

# Report & Evaluation

## Creative Business Game:

# 'Start-Up Architecture'

## 20 – 21 Sept 2018

A joint initiative of BauHow5:



ETH zürich

TU Delft



In cooperation with:



AECOM

AllesWirdGut





# Contents

<b>Executive Summary</b>	<b>04</b>
<b>Process &amp; Methodology</b>	<b>09</b>
<b>Challenge &amp; Input Lectures</b>	<b>13</b>
<b>Teams &amp; Works</b>	<b>25</b>
Dive Up	28
FYL Version	33
FYL Version 2	45
Dynetic	65
The Delightful Launchpad	77
Merlin	93
aHarmony	106
<b>Evaluation</b>	<b>129</b>
<b>Imprint</b>	<b>140</b>

# Executive Summary

## A creative workshop on defining new concepts to transform the built environment industry.

The built environment and construction industry represents one of the largest industries in the world. As an asset-heavy and labour-intensive industry, it has not embraced innovation potentials of digital technologies. With the growing emphasis on property technologies (proptech) from software development and information technology companies, as well as from consulting and management areas, existing processes and business models in the built environment are transformed.

## Context of Creative Business Game

As a second workshop, a Creative Business Game was conducted, focusing on new entrepreneurial directions for architectural practices and new business models in the AEC industry. In a 2-day interdisciplinary business game with 24 Master's degree students from architecture, design, management & informatics, questions on future entrepreneurial opportunities were challenged: Can architects transform their potentials into new competitive advantages in the future? What processes in the design and planning practice need to be changed? How will a new architectural office be organised by integrating new digital technologies? How will the built environment and industry be disrupted by advances in virtual and augmented realities as well as the application of artificial intelligence? How would a team of architectural and management students start up architecture?

## Challenges

6 teams consisting of architectural and management students worked on "Start-Up Architecture" and how digitisation may lead to new business models or disruption. The workshop was supported by the international architectural practices of HPP Architekten, AECOM Design&Consulting and AllesWirdGut, which posed three different business challenges for the teams to respond to.

HPP Architekten gave an introduction and foresight of what topics medium-sized and large architectural practices will face in the future. The company raised the question of what future practices of architects will need in their organisation, design and planning processes to remain competitive. The second challenge was described by AECOM Design&Consulting as a fictitious case, in which the teams were asked to act as a property manager for a company, and create a new value for its real estate beyond known co-working ideas. The third task considered architecture as a product and called for ideas to redefine architectural services in scalable ways. In addition to the presented tasks, two successful start-ups originating from TUM Department of Architecture / TUM - KEWAZO.com and flissade.com - provided insights into their way of developing ideas towards market implementation.

## Process of Creative Business Game

In contrast to the structured design sprint conducted as a first workshop, in the creative business game only a few design tools were provided. The 24 participants from architecture and management studies assembled in 6 teams of 4:

39% female / 61% male  
96% master degree / 4% others  
82% TUM student / 18% incomings

The teams worked independently according to a rough agenda on two days from 9 a.m. to 7 p.m. with limited facilitation:

### **Day 1 // Context & Challenge**

### **Day 2 // Model & Pitch**

After the final day and the presentations, the teams were given additional time to iterate their work, integrate comments and submit their results as a documentation. 5 out of 6 teams finalised their work. Unlike the design sprint conducted before, only 1 group submitted as a team, while of the other 4 groups only one team member as an individual finalised and handed in the documentation.

## Teams & Results

**Team aHarmony** – Love Your Architect – a communication tool to decrease tensions and misunderstandings in the architect-client relationship

**Team FYL** – Store. Organize. Share. Earn / Knowledge transfer management and platform for architectural design and details in architectural offices.

**Team Dynetic** – Shape. Experience. Enjoy. A workplace design agency for floor/space re-planning and refurbishment.

**Team Merlin** – A magical BIM Software using data science and artificial intelligence for the design and planning of buildings based on existing details and planning files.

**Team The Delightful Launchpad** - Unlock your company's potential – a furniture design agency to develop physical experience spaces.

**Team Dive-Up** – the nomadic incubator. An application to match office space requirements of software start-ups with architectural offices.

## Evaluating the Creative Business Game

Approx. 60% of the participants were students from management studies, 40% came from the disciplines of architecture and landscape architecture. Though it was intended to work in interdisciplinary teams, only two teams consisted equally of management and architecture students. Two teams proceeded with one architectural student, two teams were entirely disciplinary. No student of architecture took the challenge of redesigning future practice of architectural offices. Only half of the participating architectural students submitted documentation.

The results of the conducted evaluation showed a decent satisfaction rate with 23 cumulated replies of “agreement” and “strong agreement” (number of participants n=24):

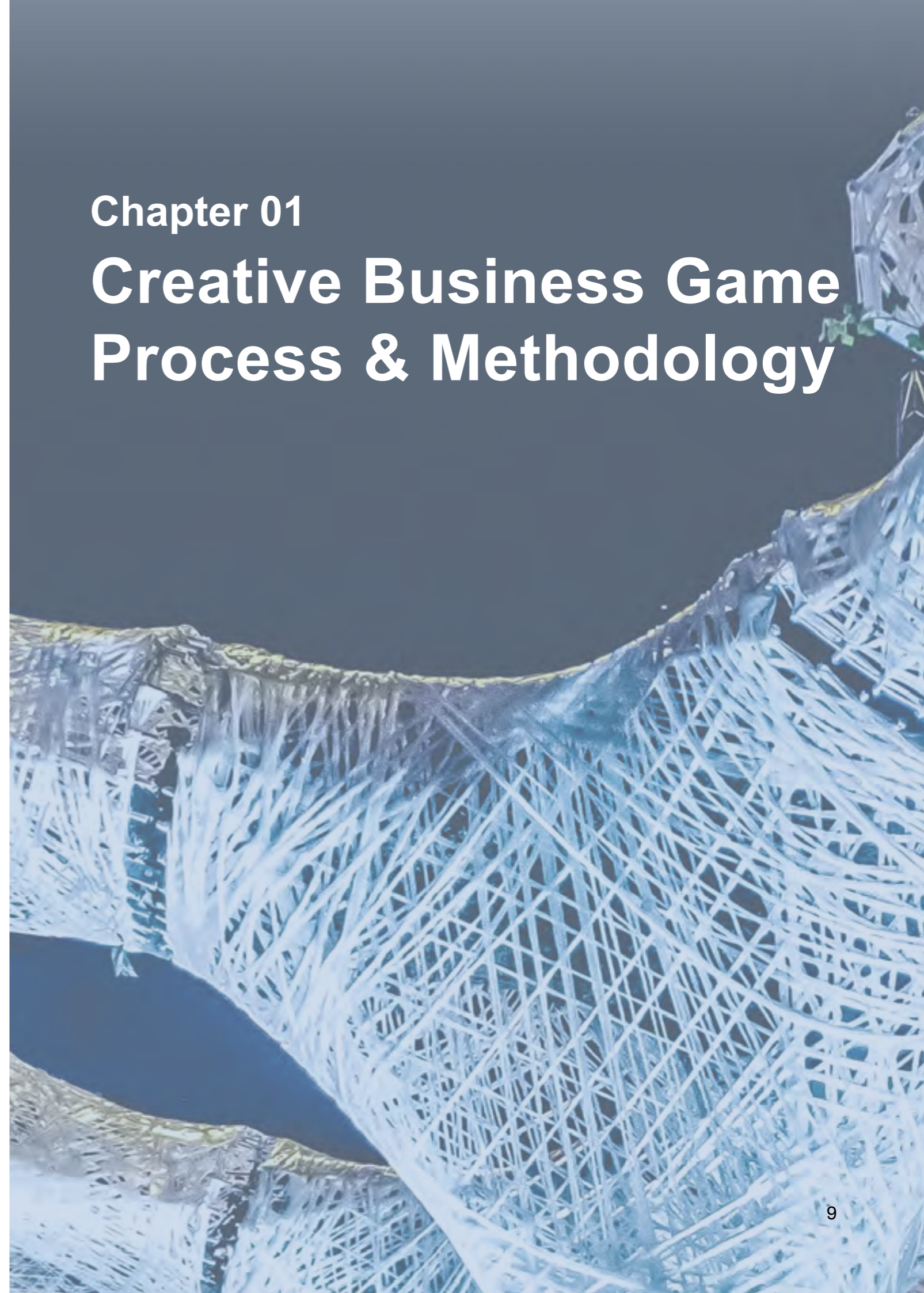
Consciousness for new business models increased:	<b>52%</b>
Workload, process & future implementation were feasible:	<b>54%</b>
Collaboration, interdisciplinarity & integration increased:	<b>54%</b>
Results&willingness to pursue idea further were satisfying:	<b>52%</b>
Benefits to apply skills & use new insights occurred:	<b>58%</b>

For future development the notions of business games and start-ups need to be rethought. As architectural students are hardly exposed to entrepreneurial topics during their education, the awareness for formats like a creative business game is limited, as well as the willingness to engage with business-oriented disciplines.



Chapter 01

# Creative Business Game Process & Methodology



# Intro

## A creative workshop on defining concepts to disrupt the built environment industry

The BauHow5 alliance welcomes you together with international architectural practices HPP, AECOM Design&Consulting and AllesWirdGut to the first 'creative business game' for starting-up a new era of architectural businesses.

The built environment and construction industry is one of the largest industries in the world. As an asset-heavy and labour-intensive industry, it has not embraced innovation potentials by new technologies so far. Businesses from other fields are challenging the existing models and entering the market.

Can architects transform their potentials into new competitive advantages in the future? What processes need to be changed? What will a new architectural office look like and how will it integrate technologies? How will you disrupt the built environment and industry in times of augmented realities and artificial intelligence?

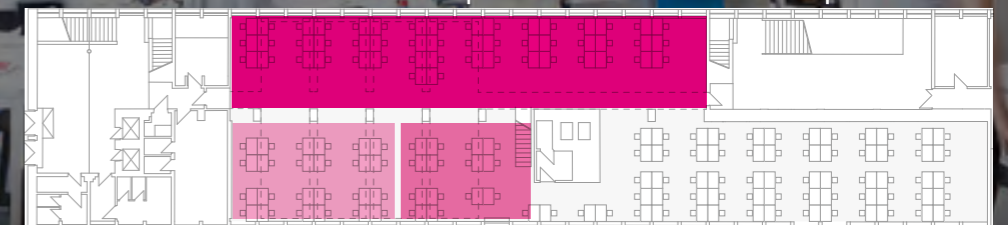
### How would you start up architecture?

Challenge these questions in a 2-day interdisciplinary business game with students from architecture, design, management and informatics. Get inspired by insights and real-life tasks from successful international practices and upcoming stars as awarded [KEWAZO.com](http://KEWAZO.com) and [flissade.com](http://flissade.com).

# Location

## TUM / Weißer Saal

Arcisstraße 21  
5th floor, central stairs  
or  
elevator to the 4th floor and  
central stairs to the 5th



Break

Plenum

# Agenda

## Day 1 // Context & Challenge

- 09:00 Get-together @ Weißer Saal
- 09:30 Intro / Why – Who – How
- 10:00 Opening Challenge 1: HPP / Burkhard Junker  
Opening Challenge 2: AECOM / Pedro Bernardo  
Opening Challenge 3: AWG / Jan Fischer
- 11:00 Building Teams of 4: 2 Management+2 Architecture
- 11:15 Pick and Frame 1 Challenge
- 12:30 Iteration I
- 13:00 Break
- 13:45 Create
- 15:00 Food for thought / Coffee Break
- 15:30 Choose
- 18:00 Iteration II
- 19:00 End of Day 1

## Day 2 // Model & Pitch

- 09:00 Get-together
- 09:15 Recap
- 09:30 Create Start-Up Model / Split works
- 12:30 Iteration III
- 13:00 Break
- 14:00 Food for Thought / Inspiration Talks  
[flissade.com](http://flissade.com)  
[KEWAZO.com](http://KEWAZO.com)
- 15:00 Prototype / Prepare Pitch
- 17:00 Finalize + Evaluation of Workshop
- 18:00 Pitch Your Disruption
- 19:00 Drinks

# Partners, Facilitators



**HPP Architekten**  
**Burkhard Junker**  
Senior Partner

[www.hpp.com](http://www.hpp.com)



**AECOM Design&Consulting**  
**Pedro Bernado**  
Associate Director

[www.aecom.com](http://www.aecom.com)



**AllesWirdGut Architekten**  
**Jan Fischer**  
Head of Office Munich

[www.awg.at](http://www.awg.at)



**Kasimir Forth**  
Facilitator / Managing Director LOC



**Martin Luce**  
Facilitator / Managing Director Department of Architecture



**Christos Chantzaras**  
Facilitator / Lecturer Architectural Entrepreneurship

# Chapter 02

## Challenge & Inputs



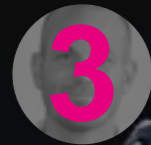
HPP Architekten  
Burkhard Junker  
Senior Partner

The  
Future  
Practice  
of  
Architects



AECOM Design&Consulting  
Pedro Bernado  
Associate Director

Create  
Value  
Beyond  
Coworking



AllesWirdGut Architekten  
Jan Fischer  
Head of Office Munich

Hack  
Industry /  
Architecture  
as  
Product  
or  
Platform

# Challenge 1

AllesWirdGut Architekten (70+ Austrian based architectural practice)  
Jan Fischer, Head of Munich Office, present beginning and end  
Christian Zotz, Architect, present throughout the whole workshop

**AllesWirdGut**  
AllesWirdGut Architektur ZT GmbH Wien München  
Jahnstraße 18, 80469 München, Deutschland

CREATIVE BUSINESS GAME

**Architecture hacks industry – break the rules!**



## CURRENT SITUATION and NEGATIVE PROGNOSIS...

Companies from other industries have consistently tried to enter (and conquer) primary markets of architects and urban planners for quite a while now. To the extent that even grocery stores like Aldi or Lidl are now starting to develop and build whole urban blocks with schools and housing to create the environment for their future stores.

Meanwhile construction developers are pushing standardized systems intended for industrial/ commercial use into other fields of architecture. Big Construction players like Max Bögl are offering their clients ready-to-use building modules for schools, residential buildings or refugee homes. This process has come along with a powerful lobby trying to influence regulations and norms according to fit their products. Construction systems like thermal insulation composite systems, insulation bricks or roof waterproofing are already widely standardized and – in most cases with tight funding – without alternative.

To make matters worse, market deregulation will eventually lead to less protection for small architecture offices and thus shake their business model, while growing digitalization has a continuous and still growing impact on architectural practice in general. This could eventually lead to negative effects on labor market and building culture.

As a result of all this, one could assume that architects will develop more and more to "ordinary servants" of their clients and are forced to plan within exceeding laws and regulations. The majority of architects and planners will just adopt standard products to a specific project and try to stay within smaller budget requirements. Individual solutions for specific problems will be cut down to a tiny number of "flagship projects".

Some architects already aware of this process are trying to find adequate response, but most approaches are addressing the problem on a rather small scale and hereby enhance the process of standardization by following its rules and feeding the game changers...

**AllesWirdGut**  
AllesWirdGut Architektur ZT GmbH Wien München  
Jahnstraße 18, 80469 München, Deutschland

Why can't architects speed up their processes like other industries and conquer new markets?

Maybe Architects need to open up the dialogue with disciplines of management to develop new models.

## WHAT IF ...?

So, maybe there is another way...

- Figure out what kind of business model could turn this process head over heels!
- How could architects use their skills – in combination with other disciplines – to protect and foster a diverse building culture AND be economically successful?
- Could digitalization and new production technologies help you to become more or less independent from the big players and even turn the tedious planning -and building process upside down?
- Could you, instead of just following current building standards and regulations, maybe use them for your own purpose?

## SETTING & GOALS

- You are representing a young team fresh out of academia, looking to develop a unique idea (service or product) - and maybe its market, too!
- Analyze how other sectors have questioned classic business models and how they developed new ones.
- Make use of architects' core skills by linking them with other disciplines or business models.
- Use digital innovation and new technologies to inspire your new business ideas.
- Find new ways! Break the rules! Do not waste your time saving classic business models for architects! Be bold! Park your tank on somebody else's lawn!!!

## SCHEDULE & REQUIREMENTS

Day 1:

- 1 Iteration I: Current situation and potentials
- 2 Iteration II: Elevator pitch: concept, business potentials & risks (funding, rules, regulations) AWG Feedback and Outlook: next steps to take

Day 2:

- 3 Recap / Potential feedback AWG
- 4 Iteration III: Outline a draft of your business plan:
  - a. Market analysis – risks and potentials
  - b. Specify your USP and possible business evolution
  - c. Define your target group, marketing concept and channels
  - d. Name possible stakeholders and competitors
  - e. Specify your product and production process
  - f. Describe first funding and cash flow
  - g. Describe necessary infrastructure (manpower, space, production resources)
  - h. Give an outlook over your first year and potential risks to come
- 5 Presentation
- 6 Jury Session
- 7 Enjoy!

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# Challenge 2

AECOM Design&Consulting (branch with focus on office space)  
 Pedro Bernardo, Principal Developer, present throughout workshop  
 Jennifer Gunkel, Consultant



# How can we create value by using office space differently?

Value Case

### Value Case // Context

**Company**

- COMX
- Hardware and products related with audio and communication
- 58 employees in Munich, +6000 globally
- Own two storeys of a building at a walking distance from Odeonplatz
- Your client is the Head of Real Estate

**Challenge**

- Post-Taylorism office
- 61 % of their assigned workstations are empty
- Local management has different views and needs on what should be done with the empty space

### Value Case // Your Solution

**Goal**

What should be done with the surplus space?

- Define value
- Disrupt "Beyond Space & Time"
- Transform COMX Munich office into a direct (and indirect) source of value
- Integrate the concerns from all managers

**Deliverables**

- Business case for the CEO
- Evaluation of two different scenarios
- Proposed Strategy
- Concept for the new office

### Value Case // Key Players

#### Manager 1 :: Human Resources



- Focus on bringing new talent into the business
- Wants to have a more engaged existing workforce
- Wellbeing, communication, flat hierarchy

Was the one that pushed the implementation of home office as an option for all workers, which was well received

### Value Case // Key Players

#### Manager 2 :: Operations

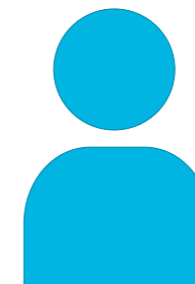


- Focus on improving facilities
- Provide amenities
- Open collaboration, new ideas, innovation

Does workshops with operative parts of the business that are scattered all around Germany, needs to do this in external locations often

### Value Case // Key Players

#### Manager 3 :: Sales



- Needs money to invest in market research
- Wants to understand new generations that are using their products
- Innovation, exposure, communication

Would like to be able to test more of the products before hand but the processes always take to long and they need to launch

### Value Case // Key Players

#### Manager 4 :: Production

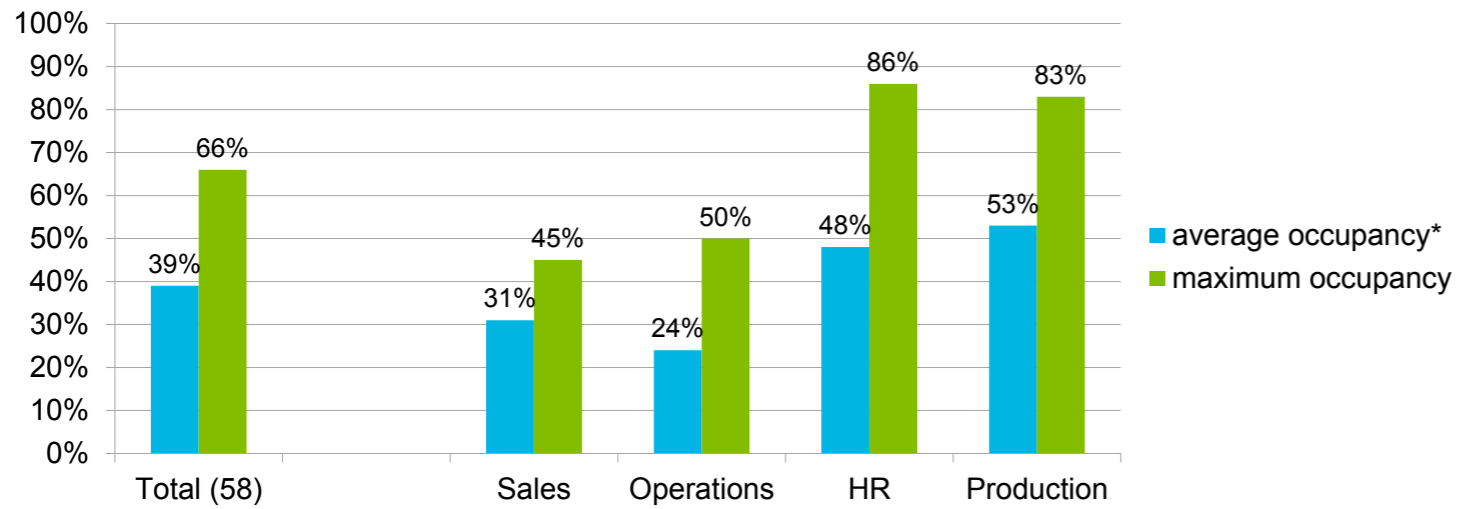


- Does not think there is any need to change
- Privacy, confidentiality and security are the main concerns
- Security, Security, Security

Everything is fine as it is. But his team is said to be lacking motivation and has a high turnover.

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## Value Case // Space Utilization Findings



- 66 % of desk are empty on average
- **Maximum occupancy between 45% and 86%**
- Reported external mobility is ~2 days per week on average

8

AECOM

## Balance & Choice

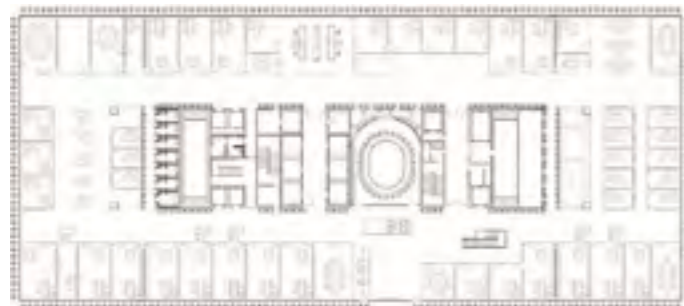
- FOCUS SPACES
- ACTIVITY SPACES
- EDUCATIONAL SPACES
- MEETING SPACES
- INNOVATION SPACES
- EXCHANGE LOUNGE
- CAFÉ SPACE
- WORK SPACES



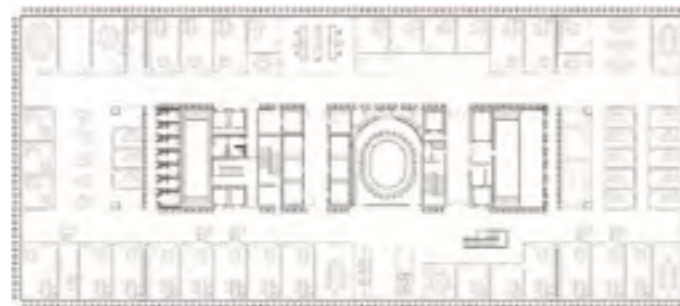
## Value Case // Object

Ground Floor

88m



First Floor



9

AECOM

18

## Evolution of Workplace

Post-Taylorism

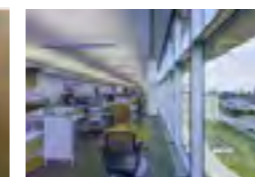
Activity Based Working

Beyond Space & Time

ENCLOSED — OPEN — SHARED — ABW — GARAGIFIED — COWORKING



Cellular spaces



Higher % of open areas

Assigned for groups and assigned for individuals

Task Zones



Braking the law: employee = workstation

Assigned for groups, unassigned for individuals

Task Zones



Non territorial office

Access to wider range of amenity spaces, focus booths and enclaves



Agile Dedicated Environments

Access to others, scrum spaces for creative and innovator teams



Community driven Space as a Service

Access to communal resources, amenities and other companies

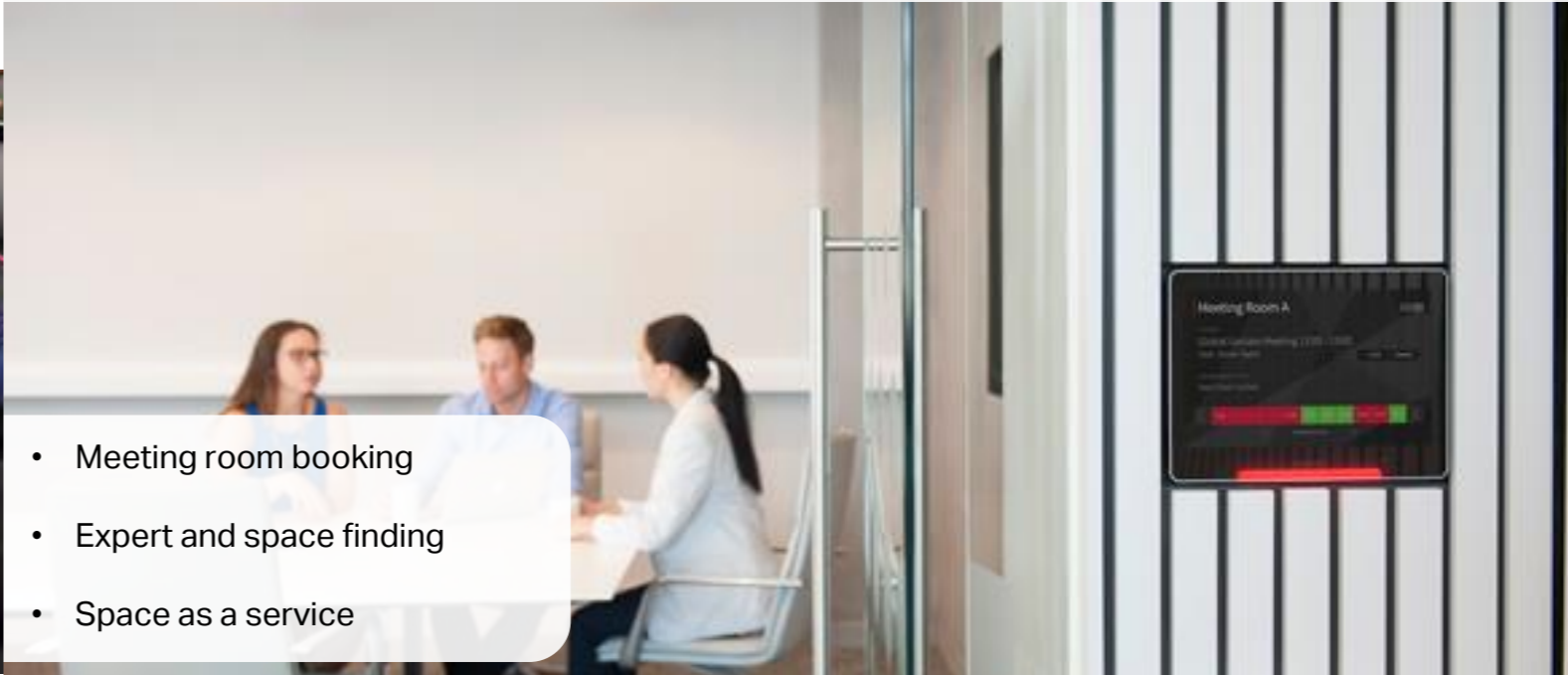
AECOM

19

**Create solutions with them – not for them**



**Spaces are being activated to assist and perform**



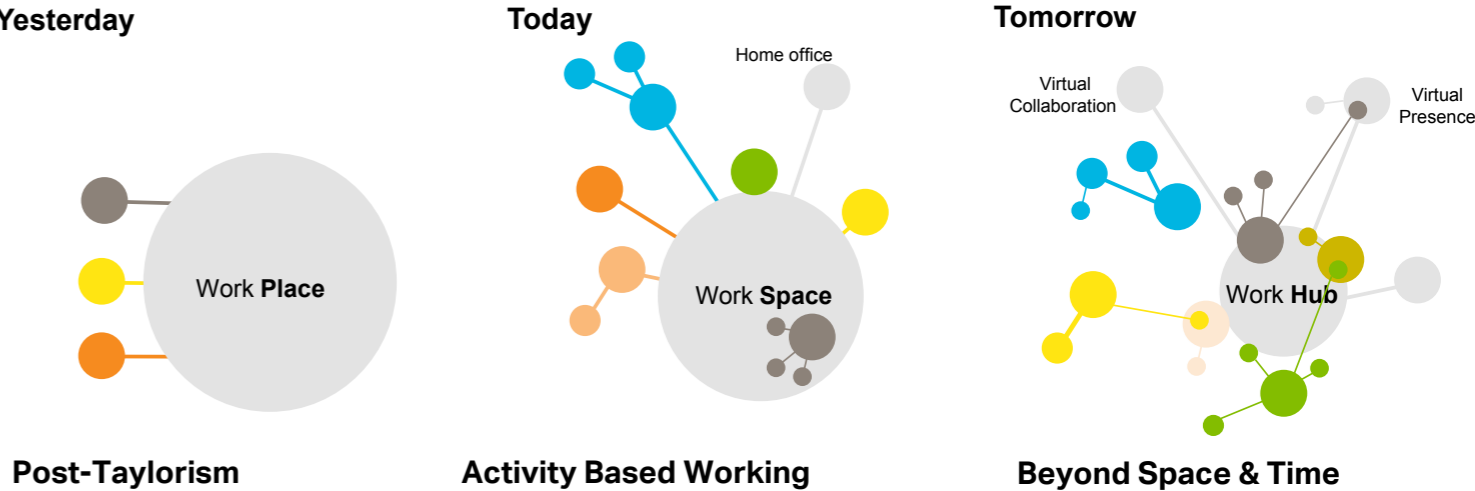
- Meeting room booking
- Expert and space finding
- Space as a service

**Exchange is evolving from silos to open collaboration**



The future of an organization depends on how effectively, open and versatile they collaborate

**Evolution of Work**



# Challenge 3

HPP Architekten (500+ German based architectural practice)  
Burkhard Juncker, Partner, present in beginning and end.

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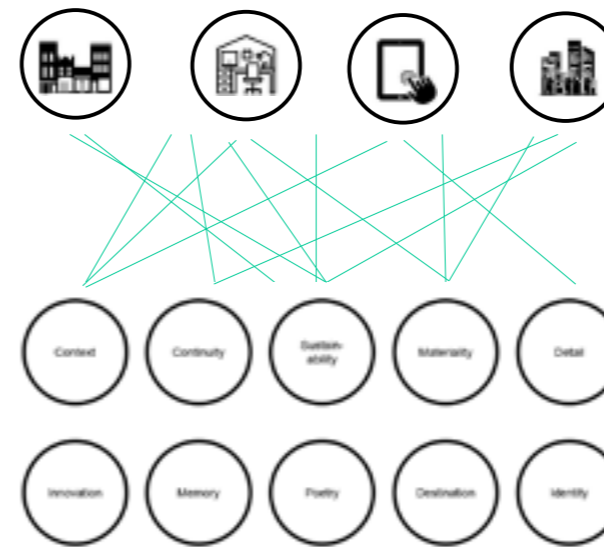
## Megatrends

We are living in a Changing World.



## Everlasting Foundation

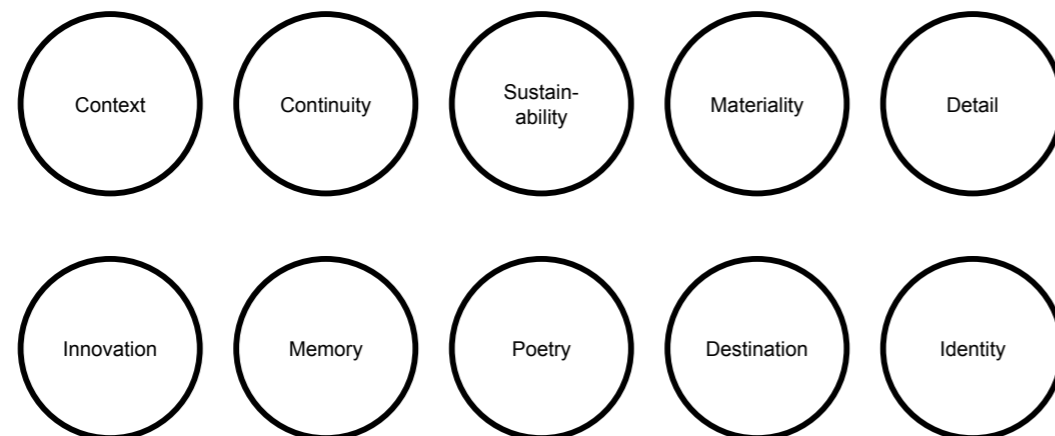
How to deal with Megatrends in Architecture?



A Changing World  
&  
Everlasting  
Design Values

## 10 Design Values

Design values are the foundation of our work.



How to create your own office  
Start of business development  
Find your USP

Changing of  
Tools of working progress

BIM Design Tool  
more than just a trend

## Chapter 03

# Creative Business Game Teams & Results

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**Team Dive-Up**  
the nomadic incubator. An application to match office space requirements of software start-ups with architectural offices.

(no submission of final report)



**Team aHarmony**  
Love Your Architect – a communication tool to decrease tensions and misunderstandings in the architect-client relationship.

