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and Architecture

Design Approaches to Sustainable Consumption

Session 12: Summary & feedback session

Tatu Marttila
Thursday 15.2.2024 (9:30–12:00)

Agenda

9:30–10:20	Discussion on project work results
10:35–11:10	Summary of course topics; Final tasks
11:20–12:00	Course feedback discussion

Discussion on project work results

Project work outcomes

Thank you for great presentations on Tuesday!

- All groups provided well-thought concept ideas ranging from service design to platforms to support collaborative action, and to strategic processes for transitions
- All presentations were clearly structured and nicely conducted!
- Remember to add reflection to your result(s) in your project report
- You may also add reflection on project work outcomes to your personal learning diary

Discussion and feedback on project work

Project work outcomes and process – feedback

Please think of some feedback based on project work progress and outcomes:

- Use Miro-canvas for feedback on project outcomes (especially if you are online): https://miro.com/app/board/uXjVNsiM6Yk=/?share_link_id=231255251301
- What was best in groups' outcomes, and what could've still been improved?
- Was there some aspects to improve in the overall project work focus topics, organisation, deliverables, management by teacher?
- After session, see announcement on peer-review of your group members, and please also fill in course feedback!

Groups 1–2, focus on food system services:

Eat Up

PSS Design Intervention to tackle Food Waste on Campus

by Aqib, Miina, Minerva, Nina, Petra, Trine

TRANSITION TO 100% PLANT-BASED AALTO CAMPUS

Strategic and transition design
Food systems and services

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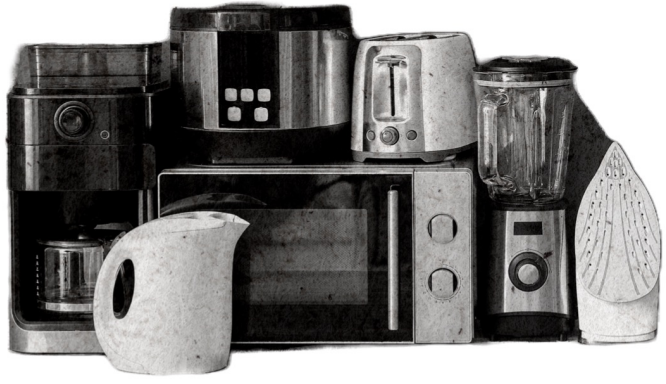
Groups 4–5, focus on mobility strategies & transitions:

Groups 6 & 10, focus on services to access furniture, appliances:

Furniture HU



TAKEHOME

DOMESTIC APPLIANCES FOR SHORT TERM HOUSING

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Groups 8–9, focus on 'platforming' for action:

Repair

SWAP

Borrow

Aalto Textile Hub

Customize
"Aalto"ed

Digital Library
Tutorials & educational

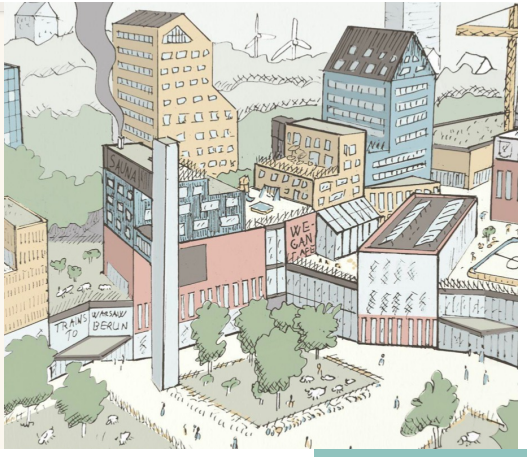
DIY
Workshops

Thematic Focus:
Housing and Buildings

Design Approach: Collaborative
& ~~Participatory Design~~
→Transition Design

Groups 3 & 7, focus on speculative futures of food systems and buildings:

What will the campus look like in 2050?



