

Faculty of Design

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Relate Systems Archetypes and Collaboration: A case study in the context of DIY bio-based materials in design education

Dumon, Louise and Ostuzzi, Francesca

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RELATE SYSTEMS ARCHETYPES AND COLLABORATION

A case study in the context of DIY bio-based materials in design education

L. Dumon and Prof. Dr. Ostuzzi

LOUISE DUMON

- Bio
 - Scientific employee, Ugent
 - Main focus:
 - Prototyping circular (circular design education)
 - Lerend netwerk Biobouwers (bio-based and circular building technology)
 - Crafth PhD-course on the topic of 3D-printing for circularity
- Teacher (2019-2020)
- Educational designer Fablab Factory (2018- 2019)
- Industrial designer, Aqtor (2015-2017)
- Ind. Ing. Ind. Ontwerpen (2011-2015)



FRANCESCA OSTUZZI

- Bio
 - Professor at UGent Industrial Design Engineering
 - PhD in Industrial Engineering and Product Design, UGent (2014 – 2017)
 - Topic: Open-ended Design. The value of imperfection.
 - Applied researcher (LCA studies for companies) at Politecnico di Milano (2010 -2014)
 - Master in Design & Engineering, Politecnico di Milano, Italy (2010)
- Main focus
 - Design for Sustainability



SCHEDULE

- Who we are
- Introduction and state of the art
- Research question
- Methodology
- Results
- Discussion
- Questions



INTRODUCTION

AND

STATE OF THE ART



DESIGN EDUCATION

INDUSTRIAL ENGINEERING
INDUSTRIAL DESIGN



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INDUSTRIAL ENGINEERING INDUSTRIAL DESIGN

LEARN BY DOING



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CIRCULARITY IN *DESIGN EDUCATION*

LINEAR ECONOMY



RECYCLING
ECONOMY



CIRCULAR
ECONOMY



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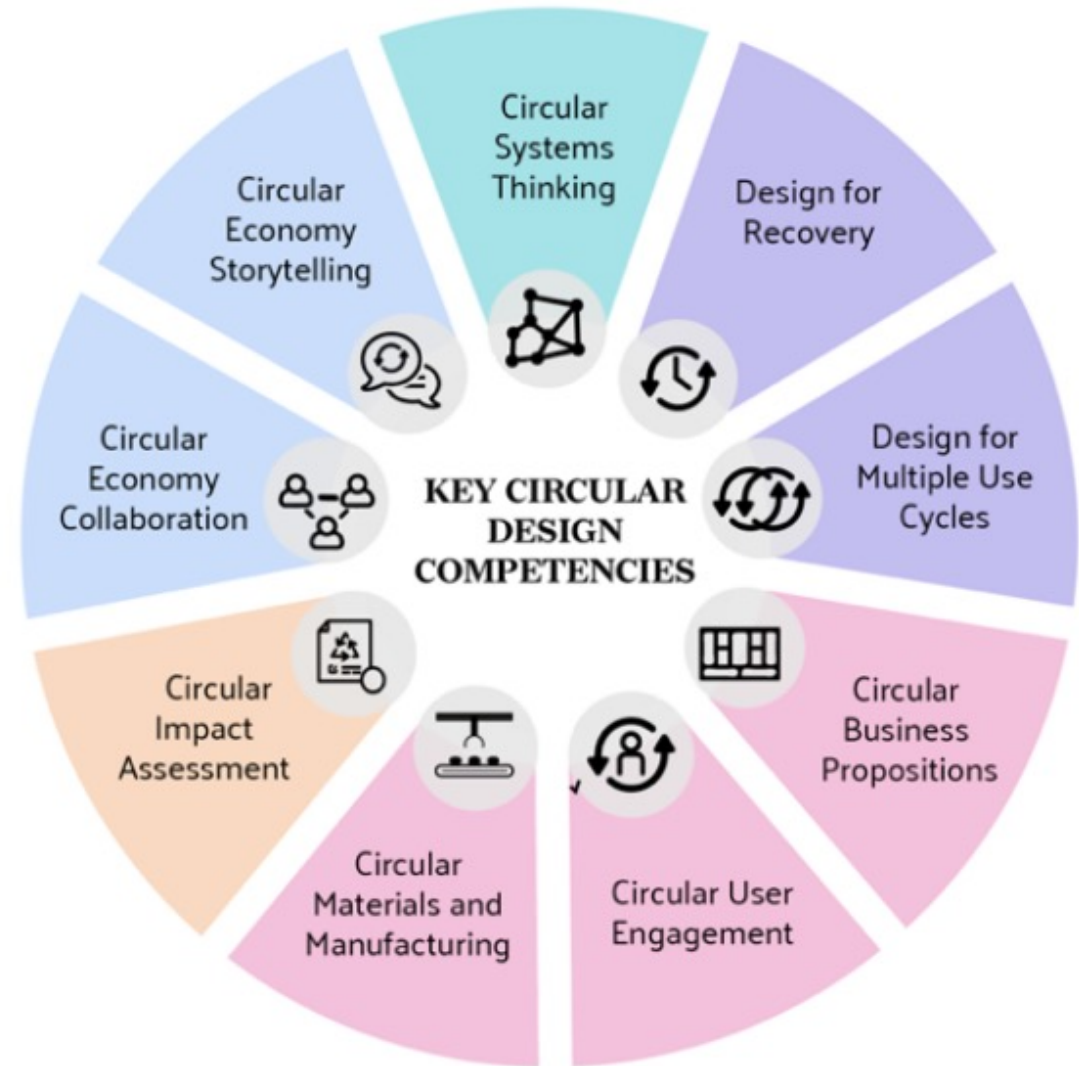