**Team Dynetic**  
Shape. Experience. Enjoy. A workplace design agency for floor/space re-planning and refurbishment.

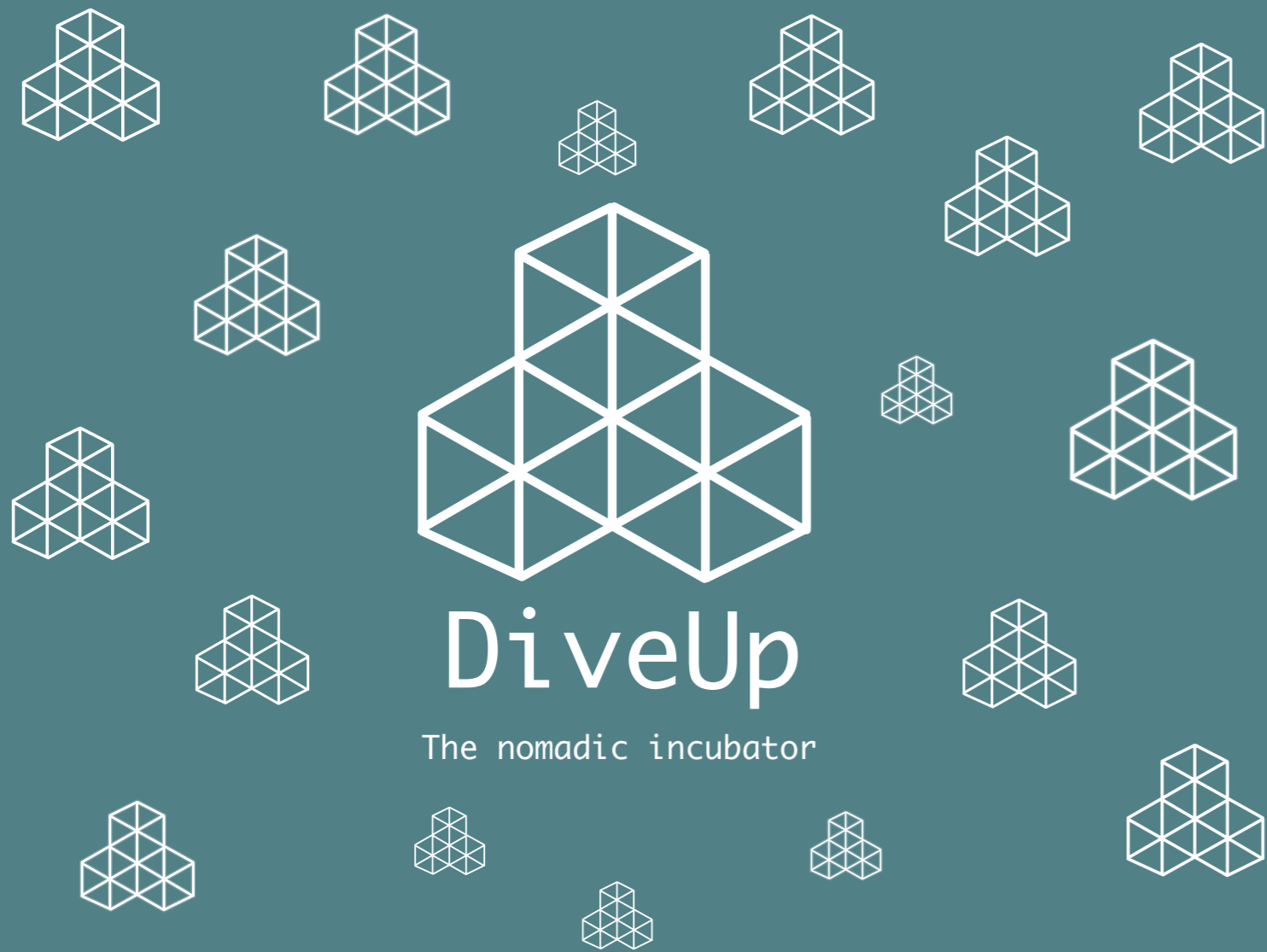


**Team FYL**  
Store. Organize. Share. Earn / Knowledge transfer management and platform for architectural design and details in architectural offices.

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A magical BIM Software using data science and artificial intelligence for the design and planning of buildings based on existing details and planning files.



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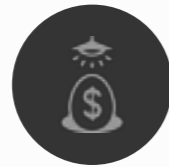


Space  
potential

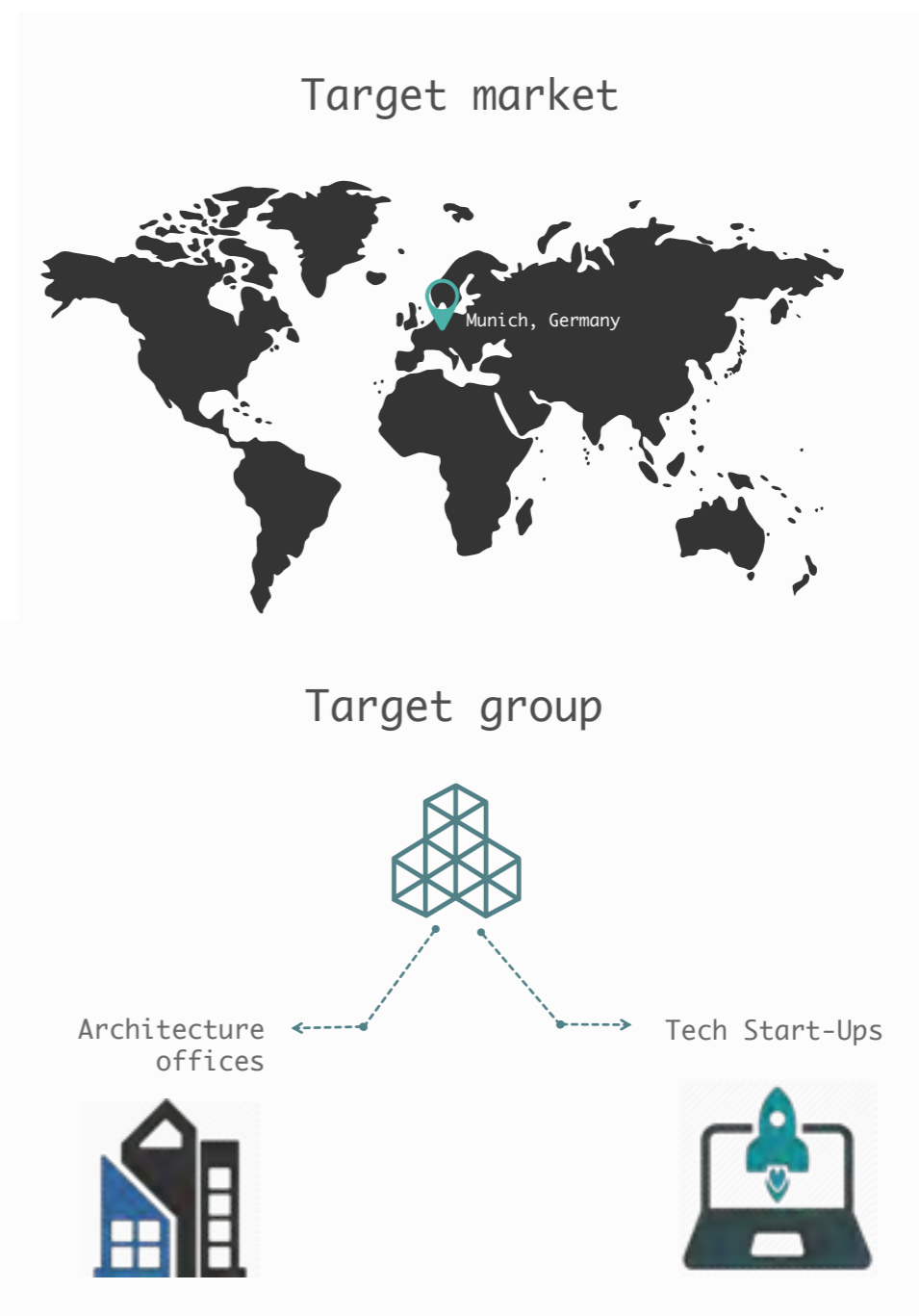
Technology  
potential  
In AEC



Co-working  
hubs



Incubators in  
AEC sector



DiveUp platform





# DiveUp Process

Customer Journey



Registrating



Profiling



Match visions



Dive together



Up a product



# Risks and Potentials

Conflicts  
Processes

Value Add  
Income  
Network  
Space Use

# Marketing



=> Merging Architecture and Technologies  
=> Use of Space  
=> Reverse Mentoring

Channels Architects

- > Magazines
- > Online
- > Presentations
- > Chamber
- > Personal Contact

Start Ups

- > Social Media
- > Founder Festivals/ Hackathons
- > Think Tanks
- > Hubs
- > Universities/ Institutions
- > Personal Contact

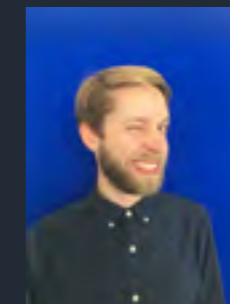
# The Team



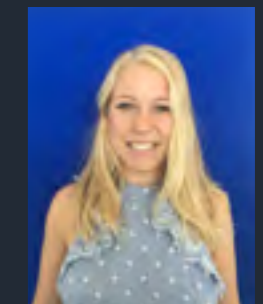
Matteo



Katharina



Jonathan



Felicitas

# The Network





Start-Up  
Architecture  
**FYL**  
STORE.ORGANIZE.SHARE.EARN  
Final Report



## Workshop Team

Akshaya Bomanwar  
Felix Krauth  
Isabel Bommers Fernández  
Yonne-Luca Hack

## CONTENT

Personal Statement	02
Executive Summary	03
Detailed Concept	04
Market Research	05
Click Dummy	06
Business Model	07
Documentation of Workshop	8-11
Literature / Bibliography	11
Appendix: presentation of the pitch	

## Personal Statement:

Even though the workshop had a rough start with organizing the groups, it turned out to be a creative environment, where thoughts were exchanged to come up with new ideas. Unfortunately, we were a group with a majority of architecture students and it would have been helpful to have a constant business opinion in the team. In retrospective this might have been the reason, why it took us longer to come to a conclusion and understand how our ideas can foster a potential business model. It would have been more helpful to have a more constant input and discussion with the mentors. Additionally, I think the challenges could have been defined more precisely and some methods the problem structuring and solving could have helped as well. But overall the well organized workshop was inspiring, productive and a lot of Fun. Also the space we worked in was perfect for the sprint.

## Report

Yonne-Luca Hack  
Master Candidate Architecture  
TU Munich

## EXECUTIVE SUMMARY

### SMALL SCALE OFFICES

Everyone, who has started a new job in the last years ran into a similar problem: The server and file structures in most firms are difficult to understand at the beginning and only occasionally make sense in a long-term perception. A lot of times, when teams face a new problem, someone in the offices ran into similar issues already years ago and the solution lies somewhere on the firm's server. But even though the problem had been solved already within the same company, it takes a lot of time and inefficiency to look for the solution or come up with a new one. It is simply an issue of knowledge management and server/software solution.

To be more specific in the following, the concept introduced here as well as this report focus on the conditions within the architectural field. Especially in the German building sector small offices, with few employees and an out-sourced IT-infrastructure, are the majority in the market: roughly 130.000 architects work in 40.000 architecture offices, which makes in average 4,25 architects per firm<sup>1</sup>. At the same time a lot of small offices struggle with the market condition and would welcome some low-effort money on the side. Furthermore, they would also benefit from an easier access to information and an more efficient planning process.

### ARCHITECTURE AS LEGO BOX

Within the architectural discipline a lot of knowledge has been developed in the past centuries. At the same time new developments, technologies and research results get published constantly in an increasing rate. But still, in daily business these results are mostly unnoticed and work is done multiple times in various locations, simply because there is no awareness that the same problem had been solved by humanity already. Especially design processes are based on existing references and combining already existing know-how into new ideas is one of three key drivers of innovation.<sup>2</sup> Architecture is similar to a massive LEGO box: a lot of knowledge exists within the discipline already; constantly someone adds new blocks and every architect knows some of the content within the box, but has difficulties accessing the known and unknown parts.

### FYL - STORE, ORGANIZE, SHARE, EARN

Knowledge Transfer Management and Platform

As a team of three architecture and one business student from TU Munich and TU Delft we developed a Start-Up concept to tackle one of the biggest organisational and knowledge transfer problems in the building industry with the goal of "Scaling good Architecture":

The missing interconnection of overall accessibility to already existing knowledge within the office and a missing connection to the general know-how of the building sector.

So how does the system work from a user perspective? Every office can easily download the software, which will save entire project folders. Within the software files can be named and tagged with crucial information for future search results. For all new projects the office could quickly access past references. This will already reduce time spent in confusing server structures and increase productivity. As a first step important drawings and files would be labelled manually with a set of relevant tags. A future implementation of BIM-meta-data to automatically tag files and save them in correct order, is conceivable. An additional option lets the office publish and share some of the tagged drawings onto an online platform. Other users can see it online and pay the publisher for downloading a file from the platform. A ranking and commenting option, which empowers every licensed architect to participate in the platform community, increases the quality through professional mass acceptance. Two approval processes by city halls and a ranking system on the platform would guarantee quality.

FYL, as the software and platform provider, would sell the knowledge management program and get a percentage of the money transfer on the platform.

<sup>1</sup> <https://www.bak.de/architekten/wirtschaft-arbeitsmarkt/architektenbefragungen/bundeskammerstatistik>  
<sup>2</sup> Erik Brynjolfsson, Andrew McAfee: The Second Machine Age; 2018; Plassen, P.53-110

## DETAILED CONCEPT

OFFICE

PLATFORM

MARKET



Individual Practice



Project 1  
#detail  
#floor plan  
#roof



Project 2  
#lightweight  
#structure  
#membrane



Project 3  
#wood  
#section  
#MunichSouth



Share



Platform

# SEARCH



Download



Download



Download



### OFFICE

Within the individual practice an user-friendly storage software of all projects enables quick research and access of former projects including their specific parts. A later implementation of BIM meta data seems feasible and can be added.

### PLATFORM

Since the data is already in the correct format on the individual platform, it is simple to upload desirable files to a sharing platform. This homepage will function as a global archive of the entire discipline, where newest data and

### MARKET

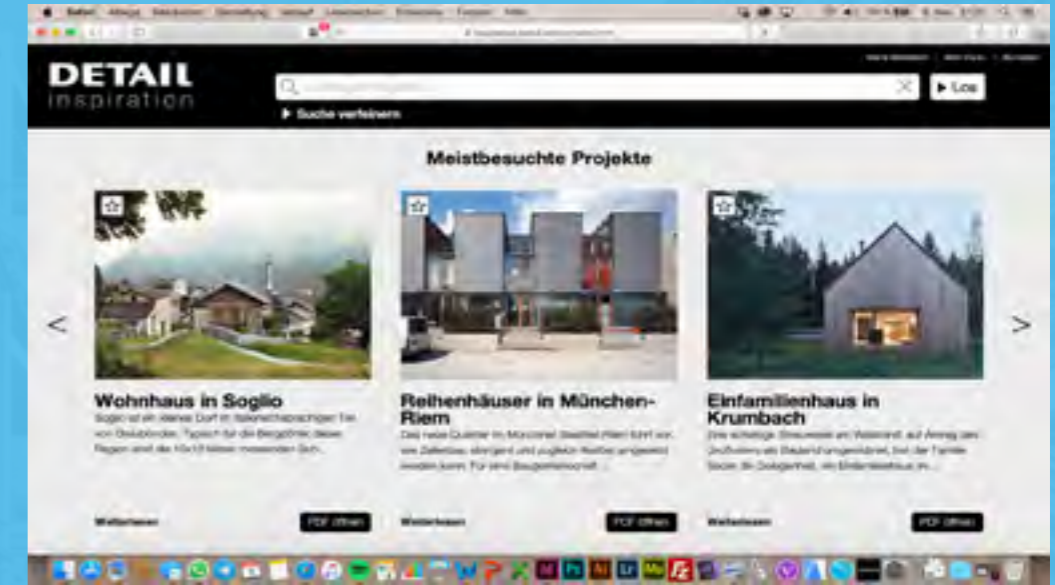
A license-based model enables architects and engineers to access current knowledge in the building sector and lets new ideas reach a larger market to scale good architecture.

## MARKET RESEARCH

### DETAIL Inspiration

The German DETAIL magazine has a large collection of existing architectural drawings and details of the past 30 years. They are all in good quality, they had been provided by the offices themselves and reworked by the magazine to reflect a similar drawing style and level of detail.

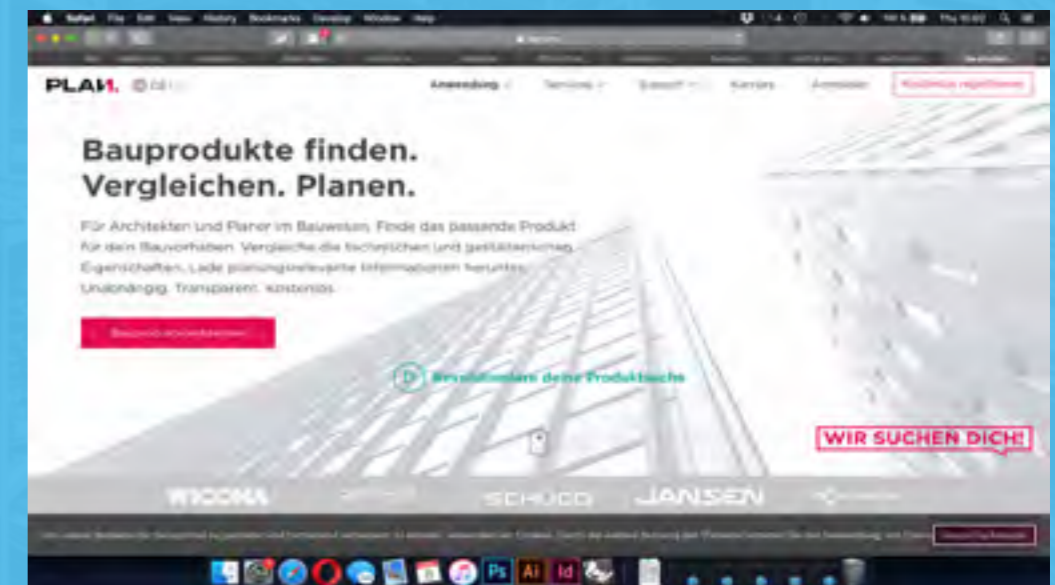
<https://inspiration.detail.de/startseite.html>



### Plan.One

As a collaboration of building material suppliers the homepage Plan.One provides BIM-details for architects and engineers, that can directly be integrated into new projects. It was developed to provide better planning details to make collaboration within the sector easier.

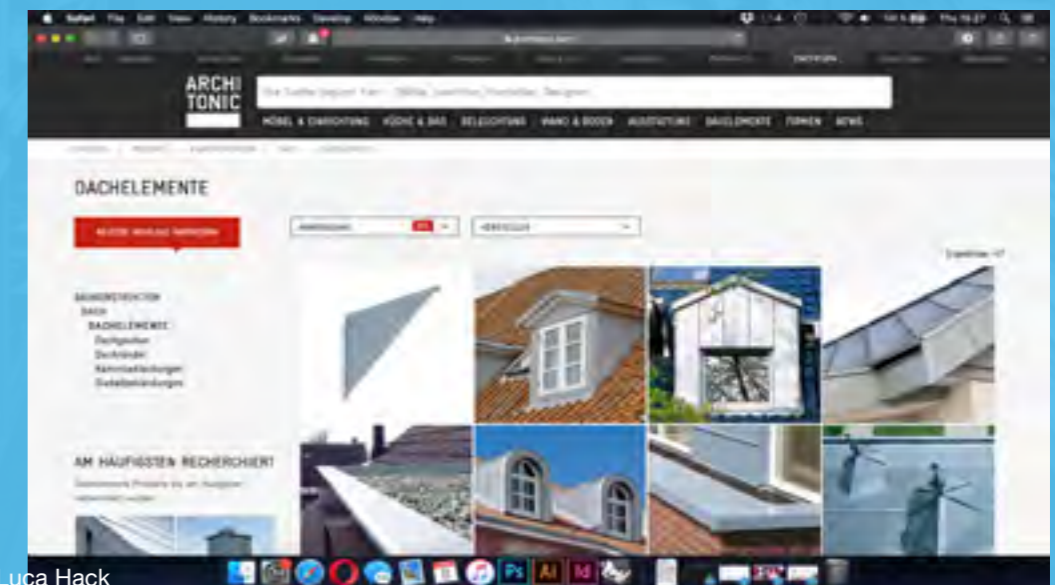
<https://plan.one>



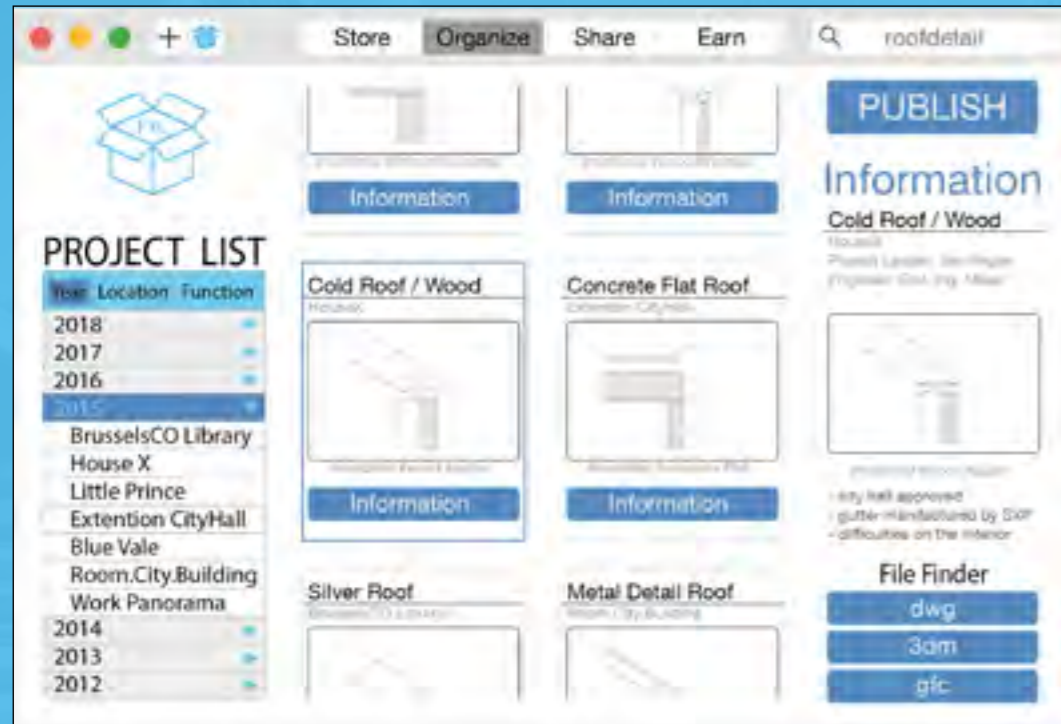
### ARCHITONIC

The platform Architec-tonic provides a wide range of objects related to architecture and interior design. There is a large variety of furnitures available as well as specific products. The resources are provided by material suppliers, which use it as another marketing strategy.

<https://www.architonic.com/de/>

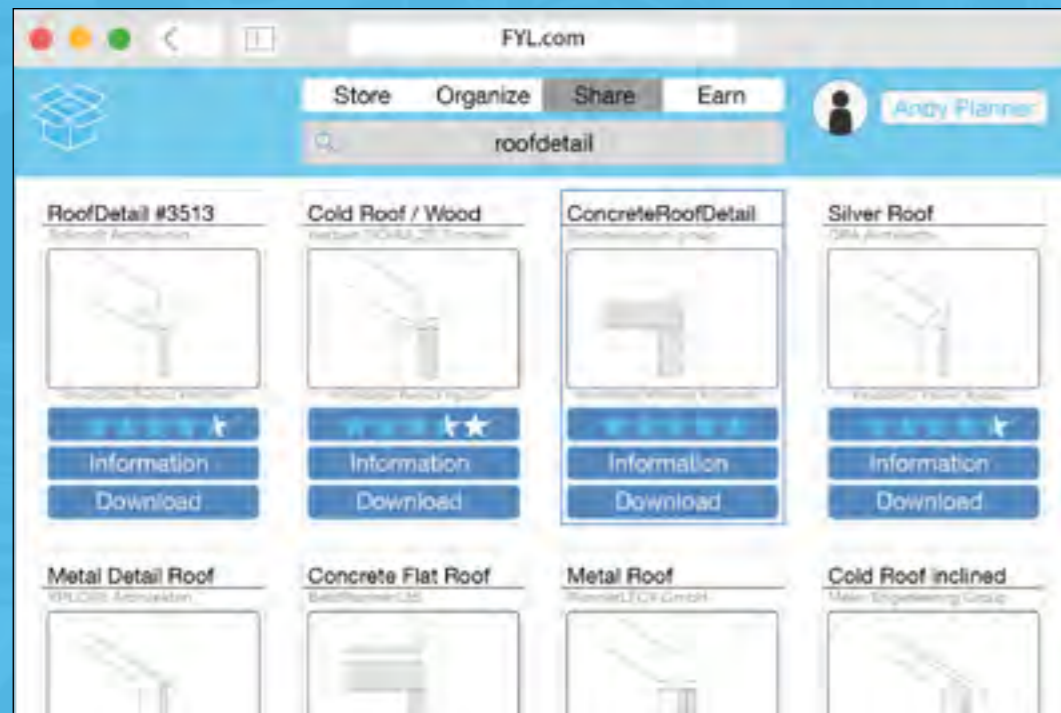


## CLICK DUMMY



### SOFTWARE

Within the individual practice an user friendly storage software enables quick access to specific drawings, plans, references, details or researches of previous projects. It can be organised according to year, location, function, etc. But especially a tag function enables quick search to specific information of projects. Further details are shown on the right, including possible file formats for easily implementation in the current project. FYL licenses the software as a micro-subscription.



### PLATFORM

Once offices publish some of their work, it will show up on a platform and a preview can be seen by everyone. To download more detailed informations, including CAD and BIM files, one has to pay the publisher. FYL charges for this pay-per-package-system to ensure service. Customers, who have downloaded projects or files, are asked to leave a ranking and comments to provide more objective information to future clients and ensure overall quality.

## BUSINESS MODEL CANVAS

<b>KEY PARTNERS</b>  Renowned Architects Small Architecture offices Bundes Architekten Kammer Bund deutscher Architekten International chambers and organisations Material Suppliers and construction firms CAD - / BIM provider	<b>KEY ACTIVITIES</b>  Build and maintain IT-infrastructure Search engine upload/download Ranking/ Commenting Payment Structure  <b>KEY RESOURCES</b>  IT-infrastructure Drawings, construction mater	<b>VALUE PROPOSITION</b>  File storage and organisation Tag-based search tool BIM metadata analysis to automatically tag projects Platform Sharing-option to provide services on the platform	<b>CUSTOMER RELATIONSHIP</b>  eMail online support Newsletter Social media  <b>CHANNELS</b>  Building fairs online platform/ marketing Bell brushing at offices	<b>CUSTOMER SEGMENTS</b>  Architecture offices, especially small ones Construction companies Real Estate firms Material suppliers
<b>COST STRUCTURE</b>  Build and maintain IT-infrastructure, server Marketing to reach customers and scale the platform Initial sales		<b>REVENUE STREAMS</b>  free content, pay for functionality Software license as a micro-subscription Pay per package on the platform		

# DOCUMENTATION OF WORKSHOP

## FRAMING THE CHALLENGE

### BRAINSTORMING PROBLEMS

After a welcoming lecture and the introductions of different challenges, we decided on Jan Fischer's (Alles Wird Gut) task to come up with a product or service, that can fundamentally disrupt how we do architecture nowadays. We were all intrigued by the idea of understanding and changing the underlying processes of the built environment and started by brainstorming various difficulties we had encountered in our own experiences. Even though this was meant to be a personal task with a discussion phase at its end, very quickly we started engaging with the problems we had pinned on the wall. The entire conversation circulated around the idea of "Scaling good Architecture", and once we named this headline, the discussion had a general topic, to which we could return to. In general, we followed the problem solving methods described by Jake Knapp of GoogleVentures in his book SPRINT.



Organized Problem Clusters

### ORGANIZING PROBLEMS

In the next step everyone presented his/her problems, in order to get a better understanding of the different ideas. We tried to find more specific headlines and framed the problems in a better way by sorting them into three different categories. Firstly, we recognised major communication issues in the building sector and hereby focussed mostly on the interaction of the architect with his clients and the society. In our opinion the architect was lacking an understanding by society and we were convinced he can change it himself. The second cluster dealt with organisational problems within architectural practices. In our experience architects see themselves as creative masterminds, that don't want to deal with any structured work. But at some point in the office's lifetime they have to build up an organisational understanding, especially when it is scaling up. Thirdly, we thought in a much larger scale and identified fundamental social problems within cities. In this case our interest laid in the role of the architect and how the profession might have the ability to change some of these problems.

### "WHAT IF...?" AND FRAMING THE PROBLEM

After we had received the first feed-back of the tutors and discussing concepts during lunch time, we started to further frame the problem. In order to come up with ordinary ideas to solve some of the Difficulties, we wrote down ideas throughout our discussion on the various topics. While we asked ourselves the question "How might we...?" to get a better understanding of the actual problem, we used "What if...?" to enter into the solution phase and brainstormed various potential approaches. To decide on a potential future solution to focus on, we went for a democratic method. Every group member had four votes and was allowed to place them where ever he/she wanted to, including multiple times on the same topic. The election gave us three main problems and the related solution ideas, that we wanted to work on:

#### 1. Good Architecture without Architects

The idea was to make everyone become an architect, "even your mum". It would be an online platform, where different tutorials and guidances would help a client to design and plan his own house. The quality would be checked by a group of "well-known" - architects to guarantee design standards.

#### 2. Archicive

Architecture has a long history, reaching back multiple centuries, or even millenniums. How can the discipline access this huge knowledge base and still guarantee to exchange new research results and innovations? A digital archive, where the knowledge of the discipline would be uploaded to and sorted would help all participants to rely on an incredible database to draw knowledge from.

#### 3. Quantitecture

Because every building has specific requirements and individual solutions to climate, context or legal issues, architecture is not a product. It is a discipline of prototyping: Every project is the first and only one of its kind. But architects rarely evaluate the outputs of their design processes. Not only would it help them to understand their working method better, but it would also improve architecture as a whole, if knowledge about performance and user satisfaction would be gathered.



"What if...?" and "How might we...?"



Three Problems with the most Votes

## WORKING ON A SOLUTION

After discussing the three problems with our team tutors, we decided on developing the second one further. On the following day, we focused on one specific part of architecture, that can easily be shared and is needed on a frequent basis: a roof detail. Even though we knew, that there were already detail catalogues online, mainly supported by construction material suppliers, it let develop a specific solution, that could be expanded later on.

### USER - STORY

Andy is an architect and a world class roof detail planner. He just finished a very nice single family home roof and a lot of people asked him already if he can show them how to do a similar one. Therefore he decides to upload the detail drawing to FYL and tags it with crucial information about the detail, such as wall and roof materials, construction mode, climate zone, etc. Other architects, who want to build a similar detail, can find Andy's drawing on the platform and would pay him a fee to download and use it. FYL as the platform provider would get a percentage of the money transfer.

### SWOT - ANALYSIS

We used a SWOT - analysis to get a better understanding of our idea and realised that the concept had huge potential for scaling and user accessibility. It would also always be up to date and be fed by the newest know-how. On the downside we were facing two major difficulties. One would be quality guarantee, in order to reach the goal of "Scaling good Architecture". We had eliminated the checking of 'famous' architects, because it would take a lot of negotiation, potentially a critical part of our cash flow and would hinder the platform from scaling quickly. We decided on a ranking and commenting solution, through which we would empower every licensed architect to participate in the platform community and increase quality through professional mass acceptance. A second problem was the classical platform issue of critical mass and it took us a long time to find a potential solution.



Concept Diagram



SWOT - Analysis

## WEAKNESS OF CRITICAL MASS

We had another long discussion with the tutors and a team-brainstorming session to present a feasible idea. We came up with the idea of developing not only the platform, but also providing an in-house file structure to organize all project. As a first step every drawing would be labelled manually with a set of relevant tags. For every future project, that the office would work on, it could quickly access past references. An option would publish and share the tagged drawing onto the online platform and would have the benefit to fully automatically generate some money on the side.

At the end the project became a combination of knowledge transfer within an individual practice and a platform to share know-how with the entire discipline.

## BUSINESS MODEL CANVAS

As a final step we used the business model canvas to evaluate our concept and get additional insights on important points, to focus on for the last part. We did a quick research on the market potential, already existing competitors and prepared the final presentation.



Business Model Canvas

Copyright © 2018 by Yonne-Luca Hack

## Literature:

Erik Brynjolfsson, Andrew McAfee: The Second Machine Age; 2018; Plassen

Jake Knapp, John Zeratsky, Braden Kowitz: Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days; 2016; Simon & Schuster Paperbacks

<https://www.bak.de/architekten/wirtschaft-arbeitsmarkt/architektenbefragungen/bundeskammerstatistik/>

<https://inspiration.detail.de/startseite.html>

<https://plan.one>

<https://www.architonic.com/de/>



## **Start-up Architecture Workshop**

(Multidisciplinary)

**TUM**

**TU Delft**

**Technological University of Munich, Germany**

**September 20-21, 2018**



# Creative Business game Start-up architecture Workshop

Technological university of Munich

## TEAM "FYL"

Akshaya Bomanwar  
Felix Krauth  
Isabel Bommers Fernandez  
Yonne-Luca Hack

## CONTENTS

Personal statement	1
Executive summary	2-3
Work flow chart	4
Concept	5
Market research	6-7
Business model	8
Target group, marketing concept, channels.	9
Possible Stakeholders	10
Design -Technology- Business	11
Necessary infrastructure	12
User interface	13
Outlook of first year and potential risks	14
Documentation of workshop	15-19

### Submitted by

Akshaya Bomanwar,

Master of science , Construction  
management and engineering ,  
TU Delft.

## Personal statement

The workshop started with distributing students according to the disciplines they study, which was a great initiative since we had a multidisciplinary view on the project, it would have been a bonus if we could divide the participants with an additional criteria of the country they have worked in so that all the teams could have a global perspective while developing the start-up idea; which would magnify the context and scope of it; luckily we had three german students and one Indian student who studies in The Netherlands so we had three AEC scenarios to consider the traits.

