

Politécnico do Porto
Escola Superior de Media Artes e Design

Carolina Lima de Faria

The role of modular graphic identity in rebranding an educational
programme

Trabalho de Projeto

Mestrado em Design

Orientação: Prof.^a Doutora Marta Sofia Bento Pires Fernandes

Vila do Conde, Setembro de 2019
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RESUMO ANALÍTICO

Este trabalho de projeto propôs-se a lidar com o rebranding do programa Challenge Based Innovation (CBI). Este é um programa educacional para estudantes universitários, onde equipas de estudantes criam projetos inovadores de design. Estes ocorrem em colaboração entre universidades e a Organização Europeia de Investigação Nuclear (CERN), na Suíça. O CBI é um programa especial, não apenas pelo seu objetivo de criar inovação social disruptiva num dos principais centros de investigação do mundo, mas também porque cada universidade que participa no CBI cria a sua versão do programa. Portanto, este não é um programa fechado, mas sim aberto a diferentes currículos e períodos de tempo.

Apesar do impacto sobre os participantes e do potencial do programa, este não é tão reconhecido internacionalmente quanto poderia ser, especialmente pela falta de identidade gráfica e consistência da comunicação. Desta forma, este projeto visa fazer o rebranding e redesign da identidade gráfica do CBI, a fim de comunicar melhor os seus objetivos, os resultados dos projetos e o processo de co-criação do programa. Além disso, o objetivo é aumentar a visibilidade do programa no CERN, nas universidades participantes e na comunidade de ensino superior.

O projeto envolveu uma longa fase de investigação para compreender o problema e as perspectivas dos participantes no programa. Posteriormente, a componente prática do projeto foi desenvolvido, considerando as necessidades dos participantes do CBI. O resultado é uma marca modular distinta, que representa a abertura do programa e sua conexão com a tecnologia e a sociedade.

Palavras-chave: design; marca; identidade; educação; CERN.

ABSTRACT

This report of practice proposed to deal with the development of the rebranding of Challenge Based Innovation (CBI). This is an educational program for university students, where student teams create innovative design projects. These take place in collaboration between universities and the European Organization for Nuclear Research (CERN), in Switzerland. CBI is a special program, not only for its motto of disruptive societal innovation in one of the world's leading research centers, but also because each university participating in CBI creates its version of the program. Thus, this is not a closed program, but open to different curricula, time periods and student backgrounds.

Despite the impact on the participants and potential of the program, it is not as internationally recognized as it could be, especially for the lack of graphic identity and consistency of communication. With that in mind, this project aims to rebrand and redesign the graphic identity of CBI in order to better communicate its goals, project outcomes and the process of co-creating such a programme. Also, the goal is to increase the visibility of the programme inside CERN, inside the participating universities and among the higher education community.

The project involved a long research phase to understand the problem and the perspectives of the programme's stakeholders. Afterwards, the practical component of the project was developed, keeping in mind the needs and struggles of CBI's participants. The result is a distinct modular brand, that represents the openness of the programme and its connection with technology and society.

Keywords: design; brand; identity; education; CERN.

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List of acronyms

CBI – Challenge Based Innovation

CERN - Conseil Européen pour la Recherche Nucléaire (The European Organization for Nuclear Research)

DFGN – Design Factory Global Network

UN's SDGs – United Nations Sustainable Development Goals

0 – INTRODUCTION

Relevance of the theme

Theme: The role of modular graphic identity in rebranding an educational programme

The report on practice presented here explains the practical project and also highlights the importance of practice-based work, confronted with the notions of branding, graphic identity and its identity dissemination. With that in mind, the document not only describes the practical project, but first it starts by identifying the relevance of the work and its state of the art.

The report on practice is the result of using a design approach to improve the communication and identity of the university programme Challenge Based Innovation (also known as CBI).

Education is changing (Tua Björklund, 2017). Increasingly we see project-based courses, based on teamwork that unite students from different disciplines in collaboration with industry and research centers. Therefore, collaboration is an important part of today's university-level education. It happens with external entities and between different fields of study.

This is the case of Challenge Based Innovation, an educational program run by CERN - the European Organization for Nuclear Research - that started in 2013, six years ago, in collaboration with universities. This is a design course, where multidisciplinary student teams are inspired by CERN technology and mentored by CERN employees to create projects that have a positive impact in society. Challenge Based Innovation is a complex programme, as it does not have a fixed curriculum, time period and the same participating universities. Also, each university participating in the programme decides, together with CBI's managing team at CERN, what methodologies to apply, the time period (from a few weeks to a full semester) and with what other universities it will collaborate with. This means that there are several variants of CBI happening in parallel. The common

characteristic is that all of them collaborate with CERN and are inspired by CERN technology to develop projects with societal impact.

As other bigger offers of project-based programmes emerge in universities and their complexity increases – as we can see by the description of CBI – there is an increasing need to communicate the programmes clearly and in a way that helps them stand out from their peers. In the case of CBI, the need arises because it has become crucial to advertise it to high-performance students, ready to take upon CBI challenging projects. Also, strong communication is needed to showcase the project outcomes globally, since the programme welcomes universities from all around the world to participate.

By recurring to a direct observation methodology, that will be further dissected, it was possible to identify common problems that arise from not having a brand that evolves alongside its institutions. As education and educational programmes change, their communication should change alongside it. It is our personal take that this represents a great opportunity for graphic design, granting this field an intervening role, for a better communication of education programmes. As mentioned by Palomaki² (2018) there is an awareness that CBI needs to have a strong brand, under the umbrella of CERN, in order to project its goals and impact, and to show its potential not only to other universities and entities, but also within CERN.¹

With that in mind, the purpose of this report on practice is to communicate CBI further, to other universities and associated entities, such as local governments with interest in developing projects. Also, it can help current participating universities to have a stronger collaboration, helping them share educational practices and methodologies as well as more coherently capturing and exposing the results of student projects.

¹ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

Objectives

In this project, there is an aim to redesign the graphic identity of CBI in order to better communicate its goals, project outcomes and the process of co-creating such a programme. Also, the goal is to increase the visibility of the programme inside CERN, inside the participating universities and among the higher education community.

Therefore, eight objectives were formulated to be answered in the theoretical research and in the practical project. For the theoretical research, the following objectives were formulated:

1. Understand the concepts of branding and of modular graphic identity.
2. Understand the importance of identity in the construction and communication of a brand and its sub brands.
3. View and reflect on case studies to better understand the option of modular, fluid or generative identity systems and recognize the best output for the practical project.

For the practical project, the following objectives were formulated:

1. Understand the network of stakeholders involved in CBI, their struggles and needs and decide what this project should address.
2. Build an adequate graphic identity to this programme, adaptable to the flexibility and constant change that characterize CBI.
3. Create an identity and guidelines that allow any teaching team member to effectively use this graphic identity.
4. Create an identity that both helps recognize all CBI programmes anywhere in the world and differentiates CBI from other project-based programmes in universities.
5. Create the elements necessary to communicate the CBI brand, its programmes and project results, being the chosen pieces the result of analysing interviews and surveys to CBI's main stakeholders.

1.2. Problem and research question

The problems initially found in CBI's communication were mostly related to the poor use of communication channels, the connection with CERN employees and the gathering and showcasing of its results with the university community.

CBI brand is little recognized², inside and outside CERN, and in partner universities. Only the current participants recognize the programme and understand what it is about. Also, the communication channels in use do not clearly demonstrate the objectives and value of the program to potential students, partner universities and other entities interested in getting involved with projects.

This lack of communication also creates difficulties in connecting with CBI mentors (CERN employees who volunteer to mentor student projects).

On the other hand, each collaboration with a different university generates a version of CBI (CBI A³, CBI Barcelona, etc.). Some of these programs created their own graphic images (logos and websites, mostly). This leads to a loss of control of how the programme is communicated globally by the CBI organizing team at CERN. The cohesion of the underlying main programme is lost.

Another problem is the lack of initial alignment of how to capture project results. This leads to many projects not being archived or poorly recorded by students.

Therefore, the research question that I want to answer in this report on practice is:

How might we rebrand an ever-changing educational programme with a flexible graphic identity?

² Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

Structure of the thesis

This report on practice is organized in five parts, which are Theoretical background, Contextualizing CBI, Understanding the problem, Developing the graphic identity and Conclusion.

In the Theoretical background, there is a study on branding and graphic identity, which is the area that this project focuses on. Afterwards, in Contextualizing CBI, there is an initial understanding of the programme. Followed by this, the Understanding the problem presents a comprehensive study of CBI to better define the problem that the project should address. Furthermore, in Developing the graphic identity, there is an explanation of the process of developing the project and its outcome. Finally, in Conclusion there is a summary of the learnings obtained with this project and report.

Additionally, an appendix is included to support the report.

Methodologies applied

In part 1, the theoretical research of the project, the knowledge of identity and branding was deepened. This was achieved by conducting literary review of books and scientific articles. Further developments included the study of three case studies to consolidate my understanding of the topic, by conducting desk research and a qualitative interview³. In part 2, I also conducted desk research and initial interviews to better grasp CBI and the context in which it happens.

The practical project is divided in two parts, Understanding the problem and the Development of the graphic identity. At the same time, there was recurring contact with the CBI managing team, allowing for an active presence and approach to CBI.

In understanding the problem, I conducted research to close the scope of the problem being addressed. I started by doing desk research on CBI, IdeaSquare and CERN to better understand the context in which the programme is inserted.

³ Ferreira, L. (2018, November 20). Personal interview. See appendix C

Also, I applied field research by visiting IdeaSquare, where the programme happens, and conducting in-person and Skype qualitative interviews (Martin & Hanington, 2012) to CBI teaching team members, CERN mentors and CBI organizing team at CERN. I conducted surveys with current CBI students and alumni students (Martin & Hanington, 2012).

After collecting the perspectives of these different groups of people, I analysed the data in order to draw conclusions of the main difficulties and needs of CBI stakeholders. This gave me insights on what my project should do to not only better communicate the programme but also answer to the challenges of the people around it.

In developing the graphic identity, I took the insights previously generated and developed a graphic identity for the programme, that relied on a lot of sketching and brainstorming (Lupton & Phillips, *Graphic Design Thinking*, 2014). Some parts of the development happened at the same time as testing and iterating the graphic identity, which meant that every part of the project that I developed was shown to the CBI organizing team, the teaching teams and to students.

Finally, at the end of the project, there was a last phase of testing, where the whole work was shared with the CBI managing team. This permitted the validation of how understandable and easy to use the guidelines were. Overall, I conducted an active project development, in which I changed previously made decisions as I developed and tested solutions, not blindly following a plan.

Part 1 – THEORETICAL BACKGROUND

1.1 – Concepts of branding

1.1.1 – We live in a world of brands

In the western world, we are surrounded by brands. Since we wake up, until we close our eyes again in the evening, we see brands (Airey, 2015). The average American sees 16000 advertisements, logos and labels in a day (Dharma Singh Khalsa, 1999). Therefore, brands play an influential role in our life, and that is a significant reason to study and understand them.

Brands surround us in many ways. This is because communication currently happens in four dimensions, according to Bill Moggridge. 1-D includes words, 2-D includes painting, typography, diagrams and icons, 3-D includes physical objects, sculptural forms and 4-D includes sound, film and animation (Morggridge, 2006).

This is relevant because we live in a world where the public understands all these languages, and the designers who create this communication, although not fluent in all languages, need to understand how each communicate and how to ensure that their message is heard when so many messages are flowing in multiple parallel channels.

The creation of a successful brand requires an effective product, a distinctive identity and added values (Peter Doyle, 2001). This project and report focus on the brand identity.

1.1.2 – Brand identity

A brand is a medium to identify and characterize a product, person or entity. A brand is a message. It is the meaning that a certain product, person or entity has. (Ollins, 1990)

A brand identity is the tangibility of a brand, which increases its recognition and conveys the brand message to the public. It essentially answers these questions: *“Who are you? Who needs to know? Why should they care? How will they find out?”* (Wheeler, Designing Brand Identity, 2009, s. 23)

Its functions are to provide navigation, reassurance and engagement. Navigation as in helping consumers choose from a variety of options. Reassurance in helping people feel that they made the right choice. Engagement in encouraging customers to identify with the brand (Wheeler, Designing Brand Identity, 2009).

Brand identity aims to be present at all moments that a consumer is making a decision in order to guide them in choosing one product over the other.

It is built of several elements that convey the same message. The engagement mentioned above as one of the functions of a brand is achieved by brand touchpoints, the channels used to get in contact with consumers, in order to increase awareness and build loyalty. Some examples are websites, packaging, business cards, billboards, word of mouth. (Wheeler, Designing Brand Identity, 2009)

Relevance of brand identity

Brand identity is relevant today because it communicates the brand values and its heritage. It helps a product, person or entity to stand out from its competition, by assisting consumers to choose it. Also, brand identity, by conveying a cohesive message, helps employees connect better with the values of a company. (Wheeler, Designing Brand Identity, 2009).

A successful brand will establish connections with its target audiences across different generations and cultures. On another hand, communicating consistently with consumers over time builds trust and customer loyalty (Airey, 2015).

“Why is branding important? Because people often choose products based on their perceived value rather than their actual value” (Airey, 2015, s. 25)

This quote is relevant not only for commercial brands, but also for all other sectors such as education and industry. A student picking what courses to take, without former experience, will choose a course based on the perceived value it might have. A person picking what company to apply, without having worked in this particular company, will choose it based on its perceived value. So, in these cases, our perception of a course or company is based not so much on facts, but, for example, on conversations we have with other people, visual communication that we encounter or our interpretation of the information these entities provide in their communication channels.

“One eye sees. The other feels.” Paul Klee (1939)

A successful brand conveys the desired perceived value to its public. However, what is more interesting is that a brand cannot fully control its perceived value. Also, what has the most impact on a brand and its success is not the message that it sends, but it is the message that the public interprets and believes. Therefore, a brand is defined by the interpretation of its recipients. As Marty Neumeier said, *“Brand is not what you say it is. It’s what they say it is.”* (Neumeier, 2005, s. 2).

This is why brand identity is not a one-time job, it requires consistent work overtime to ensure that the interpretation of the message is close to what a brand wants to convey.

Responsible brand identity

Considering that brands convey messages and that the public interpretation of the brand is separate from the message conveyed, it is important to consider the impacts of the messages that brands try to convey and their possible misinterpretations. This is relevant not only to keep a positive brand image but also not to propagate culturally negative messages. For instance, without intent, a brand might propagate a message that incites violence or enhances prejudices regarding a specific culture. Not only the brand message should be thought responsibly, but also the channels through which it is communicated. *“The medium is the message”* as Marshall McLuhan said (1964). It

is important to be aware that a design cannot be disconnected from the values and assumptions in which it is created (Pater, 2016). Therefore, both the brand and the designer have a responsibility to be careful with what they convey in the way the channels are designed.

In addition, nowadays, communication is more complex as more mediums are used, such as social media, and the internet allows for communication to spread across the world. This complexity of communication allows for more to be done, but it also requires more responsibility.

This is especially relevant for the project that this report works on, as CBI is a programme happening in several universities around the world. So, there is a need to take advantage of the easiness of communication, while being careful with how to communicate the programme. *“At the root of miscommunication lies the assumption that people will understand us because we use ‘universal’ or ‘objective’ communication.”* (Pater, 2016, s. 5) If a designer inevitably develops her work through her own cultural lens, it will be biased. Therefore, it is important to be critical and get feedback from different cultures on the developed design. This is important to keep in mind for the work to be developed for CBI.

1.1.3 – Brand architecture

Brand architecture is the logic and structure that creates cohesive relations between the different aspects of a brand. It plays a big role in brands that own sub-brands. This is applicable for the case of CBI, as it is an “umbrella” brand with sub-programmes beneath it. As figure 1 shows, here are different types of architecture structure to brands: freestanding brands, branded house, endorsed brand, sub-brands (PBL Trigger 3: Brand architecture and brand strategy, 2017).

- **Freestanding brands** are designed to stand entirely on their own in the marketplace, which target independent market segments, that can even be opposing.
- **Branded house** emphasizes a single master brand, that sits over of the other brands within an organization, which is usually used when the sub-brands fit in the same category.

- **Endorsed brands** are often designed to work together and therefore are connected to each other, through their message, colour, typography, etc. They can also have distinct brand identities but be endorsed by the “mother” brand that appears on all of them.
- **Hybrid brands** emerge when an original brand expands its offer, having freestanding brands and brands that look-a-like.

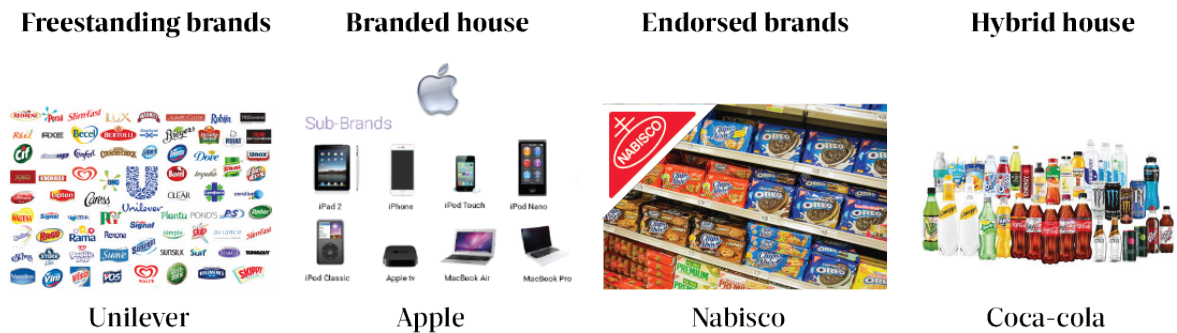


Figure 1 - Examples of brands for each brand architecture structures.

1.1.4 – When to start rebranding

There are five reasons to start rebranding, being them the change of name of a product or company, the merge of companies, the need to revitalize a brand or brand identity and the creation of an integrated system (Wheeler, Designing Brand Identity, 2009).

The need to revitalize a brand arises from, for example, the target-audience not knowing the brand or wanting to appeal to a new audience or wanting to reposition or send a different message to consumers. The need to revitalize a brand identity arises from, for instance, the need to communicate through different touchpoints or simply having an illegible brand identity. The creation of an integrated system arises when the elements that make the brand are not consistent and send different messages to customers.

Redesigning a brand identity that needs to be revitalized and creating an integrated system are particularly relevant to the project developed in this thesis, as those are part of the problems initially identified.

Before deciding to redesign a brand identity, it is important to understand the reasons that lead the client to want a redesign and reflect if this is the best way to meet their goals (Airey, 2015). If it is decided that this is the right path to

take, it is important to consider how much of the previous brand should be preserved. In case of a brand that is recognizable, that already has a strong audience, it is probably a good idea to build on top of what exists instead of starting from scratch.

1.1.5 – Elements of brand identity

A brand identity is made of logo, typography, colour, language, graphic elements and imagery (Nes, 2014). Together these elements form a system for which the brand is recognized. Each element helps shape the graphic identity and the more defined these elements are, the more identifiable a brand becomes. A successful example is Apple that *“fixes the logo (the apple), the colour (black and white), a font, and developed a unique language with the i-products (iPod, iPhone, iPad, ...), creating a strong branding system”*. (Nes, 2014, s. 7)

On the other hand, according to Alina Wheeler, a brand identity is composed of a logotype and signature, typography, colour, sound and motion (Wheeler, *Designing Brand Identity*, 2009). A logotype and signature are the tangible symbols of a brand, the colours create emotion and trigger memory, typography adds another element of personality, not only informing but also conveying a subliminal message. Sound and motion are part of the fourth language described above. These elements of a brand increase the complexity of its communication. Sounds enhances the experience of a brand, motion helps consumers create a more real and tangible idea of a brand, since people see the world in motion. *“People think in motion. There no better way to build a brand, tell stories, and bring a brand to life or bring new life to a brand”* Dan Marcolina (2003)

1.1.6 – Graphic identity

Graphic identity refers to the graphic parts of a brand – logo, typography, colour, imagery, graphic elements. Therefore, it refers to the two first dimensions of communication, described by Bill Morggridge, and it excludes physical objects,

sound and motion (Morggridge, 2006). Also, it excludes other disciplines such as marketing, needed to develop the brand's communication plan. So, it focuses on developing the visual representation of a brand and setting the rules to be applied to all communication channels, including video and sound, in order to ensure a cohesive overall message.

Characteristics of a successful graphic identity

David Airey suggests six characteristics of a successful brand identity, which are: keeping it simple, making it relevant, incorporating tradition, aiming for distinction, committing to memory, thinking small and focusing on one thing (Airey, 2015).

Simplicity avoids confusing and overloaded messages. Also, it is easier to remember a straightforward message. An example is FedEx (figure 2), whose logo is simple and memorable.



Figure 2 - FedEx logo.

Relevance ensures that the identity is adequate to the context of the brand it is representing. For example, the Hawaiian Airlines logo (figure 3) has an appropriate language for the business it identifies, while distinguishing itself from the competition.



Figure 3 - Hawaiian Airlines logo.

Incorporating tradition helps a brand identity connect with the brand's history and heritage. Also, it avoids being driven by trends that will fade the relevance of the identity with time. As shown in figure 4, Vanderbilt University is an example as its identity incorporates elements associated with the school for a long time (the oak leaf and the acorn).



Figure 4 - Vanderbilt University logo.

Distinction is important to make sure a logo is recognizable and that it stands out of its competition. The Newspaper Marketing Agency has a simple distinctive logo (figure 5), that is easy to experiment dynamic approaches in the touchpoints created.



Figure 5 - Newspaper Marketing Agency logo.

Memorable identities help consumers identify brands even in fast touchpoints, such as passing by a billboard on a highway. Coca-cola's identity is memorable and fast to identify, not only for the unique logo but also for its iconic red (figure 6).



Figure 6 - Coca-cola's logo.

Small sizes ensure that the design is legible, and the brand is identifiable in all sizes. Sugoi's logo (figure 7) is identifiable in small sizes, from zippers to small labels on its sportswear.



Figure 7 - Sugoi's logo.

Focusing on one element allows the logotype to have a clear memorable message. The French Property Exhibition is an exhibition in the U.K. for people who are interested in buying properties in France. Its logo (figure 8) focuses on one element, the open door to the exhibition.



Figure 8 - French Property Exhibition logo.

1.2 – Modular and Dynamic graphic identity

As mentioned previously, brands are made of a few elements. According to Irene van Nes (2014), they are logo, typography, colour, imagery and graphic elements.

Modular identities separate and recombine some of these elements. Dynamic identities allow some of their elements to be flexible.

In regard to CBI graphic identity, initially, it was important to study modular and dynamic brands. Considering it is a programme with several sub programmes, a modular or dynamic brand might be the right path to take to represent the diversity of programmes.

1.2.1 – Modular identity

Modular identities are fixed, giving several options of how to use their elements. These elements share the same language, but nothing new is added to the identity system (Bone, 2017). A few examples are the Electronic Frontier Foundation and 23andMe.

Electronic Frontier Foundation (EFF), a nonprofit organization defending civil liberties in the digital world, has a flexible monogram that adapts to different sizes and imagery used with it (figure 9).



Figure 9 - Examples of EFF's modular logo and its application.

23andMe, a personal genetic research company, has a modular identity with 23 distinctly unified logos that reference the building blocks of DNA, as seen in figure 10.



Figure 10 - 23andMe modular identity and its application.

1.2.2 – Dynamic identity

In dynamic identities, fixed elements help the audience recognize the brand, flexible elements allow for a livelier and more adaptable brand (Nes, 2014). There has been a need in recent years to have more flexible and adaptable brands, that grow with their audiences. This is due to the fast pace of internet and technology and to the increasing competition of other brands. The advantage of dynamic identities is that a brand is able to *“be as organic as the company it is designed for; it should speak its language, grow with it and adapt to its environment”* (Nes, 2014, s. 5).

Van Nes (2014) divides dynamic identities in six categories, being them container, wallpaper, DNA, formula, customized, generative.

1. Container identities have a shape, usually the logo, whose content varies. An example is MTV, the identity created in 1981 by Manhattan Design fixes

the MTV logo (figure 11) and varies its content with everchanging colours, imagery, graphic elements.



Figure 11 - Examples of MTV logos.

2. **Wallpaper** identities work in a similar fashion, being that there is a wallpaper placed behind a fixed element, usually the logo. An example is broadcasting association VPRO, by Thonik, in 2010, where the logo is static and the wallpaper behind varies indefinitely, as seen in figure 12.



Figure 12 - Examples of VPRO logos.

3. **DNA** identities are characterized by having a number of core ingredients as the constant element. These can be combined differently, and each time have a different outcome as well. For instance, EDP’s identity (figure 13), designed by Sagmeister & Walsh, in 2011, *“is built using four fundamental shapes: a circle, half-circle, square and triangle. These four shapes have been combined and layered to build 85 unique EDP logo marks, resulting in a modular identity that is transparent, innovative and customizable.”* (Case study EDP identity, 2012).



Figure 13 - EDP graphic identity.

4. **Formula** identities have a set of rules, a grid, a formula as the constant element. New Museum, by Wolff Olins, in 2007, is an example, as its name is the identifiable element and the logo moves and stretches according to the artists represented in the museum (figure 14).



Figure 14 - Examples of the application of the New Museum identity.

5. **Customized** identities allow for external parties, such customers, users, to interact with the brand and participate in it. Figure 15 shows OCAD University’s identity, created by Bruce Mau Design in 2011. It allows students, professors and managers to contribute to the identity. The “empty” logo is a frame ready to be filled by intervenients. For example, every year, graduating student design a new logo that is added to the set of logos for that school year.

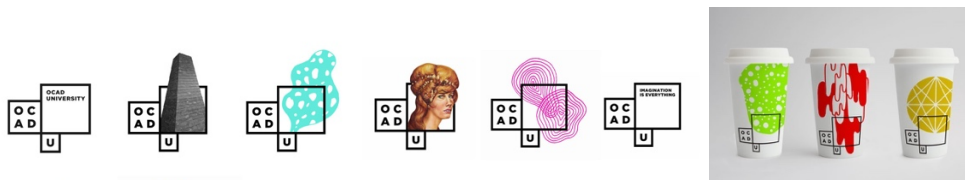


Figure 15 - Examples of logos and applications of the OCAD University identity.

6. The fifth category is **generative** identities, that are influenced by external factors in a similar fashion to customized identities. The difference is that this input is usually data – weather, stock market, news, geometrical rules - and not a user intervention. The Baltan Laboratories are an example of a research lab for design and technological culture, whose identity, developed by Eric de Haas and Jonathan Puckey, uses a digital programme to create the brand imagery (figure 16).



Figure 16 - Examples of the application of the Baltan Laboratories identity.

1.3 – Case studies

The previous examples presented in 1.2, helped characterize and distinguish modular and dynamic identities.

After that, and considering that this project is about a university programme, the chosen case studies are from different educational entities. One of the case studies is a network of universities doing a university programme. The other two are a university and a university lab. These two are also modular identities, which relate to the conclusions drawn in Part 3 – Project problem analysis and methodologies. I studied modular and dynamic identities while I conducted research on CBI, to understand the problem that this project should solve. In the interviews' analysis, it was concluded that the CBI graphic identity should be modular, so I studied modular identities in the case studies.

The analysis of these case studies had the purpose of understanding how graphic identity is used strategically, to communicate the complexity of each entity.

1.3.1 - SUGAR Network rebranding

Motivations

“SUGAR is a global network that brings together students, universities and companies for the future of innovation through a new learning experience.” (SUGAR Network, 2019) Here, teams of students develop design thinking projects, sponsored by companies (SUGAR Network, 2019). It exists since 2013, when they created a logo for the network (figure 17) that acted as a placeholder on their website and in presentation slides.



Figure 17 - Previous SUGAR logo.

Laura Ferreira, responsible for managing the SUGAR Network, explains that there was no storyline attached to this identity. *“I really don't know what it*

means and I have really asked everyone if they know what it means, if it's infinity, if it's an 8, if it's a connected network, so I have no idea and nobody knows what it means. It makes me kind of confused about it. And it was just a logo, so there was no specific identity. Someone just created a logo, that's it. There was no corporate identity, no language attached to it. And green, someone decided that we would have green on our webpage and that's it.”⁴

Ferreira adds that the network felt the need to create an identity to support this logo. They did not completely rebrand it, as they are a new network still working on building recognition. The logo was updated, and an identity was developed around it and around the network’s identity of an everchanging organization, that educates students and companies on design thinking (figure 18).

*“The biggest thing about SUGAR is that it is organic and it's always changing. Before me, there were other people working here, and before that, other people. My biggest concern with our branding strategy was to make sure that even if I go away from SUGAR, the next person still has the opportunity to apply their vision with this branding.”*⁵



Figure 18 - Elements of SUGAR Network graphic identity: logo, graphic elements, business card, explanation slide, booklet page.

⁴ Ferreira, L. (2018, November 20). Personal interview. See appendix C, p. 125

⁵ Ferreira, L. (2018, November 20). Personal interview. See appendix C, pp. 127, 128

Specific characteristics

The network needs for an easy-to-use identity, applied all over the world, by teaching teams from diverse backgrounds. Therefore, it was required that they use an easy-to-download typographic font and accessible templates, that do not require licensed programmes, such as Adobe InDesign. The goal of channels templates is not to oblige people to use them, instead they serve as inspiration. *“Because it is weird when you force people to use your thing, it's not their style, it's not how they do it.”*⁶

Impact

According to Ferreira, the impact of rebranding has been visible. The development of an identity created coherence across the communication, which made SUGAR Network more visible in the communities it wants to reach (students to join the programme and companies to sponsor projects). This is also visible on platforms such as LinkedIn, where more and more people associate themselves with SUGAR. *“When I started this rebranding, we had two employees in LinkedIn, so SUGAR had two people connected to it in LinkedIn. One year after we have more than forty. So, I think the impact will grow.”*⁷

Relation with the CBI project

SUGAR Network's rebranding is a great example for CBI. Using open source typographic fonts and templates and designing for people that need a set of guidelines, not imposing rules are examples to inspire CBI rebranding. Also, I believe it is important to acknowledge the limitations of a graphic identity that is used by many people worldwide. The managing team cannot expect that everyone will use it fully or follow all the guidelines, it is something that takes time and constant reminders.

On the other hand, in this rebranding they decided to identify each university with a colour to show the quantity of institutions involved in the programme. Each university has a specific coloured bubble that can be used

⁶ Ferreira, L. (2018, November 20). Personal interview. See appendix C, p. 127

⁷ Ferreira, L. (2018, November 20). Personal interview. See appendix C, p. 127

across the communication. However, I believe this is imposing a colour on universities, that already have their original colour and do not need another element to represent themselves. The result is that these bubbles are not being used by the universities, becoming just a decorative graphic element in communication channels, as seen in figure 19.

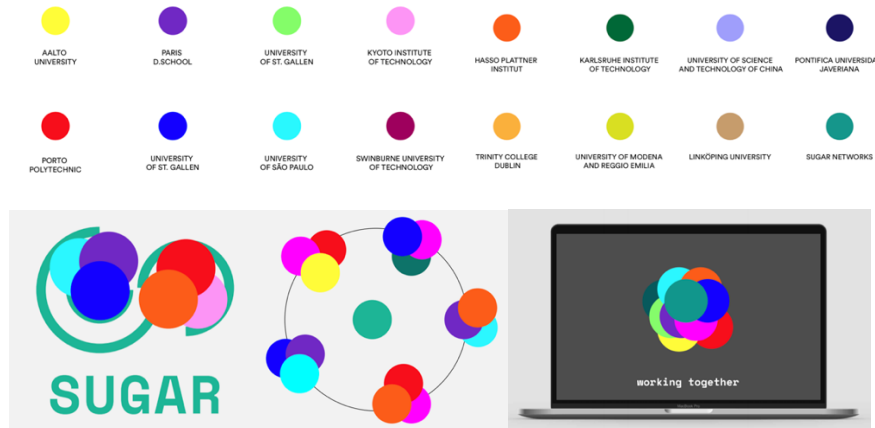


Figure 19 - Colours attributed to each participating university and current application of these bubbles as graphic elements in communication channels.

1.3.2 - The New School rebranding

Motivations

The New School's previous graphic identity was created in 2005 by branding agency Siegel+Gale. However, it does not convey the school's design-led practices anymore. The New School was founded in 1919 by a group of leftists "to oppose outrages against intellectual liberty," as the school's original proposal put it. Siegel+Gale's logo had a graffiti-inspired airbrushing effect that aimed to celebrate the progressiveness and nontraditional approach to education (figure 20). However, it was not sophisticated, and it did not communicate clearly that there were five schools under the umbrella of The New School (Armin, 2015).

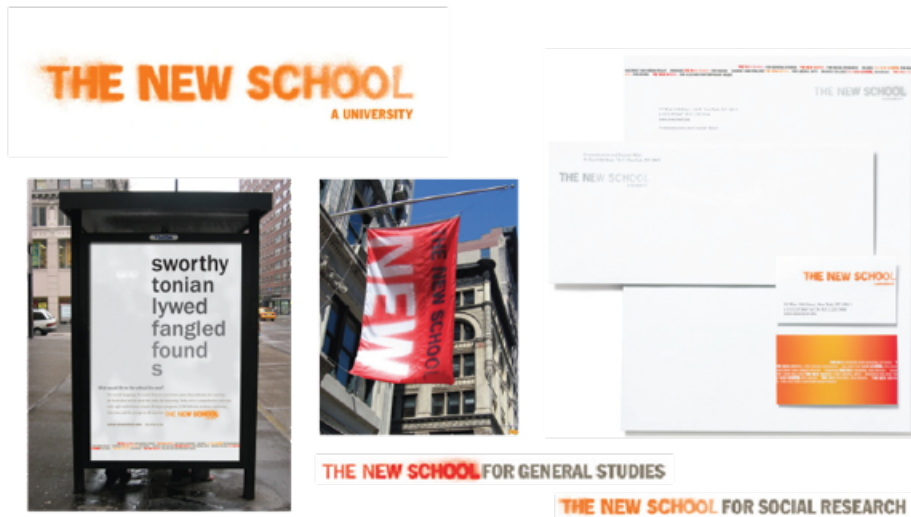


Figure 20 - The New School previous logo and identity applications.

In 2015, Pentagram, more specifically Paula Scher, rebranded the new school. The result revealed itself as a more sophisticated and technology driven identity, as seen in figure 21.

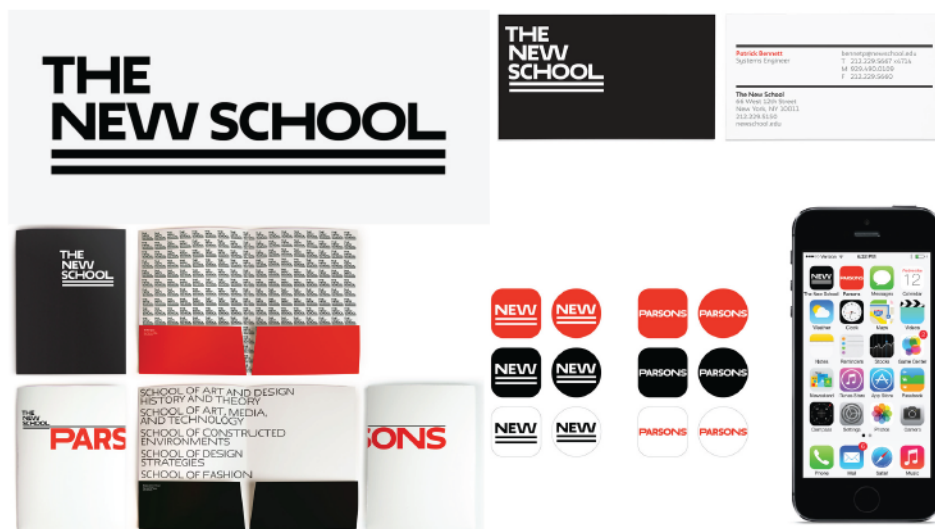


Figure 21 - The New Schools' new graphic identity, with examples of its application.

Specific characteristics

The core of the identity is that it uses a typographic solution to differentiate the various schools, with enough cohesion to show that they all belong to the same umbrella institution. *“The school names are not individual logos but did need to have their own unique character while remaining connected to each other.”* (The New School, 2015) To do so, Pentagram created a typographic font with expanding letterforms and an algorithm to facilitate the use of the three widths in headlines and text. The typographic font, and consequently

all the look and feel of the brand, is inspired by the architecture of The New School's landmark Joseph Urban building.

In addition, the graphic identity has a pair of parallel lines that anchor The New School wordmark and provide a system to create logos for the five schools. *“The system enables The New School to stand alone at large scale, or act as an endorser when connected to schools such as Parsons and Lang. The flexible structure allows the university to continue to evolve and change and supports the different names to work alongside The New School brand.”* (Dunne, 2015)

A very identifiable element of this identity is the colour red. Figure 22 shows The New School wordmark and bars appear in black, while the names of the individual schools and programs are highlighted in red.