MAKING THE INVISIBLE VISIBLE

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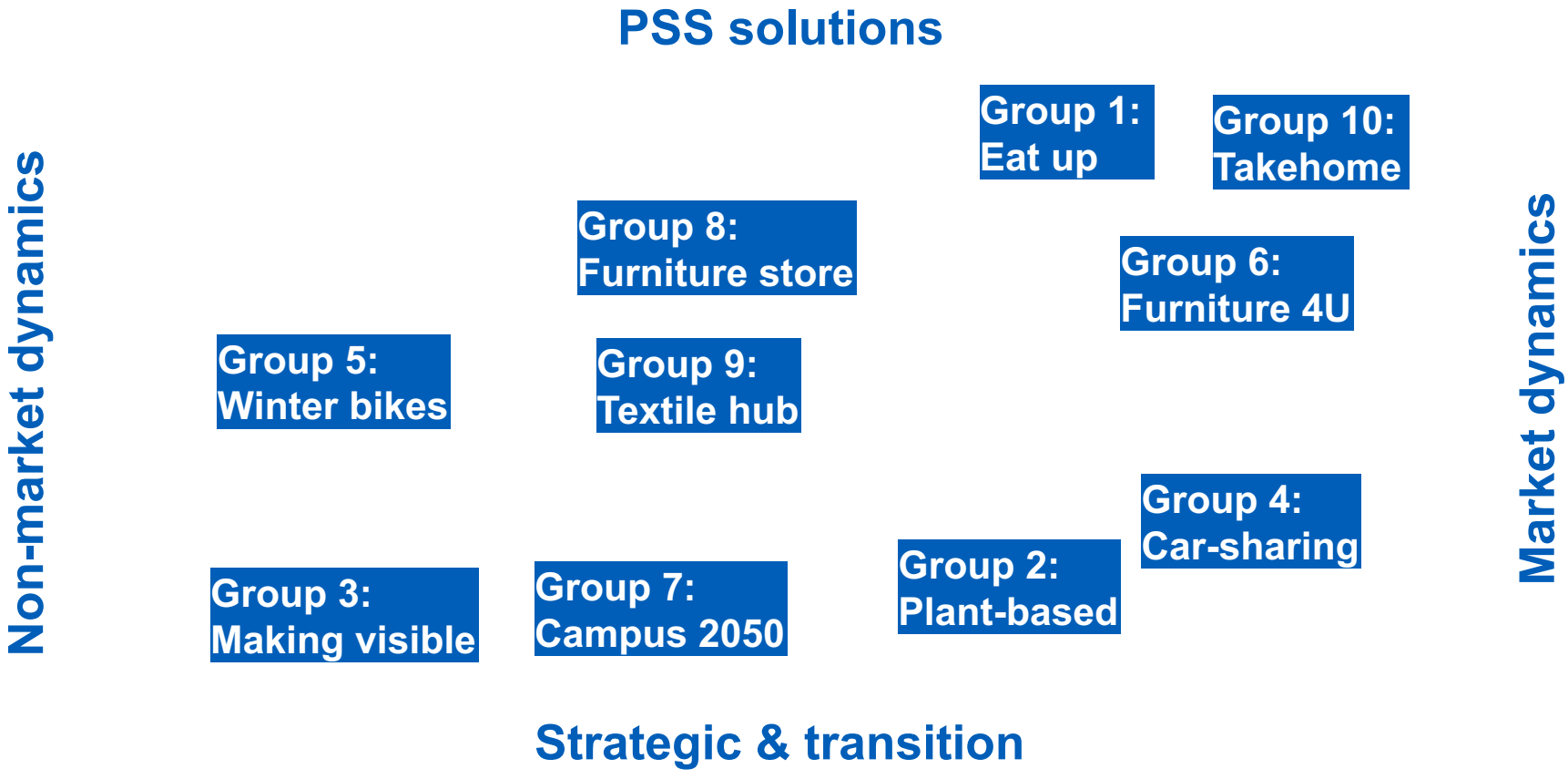
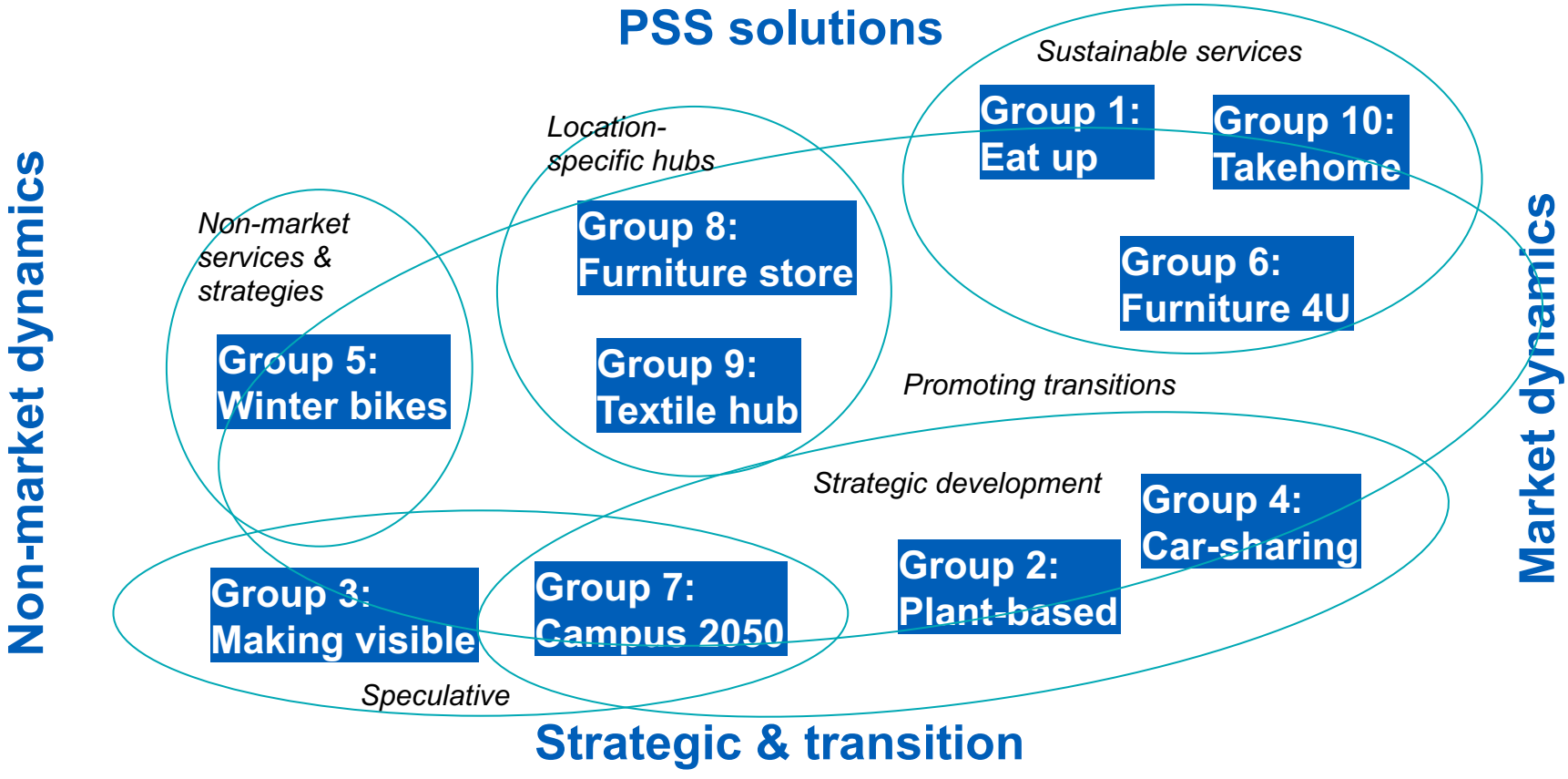
Reflection on project work outcomes – concepts as approaches to sustainability:



Reflection on project work outcomes – concepts as approaches to sustainability:



Continuing work after course ends...

- **Remember Aalto Sustainability Action Booster –** possibility to continue work with your project ideas?

- **Also, thesis topics can be found through project work topics!**

- Please, note that you can discuss with Mikko Jalas of extra credits if you continue work…

Recap of course topics

Course and project work schedule

Working days	Tuesdays (13:15-17:00)	Thursdays (9:15-12:00)
Week 1 (9.1 & 11.1.)	Introduction to course; DfS introduction (F101)	Designing for sufficiency (visitor: Mikko Jalas) (Q201)
Week 2 (16.1. & 18.1.)	**Project work: Kick-off** (A-Grid Mordor)	Sustainable PSS design & systems design (Q201)
Week 3 (23.1. & 25.1.)	Socio-technical experimentation & social innovation (F101)	**Presenting case work ideas** (A-Grid Mordor)
Week 4 (30.1. & 1.2.)	Design for sustainability transitions (Q201)	Communicating and scaling-up sustainability (visitor: Michael Lettenmeier) (A-Grid Mordor)
Week 5 (6.2. & 8.2.)	Sustainability games (visitor: Tommi Vasko) (A-Grid Mordor)	**Project work tutoring & finalisation** (online)
Week 6 (13.2. & 15.2.)	**Project work: Final presentations** (F101)	Feedback session (A-Grid Mordor)