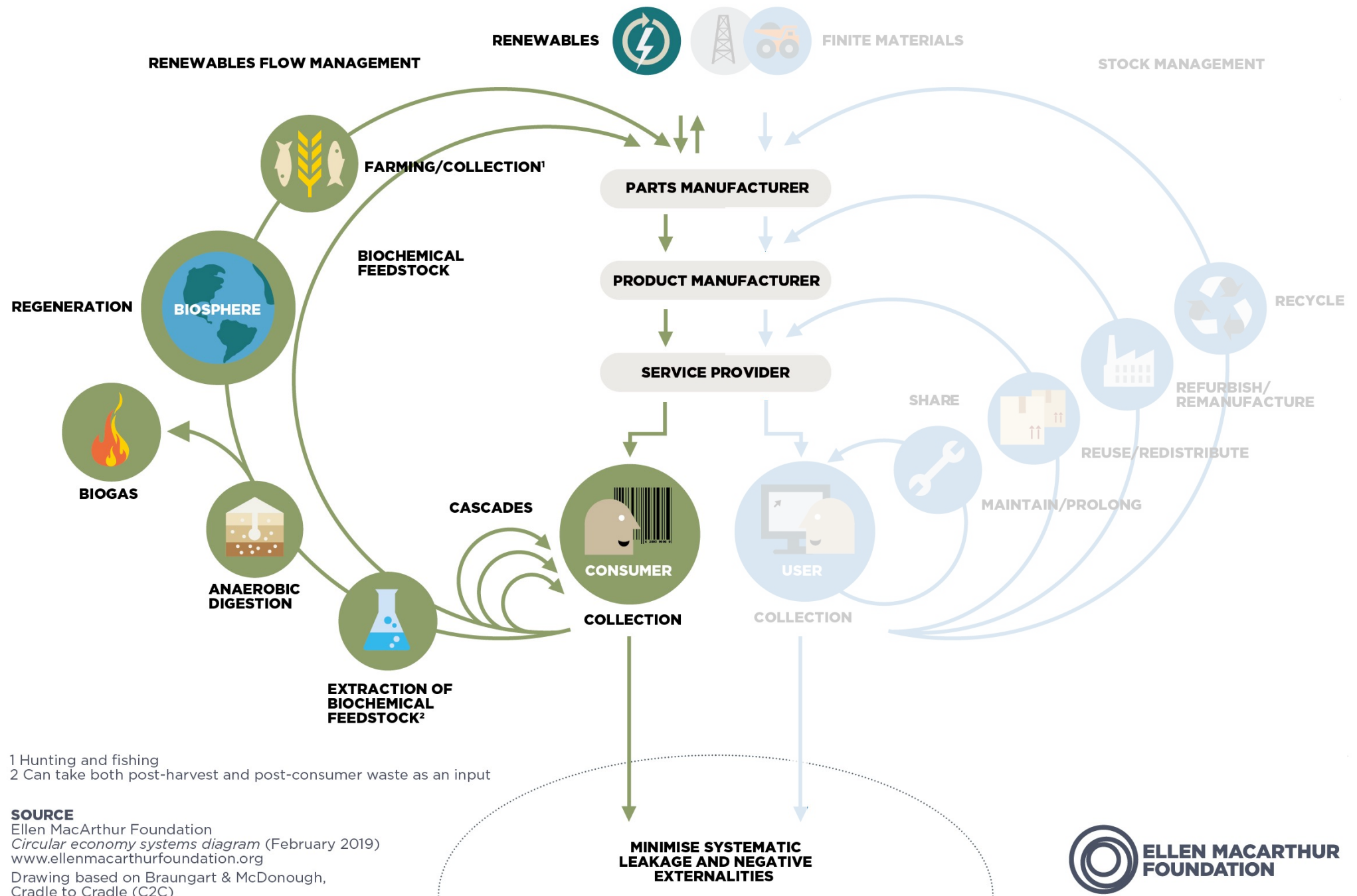
CIRCULAR
FLANDERS

CC by Circular Flanders



CIRCULAR COMPETENCIES IN DESIGN EDUCATION





1 Hunting and fishing
 2 Can take both post-harvest and post-consumer waste as an input

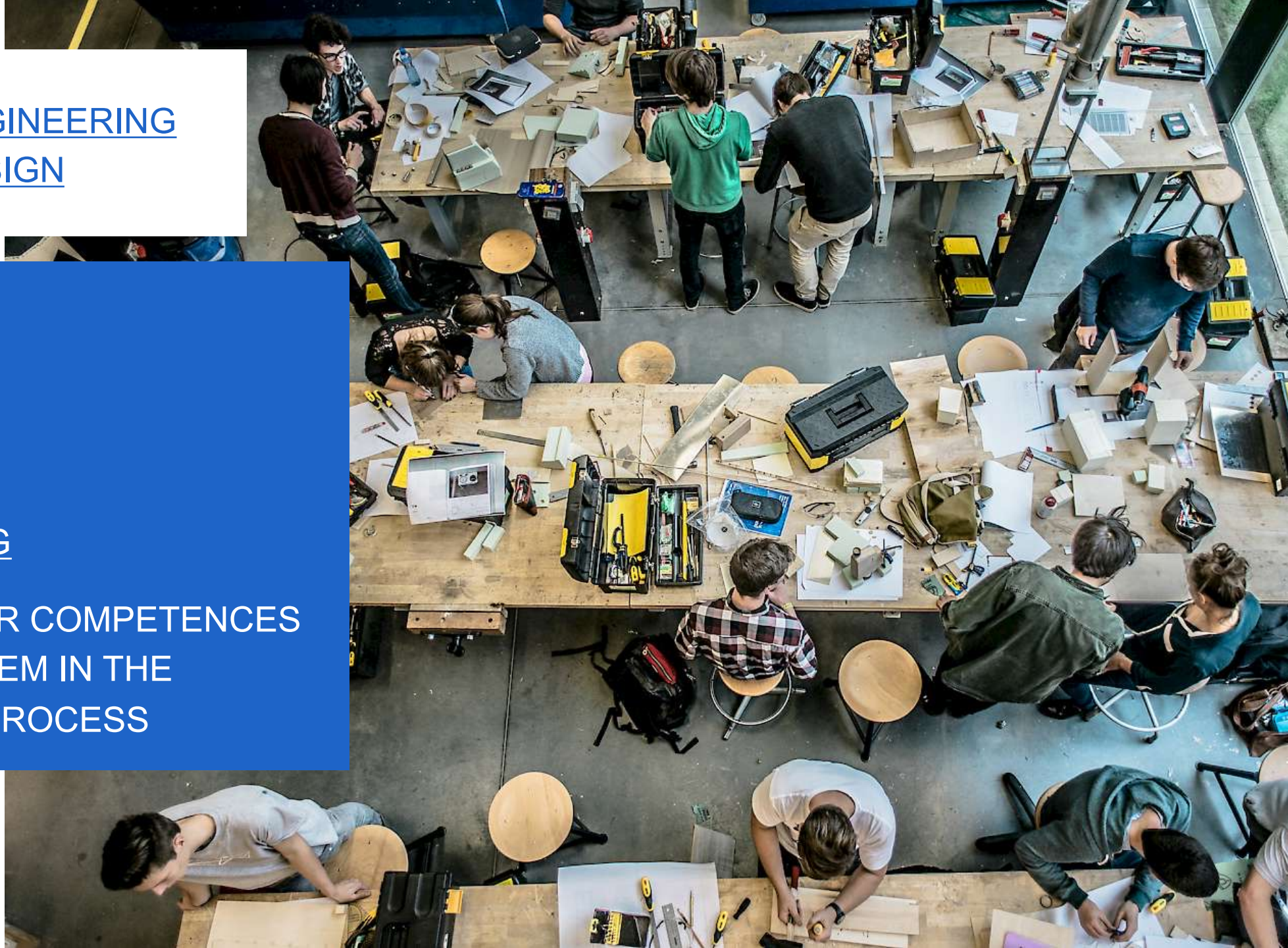
INDUSTRIAL ENGINEERING INDUSTRIAL DESIGN

LEARN BY DOING

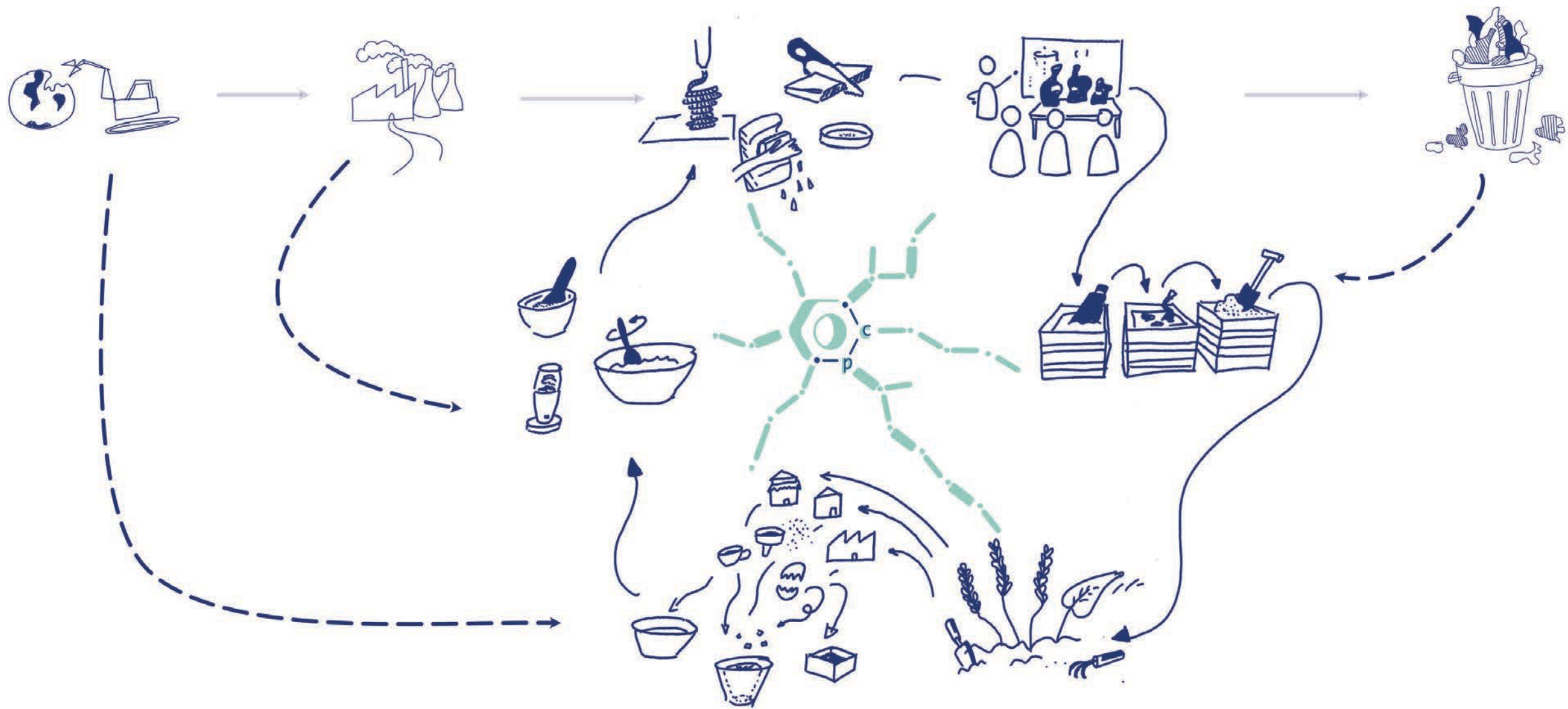
LEARN CIRCULAR COMPETENCES
BY APPLYING THEM IN THE
PROTOTYPING PROCESS



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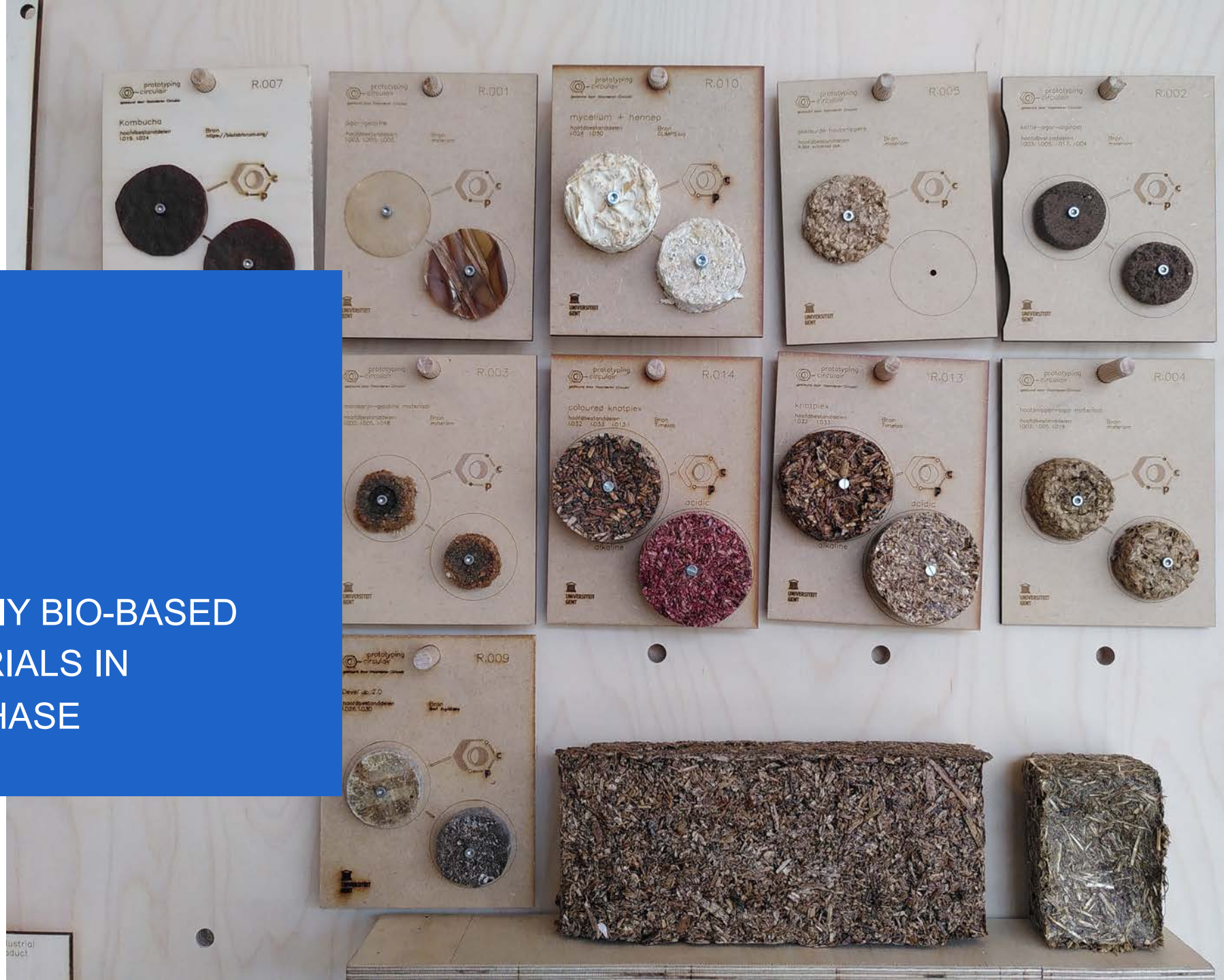




IMPLEMENTING DIY BIO-BASED CIRCULAR MATERIALS IN PROTOTYPING PHASE



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INSTALLING A BIO-MAKER SPACE IN THE ATELIER