Figure 22 - The New School's identity modular and adaptable to the several schools and programmes.

Impact

The identity was discussed a lot which led to a higher focus put on The New School, which increased its popularity (Armin, 2015). This was a positive consequence of the rebranding, and today still, it has become an example of a successful modular identity.

Relation with the CBI project

The New School's case is relevant to be studied for this project as it is an umbrella institution with several sub schools under it, that may have different purposes, people and outcomes. It is the same situation with CBI and its sub-programmes. Therefore, it is interesting to realize how a modular identity that adapts to bigger and smaller names, was the chosen solution for this situation.

“We had to create an identity system where, no matter how you listed the schools, they’d always look like they were part of the same organization, even if the departments changed. It had to be flexible.” (The New School, 2015)

In addition, the logotypes are based on the names of the schools, not individual logos or graphic elements. This is relevant to CBI, as what distinguishes each sub-programme is also their names. Therefore, The New School’s identity is a good reference of a system created based on the names of schools and programmes.

1.3.3 – MIT Media Lab rebranding

Motivations

The Massachusetts Institute of Technology Media Lab’s current graphic identity is a redesign of a previous rebranding developed for the Lab’s 25th anniversary. The previous identity was developed by Studio Green Eyl, in 2010, and it is a dynamic identity, with an algorithm that creates 45 000 possible variations for the logo (figure 23). The logo is based on three geometrical figures, whose position and colour are the flexible elements (MIT Media Lab, 2010).

This dynamism symbolizes how each individual person contributes to the way of working of the Lab - creativity, transparency and mutual inspiration. This continuous variation is aligned with the Lab’s goal of repeatedly redefining what media and technology could be today (Nes, 2014).

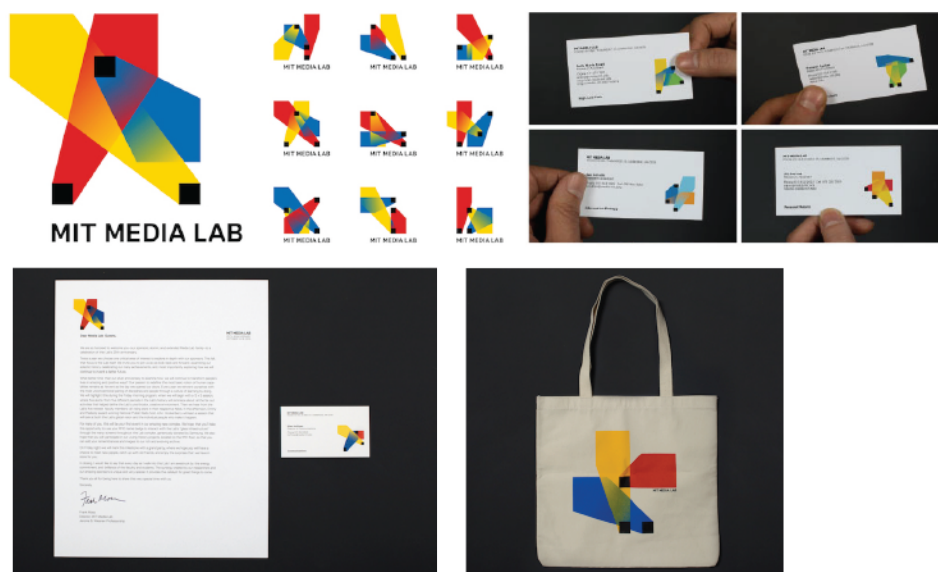


Figure 23 - MIT Media Lab previous graphic identity.

However, it is insufficiently neutral to harmonize with the Lab's variety of communications. Also, it is an abstract symbol that cannot communicate well without the name. The fact that it has 45 000 logo variations creates unstructured difference between the logos, but no distinction, that is, there is no defined use for each of the logos, they all do the same job, so there is no purpose in distinguishing them. *"It's tiring to manage 40 000 logos"* (Beirut, 2015)

MIT Media Lab asked Pentagram in 2013 to redesign its graphic identity, having a preference for a simpler representation. They referenced the early design of Muriel Cooper, for the MIT Media Press (figure 24), created in 1962, a non-complicated and intemporal logo (Beirut, 2015).

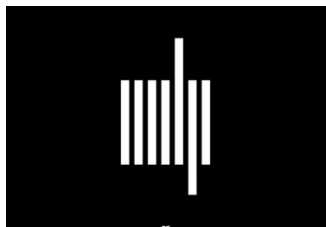


Figure 24 - MIT Media Press logo.

Figure 25 shows the second attempt of redesigning the lab's identity, where Pentagram created a simple ML monogram to serve as the logo for the Media Lab. Using the same underlying grid, the identity extends to each of the 23 research groups constitute the lab.

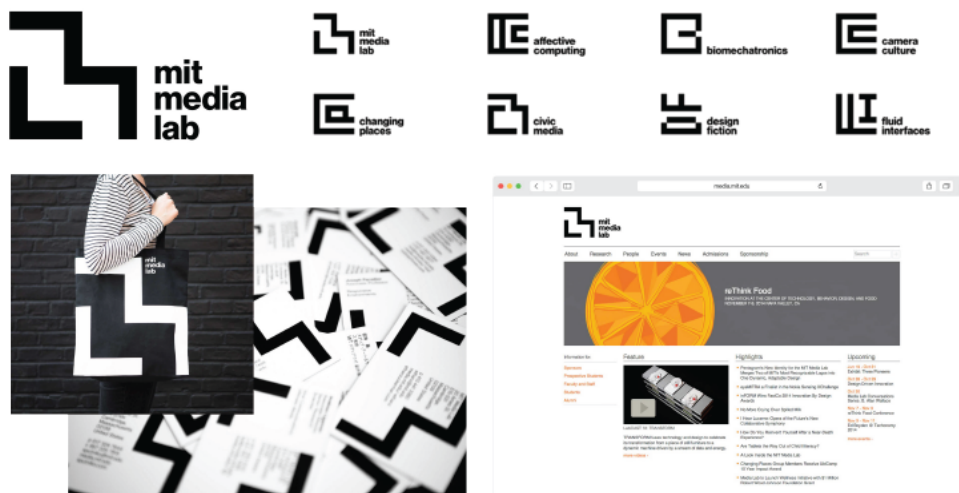


Figure 25 - MIT Media lab current graphic identity.

Specific characteristics

Inspired by the modernist design of Muriel Cooper and Jacqueline Casey, MIT graphic designers in the 1950's and 1960's, the new identity has a simple design and reinstates Helvetica as the typographic font used in the logotype.

This is a modular identity, that brings a fixed system to create recognition and familiarity between the different logos, while having independent symbols that distinguish each of the research groups. The Media Lab logo is created with the initials “M” and “L”, based on a grid. The same logic is used for each research group that belongs to the lab: a combination of the initials forms each logo. The grid is the same as the one used in the previous graphic identity (figure 26).



Figure 26 - The previous logo, the grid that was the base for its system and the new logo based on the same grid.

Impact

This identity has been quite successful, being success based on the fact that *“it structs a balance between a central theme and a variation. The variations were sufficient to help each of those research groups engender a sense of esprit de corps, but the central theme helped them feel unified that they’re all about one big idea which is the innovation that is enabled by the environment created by the Media Lab overall”*, according to Pentagram partner Michael Beirut (Beirut, 2015).

Relation with the CBI project

The previous graphic identity issue of not being neutral enough for the Lab's variety of communication is a matter to pay attention to, when developing CBI's graphic identity. CBI also has a variety of subjects and formats to communicate, considering that all project outcomes are different, and the sub-programmes take place in universities all over the world. Therefore, it is

important to consider that CBI will need to communicate in many different contexts, that are hard to predict.

On the other hand, it is interesting to consider the idea of developing an identity based on a grid system for generating different logos, such as the case of the twenty-three research groups' logotypes. These logos were created for non-increasing research groups, therefore Pentagram had full control over the representation of each group. However, in CBI, each year new CBI programmes are created, being that it is important to consider that there will not be a designer in residence to create a coherent logo for them.

1.4 - Conclusion

This theoretical background was important to understand what principles should be kept in mind when designing the CBI graphic identity, such as the characteristics of a successful graphic identity. Also, it is important to be aware that we are designing in a world already full of brands and that as designers we are responsible for the messages they communicate (Pater, 2016). On the other hand, the theoretical background allowed to conclude that the CBI brand should be the Branded House brand architecture, as CBI acts as an umbrella for its programmes and its audience should recognize that they belong to the same mother programme. This emphasizes the scale of the programme and how it spreads worldwide.

Furthermore, the study of modular and dynamic identity generated the conclusion that CBI graphic identity could be either modular or a customizable dynamic identity. These are very distinct options in a spectrum of giving autonomy to the universities that organize the CBI programmes. Modular identities do not provide much autonomy, but they ensure enough flexibility and brand recognition. On the other hand, customizable dynamic identities give each university a lot of autonomy to create their own logo within a framework, while securing recognition. The decision between one or the other could only be made with the interviews' analysis. The conclusion is that a modular identity was the right solution to follow, as can be read in part 3 – Understanding the problem.

PART 2 – CONTEXTUALIZING CBI

In order to better grasp what CBI is and the purpose of the programme, it is important to first understand the institutions in which it is inserted (figure 27). CBI is a course for university students, that happens in CERN, more specifically in IdeaSquare (see appendix Q). The latter is an innovation hub, where different innovation projects take place, that connects CERN with many external entities.

2.1 – Where CBI is inserted in

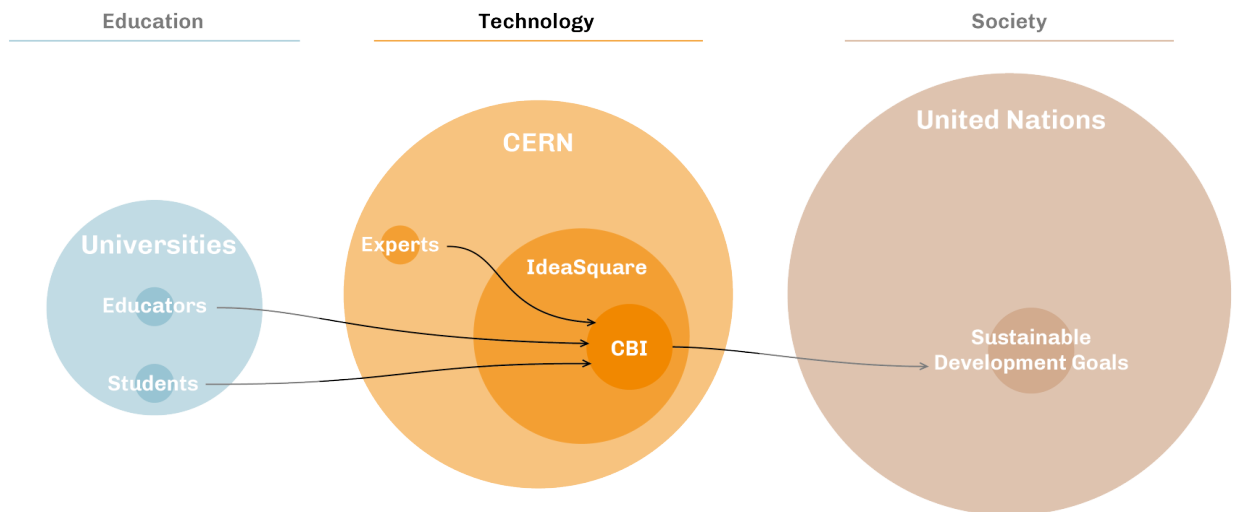


Figure 27 - Stakeholders involved in CBI.

2.1.1 – CERN

“At CERN, our work helps to uncover what the universe is made of and how it works. We do this by providing a unique range of particle accelerator facilities to researchers, to advance the boundaries of human knowledge.” (CERN, Who we are, n.d.)

CERN, the European Organization for Nuclear Research, operates the largest particle physics laboratory in the world. It was formed in 1954 and is currently owned by twenty-three member states. It was created to establish in Europe a worldwide top science research centre. (CERN, Who we are, n.d.) Its goal is to advance scientific knowledge through collaboration between different nations. This is relevant because, although its core mission is to do fundamental

research in particle physics, CERN aims to use science to connect people and use this connection to push the limits of knowledge. It also aims at educating people and at having a positive impact in society. (CERN, Our impact, s.d.)

Education is done in several ways, such as PhD positions and high school internship programmes. (CERN, s.d.) Impacting society is done, for instance, by technology transfer through industry collaboration or collaboration with policy makers in each Member State. (CERN, Our impact, s.d.)

2.1.2 – IdeaSquare

IdeaSquare is a Design Factory inside CERN. Design Factories are innovation hubs, existing in universities and research organizations, with a mission of impacting learning and research through passion-based culture and effective problem solving. (Design Factory Global Network, s.d.) Within this mission, IdeaSquare aims to generate new ideas that connect CERN science with society, through collaboration between different entities and people, such as researchers and university students. (IdeaSquare, s.d.)

IdeaSquare is part of a long-term strategy to create a European hub to push innovation in Europe.⁸ In this context, it started as an experiment to better define the process of connecting fundamental research and society.⁹ Also, it shares CERN’s goal of educating people, for which the collaboration with universities has a key role.

One relevant programme, inside this long-term strategy to push innovation in Europe, is Attract. This is a programme funded by the European Commission’s Horizon 2020 that focuses on being the pioneer to transfer technology created for fundamental research to industrial and societal purposes. They aim to have a capacity to scale up ideas in this field, comparable to Silicon Valley’s innovation culture. (Attract, The project, s.d.)

⁸ Dosi, C. (2018, December 27). Personal interview. See appendix J

⁹ Nordberg, M. (2018, December 14). Notes from a meeting. See appendix E

2.1.3 – CBI

CBI overview

CBI mission: *“Bring together university students to address societal challenges in the spirit of open science and open innovation, inspired by CERN and its experts, to create solutions that contribute towards the UN Sustainable Development Goals.”*

CBI or Challenge Based Innovation is a programme in collaboration between CERN and universities. It aims to bridge technological ideas (that come from instrumentation development or basic research at CERN) with everyday life, so using that scientific knowledge for solving society problems. Here, the bridge is done in projects developed by university students, as student teams are the catalysts between technology creation and using it in innovative ways to solve problems.¹⁰

CBI is a special program, not only for the purpose of making disruptive innovation for societal purposes in one of the world’s leading research centres, but also because each university that participates in CBI, jointly with CBI’s managing team, creates its version of the program. Therefore, this is not a closed program, but open to different curriculum, time periods, methodologies, etc.

CBI’s goal is to develop a programme where teams of students develop projects that solve challenges with societal impact, which may use CERN’s technology. Therefore, it is an experiment to better define the process of connecting fundamental research and society, which fits in IdeaSquare’s goals¹¹. Another goal of CBI is to educate people. It aims at providing students unique learning experiences by being innovation-driven, shaping their entrepreneurial thinking, improving multidisciplinary working skills and getting hands-on¹².

Asides from the educational impact of CBI, for CERN, one of the main advantages of this programme is the usefulness of research, from the societal point-of-view, which generates other kinds of value, besides research outputs and

¹⁰ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

¹¹ Dosi, C. (2018, December 27). Personal interview. See appendix J

¹² Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

scientific articles¹³. The outcomes of the projects developed during each programme vary from design concepts and early stage prototypes to functioning minimum viable products. The common denominator is that all use technology developed in CERN.

In CBI 2014-2015, with the challenge of *How might we design a viable system, that allows people to restore or enhance their ability to move?* team Ampere focused on the prevention hip fractures among elderly women. They developed “Inde” (figure 28), a working prototype of a skirt attached with a reusable auto-inflator device and machine-learning algorithm to detect the fall patterns. “With use of gyroscopes, accelerometers and charged carbon dioxide, auto inflation takes place before the person wearing the device hits the ground.” (Aalto-Setälä, 2015, p. 16)



Figure 28 - Project Inde - Enhancing movement.

On another hand, CBI Barcelona 2018/2019 focused on Sustainable Development Goal 5: Gender Equality, more specifically on the challenge *How might we create a more supportive dynamic in relationships, so that the distribution of work is equal?* Team Kaya focused on topics affecting specifically young women who faced the challenge of balancing work and career in Spain and developed WeBe (figure 29), a wearable device for couples. It visualizes the emotional battery of each individual, with the goal of increasing healthy communication and awareness of each other.

¹³ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

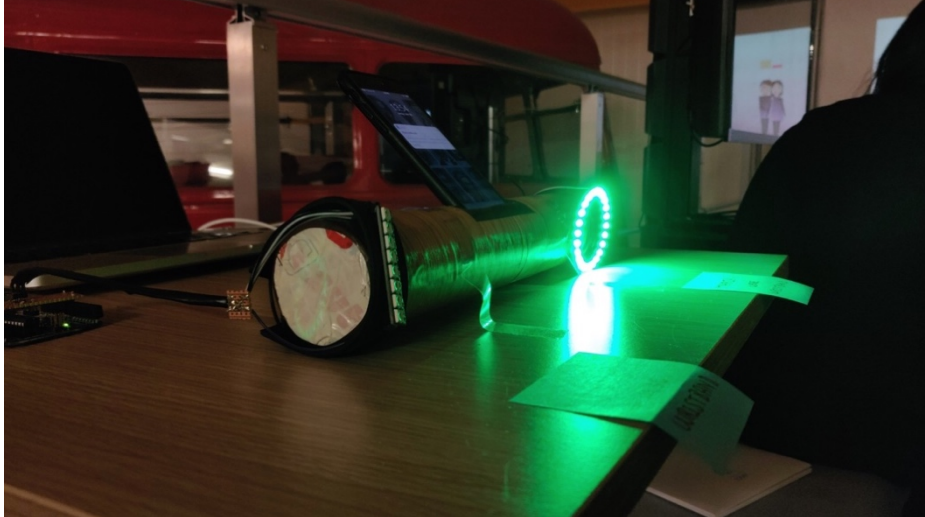


Figure 29 - Project WeBe.

The history of CBI

The programme started in the academic year of 2013/2014. First, it was a collaboration between three universities following the same programme. Later, more universities wanted to join, but they wanted different outcomes or to try out other methodologies. Here, CBI was split into sub-programmes, that had in common collaborating with CERN and being inspired by CERN technology. The differences were that they had different time periods (some last three months, other last six), different methodologies (some focused on design thinking, others included future forecasting or circular economy) and different collaboration models (some have teams of students from several universities working together and others have local teams with students from the same university).

These are the programmes that took place until June 2019:

2013/2014

- The first CBI programme that took place. It included students from Aalto University (Finland), Athens Polytechnic (Greece), UNIMORE University of Modena and Reggio Emilia (Italy). It took place from October, 2013 to March, 2014.

2014/2015

- There was one CBI programme in this academic year. It included students from Aalto University (Finland), ESADE Business School (Spain), Instituto

Europeo di Design (Spain), Polytechnic University of Catalonia (Spain), Norwegian University of Science and Technology (Norway), Swinburne University of Technology (Australia), UNIMORE University of Modena and Reggio Emilia (Italy). It took place from September, 2014 to February, 2015.

2015/2016

- This year, one CBI programme took place that included only Mediterranean universities, therefore they decided to call it CBI Mediterranean. It included students from ESADE Business School (Spain), Istituto Europeo di Design (Spain), Polytechnic University of Catalonia (Spain), UNIMORE University of Modena and Reggio Emilia (Italy). It lasted from September, 2015 to December, 2016.

2016/2017

- Only CBI Mediterranean took place in this academic year. It included students from ESADE Business School (Spain), Istituto Europeo di Design (Spain), Polytechnic University of Catalonia (Spain), UNIMORE University of Modena and Reggio Emilia (Italy). It took place from September, 2016 to December, 2017.

2017/2018

- This year, three CBI programmes took place in parallel: CBI Mediterranean, CBI-X and CBI A³.
- CBI Mediterranean included students from ESADE Business School (Spain), Istituto Europeo di Design (Spain), Polytechnic University of Catalonia (Spain), UNIMORE University of Modena and Reggio Emilia (Italy). It lasted from September, 2017 to December, 2018.
- CBI-X included students from UNIMORE University of Modena and Reggio Emilia (Italy), University of Ferrara (Italy). It took place from November, 2017 to February, 2018.
- CBI A³ included students from Porto Polytechnic (Portugal), Swinburne University of Technology (Australia). It lasted from October, 2017 to April, 2018.

2018/2019

- This year, four CBI programmes took place in parallel: CBI ER, CBI A³, CBI Barcelona and CBI Design the future!
- CBI ER included students from University of Bologna (Italy), University of Ferrara (Italy). It took place from November, 2018 to February, 2019.
- CBI A³ included students from Porto Polytechnic (Portugal), Swinburne University of Technology (Australia), Pace University (New York), Mannheim University (Germany). It lasted from October, 2018 to April, 2019.
- CBI Barcelona included students from ESADE Business School (Spain), Instituto Europeo di Design (Spain), Polytechnic University of Catalonia (Spain). It took place from September, 2018 to December, 2018.
- CBI Design the future! included students from Tampere University of Technology (Finland), University of the Basque Country (Spain), BIC Araba Innovation Centre of Álava (Spain). It took place in November, 2018, for one month.

2019

- CBI Tampere included students from Tampere University of Technology (Finland). It took place from March, 2019 to May, 2019.

The programme has developed over the years. One of the changes is that in 2013 it started with the key objective of creating applications for CERN technology that impact society positively. With time, it opened the possibilities, being that it does not necessarily have to include CERN technology, such as CBI Design the future! Also, in 2018, together with the involved universities, the CBI managing team decided that all programmes should address the United Nations Sustainable Development Goals, as a way for projects to have societal impact.¹⁴

¹⁴ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix, ppX (blue)

2.2 – CBI's Stakeholders

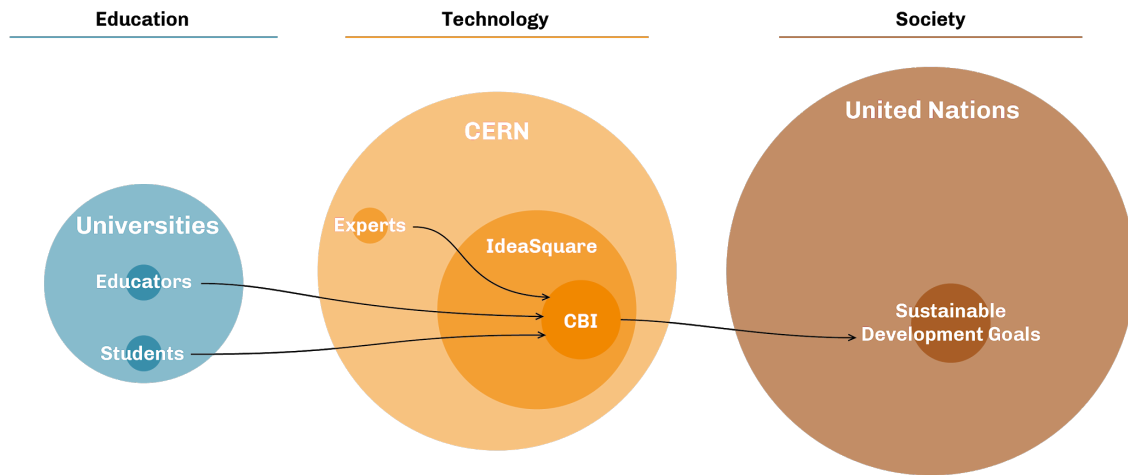


Figure 30 - CBI stakeholders.

As seen in figure 30, there are several entities connected with Challenge Based Innovation. Here it is explained who they are and what is their relevance to CBI. Students, Universities, Professors and IdeaSquare were defined as the main target audience by the CBI managing team.

Students

Students are the centre of CBI because they are the ones developing the projects and for whom the programmes are created and adjusted. One of the core goals of CBI is to educate, therefore the students' learning experiences are a priority in the programme, as stated previously.

Professors

Professors are the responsible people to run the course inside universities and to teach and coach the students. Therefore, this group includes all people with teaching responsibilities from full professors to teaching assistants.

Universities

CBI is an expensive programme for universities, as it does not admit a large number of participants and it requires students to travel to CERN, without external sponsorship. Therefore, the participating universities are ensuring the economic and infrastructure resources needed to make the programme happen.

IdeaSquare

As mentioned previously, this programme is in line with IdeaSquare's mission. Also, it is the main programme happening in the design factory, as it impacts around 200 students per year and involves currently twelve universities and external entities, such as the United Nations Sustainable Development Goals. This means that it establishes a strong network for the design factory, which gives the programme a great relevance in IdeaSquare.¹⁵

Attract and Attract consulting partners

Attract is a European initiative that aims to transfer technology created in open science to other applications. It involves many entities such as universities (for example, Aalto University), research centres (for instance, CERN) and it is funded by European Union's Horizon 2020. (Attract, s.d.) Many technologies with huge potential to impact society are developed initially for fundamental research. Attract aims to bridge this research with industrial communities, focusing on detection and imaging technologies. (Attract, The project, s.d.) A successful example of this bridge is the World Wide Web¹⁶, which was created in CERN initially as a project management platform, and it became the main communication tool in the world for everyone.

This project is actually the reason for IdeaSquare and CBI to exist, as they are steps in the process of developing an effective way of transferring research-based technology to society.^{17,18} Both the Design Factory and the programme aim to create new ideas that apply CERN technology to society.

¹⁵ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

¹⁶ The World Wide Web (WWW), commonly known as the Web, is an information system where documents and other web resources are identified by Uniform Resource Locators (URLs, such as <https://www.example.com/>), which are accessible over the Internet. It was invented in 1989 by Tim Berners-Lee invented, a scientist in CERN, as a tool for project management. In 1991, it was released to other research institutions and then to the general public. The World Wide Web has been central to the development of the Information Age and it is still the main tool that billions of people use to interact on the Internet. (Gregersen, 2019)

¹⁷ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

¹⁸ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

CERN and CERN employees

As mentioned above, CBI is an advantage to CERN as it is a programme that connects CERN technology with society, while educating university students. CERN employees play a big role in CBI as they make the connection between the students and the CERN world. They give technological support to teams by mentoring them in what technologies are available, how they work and what they can be used for.

Design Factory Global Network (DFGN)

DFGN is the network of currently twenty-three design factories, existing in five continents. As stated previously, Design Factories are innovation hubs, existing in universities and research organizations, with a mission of impacting learning and research through passion-based culture and effective problem-solving. (Design Factory Global Network, s.d.)

IdeaSquare as a design factory is in connection with many universities interested in participating in innovation-driven programmes and experimenting with new methodologies and approaches. Therefore, most of CBI partner universities also have a design factory.

United Nations Sustainable Development Goals (UN SDG's)

The Sustainable Development Goals are seventeen goals that address global challenges, set by the United Nations General Assembly in 2015 to be achieved by the year 2030. (Development agenda, s.d.) In the last year, CBI has integrated UN SDG's in all CBI programmes, as the focus of the projects' societal impact.¹⁹

*"...one of the major changes that happened in the past year and a half, is that the sustainability agenda has been integrated in all CBI versions which started as an initiative from the students: we don't want to create products for companies, we want to change the world, create new products to make it more sustainable."*Harri Toivonen²⁰

¹⁹ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

²⁰ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D, p. 134

2.3 - Walking through a CBI programme

All CBI programmes are different but, despite the methodologies used or the collaboration model, there are many common parts, such as CBI jams in IdeaSquare. In order to better understand the programme, the following example shows the process of running CBI A³ 2017/2018 (figure 31, 32 and further explanation). The organizing university was Swinburne University, particularly Design Factory Melbourne. There was one participating university, Porto Polytechnic, particularly Porto Design Factory. Each university had two local teams of students.

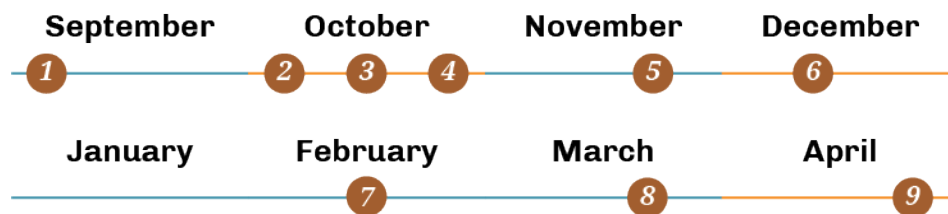


Figure 31 - CBI programme timeline, that refers to the text bellow.

1. In September, the teaching teams start conversations, as each university informs how many teams will participate in the programme from their side. Also, the organizing university, in this case, Design Factory Melbourne, shares the programme to be followed during the year. This is the time to advertise the programme, open applications and find the right students to join.
2. In October, the programme starts, and the teams receive their challenge:
 - a. “In 2017-18, A³ CBI will focus on SDG 12: Ensure Sustainable Consumption and Production Patterns. Each participating university will explore and interpret this SDG in relation to their local region. This will allow for deeper research and testing of ideas with users.
 - b. In teams of 3-4, you will be asked to propose designed outcomes that consider 2020, 2025 and 2030 scenarios for implementation, linking CERN science and/or technologies to SDG 12. You will follow structured design innovation techniques to guide your design

exploration. This will be broken down into smaller tasks, where greater detail will be provided over the 3 phases of the program.”

3. Locally the teams started investigating their theme: looking into CERN technologies and looking into local problems related with sustainable production and consumption.
4. Melbourne and Porto students shared their research learnings on a regular basis, through video calls.
5. In November, the whole CBI A³ - educators and students - travel to IdeaSquare in CERN to participate in CBI Jam. CBI Jam is an event in which CBI programmes go to CERN to develop their projects. This event can happen in any stage of the project, from the very beginning, to start the project, to the end, to present results.
 - a. In this case, there were CBI A³ and CBI X students in IdeaSquare at the same time. Therefore, the teams worked together to develop their projects, guided by their professors. Also, they did workshops with the CBI managing team at IdeaSquare, CERN employees and external speakers. They had a chance to meet CBI mentors - CERN employees that volunteer to help teams connect with CERN technology.
6. They returned to their home universities with a general idea of what they will develop and presented the current state of their projects in the Fall Presentations.
7. In January, February and March they developed their project ideas further by prototyping and interviewing users and experts. They kept in contact with CBI mentors to get better informed on CERN technologies and how they can integrate them in their projects.
8. In March, they also presented their project developments in the Winter Presentations.
9. In April, the teams developed their final prototypes and presented their outcomes in each university.

1 Teaching teams start organizing the academic year.

2 The programme starts with the theme “Responsible consumption and production.”



3 Students starting to investigate the challenge locally.



4 Melbourne and Porto students share their research learnings regularly, through video calls.

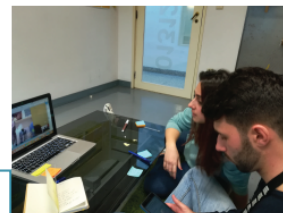


5 All CBI teams visit and work in CERN.

6 Teams return home to draw initial conclusions and present their projects in the Fall Presentations.



7 Teams develop their project ideas by prototyping and interviewing users and experts.



8 Teams presented their project developments in the Winter Presentations.



9 CBI teams finalize their projects and work on their final reports, to present the outcome in the local Final Presentations.

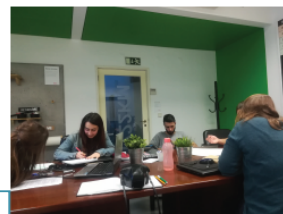


Figure 32 - Photos that illustrate the CBI programme timeline, described in the previous page.

A³ CBI programme briefing and outcome example

Challenge: Worldwide humans are using more resources as populations and consumerism exponentially grow as well, overpassing the earth's limits. Therefore, the sustainable development goal 12 (figure 33) focuses on improving resource efficiency, reducing waste and making sustainability practices mainstream across all economic sectors. (Sustainable Development Goal 12, 2019) In CBI A³, the projects focused on creating impact locally, in their home countries.



Figure 33 - Sustainable Development Goal 12: Responsible consumption and production.

Outcome example: Team Ipiranga's project focused on fighting deforestation, as one impactful problem that is eliminating the earth's resources. Nowadays, one of the main causes of deforestation are wildfires which also release big amounts of CO² to the atmosphere.

Portugal suffers many wildfires every year. The country has a very large eucalyptus area being that this is not a native tree. The lack of planning and regulation of eucalyptus plantation are factors that, along with climate change, increase the risk of having wildfires, turn forests into real ticking bombs. The team developed Geolight (figure 34), a streetlamp that captures CO² from the atmosphere and, in the case of a fire, releases just enough to keep the fire out of the road, allowing citizens to escape and firefighters to arrive fast and safely to the fire. Regarding CERN's technologies, it uses the Flame Detector (currently used in storage facilities) and the Evacuable Flat Panel Solar Collector (currently used in Geneva's airport to collect solar energy). (Maria Rita, 2018)








Figure 34 - Team Ipiranga's project outcome, called Geolight.

2.4 - CBI's previous graphic identity

CBI's previous graphic identity is defined by the logotype, colours, font and three symbols (figure 35).

CBI previous communication guidelines

Colors

				
Red	Grey	Mint	White	Black
F05C5A	C7C7D1	8DD0BE	FFFFFF	000000
R: 222 G: 891 B: 567	R: 222 G: 891 B: 567	R: 222 G: 891 B: 567	R: 222 G: 891 B: 567	R: 222 G: 891 B: 567

Font

Lato Light
Lato Regular
Lato Bold
Lato Black

Symbols



Logo



Figure 35 - CBI previous communication guidelines.

2.4.1 – CBI channels

The channels where it is applied are physical and digital. As for physical channels, the programme uses posters for events (figure 36). As for digital channels it has a website (figure 37), a LinkedIn alumni group, a Facebook page (figure 38), a Twitter account (figure 39). Regarding communication and use of channels, the organizing team says that they are quite active on Facebook and LinkedIn. However, the current team did not know there was a CBI Twitter account. They use the website as the main communicator to describe CBI. The programme is publicized mostly by “word of mouth”, within the research and university community.²¹

Here are some examples:



Figure 36 - CBI Barcelona poster for Final presentations.

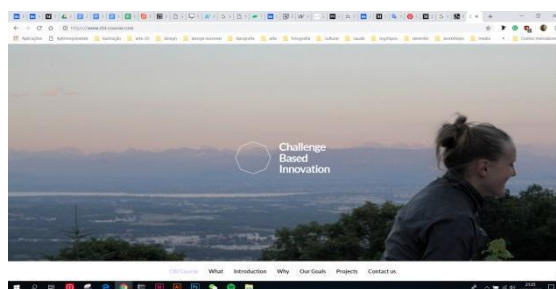


Figure 37 - [CBI website](#).

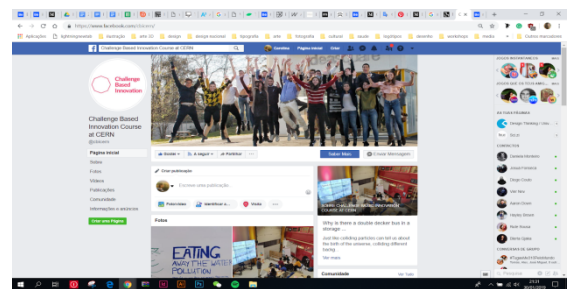


Figure 38 - [CBI Facebook page](#).

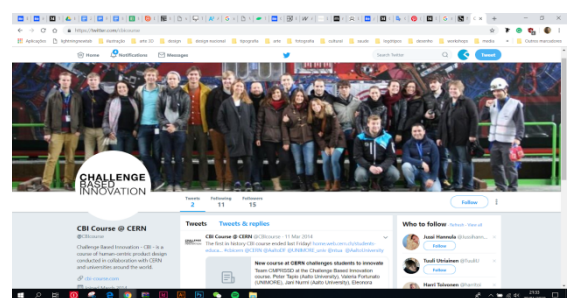


Figure 39 - [CBI Twitter feed](#).

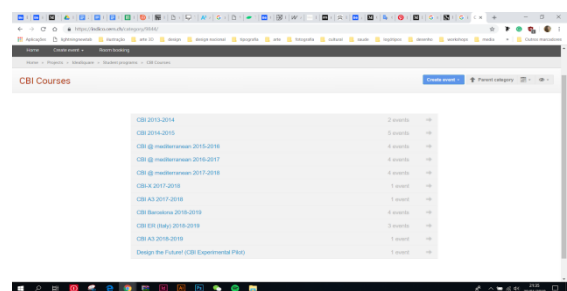


Figure 40 - [CERN Indico - CBI programmes](#)

²¹ Tello, P. (2018, December 19). Personal interview. See appendix F

2.4.2 – CBI programmes' previous graphic identity

Although CBI has its own graphic image, there are the cases of CBI Barcelona and CBI A³ who have created their own independent graphic identity. These are the current CBI graphic images that can be found:

CBI Barcelona

CBI Barcelona has a logo (figure 41) that is mostly used in slides and in videos. The goal was to create an image that gathered the three participating universities and CERN. However, they don't have a graphic identity.