The mentors did an amazing job creating 3 objectives in the beginning which helped everyone to form teams based on interests. The mentors gave us outlooks in their perspective as an employee which helped us believe in our idea and helped us fathom the parameters we weren't thinking of. The interactions and suggestions from them was informative and helped us clear our minds and gave us a direction towards the ultimate goal of finalising one idea. Towards the end we realised more than two days for the workshop would have been better since everyone was working together for the first time. Overall it was an amazing experience, and i learnt a lot from my team mates, also, it was refreshing to know how one idea can have different perspectives, and how much our surroundings, education, lifestyle influences it.

The best part of the workshop according to me was the common motive of promoting 'good architecture' that I noticed in not only the participants of the workshop but also the judges. If asked , would i attend it again, Yes i definitely will attend something on the similar terms, and would encourage my fellow batchmates from the construction industry to do so as well.



# Executive summary

## Background Sketch

We chose the challenge by AllesWirdGut which put up a question, “Why can't architects speed up their processes like other industries and conquer new markets?” the first step towards this was the necessity for architects to open the dialogue with disciplines of management to develop new models which would ensure economic gains. We were expected to make use of architect's core skills by linking them to other disciplines (business models). The use of digital innovation and new technologies that would be a Gen-next step in the AEC industry.

As this was a multidisciplinary project, we were a group of four with everyone having a bachelor's degree in architecture and two of us doing our masters in management and two doing masters in architecture. The know-hows of both the worlds were known to us and hence the a view from different aspects and a counter check of ideas in all dimensions was possible in the initial stages. Every member in team had work experience which allowed us to point out the problems and hurdles we noticed not only during the student life in architecture but also as a working professional in the building industry. We had a generalised idea and plotted down the main problems and decided the aim would be to solve some of these problems through a platform which would then be analysed and modified to generate revenue as well.

## Problem and Opportunity-

Everyone shared some problems that they think should be the major concern of the AEC industry, out of which we shortlisted two.

## Architecture as a LEGO box

With the dawn of urbanisation, innovation and technology are acting as the key players in the AEC industry in global sense. Architects solve problems as per the projects in different places at different times, although these problems can be faced by another architect in some other part of the world at a later time; wherein he will waste his time solving the issue totally unaware that there is a preexisting solution to this problem. So we compare the concept of LEGO BOX with architecture where a lot of knowledge exists; and an ongoing process of adding new knowledge (block) in continuing. The access to all this knowledge is only possible to a limited extent and not much in a wider perspective.

## Office Spaces

We had a look at some statistics on a global level and in Context of Europe. All of us had a common problem regarding handling and storage of drawings of old projects within the firm we worked in. For all scale firms the data is lying somewhere, of which the employee is unaware of or is lost due to improper handling of the team. For large scale firms which have their own servers, it is possible to find the data but the limitation is only for the firm. This also isn't very useful in the long run. The main problem was knowledge management and storage server. The smaller firms would not mind earning some money on the drawings that are already being made. This idea of 'low-effort' money would promote the usage of our solution to these problems.

## Solution and Proposal -

### **FYL - store, organise, share, earn** Knowledge transfer management and platform

As a team of all architects we decided and strongly agreed upon the goal of “Scaling good Architecture”, and evolved our idea accordingly to go hand in hand with good design and ensuring the ability to join the dots in the AEC industry. The aforementioned problems portray the hidden opportunity within the AEC industry which we identified and developed further. FYL would serve as a platform which connects architects who don't know each other but can benefit from each other's talent ensuring efficient use of skills, time and scope.

The software could be downloaded in systems in offices or by an individual, wherein different tags can be given to drawings and files ensuring no loss of time in this fast paced urban scenario. A user can tag his drawings manually and save them into the software; here FYL is only acting as a storage platform but extending the idea in future, this same user can publish his detailed drawings in the software and make them available to his fellow professionals. When browsing through the drawing someone can buy this from the user. A ranking and commenting by licensed architects option would be available to make sure the finest works are sorted and are made available. Some other features like approves from municipalities and a rate system would be inculcated. So FYL would generate revenues on a share of percentages on every money transaction done.

# Work flow chart



# Concept



The flow starts from the person who owns the company, an employee feeds all the details manually on the sheets and uploads them on FYL, someone on the other end likes those details and purchases them, a percentage of the transaction goes to FYL

# Market Research

With the market research, I found a number of websites that were similar to FYL in some or other way. This is Potential risk but none of them offers a full fledged solution as FYL does, and are web based platforms for plans, or help you design our own plan;

Since in FYL we have kept an option of assurance , rating by professional architects on the basis of their choice, the criteria helps everyone to decide, and choose, guaranteeing 'good architecture



**Floorplanner lets the user plan the floor or any room, office in general by providing a huge library, wherein the user gets to choose materials and has a visual of the Final outlook.**

<https://floorplanner.com>



**Smart draw has some templates for plans as well enables you to edit them , it has already partnered with big giants in industry who are using it for their layouts. There are some editable elevation plan as well as floor plans that can be customised as well.**

<https://www.smartdraw.com/floor-plan/>



**With room sketcher the user has to upload his plan online, where the website then offers a full detailed plan accordingly in 2D or 3D as required.**

<https://www.roomsketcher.com/floor-plan-services/>



**HomeByMe is an online 3D space planning service developed by Dassault Systems SE brand. They have draw, measure and decorate categories; wherein they offer different services to plan, furnish or interior decoration of the space.**

<https://home.by.me/en/my-services>

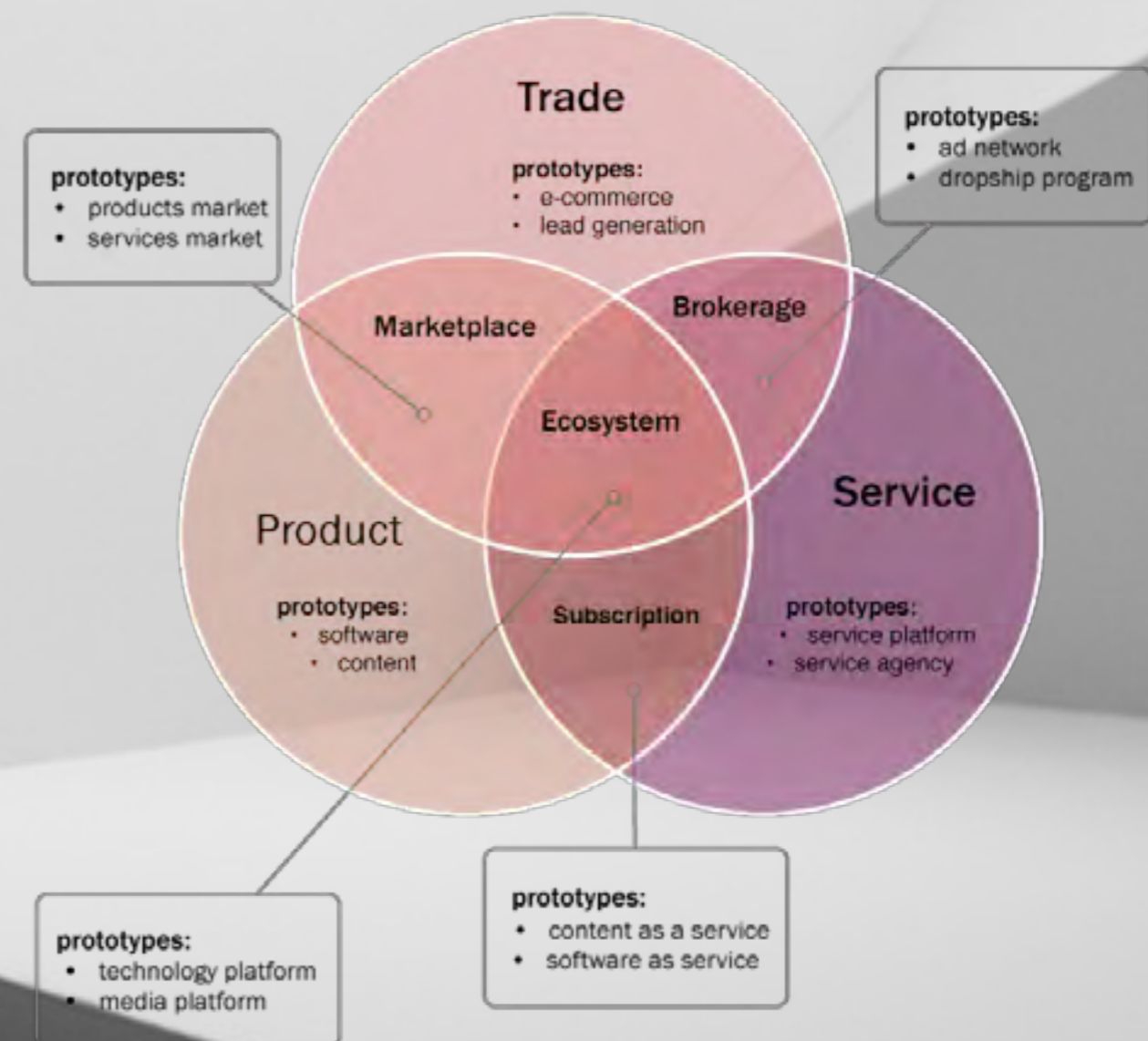
# Business model

<b>KEY PARTNERS</b>  Renowned architects, council of architecture, institutions	<b>KEY ACTIVITIES</b>  Search engine, votes, verification, uploads, downloads, payment structure	<b>VALUE PROPOSITION</b>  help architects manage their work , through a accessible platform	<b>CUSTOMER RELATIONSHIP</b>  incentives and feedbacks	<b>CUSTOMER SEGMENTS</b>  Construction firms, architectural offices, real estate, Individual architects
	<b>RESOURCES</b>  Plans, sections, details, materials detail, BIM models		<b>CHANNELS</b>  Social media, journals	
<b>COST STRUCTURE</b>  Space development, web structure, employee fees		<b>REVENUE STREAMS</b>  Free surfing , payment for services, packages, micro subscriptions		

# Target group, marketing concept and channels

The target group is the sole AEC industry as a whole, but the main focus is on smaller firms and individual architects who would upload their work on the platform and make it available for others. The help of architectural magazines, journals and e-platforms (like arch daily) can be taken to advertise FYL. Architectural bloggers can be invited for collaboration with FYL.

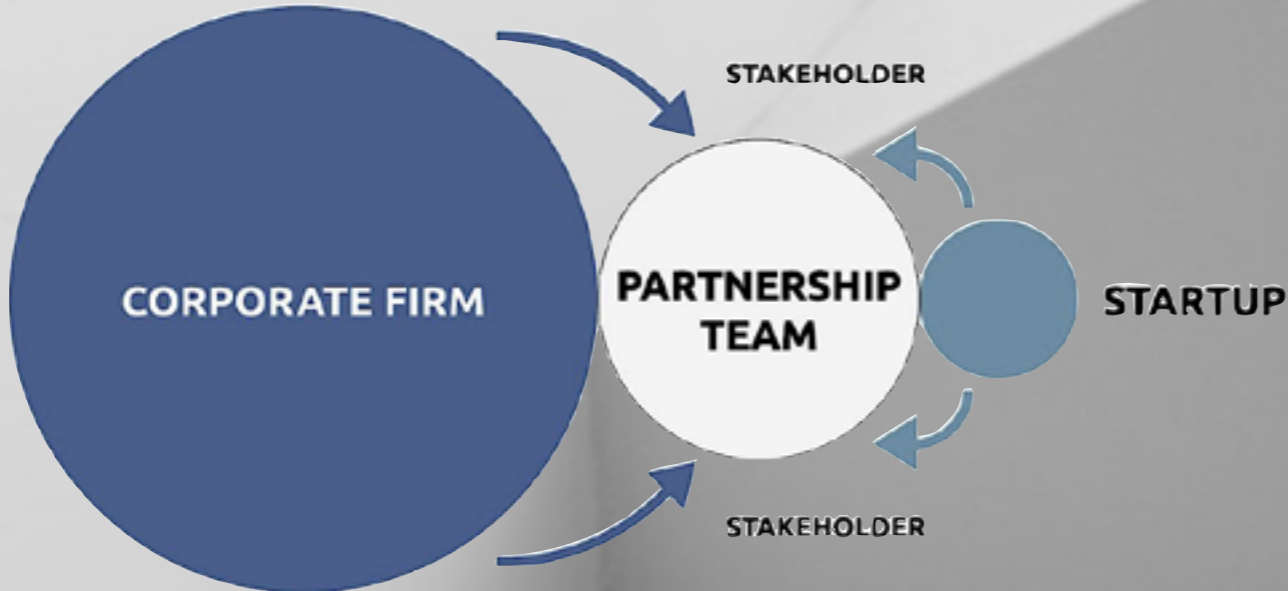
For bigger firms their underlying interests are low but if a big giant in the AEC industry uses FYL, the smaller firms would be interested and the popularity can be increased. The small scale firms can be invited over the benefit of incentives in the process, which could be free downloading of some drawings in the initial stage (numbered), and in this FYL would be actually paying the other party. Incentives can be offered for publishing the work too, catchy lines and slogans which initiate the idea of 'money-making' in the mind of individuals and firms would be published.



# Possible stakeholders

The possible stakeholders in the context of FYL would be the investors, financiers, and last but not the least the providers. Effective control if established between all these stakeholders, a good balance can be achieved in the system. The stakeholder with most power (stakeholder management) viz; having a direct impact on the revenue of FYL would be on the top of the priority list, all in all and inclusive approach can be used here to ensure smooth functioning of the startup.

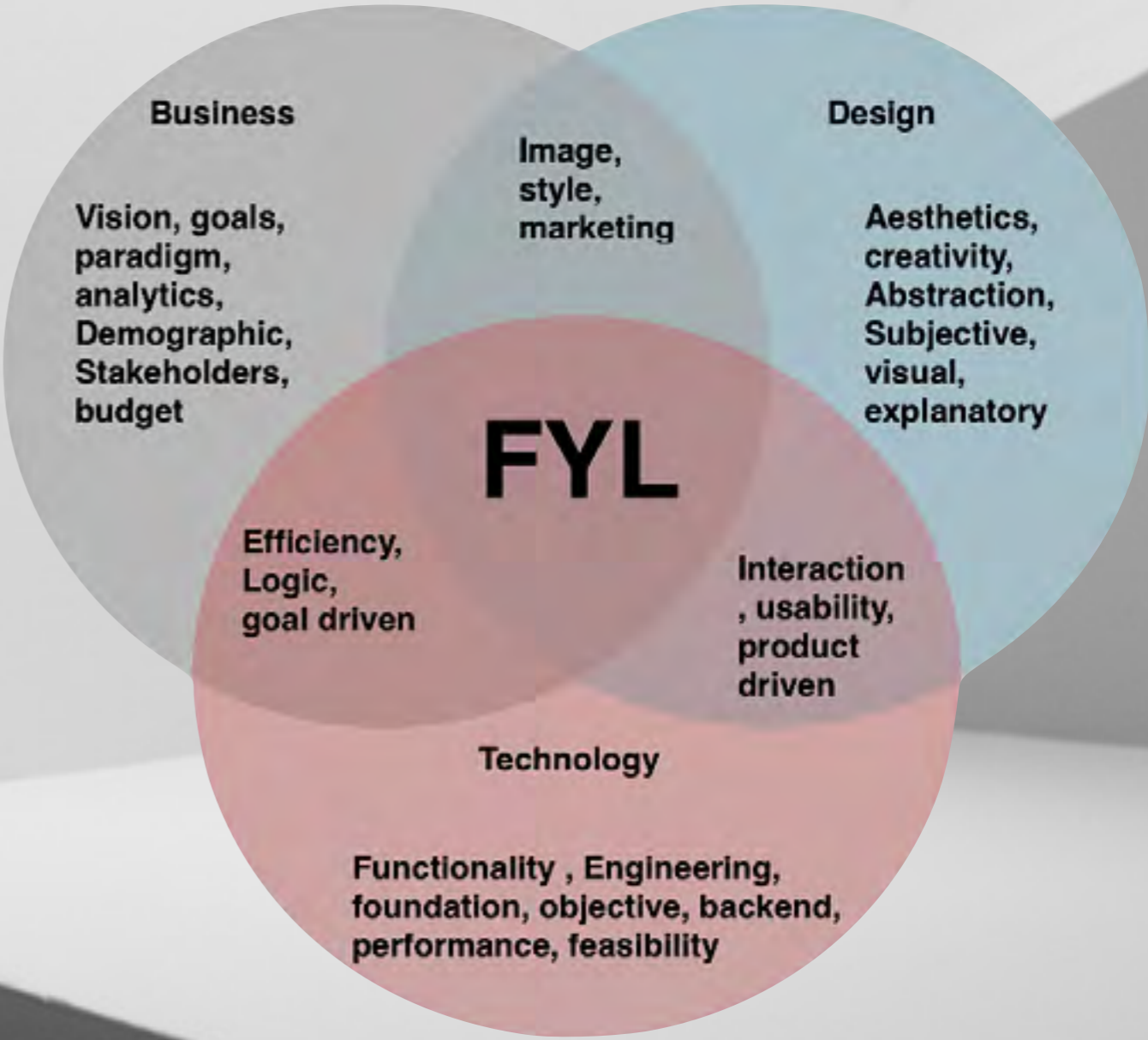
## PARTNERSHIP STRUCTURE



<https://medium.com/@TheIOSummit/this-new-model-could-be-replacing-corporate-innovation-consultants-667301e321c3>

# Design - Technology- Business

FYL can be called as an amalgamation of design-technology and business. All three disciplines come together while all of them have certain aspects in common; which are put out in the following Venn diagram, where in all the necessary aspects when fulfilled together would result in a functional FYL which will stand true to the prediction of it success. Since the product targets users from different backgrounds with different hopes and uses, I have listed down certain parameters that can ensure fulfilment of the user's need.



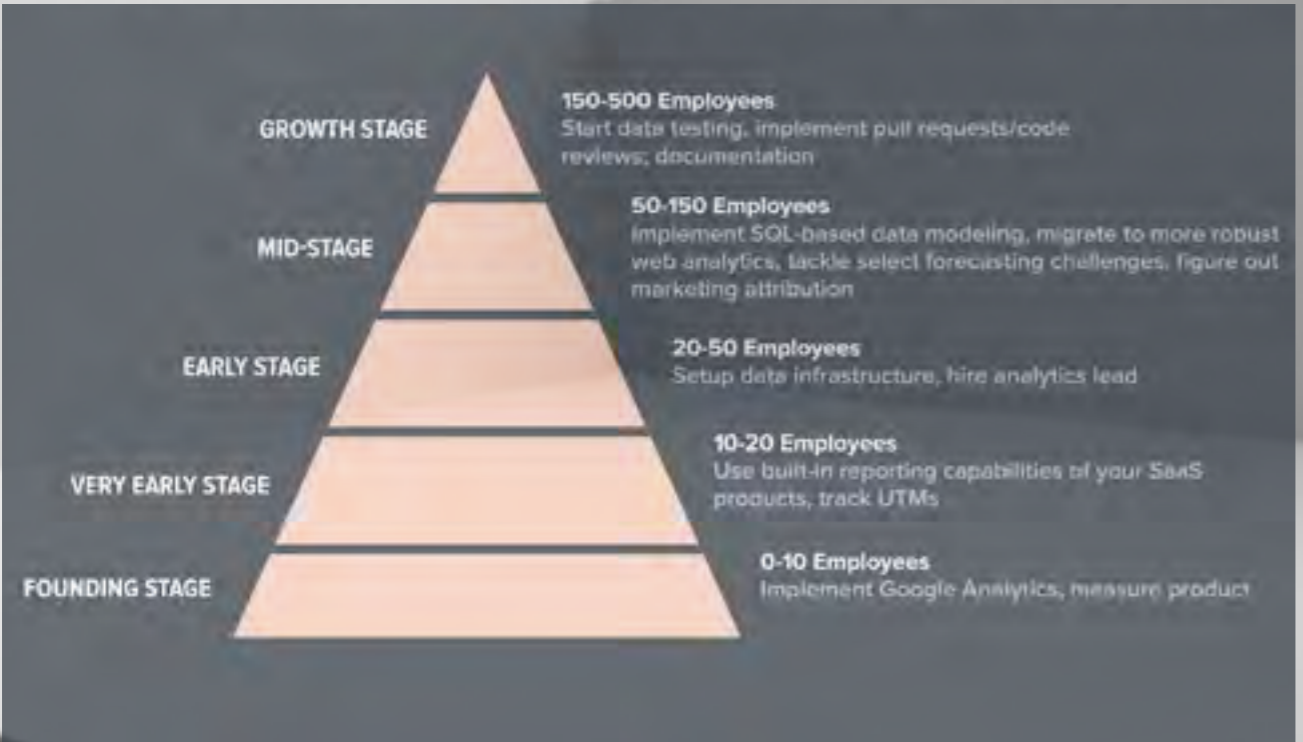
# Necessary infrastructure

Since this is a web based software-platform; we are not looking at a very large man force in the beginning. The employees FYL would need in the beginning would be small in number; since most of the tasks are done by individuals here. A workforce of not more than 5-8 people can be expected in the first year. Funds are usually used up in the development and betterment of the platform in the first few years, so a lot offends can be saved if the employees could operate from a single co-working space in the beginning. Not to forget Apple was started in a garage. Some student organisations provide spaces to work for free somewhere on the campus for fresh graduated of the university (Ex; YES! Delft at TU Delft) which can be used to save some funds.

**Man power-3- 5 people - minimum monthly wage (Netherlands)- 1594 euros per month**  
**total cost- 7500 euros per month ([expatica.com](http://expatica.com))**

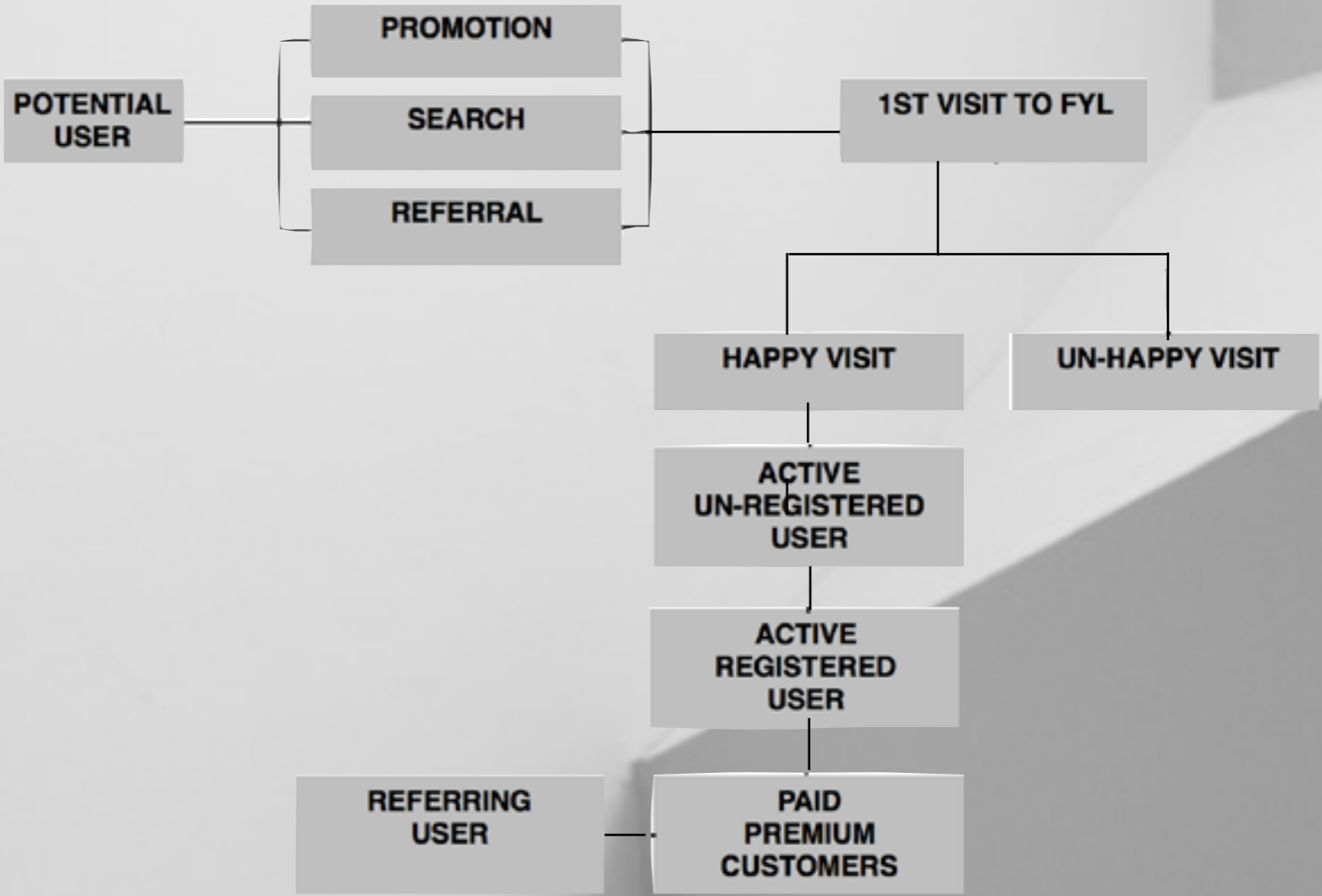
**Costs for website building - considering an e-commerce website- 7,000 euros-12,000 euros ([expertmarket.co.uk](http://expertmarket.co.uk))**

**Costs incurred in collaborations - cannot be determined without financial analysis.**



<https://thinkgrowth.org/the-startup-founders-guide-to-analytics-1d2176f20ac1>

# Potential user interface for FYL



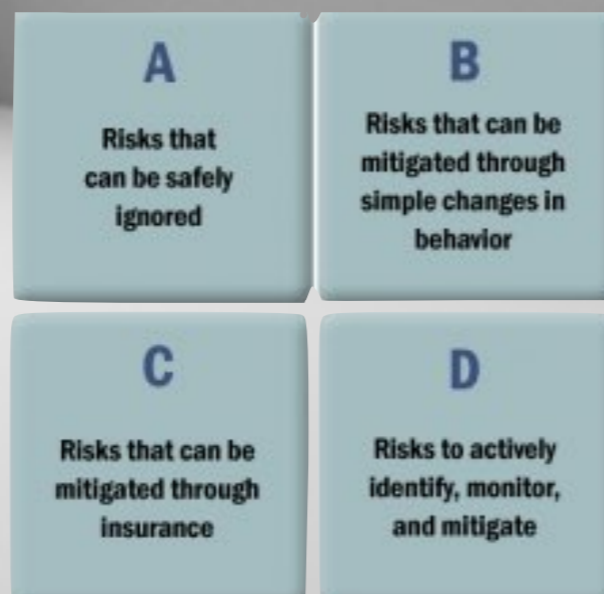
# Outlook of first year and potential risks

The first year of FYL can be viewed as “building the platform”. Where in promotions regarding ‘increasing the library’ would be done. We picture FYL as a platform in the initial stage; as the library gets bigger we start generating revenue. The potential risks would be growing competitions; people not being intrigued by this option; the platform being used for wrong content; copyright issues; design frauds; similarity in uploads. These can definitely be minimised by preparing counter strategies and a sound risk management.

Whether to charge users to use the platform or to just adopt the strategy of letting them use it for free to create a big customer base first depends on a lot of parameters and cash flow analysis, scope, financial analysis, risk analysis (calculating financial incurrence of failures). For this a financial manager and risk manager would be involved to ensure the end results have highest probability of success. The market marks changes everyday, and practical matters cannot be put down in solid statement by me as a project manager. Some potential categories in which risks can be diversified are :

- Market Risks
- Competitive Risks
- Technology & Operational Risks
- Financial Risks
- People Risks
- Legal & Regulatory Risks
- Systemic Risks

<https://www.caycon.com/what-kills-startups>



<https://www.caycon.com/what-kills-startups>

# Documentation of workshop :

We started by some discussions and decided to have stick notes on the board for problems we all see on an individual level in the industry so far, there was no preferred order, but whatever anyone felt was wrong and needs to be changed in the industry or something that has to be improved or given a new form because of the change of time was to be posted on the board. There were a lot of issues but they were scattered.

## Clustering:

We clustered the problems into categories where they can be addressed individually, we divided the problems in three categories; viz: built environment, communication and practice. Under built environment we had, the problems due to inflation, gentrification and the broader outlook was to reduce these problems with the help of

some solution. Another issue was the communication between client and the architect, we understood that the architect thinks the client doesn't understand him, which was an issue to be resolved by the architect himself. The third category was architectural practice



problem clusters

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# Business model

We developed a business model canvas for the project wherein we did a market research; listed out possibilities and data required. The possibilities of cost structure, features needed and revenues was listed out. The final presentation was prepared and we gave our pitch; we ended up with a second position as result of voting by other participants and judges.



Business model

# Literature and References

- <https://floorplanner.com>
- <https://home.by.me/en/my-services>
- <https://www.roomsketcher.com/floor-plan-services/>
- <https://www.smartdraw.com/floor-plan/expatica.com>
- <http://expertmarket.co.uk>
- <http://smarterstartup.org/framework/business-model-archetypes/>
- <https://medium.com/@TheIOSummit/this-new-model-could-be-replacing-corporate-innovation-consultants-667301e321c3>
- <https://www.caycon.com/what-kills-startups>
- <https://thinkgrowth.org/the-startup-founders-guide-to-analytics-1d2176f20ac1>





Submitted By  
Srijan Manish

BowHow5 Workshop  
21 & 22 September, 2018

Challenge: AECOM / COMx  
Project: DYNETIC



## Executive Summary

This document is an outcome of the two day creative business game on start-up architecture. The perceived challenge was to unravel the possibilities of bringing innovation(s) in the field of architecture. The two-day interactive session was equipped with glaring information sessions from three industry experts. Insights and more importantly challenges were presented which pivoted what problems we were going to solve in the due course.

This document talks about how we, as a team came up with a very unique concept of DYNETIC, which happens to be at a solemn intersection of static and dynamic. And as the name pivots pretty much what we conceptualized, we came up with a concept with which big and lavish office spaces could be turned into a custom shape (the known interpretation of the term shape could be a meeting room, a concept testing lounge or a client meeting hall) in seconds if not in minutes. Thereby truly living to the identity of bringing the dynamic architecture in the static space.

DYNETIC wishes to pitch itself as a buddying architecture startup/consultancy which specializes in office floor/space re-planning and refurbishment. The unique value it brings on the table is the scope of generating more value from office spaces. It has invented a ground-breaking concept of dynamic office setting within a concrete static building. The problem it targets to solve is enhance the space utilization and value co-creation by the virtue of dynamic architecture.

## Detailed Concept

There is a very basic drill which one can perform to arrive at the core of the concept. Yourself, the reader – while you are reading this text, can you take a 10 seconds pause and look around? You might be within a concrete building sitting on a chair within a room or a hall? Right? So now try answering a question, what defines a room or a hall or any living or working space? The walls, don't they? Now the next thing you may do is think.... Think how long you have been acquainted with these walls. How long you know them for? How long have they been there? The simplest guess could be – the same time since the building exists? And, it is highly likely that your guess is right. But where is the problem? The problem is in the static nature of the walls. Think about a situation when the researcher next door is off to USA for an 8 months sabbatical. Or your female colleague next door is off to maternity leave. Think about a situation when you want to conduct an information session for about 200 students, but you planned it late enough that no room / lecture hall of that capacity is available. Are the walls helping you yet? Maybe yes, to hang a photograph of your dog or putting a calendar.

But now try thinking of a situation where there were no static walls? And everything could move within minutes if not seconds? What if you could create a hall of capacity of 200 people from nowhere? Yes, you are right, this is our detailed concept and we want to realize that.

So, we, DYNETIC, want to disrupt the conventional architectural practices and introduce the concept of dynamic office spaces, which can be leveraged for value co-creation by all the stakeholders.

A bigger part of the challenge was to disrupt the conventional thinking and practices of the classic modern architecture world. The specific challenge presented to our team was case: **AECOM / COMx**

We were given a challenge by the architecture company AECOM and the statement follows like - There is a company called COMx, which happens to be an audio hardware making company, with its DACH headquarters in Munich. This company has about 6000 employees globally, out of which about 58 work in Munich. They own a lavish office space in the heart of Munich, right in the neighborhood of Odeonsplatz. The building houses two floors and the dimensions are 88x37 Sq. Mts each floor.

Now the problem is – That the office spaces is highly unutilized (Total utilization is about 40%). Additionally, teams such as HR, Operations, Sales and Production have different concerns to be addressed. The only constant being, every team wants to create value. The negative being their value creation methods have no overlap with other teams.