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 Levensmiddelenveiligheid **WSP1: Good Results: Cooperatie Netwerk: Rijksoverheid**



 Levensmiddelenveiligheid **WSP1: Good Results: Cooperatie Netwerk: Rijksoverheid**

RESEARCH QUESTION



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COMPLEXITY SYSTEM THINKING SYSTEM DESIGN

COURSE CYBERNETICS

3th year industrial engineering industrial design
students



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Contents

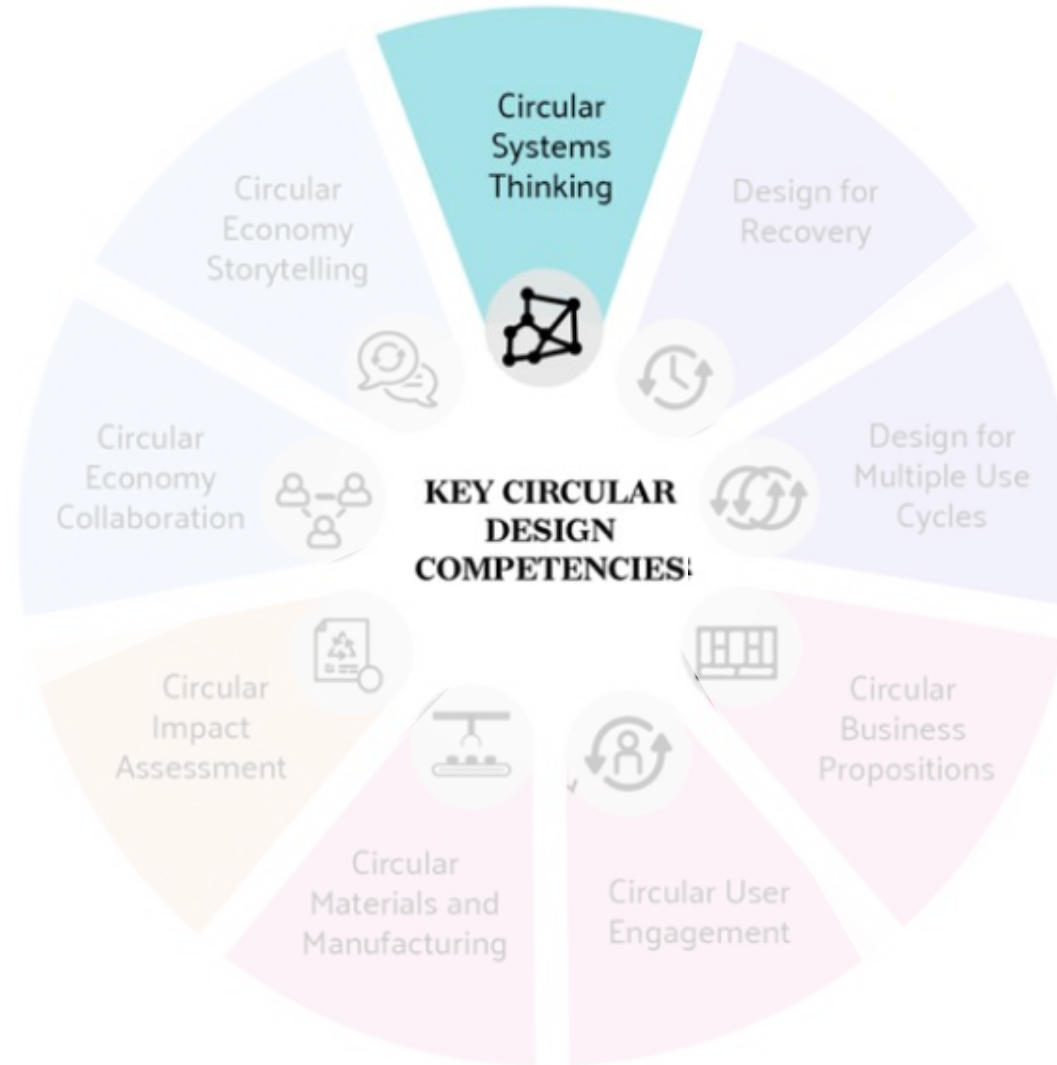
Project-based you will be working in teams of 3 students, on the assignment **Prototyping Ciculair**, later described

Theory, in keywords Complexiteit; Systems-thinking;
Cybernetica; Systeemgericht ontwerpen; Zelfvoorzienend; Open-
ended Design, Duurzaamheid