Figure 41 - CBI Barcelona logo.

CBI A³

CBI A³ has its own website. They don't have a graphic identity, or a logo (what they use for that is the written name of the programme), as seen in figure 42. The website is the communication tool of the programme, where all information can be found including the current state of the projects in progress. (link: <http://cbi.dfm.org.au/>)

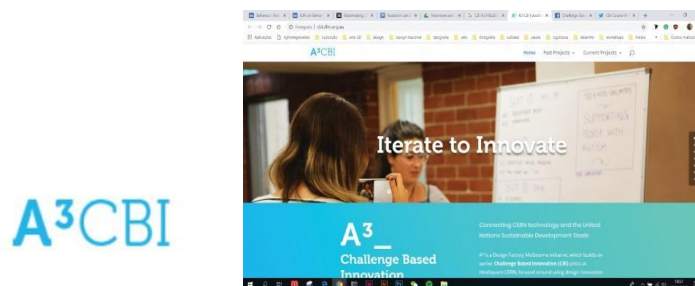


Figure 42 - CBI A³ logo and website.

2.5 – Relevance of the project for CBI

In our point of view, CBI is a unique university programme, being that it provides a space for collaboration between universities and CERN, that is different than the traditional fundamental research collaborations, where physics or engineering students develop projects, Master's or PhD thesis in developing CERN's fundamental research (Students & Educators, CERN). Instead, CBI takes a design-driven approach and allows students from other disciplines as well to connect with CERN technology and apply it to other ends, that impact society positively.

However, the full potential of the programme is not being fulfilled, as it is not well-known in CERN and in the universities in which it operates. An example is Porto Polytechnic, where only the Porto Design Factory community knows CBI, being generally unknown in Polytechnic faculties. Some consequences of poor communication of the programme and its outcomes are the challenges in finding CERN coaches that volunteer to mentor the student teams^{22,23} and the challenges in finding high-performance students to join the programme.

Also, it is a complex programme, that divides into sub-programmes, exploring different methodologies, timeframes and collaboration models, and aims to give students differentiating abilities in their professional future, while making them more conscious and critical citizens. However, this complexity makes it hard to express and communicate the programme and its benefits. This difficulty is felt across educators and students. Students at times find it difficult to explain the programme to future employees²⁴. Also, the involvement of third parties, such as CERN, IdeaSquare, or the Challenge Based Innovation parent program, is difficult to understand (who they are and what their role is).

The aim of CBI is to be a means of generating discussion around the themes and solutions proposed, which requires them to reach the general public of the Universities (not only the departments participating in Challenge Based Innovation),

²² Thong, C. (2018, January 6). Personal interview. See appendix K

²³ Leveratto, L. (2019, January 9). Personal interview. See appendix I

²⁴ Results from the surveys done with alumni and current CBI students. See appendix M

companies and government parts that can develop the solutions. This goal of communicating the projects and themes is also a way to make an impact in society, since it initiates dialogue and brings awareness to the students' work.

On another front, the communication channels in place are not being used to their full potential, as they do not demonstrate the objectives and value of the programme. An example is the existence of a Twitter account that is not used. Although there is a CBI identity, there are no guidelines except for the logotype. Also, there is no imposition for university partners to use the identity; as they don't use it, a cohesive output is lost. That has led to some universities creating their own graphic communication, as seen in 2.3.2. of this document. As some programmes take the initiative to create their own graphic images, the CBI organizing team loses control of how the information is disseminated and cohesion is lost (see 2.3.2. CBI programmes' current graphic identity).

Moreover, there is a lack of initial alignment of how to capture the student project outcomes, which leads to many projects not being archived or poorly recorded by students. This can be noticed in CBI's website, in the projects section. It contains different categories of information (some have videos and photos, others do not, and some have detailed end-product descriptions while others are very vague and abstract).

Therefore, I believe there is a need to better communicate the programme for a better perception of its work, the connection with its different stakeholders and to generate impact in a cohesive form. For this, it is necessary to help the universities communicate with proper identity guidelines.

This project is about the challenge of visually expressing all the complexity of the program in order to communicate the work of the students, involve all stakeholders and thus enhance the development of Challenge Based Innovation.

Part 3 – UNDERSTANDING THE PROBLEM

3.1 - Data collection and analysis

Methodology

I started the project by interviewing twice the CBI managers at CERN, Harri Toivonen and Santeri Palomaki. This, together with desk research, gave me enough knowledge to draft the first briefing for my project, see appendix N.

As they agreed on the proposal, I started interviewing relevant stakeholders to CBI - teaching team members and CERN employees - in a total of twelve qualitative interviews, that I recorded and transcribed. The interview guides can be found in appendix A and B.

Interviews with IdeaSquare employees:

1. Interviews with CBI responsables:

- Harri Toivonen and Santeri Palomaki (2 times Skype interview)

Harri was the responsible person of CBI in IdeaSquare. He left IdeaSquare in December. Santeri arrived in November to take his place.

- Markus Nordberg (in-person meeting)

CERN physicist and IdeaSquare coordinator. I attended a meeting about IdeaSquare's annual report, where I was able to take notes, record and ask some questions.

- Pablo Garcia Tello (Skype interview)

Section Leader for development of EU Projects and Initiatives at CERN. He also runs a CBI, CBI Design the Future!

Interviews with CBI professors from the main universities that participate in

CBI:

- Farah Haddad (in-person interview)

CBI alumni and Teaching Assistant of the program for two years at ESADE Barcelona, Spain.

- Ramon Bragós (in-person interview)

Professor of CBI since it began five years ago, at the Polytechnic University of Catalonia, Spain.

- Clio Dosi (Skype interview)

Professor of CBI ER at the University of Modena and Reggio Emilia, Italy.

- Christine Thong (Skype interview)

Founder and professor of CBI A³ at Swinburne University, Australia.

- Luciana Leveratto (Skype interview)

Former professor of CBI, at the European Institute of Design of Barcelona, Spain.

Interviews with CERN coaches:

- Mariana Moreira

Plasma physics doctoral student at CERN. She was a coach for CBI A³ students in the last edition, 2018/2019.

- Katharina Ceesay-Seitz

Master thesis worker at CERN, in Embedded Software Development. She was a coach for CBI A³ students in the last edition, 2018/2019.

- Tiago Araújo

CERN employee, in charge of identifying and disseminating CERN know-how and technologies with potential medical and biomedical applications. He has been connected with CBI since 2015, connecting the programme with the CERN Knowledge-Transfer Office.

Surveys

In parallel, I used surveys to collect the perspectives of current and alumni students. The survey used with alumni students was created together with Santeri Palomaki, CBI coordinator in CERN, as a way of asking other questions too. The survey for current students was answered by nice people, while the survey to alumni was answered by fifty-seven students. The survey results can be found in appendix M.

Analysis

After conducting the interviews, I analysed them, by comparing them to each other in an interview matrix. I analysed what answers were given to the same questions in order to find the most relevant themes to explore in my project.

In regard to the surveys, I analysed the results by comparing answers quantitatively in order to find relevant themes, as well.

Results

The interviews and surveys focused on understanding the advantages and disadvantages of participating or organizing CBI and their view on the current communication.

3.1.1 – Students

Reasons for joining the programme

Students join the programme to have a special learning experience.²⁵

“From a student perspective it was a huge learning of working in multidisciplinary teams, feel comfortable with uncertainty, doing something that is challenge based, following design thinking method to do that.” Farah Haddad²⁶

Students’ learnings

Students’ needs are focused on the learnings that they get from CBI. Therefore, they are concentrated in developing their projects, and not in any other aspect of CBI,

²⁵ Dosi, C. (2018, December 27). Personal interview. See appendix J

²⁶ Haddad, F. (2018, December 14). Personal interview. See appendix G, p. 147

such as organization of the programme. These needs are fulfilled as seen in the positive responses to surveys.

According to students currently taking the CBI programme, they joined to get a new experience, new points of view and new ways of doing and thinking, they joined for the teamwork and for developing critical thinking.²⁷

Former CBI students revealed that CBI helped them be more opened, to empathise more, learn how to work in multidisciplinary teams, how to think critically and the design thinking methodology, as the most mentioned learnings.²⁸

Students' view on communication

In surveys, alumni and current students were asked if they tell about their CBI experiences to other people and how they communicate it. Current students were also asked if they get updated on how other CBI teams in other universities are running and what communication channels they use to get informed on this topic.

In regard to telling about their CBI experiences to other people, in the alumni survey the majority of participants said they still share their experiences.²¹ In the current students survey all participants said they share their CBI experiences.²⁰

From the positive responses, in the alumni surveys, participants responded that they showed their experience by talking about the project, showing social media posts, showing their own project files, presentation and exhibition photos and by showing their participation certificate²¹. In the current students' surveys, participants responded that they show the CBI website, their own project files, presentation and exhibition photos²⁰.

Current students were also asked if they get updated on how other CBI teams in other universities are running and how they do it. Only a few students get updated and they do it via Facebook²⁰.

²⁷ Results from the surveys done with alumni and current CBI students. See appendix M

²⁸ Results from the surveys done with alumni and current CBI students. See appendix M

3.1.2 – Professors and educators

Reasons for running the programme

For educators, the advantage of CBI is that it combines unique learning experiences to students²⁹ with the opportunity of working with CERN³⁰. Also, universities are interested in working with tech-driven innovation³¹, which aligns with CBI's main goal of developing an effective methodology for technology transfer to societal applications, as mentioned in 2.2.1. Where CBI is inserted, CBI.

On the other hand, CBI is a prototype of the future of education³², where educators are also learning how to teach these skills (multidisciplinary work, critical thinking, empathy, as mentioned above) within this new environment. The fact that it is seen as an experimental programme, allows teaching teams to try different methodologies and approaches that they can later use in other subjects that they teach.³³ Also Professors have to learn to work together in multidisciplinary teaching teams, and they can take advantage to learn from each other as well.³⁴

The fact that the programme is connected with CERN is an advantage for professors, as it helps them gather the best students that are intrinsically motivated to participate.³⁵ Also, having the CERN brand behind CBI helps these professors convince the rest of the teaching staff of their home universities to apply the new methods used in the programme.³⁶

“I do see CBI as a kind of a prototype of the future of education. Challenge-based is the future and working in multidisciplinary teams is as well. So, I think it's a good prototype of what that would look like.” Farah Haddad³⁷

²⁹ Leveratto, L. (2019, January 9). Personal interview. See appendix I

³⁰ Bragós, R. (2018, December 14). Personal interview. See appendix H

³¹ Thong, C. (2018, January 6). Personal interview. See appendix K

³² Haddad, F. (2018, December 14). Personal interview. See appendix G

³³ Bragós, R. (2018, December 14). Personal interview. See appendix H

³⁴ Haddad, F. (2018, December 14). Personal interview. See appendix G

³⁵ Bragós, R. (2018, December 14). Personal interview. See appendix H

³⁶ Bragós, R. (2018, December 14). Personal interview. See appendix H

³⁷ Haddad, F. (2018, December 14). Personal interview. See appendix G, p. 147

“Well, CBI is a kind of flagship, it is a formula 1. It’s a course which is expensive, because it’s only 12 students and we have to pay the displacement and the hotel of teachers, students, materials. It’s an expensive course, but it’s kind of a formula 1, in the same way that a formula 1 is the car where automotive companies test new methods for the engines and so on, we test new methods for education. And then we apply part of those methods to other subjects. So, it’s a prototype and a space for exchanging experiences with other institutions and the design factory network.” Ramon Bragós³⁸

Needs

Professors mentioned several unfulfilled needs while running CBI. One of the main challenges is connecting with CERN community^{39,40}, which means CERN employees open to coach the projects and people interested in watching and commenting on students’ presentations and projects. Also, connecting the global CBI community is hard, as this mostly happens when several CBI’s visit IdeaSquare at the same time.³¹ These events are difficult to coordinate, as it is hard to sync the calendars of several universities. This lack of connection to CERN and to the global community sometimes gives the feeling that it would be the same to run the programme in the universities only, with no need to visit CERN^{41,42}. The lack of connection also brings the challenge of managing expectations regarding what CBI participants can actually access at CERN⁴³.

Another challenge is the implementation of projects, as CBI does not partner with companies that would be interested in developing the outcomes further. It is complicated to find institutions interested in implementing the projects⁴⁴.

³⁸ Bragós, R. (2018, December 14). Personal interview. See appendix H, p. 154

³⁹ Leveratto, L. (2019, January 9). Personal interview. See appendix I

⁴⁰ Thong, C. (2018, January 6). Personal interview. See appendix K

⁴¹ Leveratto, L. (2019, January 9). Personal interview. See appendix I

⁴² Dosi, C. (2018, December 27). Personal interview. See appendix J

⁴³ Dosi, C. (2018, December 27). Personal interview. See appendix J

⁴⁴ Thong, C. (2018, January 6). Personal interview. See appendix K

Lastly, a big challenge for universities is to fund CBI, as it is not a sponsored programme⁴⁵.

“...being at CERN is great because it's a place that is amazing and the only fact of being there makes a difference, but in some cases at the end students say "why are we doing this here and not in another place?". Because the link with CERN technology is weak and it's difficult to get to people there. They are busy and focused, so it's not every time they have the time or are ready to help.” Luciana Leveratto⁴⁶

“I could share with them some insights and learn something new. If I always go there as a single not as a group of universities, then you ask yourself, why don't I do this at home?” Clio Dosi⁴⁷

“...but when you do projects with external partners you are connecting up with the local council or with a company, you really have a stakeholder there who is looking to implement in some way. And you don't have that with CERN or CBI...” Christine Thong⁴⁸

“Of course, the funding of these projects, if we don't have sponsors then universities have to cover it.” Ramon Bragós⁴⁹

Professors and educators' view on communication

When asked with whom they need to communicate CBI, Professors mentioned new students⁵⁰ and the university community⁵¹, to see the teams' presentations and

⁴⁵ Thong, C. (2018, January 6). Personal interview. See appendix K

⁴⁶ Leveratto, L. (2019, January 9). Personal interview. See appendix I, p. 167

⁴⁷ Dosi, C. (2018, December 27). Personal interview. See appendix J, p. 176, 177

⁴⁸ Thong, C. (2018, January 6). Personal interview. See appendix K, p. 180

⁴⁹ Bragós, R. (2018, December 14). Personal interview. See appendix H, p. 154

⁵⁰ Dosi, C. (2018, December 27). Personal interview. See appendix J

⁵¹ Bragós, R. (2018, December 14). Personal interview. See appendix H

spread the projects' outcomes. In addition, they mentioned external stakeholders^{52,53}, such as experts that might help the projects development or companies interested in sponsoring the projects and the CERN community⁵⁴, to participate in students' presentations and to engage with CBI as a CERN coach.

“Then with outside companies, because we were always looking for sponsors, someone that could pay the expenses of students and would like to join, and then to the outside partners to show to the parents of students, friends, other institutions, websites.” Luciana Leveratto⁵⁵

“Other people in design factory, immediate partners that we are working with, or people that want to come and be part of CBI, from the network. We need to communicate with IdeaSquare, other people at CERN in terms of coaches. A range of stakeholders once user-centered research happens, once there's a project direction and there's input from, for example last year with food waste, it's a challenge in the hospitals. So, going and understanding more about food waste in hospitals, talking to people, yes the website can be shared as something to explain what the students are doing broadly, but then specifically to their individual project, so there's a need of reference when we are contacting people.” Christine Thong⁵⁶

When asked how they talk and refer to CBI, when they want to communicate it, Professors mentioned that they showed their own website (in the case of CBI A³), their own slides⁵⁷ or previously made videos of CBI⁵⁸. For them, the graphic identity of CBI is perceived as a logo that is used on slides and next to other logos⁵⁹ or as a website (in the case of CBI A³). This is a limited view on what a graphic identity can be.

⁵² Leveratto, L. (2019, January 9). Personal interview. See appendix I

⁵³ Thong, C. (2018, January 6). Personal interview. See appendix K

⁵⁴ Thong, C. (2018, January 6). Personal interview. See appendix K

⁵⁵ Leveratto, L. (2019, January 9). Personal interview. See appendix I, p. 166

⁵⁶ Thong, C. (2018, January 6). Personal interview. See appendix K, p. 181

⁵⁷ Leveratto, L. (2019, January 9). Personal interview. See appendix I

⁵⁸ Leveratto, L. (2019, January 9). Personal interview. See appendix I

⁵⁹ Bragós, R. (2018, December 14). Personal interview. See appendix H

However, some Professors understand the relevance of a graphic identity for CBI, because it is a flagship project, that needs to be differentiated and highlighted^{60,61}. This is the case of CBI Barcelona and CBI A³, that created their own graphic images, as seen in 2.3.2. CBI programmes' current graphic identity.

“Because it's a flagship course, it needs to have an identity and you need to differentiate it from the rest. I think it was important in this case, because it was a way of putting the names of the three universities and CERN in the same image and also because it was a flagship it was important to to give it an image.” Luciana Leveratto, on CBI Barcelona logo⁶²

3.1.3 – Universities

Reasons for running the programme

While interviewing professors and educators, they described what were the benefits for their universities to run CBI. As mentioned previously, CBI is an expensive programme, however, as a matter of strategy, universities can include it as a programme that increases the international impact of the institution.⁶³ Also, working with CERN, as one of the main research centres worldwide, increases the university's reputation.^{64,65,66} Thus, the universities showcase quite often CBI in their communication.⁶⁷

“CERN has the added value of the singularity, so being in a place which is absolutely different with people that are used to think on the edge of technology. A

⁶⁰ Thong, C. (2018, January 6). Personal interview. See appendix K

⁶¹ Leveratto, L. (2019, January 9). Personal interview. See appendix I

⁶² Leveratto, L. (2019, January 9). Personal interview. See appendix I, p. 166

⁶³ Dosi, C. (2018, December 27). Personal interview. See appendix J

⁶⁴ Dosi, C. (2018, December 27). Personal interview. See appendix J

⁶⁵ Bragós, R. (2018, December 14). Personal interview. See appendix H

⁶⁶ Thong, C. (2018, January 6). Personal interview. See appendix K

⁶⁷ Bragós, R. (2018, December 14). Personal interview. See appendix H

place that is more suitable to have ideas that are different than the regular ones.”

Ramon Bragós⁶⁸

3.1.4 – IdeaSquare

Reasons for running the programme

For IdeaSquare, the benefit of doing CBI is the experimentation with methods and ways of working to transfer fundamental research technology to societal applications.⁶⁹

Needs

It is important to understand the unfulfilled needs of IdeaSquare in regard to CBI, as this is the main institution coordinating the programme.

The organizing team at IdeaSquare has a need to align the courses from the beginning⁷⁰, in order to measure the impact of CBI. This is quite relevant because there is a need to measure how much the programme is contributing for CERN’s mission of education, mentioned in 2.2.1. Where CBI is inserted, CERN⁷¹. Also, they feel the need to experiment more in terms of methodologies and frameworks used in the programme, because it exists for five years and there haven’t been dramatic changes to how CBI is taught. These needs reflect the fact that the goal of CBI of defining an effective process of transferring CERN technology to societal applications has not been achieved yet⁷². Lastly, as well as the professors, they recognize the difficulty in connecting with CERN employees that are interested in being CBI coaches⁷³.

“...if this is an activity implemented at CERN or realized at CERN, we have to find ways of measuring how it helps to develop the CERN mission. As I said, one of the

⁶⁸ Bragós, R. (2018, December 14). Personal interview. See appendix H, p. 154

⁶⁹ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

⁷⁰ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

⁷¹ Tello, P. (2018, December 19). Personal interview. See appendix F

⁷² Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

⁷³ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

vision is education [...] we need to come up with a scale of indicators that has to do with the impact that we create or we try to create in the students and how useful these are in their future careers, in their future jobs or the way they think. And we need to come up with a measurable scale. Even if it is a relative measurement.” Pablo Tello⁷⁴

“We have been doing this for five years, and the content, methodologies are pretty much the same. So, when next year comes, I would like to explore what kind of teaching methods, sessions, technologies, we could evolve.” Santeri Palomaki⁷⁵

“The holy grail of innovation would be how do you combine technological advancement and human problems, and I am convinced we have not cracked how it works but at least we are still going forward and trying.” Harri Toivonen⁷⁶

IdeaSquare view on communication

When asked with whom they need to communicate CBI, the organizing team of CBI mentioned the universities with whom they work, their students and potential universities to join the programme. Also, CERN employees, to attend CBI presentations and join as coaches. Although there are six existing communication channels – CBI website, Twitter account, Facebook page, LinkedIn page, CERN Indico page and posters – the team is only active on four, excluding CBI website and Twitter account.⁷⁷

3.1.5 – CERN employees

Reasons for joining the programme

For CERN employees that volunteer to be a CBI coach they are interested in getting to know people with different perspectives and backgrounds, the CBI projects

⁷⁴ Tello, P. (2018, December 19). Personal interview. See appendix F, p. 145, 146

⁷⁵ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D, p. 132

⁷⁶ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D, p. 135

⁷⁷ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D

as they involve futuristic and innovative topics⁷⁸. Also, this is a chance to develop soft skills, such as coaching⁷⁹.

“...I think it would have been very interesting maybe challenging to be in this role. I mean the whole concept of this course is very new and very strange so I thought it would be nice and interesting, talk to people that are from a completely different perspective than I am. I come from science they are coming maybe from all kinds of backgrounds.” Mariana Moreira⁸⁰

Pains

None of the interviewed CBI coaches mentioned any pain or need. They said to be satisfied and willing to do it again.

CERN employees’ view on communication

They were informed on CBI events on CERN Facebook groups or by friends.⁸¹

⁷⁸ Moreira, M. (2019, March 18). Personal interview. See appendix L

⁷⁹ Moreira, M. (2019, March 18). Personal interview. See appendix L

⁸⁰ Moreira, M. (2019, March 18). Personal interview. See appendix L, p. 186

⁸¹ Moreira, M. (2019, March 18). Personal interview. See appendix L

3.2 - Conclusions

3.2.1 – Identified problems

CBI communication

After this investigation phase, a reflection and conclusion were achieved that indicated that CBI's communication problem is a system problem that involves the communication channels, the graphic guidelines, and the fact that people don't know how to communicate the programme.

Communication channels are scattered and not communicating a unified and clear message. The main channel is the website, which is currently not showing clearly what CBI is. Therefore, universities have created their ways of communicating the programme, such as creating their own independent graphic images.

For that reason, there is a need to unify all CBI's under the umbrella of the "mother CBI", so that communication is more effective and the impact of CBI as a whole is clearer.

The very limited graphic guidelines are not being used because people don't know how to take advantage of them to increase the impact of what they want to communicate.

Also, as the interviews were analysed, it was concluded that educators have difficulties in communicating the programme, being that they need guidance on how to do it in fast and easy manner. The problem starts with people not knowing how to explain the programme to external stakeholders. I believe this shows that they don't have the right tools, adequate for their knowledge, to more coherently explain CBI.

"I think the website is not easy to access and you don't get very good idea of what CBI is, so there is potential but it's not being communicated. In the end, everything is at the hands of institutions." Luciana Leveratto⁸²

We conclude that the biggest opportunity to increase the impact of CBI's communication lays in the participants - students and educators - talking about their

⁸² Leveratto, L. (2019, January 9). Personal interview. See appendix I, p. 162

experiences, showing their project files and photos of presentation and exhibition. A successful example is Luciana Leveratto, who has spoken publicly in two events about her experience as a Professor of CBI.⁸³

CBI current graphic identity

Regarding the current identity, it is very static and underdeveloped, especially in its application in communication channels. The logotype uses an octagon as a symbol, which is a very static representation for such a dynamic programme. Also, no further explanation is given on why the octagon is the chosen symbol of CBI. The graphic guidelines are limited, as seen in 2.2.4. CBI's current graphic identity, being that they describe what colours and fonts are associated with the programme, but they do not explain when to use them. In the guidelines, it is mentioned that there are different versions of the logo, with different thickness to use differently in small or big applications. However, in practice this distinction is not done (figures 43, 44).

Also, although all participants call the programme “CBI”, there is no reduced version of the logotype. There is a single version of the logo - Challenge Based Innovation - which might be hard to identify if all people hear about it as “CBI”.

On another note, for universities, CBI's connection with CERN is a very important part of the programme, being that it brings visibility to the programme, which is important for universities' communication departments and to attract high-performance students. However, this connection is not enhanced in CBI's communication. For example, it could be clearer on the website.



NOTE: there are different versions of the logo (the thickness of the stroke in the octagon varies) depending on whether the logo will be used as a big element or a small icon.

Figure 43 - Guidelines extract.

⁸³ Leveratto, L. (2019, January 9). Personal interview. See appendix I

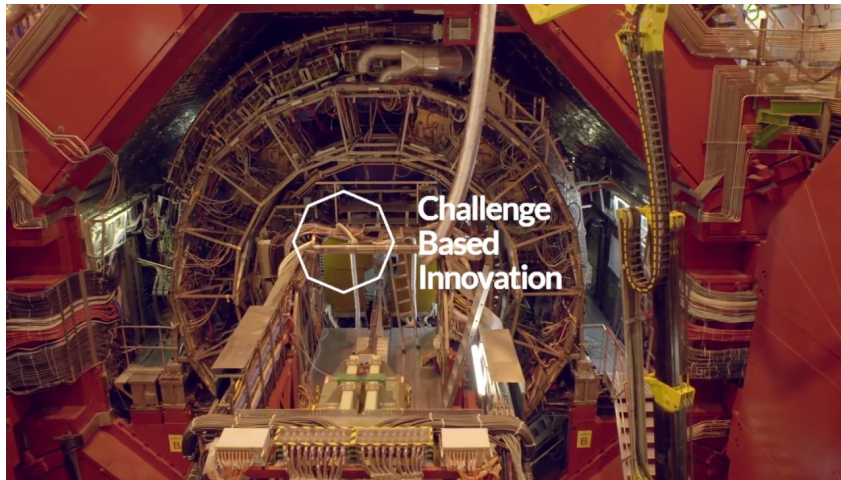


Figure 44 - Extract from a CBI video.

CBI website

As the main communication channel, in my view, the current CBI website does not provide an understandable explanation of what the programme is about, who it is for and what are the outcomes. In general, navigation is not clear, and the information provided is confusing. In addition, CBI is focused on making an impact on society, experimenting with methodologies and learning processes, and providing a unique learning experience for its students, and the website should communicate this clearly to students, various people within universities, and for the general public. However, this message is not coming across, especially for the general public, with no previous knowledge on the programme.

3.2.2 – Identified opportunities

Communication

These problems can be turned into many opportunities to improve the programme's communication.

The students' and teaching teams' challenge of explaining what CBI is about to family, friends, colleagues, is an opportunity for CBI, "the mother programme", to be the main communicator of how the programme works, what are the involved stakeholders and the benefits for students. For instance, by having a clear explanation of the programme on the website.

The challenge of involving CERN staff to volunteer to be mentors is an opportunity to use graphic design to engage with them. For instance, during the year, communicating what is happening in the different CBI programmes, with the goal of creating a genuine interest and curiosity in the students' projects.

Additionally, templates can be provided for archiving project results, that can be used to show each team's outcome in a clear and concise way. On the other hand, the organizing team can provide good quality photographic and video material to explain CBI by making sure that all CBI events at IdeaSquare are well documented by a photographer or someone from the organization team that are later published in an easy-to-access platform.

Also, renovating the graphic identity is an opportunity to address the need to align the programmes from the get-go, in order to measure the impact of each project after the course.

In order to answer these opportunities, a whole system needs to be in place:

1. **Before** each CBI programme starts, universities are informed on how their student teams should archive their developed work and how educators should archive the process and methodologies used in that edition.
2. **Before** it starts, when a new university joins CBI, they are given a communication kit that explains how they can use the graphic guidelines and includes presentations explaining the programme.
3. **During** each programme, students are asked to share photos of their projects in specific platforms, where they are easy to access and to understand their chronological order. During the universities' visits to CERN, photographs and videos are taken by professionals, that document the event and record people's perspectives on their experience so far.
4. **During** the programme, there are regular Skype meetings where all teaching teams share their experiences with each other and where people are regularly informed on communication guidelines and what new pieces of communication have been produced.

5. **After** each programme, the CBI organizing team makes sure that all programme methodologies and project outcomes are well documented and shared with the community.
6. **After**, ask students to fill a survey to measure impact and see what to improve in the programme and how much CBI is contributing to CERN's mission of education.

This system describes only the interactions between the people that make CBI happen. In between, there should be all graphic materials necessary to facilitate these interactions. These should be flexible and adaptable to diverse content and easy to use by people from different backgrounds, such as business, engineering and design.

Graphic identity

There is an opportunity to develop a more dynamic graphic identity for the programme, more adequate to the programme's ever-changing format. Also, there is an opportunity to show the connection to CERN more clearly in its communication channels. The guidelines can be more detailed with further recommendations. It is important to improve the website, in order to communicate better all the potential of the programme and the involved parties, such as CERN. With these points in mind, I concluded, together with CBI's organizing team that these are the graphic applications to be developed:

- Website
 - Purpose: introduce CBI to universities, outsiders and CERN employees
- Presentation slides
 - Purpose: introduce CBI
 - They can be adapted to be used in lectures
- Booklet template 1
 - Purpose: year overview - publication with projects outcomes of all CBI programmes and explanation of CBI
- Booklet template 2
 - Purpose: publicize CBI to attract students to apply (external)

- It focuses on students who don't know the programme, and inform them on what they need to do to apply
- Booklet template 3
 - Purpose: archiving projects and methodologies (internal and external)
 - It includes one pager template for methodology and projects, that student teams and teaching teams are asked to follow
- Poster template 1
 - Purpose: publicize CBI to CERN employees (external)
- Poster template 2
 - Purpose: publicize CBI events in universities and in CERN (internal)
- Poster template 3
 - Purpose: publicize speakers, talks and workshops in universities (internal)
 - All posters have A2 horizontal and vertical for print, Facebook rectangle and square.
 - Available in Adobe Illustrator and PowerPoint.
- Social media guidelines
 - Guidelines for video, Facebook and LinkedIn posts
- Graphic guidelines for the identity and applications

These applications do not include templates such as a letter or business cards, because such materials are not necessary. CBI managing team communicates on the behalf of CERN and participating professors on the behalf of their home universities, when they send letters and present themselves.

3.2.3 – Defining CBI

One of the main conclusions of this research stage was creating my definition of what CBI is. I concluded that it can be defined with six keywords: organic, technology, innovation, society, collaboration and education, as seen in figure 45 and explained bellow. The document delivered to the CBI managing team can be found in appendix O.

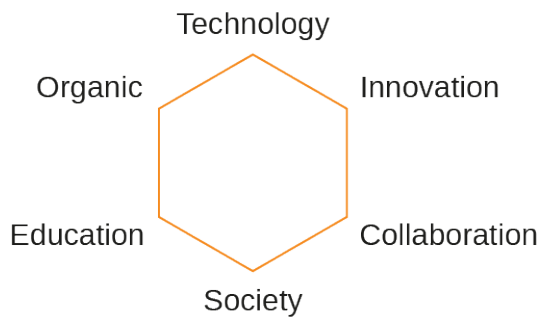


Figure 45 - Keywords that define the main characteristics of CBI.

Organic in the sense that it is ever-changing, its format depends on who are the people organizing it and what they envision. Therefore, it is like a white canvas, that can have many ways of doing CBI, as long as it goes with CERN’s goal of education.

“CBI is a chance to experiment with methodologies and collaboration formats”

Christine Thong⁸⁴

Technology because being connected with CERN, it involves consideration for technology and science. And whatever version of CBI is created, it somehow involves the dichotomy of science with design, technology with society and how these worlds are connected.

*“It is the bridge between technological ideas that come from instrumentation development or basic research. What CERN produces is the knowledge of how to produce these technologies and on the other end of the spectrum is everyday life, how to use that knowledge for solving societal problems.”*Harri Toivonen⁸⁵

Innovation is one of the mottos because it connects with CERN’s mission of thinking beyond.

*“Unite people from all over the world to push the frontiers of science and technology, for the benefit of all.”*CERN’s mission

⁸⁴ Thong, C. (2018, January 6). Personal interview. See appendix K, p. 180

⁸⁵ Toivonen, H., Palomaki, S. (2018, November 20). Personal interview. See appendix D, p. 133

Collaboration as the foundation for CBI to happen, be it through the collaboration with universities, external entities, CERN staff or any other stakeholder that might join the programme, it is created by the community of people and entities.

“in our case, all the disciplines of the teaching team are very involved, in CBI Barcelona, we have been highly involved in working together meeting every week, so we also learn to work in a multidisciplinary teaching team.” Luciana Leveratto⁸⁶

Society as CBI is a way of applying technology for societal impact.

“Challenge-based innovation [the name] only refers to the first part, solving problems. So, they use a kind of framework, like the Sustainable Development Goals or a social need.” Ramon Bragós⁸⁷

Education is one of the main purposes of CBI and the connection to CERN’s goals. It is now the education of university students, but it might embrace other groups of people.

“From a student perspective it was a huge learning of working in multidisciplinary teams, feel comfortable with uncertainty, doing something that is challenge based, following design thinking method to do that. So, CBI I do see it, the type of education is kind of a prototype of the future of education. Challenge based is the future and working multidisciplinary teams is as well. So, I think it’s a good prototype of what that would look like.” Farah Haddad⁸⁸

⁸⁶ Leveratto, L. (2019, January 9). Personal interview. See appendix I, p. 159

⁸⁷ Bragós, R. (2018, December 14). Personal interview. See appendix H, p. 152

⁸⁸ Haddad, F. (2018, December 14). Personal interview. See appendix G, p. 147

Part 4 – DEVELOPING THE GRAPHIC IDENTITY

4.1 – Design Process

Now that the project opportunities, communication channels and brand identity are defined, the graphic identity was developed. For this, as seen in figures 46 and 47, various mechanisms like concept mapping, brainstorming and visual brain dumping were produced (Lupton, Graphic Design Thinking: Beyond brainstorming, 2011). In the initial sketches, there was an attempt to try both modular and dynamic identities, where some made a reference to the previous CBI logo and others did not.

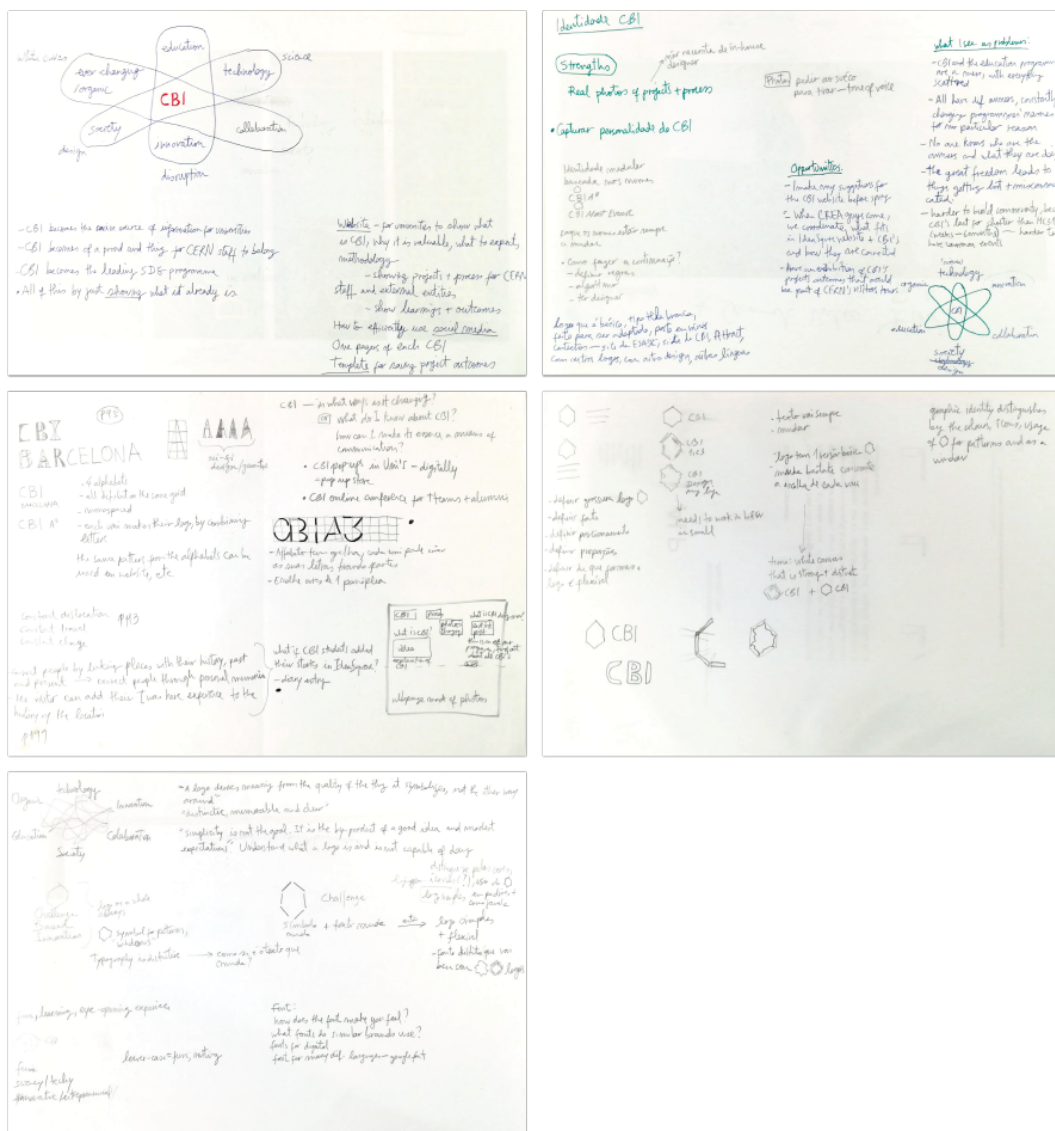


Figure 46 - Initial thoughts on how to visualize CBI.