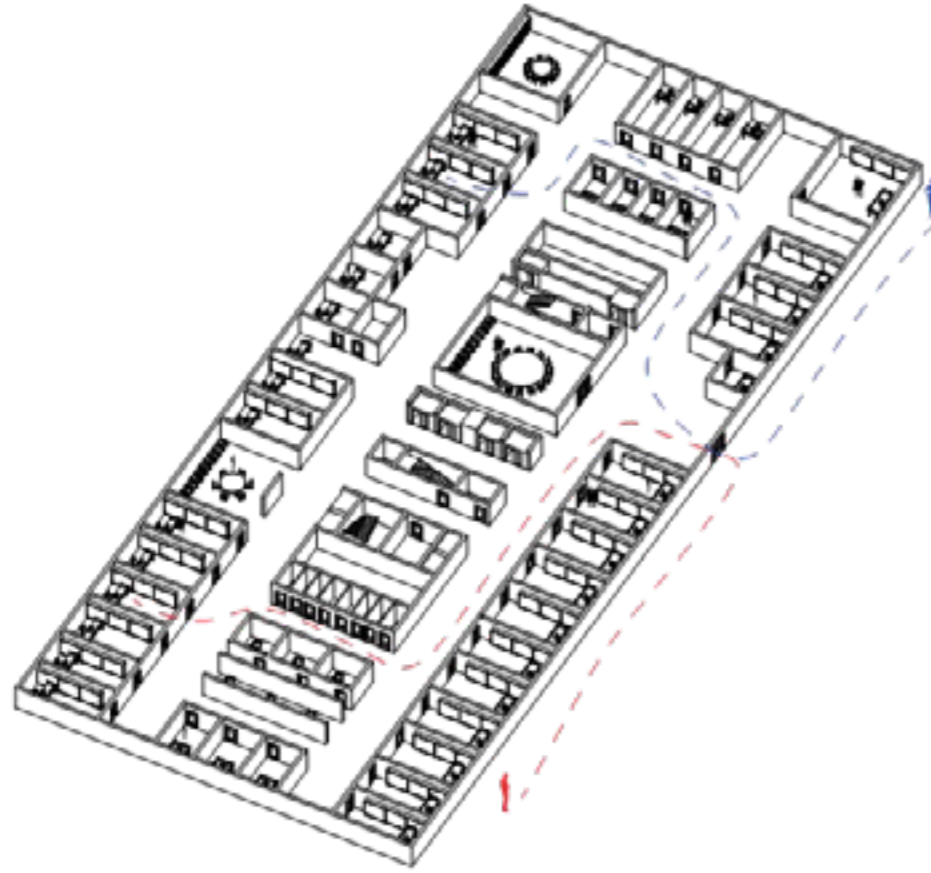
Upon skimming through the literature and talking to the supervisors we were provided with. We narrowed to the following employee problems, why they are not usually in office. Apart from the obvious and inevitable reason that they were on an on shore assignment, here is a small list of touch points.

- Monotonous Workspace
- Lack of Interaction
- Low levels of engagement
- Unutilized Workstations
- Contradicting Goals

So we basically tried to redraw what their floor of office space might have looked like and tried to empathize on employees' front. Below is the existing floor plan (Figure 1).

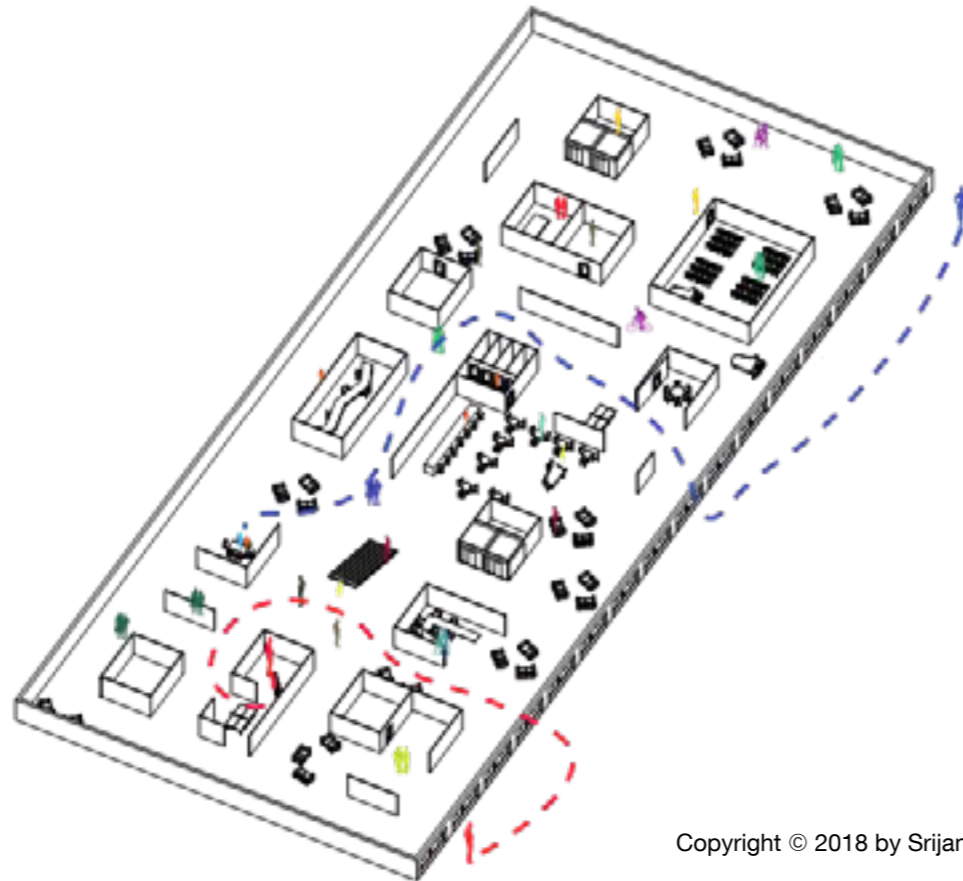
Solution approach: Reshaping office experience by transforming unutilized workspace into a flexible, dynamic, sustainable eco system.

Figure 1: Current Floor Plan of COMx



So, in our concept, we tried to find approaches where the maximum distance an employee may cover to reach his/her workstations and therefore reduce it. In this course, we came up with a plan of more centralized workstations and a greater number of entry/exits in the floor plan. The solution of the iteration of day 1 is shown below.

Figure 2: Concept After Day 1.



But soon with the feedback from the supervisors and revisiting the concept, we realized that it only partly solves the problem and doesn't contribute a lot to collaboration and value creation from space. Then on day 2, we tried exploring the existing products like Flissade, which sell convertible balconies. The concept of Flissade is shown below in the figure.

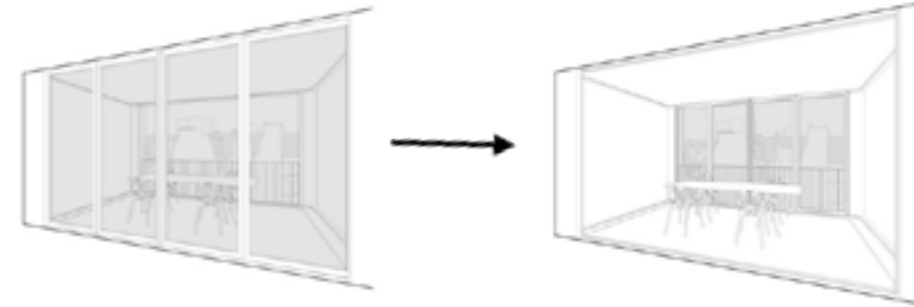
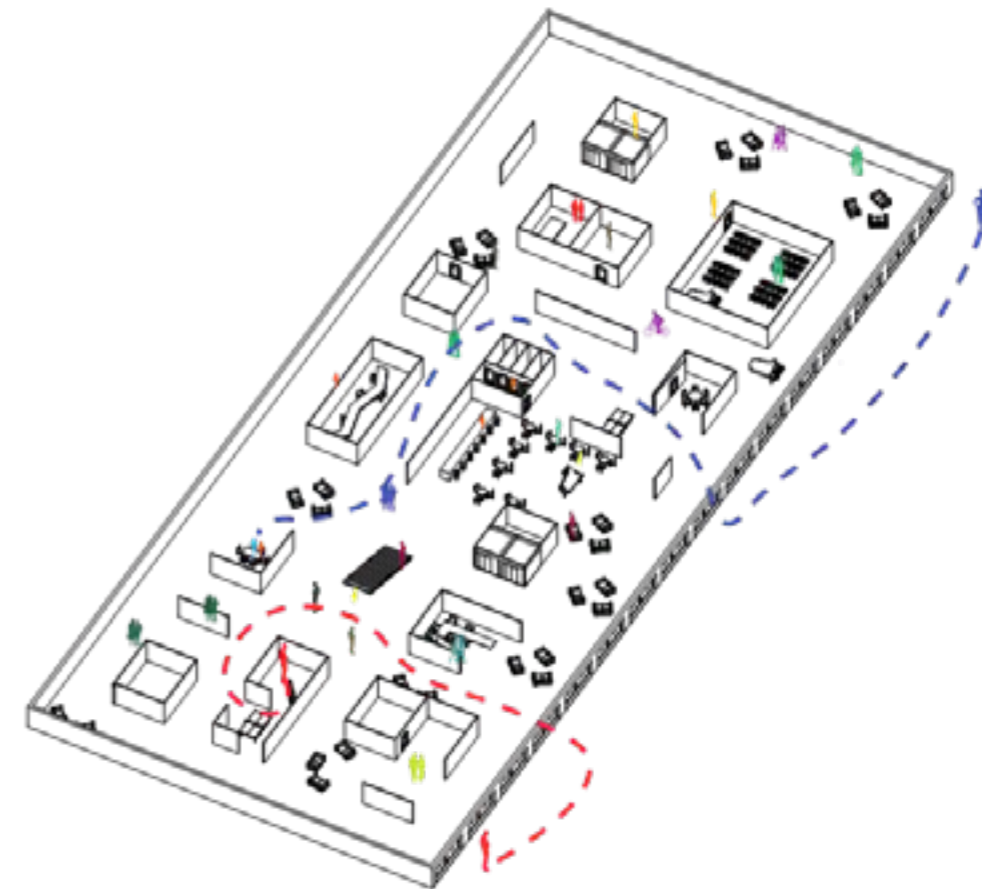


Figure 3: Flissade Concept  
Pic Courtesy: Flissade.com  
(<http://www.flissade.com/produkt>)

Based on this input, we did some trial and simulations with the design and came up with an idea, where similar products can be utilized in such a way where meeting rooms, and conference halls can be created from the free space available on each floor. The solution of the iteration of day 2 is shown below (Figure 4).

Figure 4: Concept After Day 2.



With this solution, as we consulted with our supervisors, we could solve more of the problems and increase the collaboration as well as the value co creation.

What this concept brings? For this specific COMx case, we tried to come up with a refurbishment plan, which costs about **2.6 Million EUR** and ends for a span of 4 months. Please follow the cost structure.

COST STRUCTURE & PLANNING							
COMPANY INFO		Cost Str. [In EUR]	General Construction	Furniture/Furnishing	Misc	TOTAL	
Case/Firm:	COM-Ex	Basic/Economy	€ 177.00	€ 195.00	€ 122.00	€ 494.00	
Scenario:	Design Consulting	Moderate/Mid-Range	€ 256.00	€ 246.00	€ 168.00	€ 697.00	
Type:	Floor Plan [Redesigning]	High-End/Amenities	€ 338.00	€ 323.00	€ 218.00	€ 879.00	
<b>New Configuration: Ground Floor</b>		Furniture Removal (Total)	Basic	Y	N	Y	€ 973,544.00
Span	88 m	Washrooms (25 m2) *2	Basic	Y	Y	Y	€ 24,700.00
Width	37 m	Lift (25 m2) *1	Moderate	Y	Y	Y	€ 17,425.00
Floor(s)	1 st.	Stage (Podium) (300 m2)	Moderate	Y	Y	Y	€ 209,100.00
Total Area	3256.2 m	Modifiable Cabins (75 m2) *10 *3	High-End	Y	N	Y	€ 417,000.00
		Concept Walls + Advert (60 m2) *2 *3	High-End	Y	N	Y	€ 200,160.00
		Bevators (25 m2) *2 *25k EUR	High-End	Y	N	Y	€ 77,800.00
		Bar (25 m2) *2	Moderate	Y	Y	Y	€ 34,850.00
		Lounge (25 m2) *2	High-End	Y	Y	Y	€ 43,950.00
		Misc	-	-	-	-	€ 50,000.00
		<b>Total - Ground Floor</b>					<b>€ 2,048,529.00</b>
<b>New Configuration: First Floor</b>		Furniture Removal (1/3)	Basic/Economy	Y	N	Y	€ 324,514.67
Span	88 m	Washrooms (25 m2) *2	Basic/Economy	Y	Y	Y	€ 24,700.00
Width	37 m	Modifiable Cabins (25 m2) *3 *3	High-End/Amenities	Y	N	Y	€ 83,400.00
Floor(s)	1 st.	Concept Walls + Advert (10 m2) *2 *3	High-End/Amenities	Y	N	Y	€ 33,360.00
Total Area	3256.2 m	Lounge (25 m2) *2	High-End/Amenities	Y	Y	Y	€ 43,950.00
		Misc	-	-	-	-	€ 50,000.00
		<b>Total - First Floor</b>					<b>€ 559,524.67</b>
<b>Grand Total - Refurbishing Plan</b>						<b>€ 2,608,453.67</b>	

With this plan, we would shift the Operations, Production and the internal HR people as well as the top level management on the first floor, which would not allow entry to any of the external people, and therefore is safe and sound as a working place. The ground floor, which would need more refurbishment – We would place the workstations of the talent attraction managers as well as the Sales people of the ground floor on one side, which leaves a lot of empty space for visitors. The front end of the ground floor will be opened to public to try the audio hardware for free in the company environment, place an order if they want to and give us immediate feedback. And the possibilities of doing the same is much higher as our office is situated in Odeonsplatz. The middle space will house an open lounge with a decent stage (dais) and our in house state of the art audio hardware installed. This place can be utilized to have meetings, workshops, conferences and client meetings in the evening and maybe rented out to the local jamming band for concerts and maybe evening shows as well as tech enthusiasts who want to try their hands on the audio hardware. This will not only ensure a smooth revenue stream from the space, but it will also help do the market research as well as engage the talent attraction managers in hiring new talent. Plus it will add a philanthropic value and with the space being rent and advertised by other parties, it creates a scope of marketing and brand awareness at almost no cost. Therefore, such refurbishment where places can be created from nowhere can be helpful in generating value propositions. Some of them are enlisted here.

- More employees in the office space will be satisfied with their work environment which will result in a higher retention rate and attract more talents as well.
- More customers may claim to have a higher brand awareness through a better customer experience in these offices, where they could sit and create value with COMx.
- People of the nearby community feel more collaborations will take place in the new spaces, creating more innovative neighborhoods and allowing for co-creation between the community and the employees.

And this is how our new office space looks like after the refurbishment.

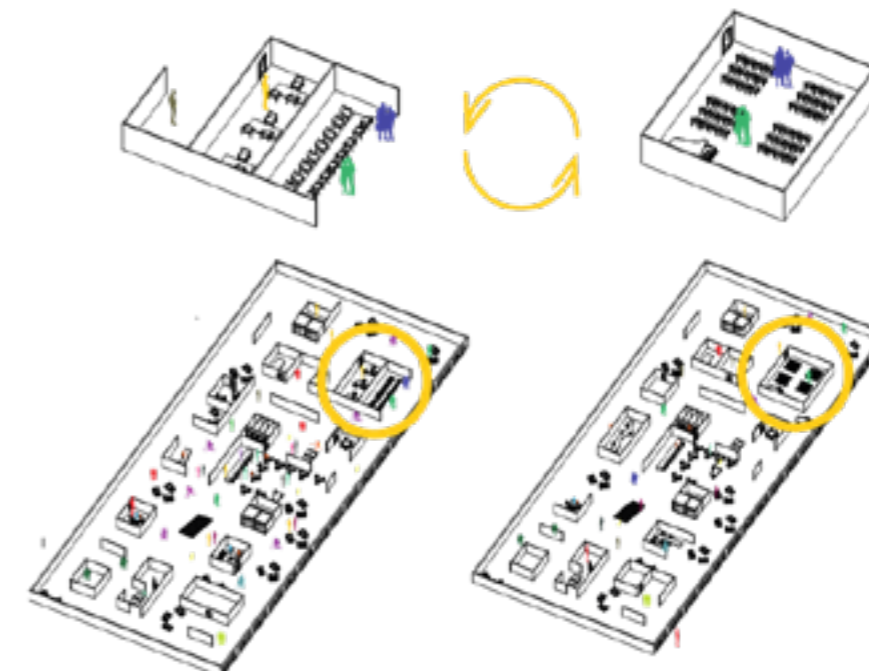


Figure 5: Final Concept

## Business Model

A detailed business model has been drawn for the realization of the plan by DYNETIC. Please find the canvas below;

Figure 6: The Business Model Canvas.



As the canvas suggests, we plan to have various key partners; including designing firms, architecture and consulting firms, concept forms like Flissade to provide us with the technology for realization. We may even consider partnering with other concept firms if there is additional requirement. We also plan to partner with music and recording companies as well as event organizing companies.

The key activities would include finding the right kind of project, which we can partner with, and then everything starting from in house surveying, planning, architecture design will be outsourced to partner firms. This will happen with the help of in-house team of architects, design and concept experts from various fields and business partners.

Also, we plan to carry our advertisement and publicity directly reaching firms, as it is not everybody who owns office spaces. Plus, we plan to attend construction and architecture symposiums and conferences and present our solution to potential investors as well as buyers.

Major part of the costs go in keeping and paying a team of experts and finding customers. That can be compensated as well as be outnumbered by selling our concept and providing end to end service to the customers.

### Market & Competition Analysis

The market of this kind of concept doesn't exist today in a particular shape, but it is the architecture industry which awaits new and innovative ideas and concept like ours which has a potential to disrupt the market and create a new segment entirely. As our concept fits well with both the old office spaces which may be refurbished as well as new office spaces which are in planning phase.

We also plan to opt for not so aggressive but slow and steady growth. Partnering with firms who can help us and being on the forefront of innovation. This will help us to stay ahead in race of the following competition. At the moment, there are no companies doing the same thing, however there is a huge number of firms, who provide sophisticated architectural designs, which are as lucrative.

### Simplified Revenue and Finance Model + Financial Forecast

We plan to gain our revenue from three main activities. We plan to provide consultancy about new architectural plans, possible methods to co-create value and strategies to utilize their space better to the customers/companies. The second activity would be majorly implementation, which is actually gathering all the partners and doing the refurbishment. The third activity would include the maintenance of the developed and installed infrastructure. This way we can assure long term value generation and at the same time give our customers lowest possible hassle with the new age, cutting edge architecture.

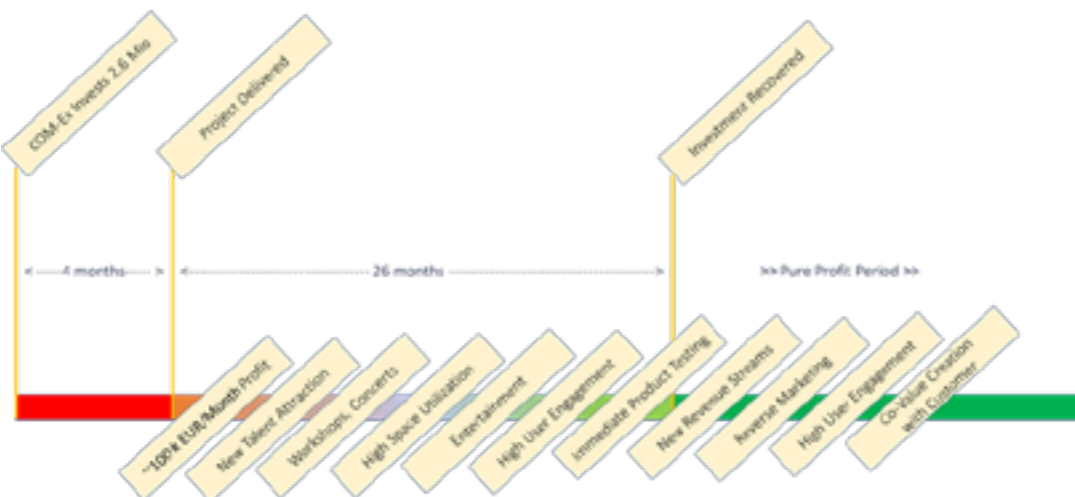
Figure 7: Revenue Streams.



For instance, for the suggested plan at COMx, we did a revenue planning that if COMx invests a sum of about **2.6 Million EUR** on the refurbishment, how and in how much time exactly they can regenerate the money invested. In our estimate, COMx would need exactly **26 months** to recover the invested money and go in sheer profit phase.

REVENUE PLANNING					
Cost/Month		Planned	Absolute	After Tax	Total
Water	€ 2,000.00	Renting for Concerts (~8/month) *8000	€ 64,000.00	€ 44,800.00	~26 months Months
Electricity	€ 4,000.00	(~4/month) *10000	€ 40,000.00	€ 28,000.00	
Maintenance	€ 1,000.00	Bar & Lounge (~15000/month)	€ 15,000.00	€ 10,500.00	
Safety	€ 1,000.00	Customer Testing & Networking Events	€ 20,000.00	€ 14,000.00	
Misc.	€ 1,000.00	(~4/month) *4000	€ 16,000.00	€ 11,200.00	
<b>Total</b>	<b>€ 9,000.00</b>	<b>Total</b>	<b>€ 155,000.00</b>	<b>€ 108,500.00</b>	
		<b>Earning/Month</b>		<b>€ 99,500.00</b>	<ul style="list-style-type: none"> <li>* Attracts New Talent</li> <li>* Does Customer Testing</li> <li>* First Hand Market Research</li> <li>* Space Utilization</li> <li>* Entertainment</li> <li>* Reimagining Office Space</li> </ul>

Figure 8: Timeline Planning



The most interesting thing here is that the charter doesn't talk about the value co-created by the team apart from the monetary benefits. For example, the plan suggested in COMx's case also gives scope to attract potential clients, it also helps gain valuable insights for the sales people, possibility to connect and hire the fresh and young talent and possibilities to make the workspace an enjoyable experience as well.

### Implementation & Marketing Strategy

As discussed earlier, the concept is generic as well as innovative, therefore it has potential to serve a lot of use cases. Therefore, we plan to slowly enter the housing segment as well, because with partners like Flissade, we can possibly generate small apartments in the free area or break bigger living space into completely isolated small apartments. Therefore, the same concept can help solving other major problems of european cities as well.

Marketing as discussed earlier focusses on large scale B2B clients and approaching them directly is the best option. Also, we plan to put big advertisement hoardings on the highways as well as the central stations across the cities to promote our concept. Additionally, we also plan to enter academia by participating, learning and contributing by means of hackthons and open-doors kind of events.

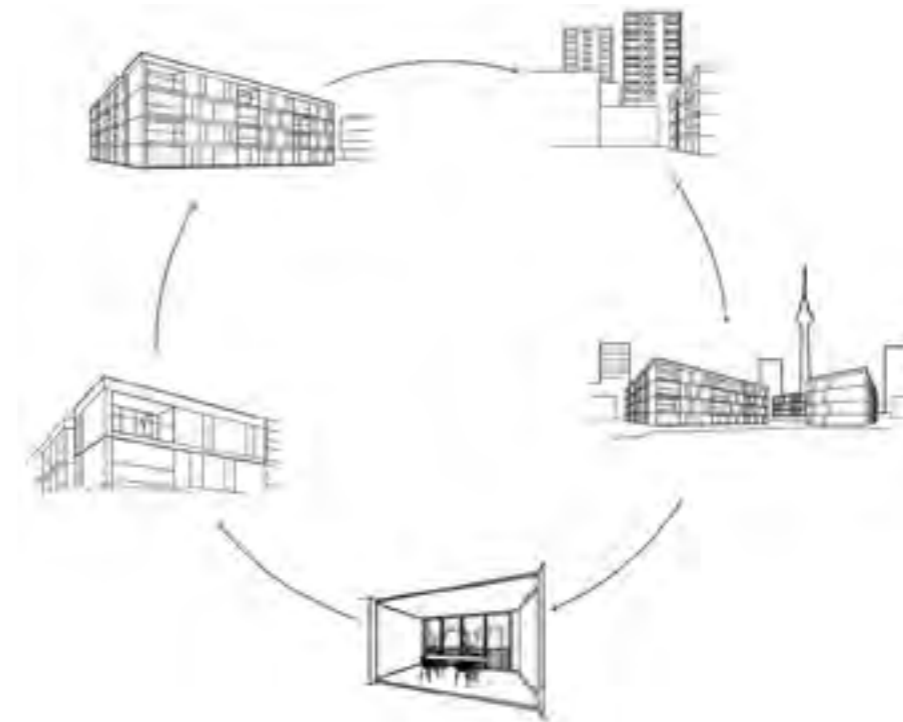


Figure 9: Use Cases

Pic Courtesy: Flissade.com (<http://www.flissade.com/produkt>)

## Self-Reflection

I would say I have gained a lot during this workshop. Collectively (including group activity and individual task), I have gained experience in how to think critically to create and assess ideas. While looking for solutions and talking to supervisors, I gained experience in how to listen and empathize. I also learned about the how the architecture industry works. The toughest part was to scientifically shape our idea as a team. Because on one hand, based on our interactions with supervisors, we could figure out what might serve the purpose, but the project is very much still on paper and therefore there are many unknowns we haven't yet known about. But I think we have some good experiences and learning at the outset, which we would surely carry along in the industry as well as academia.

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## The Delightful Launchpad

Unlock your company's potential



Zeinab Paya

TUM School of Management

## Business plan

### 1. Executive Summary

The Delightful launchpad will be a co-working and consulting company specializing in designing the working places. The firm located near Odeonplatz in Munich, Germany and will try to address the issues faced by employees using design changes and the introduction of innovative ideas based on co-working. The target clients will be the companies that are willing to increase the performance of their employees and the number of their customers by redesigning the working places and implementing different ideas for their workspaces.

#### 1.1 Mission

Our mission is to bring creative design and concepts to help our clients to benefit from their people. We believe that for any company the employees are the most important assets and at the ends our people can bring customers and help us to reach our goals. There for our focus is on improving employees 'welfare and satisfaction by redesigning the workspace and raising the office utilization rationally.

#### 1.2 Marketing strategy

Our business as a design consulting business is a typical B2B business. We will be providing services in terms of interior design to the other businesses and companies. We will have different distribution channels to help us with customer acquisition. In the recent world of digitalization, we will use the online marketing and showing our successful designs we did for our past customers.

#### 1.3 Competition

For our competition analysis, we created a list overview of the similar businesses based on the information on each company homepages. We found that our competitors can be divided into two main categories:

The one is "Architecture Company" whose services are comprehensive including structural engineering, environmental engineering, industrial design and urban design and they do workplace consultancy as well. The other category is "Design Consulting Company", which only bring ideas about the workplace design.

#### 1.4 Financial Model

For our financial forecast we considered the two key contributors to the revenue which are the membership fee and the service fee.

Total revenue has been calculated using the values for the membership fee and the average service fee.

Category	Earning/member
Avg. monthly membership fee	€ 600
Avg. monthly service fee	€ 50
Total revenue per member	€ 650

Considering these values, we can forecast to have EBITDA margin of 26% in the first two to three years.

### 2. Business concept

#### 2.1 The project

The challenge was about the remodelling the work space or identifying alternative use cases for the utilization of unused office space at COMX, a sound company. A team of consultants conducted a study and estimated that only 40% of all workplaces were being utilized. Over the past couple of years, the working format changed. People need to collaborate more instead of working in silos. The market is changing and the company's employees need to be on the move, at different client locations, travelling to different offices and so on.

#### 2.2 The Current scenario

The four managers of COMX have different ideas regarding the empty space, the HR manager wants to sell the unused area and

use the money to start their recruitment program. The operation manager wants to use the empty space to have good amenities such as a place that people can meet each other out of their offices. For manager of sales the idea was to rent out the surplus space and have a steady income to invest in more market research and finally the production manager who wants to use the empty space to make bigger workstation, so people can have their freedom and work more comfortably. The CEO of COMX tasked the Real Estate Manager to share his views on the same topic. As an architecture consultant hired by the Real Estate Manager of COMX we must consider the needs of our clients and bring a design with proper arguments to the property managers and they will base on our design and argument decide whether to proceed with the design or not.

#### 2.3 Limitations

Like any project for this project we also consider some of the limitation that we might face:

- Cost of the design
- Availability
- Accessibility

#### 2.4 Approach

We, as a consulting group consisting of architects and managers, developed ideas and designs for the empty space with the consideration of the client's expectations and all our limitations. Our approach in this architecture model is to value in the first place the employee. Since the employees for the company are the assets of it and give them the confidential space that they can be able to think, and work properly not only can increase profit but also can reduce the risk losing the employees and having the costs of hiring new employees.

#### 2.5 Benefits

The model and our design have the potential to bring benefits for all the

stakeholders. At first place it will create the motivational environment for the employees to work. Then it can bring interesting space for the customer to experience before taking an action or purchase the product and will of course generate a platform for the supplier and the shareholders to gain more profit out of it.

#### 2.6 The idea of the delightful launchpad

For the design of the COMX working area, we decided to focus on the value that we want to bring to the employees. Researches has shown that a good design of a work space has a great impact on the success of the company. The office landscape has not only effect on the maintenance of the employees but also on the attraction of the new workforces" <sup>1</sup>. The workspace design has always been changing regarding bringing more benefits to the corporate.

In early 1900, Frederick Winslow Tylor's idea was to increase efficiency by breaking tasks down into small segments that can be easily analysed. His layout was like a factory line, including an open environment with lots of desks and workers altogether, which provided a good observing possibility for managers from their own rooms, and was supposed to increase the efficiency" <sup>2</sup>.

The next specific change was Bürolandschaft style in 1960, which reflected the "socialist values of 1950s Europe to the workplace" <sup>3</sup>. In Bürolandschaft layout, the office furniture is scattered around the open space loosely resulting in "un-structurally divided spaces with different environments" <sup>2</sup>.

After Bürolandschaft, in around 1970, the idea was to bring a design to allow freedom of movement, and flexibility to work in a position suitable for the work being done. The design known as action office and later developed to the cubicle farm at 1980s



which was partially enclosed office workspace that is separated from neighbouring colleagues by partitions. This design was for the time that it was a rapid increase in middle management staff and they needed to be accommodated with their own space but as flexibly and cheap as possible”<sup>24</sup>.

All these designs step by step vanished and we can see that in today’s world, many companies either changed or tend to change the nature of the organization, due to competitive pressures and technological breakthrough. Organizations now a days are leaner and more agile, trying to focus and identifying value from the perspective of customers and trying to be less hierarchical in structure and decision authority”<sup>44</sup>. During the evolution of office design over the past 200 years, there were many design elements that were created, then gone, reappeared and reused for a different purpose. From the white-collar assembly line across the great factory floors of the Taylorist office, to the territorial-yet-trapping Cubicle Farm, most of the office design has been trying to follow the main goals of all businesses: productivity, cost-efficiency and growth”<sup>24</sup>. However, all the approaching workplace wellbeing elements, when combined, shed light on just how much the employee has become the centre of the office design blueprint. Companies are realising that productivity begins with the producers, from the managers at the top to the trainees at the bot-tom”<sup>24</sup>.

The key to increasing their productivity isn’t about quick-fixes, pushing as many people into rows of cubicles as possible, or integrating a virtually unusable hot-desking setup in an out-of-town business retail warehouse. The way forward for businesses is to look after their employees; nurture their growth; encourage their skill development and then retain them”<sup>24</sup>.

We hope that our design during this workshop will be able to address this idea and become among those important design that consider all the criteria, from happy employee to highly profitable business.

### 3. Architectural Concept

Our concept is based on the principle of co-working to provide different working areas: Cellular spaces, more open areas for groups or individuals, shared areas and “rent out” areas.

We designed two conceptual elements regarding the cellular spaces and areas for groups or individuals: the creative cubicles and the silent shells.

The creative cubicles are cubicle out of an innovative glass shaped 15 by 10 meter. With the use of colour changing glass it generates different levels of privacy. On the one hand they can be used as office workspaces or meeting rooms. The amount of offices within this cubicle and/or bigger conference rooms are provided depending on the size of the company. Generating a closed area for groups or individuals decreases disturbance and increases the team spirit and mutual exchange.

But our concept is more than just providing these cubicle as workspaces. We think a well-balanced schedule is very important throughout the business day. Our cubicles can be designed as activity rooms for as a gym/Yoga area during breaks. Both the firm and the employee benefit regarding these possibilities.

The company is able to increase its productivity due to the increase of health and motivation, whereas the employees are more likely to be satisfied with their current employments.

It is important that all the cubicles are movable.

They are installed on rails to easily change the arrangement and generate different

sizes of the remaining space. This gives the flexibility to adapt to the company requirements (especially the number of workspaces).



Figure 1. Conceptual design of Creative Cubicle

Additionally, all creative cubicles are coming with a different topic visible in the interior fitting. There is a range number of different themes, for example beach, forest, art etc. Special furniture, wallpaper and flooring can be chosen and the background sound in each cube matches the topic. The idea behind it, is that everyone can chose their preferred environment. This increases the comfort, freedom and motivation to get better working results.

Our second conceptual element is the silent shell. We designed a special furniture together with an interior company which is shaped as a shell when looking from a bird’s perspective. It is designed like an ear conch. This special shape generates a silent hole in the middle, where no noises are going in and out. It is available in 3 different sizes: for one to six people. This allows us to provide the company with the privacy they need for urgent phone calls or meeting space with customer or colleagues.

Colour and material can be chosen depending on the company style. Important is that the silent shells are created to fit in every environment to provide small private spaces. Also, in areas with a lot of movement, silent shells are there to be a place of silent.

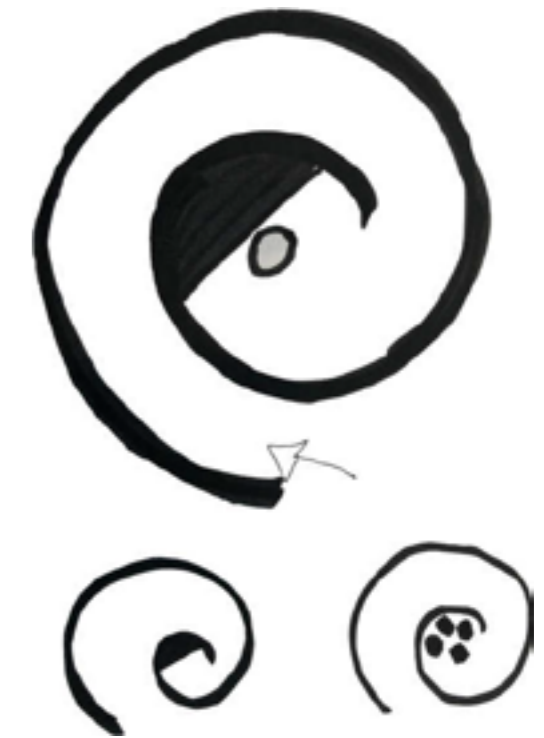


Figure 2. Conceptual design of Silent Shell

The remaining space (total space without creative cubicles) is designed as a shared area with working spots like the silent shells and with area to rent out. It is easily accessible and visible in the open area. The rent out area creates a space for cafés or small bistros to provide for the employees an outside environment within the company to meet besides their offices to chat and relax and stay hydrated during work. As a side effect it gives the company the opportunity to get an additional steady income for improved profitability or additional investment.