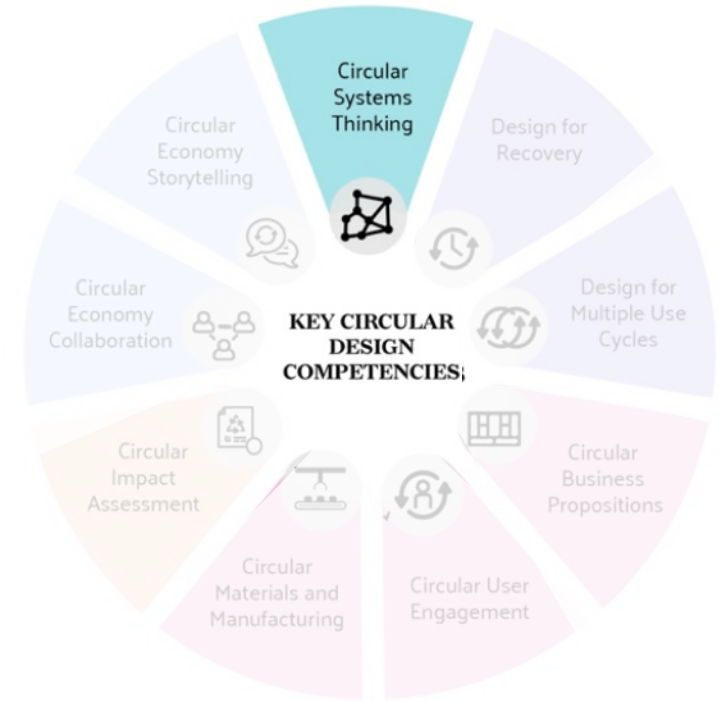
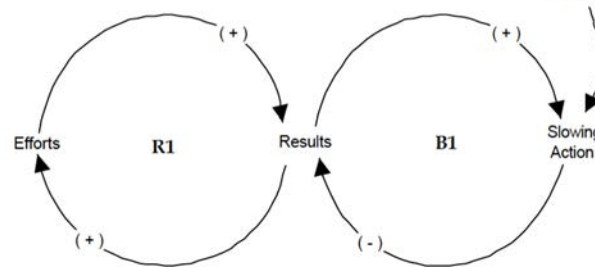
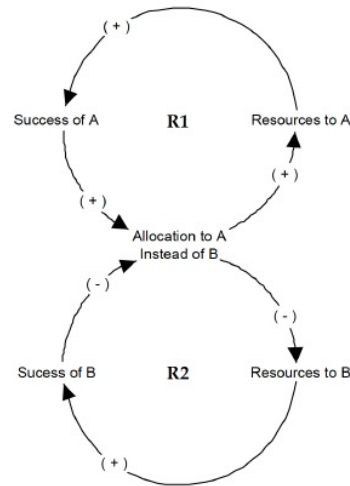
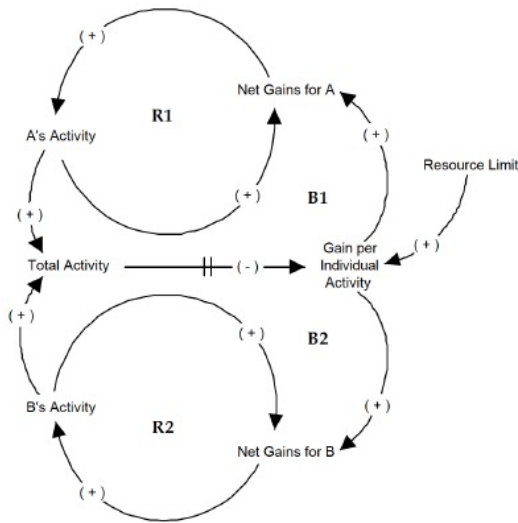
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CYBERNETICA



SYSTEM ARCHETYPES

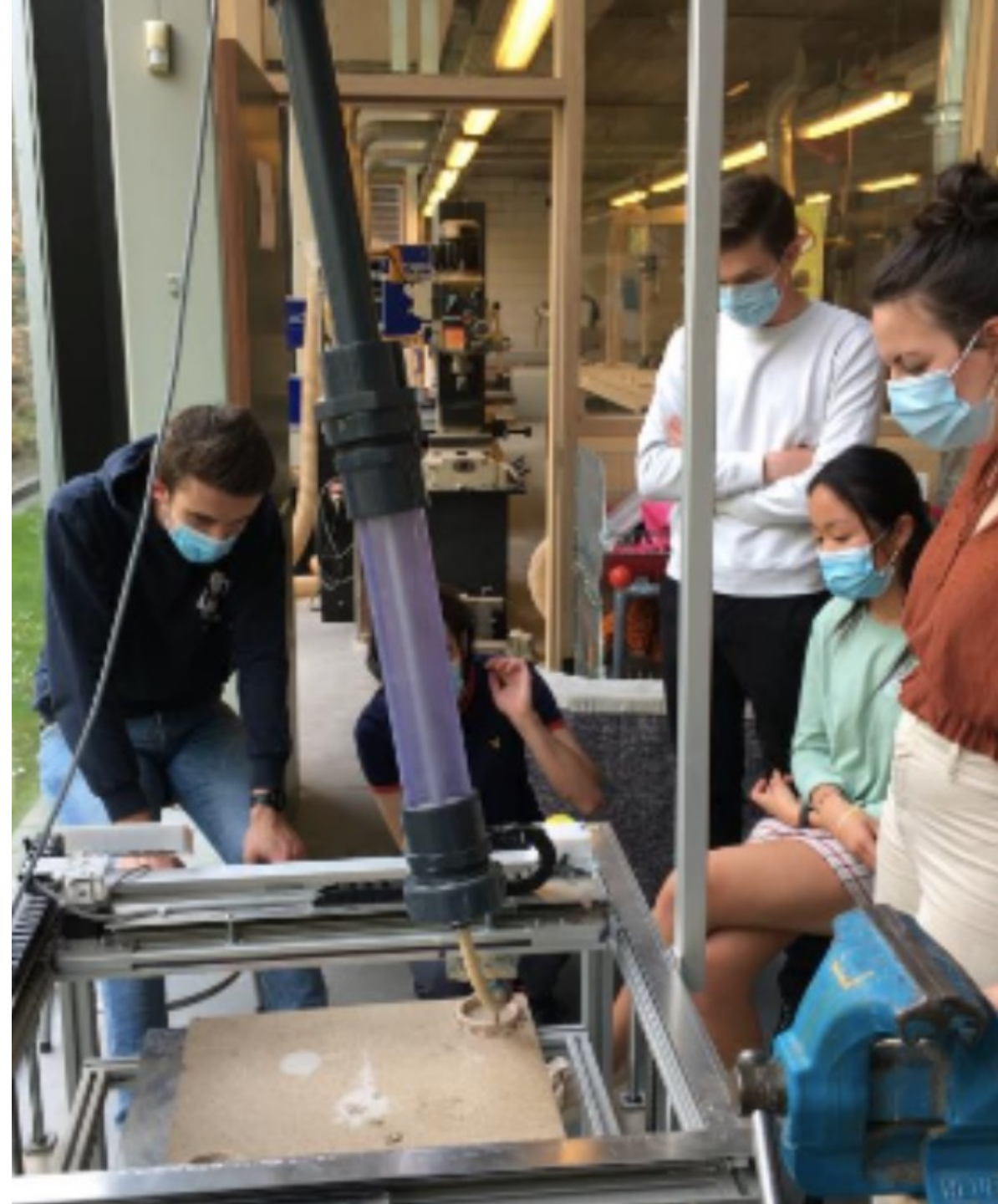
- Limits to Growth (aka Limits to
- Shifting the Burden
- Eroding Goals
- Escalation
- Success to the Successful
- Tragedy of the Commons
- Fixes that Fail
- Growth and Underinvestment
- Accidental Adversaries
- Attractiveness Principle