Figure 47 - Initial sketches for the graphic identity.

There was a first presentation to the CBI managing team, to ask if there was a preference for using the previous logo or creating a totally new graphic representation for CBI (see the proposal in appendix P). The idea at the time was to empower each of the universities creating a CBI programme, by letting them create their own logo within a framework. Both graphic identities presented are dynamic, being that they fit in the “customized” category, mentioned in 1.2 – Modular and Dynamic graphic identity, where external parties, such customers, users, interact with the brand and participate in it (figure 48).

The conclusion was that it was better to keep a reference to the previous logo, because it already had some recognition.

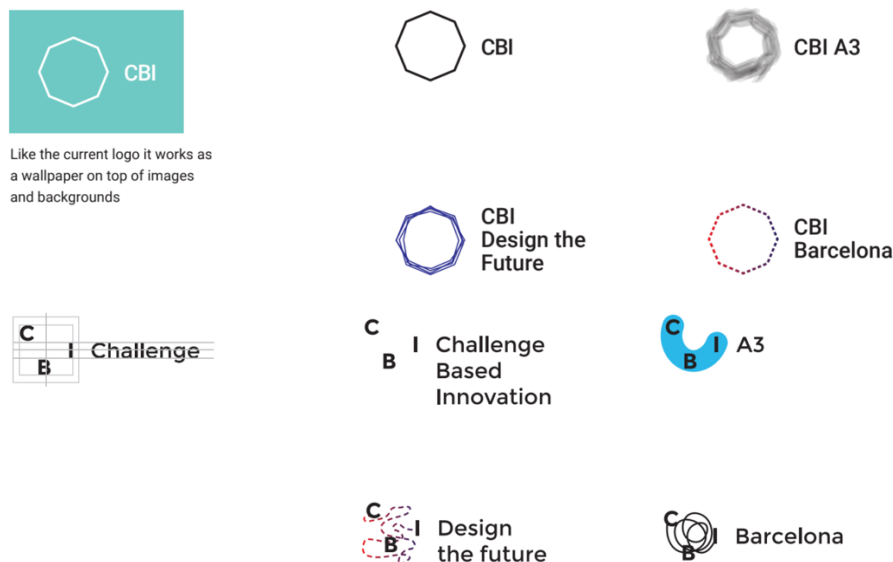


Figure 48 - Two initial proposals for the graphic identity, to decide what path to pursue: a reference to the previous logo or a completely new proposal.

Around the time of this decision, the interviews were concluded and so was their analysis that brought the insight that CBI’s graphic identity should be as easy to use as possible for teaching teams, students and the CBI managing team. It is not the main concern for the participants; therefore, it needs to be simple enough that they do not have a lot of responsibility with the CBI brand. The conclusion was to develop a modular identity, which would help generate many different coherent logotypes for the different CBI programmes. Figures 49 and 50 show parts of the process of developing the identity.

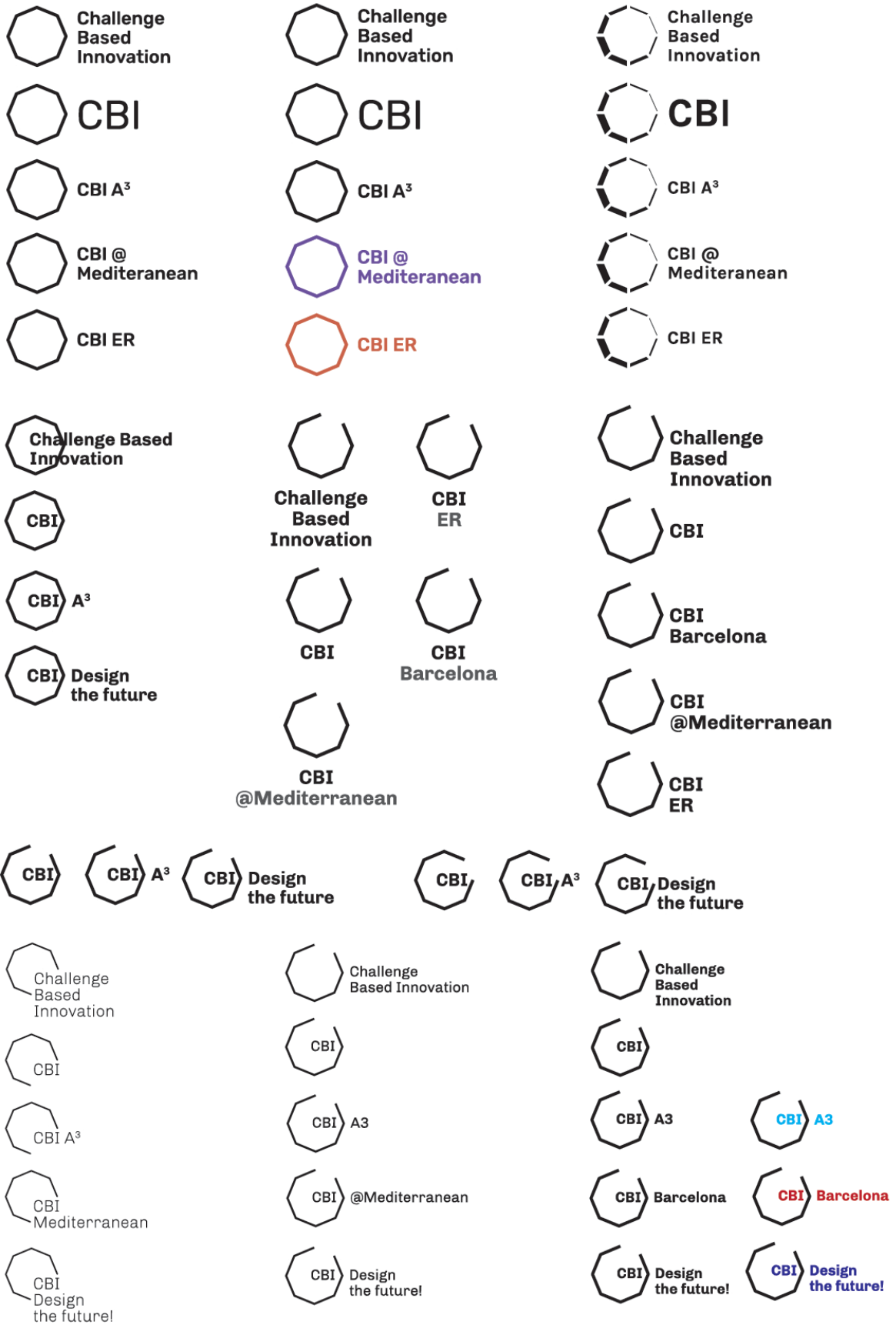


Figure 49 - Examples of trials for the CBI logotype.

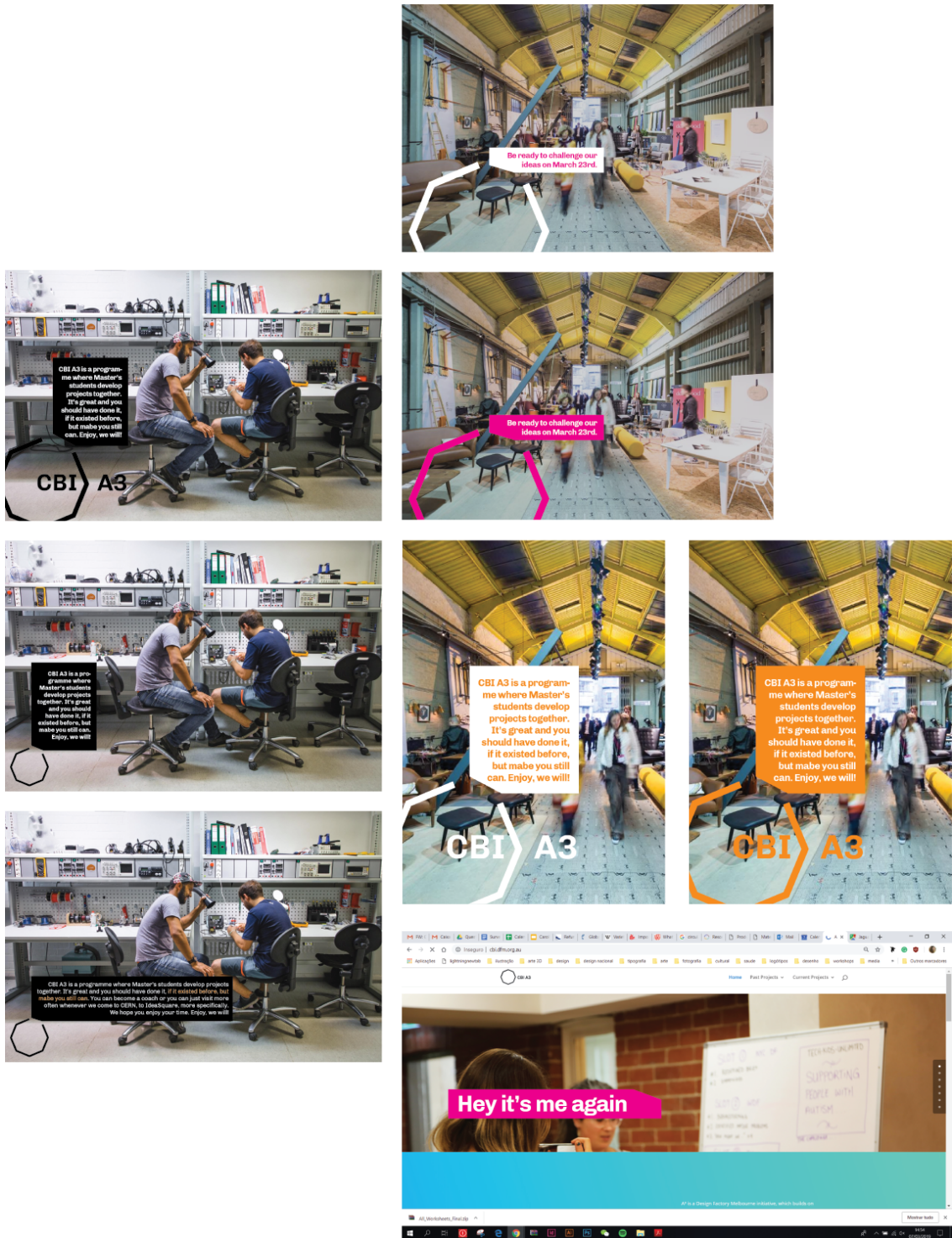


Figure 50 - Examples of initial trials for the application of CBI graphic identity.

4.2 – Final concept

The CBI brand identity, in terms of brand architecture, is a branded house, since there is a single master brand (CBI), that acts as an umbrella over the other sub-brands (each CBI programme).

Logo: the concept

The logo of CBI keeps a reference to its previous logo, by using an octagon, as seen in figure 51. However, it is now open, because CBI is not a closed programme: it is open to different universities, different disciplines, different approaches, etc. The main logo now embodies the text “CBI”, as this is actually how all the people involved know the programme.



Figure 51 - CBI logotype.

Logo: mother programme

The logo of the programme has a short version as “CBI” and a complete version as “Challenge Based Innovation” (figure 52). The short version should be used more commonly. The complete version should be used when the name of the programme becomes necessary.



Figure 52 - Short and long version of the mother programme's logo.

Logo: CBI programmes

The logo lettering varies, embracing the names of each CBI version, (figure 53). This does not allow for universities to express themselves through the logo with a lot of

freedom. However, the interviews that I conducted showed that universities were not using this freedom to create their own logos. The graphic image is secondary in the programmes, and often the professors don't have time to develop a logo.

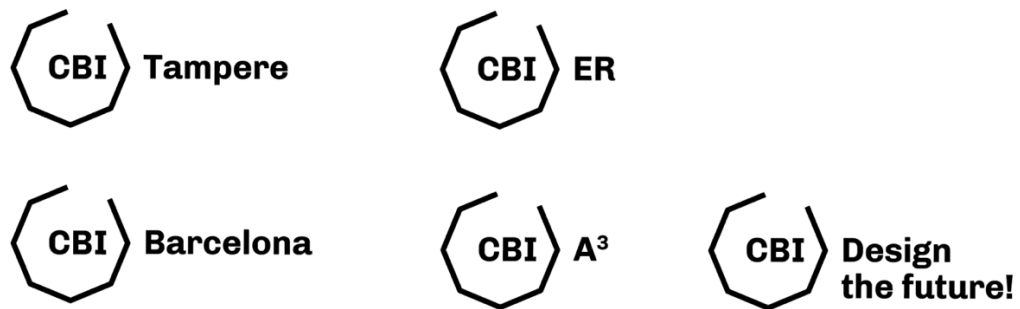


Figure 53 - CBI programmes' logotypes.

Logo: construction

The construction of the logo should keep the same distance between all elements, regardless of the name of the CBI version (figure 55). The logo has a maximum length, that should be respected when building the logo (figure 54). If the name of the programme does not fit the three lines, it is probably too big.

Regarding space with other elements, the geometric shapes around the logo mark the space that should be respected when using it next to other elements.



Figure 54 - The orange box marks the maximum logo size.



Figure 55 - Construction of the logo and space with other elements.

Logo: minimum sizes

Establishing a minimum size ensures that the impact and legibility of the logo is not compromised in application (figures 56, 57).

In digital applications, to ensure legibility and impact, the logotype should never be reproduced smaller than 40 px in any digital communication. The symbol should not be smaller than 16 px.

In print, to ensure legibility and impact, the logo should never be reproduced smaller than 10 mm in any print communication. The symbol should not be smaller than 4 mm.



Figure 56 - Minimum logotype size.



Figure 57 - Minimum symbol size.

Logo: using the logo with background colour

The logo's main colour is black. It may be white when used against other colours or dark backgrounds, as seen in figure 58.

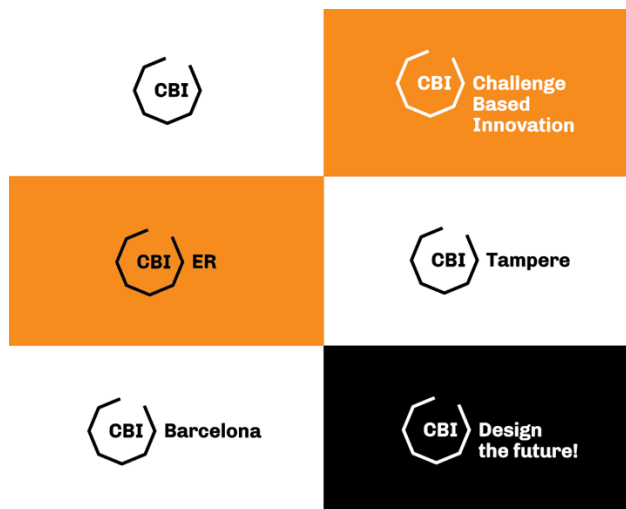


Figure 58 -Logo against different backgrounds.

Typography

Figure 59 shows the chosen typographic fonts. Chivo Bold is the font chosen for the typography of the logos and also of titles. The strength of Chivo Bold makes it ideal for highlights and headlines.

Noto Serif is a serif font chosen to be used in long text, such as in publications, and in text that should stand out. It provides a visually harmonious readability on and off-screen.

Arimo Regular is the font chosen for general text and smaller titles. It can be used in regular, bold and italic, as needed. Arimo is adequate for long text and offers improved on-screen readability characteristics.

CBI Jam is in the horizon

Only on titles

A memorable event taking place in IdeaSquare.

Quotes and highlights

CBI Jam is an event that gathers students from Porto, Manheim and Melbourne in IdeaSquare to work on projects that connect CERN technology with UN's Sustainable Development Goals. This means that 20 students will be very curiously asking questions, ideating and prototyping for two weeks, with us. If you are also curious to know more join us for breakfast, on Tuesday, at 9 am.

Smaller titles and general text

CBI Jam is an event that gathers students from Porto, Manheim and Melbourne in IdeaSquare to work on projects that connect CERN technology with UN's Sustainable Development Goals. This means that 20 students will be very curiously asking questions, ideating and prototyping for two weeks, with us. If you are also curious to know more join us for breakfast, on Tuesday, at 9 am.

Long text, specially in print

Figure 59 - Fonts used in CBI's graphic identity.

Colour: primary

Orange is connected with meanings of joy, warmth, heat, sunshine, enthusiasm, creativity, success, encouragement, change, determination, health, stimulation, happiness, fun. It is a colour used by brands from very distinct areas (figure 60). Also, the uniqueness and uncommonness of orange can be used to build a memorable visual brand (Meyer, 2018).



Figure 60 - Examples of brands that use orange as their main colour.

On the other hand, it is one of the main colours of the structures in IdeaSquare, as seen in figure 61. This is very relevant because one of the main parts of all programmes is when CBI students go to IdeaSquare to work or present their projects. Therefore, CBI is very connected to this space, and this connection should be emphasized.



Figure 61 - IdeaSquare space, with a visible orange structure.

Therefore, the primary colours of the CBI graphic identity are orange, black and white (figure 62).



Figure 62 - CBI primary colours, where orange works equally well with black and white.

Colour: secondary

Although orange and black are the main colours there is a need to use other colours for the applications of the brand. These are the secondary colours to be used, in order to ensure that all colours make sense together. These secondary colours are complementary to orange (figure 63).

Brown is used to distinguish content in illustrations and graphs, to indicate different chapters in presentations, to highlight text in documents.

Blue is used to distinguish content in illustrations and graphs, in secondary text, in quote slides and social media posts background.

Grey is used to distinguish content in illustrations and graphs, in printed text (optional).



Figure 63 - Secondary colours.

Imagery

CBI's identity should be heavily based on photography. The fact that this is a complex programme, hard to explain to outsiders is overcome by the use of images, as "a picture is worth a thousand words". Therefore, a lot of attention must be put when reporting events, taking photographs, choosing and using them to communicate the several programmes. Ideally the help of a photographer would be used, in chosen events and activities (figure 64). Photos taken by students and professors should also be used, but carefully chosen (figure 66). An idea is to also add analog photography, as a way of reporting the programmes. Analog makes the programme stand out and is nowadays seen as "cool and appealing" (figure 65).



Figure 64 - Professional photography by Simon Olofsson.



Figure 65 - Analog photographs taken by Manuel Soares and Carolina Faria.



Figure 66 - An example of a good photograph taken by John Engleman, a previous CBI professor.

4.3 – Communication channels

4.3.1 – Process

After the graphic identity was created, the communication channels were developed. These are already different from the materials defined after drawing conclusions in Part 3 – Understanding the problem. Here are the decided materials:

- Website
 - Purpose: introduce CBI to universities, outsiders and CERN employees
- Presentation slides
 - Purpose: introduce CBI
 - They can be adapted to be used in lectures
- Booklet template
 - Purpose: year overview - publication with projects outcomes of all CBI programmes and explanation of CBI
- Brochure template
 - Purpose: publicize CBI to attract students to apply (external)
 - It focuses on students who don't know the programme, and inform them on what they need to do to apply
- Project archive template
 - Purpose: archiving projects and methodologies (internal and external)
 - It includes one pager template for methodology and projects, that student teams and teaching teams are asked to follow
- Poster template 1
 - Purpose: publicize CBI to CERN employees (external)
- Poster template 2
 - Purpose: publicize CBI events in universities and in CERN (internal)
- Poster template 3
 - Purpose: publicize speakers, talks and workshops in universities (internal)
 - All posters have A2 horizontal and vertical for print, Facebook rectangle and square.
 - Available in Adobe Illustrator and PowerPoint.

- Social media guidelines
 - Guidelines for video, Facebook and LinkedIn posts
- Graphic guidelines for the identity and applications

There were changes that were made to the applications during their development, because as I developed them, I realized some were not the right solution. Also, this conclusion was drawn by keeping in contact with the CBI managing team.

For example, as I developed the project, I realized that the application “Booklet template 3”, where each project filled one pager that would be printed and archived in order to be documented, was not very helpful. It would be more useful to have each team provide specific information on their project to be published on the website. It changed to “Project archive template which improves the website archive of projects that currently looks different for every project.

The graphic guidelines and applications are available online in a CERN drive that everyone can access with a password. Each application template is provided in an Adobe Illustrator or InDesign file and Microsoft PowerPoint or Word. This is necessary as not all teaching teams have access to Adobe programmes, and it is necessary to make the identity easy to use at any stage.

Figures 67 and 68 show the process of creating two communication channels, the poster and the website.



Figure 67 - Examples of the process of developing posters.

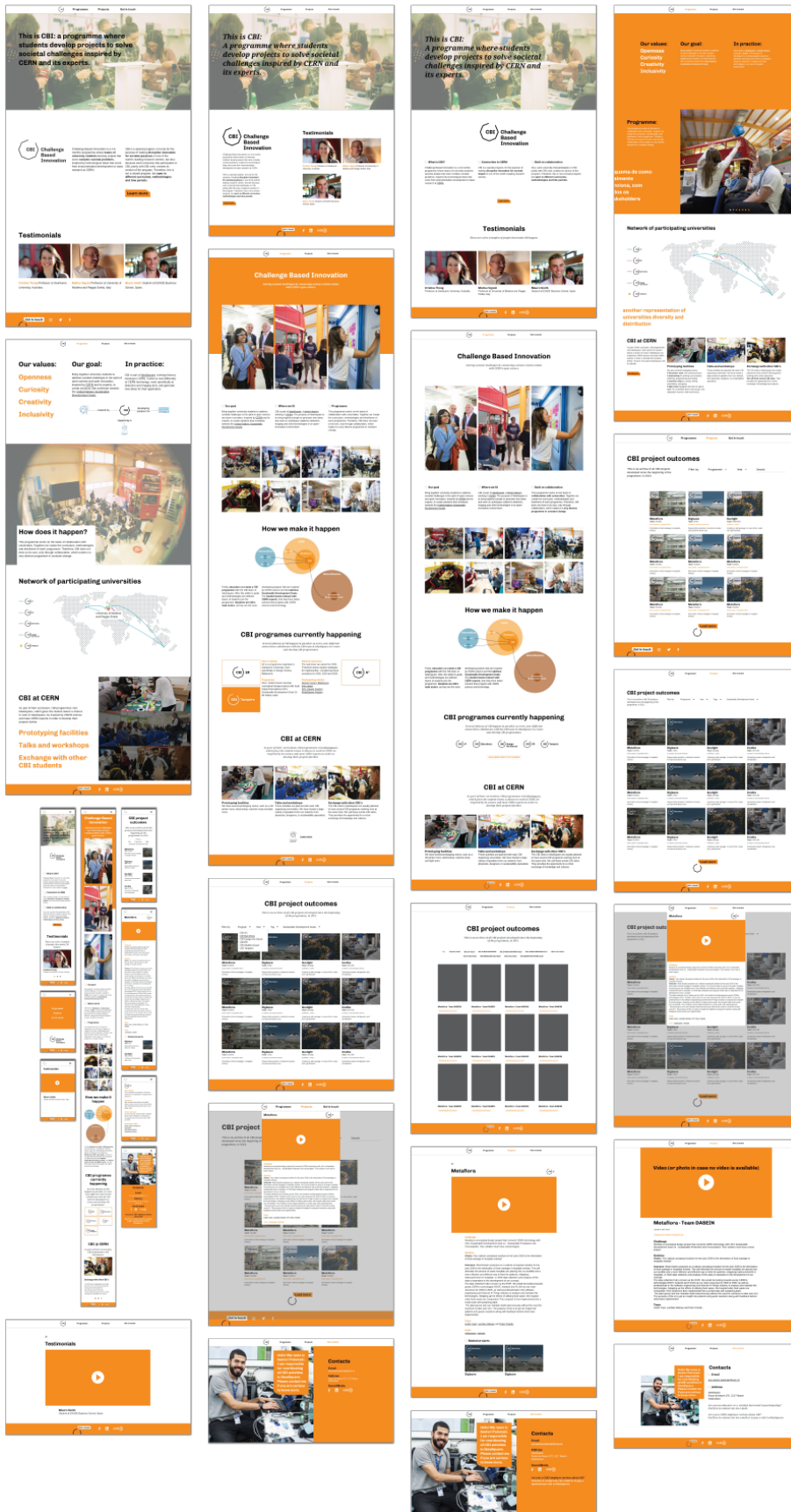


Figure 68 - Examples of the process of developing the website.

4.3.2 – Delivered communication channels

Website

Within the communication channels, the website is one of the platforms on which communication has the greatest impact, as it is a global program whose broader reach is digitally achieved. Digital media, in this case, the website, should thus be an extension of the physical space and events of the program. Just as people would go to CBI at CERN, get to know the organizers, and ask questions about the program, people should be able to visit the website and have as much of the same experience as possible. The purpose of the website is to introduce CBI to universities, CERN employees and external stakeholders that might be interested in the work developed.

In regard to the application of the graphic identity, the goal is to make the website appealing, clear and informative, since the previous website lacked these characteristics⁸⁹. There was a constraint from the CBI managing team to use WordPress, so it was designed based on the theme “Unicode”. The website uses a lot of photographs to create a clear message and proximity with the audience (figure 70). Furthermore, the projects page is intended to archive all CBI projects. For that a project archive template was created, so that students document their projects to be showcased on the website. This leads to more coherence between all projects on the website.

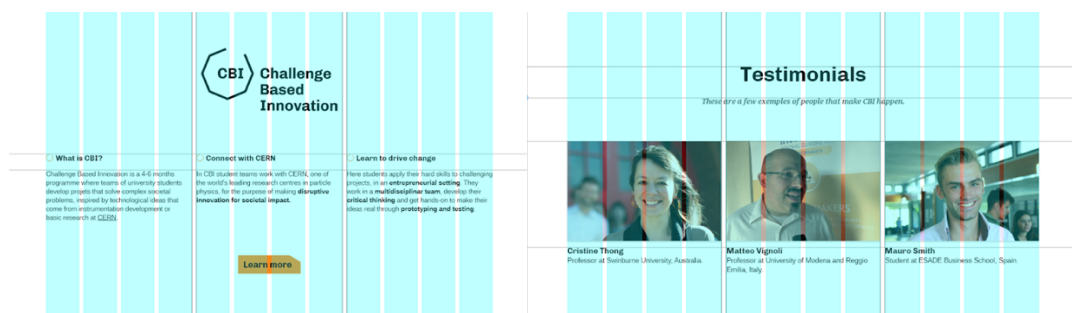


Figure 69 - Website structure.

⁸⁹ Leveratto, L. (2019, January 9). Personal interview. See appendix I

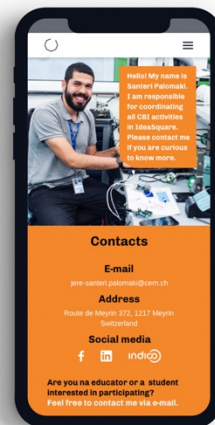
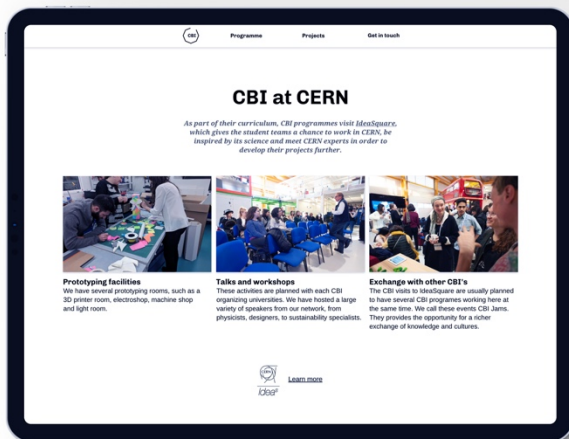
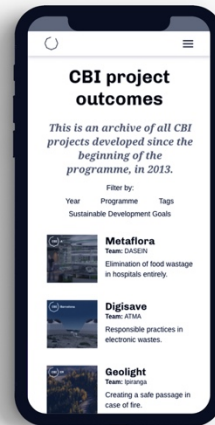
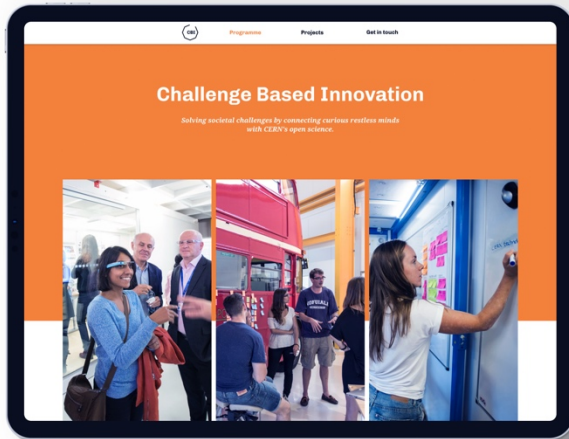
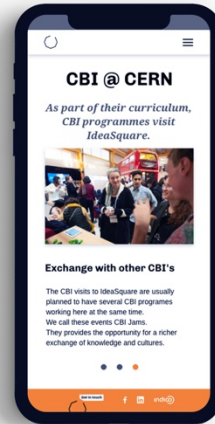


Figure 70 - Website mock-ups.

Presentation slides

The purpose of presentation slides is to introduce CBI. These slides also include a template, so that they can be adapted for other purposes, such as content slides in lectures (figure 72). These are designed for the CBI managing team and for the universities teaching teams.

In regard to the application of the graphic identity, the goal is to make use of photographs and infographics as much as possible, while still giving templates for more text intensive slides, that might useful for lectures.

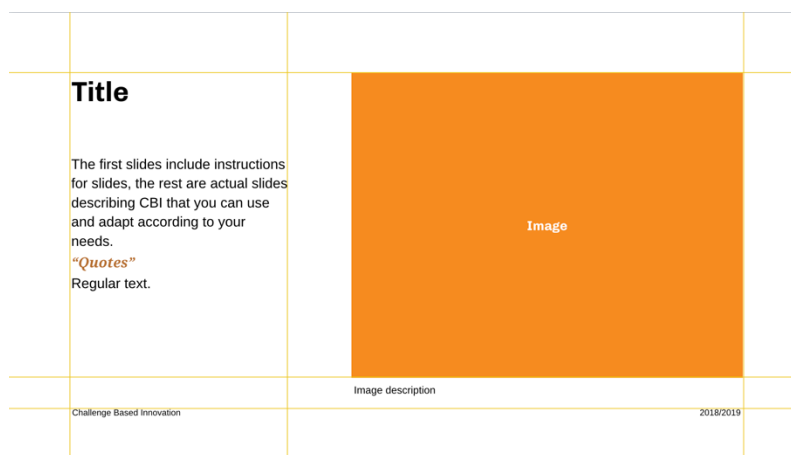
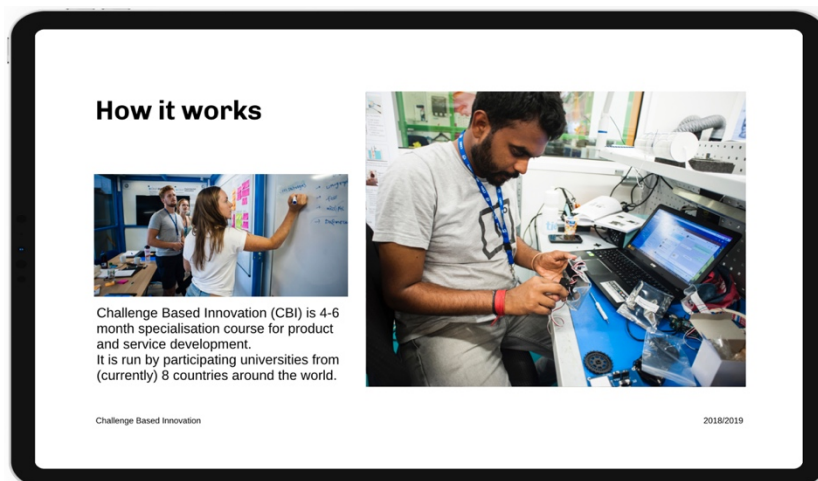


Figure 71 - Presentation structure.



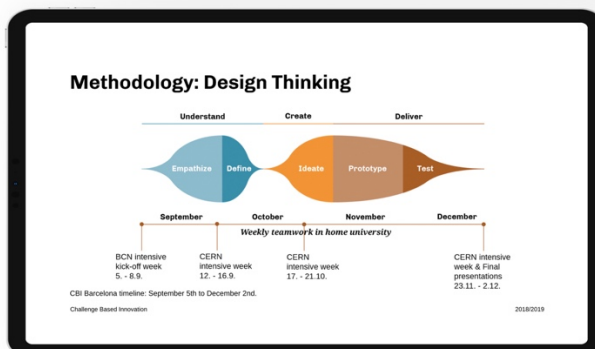
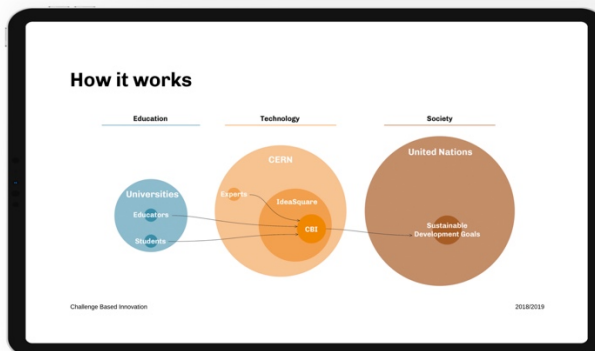
Challenge Based Innovation

"Our mission is to bring together university students to address societal challenges in the spirit of open science and open innovation, inspired by CERN and its experts, to create solutions that contribute to the United Nations Sustainable Development Goals."



Students from CBI Tampere building a prototype, during their stay at IdeaSquare.

Challenge Based Innovation 2018/2019



Project: Metaflora

Solution

"Our solution ensures the nutrition of hospital patients in two ways: for patients who ingest food and for those who absorb it.

For them, we created Metaflora, a modular hydroponics system, which grows its plants with accordance to patient orders, creating an equal ratio of supply versus demand."



Challenge Based Innovation 2018/2019

Figure 72 - Presentation slides mock-ups.

Brochure template

The brochure is designed to publicize CBI to attract new students to apply (figure 76). It focuses on students who don't know the programme and inform them on what they need to do to apply.

In regard to the application of the graphic identity, it is adaptable for any content, being that it uses four text boxes and relies on photographs to fully communicate what the programme is about (figure 75). The CBI symbol is used as a bullet point.

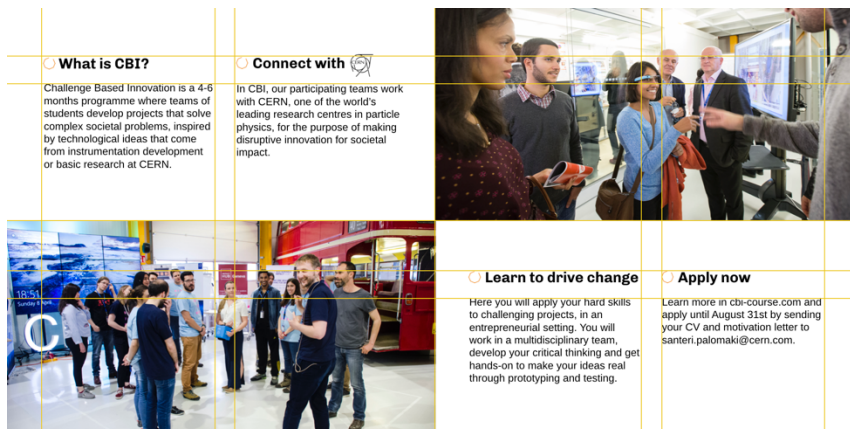


Figure 73 - Brochure structure.