This concept can be implemented in many companies. Especially those companies which have or will have (in the future) empty office space due to people work at home or during traveling. Like it is the case in COMX, a sound company with more than 60% empty space.

With our concept companies become more attractive for young talents and employees with a changing work life balance.

In addition, our concept shifts the term of co-working to the next level. They are

generating a new concept of sharing and working. Our Coworking spaces “are designed to provide a productive and collaborative environment for their dynamic inhabitants and created without corporate constraints on what is perceived to be an “office” environment offering flexible memberships to suit most needs”<sup>5</sup>“.

“Coworking is not just about the sharing of infrastructure and cost, it is about belonging to a community, accessibility and sustainability”<sup>5,6</sup>“.

Large forward-thinking companies are jumping on board with coworking spaces due to the benefits to their employees, from increased happiness and productivity to net-working opportunities with people outside of their own domains”<sup>5,6</sup>“.

#### 4. Market and Competition

##### 4.1 Market Analysis

In recent decades, workplaces have been experiencing rapid, widespread changes. According to the opinion of Larry Alton, a writer, and business consultant, these changes can be classified into three main categories”<sup>6</sup>“. The first one is related to job types and responsibilities. Automation incurred „technological unemployment “, many labour-intensive industries are switching to more managerial and strategic roles”<sup>7</sup>“. In approximately, automation has caused 88% of job loss in manufacturing industries”<sup>7</sup>“. The second reason lies in the change in working conditions and requirements”<sup>7</sup>“. A home office is getting more common, statistic showed almost half of employed Americans now spend at least part of their time working from home.<sup>4</sup> According to Randstad-Ifo Personnel Manager Survey for Quarter 2 2016, “The number of German companies offering employees the opportunity to work from home has increased”<sup>8</sup>“. Aforementioned „workplace” is not limited in office room or

in a company, instead, it refers to the workspace which means more flexibility and less physical

boundary limitation. Nowadays, employees are not „bound “on their working desk or workstation anymore. Thanks to the development of information and telecommunications technology, new working forms are forcing businesses to move at a faster pace. And at the same time, it increases workers ‘productivity and efficiency. They can submit documents in digital form, communicate across vast distances with email and streaming video”<sup>7</sup>“. Having online meetings using communication software makes workers more flexible. They can attend meetings without showing up in the office. It can be on the way of their business trips and even at home.

That would have not been feasible decades ago. Obviously, two possible reasons that mentioned above have a strong impact on the employee number and utilization rate of office spaces. In the meanwhile, it demonstrated in the survey produced by „cort.com/solution “that in North American, the average office worker had 225 square feet of space in 2010. It is estimated that the available average space for workers is decreased to 151 square feet.

Nevertheless, „nearly 40% of businesses plan to reduce that number to 100 square feet by 2020”<sup>8</sup>“.

Besides, Alton also stated that company culture has been trending to more relaxed working atmospheres and flat hierarchy”<sup>9</sup>“. It is undeniable that architecture, an appearance of the office building and interior of the working environment can reflect or demonstrate the company culture to some extent. For example, „corner offices were meant to convey hierarchical prestige and status. The cubicle was intended to improve employees ‘lives. And

the currently popular open office layout was introduced as a more egalitarian approach”<sup>10</sup>“.

“A modern business owner is willing to embrace changing trends in the workplace, such as collaborative space and co-working”<sup>11</sup>“. In order to adapt the changes in workplaces and meet the needs of different industry branches, company cultures, and functional departments, the workplace design should be more comfortable, flexible, productive and diversified.

As a design consulting company, our „service “, which refers to our design concept, is more creative and customized than products produced in assembly lines. Our client in this specific case is a „sound company “whose offices were being utilized at an average of 40% of its capacity. This utilization is way below the average utilization of occupied desks in the United Kingdom basing on the data in „the utilization of the Office Report” produced by Advanced Workplace Associates (AWA). AWA has undertaken lots of workplace utilization studies for major organizations in the UK over the last 5 years. The report showed that the average utilization of occupied desks is 48%, mode is 46% and the median is 47%. The maximum and minimum utilization is 74% and 27% respectively”<sup>12</sup>“.



Figure 3. Workplaces by industry sector

“The study embraced 75 buildings (within the population range from 20 to 3284 workplaces, 36100 desks, 542 hot desks, and 728 meeting rooms) ”<sup>13</sup>“.

Our vision and mission are applying agile concepts and creative design to help clients benefit more from their people and workplace assets. We insist that the productivity of employees is one of the most important economic drivers of the company. Hence, our prime focus is on improving employees ‘welfare and satisfaction by redesigning the workspace and raising the office utilization rationally. After setting the goal, it is very necessary to identify “strengths, weaknesses, opportunities, and threats related to business competition or project planning (SWOT analysis) ”<sup>14</sup>“.

The strengths of our concept are that our standing point and mission are more sustainable and healthier in compare to sticking on how to raise the workspace utilization. Imaging: if I were the employee of this company, what kind of office, what kind of interior design, facilities and working environment I would like to have. It is very helpful to define the factors that can influence the welfare, satisfaction, motivation, and performance of employees.

In term of weaknesses, it could be insufficient information about the client and their business/ product. Basically, we only knew the office architecture layout, workspace utilization and the opinions of some managers related to the unused area. This kind of information is insufficient to identify how to add company value or employee value in a specific way. Our client is supposed to be a sound company. But what kind of sound company? If it is a sound production company, then it will need to record live bands and will need a well-outfitted studio with enough rooms. Or it is a sound rental company, then the

business model and facilities for office could be totally different.

Recruiting high-quality workers equipped with excellent skills and an open mind is the most essential and solid fundamental, which helps the company grows rapidly in a promising direction. There are many ways to attract talented people, such as high salaries, innovative and comprehensive company culture, relaxing working atmosphere and a great working environment. Just like people always say that one picture is worth ten thousand words. We can also say that once experience is worth ten thousand words. For candidates or potential candidates, they get every first impression as they walk into the company building. Going through the workplace, looking around and maybe chatting with employees a little bit, they can already feel the company culture roughly. Hence, it is a great opportunity to impress people by using the design of the workplace.

The weakness of our concept could derive from the trade-off between costs and outcome. It is inevitable that highly customized design is usually pretty cost-intensive, such as ordering „moveable cubicles“, installing tracks on ceiling or ground. At the same time, its impact and influence on the employees or on the productivity of them cannot be observed straightforwardly. Another weakness of the concept that we proposed is that although the initial idea is supposed to be very creative and brilliant, like aforementioned the design of moveable cubicles. It could also put us in a dilemma. On the one hand, it is still unknown if they do work, which is not related to mechanical aspect but regarding the customary human behaviour. Specifically, no one moves the cubicles in the end, even everyone knows that he or she is movable. On the other hand, it could also be kind of time-consuming to organize

and coordinate to move these cubicles. Because a bunch of these kinds of organizational questions will come along with, for example, is everyone allowed to move them „randomly“? If the answer would be „Yes“, should it be „first come, first serve“? Is it necessary to find a responsible person to take care of this? That runs counter to our original intention: Try to make the work and the workplace agile, flexible and creative.

Different from the „strengths“ and „weakness“, which are internally-related, derived from characteristics of the business, the „opportunities“ and „threats“ usually focus on the „external environment“<sup>15</sup>. Unfortunately, we cannot define them in term of workspace design consulting company, due to limited existing data and literature. However, based on the data collected by „statistics“ about „Management consulting market size by sector from 2011 to 2020“, we can still make a bold guess that market size of workplace design consulting company went up continually as well. That could be seen as an opportunity. Regarding „threats“, the main threats come from our competitors that will be discussed in the following section.

#### 4.2 Analysis of Competition

Competitor analysis is regarded as one important part of the market analysis and business planning. „A good competitive analysis is a scouting report of the actual market terrain that your company must navigate in order to be successful“<sup>16</sup>. Therefore, we researched our competitors: other workplace design consulting companies, through collecting the basic information about companies, for example, the design concepts, services „project in focus“ and clients. We made a list overview based on the information on their

homepages. We found that our competitors can be divided into two main categories: The one is „Architecture Company“ whose services are comprehensive including structural engineering, environmental engineering, industrial design, urban design. And they do workplace consultancy as well. For example, the company called „Foster + Partners“ and „HOK“. The other catalogue is „Design Consulting Company“, which only bring ideas about the workplace design, such as the companies named „Good Morning Creativity“, „WORKSPACE-design“, „The workspace consultants LLP“ etc.

It can be easily found that in the later catalogue almost every company mentioned their business in their company names, just like us. The services they supplied more targeted, such as workspace analysis, space planning, and concept design.

#### 4.3 Distribution Channels

Our company, a design consulting company is a typical B2B company. Because we supply services to another company instead of a consumer. There are various distribution channels to help us with customer acquisition. Thanks to the digitalization and globalization, we can use online advertising and social media to market our business. Specifically, we can produce a company advertising video to deliver our mission and firm spirit, we can also shoot photos or make some short but interesting videos about our historical successful cases.

Then we post them on social media, such as official company Facebook/Instagram page. To be attention, it is very necessary to anonymize the private information of the client or confirm with clients about the permission for publication at first.

## 5. Business Model

The fundamental objective of bringing about innovative changes in the workspace, for instance, the introduction of the co-working concept is to enhance employee productivity through improvements in the work environment. Figure 4. shows the importance of future innovations to end users of flexible workspace worldwide in 2018. Our implementation strategy is focused on addressing the 3 major factors namely,

1. Service improvements
2. Innovation in workplace design
3. Quality of social/community experience

These factors form the guiding principles for the implementation strategy to address the underutilization of workstations at COMX, keeping in mind it's strategic, financial and human resource-based requirements. The recommended strategy has been developed with a long-term perspective, without losing sight of short-term financial and profitability goals. There are various operating models that can be used to initiate the execution of our implementation strategy.

### 5.1 Operational Model Analysis

In the following sub-section, we will briefly discuss the prominent operating models in the co-working business and then put forward our recommendations for the case of COMX.

#### 5.1.1 The Lease Model

This is similar to the traditional leasing of real estate, where the co-working company leases the property from its owner, typically for a duration of 10-20 years and then separately runs the operations of the co-working business.

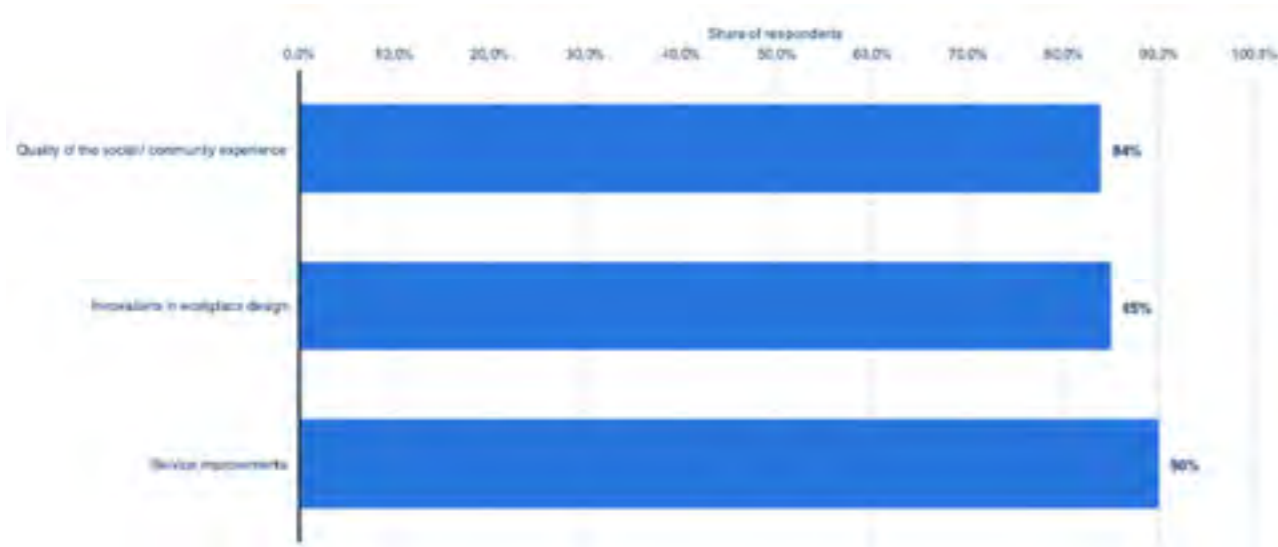


Figure 4. The importance of future innovations to end users of flexible workspace worldwide in 2018

### 5.1.2 The Joint Venture Model

Under such an arrangement, the property owner acts as a limited partner, contributing the majority of financial investments. The co-working company, in this case, acts as a managing partner, bringing in a smaller financial investment but with complete operation control on the co-working business. The distribution of profits is shared based on a pre-decided preferred rate of return for the property owner and the co-working company takes a majority of the remaining profits, over and above the hurdle rate.

### 5.1.3 The Management Model

As the name suggests, the co-working company is primarily responsible for the operations and management of the co-working property. The property owner contributes almost entirely to financial investment. The co-working company earns a management fee for its services from the property owner.

### 5.1.4 The Franchise Model

In this model, the property owner brings in all the required financial capital and is also solely responsible for operating the co-working space. The property owner pays a franchise fee and an annual royalty fee to the co-working company for using its brand

and technical assistance. The co-working company, on the other hand, provides technical training and support to the franchise to inform them about all relevant aspects of the co-working business and operations.

### 5.1.5 The Owner-Operator Model

As the name suggests, the co-working space is owned and operated by a single entity. An individual or a business make the necessary capital investments in acquiring the property and then subsequently running the co-working spaces. This is a capital-intensive model suitable for property owners or real estate companies that already own properties. In investment required in setting up and running a co-working space is substantially lower than in purchasing the property. Therefore, this is not a preferred model for typical co-working companies. Taking into consideration the facts that COMX owns property in a prime location like Odeonsplatz, with around 60% of the workspaces being unutilized, it would make sense strategically and financially to employ the above-stated management model. This gives us a co-working and consulting partner to operate the workspace by bringing about new design changes. This will directly benefit COMX,

as they can monetize their unutilized workspaces by using them as a co-working space for other interested companies and bring about new design changes to improve employee engagement, satisfaction, and productivity within their COMX by the introduction of new and innovative concepts in the workspace. Additionally, it offers COMX has the flexibility to rent out part of the property as a co-working space and in the future claim, it back in they need additional space due to internal growth. As a consulting partner, we will earn our management fee for managing the co-working spaces.

## 5.2 Earning and Financial Streams

Our goal is to eventually turn us into a successful co-working business. Therefore, in the following section we will analyse the important components of cost and revenue and subsequently, we will focus on our revenue streams.

### 5.2.1 Revenue

The two key contributors to the revenue are the membership fee and the service fee. A membership fee is paid by all members for using the co-working space. This includes bills for utilities such as electricity, heating, water, and internet and also for other maintenance tasks such as cleaning. The membership fee can vary depending on the kind of services and facilities availed by the members. The service fee is charged by the co-working company for any additional services provided. It is usually charged on a pro-rata basis upon usage. Service fee can be charged for providing basic services such as refreshments such as tea and coffee and on a higher end for providing catering services. It may also include other services such as postage handling, HR services. The extent and scale of services provided depend on the location and capabilities of the co-working

company. Membership fee typically makes up the lion's share of the total revenue"<sup>17</sup>". However, the service fee is important to improve the profit margin of the co-working companies. Another important source of revenue is the partnership of co-working companies with services providers. This becomes significant in cases of well-established co-working companies that can use their brand name to negotiate favourable terms and rates with service providers. For instance, WeWork, which is a major player in the co-working domain, earns a one-time lead generation fee of \$125 from TriNet (TNT) for promoting TriNet's healthcare and HR services with its own members. Additionally, WeWork receives 15% of the total revenue generated over the lifetime of the member company"<sup>18</sup>".

This can be a potential source of revenue for our co-working and workspace consulting firm as we can leverage the brand value that we can build up by providing our services to reputed clients such COMX, while foraying into the co-working business.

### 5.2.2 Earning Streams

Our research has revealed that revenue generation is the most important path to profitability in the co-working and consulting business. We have made a few reasonable assumptions to come up with the financial forecasts.

The total revenue has been calculated using the values for the membership fee and the average service fee for the period. The average values used in our calculation can be seen in Table 1.

Category	Earning/member
Avg. monthly membership fee	€ 600
Avg. monthly service fee	€ 50
Total revenue per member	€ 650

Table 1. Assumptions for revenue calculations

Table 2. shows a Unit-level EBITDA Analysis based on the forecasted values when we achieve a steady state in our operations around 2022. The EBITDA margin in the base case is 26% which is quite healthy. However, since the EBITDA margin can be impacted by revenue and rent, it is possible that these forecasted values might turn out better or worse depending on the market conditions in the future.

Base Case	
Key Drivers	
Average square footage per desk	80
Density	30%
Reg density (revenue/member)	150
Unit-level #BL	
Revenue*	83
Rent	59
Unit OpEx	18
Corporate Management Fees†	3
Cost**	73
Unit EBITDA	10
EBITDA Margin	26%
Breakdown Consistency	88%

\*Unit Revenue = Avg. Monthly Revenue/Member \* 12 \* Consistency / Average square footage per desk  
 \*\*Unit Cost = Rent + Unit OpEx + Unit Corporate Management Fees

Table 2. Forecasted Unit-level EBITDA Analysis

### 5.3 Growth Roadmap

Initially, we plan to launch our co-working and workspace consulting firm in Munich, gradually launching our offerings in other major cities in Germany in the subsequent year. Post our initial rollout in Munich, we will launch our services throughout the EU market in the third year. In the fourth year, we will provide our workspace consulting globally, during which we also expect to reach steady state in our operations and revenue. The co-working market is growing rapidly across the world and the figure 5. shows cities with the largest growth of the number of co-working centers worldwide in 2016. This further demonstrates the potential for growth in this relatively new and untapped market.

Berlin, which has observed a YoY growth of 21%, further confirms the immense potential for growth in the co-working domain in Germany. Munich, itself being

an economic powerhouse is likely to witness high growth in the coming years.

### 6. Personal Statement

As a team we thoroughly enjoyed ourselves throughout this journey that started off with the conception of an idea to build a business plan focused on workspace consulting along with few other features that gradually evolved into an elaborate business plan for co-working and consulting for corporations and start-ups to help them find innovative and contemporary workspaces for their workforce. The unique aspect of our team was its truly global nature, with team members hailing from Germany, China, and India. The often lead to animated and colourful discussions and brainstorming sessions but most importantly, it expanded our horizons and broadened the outlooks that helped us come up with this idea. Though our team comprised predominantly of students from the TUM

School of Management, we were fortunate to have members who had diverse educational backgrounds ranging from architecture and computer science to finance. Through our interactions with our mentors from AECOM and the organizers from the Chair of Architecture and through the feedback we received during our presentations and interactions during the seminar sessions, we were able to mould our idea into its current design. Through the valuable inputs that we received and incorporated into our product, we have been able to conceive a blue-ocean market idea.

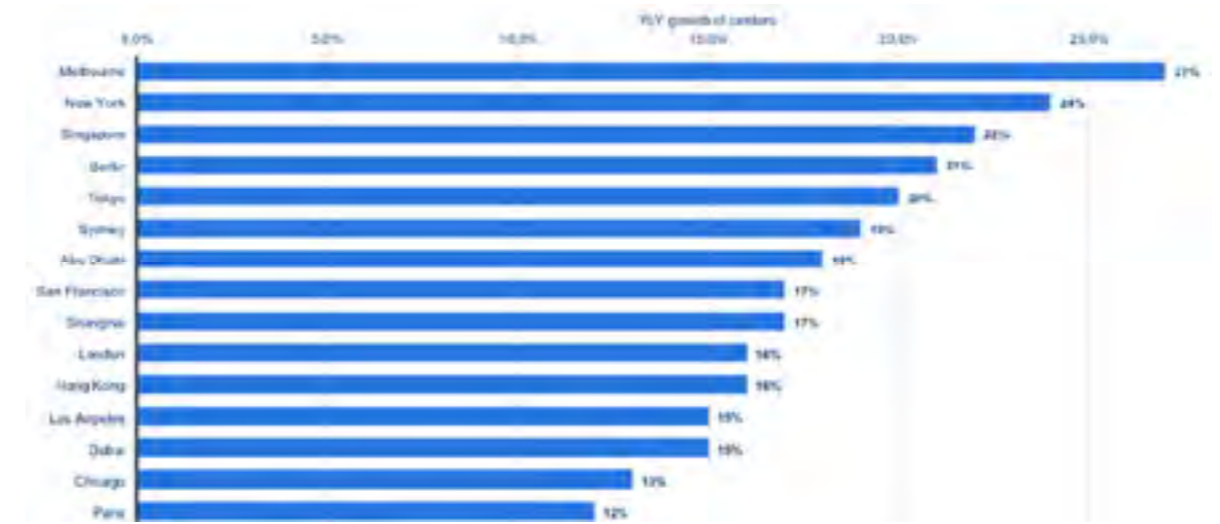


Figure 5. The importance of future innovations to end users of flexible workspace worldwide in 2018

### The summary of the workshop

The idea of this workshop was to defining concepts to disrupt the built environment industry and was organized by the BauHow5 alliance. The speakers were international architectural practices HPP, AECOM Design & Consulting and AllesWirdGut together with architecture and management students as participants. The 2-day workshop started off by Christos Chantzaras, who was also out host for the workshop, giving us a brief overview of how architecture has been instrumental in inspiring innovation and entrepreneurship and the most notable example of this would be none other than Steve Jobs. "Stay hungry, stay foolish" is one of the most iconic quotes by Steve Jobs, originally appeared in the World earth Catalogue in its 1974 edition. The founder of the magazine, Stewart Brand, has been famous with innovation and cutting-edge technology, was deeply inspired by architects, his hero being Buckminster Fuller, a futuristic architect and designer.

After the nice introduction and greetings the workshop challenge began by the cases that each speaker brought. Each speaker gave a presentation and describe their case and we, as architectures and

management students had to form a group and picked one challenge to work with.

- Challenge 1, HPP / Burkhard Junker, what future practices of architects need
- Challenge 2, AECOM / Pedro Bernardo, create value beyond co-working
- Challenge 3, AllesWirdGut / Jan Fischer, hack industry or architecture as product or platform

After discussing about each challenge, we decided to work on the challenge that AECOM brought, which was about bringing ideas for the unused space at a sound company and convince our client about our idea and the need of our design.

We have around one hour to work with the topic we chose and in total we had three iteration. For each iteration we presented our idea and received feedbacks then for the next iteration we applied the feedbacks and presented the new version. However apart from so many great feedbacks we received, we realised that having so many ideas from different people may also lead to confusion, and this is an important issue when developing a design or idea.



Picture1. Pedro Bernardo(AECOM), Burkhard Junker (HPP) and Jan Fischer (AWG)

For the first iteration, our idea was to remodel the space that we had in our case to satisfy all our stakeholder. However, after the first iteration and receiving feedbacks we realized that it is much better to put value on one of the stakeholders and it was then that we chose the employee. So, for the next iteration we tried to think about what the important criteria for the employee are and how can we integrate this feature of the employee wellbeing in our design.



Picture 2. Brainstorming after first iteration

The second day of the workshop started with a short recap of the first day's work with our team and preparation for the next iteration and our final presentation. During the day we had to create our model and prepared our pitch, since our pitch and our presentation were at the end of the day competed with the other pitches and then evaluated.

In the second day however, we had two inspirational talks from flissade.com and KEWAZO.com. Each speaker presented shortly about the company and described their creative designs. They explained how the idea were generated and how it developed to become a complete product.

After the inspirational talks, we needed to start finalising our idea by creating our prototype and pre-paring our pitch. We gathered already all the feedbacks and applied them in our model. We managed to build our architectural model as our prototype to give the better understanding of our idea. The last two hours, all the participants present their business model and their pitch. All our presentations were evaluated, and the 3 winners of this business game were announced.



Picture 3. Winners of the business game

The workshop was the great opportunity for all architects and management students, since the cases helped us to see how beneficial it would be to have architectural thinking and bring this mindset to management and innovation. During the workshop and during working on cases we were involved with the design thinking methodology which tries to design and find a desirable solution for the clients. A design mind set try to focus on the solution and not the problem and it is action oriented towards creating ideal future<sup>19</sup>.

Working in a team consisting of management students and architects was also a great experience. We tried to use architectural thinking and use our imagination to create solutions for our problem. It was important to first imagine

ourselves in the position of the problem and try to look at it from different perspectives and the way we are looking at people, spaces and interactions can help us to explore possibilities of what could be and to create desired outcomes that benefit our customers<sup>19</sup>.

We really hope that these kinds of workshops will be more and more, so that the chance of experiencing such a creative event become high for everybody who is interested in such interdisciplinary topics.

### Our 2-day workshop



Developing the idea with team



presentation at the iterations



Brainstorming and working on the feedbacks



The view of the workshop



giving feedbacks after each iteration

## Merlin – A magical BIM Software

Business Model from the Creative Business Game: Architecture in the Future



# Merlin – A magical BIM software

## Business Model from the Creative Business Game: Architecture in the Future

Architects are creating forms, structures and buildings just by using their imagination and combining it with learned styles and formulas. This similarity with the description of wizards is the background of our product's name Merlin. My team and I developed this idea in the creative business game "Start-up Architecture" which was offered by the faculty of architecture of the Technical University Munich. Our task was to develop a concept of the future architectural practice in two days, which was requested by HPP Architecture.

The requirement was to support architects during the building creation process. The basic idea is to use the know-how from previous projects existing in established architectural offices to design new buildings. In relevant companies a database will be implemented that includes components from previous designed sketches. The design process will be simplified by using a building block system. At the same time, a real time cost calculation feature should assist architects fulfilling their clients' requests. Besides the simplified design process, we would like to implement

a whole marketplace where manufacturer can promote their products and architects can buy or sell designs. In the following, we conducted a market analysis to find out that there is a worthy target market. Additionally, after we point out the main upcoming challenges, we want to explain our application strategy. Afterwards, we show our financial plan for the next three years. As final part of the business plan there is a short vision of where we see Merlin in the future.

Furthermore, I describe the workshop that enabled us to develop this business idea. The creative business game "Start-up Architecture" connected architect and management students to teach interdisciplinary working. Based on this example, I want to outline the importance of mixing subject areas to foster creativity and innovation by explaining the advantages and disadvantages.

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Marco Gronover

*"In the longer run and for wide-reaching issues, more creative solutions tend to come from imaginative interdisciplinary collaboration."*

~ Robert J. Shiller ~

# Merlin – A Wizard as a Supporter

Many architectural offices design buildings for their clients by creating every time a completely new layout. Despite the fact, that the building is unadulteratedly conceptualized, the whole process seems inefficient from an outside perspective. Especially in case of office buildings the shell construction mostly looks the same for the untrained eye. That's why in this paper a business model will be presented, how the architectural work should be converted to reusing existing designs. A software will be described, that assists architects in creating buildings, just like Merlin assisted King Arthur creating his kingdom. The name of our business idea therefore is Merlin.

In the following, I will introduce Merlin as a product by outlining the concept and the business model. To substantiate the product, further a market analysis, an application strategy and a financial plan are included.

## Business Idea

What are architects doing? They create new designs by connecting their knowledge with their imagination. Finally, they will decide if it merges the clients wishes. In case of most office buildings it seems like the design is only a deviation from existing styles and buildings. We would like to present a software that provides architects with a library of previously created designs and deviated design suggestions based on already sketched buildings. We want to call this software

Merlin, because designing a building with it should be as easy as a wizard is helping.

For that purpose, a database will be implemented where different types of building components are saved, which have been created from other people in the company before. These components can be inserted to new sketches of an architect like using a building block system.

In the following, there will be a description about the handling of the software. The design process starts with a request page for basic information such as size of the building, climatic region and information regarding the interior design (figure 1).

Secondly, the software compares this request with plans in the database and shows building shells that fit the best to it. These suggestions can be edited to fit deviating requirements. Of course, the user would still be able to create a completely own building. In the nearer future we also want Merlin to generate fitting building shell on its own. (figure 2).

In the third step the designer can add components from the database, like windows, to the basis. The software automatically generates position and size of the element according to the interior plan. Alternatively, the architect can design his own element alternatively, that will be saved to the database too. During this process an estimated price is calculated, based on data from the past and current resource values. So, the architect can see constantly, when he hits the maximum price. During the design all components' colors can be changed and the component's design can be tailored. Changes in size or position of an element will automatically be checked for



an interference with other parts of the design – or physical laws (figure 3 & figure 4). Merlin can be handled like other CAD/BIM software, but if there are repeating patterns it will develop its full potential and show its benefits. Before the plans can finally be saved, a summary is presented, that includes all kind of useful information about the designed building such as estimated price, material requirements etc. Additionally, the software will suggest a layout, based on the cheapest components and a layout designed by an algorithm. In the beginning this feature won't be very useful, but we want to feed the artificial intelligence in this way with information to improve its designs. If the user selected in the beginning a previous used plan there will be more information regarding it in the summary. For example, a comparison between the new and old design or the suppliers from the previous construction. In the end, the file is saved according to ISO 16739 to support further processes (figure 5).

We are sure that the design process with Merlin will reduce the working time of an architect to create a building highly. Additionally, it is easier to handle than a normal CAD-software what theoretically enables amateurs to design a building too.

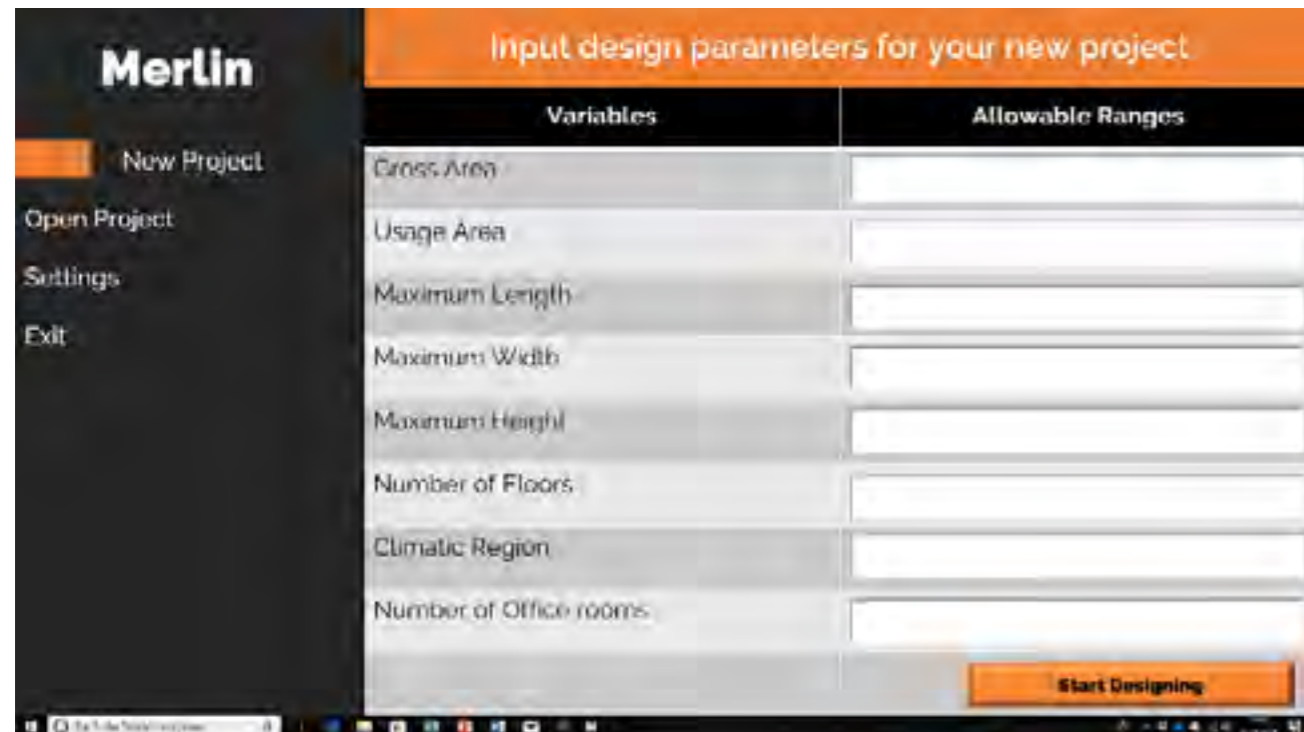


Figure 1 The beginning of the building design process with Merlin (own design)

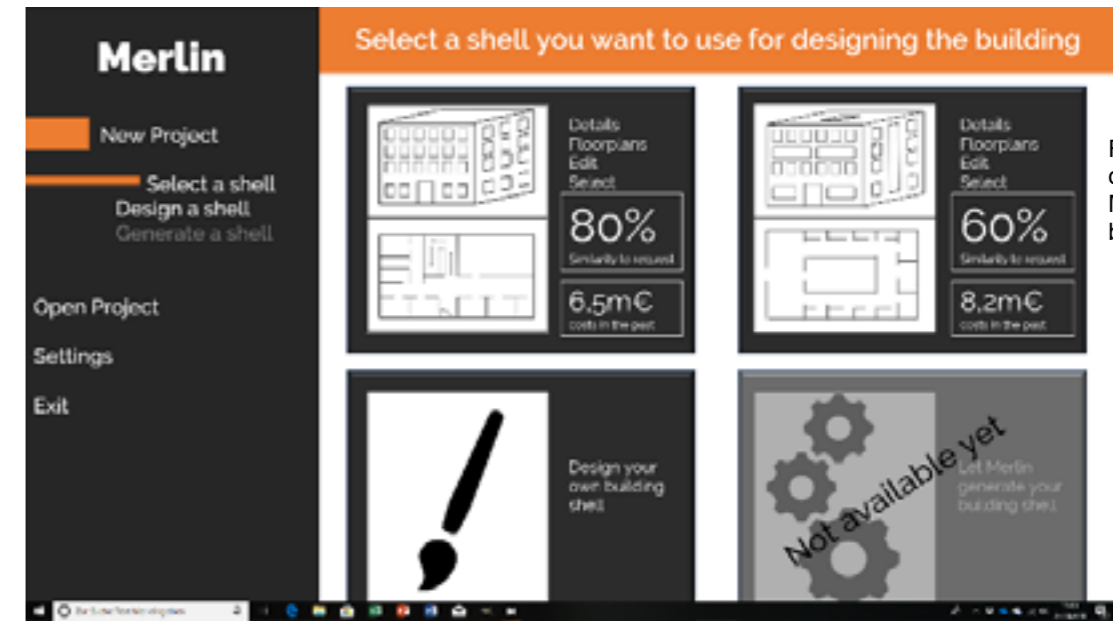


Figure 2 The second step of the design process with Merlin: Selecting a basis(own design)



Figure 3 The third step in the design process with Merlin: Select components and the way how they should be inserted to the basis (own design, components from Planet Coaster)



Figure 4 The third step of the design process with Merlin: Automatically placed window element (own design, components from Planet Coaster)



Figure 5 The last step in the design process with Merlin: The summary page gives useful information regarding the previous and the new design (own design)

# Business Model

In the beginning of our business we want to focus on big and medium sized architectural companies such as HPP. We'll offer to implement Merlin in their business by teaching the software to their employees, digitalizing their previous creations and implementing these in Merlin. The costs for the implementation are difficult to forecast, because they depend on the number of components that have to be digitalized. We want to hold the switchover costs as low as possible which is why it is not our purpose to generate profit with the implementation. Afterwards we will charge a monthly license fee for the usage of Merlin and updates. There will be no cloud service, because all data will be stored on the servers of our clients. The monthly price for the usage of Merlin also depends on the size of the company.