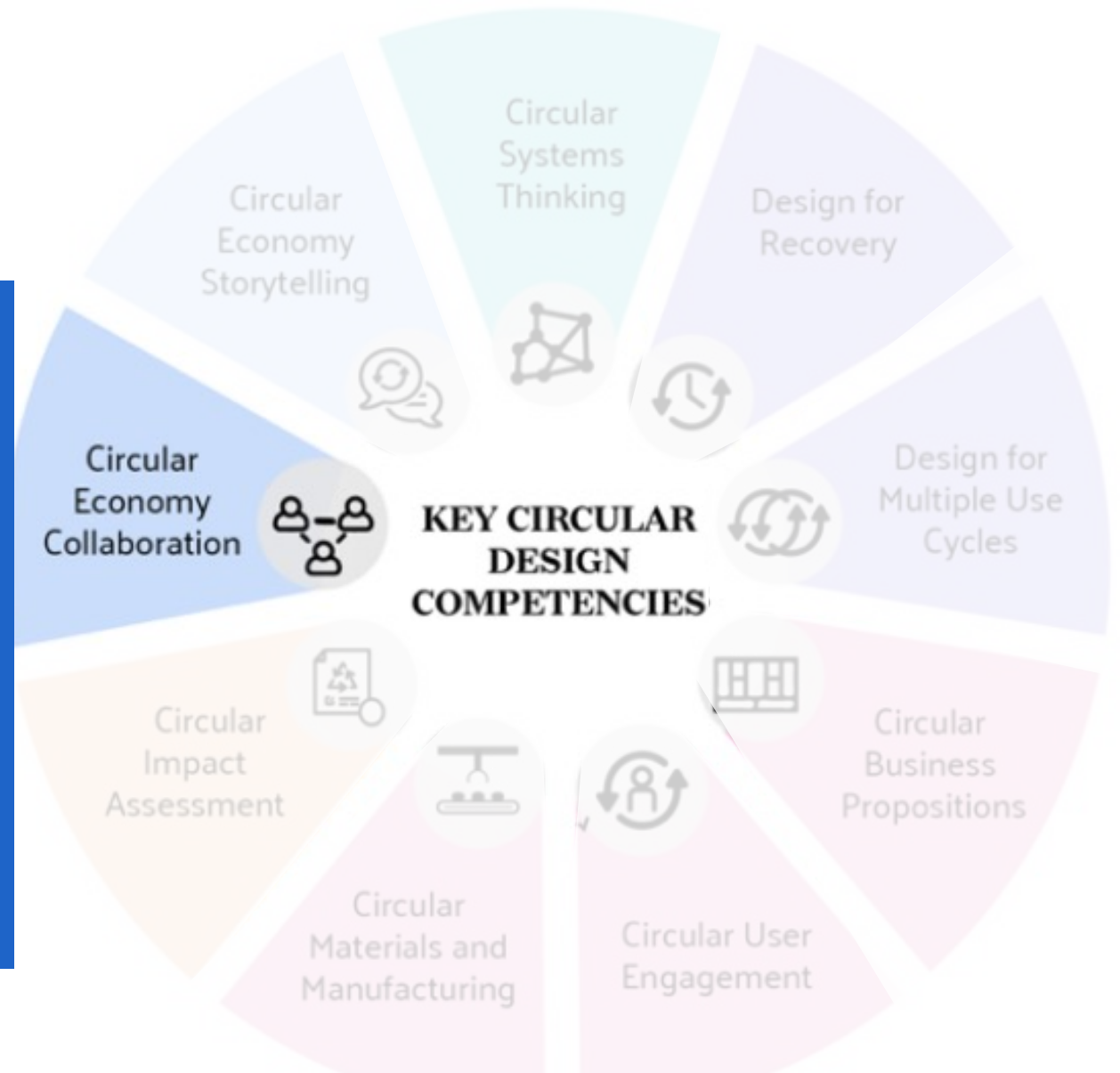
NOTICED:
TEAMS COLLABORATED



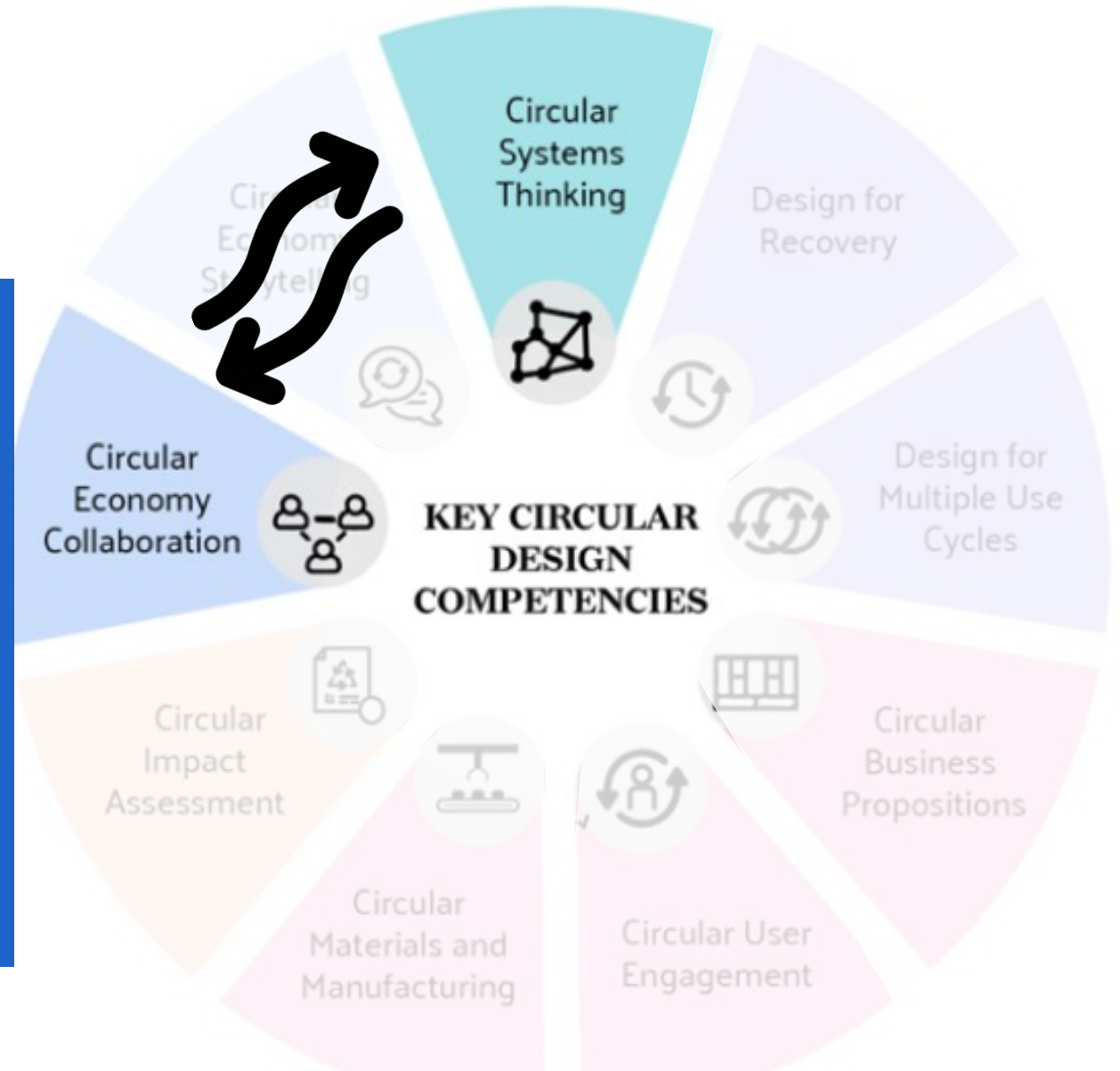
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NOTICED:
TEAMS COLLABORATED



WHAT IS THE LINK



What is the relation between
the use of system thinking (archetypes)
and
the students attitude towards collaborations
happening within the project?



METHODOLOGY



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COURSE CYBERNETICS

3th year industrial engineering industrial design students

Contents

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MATERIAL DRIVEN CHALLENGES AND OVERARCHING CHALLENGES



Bridging academia and
industry

[Read more](#)



End of Life

[Read more](#)



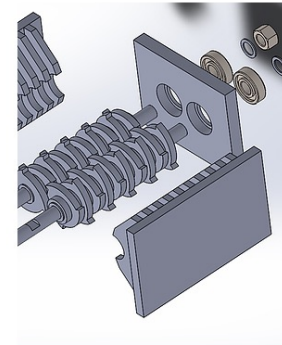
Connections in
Prototypes

[Read more](#)



Knotplex

[Read more](#)



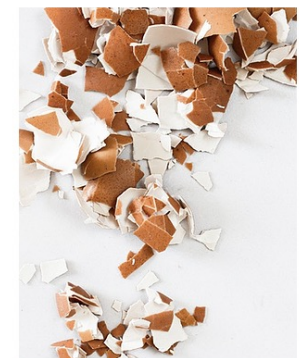
Press / Mould for Bio-
materials

[Read more](#)



Wood (chips)

[Read more](#)



MATERIAL DRIVEN CHALLENGE



Knotplex

[Read more](#)



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OVERARCHING CHALLENGE



Connections in Prototypes

[Read more](#)



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Team 10: Jarne Fiers, Stef Mothys, Rosan Pille

Organising a workshop can be chaotic but really fun! The results were nice, the guests were pleased, and we all learned something new.

#knotplex #workshop #IDC
#IOstudents



Team 10: Jarne Fiers, Stef Mothys, Rosan Pille

To wrap up the project and get ready for observations, we had to send lots of mails and talk with lots of people. We also sat down with Team 13 and Team 8 for Team 13's website!