Booklet template

The purpose of this booklet is to act as a publication for CBI (figure 74). It is designed for the CBI managing team and for the universities teaching teams (figure 73). For instance, it might be used as a year overview publication with projects outcomes of all CBI programmes and an explanation of CBI.



<p>Title</p>	
<p>Instructions The first pages include instructions for publications, the rest include content explaining CBI and where to include programme explanations and project brochures.</p>	<p>Smaller title Text</p>
<p>Sub-title Highlighted text that can occupy the whole length of a page. Long text, that we currently have in the instructions paragraph should occupy half the length, in order to provide a pleasant readability.</p>	<p>Instructions This is the suggested grid for images.</p>
	

Figure 75 - Booklet structure.





Figure 76 - Booklet.

Project archive template

The project archive template is a guideline for archiving projects and methodologies, that student teams and teaching teams are asked to follow at the end of each project and CBI programme. This allows to archive with coherence, so that projects can be compared and serve as examples for future projects. Methodologies can also later serve as reference for future programmes.

Poster templates

There are three different posters templates. Publicity posters aim to advertise CBI to either prospective students or CERN mentors, therefore they target an external audience to the programme. Event posters advertise events happening in universities and in CERN, such as final presentations. Talk and workshop posters advertise talks and workshops, being for an internal audience of people that are familiar with the programme.

All poster categories have A2 horizontal and vertical for print, Facebook rectangle and square for digital use (figure 78).



Figure 77 - Examples posters structures, event and talk and workshop posters.

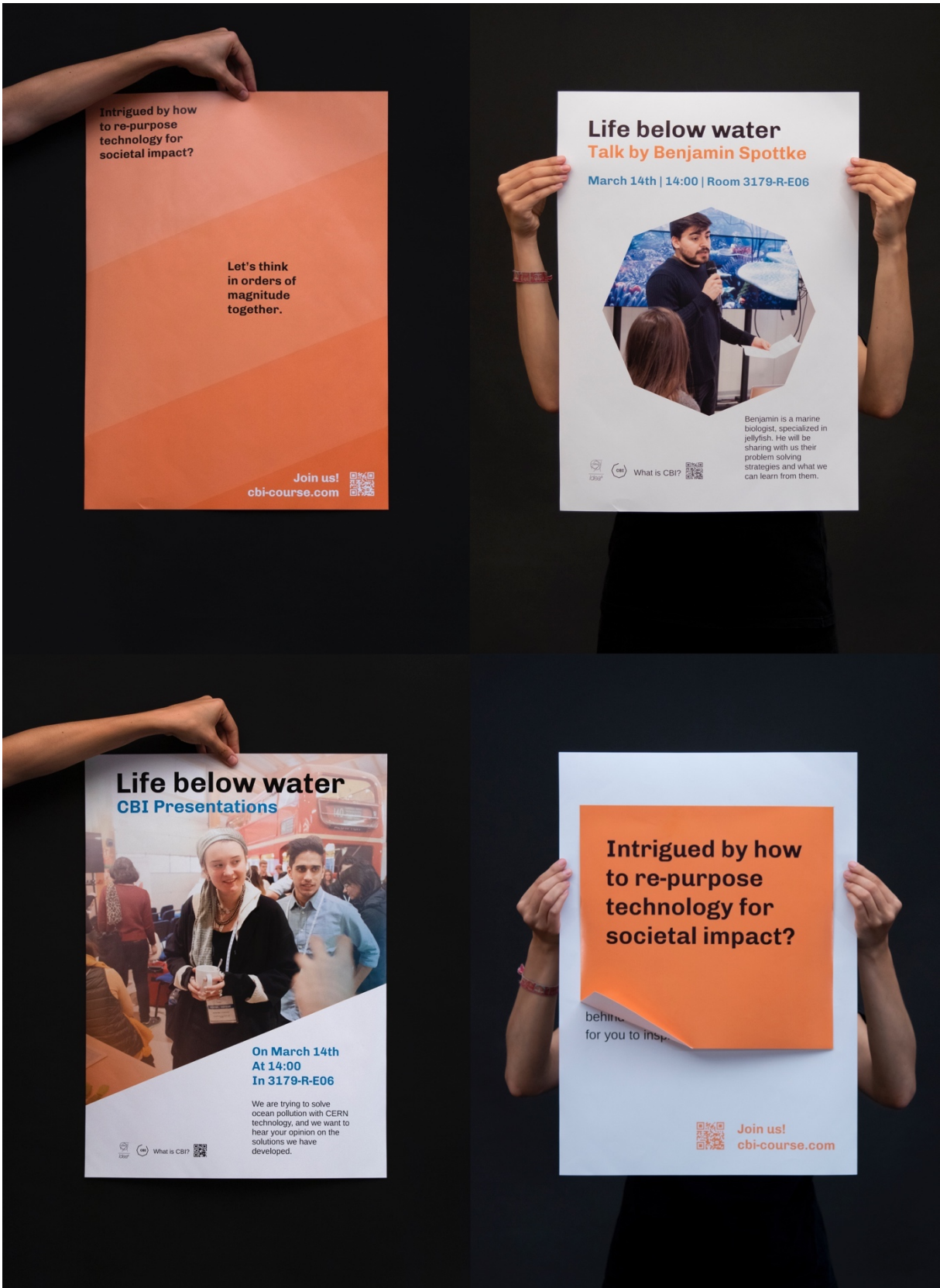


Figure 78 - Posters.

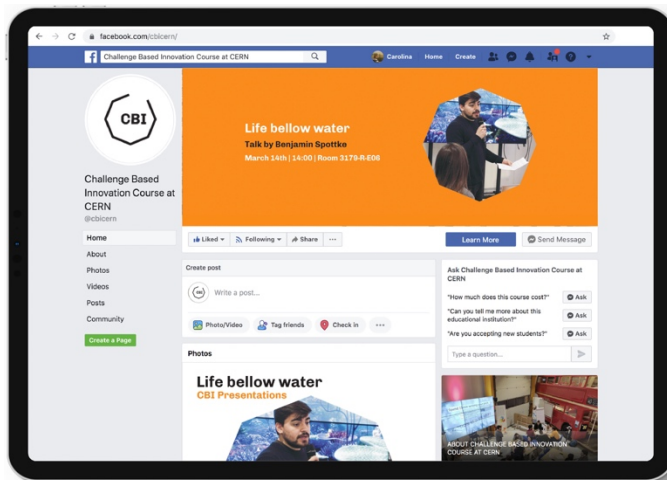


Figure 79 – Mock-ups of posters in digital media.

Social media guidelines

CBI uses the social media platforms Facebook and LinkedIn. So, there the social media guidelines include templates for cover photos and posts in both channels (figure 80). Also, there is an introductory video, to be used in videos related with CBI.

In regard to the application of the graphic identity, the posts use primarily images, very short text and a photo filter that is used on the website and posters as well (figure 81), conveying a cohesive look to the photographs used in CBI’s communication.



Figure 80 - Social media posts structure.

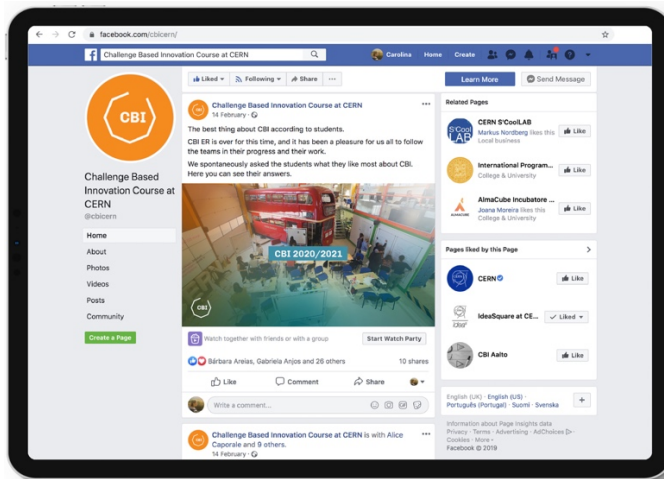


Figure 81 - Facebook page mock-up.

4.4 – Validation

In order to validate the project developments, several meetings took place across the project:

- 26.11.2018 meeting to validate the briefing for the project.
- 31.01.2019 meeting to share interview analysis results and validate the brand's new keywords.
- 22.03.2019 meeting to validate the new graphic identity with the CBI managing team. It was presented to Santeri Palomaki, responsible for CBI at IdeaSquare, CERN.
- 15.04.2019 meeting to validate the new graphic identity with the CBI programmes teaching teams. In this meeting there were representatives of CBI A3, CBI Barcelona, CBI ER, more specifically Christine Thong, Farah Haddad, Elahe Rajabiani and Clio Dosi.
- 02.09.2019 meeting to validate the final deliverable, specifically, the communication channels, with Santeri Palomaki (see appendix R).

4.5 – Further recommendations

The website started being developed by an IdeaSquare employee, but it was not completed in the timeframe of this project. Therefore, there will be further contact to ensure that the brand identity is well applied in this communication channel.

Also, the communication channels will only be fully tested by CBI teaching teams once the 2019/2020 academic year starts. It will be important to test the CBI project archive guidelines, to check if students and teaching teams document the projects and programmes clearly.

Part 5 - CONCLUSION

How might we rebrand an ever-changing educational programme with a flexible graphic identity?

This project had the main objective of answering the above question while rebranding the educational programme CBI. During the project, an active research and regular contact with the CBI managing team allowed to deeply understand the struggles and needs of the programme. These included regular videoconference calls with the CBI managing team and teaching team members, visits to IdeaSquare, where the programme takes place.

The initial understanding of the programme, of the stakeholders involved and of the role that the previous graphic identity played was important for the framing of the project and for the identification of aspects that would support the accomplishment of the same.

The theoretical research together with the understanding of the network of stakeholders involved in CBI allowed for the conclusion that a modular identity was the best fit for the CBI graphic identity. It provides enough flexibility to communicate the programmes to come, with diverse names and structures, while ensuring that all programmes are recognized as part of CBI.

This knowledge was fundamental to develop a solution for CBI. The design process involved a lot of experimentation and feedback from the CBI managing team, that was very important to delivering an appropriate solution to the programme.

I believe this project answers the research question as it rebrands effectively an ever-changing program. The graphic identity is able to include the next programs that will come, with varying methodologies, student profiles, timeframes, etc. At the same time, it is easy to use by teaching teams with different backgrounds and little time to dedicate to the communication of the program. Furthermore, it helps the CBI managing team now have more control over the program's communication. The teaching teams feel supported with this communication guideline and do not need to create their own graphic identity, as it happened in the past.

Personally, the development of the entire project design process, from the conceptual and graphic definition of the brand, basic elements of visual identity, to the selection and development of graphic materials and applications was fundamental to my experience and for my professional development. Developing a work based on the criticism and observations of a real audience added a lot of learnings to this project which, in the exercise of the profession, are easily abandoned due to the lack of time and resources.

This project promoted a more creative, innovative and reflective behavior from my part. One that I hope to take and apply in my professional career.

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APPENDIX

Appendix A - Interview guide for IdeaSquare employees

Appendix B - Interview guide for teaching teams

Appendix C - Interview to Laura Ferreira, responsible for managing the SUGAR network

Appendix D - Interview to Santeri Palomäki, Project Associate at IdeaSquare, responsible for CBI, and Harri Toivonen, former responsible for CBI

Appendix E - Assisting a meeting for the IdeaSquare Annual Report

Appendix F - Interview to Pablo Tello, responsible for EU projects in IdeaSquare and Tutor for CBI Design the Future!

Appendix G - Interview to Farah Haddad, ESADE Teaching Assistant of CBI Barcelona

Appendix H - Interview to Ramon Bragós, UPC Professor of CBI Barcelona

Appendix I - Interview to Luciana Leveratto, Former IED Istituto Europeo di Design Professor of CBI Barcelona

Appendix J - Interview to Clio Dosi, CBI Professor at UNIMORE University of Modena and Reggio Emilia (Italy)

Appendix K - Interview to Christine Thong, Swinburne University Professor of CBI A³ (Australia)

Appendix L - Interview to Mariana Moreira, coach for one team of CBI A³

Appendix M - Results from the surveys conducted with alumni and current CBI students

Appendix N – Design brief for the branding guidelines for CBI

Appendix O – Research conclusions derived from qualitative interviews, visit to IdeaSquare and desk research

Appendix P – Proposal for discussion on initial graphic identity concepts

Appendix Q – Pages from the booklet developed for CBI, where the programme is described

Appendix R – Confirmation of delivery of project

Appendix A - Interview guide for IdeaSquare employees

Story

1. What is the story of CBI? How did it start?
2. What is its goal in your view?
3. What is the role of CBI? (does it disseminate CERN, connect CERN to other stakeholders, creates a sustainable image of CERN)
4. What's the role/relation of CBI to IdeaSquare? Do you feel like CBI belongs to IdeaSquare?
5. What's the role of CBI to Attract or vice-versa?
6. What impact has it had so far?
7. How has the impact changed over time?

What it is

8. What makes a CBI?
9. Please tell me about CBI PS/Design the future?
10. Santeri mentioned that it was a way to refresh the methodologies used in CBI and trying something new. Does this make sense? In what way?
11. What is the process of creating a new CBI?

Communication

12. With whom should CBI communicate in your view?
13. What's the relevance of communicating with the general public? Why?
14. What's the connection between CBI and all these stakeholders?
15. How do you think CBI is perceived?

Rebranding

16. What is the primary message that CBI should transmit?
17. What tone of image do you want to portray? / Please characterize CBI
18. How do you tell about CBI to other people? Do you show the website? Word of mouth?
19. How is CBI communicated?
20. What channels are used?

Future

21. What do you find as a need for the programme?
22. What is your personal wish for CBI? Where do you see CBI going? What would you like it to be?
23. What is the strategic plan for the next years? How does CBI want to grow?

Appendix B - Interview guide for teaching teams

What it is

1. What is CBI? What is its goal in your view?
2. What is the role of CBI?
3. What is your story with CBI? How did it all start?
4. You've been doing CBI for some years now. Why is it worth to continue doing CBI? Why not something different? What is still the advantage of CBI?
5. How do you characterize CBI?
6. How did you view CBI in relation to (your university)?
7. What are your difficulties/challenges while doing CBI?

Communication

8. What is the graphic identity of your CBI programme?
9. Why do they have a need to create a graphic image? Why didn't they just use the CBI logo?
10. When doing CBI, with whom do you need to communicate?
11. How do you tell about CBI to other people? Do you show the website? Word of mouth?
12. What is your personal wish for CBI? Where do you see CBI going? What would you like it to be?

Appendix C - Interview to Laura Ferreira, responsible for managing the SUGAR network

Date: 17.12.2018

Interviewer: Carolina Faria

Carolina: In your view what is SUGAR network?

Laura: SUGAR network right now is a platform for distributing knowledge in design thinking. And it makes a connection between universities, companies and students. It's the holy trinity of people that are interested in innovation and our biggest duty and mission is to connect all of these interested parties. So first we want to empower students, to teach them how to innovate, how to design thinking and in the end hopefully they get a job in the innovation departments and so on. Secondly, we need to promote new ways of teaching and learning in universities. Third, probably it is the most important part, we also want to empower companies and encourage them to adopt innovation to their processes. So basically what we provide is a lab, it's an experimental platform where companies can test if they can have innovation projects and if they can support innovation projects within their scope of action and we give them, we provide them that with the guidance of universities and the help of students. It's a learning experience for the all of us. Everybody can just experiment a little bit. So, it's a platform for experimenting with innovation.

Carolina: From these people that you mentioned, what kind of people are involved?
From the companies, the universities and students' side.

Laura: As you said there are three different groups that are involved in the SUGAR network. The first are the students. I would say there three different kinds of students that are involved in this. The first type is the students that are thinking of enrolling in a SUGAR project, we call them prospective students, then we have the alumni, that already participated in a project. These are also a big source for acquisitions, so if we want to create new contacts, these are the people that we contact. And then there is a third group inside the students which is the current students that are taking part in the project.

Then we have the universities. Here we have a lot of people involved and participating in the network. I would say the most and more prominent person who is involved in this is usually the president of the university. Even though it is not apparent and visible, most of the SUGAR projects that are accepted, they have a signature from the president of the university. For this innovation environment to exist, there needs to be a top down initiative. So usually the president says “yes, we are going to do it”. And then there is a person that has a good relationship with the president or the dean or whatever, who is usually the professor of the programme, it can be a person who is experienced for many years or it can be a new professor, but usually the person who is the anchor of a SUGAR project is the professor, like Falk, or Kevin Kelly or Christine Thong. So this is the person who is making things move forward. Then there are the TA's and coaches, and these are the people that are the most direct connection with both the students and the companies, so they are kind of making the translation between the students and companies. And they are one of the biggest innovators in terms of learning methodologies and processes, so they are bringing new knowledge for the professors too. These are also three layers involved in the universities.

And of course, there are the businesses or the companies. First of all, there is one person involved with the company who is the corporate liaison. Usually that's the person who has a topic they want to work on. They identify that in this company there is this problem and they say oh we are going to solve this. But then they need money to do it. So, they find a person who will bring the money. The corporate liaison is sort of managing the project and then there is the sponsor who is giving the money for the project to happen. And many times, the sponsor can come from another business unit, from the liaison, so there's a lot of stakeholders involved I that, but basically that's it, I wouldn't complicate the business more than that.

Carolina: With whom does sugar need to communicate?

Laura: We have been discussing over the past year is who do we want to address. 1 year ago, we had a meeting with everyone from the community and we defined that the most important stakeholder is the corporate partners. There's a very pragmatic reason for that which is the acquisition, acquiring projects. For instance. Here in St. Gallen, it's fairly easy for us to get people who are sponsoring a sugar project but for other

universities like Colombia, Brazil, India it's really hard to convince companies to give money to a students' project. And these universities are fighting really hard to stay afloat [in SUGAR] because they don't have a business background, they are usually designers, they have no idea how to conduct business, no idea how to make negotiations. We as a network also want to provide them with the techniques and the tools to grow, so we identified that basically its really easy to get students for these projects, because they are quite exciting. They are very they have a lot of workload, but the students still want to participate. Then of course there are the universities, they also don't have the need because every year I get tons of universities to join the network. We are not lacking universities or students, but we are sometimes lacking corporate partners. Not on a local level but it's a global problem, so many universities. Even the ones that don't appear like Aalto University. And also to build credibility, if you build credibility with corporate partners and if you show them in a message type that they understand that what we are doing is solid and that it produces results that interest them we can get them on board with us.

Carolina: What do you think is the biggest selling point of SUGAR?

Laura: I think it's being a platform for experimentation, so the companies can experiment with low risk. Usually the price tag is very low comparing to consulting projects, they don't need to implement in the innovation department in the company, so it's kind of like an external innovation department that is very cheap, and that they can experiment with it. And the same thing for the students, they are working for a company, but they are not in the company, they can also do whatever they like. It's a 2 ways experimentation. For me that's the biggest selling point for sugar, even though most people don't know it, don't see it that way. They are too busy taking care of operational issues, shipping students around the world.

Carolina: What are the competitor programmes?

Laura: Doing exactly what we do. I don't think there is. Of course, there is PdP, CBI, all the programmes that are happening in Aalto. And I know that other universities are doing such projects, but they are working understanding different types of innovation, so I don't see them as competitors, actually we do different things, so I don't see them as competition per say. I am more afraid, and I see it as competition, service design

network, for instance. It's a big network of service designers and they kind of do what we do. So they have conferences and events going on, they don't have educational programmes, but probably in the future they may have and there we are in disadvantage, because they are bigger than us, they have many members, and if they just decide to start having educational programmes we are kind of screwed because they have many more members. But we have one thing, one thing that no one has, we have expertise in our group [global teaching team] that is hardly comparable to any network that is out there. The professors that we have are experienced in doing this for. Many years now. Most of them of done this even before the d. School existed in Stanford. D. School was inaugurated in 2005, Michael Klaas has been teaching here since I don't know when. They really have a lot of expertise, but they don't know how to sell it.

Carolina: What is your vision for SUGAR in the next five years?

Laura: For it to become a respected entity regarding human-centered innovation. And I say human-centered innovation because it's a broader topic than design thinking or service design. Because platforms of innovations and ways of doing innovation are always shifting, so you have scrum, agile, design thinking, etc. But the thing that for me that most matters is the human in the center, so human-centered innovation. That's what we should achieve in the next years. We will be a respected entity that is providing educational programmers about human-centered innovation and conferences about this topic. So that's kind of my vision.

Carolina: Recently you had a re-branding, what was your branding like before?

Laura: Actually you can still see it in our website, it is still online. I don't even know when it was developed, I guess 2013, when we developed that identity. It was an Australian dude that did the logo and I really don't know what it means and I have really asked everyone if they know what it means, if it's infinity, if it's an 8, if it's a connected network, so I have no idea and nobody knows what it means. So, it makes me kind of confused about it. And it was just a logo, so there was no specific identity. Some dude just created a logo, that's it. There was no corporate identity, no language attached to it. And green, someone decided that we would have green on our web page and that's it.

Carolina: And why did you feel the need to rebrand? I mean I can understand this lack of coherence, but from the work that you want to do in SUGAR why did you feel the need?

Laura: It was not about creating something new, it was about establishing something that we had created. I didn't want to create a fully new logo for SUGAR, even though I don't understand this one. Visually is very unbalanced, it's really hard to integrate it in any kind of design. I still don't like it. But we had already established that this is our image and that this is our logo, so we are so young, and we have just started getting recognized. If we change the logo again it would lose the connection with people, so I decided that we don't change our logo, we keep it and twitch it so that we don't lose the connection. Before we had small letters, the lettering, and then we change to capital letters. Like I said the other day, SUGAR is big not small. And then we keep the image so the symbol. And then around it the designer tried to create a language for everything that was around this logo, this idea of network, idea of cohesion. She chose us some typefaces to use, that she thought would be suitable on web and for print. And my requirement for a typeface was that it was easily downloadable. She chose Google fonts. One of the biggest issues that we had with SUGAR materials was that everyone was just using random fonts. Because it was a special font that nobody had. If you are going to do a rebranding, it's better to choose a font that is easily accessible for everyone. Then she had the idea of showing in a visual way how many universities we have, how many universities we are. Each university should have a colour and be represented by a bubble. She attributed a colour to each university and then used the circles all around the rest of the communication. She also tried to create something of high contrast, so very black and white and lots of images. We have pretty cool images from everything that we've got going on, so we need to use what we have.

Carolina: You mentioned for example the requirement regarding the font, so did you have any other requirement that came from how the programmers are done and how people deal with the branding?

Laura: I also requested that she make some templates for slides, for Booklets, business cards. Even though we are not officially employed, and the students are not officially

working for SUGAR, I thought we should at least have something just in case. And if someone wants to do a SUGAR event and if someone wants to do a presentation in a SUGAR event, we have a template for them. If they don't want, they don't have to use it, but we have something that we can just say "hey dude, here's this". And people still have their freedom. And they can get inspired, even if they don't use it, at least they can get inspired and it's something that is not easy, to make people use your own style. Most of times, I just give them the logo and say "please put this in your presentation" that's it. And on the other hand maybe there will be some people that want to do a different presentation and they have no clue of what to do and this would help. And I have been to conferences and events where there is this template, there's this exterior bound and inside there's like the person slide and I think that looks bad. So I prefer to tell people "hey just use our logo" and it's ok. Because than it looks weird when you force people to use your thing, it's not their style, it's not how they do it.

Carolina: What do you think is or will be the impact of the rebranding on each SUGAR programme?

Laura: It will be a lot. So, when I started this rebranding thing, we had 2 employees in LinkedIn, so SUGAR had 2 people connected to it in LinkedIn. One year after we have 40 something. I think the impact will be a lot. And I also heard people that came to me in San Francisco or here in Switzerland that were in a train and somebody told them "oh this SUGAR network..." These people were not at all linked to the university or to the programme they were just random strangers that heard about the network. This also happened in San Francisco, so it's happening very slowly, but we just have to keep pushing it further and further. I know it will have a big impact, but you cannot want things to happen faster than possible.

Carolina: It's still many people to influence in the end. And do you think the rebranding will influence the vision that you have for SUGAR in any way?

Laura: I think the vision can influence the branding. So the branding should reflect a little bit this vision that we have for the future [I need to ask Santeri, what is for him the vision for the future, mission and values of CBI - in the next meeting]. So it should be somehow integrated and flexible with what we are doing. So the biggest thing about SUGAR is that it is organic and it's always changing. So before me, there were other

people doing stuff, and before me there were also other people doing stuff [whatever I do with the logo, should not have too much freedom, too much artistic, because this is still happening in CERN and should be taken seriously]. My biggest concern with our branding strategy was to make sure that even if I go away from SUGAR, the next person still has the opportunity to put their vision in this branding [good point!]. I don't want them to through away what we have done, I just want them to incorporate their ideas in this new thing. That's why the website is very modular. You can always add stuff on top of it and it will make sense. One of the biggest concerns is to keep adding to it and not doing something completely new and that was also one of my concerns with the rebranding. I didn't want to erase what was there before me, I don't think that's the best way. You should always build on top, it's yes and" not "no but".

Carolina: Yes, it goes very well with the philosophy of the programme. Do have anything else to add?

Laura: Yes, I wish more people with a notion of Design, and with an understanding of what design is and what a graphic identity means. I think a lot of time a lot of people come to me and say "why are we spending so much money on doing a redesign?" and I mean it's not just about having a new logo, it's about everything that surrounds it and people don't understand the importance of having a cohesive strong strategy, having a cohesive package that is for everyone. Otherwise you will just copy paste a logo on top of something and that's not going to look good and everything needs to make sense. It's like when someone dyes their hair black. But the skin tone doesn't go with black, and they still do it and it looks like it's a wig. It looks weird. It's the same with branding. You cannot just paste a logo, just paste something there and hope that it's going to look good. It's not.

Carolina: That's a good point about the need to educate people about why this matter and what's the impact that it has.

Appendix D - Interview to Santeri Palomäki, Project Associate at IdeaSquare, responsible for CBI, and Harri Toivonen, former responsible for CBI

Date: 20.11.2018

Interviewer: Carolina Faria

Carolina: I have some questions about CBI as a whole: what the needs of the programme are, the strategic plan and then moving to communication as a consequence of this. CBI has been around since 2013/2014, right?

Santeri: Yes, 5 years now. We started the course around October and it lasted for 4 months. We were the first students to go to IdeaSquare to do CBI. We were from Aalto Business School, School of Engineering and School of Design and Arts. There were students from UniMore, all engineers, and architecture students from the University of Athens. The programme consisted of two weeks in the beginning in CERN, two to three weeks in between in our home countries and two weeks before the final gala in CERN again. Now there are different kind of courses: some courses come here once for two weeks, others come three times (like CBI ER), the people from Barcelona come here twice. The longest visits are usually 2 weeks.

Carolina: What do you think is the goal of CBI in your view so far?

Santeri: As the student, what I saw as the biggest benefit for myself was shaping the entrepreneurial thinking, because most business students come from a pretty theoretical background. So it was very different to be hands-on, learn about prototyping, with a startup mindset and learning to work with other disciplines, such as architects, engineers, designers. That's the beauty of it. Also, how it prepares for the professional life. In a nutshell: shaping the entrepreneurial thinking, improving multidisciplinary working skills, getting hands-on.

Carolina: How many CBI's do you have now?

Santeri: It depends on how you count it. In 2018, there is CBI A³, CBI Barcelona, CBI ER, CBI Design the future! (or Pablo Special). We have four courses now and each has three to five universities participating.

Carolina: Taking the example of CBI Design the Future!, why is it part of CBI and it isn't a programme on its own? What makes it a CBI?

Santeri: It's an experimental pilot. It is under CBI because it works in a very similar way. Many of the sections and workshops are the same and least in our Indico page it is called CBI PS (Pablo Special).

Carolina: I remember that the Italian universities were doing projects for companies. So, I wonder, how does this work? In CBI A³ there are no companies involved. So, how many intervenients does CBI have? Do you have industry partners, high schools?

Santeri: That's not so common. Working with companies is hard for CERN because it should support companies from each member state equally. So, working with companies is difficult. We had a team from CBI Barcelona working for an NGO not connected to the UN, but I think the rest of the projects are done for the UN's sustainable development goals.

Carolina: What do you think is the role of CBI in IdeaSquare?

Santeri: We prioritize the CBI events. Yesterday they had a visualization hackathon, some were physicists from CERN, others were people outside of CERN and they just used IdeaSquare space. Now we have the RCA workshop going on. We will have a cooking workshop going on, probably a friend of Harri or Markus. But the students are our first priority, so we tell these people to not feel offended if the students are noisy.

Carolina: So IdeaSquare is making the bridge between CERN and the outside world and CBI is part of that.

Santeri: Yes. A few weeks back we had a 3D printing workshop for CERN scientists to learn about it but it was opened to company partners, outside people, we had a Facebook group, and other people from Geneva came. It's a space for open innovation, the open innovation mission comes from CERN: CERN's mission is to promote open innovation, open science.

Carolina: With whom does CBI want to communicate? Inside of CERN, outside, universities?

Santeri: My view so far is that the main audience is our current and potential collaboration universities: the universities where the students come from. The other experiments and other people working at CERN, the CBI galas are open events for everyone to join, we recruit coaches and mentors within CERN. I am not sure about the general public. I mean we do have a public Facebook page and Harri has stated that one of our goals here is to promote what we do through that facebook page and get followers, following for what we do. For that, I would say that the general public is a good audience for us.

Carolina: What is the process of creating a new CBI?

Santeri: When Barcelona students were here a few weeks ago, we also had students from a UK University. They came because they are interested in putting up a new CBI course. It was one professor and three students. Getting to know this space is a first step. We don't do marketing here. I wondered if I was supposed to sell this concept to someone and Harri was said it sells itself. We are pretty close to working to full capacity. The next point where we wouldn't get any students here will be December 18th. So, for 1 month and a half in a row, we will have students every day. We can have more at the same time, this week we had 17 students, last week we had 56, but if we had 56 students every week it would be too much. All the people working on the first floor are outside of student projects.

Carolina: How do CBI coaches get involved with CBI?

Santeri: Being a coach is something you do in your free time.

Carolina: Regarding communication of CBI, what are your communication channels?

Santeri: There are prints of one-pagers of projects, printed ads of the CBI gala, Facebook page, we should put up an alumni group on LinkedIn as well.

Carolina: These are the main channels and what about personal communication?

Santeri: There is one to one communication because we hardly do any marketing and we have 200 students per year, a lot of people visiting the gala, we get e-mails of people asking for collaboration (maybe Markus meets someone in a conference and tells them about CBI and then they email me).

Carolina: What are the needs for the programme?

Santeri: Getting new schools in, for instance. I participated in this programme five years ago and the content, methodologies are pretty much the same. So, when next year comes, I would like to explore what kind of teaching methods, sessions, technologies, we could evolve. If you think of CBI we have some technologies that are well represented: 3D printing, electronics workshop, machine workshop. There has been an idea of involving more design, arts perspectives: Pablo special is about taking the course to this more disruptive, futuristic scope: social sciences, future scenarios.

Carolina: What are your problems with the CBI brand?

Harri: We intentionally developed it as a separate stand-alone brand from IdeaSquare. The problem is that all the consortium of universities has sort of developed their own graphic image. The website we have, the graphic identity was developed by one CBI alumni 4 years ago, and the problem is that Barcelona has their own graphic image, our website has its own, CBI A³ has their own. I would see that there is a need to unify that, so that we are communicating in the same way across all different CBI versions. That would mean: the logo that was developed is ok, it can be updated or refreshed, but looking at the different versions, what this would require is a conversation with Barcelona and A³ teams to find a common denominator.

But I think in general, yes there is a need. Look at CERN branding guidelines, these are things that we cannot change. IdeaSquare also has. But they are separate from CBI. And we have the initial outline for the CBI branding.

Related, but separate brand is Attract. This is the landscape that we need to be smart with: it would need to fit within IdeaSquare and Attract. As a stand-alone, but compatible. Attract is the reason for IdeaSquare and CBI to exist. It's a funded programme, from which CERN is part of. The graphic relation is that in Attract materials we should be able to use IdeaSquare and CBI references.

Carolina: What is the relation between CBI and Attract? How do the programmes overlap?

Harri: In the second stage of Attract the CBI courses would be the societal value creation tools that students could explore in how they can use technology in innovative ways. And CBI's projects are the tangible results with projects, startups, etc.

Carolina: What is the role of CBI?

Harri: It is the bridge between technological ideas that come from instrumentation development or basic research. What CERN produces is the knowledge of how to produce these technologies and on the other end of the spectrum is everyday life, how to use that knowledge for creating/solving societal problems. At that end of the spectrum is the United Nations Sustainable Development Goals, that question "what is the societal value that we create?" This is the gap: initially, you would have the knowledge transfer group working on this, but our hypothesis is that this doesn't work very well with the traditional models. So, CBI and the student teams are the catalysts between, technology creation and using it in innovative ways to solve problems.

Carolina: What is the role for CERN?

Harri: It's the usefulness of research in general, at least from the societal point-of-view. What we are looking for are interesting showcases, or projects, startups which have been inspired by CERN, and that create some societal value. This is what we don't need to show to our founders yet, but they will come, and it might come sooner than perceived. Because the member states are interested in scientific articles output, research results, but the day when ask us to show something more will come sooner or later because the politicians who design what to invest or whether to invest or not, they need to show their voters that this is worth it.

Santeri: I could see in my old job, working for the UN, that these humanitarian organizations that have been justifying their existing by relieving problems in humanitarian area, their donors are starting to demand from them something that is completely out of their scope, which is something like we did for the Red Cross: a logistics overview, how their logistics changed, environmental impact of organization.

Harri: CERN is working also on how we as an organization try to be as sustainable as possible, in environmental impact. This IdeaSquare and Attract initiative is about how

to create new value, so it's the innovation arm of CERN, which they are interested to fund if there is some meaningful output.

Carolina: What for you is the impact that CBI has had so far?

Harri: I think so far it has been the value that students learn through the CBI course and how it affects their career choices and so on. In terms of prototypes and startups, we haven't checked how many projects have gone forward in some way last year. There are some real cases, but it's hard to measure what is the real impact.

For this we are thinking of solutions such as the LinkedIn group, to conduct some study on how CBI has affected their choices afterwards. And one of the major changes that happened in the past year and a half, is that the sustainability agenda has been integrated in all CBI versions which started as an initiative from the students: we don't want to create products for companies, we want to change the world, create new products to make it more sustainable.

Carolina: Always related with SDG's?

Harri: Yes, in general, but the students are interested in working for ecological, societal, humanitarian impact, which all of those are in the SDG's. It is because of the publicity of the UN Goals, it's a good way to connect, show in a structured way what is the outcome.

Santeri: Yes, the UN Goals are an umbrella term that is widely recognized. There are municipalities, companies, NGO's talking about UN Goals. We work differently from these, in quite a high level.

Carolina: What would be the strategic plan for the next years?

Santeri: Align the courses from the get-go, in the sense that we can measure if there is an impact and what the impact is after the course.

Carolina: Does CBI want to grow? Other stakeholders, more people from CERN, more universities, etc.?

Harri: No, now we are at the upper level of what we can handle in the number of students. Most CBI courses occur during the Fall period, we still have space in Spring and Summer. As CERN we need to be as open as possible. But I think one of the key factors would be to develop a pedagogical model as a sort of open source thing that we would have resources that are open to use by any university and scale the impact, including more people. What has always been a pain point is the CERN connection. With Attract coming, it would not only be CERN but also this large researching production of how we actually use technology development knowledge in solving other societal models. If we have the pedagogical model that you can apply of how you combine this human and technology modes of innovation, which can be applied within the CERN context or NBL context. But this would be strategic that we could use to expand the brand to the research institute as well.

Carolina: How do you aspire to look like in a few years?

Harri: The holy grail of innovation would be how do you combine technological advancement and human problems, and I am convinced we have not cracked how it works but at least we are still going forward and trying.

Appendix E - Assisting a meeting for the IdeaSquare Annual Report between Markus Nordberg, Head of Resources Development in the Development and Innovation Unit (including IdeaSquare) and Luciana Leveratto, former CBI Professor in Istituto Europeo di Design (Spain), entitled to develop the Annual Report

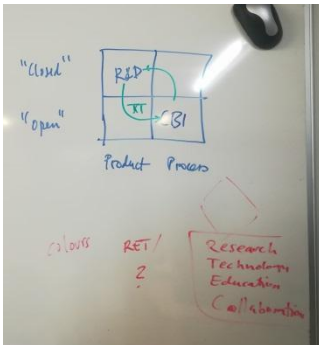
Date: 14.12.2018

Notes from the meeting by: Carolina Faria



IdeaSquare = research, sharing knowledge, collaboration with KT & CERN internal departments. IdeaSquare is the “license to dream”. The four pillars of CERN are the same four pillars of IdeaSquare, technology, education, research, collaboration.