We also keep the option open to offer a marketplace for components or construction shell designs. Here we will charge a commission for every sold component. Additionally, we plan to sell the top results if a user searches for a component.

## Market and Competitor Analysis

Our market of interest has a huge potential. Solely in Germany there are about 110.000 architects (BMW, 2017), that generate a yearly turnover of more than 10bn€ (Statistisches Bundesamt, & Statista., 2018). All over Europe, including Switzerland and Turkey and excluding

Cyprus, Hungary, Lithuania, there were in 2014 565.000 architects with a yearly turnover of estimated 15 bn €. An architect in Germany earns 34.000€ a year, while the average in Europe was about 29.000€. Important to know is also, that most architects are working in one-man businesses. While in Germany existed only 365 medium and large architectural offices with more than 10 staff members in 2014, there were about 30.000 with only one staff member. Although more than 90% of all architectural offices were small ( $\leq 10$  staff members), the medium and large offices generated nearly 20% of the revenue on the adequate market (Mirza & Nacey Research Ltd, January 2015).

Our target market are medium and large architecture offices in Germany that focus on designing building constructions. There are no detailed numbers available, but we project our serviceable, obtainable market (SOM) at about 10.000 licenses.

Our serviceable available market is defined of all architecture offices in Europe that focus on designing building constructions. We estimate the number of licenses we can potentially sell at 51.000. In 2015 the turnover for BIM-software was estimated 500m\$ in Europe (LSP Digital, 2016).

We see our total available market as architectural offices all over the world and not reduced to medium and large companies. Unfortunately, there is a lack of information about the size of the market. But the Allied Market Research Institute numbers the potential market of BIM-software at





					
	Merlin	DESTINI Profiler	Allplan	Revit	Sketchup
Design support	☆	✓	✓	✓	✗
Integrated Analysis	✓	✓	✓	✓	✗
Predesigned Elements	✓	✗	✓	✓	✓
Element's Marketplace	✓	✗	✗	✗	☆
Add-Ons Available	✗	✓	✓	✓	✗

Figure 2 The analysis of Merlin's main competitors DESTINI Profiler, Allplan, Revit and Sketchup (own design)

about 11.7bn\$ in 2022 (Allied Market Research, 2016).

Therefore, our target market is the market of architectural CAD software we see our main competitors in the BIM market.

We outline Beck Technology Ltd with its DESTINI programs, Revit by Autodesk Inc., 3D CAD by Dassault Systems SA, Sketchup by Trimble Navigation Ltd. and Allplan by Nemetschek AG as the main players in the market. Especially, the DESTINI programs, Revit, Sketchup and Allplan already include some of the benefits of Merlin or even go further. Sketchup offers a marketplace for components and elements to put into a design. DESTINI and Allplan offer a strong cost calculation feature the client, which is similar to what Merlin includes. While Allplan also includes some prefabricated components, the DESTINI software includes some automatization, for example a functionality to find the best placing for your designed building (included in the Op-tioneer).

There are also some potential supporters such as AECOM, Asite Solutions Ltd. and Pentagon

Solutions Ltd., that can help to implement Merlin in planning processes.

## Challenges

Currently, we are facing the challenge of missing skills in our founder team. Although, our business idea is in the field of architecture and informatics, we lack experts in both areas. Following this, we can't evaluate how architects' working habits look like and whether they are willing to change their way of designing.

To face these challenges, we plan to hire a software developer or let him join the founder team. Additionally, we designed an application strategy, which enables us to develop our product directly in an architectural surrounding to gain the necessary information.

We also see challenges regarding the current market situation. As outlined above the competitors are positioned strongly and we don't expect that our clients will easily change an implemented CAD software. Even though, we are certain to acquire a position in the market. Especially, Merlin's design assistance, the potential for an upcoming automatization and the inner-

company marketplace outperforms the current available software.

## Application strategy

Our application strategy consists of three phases. In the beginning we plan to cooperate with a medium or large scaled architecture office (for example HPP). After developing a basic construct of our software, we will tailor our product perfectly to our partner's needs. In this way we expect to get access to sensible information how architects in companies work together and what our software requires to be accepted by architects. Therefore, we plan to get our program tested in daily life and conduct user surveys. Additionally, we try to reach an agreement with our partner, so that most of our expenses during the starting period will be balanced by them. In this way we try to address most of the unsolved challenges. Alternatively, in the case that we can't

find an appropriate partner, we would try to find an architect to join our founder team.

In the second phase, after we developed our product we will sell it to our target market which was described before as medium- and large-scaled architectural companies. We plan to address them on fairs such as the EXPO Real. Our needs for employees will increase rapidly at that time, because we must develop our business structure including an own office and an acquisition department.

In the third phase of our application strategy we will probably implement a market place for component designs. In this way we also want to attract even self-employed architects to use our product. The marketing must then be extended then to online marketing and other methods that enables us to address smaller sized architecture offices. Additionally, we must hire more software developers, because for the market place we need to become a cloud provider as well. We hope to finish that phase in the end of 2020. Finally, our product will be sold to customers all over Europe.

Figure 3 The application strategy for the development of Merlin in five steps (original design by TUM investment club)



## Finance plan

Our finance and revenue plan is dependent on a partnership as described in the application strategy. We expect to develop and implement Merlin to our partner's business structure until end of 2019. During this time, we do not want to have a negative balance. Hence, we will only spend budget for the further developing of the product. There won't be expenses for marketing or other business segments. In 2020 we want to start accessing the market. Therefore, high investments in marketing, service management and business structure have to be made. As explained before, we don't want to make profit with the implementation to lower the change barrier, that's why high losses are generated. After implementing we charge a monthly cost of 150€ per user. If a customer demands more licenses the price will decrease. In the following we therefore assume, that we only have one client in the first year, which is our client. Therefore, we have a negative balance of about 60.000€ if we hire one software developer. In the second year we will increase our expenses, because we need an office and more employees from different fields. Additionally, we need to install a server if we want to provide our marketplace. We assume, that we can find during the second year 15 clients, who buy 12 licenses for 130€ each. Due to the high expenses to develop the marketplace and rise of the staff we expect a negative balance of 165.000€.

In the third year our expenses rise in the same way as in the second year, but our revenue increases strongly. We expect to have 30 clients

at this point, who pay 140€ per month for in average 13 licenses. This presents nearly 4 percent of our target market. Nevertheless, in the third year we calculate with a slight negative balance of about 20.000€.

In the beginning of the fourth year we assume to hit the break-even point. Therefore, the total funding we are looking for amount to 250.000€.



Figure 5 Forecast of our expected expenses for three years

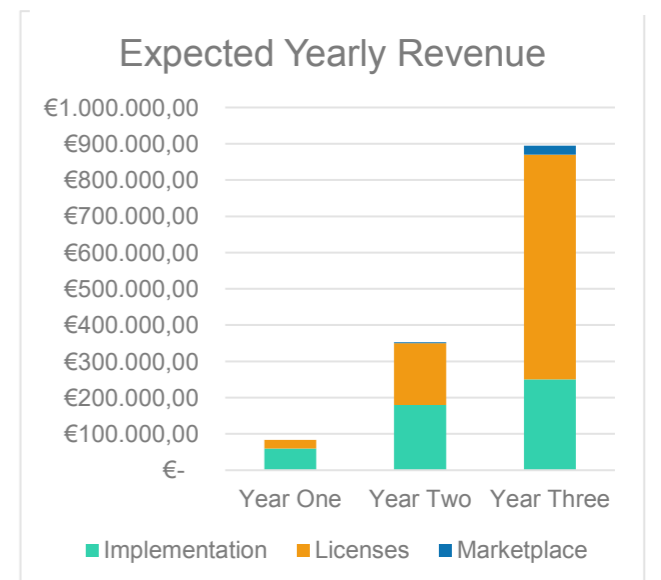


Figure 4 Revenue forecast for three years

## Vision

Merlin is at the moment a tool for architects. But we see it as platform in the future, where creatives like architects and executers like manufacturer are connected and work together. Manufacturer would implement their producible components to Merlin while architects decide. The design process would be minimized just to this component, because Merlin will generate the requested building and the architects just have to give feedback. This process should also be backed up with as much data as possible, which are available in construction and operation (World Economic Forum, 2016). Therefore, less architects will be needed and we can sell fewer licenses, so the marketplace function will be becoming more important for us. Even if it is our dream to create buildings automatically by pressing one button, we do not want to oust humans. Creativity and decision making will always be a human factor in processes.

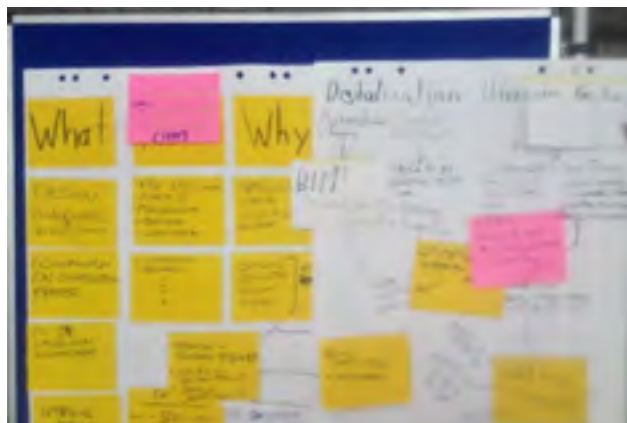


Figure 6 Our notice board during the creative business game including an analysis of the architects' current work and the megatrends

## Where the idea came from: "Creative Business Game: 'Start-up Architecture'"

For two days in September 2018 students from the fields of management and architecture were merged to search for business ideas answering the following questions:

*"Can architects transform their potentials into new competitive advantages in the future? What processes need to be changed? How will a new architectural office look like and integrate technologies? How will you disrupt the built environment and industry in times of augmented realities and artificial intelligence?"*

Established companies from the business field, namely AECOM, HPP and Alleswirdgut Architekten, set up different exercises. My group worked on the topic "The future practice of architects", which was asked by HPP. Our team consisted of one landscape architects, a student of management and technology and part-time management student from all over the world. Due to the lack of a proper architecture student we were a group to disrupt the current processes in architecture. We had a clear schedule, that included various methods, we had learnt in our studies. First, we started to explore the current processes by interviewing students, lecturers or attendee from practice. We asked the following questions: What are architects doing, how are they doing it and why are they doing it. Afterwards, we analyzed upcoming megatrends (Digitalization, Artificial Intelligence, Data Mining,

Augmented Reality, Blockchain, Urbanization and Neo-Ecology) and their influence on architects. We used the information to discuss the way we want to change the business. We rapidly came to the solution, that we should try to find a business idea, that replaces architects. Our slogan in this phase was "no more architects". We struggled to develop this business idea, because we didn't know about the working field of architects and its demarcation to engineering. There were also problems within the team, because we first had to accustom ourselves to our different styles of discussion and co-working as we had different backgrounds.

Because we didn't end up with any results, we started to look at our exercise from a different point of view. Since our "partner" was HPP we started analyzing now, what makes them successful and what resources are available to shape their business model. We recognized that in established architecture companies is a lot of unused data. After some discussion we concluded, that we want to make a software, that learns from previous plans of architecture offices



Figure 7 Our team presenting the results to the attendees during an interim presentation

and is able to design buildings on its own. A hint that came up during the feedback session from another group made us request if it is possible to make everything automatically. At that point we also came up with the idea of implementing sensors to buildings and use the data to teach Merlin furthermore. Finally, we realized that our knowledge about buildings and construction is not sufficient for such a big business field. Maybe in the future data mining to improve automated building design will be possible to implement in Merlin, but from our point of view to focus on one business field promises more success than extending our business idea and shareholders.

After finding a business model on Friday morning we had to develop a pitch in the afternoon. We split up the group to finish on time. At the end of the creative business game we presented our ideas to other participants and to the attendees from practice. Despite all the challenges we had to face, our final presentation was more than satisfying.

Even if my team was lacking an architect it was interdisciplinary. Yong, Sauer & Mannix state in an empirical paper, that task conflict in interdisciplinary teams fosters creativity, while relationship conflicts might have a negative influence (Yong, Sauer, & Mannix, 2014). It is also commonly accepted in research, that interdisciplinary teams are beneficial for creative work. Both, I can verify from my experience in this workshop. In my team came up differing, but good ideas from each team member and many were influenced by the disciplinary fields we origin from. For example, the methods and knowledge we applied had different

backgrounds. Nevertheless, there were strong relationship conflicts, that sometimes impeded our potential. Thus, in my opinion the team spirit is more important for finding useful ideas, but interdisciplinary teams are better for fostering creativity.

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# Creative Business Game

· **aHarmony**. A platform that reforms the client/designer interaction

**aHarmony**

love your architect

Lebriz Kiziler 03688653  
 Qiguan Shu 03699094  
 Haosen Hu 03708200  
 Camilo Garzon 03697826

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# Executive Summary

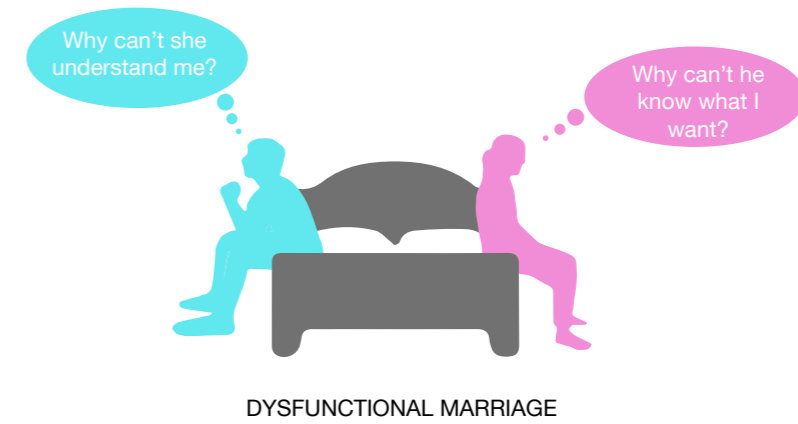


Figure 1 Executive Summary 1

In our opinion, the communication problem between the designer and the client is like the one in a dysfunctional marriage. They can not understand each other because they speak different professional languages.

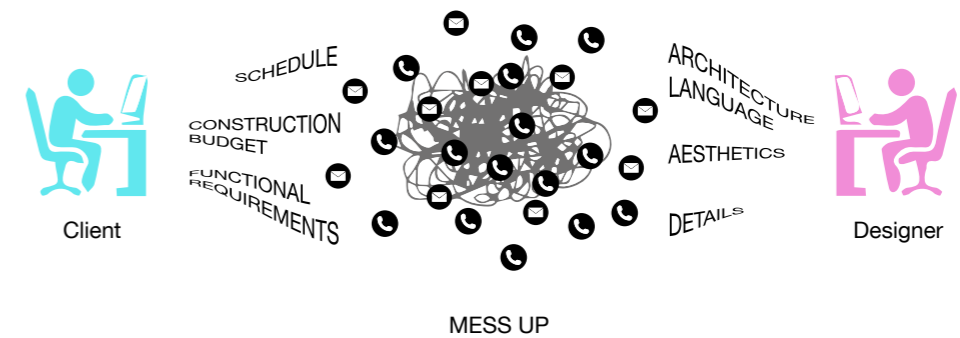


Figure 2 Executive Summary 2

The communication between client and designer is messed-up by endless phone, mail and feedback.



Figure 3 Executive Summary 3

Therefore, we hope to develop a platform to integrate communication between customers and designers, improve work efficiency and achieve **aHarmony**.

# Detailed Concept

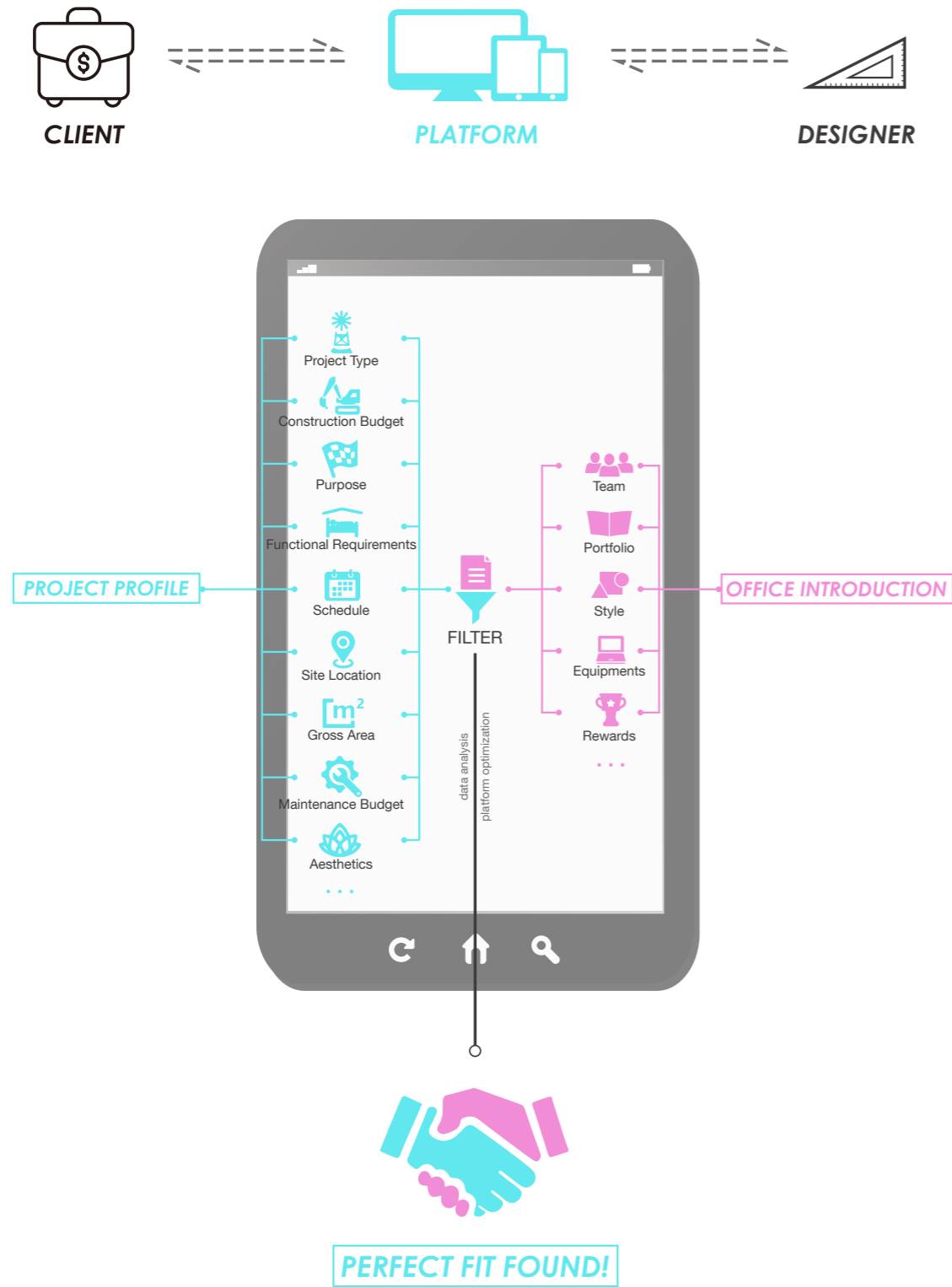


Figure 4 Detailed concept „Providing the perfect fit“

Providing the perfect fit is the first function of this platform. According to the information uploaded by both sides the platform will find the perfect match for every individual project.

# Detailed Concept

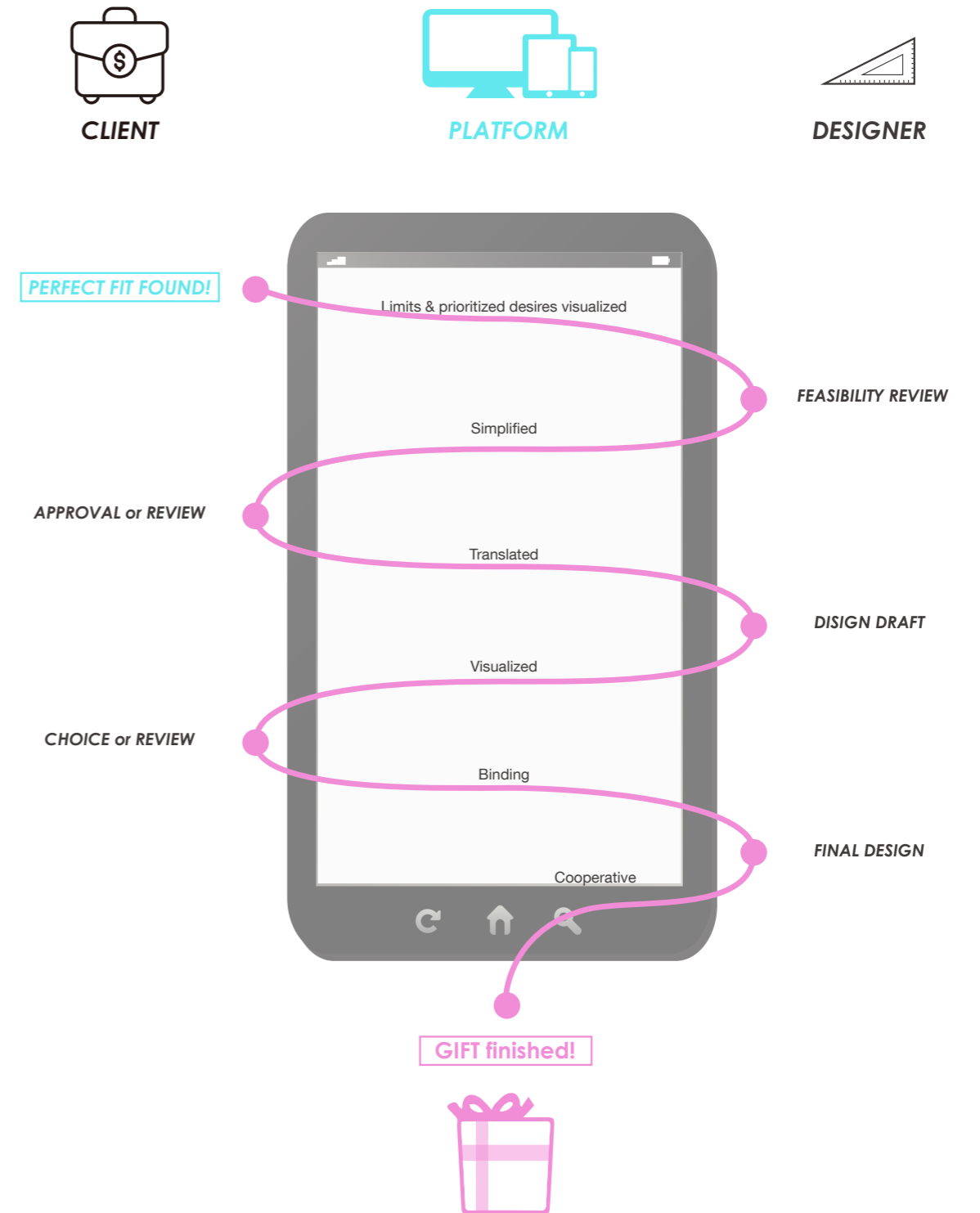


Figure 5 Detailed concept „Mediating the dialogue“

The platform will provide sustainable communication optimization after the match function. Client and designer will use this platform to communicate in the every phase of the project.

# Detailed Concept

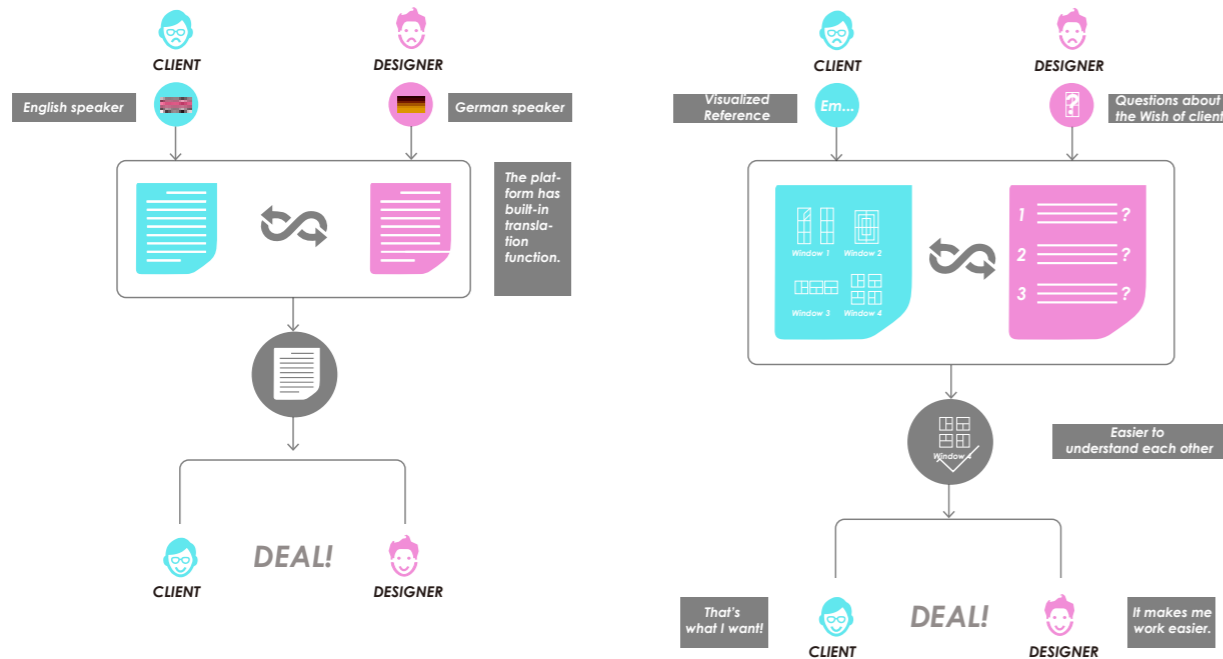


Figure 6 Translate Function

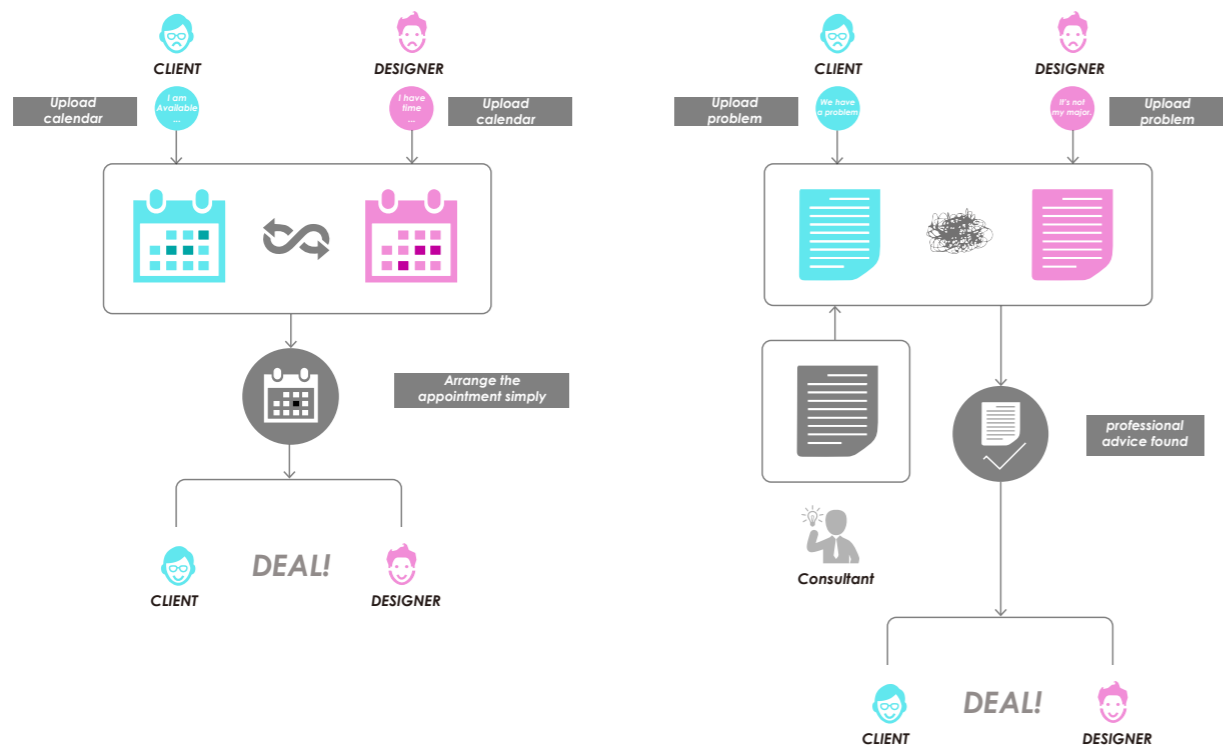


Figure 8 Calendar Sync Function

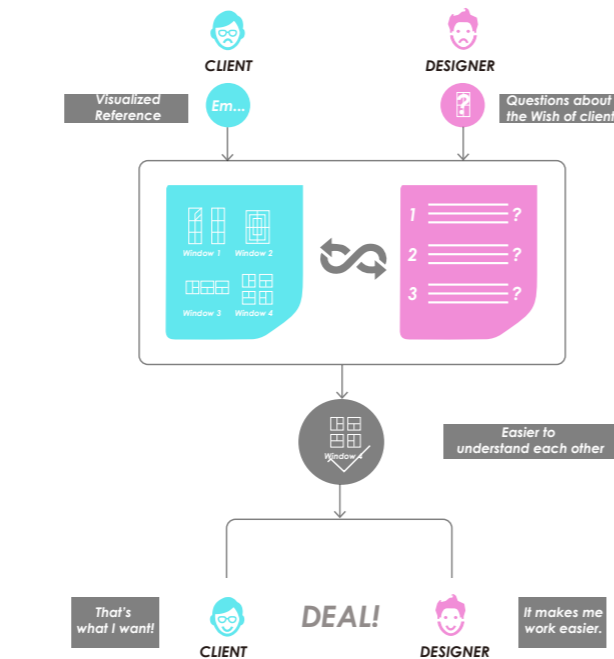


Figure 7 Visualization Function

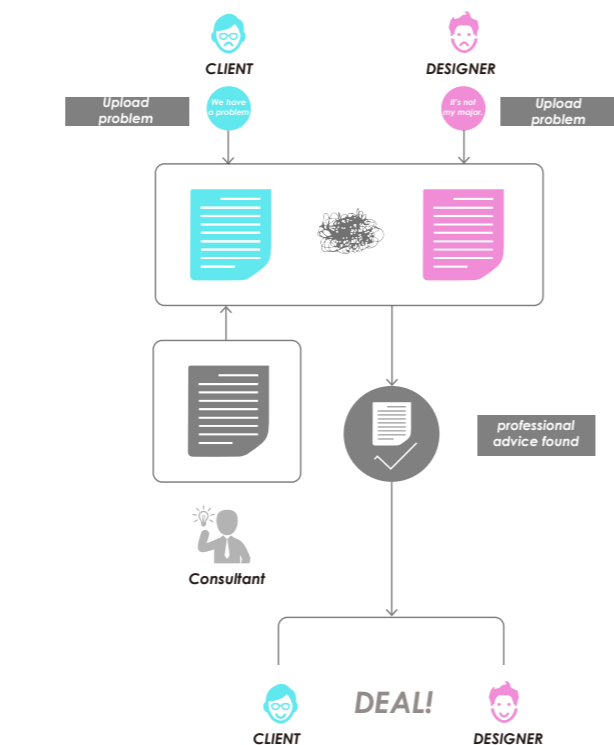


Figure 9 Consultancy Function

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# Business Model

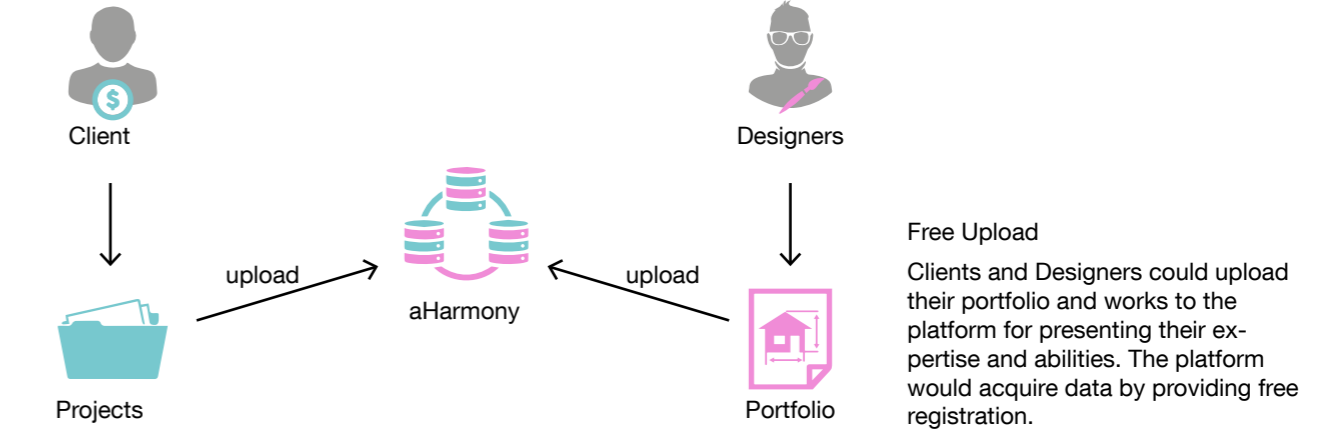


Figure 10 Business Model Free Upload

**Free Upload**  
Clients and Designers could upload their portfolio and works to the platform for presenting their expertise and abilities. The platform would acquire data by providing free registration.