#observations #mailsmails
#team13collab #endofsemester



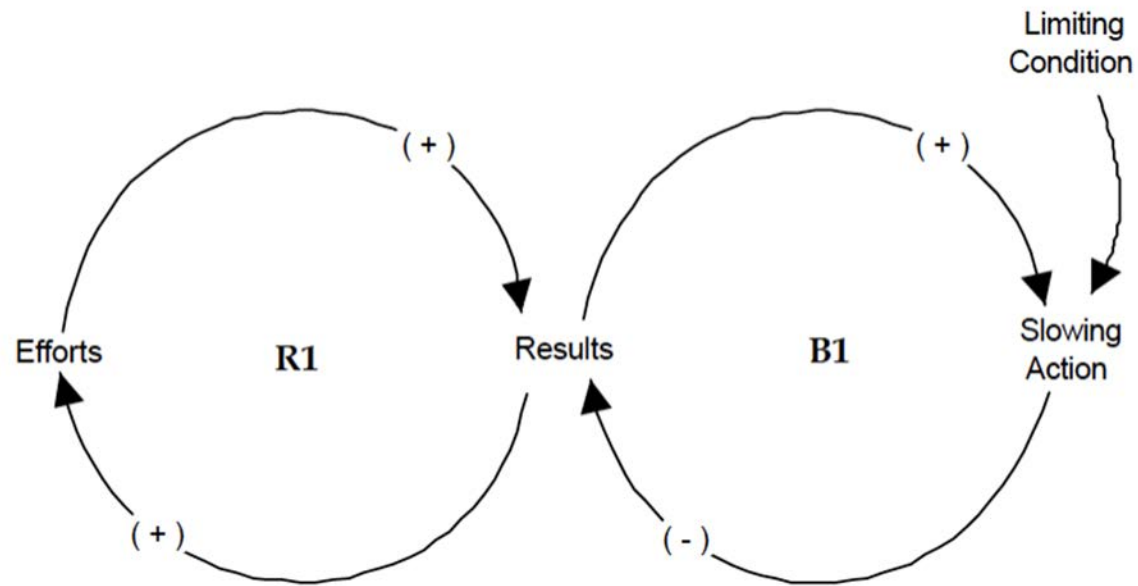
Team 11

Team 11 finished their project, we had the material with them, they are curious to see the dry result.

#team11collab #mold #knotplex
#heavy

MENTIONING OTHER
TEAMS

MENTIONING
STAKEHOLDERS



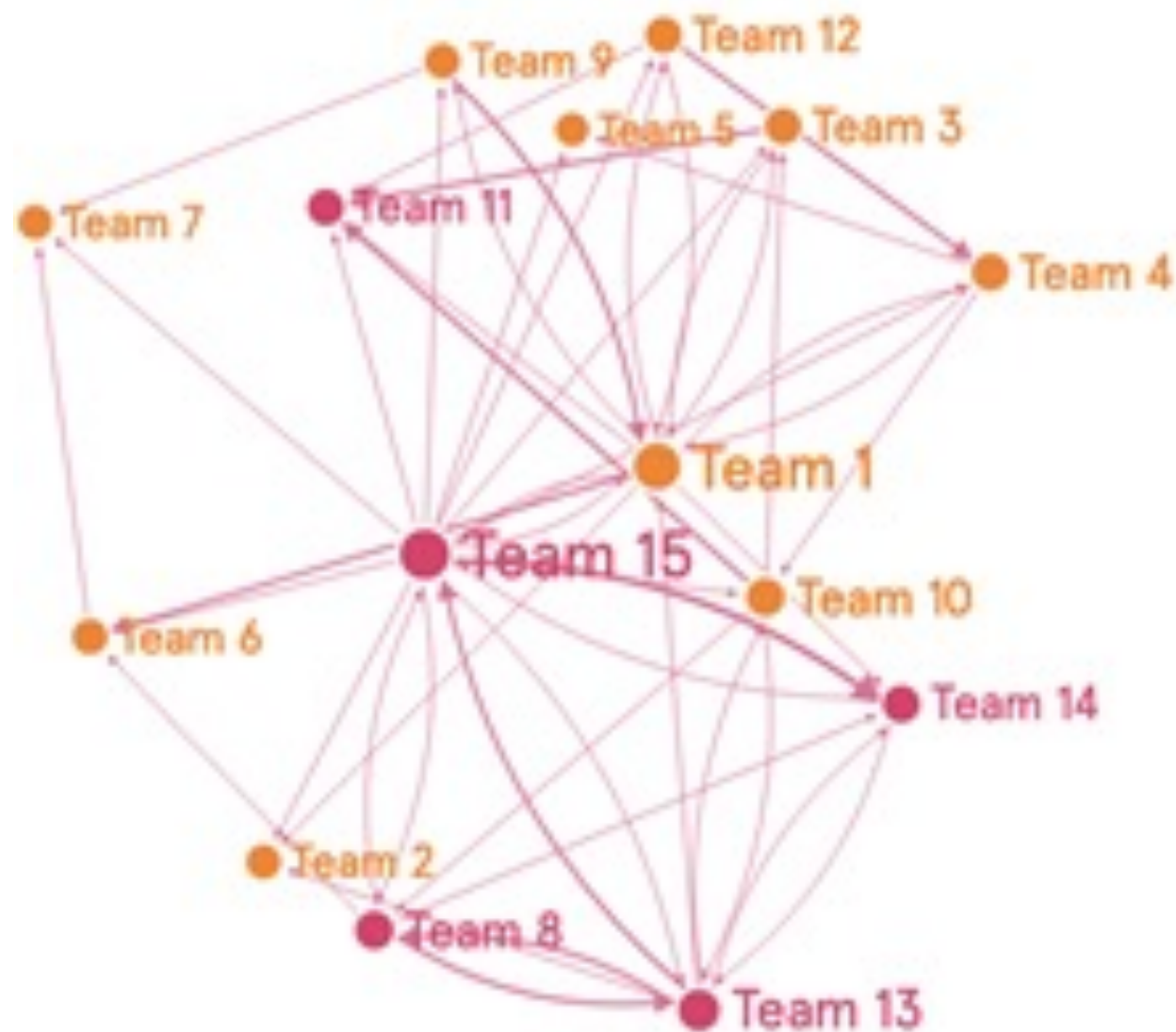
STUDY THE ARCHETYPES
OF THE STUDENT TEAMS