Markus Norberg: “We are exploring, we are trying to answer fundamental questions.”



World of science (fundamental challenges) versus the World of society (societal challenges). We are trying to find a balance and make a connection between the two. To the science, we use their language, but we convey the human side. To the design/society, we convey that this is a scientific environment, with a rigorous process.

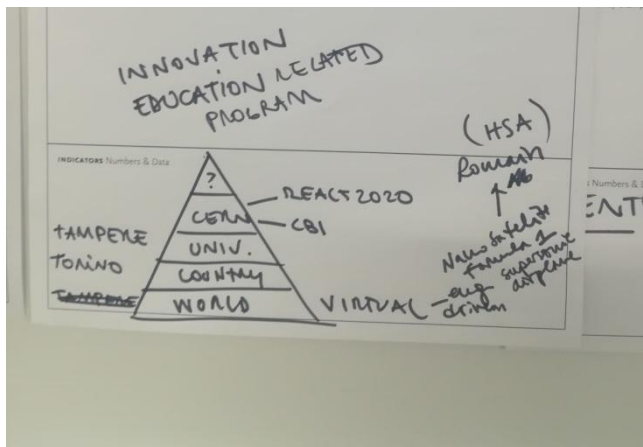
“closed” you know what the expected result is, you have a hypothesis, based on physics.

“CBI” is human - what do humans want? we don’t talk about solutions or technology when we start, only at the end of a project we converge - that’s when we connect to the “closed”

That’s why it is a loop. We go from one to the other. The two worlds have completely different goals. This is an experimental self-evolving system.

IdeaSquare = we want to make fundamental research and connect to society - there is no defined process, we exist to define this process.

Transcript of conversation that started with the CBI pyramid:



Luciana: We have a pyramid with all the IdeaSquare programmes. The pyramid is connected to societal impact. Maybe this can be linked to an indicator of reach: how many people, the scope for it.

Markus: So [we have] World, Country, University, CERN, and then the [top of the] pyramid that I don't quite know how to explain that yet, so put a question mark at the top. Exactly, what's next.

Carolina: For example, CBI A³ or Barcelona they go into University and CERN?

Markus: CBI today is here, because they are at CERN.

Luciana: These are educational projects for societal impact.

Markus: Yes. Innovation related educational programmes, connecting science and society, so putting in perspective. The philosophies are very different, as we discussed in February. So, for instance, the virtual CBI starts as a very engineer driven - design a supersonic airplane, design and build a nanosatellite, design and construct a formula 1 car, design and construct a competitive next generation racing iate. And then you bring in the design aspect and the economic aspect, but it doesn't work like design thinking where they come here and they have the team already, it's sequential. It starts from a really engineering challenge and then the non-engineers come in.

Luciana: Do you have some documents that explain the programmes?

Markus: Which programmes?

Luciana: For example, the virtual CBI.

Markus: We don't have that much, except that we have a wiki page of ISP aviation.

Luciana: Because I would need some concrete info that we can use for the text.

Markus: If we ask Roman he will send you, they have the link. We call it HSA - high speed aviation. I have the link I can give it to you. I asked Roman to make it visible in our webpage but it's not yet there. So next spring we have these guys from CREA design, they are going to redesign all the whole thing. The CBI site we kept on purpose

separate because we didn't get into the problem of CERN logos and stuff. And I didn't want the videos to go through CERN. So it's a bit ambiguous what is the CBI site, but they can redesign it anyway. We just have to be careful that it doesn't appear like a CERN site.

Carolina: So, the reason for having them separated is author rights.

Markus: I wanted to make sure they don't get into the CERN [area], because then they kill it. So, we made the CBI site, I mean we should take the opportunity to talk to all CBI partners and so that they are aware of it, because they are not aware, in case someone starts asking. You know the usual, who is in charge of the website? It's a bit ambiguous.

Appendix F - Interview to Pablo Tello, responsible for EU projects in IdeaSquare and Tutor for CBI Design the Future!

Date: 19.12.2018

Interviewer: Carolina Faria

Carolina: What is the story of CBI from your view? How did it all start?

Pablo: The story of CBI, I am not the best person to tell you, I think the best people are Tuuli, Harri and Lauri. I think CBI is kind of a workshop that was transported from the experience of Aalto Design Factory to IdeaSquare at CERN a little bit adjusted to the CERN environment.

Carolina: In your perspective, what is the goal of CBI?

Pablo: The goal of CBI is to find a way in which detection and imaging technology - that is done at CERN for achieving the CERN mission, which is to find the origin of the universe - could inspire interdisciplinary teams of students coming from Design, Business, and Engineering to develop concepts for innovation with a social component. For example, how to facilitate life to elderly people? How to improve the education of tomorrow? So normally social goals are related to UN's Sustainable Development Goals. This is CBI.

CBI Design the future! is a different thing. And I have decided to include a variation because to my personal opinion, bringing the students here at CERN, in which we think in orders of magnitude, we think in quantum jumps of technology, doesn't fit with the more immediate needs of society, that the traditional CBI is targeting for. So I have designed a new methodology and I call Multiverse Thinking that rather than thinking of the needs that society has today, it anticipates to the needs that society may have in the future and once you have identified the needs of the society in the future, it's when you think about technology that actually can fulfil or transform the society towards those things.

And my point of view is that I do not care whether the technology is feasible today, because in my experience in industry, in academia, in science, in technology in general, in innovation, when somebody has said that this technology is far away or that this is

an impossible tool to achieve, it always has been achieved in one way or another. So, my goal is to ensure that the students adopt or learn a mentality of breaking variables or breaking solutions. Because only when you think of breaking variables or breaking solutions, you can think of technology that is transformable, that is not just incremental. Because CBI with traditional Design Thinking starts with the three circles of feasibility, viability and desirability. In my point of view, when you start from these circles, you are constraining the imagination of anybody, with the two conditions of viability and feasibility. So that immediately brings into incrementalism, because you filter any solution that you may have with the filter of feasibility and viability. So, my goal with Design the future! is actually to break this and say, so let's not worry about feasibility and viability and let's worry about transformational. That's the main difference.

Carolina: So, it's not so much focused on using technology from CERN, it's focused on the transformational. If the programme would use technology from CERN, that would be as a consequence?

Pablo: The only thing I tell the students about technology is that I don't care if your technology is super imaginative, as long as it doesn't break the laws of physics.

Carolina: What's the role of CBI in relation to Attract?

Pablo: Attract is in the future to have a pool of projects that are breakthrough projects on detection and imaging technologies. Those are going to be projects very industrially or scientifically oriented, in the majority. So, we need to introduce this social innovation with the help of interdisciplinary teams of students. They will actually be inspired by the technologies that are developed in these projects for industrial or scientific purposes and they will give again the stamp or the perspective of social innovation. In this sense, we can say that CBI is a sort of test for scaling up in the Attract project.

Carolina: Starting with Attract, would it be relevant to share with Attract partners what were the results of CBI, what has been happening in the last 5 years?

Pablo: You don't need to see the full story. The message always has to be simple. And the message is Design Thinking is a methodology that helps because it's people-

centered, because it puts people before technology, then it is a methodology suitable for incorporating the social aspect in technology. This is the only thing they need to learn. If you want to mention that this methodology has been tested by many stakeholders and one of them is IdeaSquare in the form of Challenge Based Innovation, then it's ok.

Carolina: From the perspective of CBI, in this sense of communication, with all the relations you have had with CBI so far, with whom do you think it's important to communicate?

Pablo: I think the first ones are the general public, they need to understand that there is a certain way of doing innovation that is called DT and puts people's needs before technology. Then I think that the second stakeholder that is interested in knowing that is industry, because industry makes products and they know about product design, but sometimes product design is just misconceived to be pretty or easy to use without really thinking deeply of what is the purpose of the product. Certainly, the groups that don't need to be informed about that are the academics and design thinking and so on. These guys they know what it is. So, for me the most important are the general public, I think they are policymakers, because the language is similar and industrial stakeholders.

Carolina: And do you think that it's important to show the project outcomes to industry?

Pablo: Yes of course, because there are always interesting ideas in there that can be tip taped by industry or investors that might want to invest in student teams. And disseminating ideas is always good.

Carolina: How do you think CBI is perceived? And you can take the perspective of students, universities, CERN employees.

Pablo: I think CBI inside CERN, is perceived by the people that know what it is as one among many educational activities that CERN offers to young students and I mean that connects to one of the pillars of CERN that is the education of young researchers or whatever of the future. I don't think that anybody thinks that the results of the projects that students realize, I mean sure they don't have any impact on CERN's mission except

for the education pillar, because the project development is of 0 interest for the mission of CERN, especially because it is incremental.

So, this is the perspective of CERN.

I think the perspective of students if you ask the students, it depends on the moment in time that you are asking them. If you ask them in the beginning of CBI, they don't know what it is about, they don't know what it's useful for, it's just a course, they just in many cases they receive credits and they spend some time at CERN. If you ask them in the end, towards the gala, then they feel that the solution will change the world and if you ask them afterwards, it's rare the case where they move forward with the solution, to create a company, so at the end I think the experience that remains in their minds is a sort of, I always call it Innovation 101, in the sense that it's the first experience probably that they have been in the main role of developing something of thinking about something that looks like innovation and they have to sit down with fellow students that are not from the same areas and they to experience the discussions, the agreements, disagreements. So, I think what CBI delivers, in the end, is a first experience of how innovation happens. Because innovation is about people and interaction among people and not so much about technology. Technology is the result of this interaction. But innovation is also about the process, or mainly about the process. These are the three main perspectives that I think are important.

Carolina: So when you talk to people about CBI how do you tell them about it? Do you show them the website? Do you show something else?

Pablo: It happens in many different ways. The most common one would be that I tell them by personal communication, because I know the people then I send them various links.

Carolina: Which links? To CBI and IdeaSquare website?

Pablo: Correct, these two. Then they can have an idea of the type of projects that there are, so they are pretty explanatory, there are videos of the students. So, anyone that has the links, can have an idea of what we are talking about.

Carolina: Now thinking more of the future, you already touched this in terms of your programme, but what do you find as a need for CBI in general?

This is what I think it should be in the context of CERN. Because, I mean, Design Thinking is a different thing but as I said for me the main point here is that we are bringing students to CERN and we only teach them to think disruptively, or CBI, as it is now, doesn't teach them to think disruptively, which for me there is nothing wrong with that. There are many universities that collaborate with us that are happy with how CBI is realized or implemented in this moment, because it fits with the programmes, but then what I notice is that the students are a bit confused when they arrive here and ask from CERN to talk about all the magnitude jumps and breaking the assumptions and then the teachers and the tutors they put the students again in the incremental road, because then there is no point in bringing the students here at CERN, it could happen somewhere else.

Carolina: And do you think that using SDG's, no defined problem, aiming to 2030, do you think that was a step in thinking less incrementally?

Pablo: No. Because you cannot, I mean, this is like saying that you have a new car just because you painted it in a different colour. You cannot, I mean, for thinking disruptively you have to create a toolbox for the students for the way of thinking and a toolbox to be used. You cannot say that just because I put there the focus on 2030, it creates everything, and people focus on 2030. No, you have to teach the students a methodology of breaking their assumptions. When I created the course of Design the Future, it lasted two weeks. The first week was just all dedicated to a thinking toolbox to the students. Because it doesn't work, I mean just because if you painted the car, doesn't mean that it's new. So, for me, it's not the solution at all.

Carolina: What is your personal wish for CBI? Do you think it will actually focus on something that takes away the feasibility and viability and actually changing the way people are thinking?

Pablo: My desire is that we truly develop something that has to do with disruptive thinking, with breaking the assumptions, with no worries about the feasibility and viability of the technology. Something that actually a student after passing through this,

they will say Wow! This only thing I could only have done it at CERN. Because otherwise, it's just a basic approach that can be done everywhere else. It has to do something of think differently, act differently, prototype differently, but not, it has to be adapted to the kind of place that CERN is, it has to have the stamp. Not necessarily of CERN technology, I don't care about that. Sometimes in current CBI's I see many examples that the students are kind of forced to introduce CERN technology. I don't care if they introduce the tele-transport, that hasn't been invented at CERN, as long as the way of disruptive thinking has the stamp of CERN.

Carolina: I always thought of it as including the technology, but yes including the way of thinking and connecting the CERN's mission of education, creates a different impact.

Pablo: I don't care about CERN Technologies. I was working at the Technology Transfer departments before. CERN technologies are fine for CERN purposes and maybe there is one or two that can be applied to industry. But forcing the students to use CERN technologies, then the projects for my point of view become pointless because why do you want to put a cryogenic system to freeze water? Just because you use the cryogenic technology from CERN? It doesn't make any sense, I mean, I prefer that they tell me that: Look I have a technology that produces artificial clouds, is it available today? No, but this could solve the problem. So, I say: Ok, fine, fantastic.

So there is a danger, you have to really monitor the students in the sense that you have to avoid to fall in the trap of Harry Potter, in the sense that the projects because like: Look I add here the magic ingredient and then everything is ok. Because then it's not technology anymore, or not technology forecast or breakthrough technology and it's magic. So, this is the role of the coaches to my point of view. It's to tell the students: ok, what you are telling me now is magic. This the fine line and the role is to keep the students in this line. It's science, science fiction and not the other way around.

Carolina: And do you think it is important to measure the impact of CBI Design the future on students?

Pablo: Yes, because if this is an activity implemented at CERN or realized at CERN, we have to find ways of measure how it helps to develop the CERN mission. As I said one of the visions is education, so I think we should be more systematic at it, not necessarily

measuring the impact in what is the entrepreneurship rate that we have, do we have articles or not. But we need to come up with a scale of indicators that has to do with the impact that we create, or we try to create in the students and how useful these are in their future careers, in their future jobs or the way they think. And we need to come up with a measurable scale. Even if it is a relative measurement, you know? But we need to make an effort on this.

Appendix G - Interview to Farah Haddad, ESADE Teaching Assistant of CBI Barcelona

Date: 14.12.2018

Interviewer: Carolina Faria

Carolina: How did you first connect with the CBI programme?

Farah: I was a student 3 years ago.

Carolina: For you, what is CBI?

Farah: From a student perspective it was a huge learning of working in multidisciplinary teams, feel comfortable with uncertainty, doing something that is challenge based, following design thinking method to do that. So, I see CBI with the type of education that is like a prototype of the future of education. Challenge based is the future and working multidisciplinary teams is as well. So, I think it's a good prototype of what that would look like.

Carolina: And what is for you, the role of CBI?

Farah: The role of CBI. Ah! And something else of CBI is solving big societal problems, so one of the roles of CBI is solving big societal problems.

Carolina: You've been a teaching assistant for CBI for two years. Why do you think it is worth continuing doing CBI?

Farah: It is a life changing experience for the students who are involved in it, they come out of it learning and understanding other disciplines, learning how to work with other disciplines and feeling much more comfortable with ambiguity and having much more sincere trust and motivation to do something about societal challenges.

Carolina: So, it's really focused on the students' learnings.

Farah: It's also teaching learnings. We also have interesting learning each year for the teaching team as well, on how to best work together, as we are an interdisciplinary team and also what kind of learnings, how can we convey these learnings to the students in the best way. Sometimes we have a struggle that we give too much and we act like customers, we give too little and they don't feel supported enough. So, CBI is

not only for the students learning, but also for the teachers, educators learning how to educate on this new model of the future.

Carolina: In your case, you are more connected to ESADE. How do you see CBI in relation to ESADE?

Farah: I think we are really fortunate that ESADE is very open minded and pushes innovation and entrepreneurship, that's why CBI was through Lotta Hassi, through ESADE. Well, the collaboration started by an ESADE professor and they invested in this initiative to a point that Fusion Point, the Design Factory, was created.

Carolina: So, CBI was the main programme?

Farah: It is what started this collaboration and now they formalized this collaboration, and now have other projects together, but the first was CBI, five years ago. Although all CBI's are international and interdisciplinary, CBI Barcelona started with three different universities and it solidified their partnership into one. So, that has solidified the partnership, because it's private and public universities. And another reason for ESADE to promote the collaboration, as a business school, we have a lot of entrepreneurship programmes, so how do we connect CBI to entrepreneurship better? We create programmes to support these projects to actually becoming entrepreneurship programmes.

Carolina: Is that one of the goals?

Farah: I mean we have created a Rambla Innovation, where we have the Design Factory Fusion Point, E Points the accelerator for entrepreneurship, there's FabLab for fabrication, there's the Decision Lab to try to understand customers, so one of the things that ESADE is trying to do is creating innovation through this Rambla and is trying to figure out how to connect them better and make these innovative projects connected to our accelerator programmes.

Carolina: In that sense, with whom does CBI Barcelona communicate?

Farah: CBI of course is a CERN project and without the supports and links, now with the SDG labs and the SDG's, I think better with the CERN community on how to take advantage of this programme and the UN SDG community, like how do we make those

connections sustainable. We've had some connections, well, sometimes the projects come out and they might not end up being interesting to continue with, so how do we make sure that relationship stays sustainable and giving them what they expect and that we know very clearly what they expect. Now some of the students understanding the technologies but are supposed to work with them. There is the Knowledge Transfer Office, but it's hard to reach them.

Carolina: Yes, we had the same problems last year with CBI A³.

Farah: We have it every year and they try different models and it seems that they have lost interest, but they also have a high turnover, so we always have to explain CBI every year instead of it being a sustainable relationship. And figuring out some sort of process which works from both, where they are getting what they want and we are getting also.

Carolina: And from ESADE, UPC, IED, from their perspective with whom do you need to communicate CBI?

Farah: One of the biggest challenges for having three different universities is that it counts for different ECTS for the students, the appreciation within the university of how valuable this is. For example in ESADE students are not allowed to take other courses except CBI, while other universities have times where they are doing internships at the same time or have a load of other courses at the same time, So managing that, it's hard to convince burocratically how important it is and how much time and dedication should be given.

Carolina: Do you usually work with companies and sponsors?

Farah: We have before. In my year, when I was a student, Carrefour was sponsoring one of the projects, then we could cover a lot of the other courses. But this is the first year we start with the SDG's, and we start with a broader challenge and we ask the students to define their own challenge, which was an interesting approach. Each team has an SDG, they choose a problem within that and they connect with a technology. But it was hard to connect with the technology.

Carolina: Did you use the KT platform to look for technologies?

Farah: Yes but it's very difficult. They, I mean, what they would need is someone to sit down and help the team figure out what is adequate for the project. Also, they need like a buffet of all the technologies and who knows it. We had Pablo as our coach here and that helped, he would know, he would say "why don't you look into this technology?". But it's very challenging. That's one of the challenges the teaching team tries to learn every year as well.

Carolina: Now I would jump to graphic identity, visuals that you need to use. Do you have a logo?

Farah: So we have this:



Carolina: Why did you feel the need to create a new logo? Why not use the general CBI logo?

Farah: I am not sure. I wasn't around when they created.

Carolina: For what do you need visuals?

Farah: Presentations, websites, it helps with the communication to the bureaucracy as well: what we are, we are a unit. To anyone who doesn't know CBI, it shows who is involved, where it is, the science, the innovation in it.

Carolina: What is the graphic identity if CBI?

Farah: I don't think we have one, now it's becoming Fusion Point. CBI was the first brand now it's Fusion Point. They need to emphasize the Fusion Point brand because the communication departments get involved to communicate the activities and it gets complicated. The communication departments are the ones that define a lot and they form the team between the different universities.

Appendix H - Interview to Ramon Bragós, UPC Professor of CBI Barcelona

Date: 14.12.2018

Interviewer: Carolina Faria

Carolina: From your point of view, what is CBI?

Ramon: CBI is a course that is intended to gather students from different disciplines to face challenges with social impact and if possible, exploring the possibility of using CERN technology. Challenge Based Innovation [the name] only refers to the first part, solving problems, where they use a kind of framework, like SDG's or a social need. But CBI at CERN has this other side of exploring how technologies created at CERN that can be used, but rarely happens.

Carolina: What is for you the role of CBI?

Ramon: From my point of view, the most important is the learning outcomes of our students, which are huge. Mainly the engineering students learn a lot about team building skills, knowing the mindset of others, because they are very used to a linear mindset. Only when someone detected a problem or a need, proposed a solution, which has some requirements and even specifications, is that engineers enter the project. But this is a small part of the innovation process, so they should be able to participate in the needfinding and ideation phases. Also, this identified need and solution would be better if the engineers are present from the very beginning. So, the biggest value, and they acknowledge this in the feedback sessions, is the multidisciplinary. Also, CBI at CERN has the added value of the singularity, of being in a place which is absolutely different, at CERN, with people that are used to think on the edge of technology, so a place that is more suitable to have ideas that are different than the regular ones.

Carolina: What's the story of CBI Barcelona? I ask because my understanding is that you have been involved since the beginning.

Ramon: We came here [to CERN] five years ago. Markus and the people around already did in the previous year a pilot and defined CBI at CERN. The next year when we arrived in September this building was empty, and we saw the autobus come in the

building for the first time. And then when we came back in November and in February, the containers were here. So, it was built during the first year. But the dean was here, and at the time, the management of the course was mainly made by the staff here of IdeaSquare. In the following years, now at Fusion Point, we took ownership of the programme. Some years we get involved with Italian students as well, but in the last two years, we have worked only with the three Barcelona-based schools, representing three disciplines, design, engineering and business. For example, this year with 29 students we have 17 nationalities, so it is not really needed the international [collaboration]. Of course, it's really nice but also adds more complexity and in that case the added value of having international multidisciplinary is already there. So, we come here for the contact with CERN people and for the singularity of this space, it helps.

Carolina: How has the impact changed over time of CBI? Because I guess the programme has changed has well.

Ramon: I think the first years were bigger, I think because there were more expectations from part of the CERN community and there were more people around and it was easier to get contacts and have interviews with scientists and so on, and in the last 2 years this has declined. Also, in the first years, the topics being open challenges was more focused, so it was probably easier to focus on a technology. Now, this year for example, the challenges are the SDG's, so it's really open and with a social goal. Then, it is more difficult to relate them with CERN technology, until the last stage where they know the solution they will apply, so from the beginning it is not clear what technology will be used. On the other hand, here at CERN, there are a lot of people that are connected with NGO's or are concerned with social problems which have contacts in UN, so this is a way of creating connections with these institutions or with social challenges. But, on the other hand, the connection with the CERN technologies gets harder.

Carolina: That's interesting, that's true. When you open the challenge too much, with what do you connect, with what technology, with whom? It gets complicated.

Ramon: I think we are and IdeaSquare is allowing this, we are putting more emphasis in the social impact than in the use of the CERN technology. So, if it matches OK, if not we

give priority that the concept is relevant to the social need. If it was the contrary, maybe we would start from the technology side, and the solution would be industrial-led, not social-led. There is always a possible link, but sometimes it's a bit artificial. The link has been created once they found a solution, at a very late phase of the project.

Carolina: Why do you think it's worth continuing doing CBI? What's the advantage? Why not another programme?

Ramon: We are in Fusion Point, in Barcelona, and the key point of the Design Factory is multidisciplinary. And this course is an attractor for engineers. We tell them it's not about detectors, high energy, it's about creativity, designing a social solution. But they like to come here and be in contact with CERN people. So the singularity allows us to have the best candidates among the engineers and make more brilliant projects, and also being smart people are motivated and so if this was a mandatory course, there would be people that do not understand the values, it is not the case of those students: they understand quickly and they work hardly.

Carolina: And how do you view CBI in relation to UPC?

Ramon: Well, CBI is a kind of flagship, it is a formula 1. It's a course which is expensive, because it's only twelve students and we have to pay the displacement and the hotel of teachers, students, materials. It's an expensive course, but it's kind of a formula 1, in the same way that a formula 1 is the car where automotive companies test new methods for the engines and so on, we test new methods for education. And then we apply part of those methods to other subjects. So, it's a prototype and a space for exchanging experiences with other institutions and the design factory network. We tell the students: this is available for a few of you, there are other courses that work the same things with less intensity. And in any case, there are teachers that apply part of this in other subjects. For example, we have several project-based subjects in the engineering school, that were initially focused on developing after someone gave the specifications. Now we ask for projects that are more opened. So, the students have the opportunity to add some creativity in the process. And this is a result of having done CBI.

Carolina: So, one of the main outcomes that you take for the relationship with UPC is the methodology.

Ramon: You know that if I have to convince the staff, the teaching staff, the faculty of UPC to apply new methods in that way, having needfinding and stuff like that, they will not follow, it will be very difficult for me to convince. But if I say we go to CERN and we do that there, they think it should be ok. So, it's easier to apply those methods if they have been tested in a singular space like this one, so you have more credibility and people are more prone to listen. If you say I have read a book about engineering education, no.

Carolina: What other benefits does CBI bring?

Ramon: Apart from the skills, team building, presentation, etc. there are two big learning outcomes. One of them is the self-confidence, or I don't know it's between self-confidence and self-efficacy. The engineering students are initially afraid of the relationships with managers and companies, and in CBI they learn how to talk, how to interact with industry. After that course they are more independent and able to define the problem, able to interview stakeholders. So, they gain a lot of self-confidence.

And another one [learning] is having higher standards. So they lose the fear of talking to a scientist at CERN or a high level manager in Red Cross or the UN. They can do that and they gain the confidence to be entrepreneurial. I think in the individual level for the students these are big assets. And these are very good lines in their curriculum. Very few of them have been working with MBA's and designers in a project.

Carolina: In these 5 years of doing CBI with whom do you need to communicate?

Ramon: In our case, the ICT engineering school, the requirement to do the course came from the top, so people of ESADE contacted the dean of the school, and the dean contacted me as a coordinator of the project-based subjects, so it was driven by the management. So, after having done it for a couple of years, this appeared at newspapers and communication department was involved to spread this. The rector of the whole university asked about this and he thought it was a great programme. We are a public university, so the only condition is that we don't ask for money. We use our own money as a school or money from sponsors in some cases. But we don't ask for money from the university, because this is a red line because of the crisis in Spain. But they like it a lot. They are only afraid that it is a model that can hardly be exported to the whole

university. If it was not because of the crisis, this might have been exposed to other schools because the methodology is already defined.

Carolina: And is it a success there?

Ramon: Yes. The students at the end ask why there are no more subjects like this one. They don't know how difficult it is to have this. This is the formula 1, like I said. There is another subject which made only in Barcelona and the challenges are defined by companies and there are 80 students. So, it's another scale. This means we are trying to do reduced versions, with less intensity but with more students.

Carolina: And regarding CBI still, do you need to communicate now the outcomes? What are your needs in terms of communication? Who do you need to show what they are doing?

Ramon: In fact, my only really needed need is to communicate with the students in order to get them, get the best ones for the next years. On the other hand, in order to have institutional support, we have to provide information to the communication unit of the university, in order to have this appearing in newspapers, in the webpage of the university. Every year this course generates a pressnote, one year there was even a TV programme. We had interviews in the radio, 2 pages in newspapers, so it's something relevant.

Carolina: Do you mostly communicate to open signing up or you also have to communicate the outcome projects?

Ramon: As the manager of the course I always have to ask for new challenges in order to have support to that, from time to time, the dean of the school has to go to a conference or a meeting of schools and he asks to prepare some slides with the projects done in some years and pictures about the results, to show evidence to others, and the university asks for pictures and news. Or when the vice-rector of innovation goes to a conference or a meeting, they can show.

Carolina: Farah showed me your logo.

Ramon: The Fusion Point one?

Carolina: No, the CBI one.

Ramon: Yes, well we use it for the slides with the students, I don't know if it's exactly the official logo. So, we have an official logo of Fusion Point. We did that bottom up: we started doing this course, than other courses, then 4 years later the 3 rectors of the universities signed an agreement. So, Fusion Point exists since February 2018 and we have been working for 4 years before that, we worked together, but without a formal agreement. And we had demonstrated it worked, now there is an official logo and an agreement, and the teachers have, not all the time, acknowledged as our professional activity.

Carolina: So, before it was a way of identifying the programme as a collaboration between the three universities?

Ramon: Yes. If you go to a rector of a faculty and say I want to devote 2 teachers in full time to an experiment that is useful for 12 students, during 1 semester, they say no. So first you do it and then you show the impact of that. So, the official logo is the Fusion Point logo, the other logo the people from Design did it, we only have it on the slides.

Carolina: Do you know why you had the need to create a new logo, instead of using the general CBI logo?

Ramon: No because CBI is, we made our own version of CBI, there is CBI A³, there was CBI Mediterranean, when we were working with the Italians, for example. But the CBI logo is not that important, I think that that's why it isn't even in the web because it is something to put in the slides.

Carolina: What is your personal wish for CBI? Where do you see CBI going? What would you like it to be?

Ramon: I would like to have, and we have not succeeded in that, to convince institutions and big companies that it is worth to sponsor it, not because of the results but because the students that result from it will be a lot more innovative. Now they depend on the personal involvement of a few champions that do more work than they are paid for and students paying for their own travels, and things like that. All this paid by an EU project or a sponsorship of a bank would be a lot easier to involve much more

people. Every year we have to invest a lot of time to check how we will do that at a very low cost.

**Appendix I - Interview to Luciana Leveratto, Former IED Istituto Europeo di Design
Professor of CBI Barcelona**

Date: 09.01.2019

Interviewer: Carolina Faria

Carolina: What is CBI for you? What is the goal of it?

Luciana: From my perspective after 4 years doing CBI and of tutoring projects, the main goal is the impact that it is having on the students. Normally CBI is run by universities, IdeaSquare is the only institution that isn't a university. And when we are working at the university, what we look at first is what do our students learn, the experience, the learning outcomes and the impact. So, for me the main goal and impact is the transformation. For me, IdeaSquare is a transformation agent for the students. For the students, especially design students when they finish CBI they see their profession differently. For me, it's the first value. They learn to speak the language of others, as professionals. In the beginning working with other disciplines is a bit shocking or they are not ready or they don't know how to deal with that. But at the end they understand the advantage of working with other disciplines. For instance, one year, I got the news that a group of engineering students from UPC joined an innovation project with no designers, and they said "how come we don't have designers in the team?" So they adopted the role of designers in the team. I think that this happens to all the disciplines: they learn to work together, to listen to other disciplines, to interrelate knowledge.

Carolina: They learn to appreciate other disciplines and their value.

Luciana: And to interact with them and speak the same language.

Carolina: Besides this, do you think there are other roles of CBI?

Luciana: For the teaching team, I can speak for my experience, it is also challenging because we never know what's going to be coming out and we have to learn about the project with the students at the same time. Also, in our case, all the disciplines of the teaching team are very involved, in CBI Barcelona. We have been highly involved in working together meeting every week, so we also learn to work in a multidisciplinary teaching team. As far as the outcomes of the project, I think that they are good and I

think that they have a lot of potential, even though some are a little conservative, I think most of them have or could have a very positive impact. However, I think the students are not in the moment to develop their projects further, after the course. Many of them are finishing their bachelor's, they want to move on to a master's, they want to go on exchange, move to another country, or they need to work.

Carolina: And what is your story with CBI? How did it all start?

Luciana: It all started because I was working at Instituto Europeu de Design, Barcelona. So ESADE has relations with Aalto University, and throughout these relations, the idea of joining CBI came. However, ESADE only has business students, and they wanted to build interdisciplinary teams of students. So, they came to see IED and the director involved me from the first beginning of the project. Then we decided on who could be the best partner in terms of engineering, so we decided on UPC, UPC came and we started running the team. I have to say it has always been a great thing.

Carolina: Now that you've done CBI for 4 years, why do you think it's still worth doing CBI? Why not something different? What is still the advantage?

Luciana: I think the advantage is that new groups of students are coming every time and these new groups of students are having the benefit of the design experience. Even if for the teaching team or for IdeaSquare is the same process, for the students that are joining it's new, and it's a new opportunity to reach the professional culture and skills with a project. What I found that is really challenging, is the credits for the course work differently in each university. Some are more flexible than others. IED is not so flexible which creates problems with the universities with which we collaborate. When you are looking from the university perspective you have to ensure some quality of work for the students, in the academic calendar.

Carolina: Yes, it's the same in Porto as well, design students do the project as a final project, for engineering students it's not recognized at all.

Luciana: We also have some students that finish their credits and do it in any case. As it's something that they have to pay on their own, it's not possible every time.

Carolina: How do you characterize CBI?

Luciana: I think CBI is exclusive, because even if this year the universities paid for the hosting, the rest they have to pay on their own and it's expensive. And it's exclusive because very few students enrol. I think it's disruptive but not completely. I think it's quite dynamic. I think it's quite idealistic, as idealistic as we can get with philosophy. I think it's very friendly, people feel really at home in IdeaSquare. I think it's trying to push some boundaries [progressive], but still, we are using tools that are not disruptive at all [traditional]. It's idealistic in terms of vision, but the outcomes that we've had in the last years were very realistic. So, it depends on what I have to characterize, I could think it could be different. I think it's complex for the students, I think it's really bold, they need it, and it's really intense for them. It aims to be disruptive for the students but it's not disruptive because we are using tools and methods that are not totally disruptive, even though they are disruptive for them [students].

Carolina: One of the hard things to cope is the methods. People want to experiment with CBI, but students need to grasp, so it's a hard and interesting balance to find.

Luciana: And we have to consider that it depends on the university, but in the case of Barcelona it's a really short programme, only 3 months.

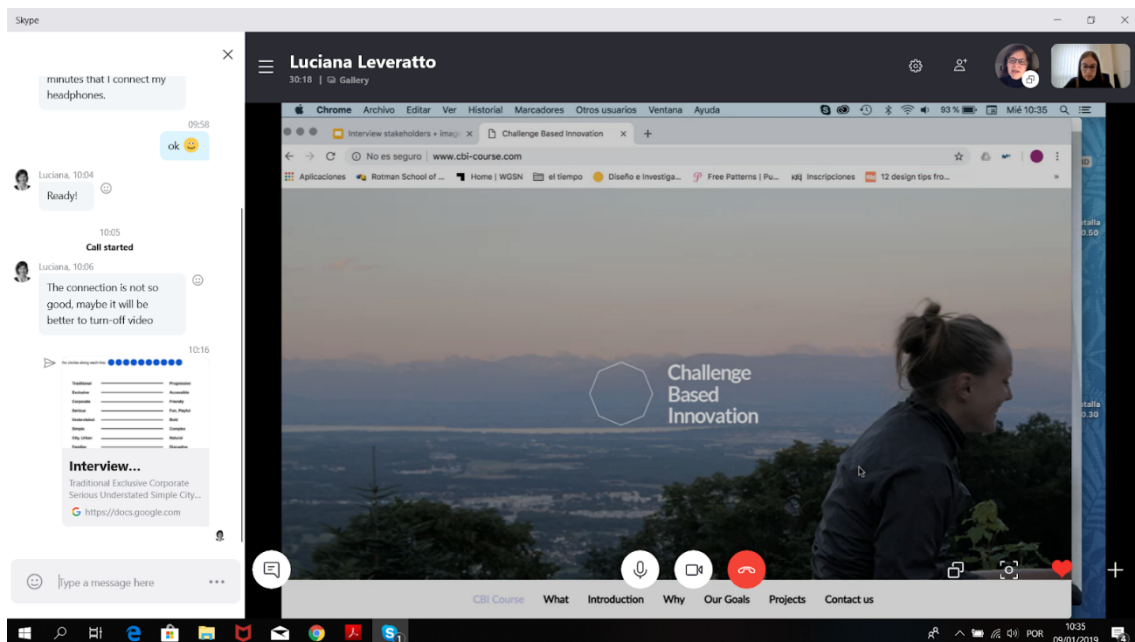
Carolina: How do you view CBI in relation to IED?

Luciana: I think that at the beginning it was hard, IED is a private institution, so it doesn't receive any EU money, it was all the tuitions of students. And CBI was expensive, so it was charged, and I agree with the director that it was charged in the promotion and communication budget. Because at the end, the project that the school communicated and to make a differentiation from other design schools, as an element of prestige and reputation was CBI. It was an investment. That's why it wasn't charged in the education area, it was in the communication. I have to say that internally everyone was looking at it very seriously, not everyone was understanding very well how it was going, I think that it's a lack of internal communication channel at IED. Happening in this area but many areas. And it was kind of disruptive for the school calendar. For the departments that were participating it was something that was different, special, out of the standard.

Carolina: Regarding communication issues, even to the outside for press return, do you think CBI at IdeaSquare could have helped in any way?