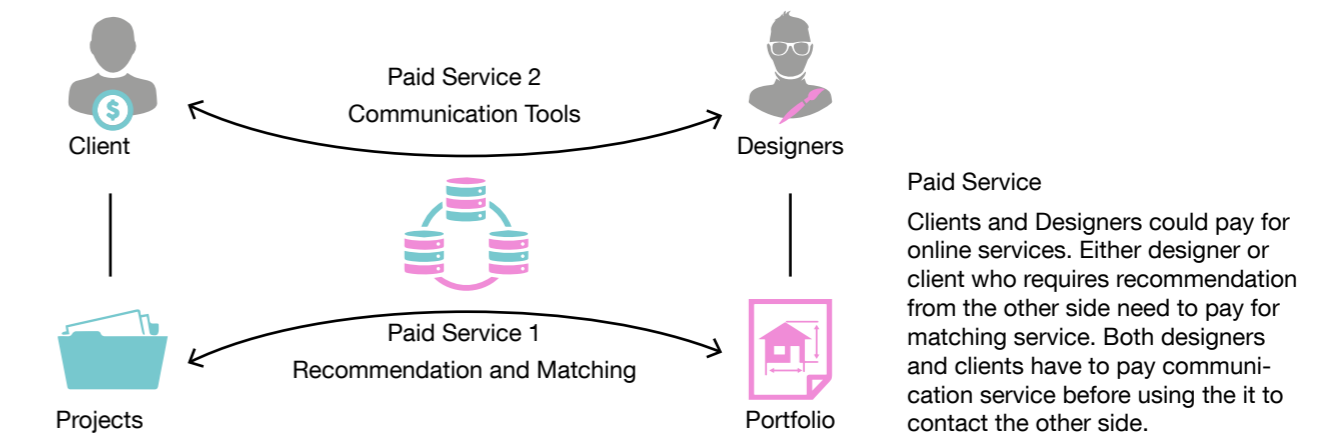


Figure 11 Business Model Paid Service

**Paid Service**  
Clients and Designers could pay for online services. Either designer or client who requires recommendation from the other side need to pay for matching service. Both designers and clients have to pay communication service before using the it to contact the other side.

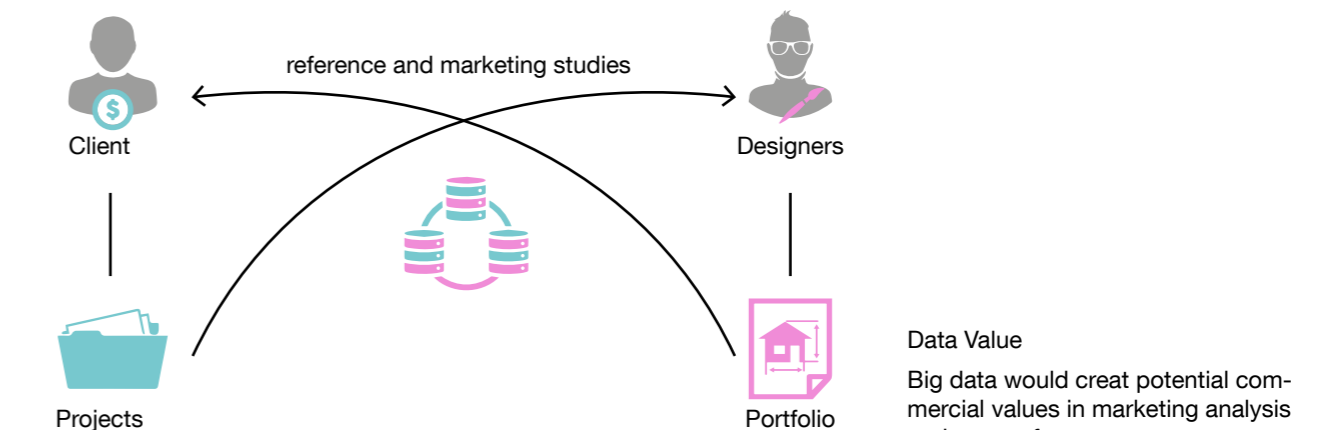


Figure 12 Business Model Data Value

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**Data Value**  
Big data would create potential commercial values in marketing analysis and case references.



# Market and Competitor Analysis

We tackled the market analysis according to the initial Segmentation proposed in the S-T-P process (Kotler & Keller, 2006). There, we sliced the market in two big masses: Architects or Architecture-related firms and the regular clients of said groups. Thereafter, we concentrate ourselves in Small Firms and Freelancers since they are the ones how usually deal with clients how don't have backgrounds in construction or architecture, hence the ones that struggle with communication the most.

Following the business model, we profile now our chosen customer. Therefore, we enter aHarmony Front-End (Osterwalder 2010) to better describe the customer segments we discussed throughfully in the workshop.

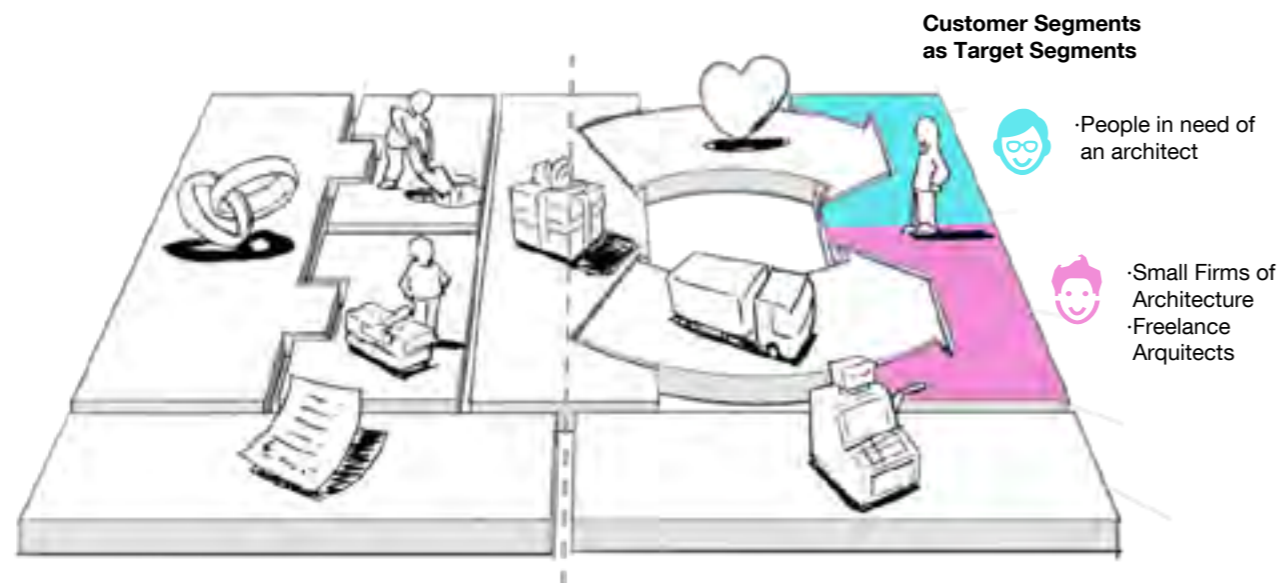


Figure 13 Osterwalder canvas (2010) with aHarmony Target Customers Segments

Since one of our goals is to act as a match-maker between architects and clients, both will act as our customers. Regular people in need of an architect, looking for their dreamed house, garage or even patio gazebo will enter the platform in search for their new dreams-builder architect who will understand them 100%. As well, small firms or Architects will go into the project looking for the client of their life who will challenge them with an amazing project. At this point will begin the process of mediation.

There is no **Tinder** for architect/client that we possible could be aware of. However, there are many platforms, especially based on the US whose target is the freelancer architect in search of clients. We do not consider them direct competition since our position would emerge from the mediation between both parties and not client-searching per se. According to the number of people using these platforms, the market share would be divided as the following graph:

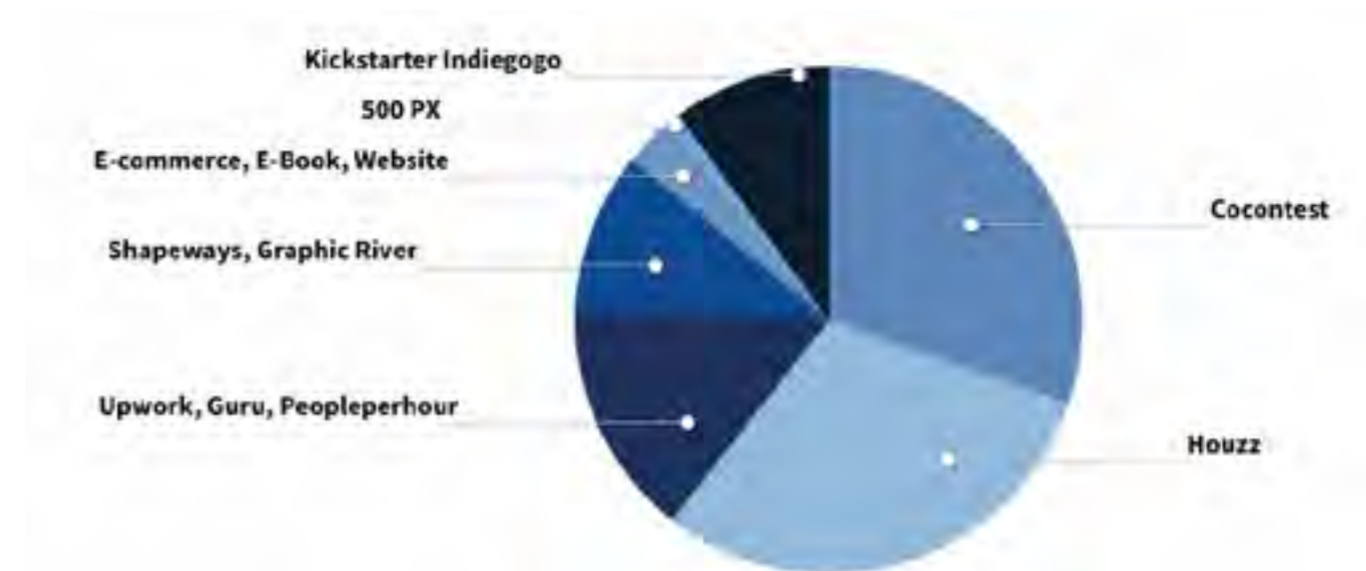


Figure 14 Architecture freelancing Platforms according to archiobjects.org

Following the analysis of strengths, weaknesses, opportunities and threats -SWOT- (Kotler & Keller, 2006). We focused in the common weakness that those platforms have in common. After they have found the client for the freelancer architect, they don't mediate in the process of design per se, abandoning client and architect at the same time. This opportunity in the process will represent a threat for those existing platforms in the target market

## Simplified finance and Revenue plan

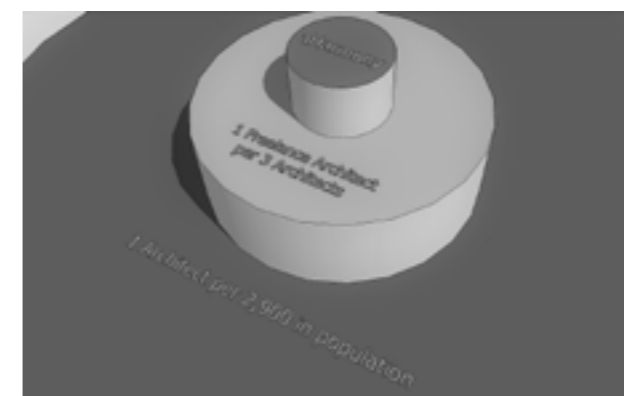


Figure 15 Market Composition of aHarmony with US-based Numbers

The target market would be derived based on the US actual numbers on our potential market. The US counts with 1 architect every 2,900 habitants and according to *architect.com* almost one third works as Freelancer or has started a one-man firm, the former as our available target in the US.

Our SWOT analysis helped us understanding that one of the strengths these platforms have is the developed revenue streams and their concise cost structure needed to operate. We can adapt these methods to charge monthly subscriptions and/or per extra feature. Also developing a strong sponsored ads system that small-firms could paid to increase visibility.

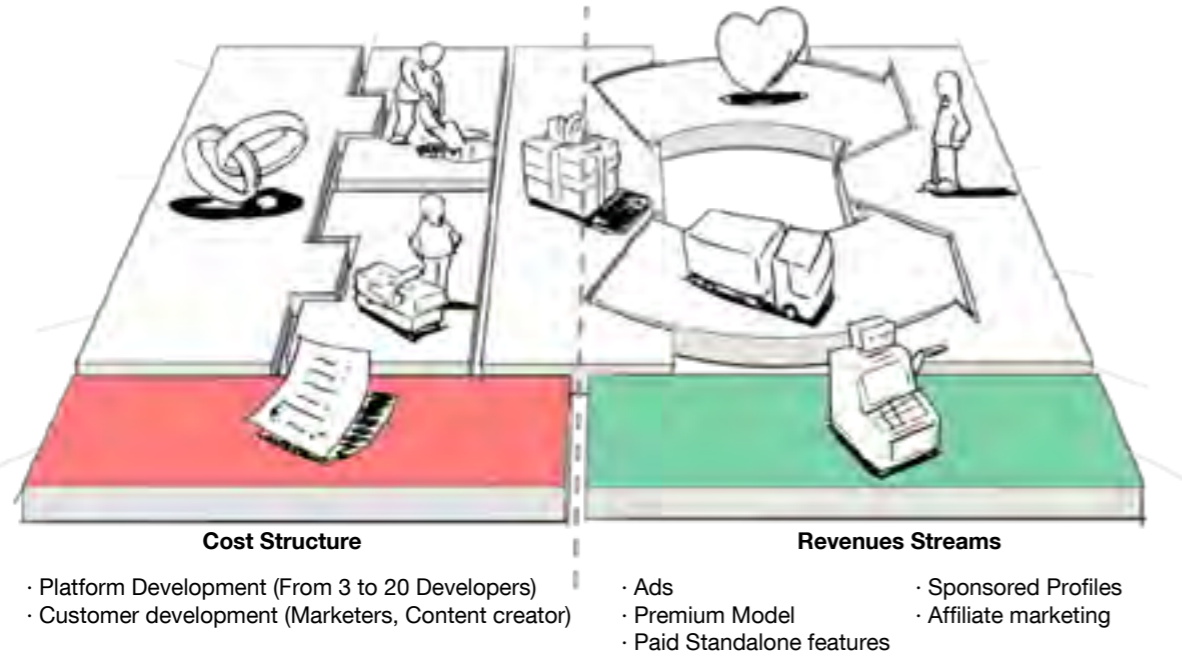


Figure 16 Osterwalder canvas (2010) with aHarmony Cost & Revenue key points

Cost & Revenue Forecast of aHarmony

Startup costs		Year 1	Year 2	Year 3	Year 4	Year 5
<b>Expenses</b>						
Website design	2,000					
Stationery	2,000					
Insurance	4,000					
Payroll	3,000					
Rent	4,000					
Computer costs	6,000					
Legal	1,000					
Logo design	1,000					
Training	5,000					
Marketing	6,000					
Other	3,000					
<b>Total expenses</b>	<b>37,000</b>					
<b>Customers</b>						
Churn rate		5.0%	3.0%	2.0%	1.0%	1.0%
Additions / Growth rate	10	5.0%	3.0%	2.0%	2.0%	2.0%
Opening	10	30	125	291	514	837
Churn		-37	-72	-94	-75	-121
Additions		151	238	317	402	510
Ending		125	291	514	837	1,225
<b>Revenue</b>						
Monthly subscription fee		30.00	30.00	31.75	31.75	33.80
Revenue		25,362	76,511	156,082	260,607	422,292

Figure 17 Cost & Revenue Forecast of aHarmony

According to the forecast, our goal would be to achieve 4% as penetrated market in the US, around 1200 users at the end of year five. Therefore, forecasting green numbers in year No. 3 as all sunk cost would be covered thanks to the revenue Streams of our monthly-subscription fee that was derived by analyzing our closest competitors in client-searching platforms.

## Application and Implementation Strategy

The service we suggest essentially is Software as a Service (SaaS) in a business to business (B2B) setting. This is because the main customer is architectural firms that would like to utilize this software, even though non-paying customers are also to be users of it. In order to simplify the implementation and application as a whole we could evaluate the software development not only in the product development sense but also quality assurance.

For the development of the platform we prefer an iterative process as these kind of iterative models incorporate the customer feedback in almost various parts of the process in order to optimize the product increasingly and maximizing adoption (Hai & Sakoda, 2009). The iterative parts of the process therefore have to be the ones that would benefit from incorporating this customer feedback. Following through with Fujitsu Consulting's five step strategy which includes iterative processes for the individual releases (Figure 18 A. I. S.) we would start with defining the main needs and focuses of our product.

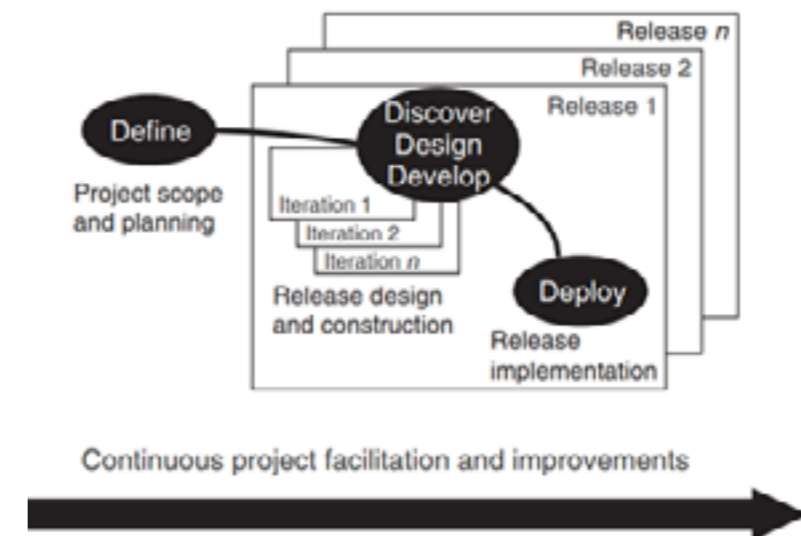


Figure 18 Application and Implementation Strategy (Five D's)

In order to better structure our implementation strategy we identified the two main focuses of our platform to be fulfilling on the user end: data security and UX. Furthermore we defined additional needs related to these main topics such as encryption practices and database structures for data security as well as platform design and intuitiveness for UX. These four main areas need to be covered in order for the platform to be an applicable business practice as well as a realistic implementation for existing firms. Furthermore the integrations of other software (architectural design or illustrations related) needs to be defined in order to incorporate these needs within the development process.

Second part of the implementation would be the discovery of the needs and structures that provide such. Basing it on our initial concept the needs in terms of development environments and

timeframe should be evaluated as well as any further needs for the individual external softwares that will be integrated. Development team then could be recruited based on the project span and focuses, followed by the creation of a product roadmap in order to create a framework for the design and development.

Furthermore data structures need to be considered in this stage in order to ensure the platform has the appropriate back-end or at least capacity of back-end operations whilst handling large amounts of data which would be due to the large scale media used in architectural design as well as the sheer volume of users we aim to gather. This is especially a challenge considering data security which also needs to be addressed.

Design part of the implementation should involve most of the customer feedback as for an aesthetic topic such as architecture the platform needs to be representative of such topic and the specialist's needs within this platform. Therefore we suggest having a selection of architecture from the targeted markets to be included in ideation or at least testing of this part in order to best incorporate their input. Design needs to be iterated a couple of times and parallel to the rest in order to ensure the best fit. Garrett's (2010) five elements of user experience could already be incorporated in the design part to build up for a more optimized development (Figure 19 A. I. S.).

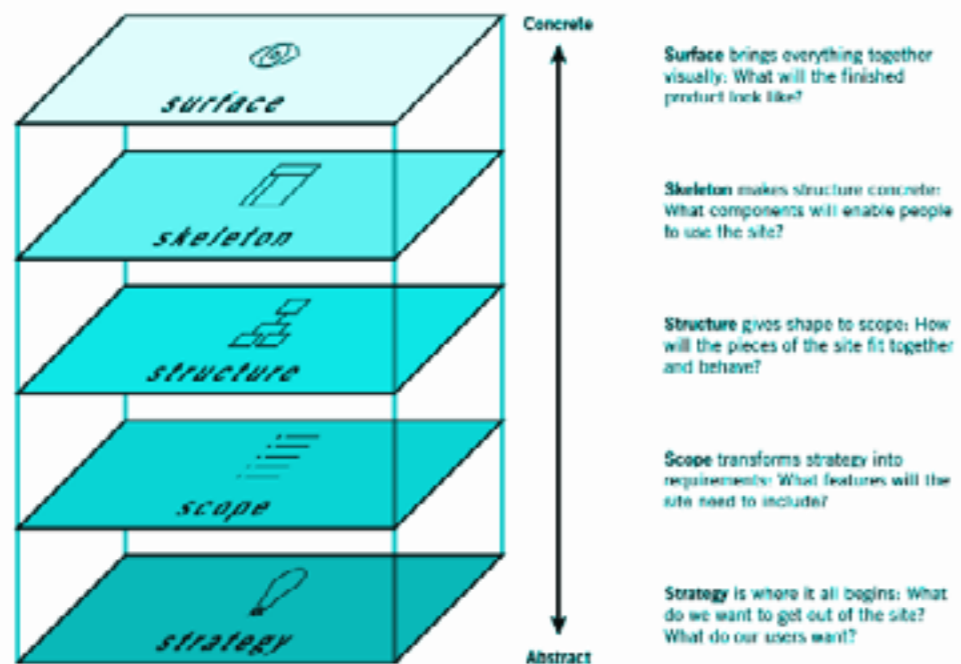


Figure 19 Application and Implementation Strategy (Five Elements of User Experience)

Development then would follow using the team, design and project roadmapping defined and discovered previously. We suggest adopting Agile development (Cockburn, 2002) within this topic as it is the common practice and enables following through with roadmaps for development teams whilst keeping the focus in mind. A relevant user group could be incorporated in the testing of this part yet it is also possible to test it in code basis as well. The five elements of user experience is again to be evaluated every iteration of the development. Furthermore, as one of the most error prone steps, structures enabling continues adresings of development topics such as bug reporting should be considered for implementation at this stage.

Initial Deploy step would be the launch of our platform with the pilot users which could be contacted individually or gathered through a launch marketing campaign. This initial or beta deploy would provide the information necessary for the user experience optimization as well as data security in large scale. The five steps would then cycle to further optimize the service to address data security topics further.

## Marketing Strategy

Marketing strategy is commonly defined as the activity that illustrates the best target markets and value propositions with respect to the existing conditions and opportunities (Kotler & Keller, 2006) in order to formulate how it will compete in the presence of the competitors and alternatives (Porter, 1989). As our product is pre-launch, our initial marketing strategy is focused on market entry.

We developed a 5 step marketing strategy (Figure 20 Marketing Strategy) specialized for the type of product (SaaS), type of business (B2B) and the target market (architectural community) using existing methodologies such as West & Ibrahim (2015) and Peter et al. (1999).

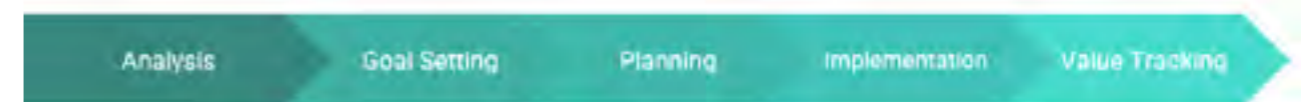


Figure 20 Marketing Strategy (Five Steps Experience)

As this is an iterative process the result would be a cycle that connects as in Figure 2, steps of which are defined in the following part.



Figure 21 Marketing Strategy (Cycle of Marketing Strategy for aHarmony)

In the initial step we would like to analyse the existing market with respect to alternatives and competitors, similar to the analysis included in this report. Through that the placement and needs of the current marketing activity could be identified in order to be addressed further. In the very first iteration of launch the existing placement is null and competition needs to be very thoroughly evaluated as it is the baseline. Furthermore the benefits of the alternatives and the status quo should be addressed to make sure these are maintained in our product and its marketing. prone steps, structures enabling continues adresings of development topics such as bug reporting should be considered for implementation at this stage.

Based on the analysis and the evaluation of the placement the goals (mission and vision) need to be set which aim at achieving the needs and priorities previously defined. These goals would be formulated "SMART" as in specific, measurable, achievable, realistic/ relevant and timed (Doran, 1981) (Figure 22 Marketing Strategy) in order to keep the focus clear and the goals achievable within these cycles. Since the goals are structured such way the timeline for the marketing projects could also be loosely defined at this part in order to set a better forecasted project plan in the next part.

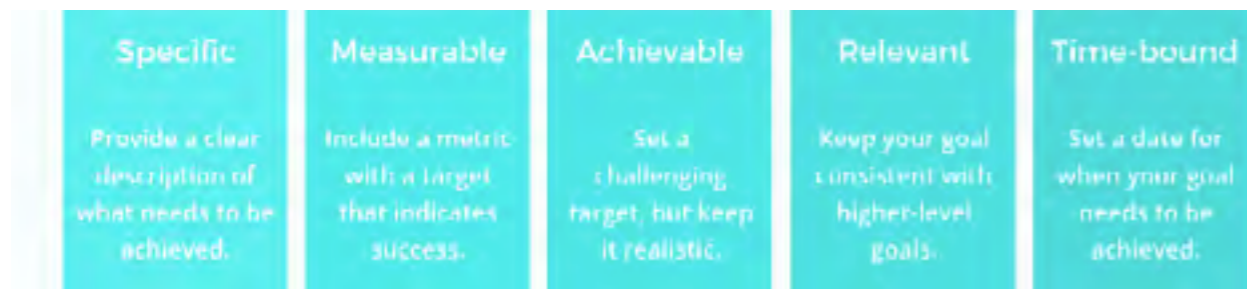


Figure 22 Marketing Strategy (Smart Goals Definition)

Next part would be finalizing this timeline through setting up the budget and project planning of the upcoming marketing activities. This is to ensure it would be possible to later evaluate the value created by the individual marketing activity through a clear view of its expenses. Furthermore it would allow further forecasting of the future activities as providing a baseline.

The finalized project planning would then be implemented through content creation and their implementation/deployment to the corresponding marketing channels. This would involve design activity, which, again, should be addressed with care considering the visual arts and aesthetics involvement in our target market.

Finally, before the starting of the new cycle, value created could be evaluated through the evaluation of individual channels and the detailed activity and tracking the success of those projects. This would allow a quick overview of the success of the projects even before the next analysis and provide a standing point for where to go next with these marketing activity. The current structure of tech platforms allow highly detailed evaluations of the marketing activity to the level of page visits, time spent on pages as well as click counts; which we believe would allow the next cycle to quickly optimize.

## Distribution Channel Strategy

Our distribution model would focus in reaching the customers through Mobil platforms like Google Play Store, Apple App Store or Amazon AppStore. However, our goal is to reach only our target market and these Appstore only serve as a common site to download the software per se. Consequently, we would assure to be at display for architects and people in need of one via social media o highly position platforms like Pinterest that could segregate customers based on their searches.

Although we have to recall here that we have proposed to reach two different segments of customers: the non-architect client and the designer. Hence, our idea to reach the architect would be through a Zero-level-channel (Kotler & Keller, 2006) via Internet.

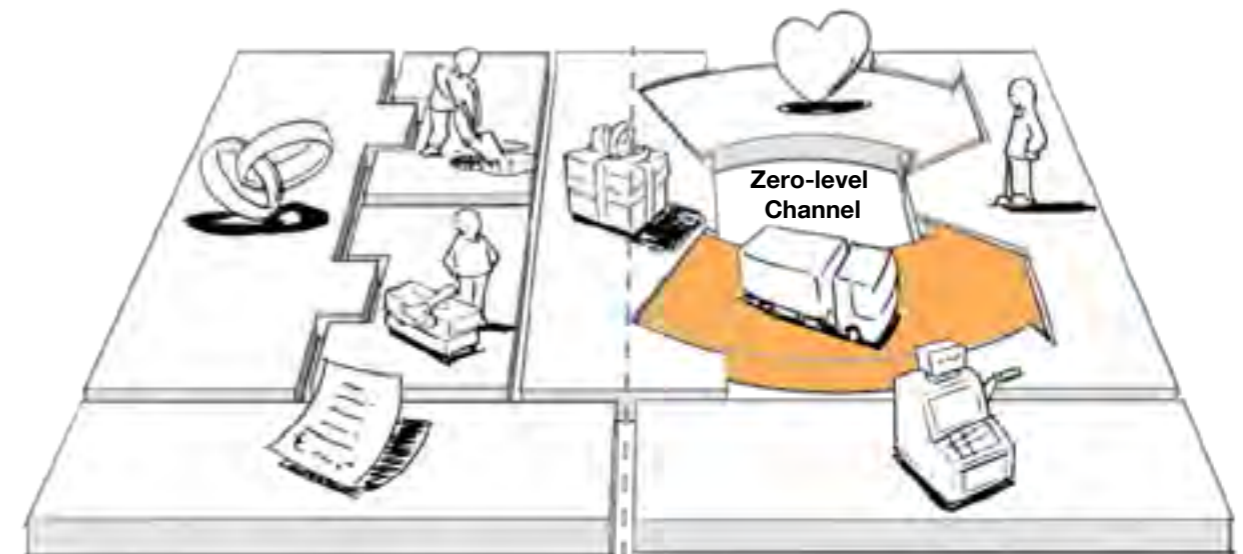


Figure 23 Osterwalder canvas (2010) with aHarmony Distribution Channels

# Paper Prototype



Figure 24 Paper Prototype Designer

Figure 25 Paper Prototype Client

# Documentation of Workshop



Figure 26 Documentation of Workshop\_11.00 team up

20.09.2018

09.30 Kickoff

11.00 Team up for challenge: 3AWG / Jan Fischer



Figure 27 Documentation of Workshop\_11.30 brainstorm

11.30 Brainstorm - problems in architectural design process

For Industry: administration cost; hasty project planning; redundant restrictions; limitation in land use and money

For Practices: synchronous management; contradicting goals between clients and designers; short design period; loss of good ideas

For Individuals: conflict of interests; lack of client awareness; feeling limited

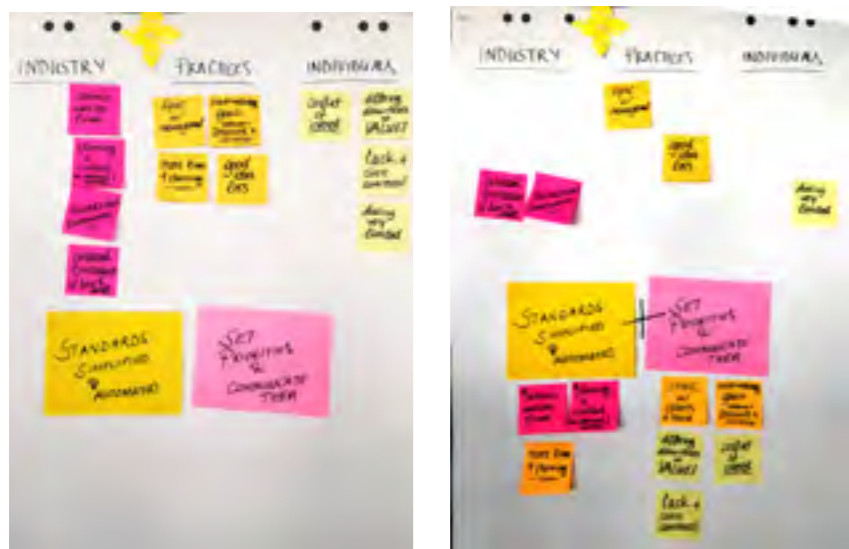


Figure 28 Documentation of Workshop\_12.00 categorization

12.00 Categorize problems

Problems are divided into solvable and unsolvable.

Solution to solvable problems is categorized into two types: set standards and set priorities.