RESULTS

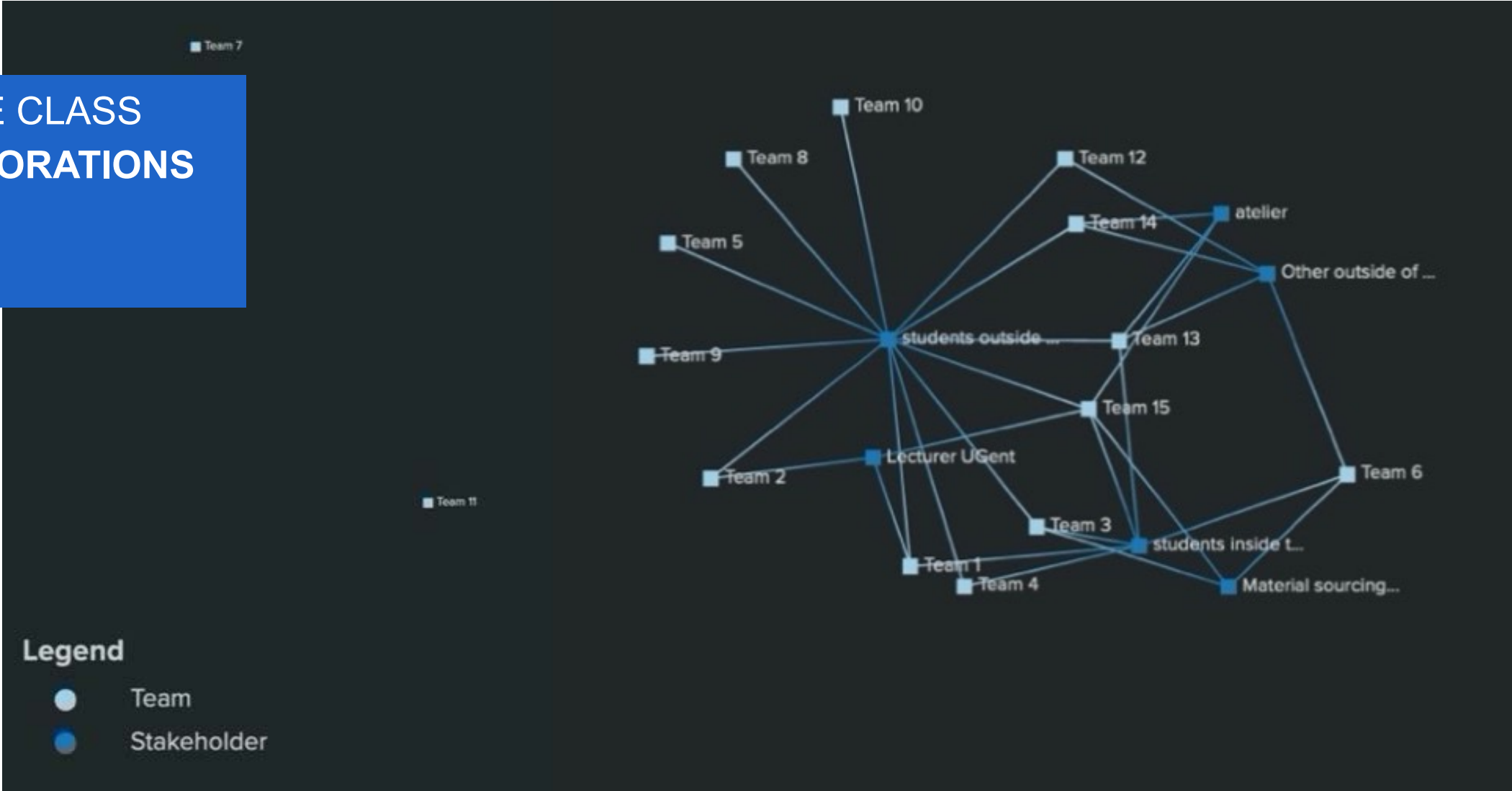


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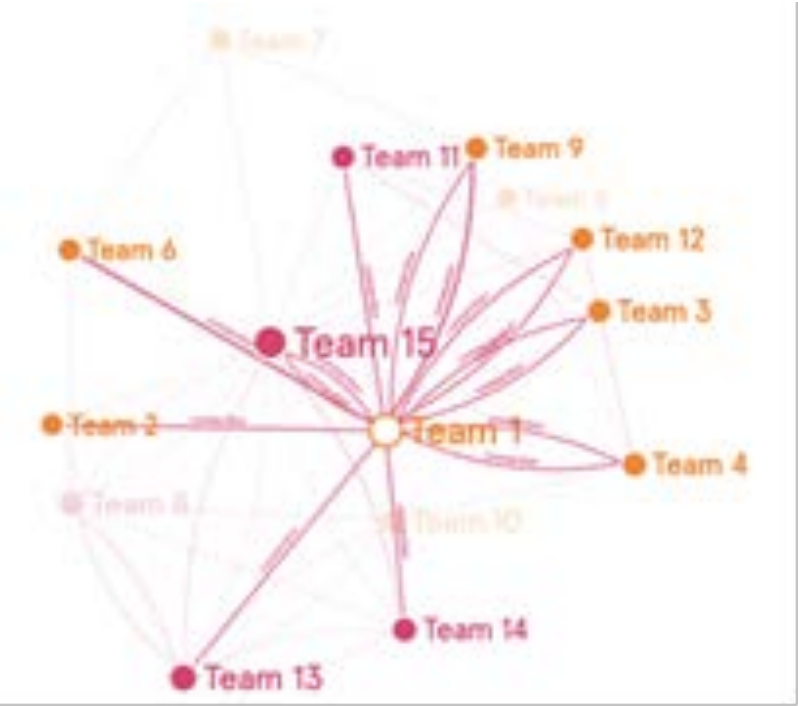
INTERCLASS COLLABORATIONS



OUTSIDE CLASS COLLABORATIONS



TEAM 1
MYCELIUM
MATERIAL



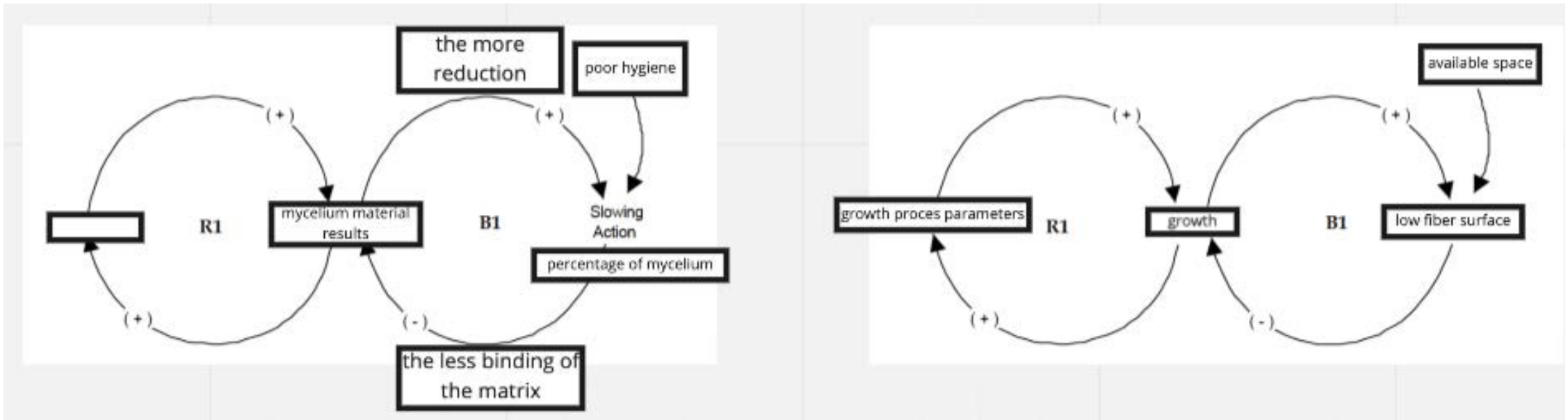
INTERCLASS
COLLABORATION

MENTIONING OF
STAKEHOLDERS

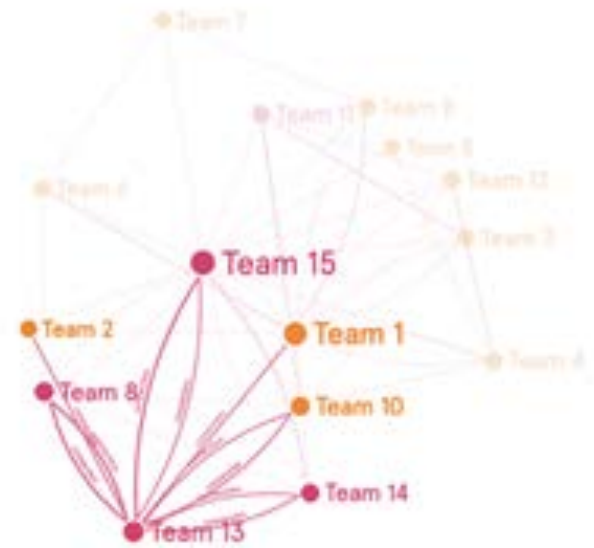
Team Number	Subject of the team	Category challenge	Number of stakeholder categories mentioned (out of 6)	Total weekly highlights mentioning a stakeholder (out of 33)
1	Mycelium based materials	Material-driven	3	4

TEAM 1 MYCELIUM MATERIAL

describe the technical parameters (growth, process, available space) of the mycelium.