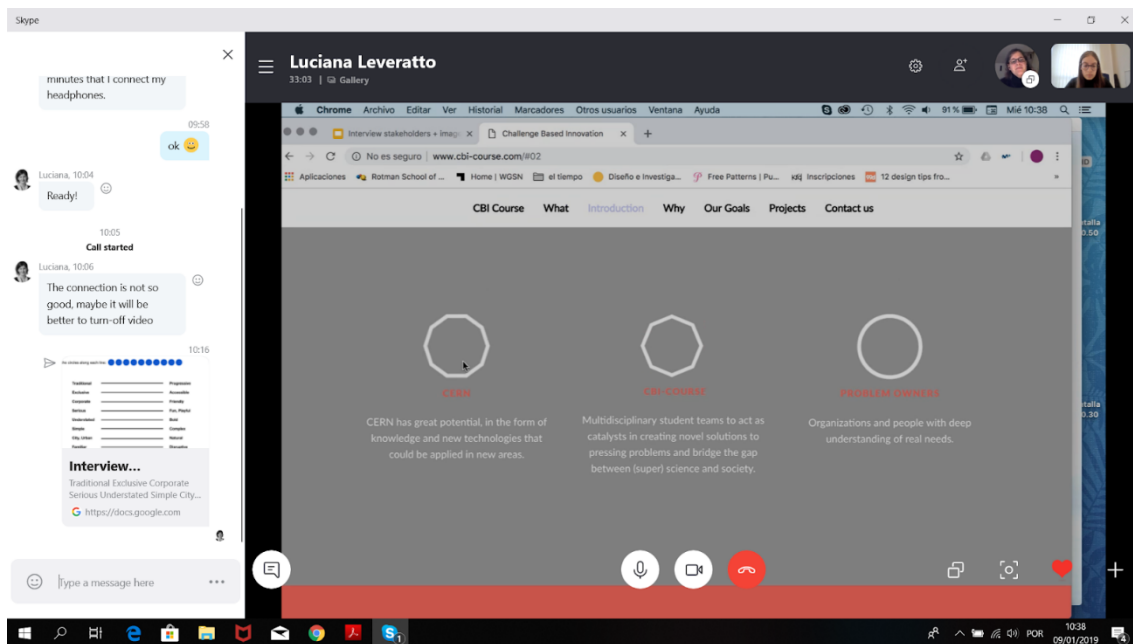
Luciana: Yes, because I think that CBI is like a hidden pearl, hidden diamond, I think it has enormous potential, very powerful but they are not having now the channels, structure to communicating. So, you never really know what's happening, what programmes are running, who is involved in there, to have opportunities in collaboration. Of course, I have to say that the team internally always does a very good job and it's something that I like very much at IdeaSquare, I like working with them, it's the openness, the collaboration base, that is always there in any field. But I know that they are really overloaded. That they don't batch all the points, and that this happens. I think the website is not easy to access and you don't get very good idea of what CBI is, so there is potential but it's not being communicated, so in the end everything is at the hands of institutions.

Carolina: Regarding the website, we can go through the website quickly and you can tell me what are the main things that are missing, what you like.

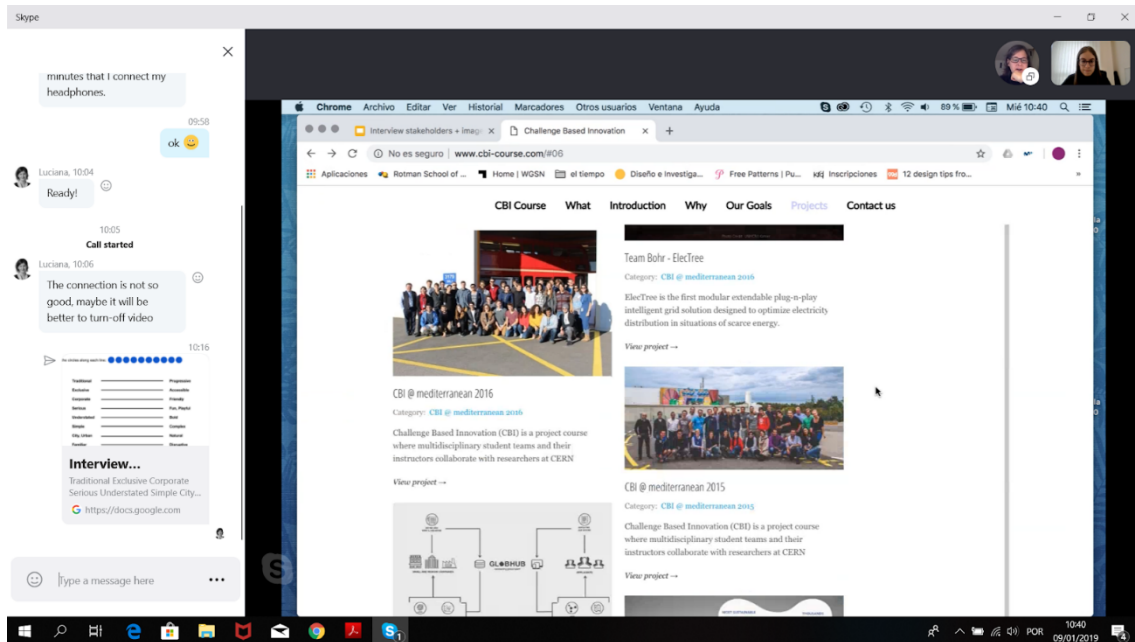
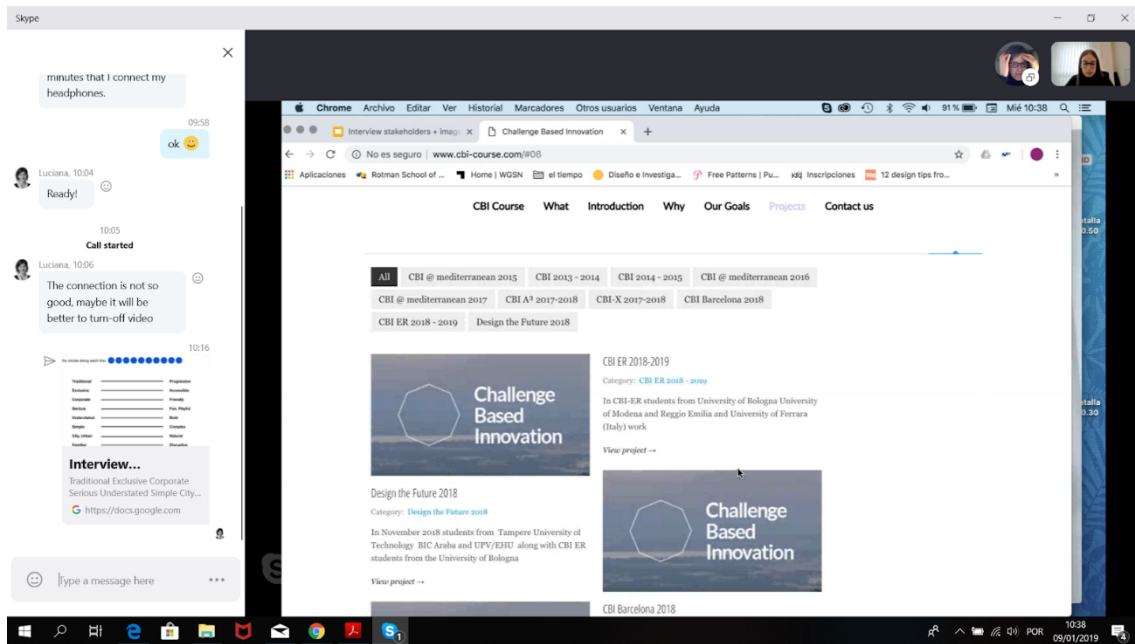


Luciana: [The landing page images] I think that in terms of images, the images are not... I know that Tuuli and Joomla did this with a lot of effort and no resources, so I really appreciate what they did, but I have to say that images maybe are not showing the mood. I understand that this image probably shows the horizon, the land, to look

further, being optimistic and changing the world. With the information that I have, I can add this meaning to the image. But someone who does not have that, should say "what's that?". I think that there were some very good videos that were done in the second CBI iteration, that were done by IdeaSquare, and those videos were very good because we're done to explain the process of CBI. The communication videos that were created by IdeaSquare were very effective. However, when the schools became in charge of their communication, it became really dispersed, because every university was using their own style, communicating team, image style and all let's say visual aspects are different, and we are not having the same intention in how to explain CBI. So I think that in this first year, where they produced this visual material, was very good and it's the material that I still use to explain CBI and it's from 4 years ago so I think that having a centralized recording and material production for the projects would be very helpful. This video that is in the introduction is done by them, I think it's very good and it explains the projects.

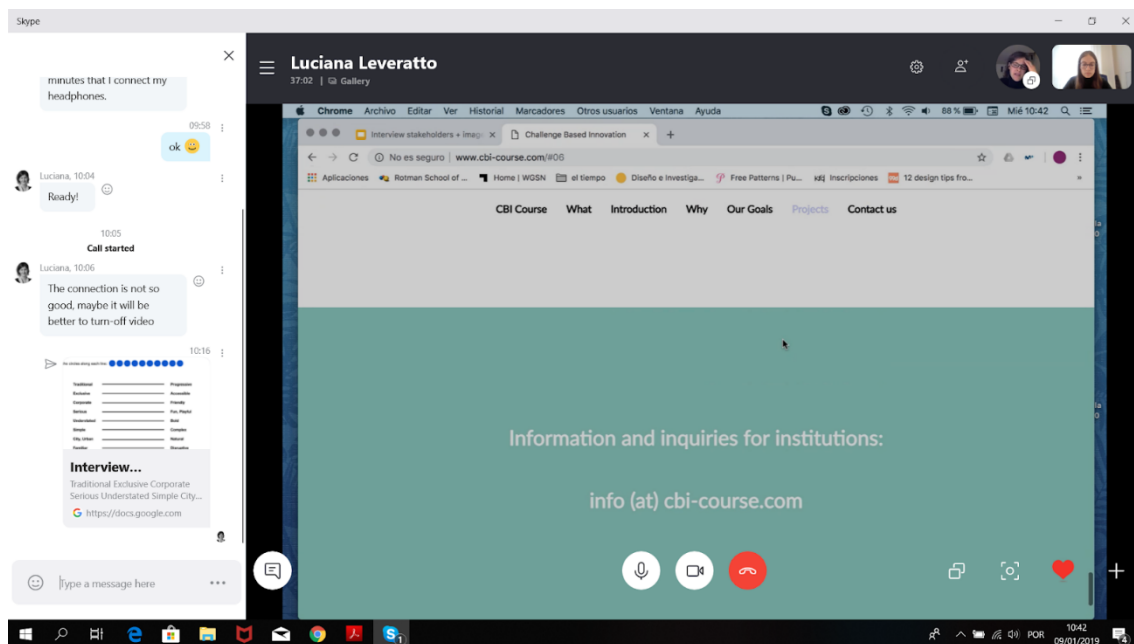


I think the methodology, or the process is not well explained, so I think that that is good that they explain on the website what is CERN, what is CBI projects, but I am still missing how this works.



The projects page is a little bit random. When we go through the projects, I don't know how we navigate them projects, how long they took, who took part of that. I haven't been searching for some time, but I don't know if this information is having the same order and the same content, if they show it in a way that is understandable and comparable. I think CBI is quite organic, but although CBI it's ever-changing, it can be anything as long as it is connected to education and to CERN, there's always a way of finding things in common to make them comparable to each other. Still in the projects page, in some cases there are teams, in some cases there are courses, so I think that

there should be an order, even if it is organic, there should be ways or categories or fields that are common and you can share the information.



In general, there is good information, but I don't know if there are any requirements to join CBI, how is the process, who is able to contact.

Carolina: What is the graphic identity of CBI Barcelona?

Luciana: Well there was not much done. Here, for example, you can see in this video the logo. This is something that we did with Alessandro Maneti to give an identity to the project because it was also 3 universities and at that moment IED was hosting the project, so students were working at a dedicated space in IED. They moved now to the Design Factory, but it was the space. No one provided us with anything, we didn't know there was a logo, I think there was nothing at that moment, so we did that logo with the design department at IED to put together the names of all institutions in communications.

Carolina: You felt the need, why didn't you just use the CBI logo that we see on the website?

Luciana: Because we never knew that it even existed, in fact, we are talking about five years ago. I don't know, no one told us about that. In our case, we are three universities and we were not knowing at that moment how this was going to be working, because

it was a pilot, an experimental project and we did that before arriving to CERN the first time.

Carolina: For what did you need to have a graphic identity?

Luciana: Because it's a flagship course, so it needs to have an identity and you need to differentiate it from the rest. I think it was important in this case, because it was a way of putting the names of the three universities and CERN in the same image and also because it was a flagship it was important to give it an image.

Carolina: When doing CBI with whom do you need to communicate?

Luciana: First with students, with internal departments at the university, with students because we have to convince them to join and in this case they have to pay their tickets and now for the first year, I know that last year, the hosting costs were covered, but before no, they were paying tickets, hotel, transport, etc. It makes it expensive. Also, we need to communicate with students, who would choose to do CBI as part of their curriculum. At the moment I was there, I was assuring that the learning outcomes were the same if they were doing CBI or other subjects. There were also students that said On the other hand, we had to communicate with outside companies, because we were always looking for sponsors, someone that could pay the expenses of students and would like to join, and then to the outside partners, the parents of students, friends, other institutions.

Carolina: How did you tell about CBI to new people?

Luciana: I show the videos that I told, that I will send after and I prepare my own presentation. In fact I explain the projects in many events and conferences. At the end I chose my own images, I chose the ones that I took.

Carolina: What were your difficulties while doing CBI?

Luciana: My challenge was time because it's a very demanding programme, so you need a lot of time, much more time than any other course for a few students. So it took a lot of management time because you need not only to manage or prepare the class but also manage a lot of issues internally, so it took a lot of time. Another challenge comes with CBI students being the owners of their own process. Our role is to objective

was to guide them, let them follow their own process and they are the ones making decisions, but sometimes, from a tutor's perspective, we don't agree with the decisions. So, sometimes we have a lot of discussions internally of how far we should go. I've regretted a couple of times of being too flexible, because I think at that moment we should have said no and it's not easy.

Carolina: Where there any difficulties with CERN?

Luciana: Yes, it's hard to reach CERN community, people are really busy so at the end, I think that's probably something that anyone will tell you, being at CERN is great because it's a place that is amazing and the only fact of being there makes a difference, but in some cases at the end students say "why are we doing this here and not in another place?". Because the link with CERN technology is weak and it's difficult to get to CERN people, because they are busy and focused, so it's not every time they have the time or are ready to help.

Carolina: Do you think that there are other things in IdeaSquare that can be done to help with these challenges?

Luciana: It's something we have been asking ourselves many times. I think that they do all their best. One year I did with my design management students something very interesting, where I had groups of students doing a project about how connecting CERN scientists or community to connect to IdeaSquare. With the students first we worked in Barcelona and someone from CERN, who was Claudia Marcelo at that time, came to Barcelona to meet the students, and explained what was IdeaSquare. The students did research, then they did field work for three days at CERN. After that the students worked on a presentation and some proposals. That can be interesting because there were many insights of how to connect IdeaSquare with CERN community. I think that there are new channels to be established that are not working now. And one of the tasks of the students was to develop an open day. This was something I insisted in and the open day was coincident with CBI students being there. I had this vision from the beginning because I think it was that the students being there while other things were happening at CERN. So, students really appreciated. A great interaction between IdeaSquare and CBI students.

Carolina: From this experience, what is your personal wish for CBI?

Luciana: I would like to see CBI more connected between different programmes. Gathering all CBI programmes in IdeaSquare at the same time would be ideal but it needs to be very well organized to make sure that everything runs smoothly. So I think keeping this connection between different CBI's is very important and creating more learning initiatives. Then I we wish we would go in more in depth with the CERN community and expertise. Having a channel or an opportunity or in the end an agreement or tools for students to move their projects after CBI, because the projects in most of the cases end there. And making that continuity even if it is less experimental for IdeaSquare, I think it's always having a good impact for students. I think that keeping it running even if there are no changes is still having an impact.

Carolina: I had seen your videos when you talk about CBI and I now realize that the professors and even the students in the future can be the ones who communicate it. If this is better connected and more explicit, people will feel more comfortable to talk about it.

Luciana: Absolutely, because the same happens to me. We do research, we publish papers, we talk in many places about CBI, but I think there is no systematic way of sharing that. I have to say that I am super found of IdeaSquare, it's always interesting and fun, but sometimes when I was at IED, there was no time for sharing and collecting information and it's bad. And it happens when we have a lot of things. So, CBI is missing systematic way of collecting information and to share.

Appendix J - Interview to Clio Dosi, CBI Professor at UNIMORE University of Modena and Reggio Emilia (Italy)

Date: 27.12.2018

Interviewer: Carolina Faria

Clio: So our students they want to put on LinkedIn the experience that they had and what happen is that they always try to put CERN, which they can't do it. And I saw that the SUGAR network did something like a SUGAR logo, that they can apply next to the university one. So why don't they do such a thing? I wanted to propose that to the new guys there.

Carolina: That's a good idea, last year we had the same problem with communication. What is CBI?

Clio: For me, CBI still remains an unsolved experiment of a method that can transfer CERN technologies to society. Which means a lot of things, they have their Knowledge Transfer Office, they are good, very well. But why do we need such an effort? Why students? Why not just leave the things to the KT Office? So, the KT Office has a very specific target, which is companies, and, from our perspective, CBI has as well. So, CBI is always targeted for companies because our students have always been thinking that it's fair, that it's right, and to pay for the scholarship we need companies. Also, our approach has always been that we want to implement something, we don't want projects that just remain on the paper and that's why we need companies. Because it's quite rare to find students that want to take care of a start-up or something like them. For them, especially for engineers and business students, it's much better to have something that they can state on their CV that has been implemented and they have designed that. So for us, our companies are as important as students. Let's say that the difference is that the KT Office has a very marketing-oriented approach, from what I have seen, so the CERN projects are so complicated, and it's false that once they have been applied in LHC they can be applied in the real world because it's like 10 years of development and adjustments, so it's very problematic to transfer them into society. For me, CBI is the next part, the next phase after the technology, we use students to find a possible application and then if you are successful, the results of CBI need to be developed by technical experts from the companies and also from CERN if they

wanted, to be really implemented as it has been designed. I am saying that this is an unsolved challenge, because still we don't have a strong method that can be really used to be 100% successful.

Carolina: How do you deal with the implementation? Is it agreed with the company that the projects are far-fetched and that the company will have to deal with the implementation?

Clio: Yes, what we used to state for the companies, there's a huge opportunity out there, they have a lot of technologies and they could find a technology that could help the company, but we don't assure this to them, because the problem solution comes before, so if we find a solution that actually doesn't need any CERN technologies, students will go for that, then if you have found a link, usually they specify the technological output and then companies can be in touch with CERN if they want. Let's say that in several years we've had several projects, and some were tech-oriented, and some companies decided to implement that after a while. Then maybe it's 4 years of work for the companies, or the company says they keep the project but then we don't know what happens next. We are quite satisfied but still, we need, as a community of CBI, to work closely to find how to solve these issues.

Another point is that, because I have done some research on that, on how to approach this method, and the point is that you cannot solve it by fixing both the technology and the context. You either fix the context or you fix the technology. For example, I want to fix the context and the context is surgery in hospitals, then we can use all the technology that CERN has or nothing, and you have a sort of human-centered design approach. Otherwise, you say if I start from augmented reality and I don't care who I am going to help, I know I will help someone in a context, but I have to use augmented reality as a constraint, so it's a tech push.

Carolina: Is it either one or the other for it to be successful on the project?

Clio: No, in the tech push, you have to use the tech to be successful and in CBI we are not in that approach, we are in the context approach, so user-centered. And that's why

most of the time we failed in having CERN technology in the project, because of course, it's user-centred design, so I don't care which technology is inside.

Carolina: What do you think is the role of CBI for students, companies, universities? What do you think people take out of this?

Clio: For companies, it's a way to get in contact with a super innovative centre. For companies it is "I want CERN as part of my strategy". Then most of the time the person you are in contact with is thrilled to have such a portfolio of experts, for them it is awesome to have a phone call and they are in contact with CERN experts, which are profiles that on the market, I mean exist, but are hard to be caught. In other research centers, those kinds of researchers do not care to be in contact with companies, or they are all their competitors and they cannot be in touch. So, it's great for the companies. I think it's fascinating. I think that for the companies it's the fascination of having such a portfolio of experts.

For students, it's the experience and the growing that they can have with this programme, so it's the same as SUGAR. The way we explain it to students. We tell them you have to work part-time with us for 5 months and basically, you either go into the SUGAR programme or into the CERN programme. The difference is that SUGAR is really user-centered and CERN has this tech side, let's say in a parallel way. For students, the point is the growth of their innovative design skills.

For the university, it's a matter of strategy, because some universities want to put this programme in the international programme. I don't know if you know how universities work but you get points in Italy, at least. Not only in Italy, everywhere, there is a worldwide commission that gives you points considering certain elements. How much you are international is one of those elements. So, some universities decide that they want to put CBI as a programme because they get points for that. Others they want to use that programme to have an impact on their local area, so they really use the programme for the third mission of the universities, meaning having an impact on the local area, so companies, students, people, whatever. Also, for universities this is one of the rare programs that is multi-disciplinary, it's really rare to have such programs and all the universities that I have been working with really push on that element as well. Also, yes, CERN is a brand. I mean all the universities in Italy have a connection with

CERN already but it's in the physics department. It's not that you do that for the connection because if they want, they already have, but not with this kind of twist.

Carolina: Yes, connected with innovation. What is the story of CBI with UniMore?

Clio: We started when CBI did not exist, it was Harri and Tuuli from Aalto and us, me and Matteo from UniMore. Actually, you know what, St. Gallen called Matteo and said "CERN has contacted us and they want to do this kind of programme, but we don't have time. Since you are the nearest in the network, would you like to join? It's 2 weeks in August" like that. So they didn't know what it was either, so we went there, Harri just arrived from Aalto and Tuuli as well and nobody knew what it was. And we pushed the first CBI for one month, from July to September with 6 students of us, 6 of Aalto and 6 from Athens Polytechnic. So that is how it started for us. The real story behind is that the top top top research, which at that time was Sergio Bertolucci, the Head of Research, decided that they wanted to create a European hub to push innovation in Europe. And they actually managed to do that because after 6 years now they have this programme that is called Attract, and that's the second result. Besides the first building, the second element of this long-term strategy is Attract. And CERN 1 will be an escalation of Attract. To me, it remains an important element that you need to develop a strong method, BUT It still is a strong success story.

Carolina: After all these years of doing CBI what's still the advantage?

Clio: I have asked this to myself several times and we have had this discussion internally of whether to participate or not, because honestly, you can use it as a programme for students and companies, now we have in our portfolio both SUGAR and CBI, so why CBI? Because there's a community there, this idea of CERN and there's a European centered network that we like and it's one of the things that I really push. Because SUGAR is there, it's Stanford, but the Silicon Valley model is not relevant for us. It's not a model for civic engagement in Europe because it's totally different the way they live, and they do business. So, we want to create a community that is at the centre of innovation in Europe. That's why we still remain there, because we really want to have our community there, besides this SUGAR one, with this European flavour and

European culture and having this kind of impact. Also, we made some mistakes in the first years. It was not a mistake, you know it was a decision, that was worst at the end. We had to decide whether to go on with a clear statement for companies and other universities and enlarge the community or to experiment on the method. Because if you have sponsors you are not so free with experimentation because if you fail what do you say to them? And with other universities as well, because we wanted to have Porto or Spanish universities in the network, like ESADE, UPC, IED, and we really worked to have them with us and tried to transfer the method to them, so we worked together a lot. You cannot start saying to other universities, "we are experimenting, we don't know what the result is" because they get shocked. So we understood from the first year, but I would say it was very clear from the second year that this method wouldn't have worked for the transferring of the technology but we decided to suspend the development of the method for some years in order to let the community grow. So why there? It's a community, I want to have a European network and we also want to adjust our process with those elements. For instance, in SUGAR you have a lot of strong procedures and elements to follow, so you have common milestones and Winter presentations, and Summer presentations and whatever. These defined elements establish the moments for the community and make the rest of the work more flexible. So you can decide to work with whom you want to work, how do you want to experiment this year, so it's easier than in CBI where each programme defines its own dates for presentations, programme timeframes, etc.

Carolina: Characterize CBI.

Clio: I would say that it's more traditional.

And there was another point that I didn't mention to you but it is important. So CBI started like that, and when they realized it was really hard to transfer CERN technology, it became closer to the United Nations Sustainable Development Goals, so how to impact with a positive twist the world at large. Of course, I am pro impacting the world in a positive way, what I do not agree with is having those kinds of challenges like "we want to help refugees or third world". It's not because I don't like it, it's because this kind of programme cannot support such challenges, you don't have time, nor money to go and do real research on the field, so if we want to have a nice result, we cannot

afford to have those kinds of challenges. In our case, we have interpreted that as a first world good impacting, so like ageing society, or like how to improve the transport of frozen food, so that we don't waste a lot of petrol.

Carolina: It makes a lot of sense when we think of projects like the mosquito nets used for fishing. [Going back to characterizing CBI]

Clio: It can be considered accessible, friendly, fun, and playful, because that is really in the identity of CBI and CERN. CERN has an open model, so it has to be friendly and accessible. Of course, CBI is a bold project, if you consider the goals: having an impact in Europe as a model and impacting the highest number of people in the world. Now they are working with MOOC (Massive Online Open Courses) they are experimenting with those things. That's why I say it is bold, but not 100% because then somehow, I feel that it is a bit slower in a few things. It is complex because it is hard to explain this model and the technologies. Considering familiar versus disruptive, I think it is more familiar because in six years I really didn't perceive strong support in saying "ok let's push for these things a lot". So, it's extremely friendly, extremely open, but in the end it is like "do your own", which is in line with the policies of CERN - I open my building and resources to you and then you can do your experiments. That's why I put a steady stable rather than dynamic. I think it is idealistic because I think that if you want to find a way to push the technology you cannot ask, I mean, we cannot be aware that we cannot ask universities to find sponsors on their own. Because sponsors then want a result and you can't experiment on the method. I would say a bit more on traditional. Especially in the first years, there was this community that was very near design thinking and those kinds of things, so it was a very traditional approach.

Carolina: What are the main difficulties while doing CBI now?

Clio: The ones that I told you. First, setting the expectations of companies and of students, because you start with the expectation of super tech elements, you explain to them that you don't care about technology at large but you care about technology as a way of impacting the world, and then you have to explain to them and they realize that it's quite rare that they find technology to be applied in their context and it's hard for them, most of the times. Mostly for the students and some companies. Partly it's that, a mixture of the method and setting expectations for students and for companies. And it's

hard also for the universities, because after a while maybe you have colleagues from the engineering department that say "then what happens? Six years and how many times have you used the technologies? And you know".

Carolina: Yes, there's some sort of pressure. When doing CBI with whom do you need to communicate?

Clio: We need to communicate to the students because we want to get a lot of applications because we want to select the best students. We are not finding a way to get 100 students, because we don't want them. This year we have 40 students, so I don't think we can scale more than 60. So yes, students because we want a lot of applications, because we just want to select the best ones. We want communication towards companies, it's obvious, because we want companies that, we have this approach that aims at having a cultural transition of our companies, so to be innovative, to do innovation, on the way they see students, so not as a way to explore students, as they cannot do anything, as a way we need to empower people of having an impact in the world, so that's also our commitment to the companies.

And then also universities and institutions, also regional and national institutions. Like regions, municipalities.

Carolina: Do you want to communicate the process, what students learn or also project outcomes?

Clio: For us is more the aim, not the project, nor the outcome, it's the why are we doing CBI, that is more important for us. This growing, this process of cultural transformation, both for students and companies. Then, of course, we need to explain the process to explain this aim, and results are just examples to explain to companies and students what happened in the last years.

Carolina: And how do you usually tell about CBI to other people?

Clio: Usually, we start with a conversation, a very informal one, and then after a while, we use some slides, showing our approach and some examples. We are not specific on explaining the process because it's too complex to explain.

Carolina: Do you have graphic visuals, branding?

Clio: No, we made this kind of horrible logo with our region behind CERN, so it's not really something that we keep so every year we ask ourselves, shall we create something? We have some designers that are very pushed by themselves, so they may create a logo or something nicer. For example, last year, we created these cards which are "license to dream". A colleague of mine created these cards like a license.

Carolina: This is for me to understand what your needs in terms of communication are, but I guess it's more in terms of slides and these new things that you may create. This is the last question: what is your personal wish for CBI?

Clio: I wish two things, first an intimate experimentation for the method. So that's very personal, I hope to find a year where we can have the experimentation without being worried about other things like sponsors. Then I wish to have a larger community, because now I know that we are in a community but it's not like SUGAR that you have twice a year a moment where you meet everyone. It's good because it's flexible on one side, but on the other side, you don't see this community. I mean until two years ago we worked with the Spanish guys, then we met you and the Australian, then three years ago we met the Norwegian. Still, we think that there is someone there, but we don't really meet once a year, or twice a year like SUGAR. I mean for one day or two days there is a method sharing moment.

Carolina: That's a good point, the community, because it exists anyway. Do you have anything that you want to add? This for me was amazing, you really explain your ideas and your points really come across, so it was great to have your perspective.

Clio: Let's say that in recent years I somehow felt the absence of a figure that could really be there to help us from the methodology point of view. Let's say that I was the one that was expert on that side. Which is OK because it's my work and I also have to help building the CBI community and we took that role as a university, but maybe in such a place they should really find someone with expertise on that side. Maybe, I am not sure 100%, because either you take experts of a lot of things, experts on prototyping, experts on European projects, experts on simply community building, or you say I take experts on the method side. So, I would also love to have experts on that side, but

maybe it's a result of the fact that there is no meeting with the community, because if I had that meeting, of course, I have a lot of experts like me. And I could share with them some insights and learn something new. If I always go there as a single than as a group of universities, then you ask yourself, why don't I do this at home? We also have to design for professors who want to run the programme, not only companies and students but also professors who run the programme themselves. So, what do they want? My latent need is this one.

Appendix K - Interview to Christine Thong, Swinburne University Professor of CBI A³ (Australia)

Date: 06.01.2019

Interviewer: Carolina Faria

Carolina: What is for you CBI?

Christine: To me its goals has two folds, one is with educators and it's to inspire and develop the next generation of inventors and teach the people to be curious, responsible human beings. That's the overall educational purpose. And the second educational purpose is to really specifically learn about technology driven innovation. So, methods for designing with technology, design for the future, with different tools and things that you learn along the way, and that becomes like an enabler. So that's a secondary goal from the educational viewpoint. From an outcome viewpoint, is broadly to find and imagine applications that connect CERN science and technology to societal need. Everything that CERN does falls underneath that broad goal, so CBI is of course a face to do that as well and to do that with universities where whether students who maybe have the right balance of intelligence curiosity and, I am going to ease the word, untated, by too much time spent in industry or discipline set up, so that nativity that often gets mentioned but trying to bring forward being naive.

Carolina: Are there other goals? For example, regarding the university itself?

Christine: For the universities, I think it's a chance to work with collaborators, it's reputation.

Carolina: And what is your story with CBI?

Christine: Basically, through the Design Factory Network, I visited CERN, I think in 2015, we had students in 2014/2015 participating in CBI. It happened in the same way as most of the Design factory programmes, most of you are open to exploring different things and what happens at CERN sounds interesting, you look at and experiment with. For me personally I have got a research interest in tech translation, I did a PhD where I used Design with material science to develop new stuff, timber, so I had a personal interest in doing that as well. And the university has an interest, there are people in Australia

that collaborate directly with people at CERN, so the university has an interest to explore that. Personally, it's interesting to me because of my research background and educationally it fits in line with what we are doing at design factory. So that is personal interest but also for the educational viewpoint it's a way of inspiring students it's another programme I guess that has a point of difference in it, it's tech-driven, and that's a more difficult innovation process, when you have to harsh your solution and there's not a lot of methodology to help you guide that, so that's an area of growing interest and importance and you get to sort of translate and reframe different innovation processes, when you've got a specific capability in the beginning that you need to integrate and deal with, so it's a transferable and valuable skill. In traditional design thinking, we use human-centered design, and that's what it is really structured for. So, we found ourselves in it for all sorts of reasons.

Carolina: And is it that, because there are not so much methodology to deal with tech driven innovation, is it also a learning experience for you as teaching team?

Christine: Yes, it's getting to do something different and interesting.

Carolina: regarding the goal of CBI, for you it's student learnings, not project outcomes?

Christine: I think that's a secondary goal, so it's nice if there is something that comes out of it but in the end of the day if you are designing for A³, for 2030, it's really big and hardcore to have something that would be implemented, even though you have to look at 2020, 2025 and 2030, you are relying on the students within the team wanting to be entrepreneurs or them encountering an industry along the way that wants to take that up, and because CERN tech is so obscure, it's quite a hard challenge. So they've got skills to understand stages for implementation that bring forward something that could be taken up by someone else, but there is still a challenging gap between the things that happen in students projects at CBI and how it can actually be realized and accessible by others if the team doesn't want to, because quite often they are still studying, they are committed to things that are still going on.

Carolina: What are your main difficulties or challenges while doing CBI?

Christine: I think maintaining a global community and disability when you are not there to connect with CERN coaches and people, and IdeaSquare is also very difficult for us

when you don't go back to show your work, how do you maintain that strong connection. The outcomes get celebrated by people luckily. How do you actually communicate the outcomes of the work that other people could actually reference and learn from and adapt or adopt. That kind of thing I think is very difficult in the world, knowledge dissemination and transfer of outcomes.

Carolina: You've been trying to do that with the website. How is it going?

Christine: I don't know, it's been two weeks since we were at CERN and there are not many comments on the website. One thing we want to do this year having members of the global people sharing and seeing how people connect and how it works in that view point. And I think it will come down to the people, rather than the website itself. In terms of other people referencing work, I don't know what the answer there is. I don't think a website can solve it.

Carolina: Do you think IdeaSquare there can help with it? With the sharing of the projects?

Christine: Yes, I think they've highlighted this. The website needs a bit of configuring and updating to be able to make work more accessible and to understand what past students have done and also where projects have gone, if they have gone somewhere, it's usually the students that do something interesting for the change of mindset, rather than projects being taken up. When you compare to other programmes that Design Factory often do or any other institution might do. So I am sure other collaborators like the Royal College of Arts or other things, when you do projects is not in act to Design Factories, but when you do projects with external partners you are connecting up with the local council or with a company, you really have a stakeholder there who is looking to implement in some way. And you don't have that with CERN or CBI, trying to seek or demonstrate who might be. Having time to develop a relationship and gaining trust, maybe building a relationship where they see and give other resources to that. That's a challenge. Comparing to other industry funded challenges, it's already a funding challenge to do it.

Carolina: What is the graphic identity of CBI A³?

Christine: What is in the website is essentially it. We just used a font that was being used from the design factory Melbourne, which is no longer being used by the design factory. We just keep using sort of the blue colors with that. Museo font. We don't really have a very strong identity. We don't have a logo.

Carolina: Do you have a need to create a graphic image? Because you can also just use the general CBI logo.

Christine: Yes, so for us it's important or for Swinburne, it's important that there is a separate identity for CBI A³ because there's an interesting resource, like time. But also funds to send people to CERN. For the reputation of delivering a programme. It's not just giving students a nice experience but it's also building Swinburne reputation by leading it. Having a prove that we are leading a programme is also very important and it provides a piece of evidence for that.

Carolina: When doing CBI with whom do you need to communicate?

Christine: Other people in Design Factory, immediate partners that we are working with, or people that want to come and be part of CBI, from the network. We need to communicate with IdeaSquare, other people at CERN in terms of coaches. A range of stakeholders once user-centered research happens, once there's a project direction and there's input from, for example last year with food waste, it's a challenge in the hospitals. So, going and understanding more about food waste in hospitals, talking to people, yes the website can be shared as something to explain what the students are doing broadly, but then specifically to their individual project, so there's a need of reference when we are contacting people.

Carolina: Do you have to talk to people in communication office or something like that?

Christine: No, so our communication office - marketing, branding, outreach - is really understaffed, so we basically do everything ourselves, because even if we would get their help, we would basically have to do everything, and they just push it to a channel. So that doesn't help. The website does get used internally for different people to know what we are doing.

Carolina: And for students as well to get new students?

Christine: No, we don't use it to get students, we use it as a point of reference for students who are interested because we get people into global programmers so we use the design factory website, not well but we use it, and the CBI website gets included as a link in a pack. So yes, that's a good point it does actually get used for that indirectly.

Carolina: In terms of people you need to talk to, doesn't have to be with the website, for example the dean, directors, show why the programme is valuable, etc. Is this something you have to do?

Christine: No because of structure, of the way that design factory Melbourne is set up, so Nate, the director, would be the person to whom I would have to report to and I don't have to convince her of anything within the programme, so I might have to have to talk to other people. So we are thinking of expanding CBI A3 and doing different versions at secondary level, so develop curiosity in kids as part of a larger research center for astrophysics, dark matter, particle physics, so collaborating internally in Swinburne University but also Melbourne University, so some people are also at CERN communicating how it works, what is the sort of outcome to further research and expand the programme to other domains locally. So, it's part of a seven-year research grant that is in for that. I use the website to help explain to people in that programme, in that center.