12.30 Iteration I



Figure 29 Documentation of Workshop\_12.30 Iteration I

13.45 Selecting focus

Low efficiency in Communication between clients and designers is chosen as the problem with both possible solution and commercial values.

14.00 Find concrete barriers in communication

For designers: lack of skills in communication; not share the same goal as client; etc.

For clients: withholding information like budgets; focus on wills while ignore limitations; uncertainty in decisions; misunderstanding professional terms; etc.



Figure 30 Documentation of Workshop\_14.00 barriers discussion

15.30 Core solution decision

Relation as employer to server between client and designers lead to low efficiency and unhealthy communication.

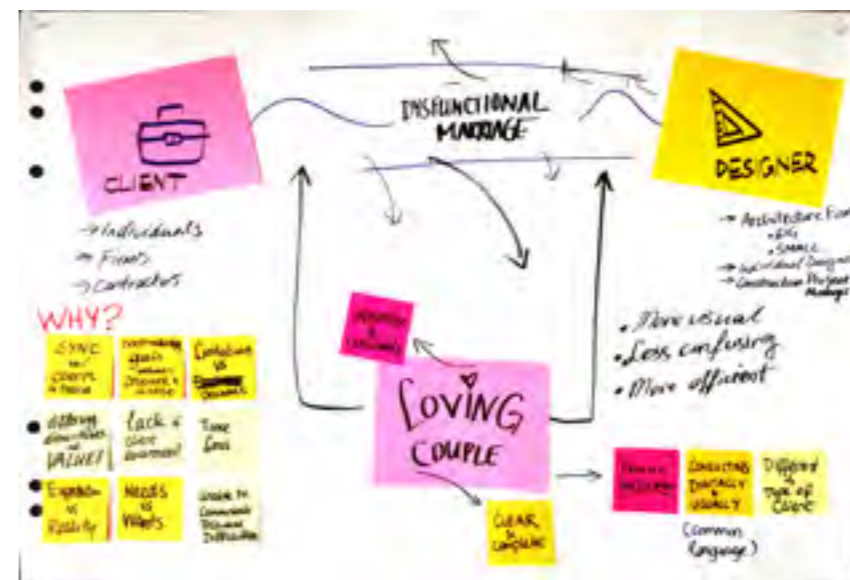


Figure 31 Documentation of Workshop\_15.30 core solution

A creative solution: think designers and clients as a couple to achieve a project together

16.00 Platform functions

Communication media and tools during the whole design process. It has to be visual, simple and standardized.

18.00 Iteration II

# Personal Statements

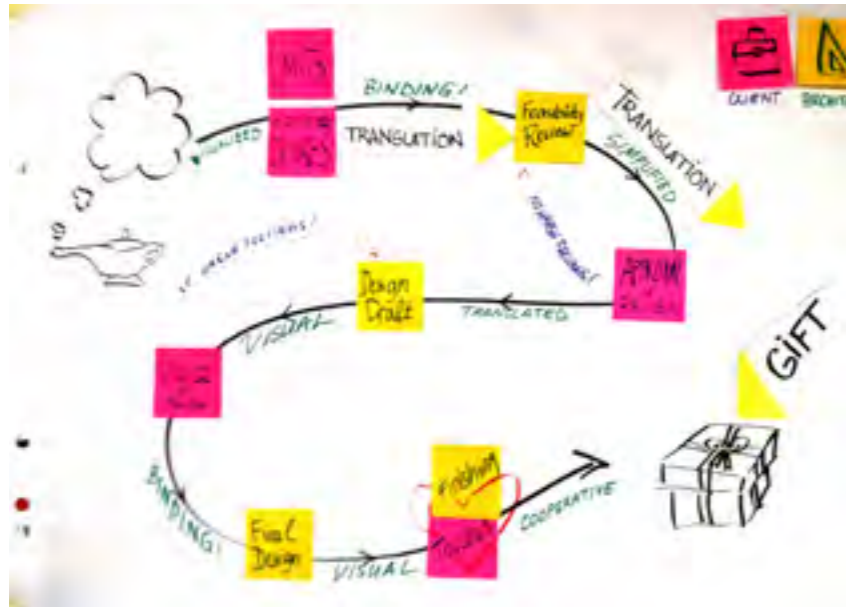


Figure 32 Documentation of Workshop\_16.00 platform functions

21.09.2018

09.15 Recap

09.30 Information involved in communication - what architects and client must know about each other?

date / schedule; site location; environmental factors; budgets (construction & maintenance); aim of the project; functional requirements; non-functional requirements; gross area; aesthetics

**Haosen Hu**• The interdisciplinary work allows us to learn by making connections between ideas and concepts across different disciplinary boundaries. Like in this workshop I understood the other aspects of a project expect for architect, like the financial part and the market part. This experience will greatly help my architect career in the future.

**Qiguan Shu**• It is indeed a challenge to achieve such complicated tasks identifying one problem and offering a commercial solution only in one and a half day, especially when cooperating in an interdisciplinary team. We have spent a lot of time trying to really stand in others' shoes. It is rarely seen in start-up discussions that Robert's Rules of Order is taken into use. I am wondering if those procedures could help in interdisciplinary and cross-cultural talks.



Figure 33 Documentation of Workshop\_12.30 Iteration III

12.30 Iteration III

15.00 additional goal and function

Match suitable designers to clients

Allowing easy documentation and draft sharing

Promoting creativity while ensuring needs are met

**Lebriz Kiziler**• Interdisciplinary nature of the teams, while beneficial, was not fully utilized due to the activity being mainly a management type business game which demanded mainly management competencies. Exposure to the differences in working styles as well as approaches to topics to tackle was something valuable to experience as a future manager. When applied through innovative or creative work these differences in competencies could provide a larger pool of ideas as well as approaches and methods, enhancing the ideation process, however, the differences also should be addressed respectfully within the team and holistically without favoring any party based on assumptions.

**Camilo Garzon**• The concept behind this workshop is simply an astonishing idea that develops the channel for creating this bridge between architecture and management that every time is more crucial in the business/creative world. I personally believe this will be the near future and architects will have the need to reinvent themselves to keep up with this constantly-changing digitalization era. I hope that from the Architecture academy the transversal knowledge of management keeps being integrated to the traditional curricula. I find myself in this path that will lead me to new horizons and capabilities, hence the workshop being an insightful experience for this new Architect/Manager role I pursuit.



Figure 34 Documentation of Workshop\_18.00 final pitch

17.00 business plan & financial value

monthly subscription

Save more than 700 hours communication time, which equals to 50,000€ values

18.00 Final Pitch

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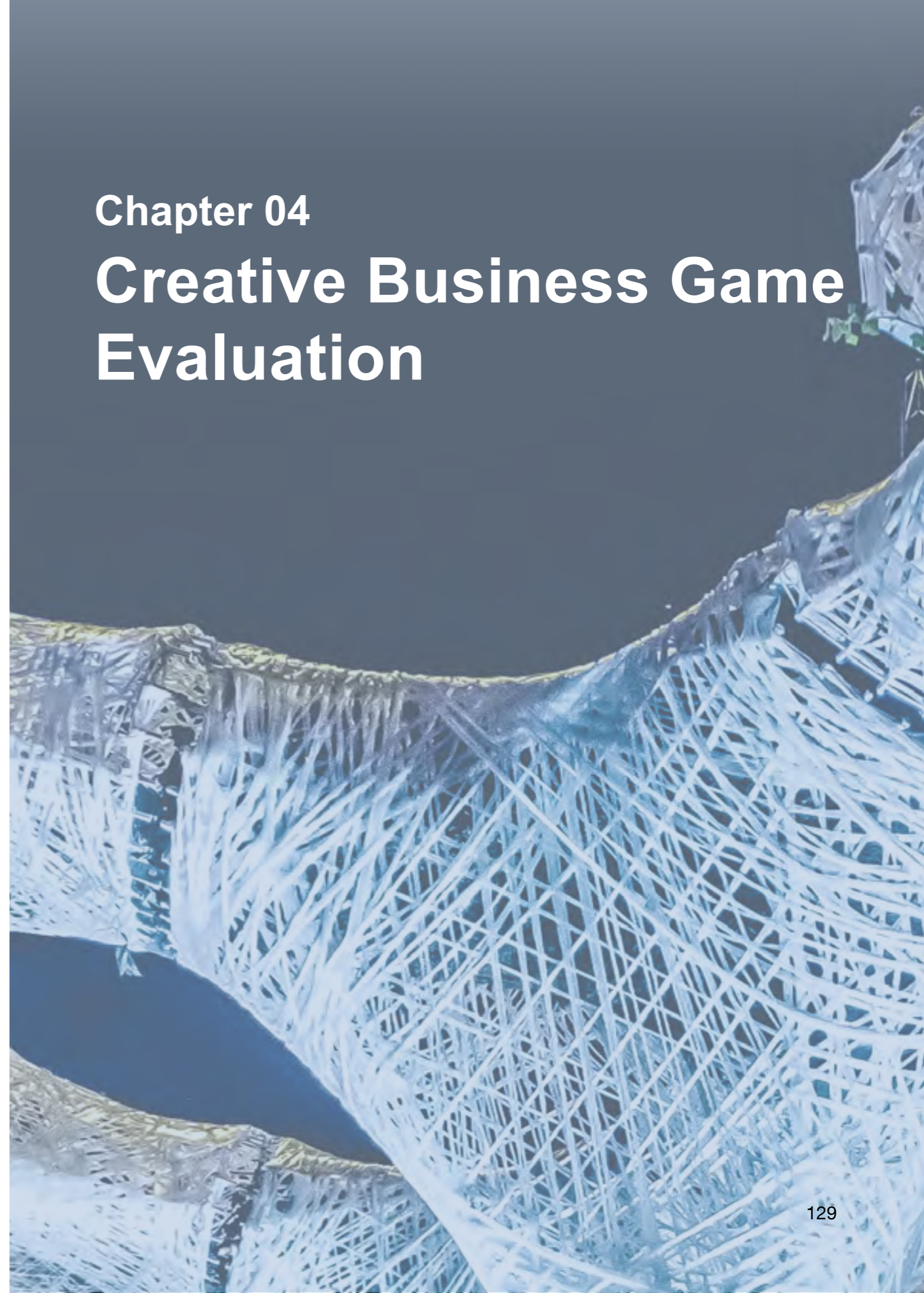
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Chapter 04

# Creative Business Game Evaluation

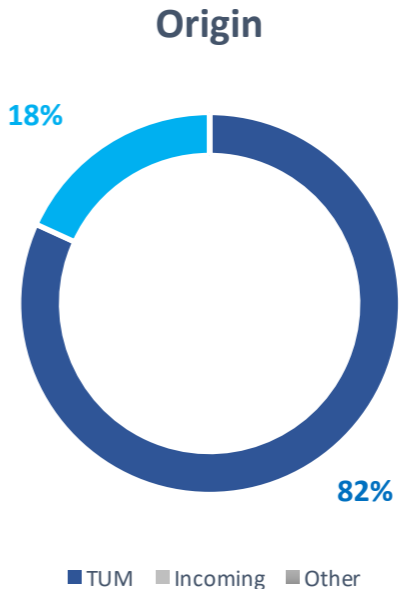
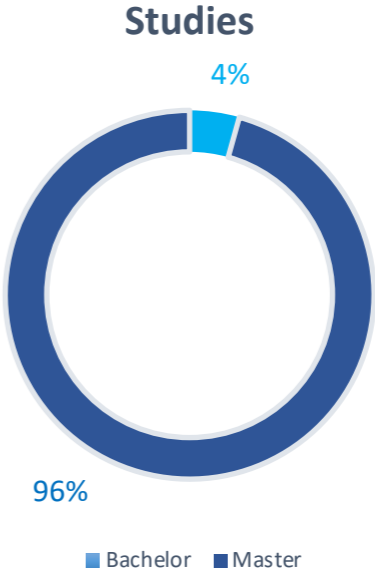
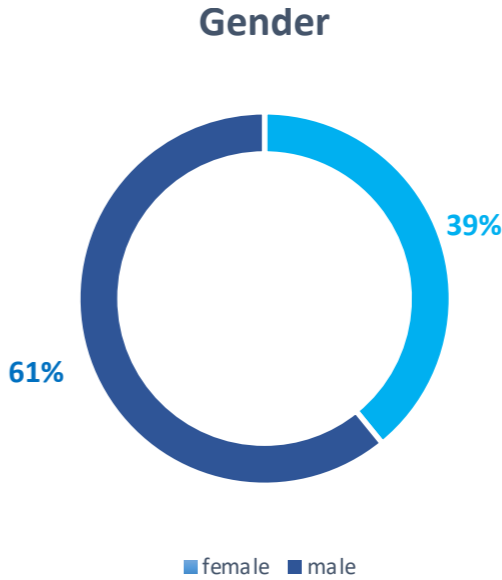
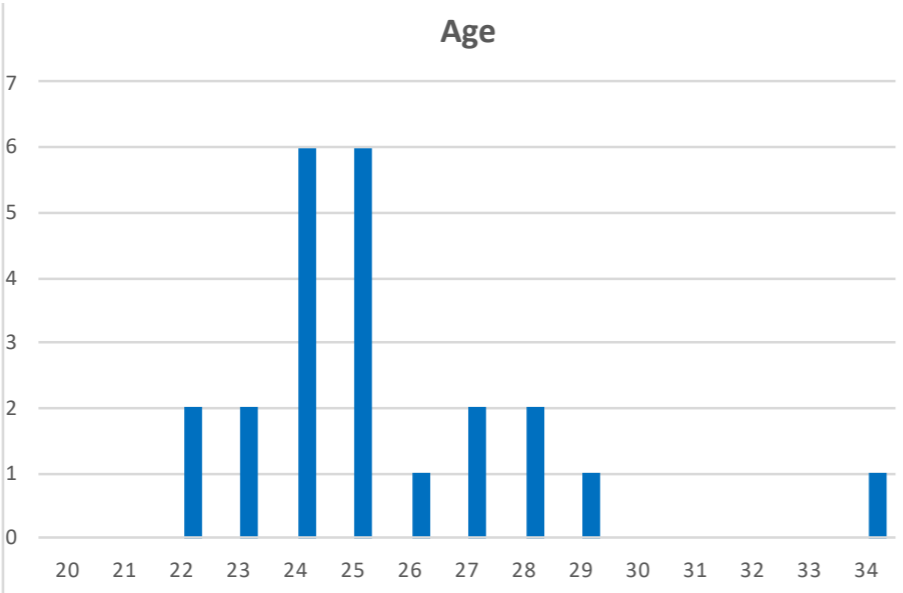


# Summary of Evaluation

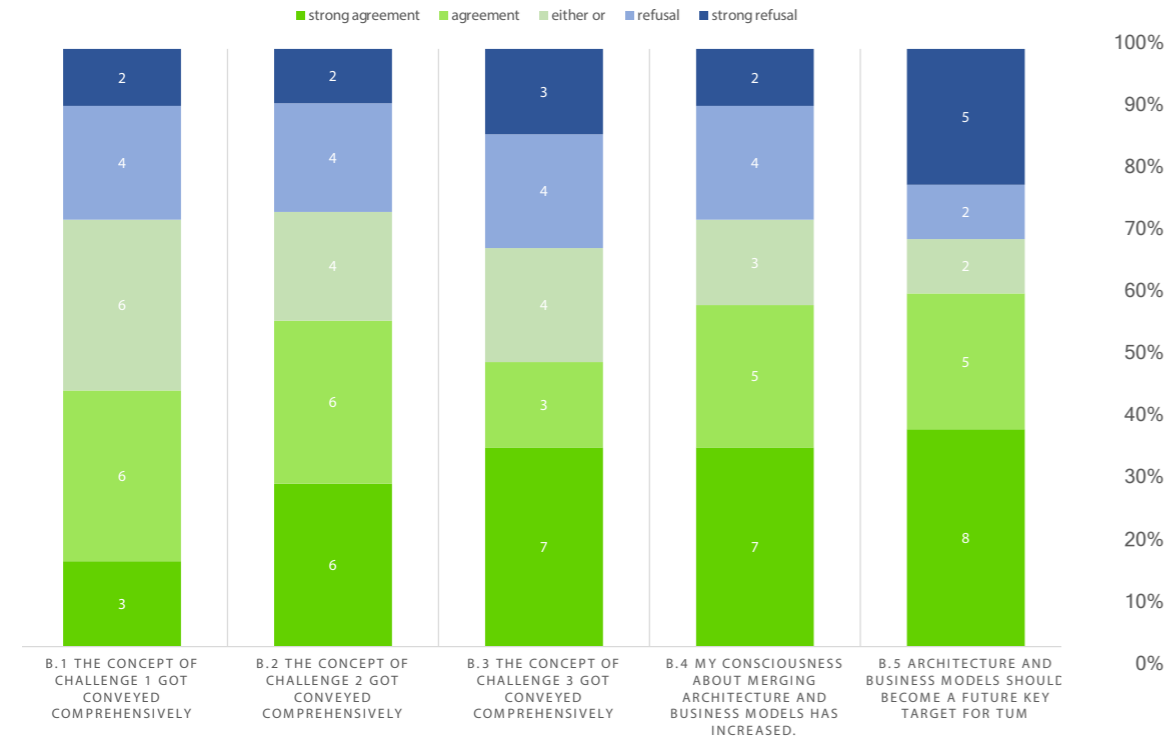
Approx. 60% of the participants were students from management studies, 40% came from the disciplines of architecture and landscape architecture. Though it was intended to work in interdisciplinary teams, only two teams consisted equally of management and architecture students. Two teams proceeded with one architectural student, and two teams were entirely disciplinary. Surprisingly, no student of architecture took the challenge of redesigning the future practice of architectural offices. Only half of the participating architectural students submitted documentation. The results of the conducted evaluation showed a decent satisfaction rate with 23 cumulated replies of “agreement” and “strong agreement” (number of participants n=24):

- Consciousness for new business models increased: **52%**
- Workload, process & future implementation were feasible: **54%**
- Collaboration, interdisciplinarity & integration increased: **54%**
- Results&willingness to pursue idea further were satisfying: **52%**
- Benefits to apply skills & use new insights occurred: **58%**

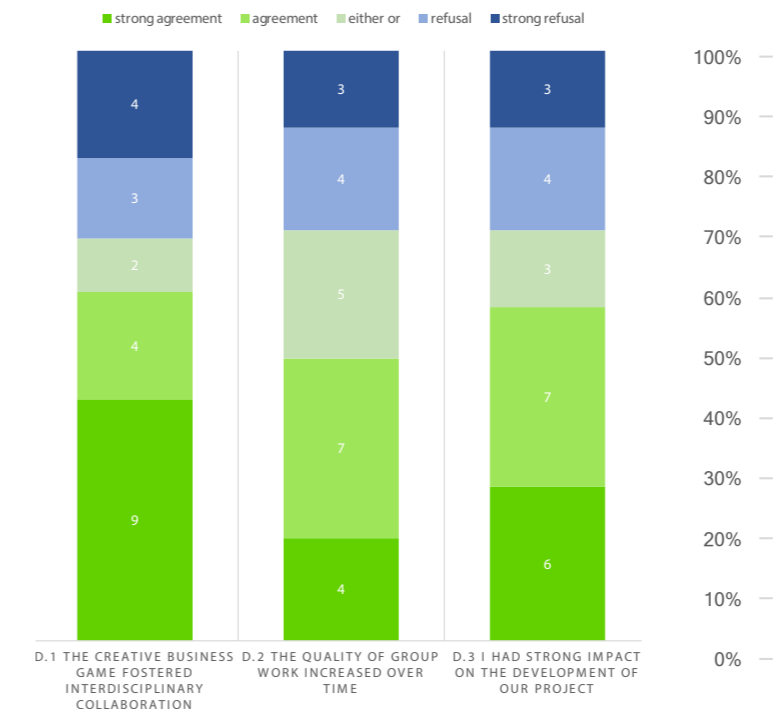
For future development the notions of business games and start-ups need to be rethought. As architectural students are hardly exposed to entrepreneurial topics during their education, the awareness for formats like a creative business game is limited, as well as the willingness to engage with business-oriented disciplines.



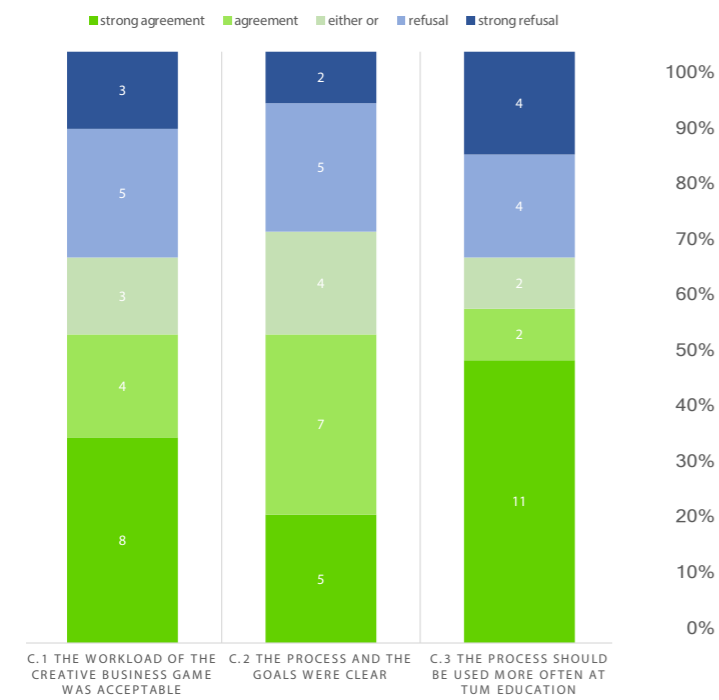
## On Challenges



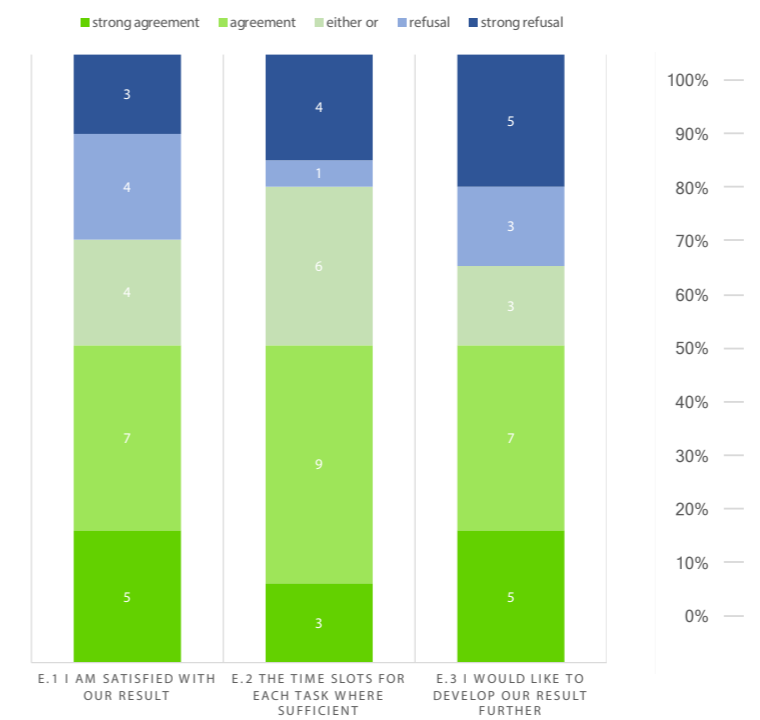
## On Collaboration



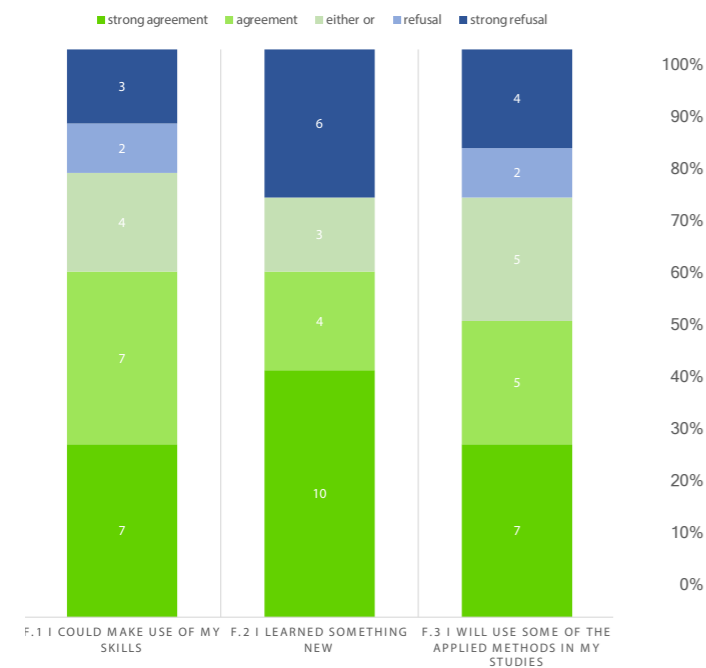
## On Process



## On Results



## On Benefits



## Did the Creative Business Game meet your expectations?

- Yes!
- Yes, my main goal was to see if I am functional in the industry that I didn't have a background in, which I did indeed.
- Yes. I enjoyed working with people of different ages, backgrounds, career levels and personalities. I liked that the mentors are very optimistic about disruption. That's a little bit too out of the border for me.
- Yes, though interdisciplinarity could have been stronger.
- Good mix of the disciplines.
- I thought there would be more input.
- Yes.
- Yes, the interaction between management & architecture was very clear within the group.
- Yes! It was AMAZING!!
- Yes.
- Would recommend max. of 3 people (1 architect, 2 business) for more efficient work flow.
- Yes. Maybe more invited offices?
- I thought the business game would involve new technologies and not only concepts.
- No.
- Yes and no.
- Yes.
- Yes!!
- Fully, even though in some unexpected ways. The workflow & the interdisciplinarity met my expectations, the challenges entirely suprised me.
- Yes, beyond my expectation.
- Yes. For input about what companies are concern about.
- Yes.
- Certainly not, too quick and short. Plus the moderators from different challenges had varied understanding and expectations, that worsened the experience somehow.
- It fostered interdisciplinary awareness.

Open answers to questions within evaluation, n = 22 / 23 answers.

## If not, what did you miss?

Open answers to questions within evaluation, n = 11 / 23 answers.

- A longer project period would be more efficient.
- I didn't miss anything. Rather discovered something about my abilities which I was very proud of. I can control my passion, I do not jump on things. This is something I didn't know about myself.
- A little more structure.
- More time maybe.
- I'd put more focus on the goal per-se in terms of achievement & detail.
- Maybe more time to develop the projects further.
- Maybe more offices.
- Better mix between architects & business students.
- Interdisciplinary team, knowing the people before team construction.
- Sense of urgency took over creativity and sense of collaboration. Plus the deliverables weren't sharp enough.
- Further facilitation: being aware of how the individual skill-sets work together.

## What worked in the process, what did not?

Open answers to questions within evaluation, n = 15 / 23 answers.

- Collaboration on the first day didn't work well due to lack of knowledge about the other participants, but it improved a lot on the second day.
- The control was good. Assimilation or going in real-time progress while developing was challenging. It's important to move around the boxes and control passions. I realised some things can't be structured in short time.
- Everything worked, except for more efficient management of time.
- First we struggled to find an idea, then there were some communication problems as well.
- Groups should be divided before and topic to be let to the group to choose.
- The framework was good and organised. The idea behind the business game seemed clean, but the challenges were too abstract.
- Collaboration was difficult to manage at times. More exchange of ideas in bigger groups could be helpful.
- I liked the time slots. They gave a good direction. The team selection needs to be improved, if interdisciplinary teams should be formed. Speed-date architects / management. More disciplines would be nice in one group.
- Workflow, guidance, challenges.
- The creative part worked.
- The programme was developed in a good way, when pass the first pres. Maybe wrong the organisation of the presentation. The workshop was really good and organized in a perfect way to create better idea.
- Core skills worked, what we knew we could. New learning didn't happen
- Empathy worked, workload sharing & mutually taking initiative didn't.

## What can be done better?

Open answers to questions within evaluation, n = 18 / 23 answers.

- More time.
- Industry guidance of each subject (architecture, soft management), basic knowledge should be available while dealing with interdisciplinary students. Focusing on personalities or problem solving skills of architects and business is actually not so strong point.
- In education at TUM: offer architecture students some economic knowledge/stress is relevant for future practice.
- Better structured, how to work on it -> method input?
- Food! No coffee machine in the building catering.
- Arranging the teams should be the workshops top priorities. Making sure that is interdisciplinary & multicultural.
- Less food for thought or more time.
- Inspiring 'food for thought' but would recommend a break afterwards to refresh.
- Adding more disciplines into the game - sociology, civil ?, urbanists.
- Explain the challenges better. It was not clear what we should implement (challenge 2).
- It's a lot to process in a team where the participants do not know each other, time management can go very easily in an environment where results need to be fast and fancy and convincing. Maybe a clearer guidance to developing the concept so it doesn't result in vague presentations.
- Preform the teams.
- Final presentation by sketches on pinboard instead of projection. Reworking the graphics is an obstacle to creativity.
- Longer breaks.
- For sure the time wasn't a lot but work under pressure was really useful.
- Little longer format, 3 days at least. Moderators must be in sync, that was missing. Just worsened the process. More the feedback, bad became the situations.
- Try to get more interdisciplinary students.
- Longer breaks, less iterations, less inter-team presentations (once daily).


## Do you think this format should be applied more often?

If yes: 5 days, 3 days, 1 day?

Open answers to questions within evaluation, n = 21 / 23 answers.

- 5 days.
- I was really satisfied with 2 days.
- 5 days would definitely produce an output that can be used as work portfolio for career development. Doesn't need 20 pages.
- Yes, but maybe in 5 days.
- 2 days is fine, because you waste less time on framing the problem.
- 5 days and some lectures.
- Yes 5 days would be better.
- Yes, two days is a good amount of time.
- 5 days.
- 2-4 days would be fine.
- I guess 2 days are enough.
- 2
- 5 days (so yes!).
- Yes, two days are perfect.
- 4 days.
- Yes. 2 days is proper.
- 2 days.
- Yes, 5 days.
- Yes, but with more time and better planning. 5 days would do great.
- Maybe once a semester for 5 days / 1 week and every month for 1 / 2 days.

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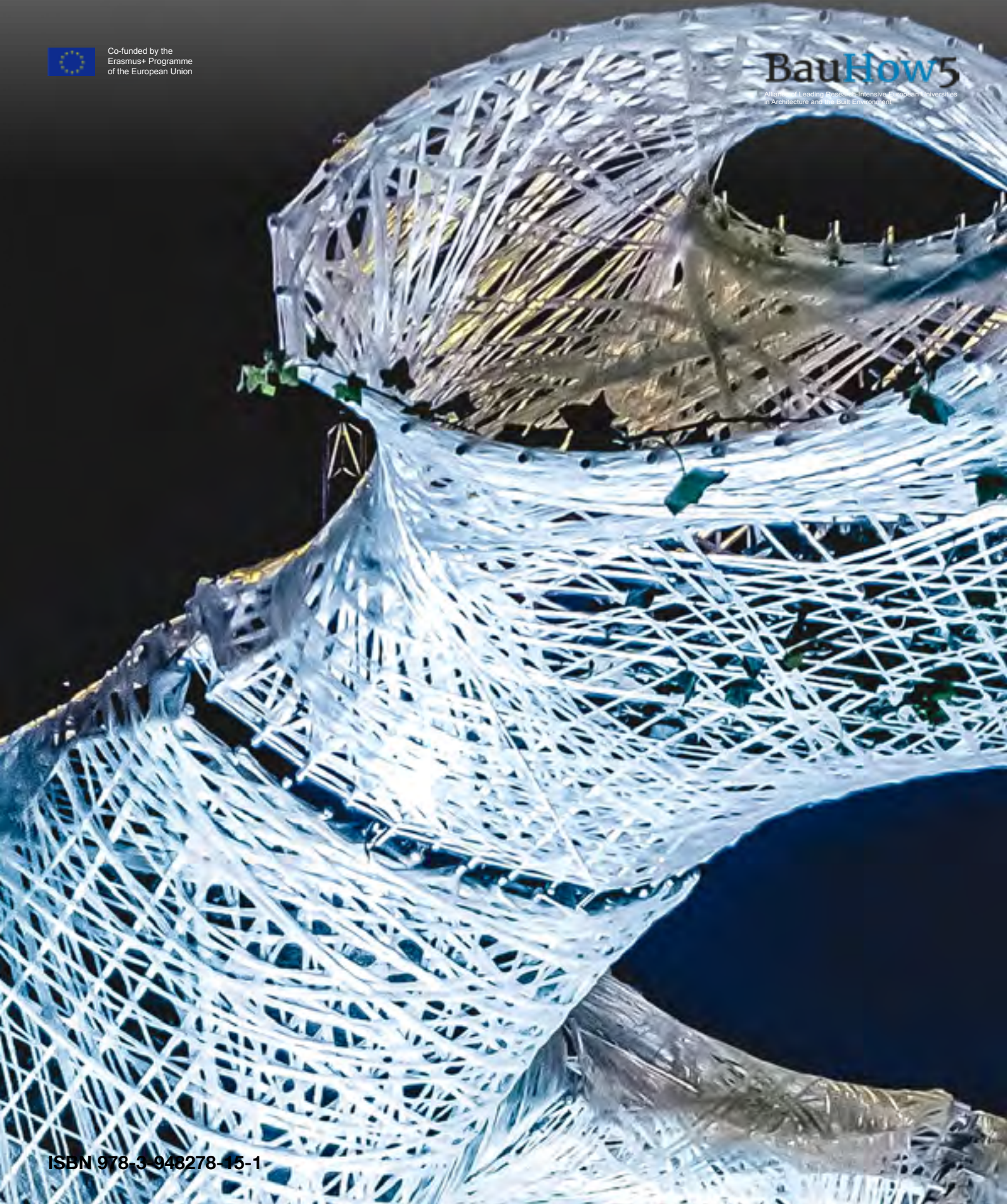




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