TEAM 13
BRIDGING INDUSTRY
AND ACADEMIA



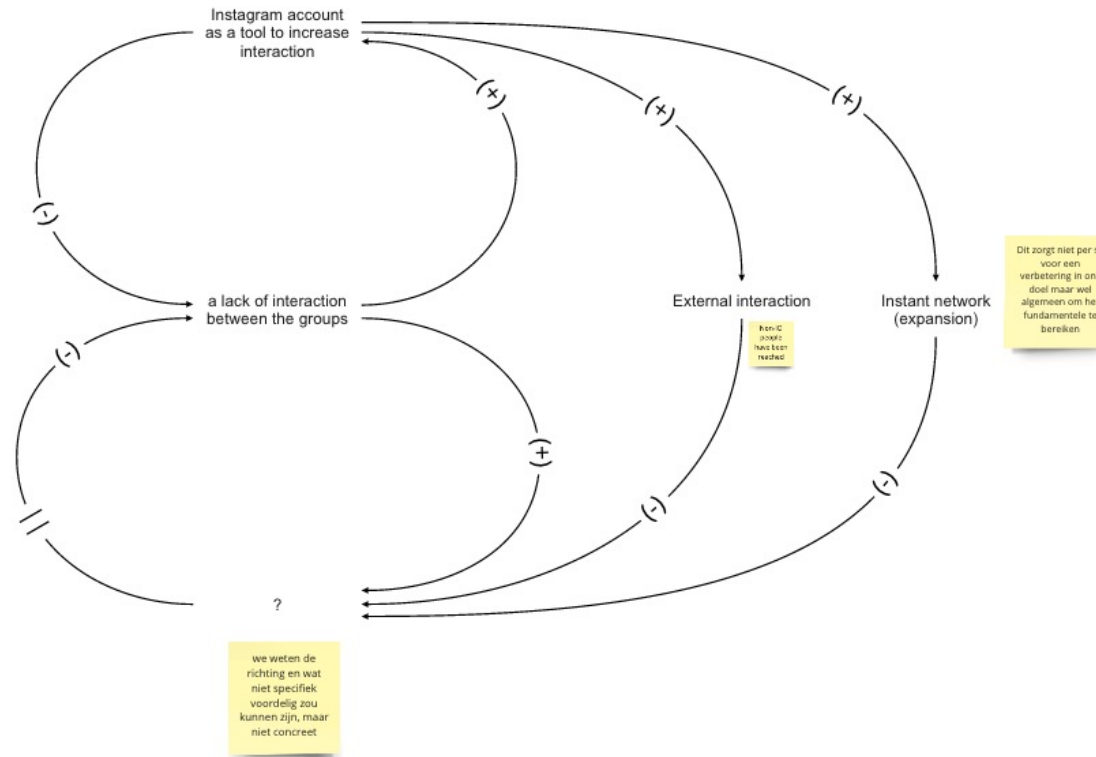
INTERCLASS
COLLABORATION

MENTIONING OF
STAKEHOLDERS

Team Number	Subject of the team	Category challenge	Number of stakeholder categories mentioned (out of 6)	Total weekly highlights mentioning a stakeholder (out of 33)
13	Bridging academia and industry	Overarching	4	9

TEAM 13

describe how the interaction between the teams can be higher by using the Instagram page



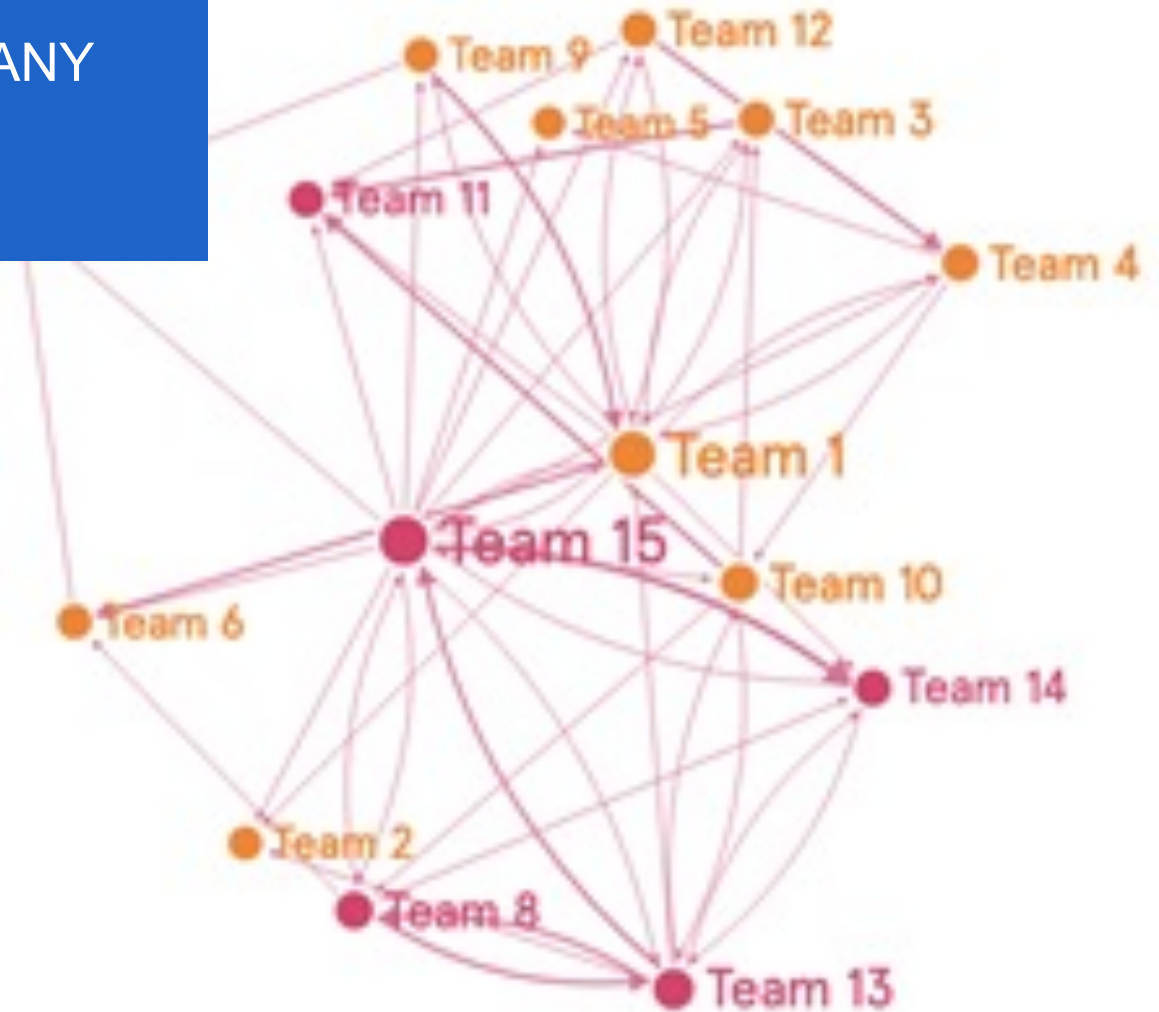
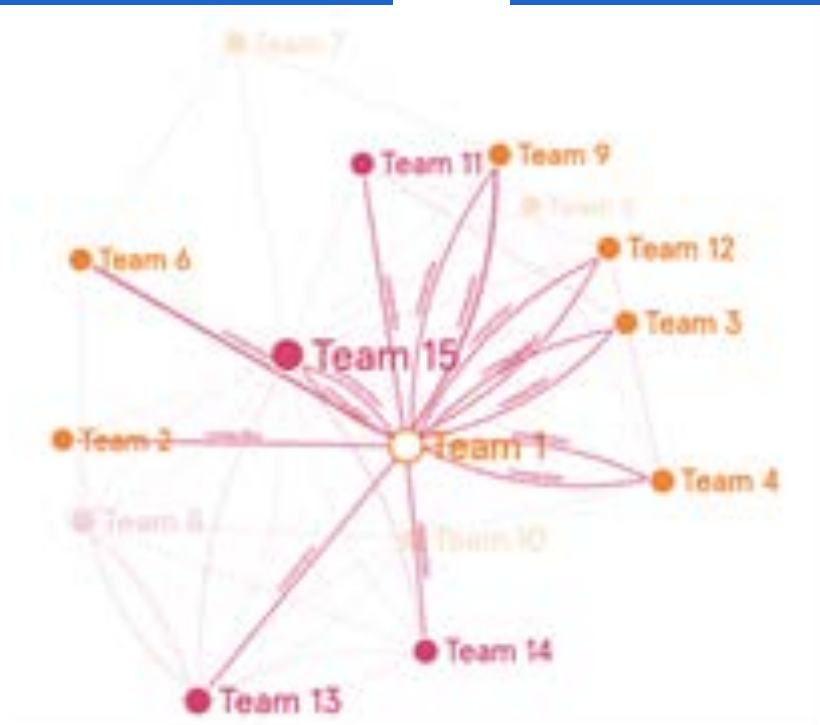
DISCUSSION



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GRAPH VISUALISATION NETWORK MAP

NEXT:
USE IN COMPANY
CONTEXT



WHAT FACTORS
FAVOUR
COLLABORATION

NEXT:
RESEARCH
NEEDED

SYSTEM THINKING
THEORY AND USE
OF ARCHETYPES

WE CAN ONLY TELL
WHAT WE DID IN
THIS CASE

PROJECT BASED
WORK

DIFFERENT
CHALLENGES WITH
A CONNECTED GOAL
BEHIND



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QUESTIONS



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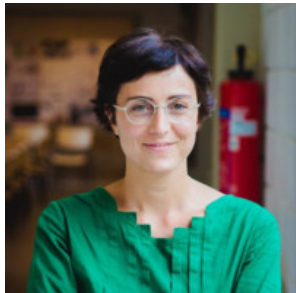
I invite particularly feedback on:
THEORETICAL GROUNDING
RESEARCH DESIGN





Louise Dumon
scientific employee

louise.dumon@ugent.be



Francesca Ostuzzi
dr. Prof. Sustainability

francesca.ostuzzi@ugent.be



www.prototypingcirculair.com



[prototyping_circulair](https://www.instagram.com/prototyping_circulair)



Prototyping circulair