Carolina: It's funny because in A³ it's already hard because to combine CERN technology with society, but this seems harder, it's such a big mixture of people.

Christine: Here I think that it will add to the number of different technologies, so "here's the stuff that comes out of CERN, here's the stuff that comes out of ANSTO, can you use both in any way shape or form, or what can you use from either?" I think just increasing the pull of potential technologies, and it might be for the Center great that they use a CERN tech, but the goal is to try to use an ANSTO tech. That is what I am hoping, but I don't know how it will actually work. I am worried now if we actually get funding.

Carolina: Yes, but that will be pretty cool, especially with the high school kids.

Christine: That will be a PhD, that's a PhD scholarship to someone to explore how there is a way that we can do that.

Carolina: How do you tell people about CBI, to people who haven't heard about CBI? Do you still use the website like you mentioned before?

Christine: Yes. Because for me last year I had a really hard time explaining what it was.

Carolina: Now this is the last question, where do you see CBI going?

Christine: There's ways that it can connect with reality better, for implementation, without compromising designing for the future and thinking big. But how steps sort of be taken to or chunks of projects be taken to develop further, not full outcomes, it can only be chunks because part of the project of designing for the future is to help shape what it is and to be provocative, it's not to design something that is ready for implementation. It is to help shape and consider what our future could look like, should look like and provoke conversation around that. So maybe that's also facilitating such conversation. I think that some people mentioned that already, that this was the goal of CBI, like how to connect design and technology better, finding the bridge, the methodological bridge and yes that the challenge is still there, that the solution hasn't been found yet.

Carolina: Do you have anything else to add?

Christine: I think that one of the challenges is the time it takes to wrap your head around it, for students, to effectively engage in the process and understanding CERN tech enough and in a way that you can integrate it, so that's always a challenge for the student teams to, CERN technology even those it is obscure to be accessible that they can meaningfully react to it, to each challenge. What's on the Knowledge Transfer website isn't sufficient and there's ways others and pieces of science and tech that aren't there, to sort of find out it's a huge undertaking. To have some kind of one shop stop list would be almost impossible, and it would require a huge amount of resources to put together, but that's always what students are searching for. So, I think that actually language, so being careful about speaking to scientists, how do you present this in a way that CERN scientists, and they are actually from all different backgrounds, actually they will value and be interested to understand what it is. Because we have our own language, how do we make it also accessible to that environment without then alienating the rest of the world?

Carolina: How to get them involved, yes.

Christine: Yes, and it was interesting, this year, it was challenging last year to cold approach people at lunchtime and get interested to talk about the projects. We did it again this year and we did it at the end of the day and no one had any problems talking to people, like we had to drag people out of there to IdeaSquare. Like at 4 pm. And they didn't seem to have a problem communicating and explaining, so in a crude way showing people prototypes and things, what they are trying to do. And it is becoming a bit common that people have heard of IdeaSquare, but also there is no sort of pressure, so if they can help them, they can, if they can't, oh well they can't. So, it wasn't a problem communicating then, and they really didn't have very good props. We did have the same, they had flyers so that people could go find out more about their work and find things online, so I think that helped them, having something to give to people. Having said that, no one was curious enough to come along and do anything more than just talk to them on the spot. So further engagement is a challenge, communicating the value of this to get greater...

Carolina: There was a professor from Barcelona that had an idea to approach the entrepreneurship clubs at CERN.

Christine: I think that IdeaSquare already do that, because they host the meet ups, I think they use that as a pool to recruit coaches to the programme. I think there is a bit of a connection happening. But I've got really little knowledge so it can be something that can be pushed far further, that's a really good point.

Carolina: Maybe finding other clubs and things where people get social and stuff.

Appendix L - Interview to Mariana Moreira, coach for one team of CBI A3. She is a Doctoral student in plasma physics, doing her PhD in CERN.

Date: 18.03.2019

Interviewer: Carolina Faria

Carolina: What is the CBI that you are coaching?

Mariana: CBI A³, organized by IdeaSquare.

Carolina: And is it the first time you are being a coach?

Mariana: Yes.

Carolina: What is CBI to you?

Mariana: As I understood it, the idea is to gather a bunch of people and give them some challenge and the context for that challenge and then have them be as innovative as possible as they address this challenge.

Carolina: And what do you think is the role of CBI?

Mariana: I think it's important to have this kind of activity because other approaches by, I don't know, industry or research institutions maybe they are a lot more formatted and constraint, they think about budget. Some other constraints. So I think the point of CBI is to think completely, to think out of the box, to use other approaches that is impossible for a research institute or industry to take, so I think it's like edging your barriers when addressing the challenge.

Carolina: How have you heard about CBI in the first place?

Mariana: I think there was an e-mail that was sent from CERN, so I this e-mail through CERN, through IdeaSquare, it was either an e-mail or a post on the Facebook group, I am not sure. But in any case, there was just this announcement about this course and how they were looking for CERN mentors and I think then it went a bit of what our role was supposed to be. For me it was completely new.

Carolina: Did you hear about CBI through the possibility of being a coach?

Mariana: Yes exactly.

Carolina: And why did you decide to join?

Mariana: I thought it might be interesting. I mean it wasn't immediate, I mean at first, I was trying to understand what this was about because I am not someone that comes from design, or from this type of education, I guess. I tried to understand what this was about, it seemed interesting also because of soft skills part, because this was also a new role for me in general.

Carolina: That's interesting the part about the soft skills. Because I guess you are talking about something that is sort of familiar to you to people who have no clue about it, from different countries and everything.

Mariana: Exactly, I think it would have been very interesting maybe challenging to be in this role. I mean the whole concept of this course is very new and very strange, so I thought it have been nice and interesting, talk to people that are from a completely different perspective than I am. I come from science they are coming maybe from all kinds of backgrounds.

Carolina: What are the tasks that your coach job involves?

Mariana: They offered us an information session so that we all knew what this was about and what our roles more specifically would be our tasks that we try to be physically present in these events that they were organizing. Of course, not all the time, because it's long term activities. To be available to answer questions, to give input to what they were doing, and generally one point for me was to not feel too responsible for their work and instead just give them some pointers, show them, pose a couple of questions that they can think about.

Carolina: To question, to give your own perspective.

Mariana: Yes, really to guide, at the end it's not the same job as a supervisor or a project leader, it's just to give as much information as possible and many times this is just channelling them to a more appropriate source, because we have our own backgrounds and we may not know about a specific thing, so I think this was part of it. To have an overview and be able to guide them.

Carolina: What is the best part of being a coach?

Mariana: I think, for me what I liked the most was to be a bystander to be able to help the project but not feel any responsibility. The way that they talk to us, the people organizing the course, they really made a point out of we are supposed to be like, you're not supposed to be so serious, it's not your job to make sure they are successful, so for me this was very nice because this removes all the pressure. You can say what you want, you can observe the project, observe the process. And for me because this was very new, it was interesting to see how a course like this works.

Carolina: That's a very good point. That's very fair. They don't need your responsibility. They just need something that for them is so valuable and got you maybe it's not so painful to give. What is hard about CBI?

Mariana: I think maybe, since the point of this is to be as creative as possible and to look as much as you can into new ideas, new areas, stuff that you are not comfortable with, for a group that I was mentoring with their challenge, sometimes some great input like "I know the perfect application for your challenge, you should definitely look into it" but sometimes this doesn't, I felt like I really didn't have enough knowledge to help them. Of course, they ask me stuff, I answer, and I think some of my knowledge was helpful. But also, part of me feels a bit sorry that I couldn't give them more out of the box knowledge.

Carolina: Why is that hard?

Mariana: This goes back to the responsibility thing. They are doing this great course, they come to CERN, they are feeling excited about it. I wanted to be a positive part of that, for example, the groups have different mentors, I just wanted to do a good job.

Carolina: Is time a problem?

Mariana: No, there were other mentors that spent more time there, for example during these activities, where we were invited specifically. But I couldn't go to all of them, so I didn't spend that much time. In general, I didn't feel that it was too much time.

Carolina: Do you still have to do something now, after the events? They ask you questions, etc.?

Mariana: Yes, we wrote an email, I think I wrote them another e-mail with some feedback I still had about their presentation and they said that they would keep in touch. I tried to make it clear that I would stay available for them. But I don't think there is no concrete event or thing where we are involved.

Carolina: From your experience so far, would you do it again

Mariana: Yes, I would. It was positive, maybe I was even too little involved, because as I said I didn't spend as much time as the other mentors, so I may enjoy it fully next time. There's no reason to not do it again, I learned, it was nice.

Carolina: Do you still get updated of how the projects are going?

Mariana: No. They have these blogs for their projects, I could have checked it, but I completely forgot. They haven't updated me directly, but they are keeping their blogs and I can go there to get updated.

Carolina: There is nothing available being given to you, that comes to you, is that right?

Mariana: Yes.

Carolina: Are you involved with other CERN clubs and activities?

Mariana: No, there are a lot of CERN clubs for hobbies, this is more like a project. This was my first experience with a more voluntary project here at CERN.

Carolina: I wonder what mediums you use to get updated on CERN activities?

Mariana: For me is through Facebook, because we have a Facebook group for young people. It's called young at CERN. A lot of people post things there about these events. For example, there's an improvisation group that post there whenever they organize something. So that's the main medium. Between seeing an email through CERN, or getting info in this group is different, it's not some abstract mailing list.

Carolina: What do you think are the best ways for CBI to approach CERN coaches?

Mariana: Well I guess the email is also ok. Maybe they can do small, at lunch time everyone goes to the canteens, so sometimes there are some campaigns that they want to advertise something. And there are some people in the restaurant, that are giving out flyers and this could be an effective method although it requires more effort and time.

Carolina: And why do you think other people would be curious about CBI?

Mariana: I think that anyone that is interested in outreach. There was at least one of the other CERN mentors, that was coming from the outreach perspective. He is a CERN guide; I am a CERN guide. I think this is an important factor. Someone who is looking for opportunities to outreach.

As I mentioned, these soft skills as well are a reason, someone looking to develop interpersonal skills or these project management types of skills. I think they would like this experience.

Carolina: Are you a coach for one team?

Mariana: Yes, one team, from Porto, A³ CBI, called CBeneath. I work in the beans department here at CERN, I am doing my PhD in plasma physics. I am here full time, I am going to be here for another two years, in total three years.

Appendix M - Results from the surveys done with alumni and current CBI students

- Survey to former CBI students (alumni)
- Survey to current CBI students of CBI Tampere (Tampere University, Finland) and CBI A3 (Porto Polytechnic, Portugal, Swinburne University of Technology, Australia, Pace University, New York, Mannheim University, Germany)

Table 1: What are the advantages of taking CBI?

Students	New experience	Multidisciplinary teamwork	Critical thinking	Become opened	Empathize	Learn methodology	Total
Alumni	0	7	11	13	6	16	57
Current	4	2	3	0	0	0	9

Table 2: Do you still tell about your course experience to other people (e.g. in a work context, or to friends and family)?

Students	Positive response	Negative response	Total
Alumni	55	2	57
Current	9	0	9

Table 3: What do you tell/show to describe your experience?

Students	Talk about project	Social media posts	Their own project files	Presentation and exhibition photos	Certificate	CBI website	Total
Alumni	42	1	9	4	1	0	57
Current	4	0	4	2	0	2	9

Table 4: Answer to: Do you get updated on how other CBI teams in other universities are running currently?

Students	Positive response	Negative response	Total
Current	2	7	9

Table 5: If yes, how do you get updated?

Students	Facebook	Instagram	Other	Total
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Current	2	0	0	2
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Appendix N – Design brief for the branding guidelines for CBI

Date: 26.11.2018

PROPOSAL FOR BRAND IDENTITY OF CBI

CAROLINA FARIA MA THESIS PROJECT

26.11.2018

Hello! My goal with this document is to show my current understanding of CBI, how I can use my thesis to enrich it and further questions that I have. This is a programme of which I am really enthusiastic about, therefore I look forward for this opportunity.

What is CBI and what does it do?

Challenge Based Innovation is the bridge between technological ideas that come from instrumentation development or basic research at CERN with everyday life, by using that knowledge for solving societal problems. Here, the bridge is done in collaboration with universities, as student teams are the catalysts between technology creation and using it in innovative ways to solve problems.

CBI is a special program, not only for the purpose of making disruptive innovation for societal purposes in one of the world's leading research centers, but also because each university that participates in CBI, jointly with CBI crew, creates its version of the program. Therefore, this is not a closed program, but open to different curriculum, time periods.

CBI has existed since 2013. Currently, there are 4 versions of CBI running - CBI A3, CBI Barcelona, CBI ER, CBI PS - each involving 3 to 5 universities and, in total, around 200 students per year.

Existing inside IdeaSquare, it is the main programme of the Design Factory. For CERN, its goal is the usefulness of research, from the societal point-of-view, which generates other kinds of value, besides research outputs and scientific articles. This different value comes with the creation of projects with societal impact and students' unique learning experiences: shaping the entrepreneurial thinking, improving multidisciplinary working skills, getting hands-on.

Who's the audience of CBI?

On one hand, it is the current partner universities, their students, and the future partner universities. On the other, it is CERN employees in general, to be engaged with the programme's activities by coming to the CBI Galas and also by volunteering to be mentors of projects.

Another possibility would be to communicate further with other bigger stakeholders, such as the UN Sustainable Development Goals, for whom the projects are directed.

What is their ultimate goal of CBI?

The vision for CBI is to keep collaborating with new schools, while exploring new methodologies and spreading knowledge by developing an open source way of sharing pedagogical models to universities. Also, another goal is to measure and show the impact of the programme effectively.

Challenges and opportunities

I believe it comes as a challenge for the students doing CBI, and maybe even teaching teams, to explain what it is about to family, friends, colleagues, because it is a complex network, with usually complex curriculums as well. I see this as an opportunity for CBI, “the mother programme”, to be the main communicator of what it is, how it works, what are the involved stakeholders and the benefits for students.

Another challenge I see is the involvement of CERN staff, to volunteer to be mentors. This can also be an opportunity to use graphic design to engage with them, for instance, to communicate what is happening during the year with the different CBI's, creating a genuine interest and curiosity in the students' ideas.

Finally, building the graphic identity of CBI with these goals, will also put it on the same stand as other big programmes, such as Attract.

These last two aren't yet clear on what is the best way that graphic design can help, but I find them fundamental to keep in mind and later find a connection to them during the project.

Outputs of thesis project:

1. Re-branding of CBI into a modular brand and branding manual.
 - Decomposition in other CBI's graphic image
2. Applications:
 - Usage in digital formats
 - Website
 - Social Media
 - Usage in print formats
 - Posters
 - Stickers, etc.
 - Wall of CBI at IdeaSquare (to be defined)
 - Usage with other universities (to be defined)
 - Open source sharing of pedagogical models
 - How to present and archive projects' outputs

THESIS PROJECT

What is the scope of the project?

Although CBI has its own graphic image, there are the cases of CBI Barcelona and CBI A3 who have created their own independent graphic identity. Therefore, there is a need to unify all CBI's under the umbrella of the “mother CBI”, so that communication is more effective and the impact of CBI as a whole is clearer. This is an opportunity to also archive and communicate outputs more effectively, creating a bigger and evident picture of all the potential of CBI.

The renovation of the graphic identity would keep in mind the need to align the courses from the get-go, in the sense of how to measure if there is an impact and what the impact of each project is after the course. Also, it would keep in mind the need to develop a pedagogical model with open source resources for universities to use.

FOR OUR MEETING ON 28.11.2018

I would like to take the chance to leave some questions that I still have and further requests that I would like to discuss in our next meeting.

REMAINING QUESTIONS

Story:

How did CBI start?
How has the impact of CBI changed over time?
How do partner universities talk about it?
What makes a programme a CBI?
What is the process of creating a new CBI?

Audience:

With whom does CBI want to communicate?
How do you communicate with CERN internally?
How do new universities hear about CBI?
How does CBI sell itself?

Other stakeholders:

Is the general public also an audience? Why?
Are there other possible stakeholders to communicate with, such as the United Nations SDG? Why?
What is the connection with Attract?

The scope of the project:

Who is CBI's competition?
What tone or image do you need to portray?

REQUESTS

Branding guidelines of CERN, IdeaSquare, CBI.
Interview with Pablo
Interview with Markus
Interview with a CBI Barcelona representative
Visiting IdeaSquare in December (maybe)

Appendix O – Research conclusions derived from qualitative interviews, visit to IdeaSquare and desk research

Date: 31.01.2018

CBI RESEARCH CONCLUSIONS

ALL THAT CBI CAN BE

CBI started as a pilot to Attract. “ATTRACT is a pioneering initiative bringing together Europe’s fundamental research and industrial communities to lead the next generation of detection and imaging technologies.” Attract aims at creating a European innovation hub that creates other ends for these technologies. Therefore CBI started as an experiment to define the process of transferring CERN technology to serve societal purposes.

Over the past five years, it took many shapes, being closer and further away from defining this process. Another goal of this programme is education - one of CERN’s pillars - in which it has been extremely successful. In education the goals are:

- (Multidisciplinary teams of) students developing projects that solve challenges with social impact, which may use CERN’s technology.
- Students learning experiences: shaping the entrepreneurial thinking, improving multidisciplinary working skills, getting hands-on.

So there have been CBI’s whose starting point is a CERN technology, others that need to match CERN technology with a societal problem, some start from a societal problem and don’t even have to involve CERN technology, they can involve companies, or focus on future scenarios and how to solve those problems, regardless of which technology is used.

I believe we can conclude that CBI is organic, it is a white canvas, whose definition stretches. The limits are that it must comply with CERN’s mission of education. So far this happens by using technologies created at CERN or using the philosophy of CERN of disruptive thinking.

WHAT I FOUND OUT THAT CBI IS

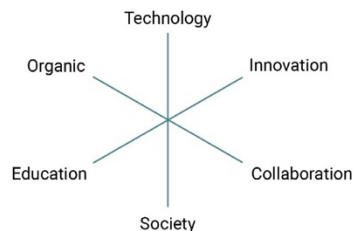


Fig. 1: The six keywords I conclude that define CBI.

Organic in the sense that it is ever-changing, its format depends on who are the people organizing it and what they envision. Therefore it is like a white canvas, that can have many ways of doing CBI, as long as it goes with CERN’s pillar of education.

Technology because being connected with CERN, it involves consideration for technology and science. And whatever version of CBI is created, it somehow involves the dichotomy of science with design, technology with society and how these worlds are connected.

Innovation is one of the mottos because it connects with CERN’s mission of thinking beyond, “unite people from all over the world to push the frontiers of science and technology, for the benefit of all.”

Society as CBI is a way of applying technology for societal impact.

Collaboration as the foundation for CBI to happen, be it through the collaboration with universities, external entities, CERN staff or any other stakeholder that might join the programme, it is created by the community of people and entities.

Education is one of the main purposes of CBI and the connection to CERN’s goals. It is now the education of university students but it might embrace other groups of people.

UNIVERSITY DIFFICULTIES

Each university has a different perspective and different goals, however, the main difficulties of doing CBI, that were pointed out during the interviews are:

- Connecting with CERN coaches and technology
- Implementation of projects (the actual technology transfer)
- Keeping a global community
- Funding CBI

Connecting with CERN is a recurrent problem, as it is difficult to find coaches for projects, to access and understand technology (being that the Knowledge Transfer website is hard for students to grasp). Also, this raises a need to manage expectations of students of how much they will actually access while visiting CERN, because there is not much contact with CERN staff, which many times leaves people wondering that the same could have been done “at home”.

Regarding the implementation of projects, it is hard to actually apply CERN's technology to another context (to do the technology transfer), because the projects aren't usually made for a company and the students are not in a position to implement the projects (for instance, by creating a start-up) because they are still studying and have different goals. Only UniMore has been doing projects for companies, which is the closest to transferring CERN's technology to society.

As for keeping a global community, this is a major struggle for CBI A3, as it is implemented by several universities that are physically very far away from each other. However, it's also a general need for exchanging knowledge, in order to improve the programmes and develop the methodologies used. Especially to develop an effective method for transferring CERN's technology to society. Interestingly what creates a struggle to keep a tight community is the flexibility that CBI has (which is one of its best assets). If, like SUGAR, the programmes had the same timeframe and, by rule, all met in the beginning and at the end, there would be predefined community meetings. However, as all CBI versions have different timeframes, it's hard to find touchpoints.

Funding CBI is a general problem, except for UniMore, because it's an expensive programme that runs without sponsoring.

WHY THERE IS A NEED TO CHANGE THE GRAPHIC IDENTITY

Regarding communication, it is not being very effective and structured, because it is not clear what CBI is from what is shown in its channels. Therefore universities have created their ways of communicating the programme. Also, there is a need for a structured way of sharing knowledge, methodologies and learning with each other. Especially considering that all people running CBI's are methodology specialists, for different areas, and have much to share and to add to the other programmes.

"I think that CBI is like a hidden pearl, hidden diamond, I think it has enormous potential, very powerful but they are not having now the channels, structure to communicating. So you never really know what's happening, what programmes are running, who is involved in there, to have opportunities in collaboration. Of course, I have to say that the team internally always does a very good job and it's something that I like very much at IdeaSquare, I like working with them, it's the openness, the collaboration base, that is always there in any field"

Although CBI has its own graphic image, there are the cases of CBI Barcelona and CBI A3 who have created their own independent graphic identity. Therefore, there is a need to unify all CBI's under the umbrella of the "mother CBI", so that communication is more effective and the impact of CBI as a whole is clearer.

These are the current CBI graphic images that can be found:

CBI ER

UniMore has created a logo but not a graphic identity. The logo was used on slides but the professors are not fond of it, so they avoid using it. For this reason, I could not get it either.

CBI Barcelona



Fig. 2: CBI Barcelona has a logo that is mostly used in slides and in videos. The goal was to create an image that gathered the three universities and CERN. However, they don't have a graphic identity.

A3 CBI



Fig. 3, 4: A3 CBI has its website. They don't have a graphic identity, nor a logo (what they use for that is the written name of the programme). The website is the communication tool of the programme, where all information can be found including the current state of the projects in progress. (link: <http://cbi.dfm.org.au/>)

When asked why these universities found a need to create their own image, the responses were:

- **A3:** "so for us, it's important for Swinburne, it's important that there is a separate identity for CBI A3 because there's an interesting resource, like time. But also funds to send people to CERN. For the reputation of delivering a programme. So it's not just giving students a nice experience but it's also building Swinburne reputation by leading it. So having a proof that we are leading a programme is also very important and it provides a piece of evidence for that."
- **Barcelona:** "Because it's a flagship course, so it needs to have an identity and you need to differentiate it from the rest. So I think it was important in this case, because it was a way of putting the names of the 3 universities and CERN in the same image and also because it was a flagship it was important to make, to give it an image."
- **ER:** For UniMore it is not something they have felt a strong need for, it has been something to identify the programme in presentation slides.

Channels

Regarding CBI channels, these are scattered and not communicating a unified and clear message. The main channel is the website, which is currently not showing clearly what is CBI, what is its goal, how it actually happens, who are the people involved and what are the requirements to connect to CBI. Furthermore, the Projects section has the potential to be better structured so that each page shows the same categories of information, making it easier to compare each version of CBI and its outcomes.

Actual testing will be done further in the project, to specify what can be improved in the website and how to fully showcase what CBI is about.

"The website needs a bit of configuration and updating to be able to make work more accessible and to understand what past students have done and also where projects have gone, if they have gone somewhere, it's usually the students that do something interesting for the change of mindset, rather than projects being taken up. So when you compare to other programmers that design factory often do or any other institution might do."

"I think the website is not easy to access and you don't get a very good idea of what CBI is, so there is potential but it's not being communicated."

These are the current CBI digital channels:

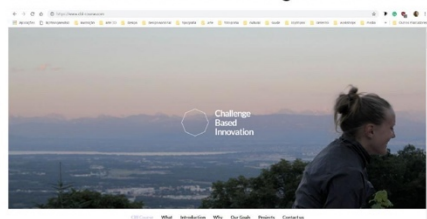


Fig. 5: CBI website.

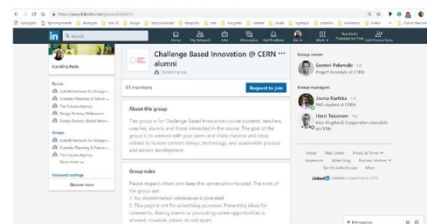


Fig. 6: CBI alumni group on LinkedIn.

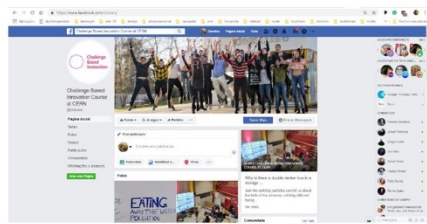


Fig. 7: CBI Facebook page.

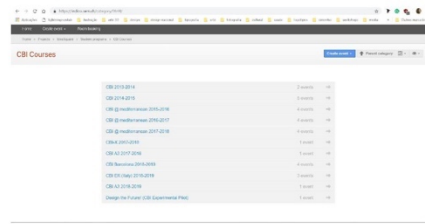


Fig. 9: CERN Indico - CBI programmes



Fig. 8: CBI Twitter feed.

WHAT WE CAN LEARN FROM SUGAR NETWORK

“SUGAR network right now is a platform for distributing knowledge in design thinking. And it makes a connection between universities, companies and students. It's the holy trinity of people that are interested in innovation and our biggest duty and mission is to connect all of these interested parties.”

SUGAR is the network of universities that do a project-based university programme that teaches design thinking to students, in a very hands-on approach.

They have recently updated their graphic identity because they did not actually have a graphic identity, as they only had a logo and used the colour green on their website. They felt the need to better establish what SUGAR is about. Therefore, they did not create a new image, they updated the logo and created a language around it. Also, they made it more accessible by just changing the font to a free one.

Templates for several materials were created that each university has the freedom to use or not. The same happens in CBI that different universities will have different requirements regarding graphic image - some will use their official graphic materials and use CBI's logo as a way to identify it, while others might prefer to use CBI materials (in presentations, for example) and need some orientation on how to do it well.

The website now targets corporate partners because the process of acquisition of sponsors for projects is the biggest difficulty in the network.

Their goal with their branding update was to take another step for SUGAR to become a respected entity regarding human-centred innovation and providing educational programmers in this area.

This is already showing its impact, as people mention on LinkedIn that they work at SUGAR (professors and teaching assistants) and students post that they are taking part in this programme. Also, more and more they find external people referring to the SUGAR network.

WHAT OPPORTUNITIES WE FIND

The opportunities that were found during the interviews are:

- Students share their experience on LinkedIn
- Connection to CERN
 - Entrepreneurship clubs at CERN
 - IdeaSquare Open Day with CBI
- Stronger CBI community
 - Open source sharing of pedagogical models

One of the learnings from SUGAR that built a stronger community and gave the students the chance to show the fact that they did the project is to be able to post on LinkedIn that they did "SUGAR" for their studies. The same can easily be done by CBI.

In regards to increasing the connection to CERN, one suggestion was to approach entrepreneurship clubs and other clubs that might have a connection to what is done at CBI. This can be a way of finding more interested coaches or just curious people to join the projects' presentations. Another idea is an event from the past, in which an IdeaSquare Open Day was organized by interns from Barcelona. The event was coincident with the stay of CBI students which promoted a lot of conversation around their projects with CERN staff.

A way to strengthen the CBI community is to start archiving well each programme's information in a place that is easily accessible by everyone, such as Indico. Also, an initiative might be webinars, where each month one university shares a topic on which they have learned. Universities that cannot participate can see the recorded version. This can be a way of providing space for methodology development as well and starting conversations and collaborations between universities that wouldn't have started otherwise.

WHAT THE SCOPE OF MY PROJECT ENCOMPASSES

As more and more versions of CBI are created every year, it is important to keep them connected, so that everyone can be better informed of what goes on in this lively programme and can learn from each other, to improve their own programmes and take them beyond. Also the more clear and better communicated it is, the more its value can be shown and spread.

That is why a dynamic identity would fit CBI. A dynamic identity is changing and adaptive. A graphic identity is usually composed of six main elements - logo, typography, colour, language, graphic elements, imagery. Traditionally these are all defined when the branding is defined. However, being that brands are usually always evolving and adapting to different circumstances, more and more dynamic identities come into play. A dynamic graphic identity has at least one fixed element and the other ones change, making it flexible and adaptable.

CBI versions communicate very differently. For some universities, CBI graphic identity is just a logo for slides, for others it is actually the face of a programme.

CBI needs a dynamic identity that works without customization (only the programme's name changing) and with customization: therefore schools can choose which version to use, in case they want to use their university's or design factory's graphic identity and just want to put the CBI logo in slides, in a way that it fits smoothly.

Because for some universities CBI is just CBI, they don't find a need to portray it as a specific version (such as CBI A3 in Porto). However, for others like CBI A3 in Swinburne University, the version is very important because it's important to distinguish CBI from CBI A3, and to have the last as an independent programme.

On another note, I believe a good way to measure the success of communication in the long-term within the university partners is to check if people start pitching CBI or presenting it. Luciana Leveratto has spoken about CBI as a study case in two conferences. She did research around CBI so she felt comfortable to present it and her results. With this I realize that the professors and even the students are the right people to communicate CBI and their experience with the programme.

It is my assumption that the better explained and clear it is, the more comfortable people will feel to talk about it.

MORE ON CHANNELS

We can think of communication channels as an extension of space and happenings. So, when people go to IdeaSquare, they can meet, for instance, Santeri, ask what CBI is and get a very vivid impression of the programme. When they visit the website, the goal is that they have an experience as similar as possible as when they meet in person: they should also be able to meet Santeri and the current teams, have some of their questions answered and be able to ask more questions if they need.

People need to hear the story of CBI the same way as if it was told by Harri or Santeri, Christine or a CBI student.

Digital formats

1. Website

This is the main channel to communicate CBI as a whole and to act as a reference of the quality of the programme for all CBI users, such as students, professors and CERN coaches. Also, the goal is that it communicates CBI as a unified cohesive programme, in which its diversity of versions shows flexibility and uniqueness. In order to be developed, the current website will be tested with external people, to see what they can understand of CBI and what exactly is not coming across.

2. Social Media

The goal is to update the community and external people on what is happening on the several CBI's. The right channel will still be defined in questionnaires to students.

It might be the case that it makes no sense to have a channel only for CBI and it should be communicated via IdeaSquare channels in order to actually reach people (to be confirmed).

3. Video

As a requirement, a template will be made for the introduction of videos.

Also on videos, a good reference are the videos produced in 2015 that very well explain the projects. This reference was given by Luciana, who since then used them to communicate the programme (link:

https://www.youtube.com/watch?time_continue=35&v=LZ33CA2wLWY)

4. Presentation template

Slides that can used by any university to explain CBI.

Print formats

1. Template for one-pagers of each programme.

This is also a way to archive all the CBI versions that will exist. There can be a longer version to be completed by the end of the programme, where more specific topics are asked, such as the methodologies used.

2. Poster

Template for posters that can be used for CBI presentations, for instance.

Appendix P – Proposal for discussion on initial graphic identity concepts

Date: 31.01.2018

CBI GRAPHIC IDENTITY - INITIAL CONCEPTS

CBI as a programme that exists through collaboration. With different versions, it is not a static defined programme. All the versions together form CBI, therefore, they need to visually portray that they are connected and part of something bigger. For that reason, CBI needs a dynamic identity.

Graphic identity is a system composed of six basic elements: logo, typography, colour, language, graphic elements and imagery. A dynamic identity is essentially opening up one or more of the components to a dynamic influence.

In the case of CBI, the programme is made by many different people, who, from the universities, are mainly designers, which I believe they want a voice in the logo that portrays their programmes (in many cases, their “babies”) although they don’t have the time to dedicate to building a strong graphic image.

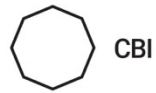
So I think the most adequate solution is to have a structure that allows each university to customize their logo, within specific rules that guarantee that they are all unique but related. A customised dynamic identity allows people - customers, employees, etc. - to customise their logo. Customisation is the first step towards letting the identity reflect a certain sense of community, creating an emotional bond.

Carolina Faria
January 30th 2019

UPDATING THE CURRENT LOGO



Like the current logo it works as a wallpaper on top of images and backgrounds



Static elements: typography, colour of typography, shape of logo
Dynamic: name of each CBI, illustration, colour of illustration

PLAYING WITH TYPOGRAPHY, CONNECTING THE DOTS



Static elements: typography, colour of typography, structure of logotype, and area for the logo
Dynamic: name of each CBI, illustration, colour of illustration

Appendix Q – Pages from the booklet developed for CBI, where the programme is described

Date: 29.05.2018

“Our mission is to bring together university students to address societal challenges in the spirit of open science and open innovation, inspired by CERN and its experts, to create solutions that contribute to the United Nations Sustainable Development Goals.”

What is CBI?

Challenge Based Innovation (CBI) is 4-6 month specialization course for product and service development. It is run by participating universities from (currently) 8 countries around the world. In the course, multidisciplinary student teams learn how to apply Design Thinking – a process for new product/service development. CERN researchers act as technological coaches in the process.

Connect with CERN

In CBI student teams work with CERN, one of the world’s leading research centres in particle physics, for the purpose of making disruptive innovation for societal impact.

Learning to drive change

Here students apply their hard skills to challenging projects, in an entrepreneurial setting. They work in a multidisciplinary team, develop their critical thinking and get hands-on to make their ideas real through prototyping and testing.



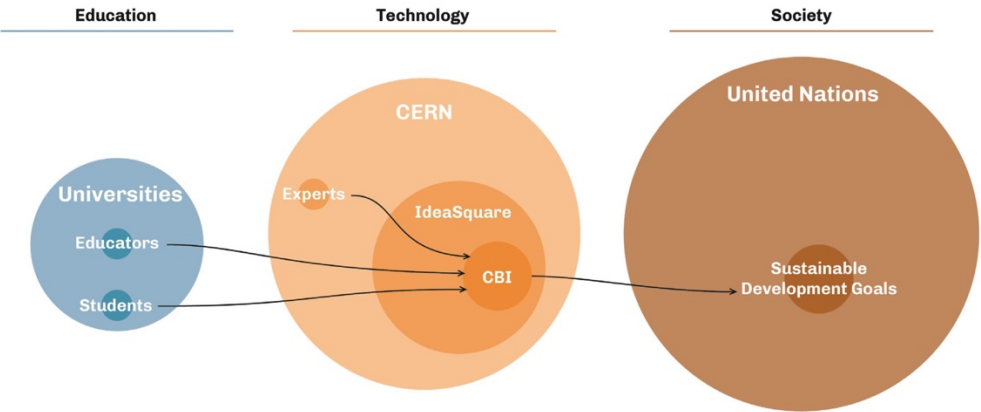
How it works

Where we fit

CBI is hosted at IdeaSquare, CERN's open innovation lab and makerspace. The purpose of the space is to bring together people to generate new ideas and work on prototypes related to detection, imaging and other technologies.

Built on collaboration

This programme works on the basis of collaboration with universities. Together we create the curriculum, methodologies and timeframe of each programme. Therefore, CBI does not exist on its own, only through collaboration, which makes it a very diverse programme in constant change.



How we make it happen

Firstly, educators co-create a CBI programme with the CBI team, in IdeaSquare. After this edition's goals and methodologies are defined, teams of students join the programme. Students are CBI's main actors, as they are the ones developing projects that are inspired by CERN science and that address Sustainable Development Goals. The student teams interact with CERN experts, that help them better connect their projects with CERN science and technology.

CBI at CERN

As part of their curriculum, CBI programmes visit IdeaSquare, which gives the student teams a chance to work in CERN, be inspired by its science and meet CERN experts in order to develop their projects further.



Talks and workshops

These activities are planned with each CBI organizing universities. We have hosted a large variety of speakers from our network, from physicists, designers, to sustainability specialists.



Prototyping facilities

We have several prototyping rooms, such as a 3D printer room, electroshop, machine shop and light room.



Exchange with other CBI's

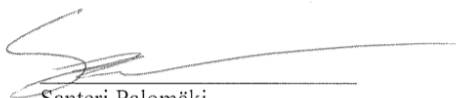
The CBI visits to IdeaSquare are usually planned to have several CBI programmes working here at the same time. We call these events CBI Jams. They provides the opportunity for a richer exchange of knowledge and cultures.

Appendix R – Confirmation of delivery of project

Date: 29.05.2018

Letter of confirmation

This letter is to confirm that Carolina Faria has delivered the project *Brand Guidelines for Challenge Based Innovation course* on September 2nd, 2019. We consider the quality of work commendable and see that considerable time and effort has been invested in the work by Ms. Faria.



Santeri Palomäki
Challenge Based Innovation (CBI) Coordinator
September 2th in Geneva, Switzerland