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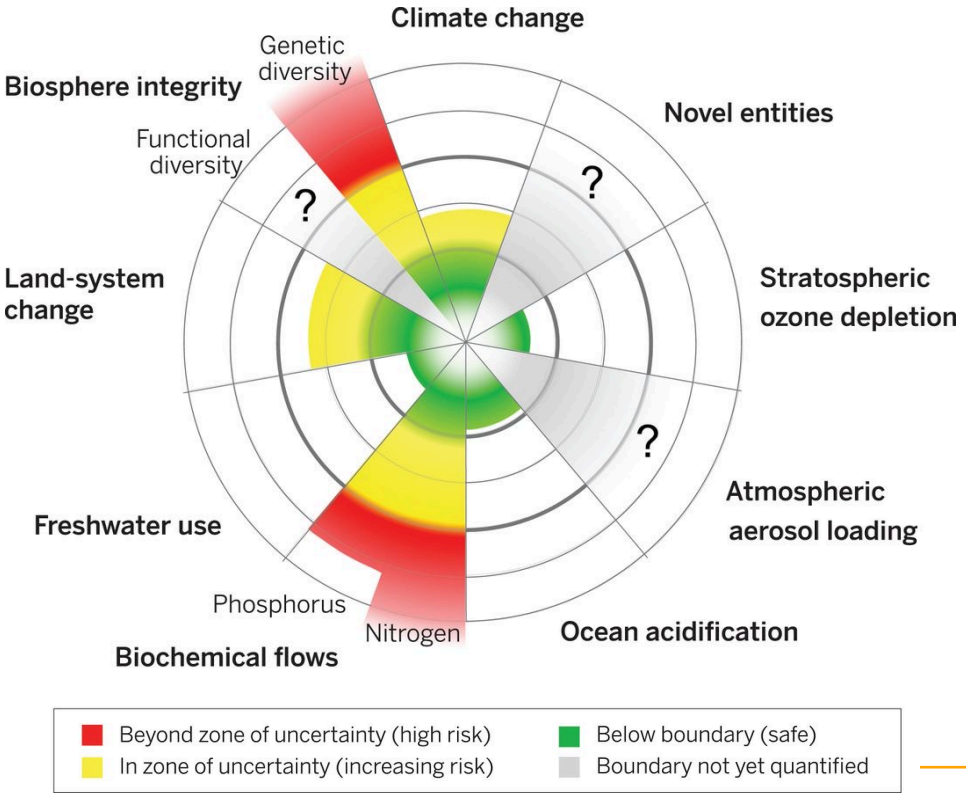
Week 1: Introduction to DfS & designing sufficiency

Context of action – the planetary boundaries and social foundations for sustainability



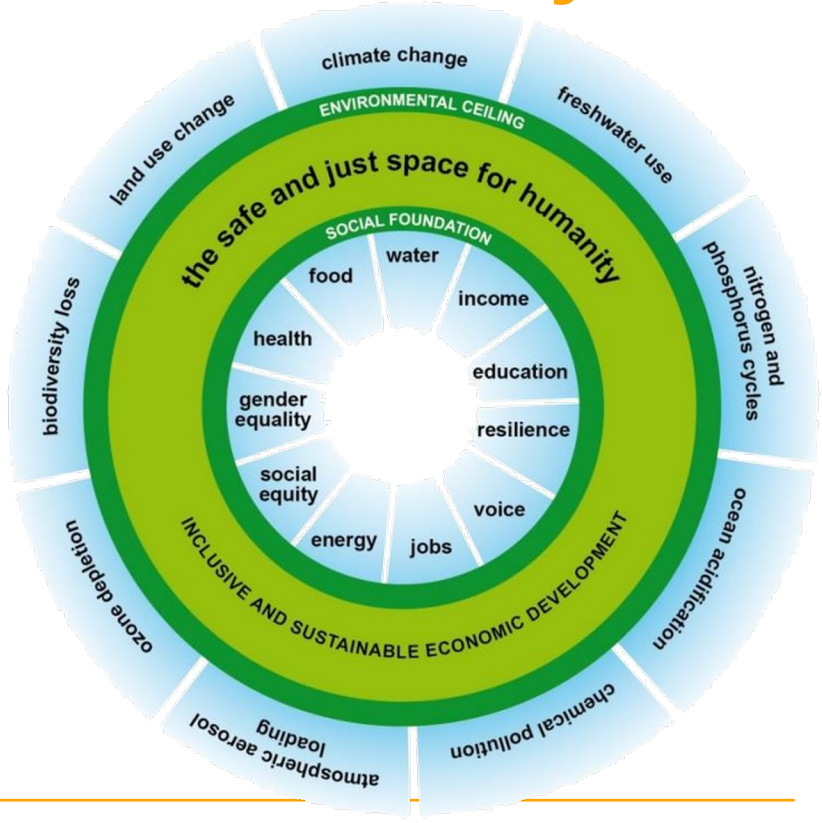


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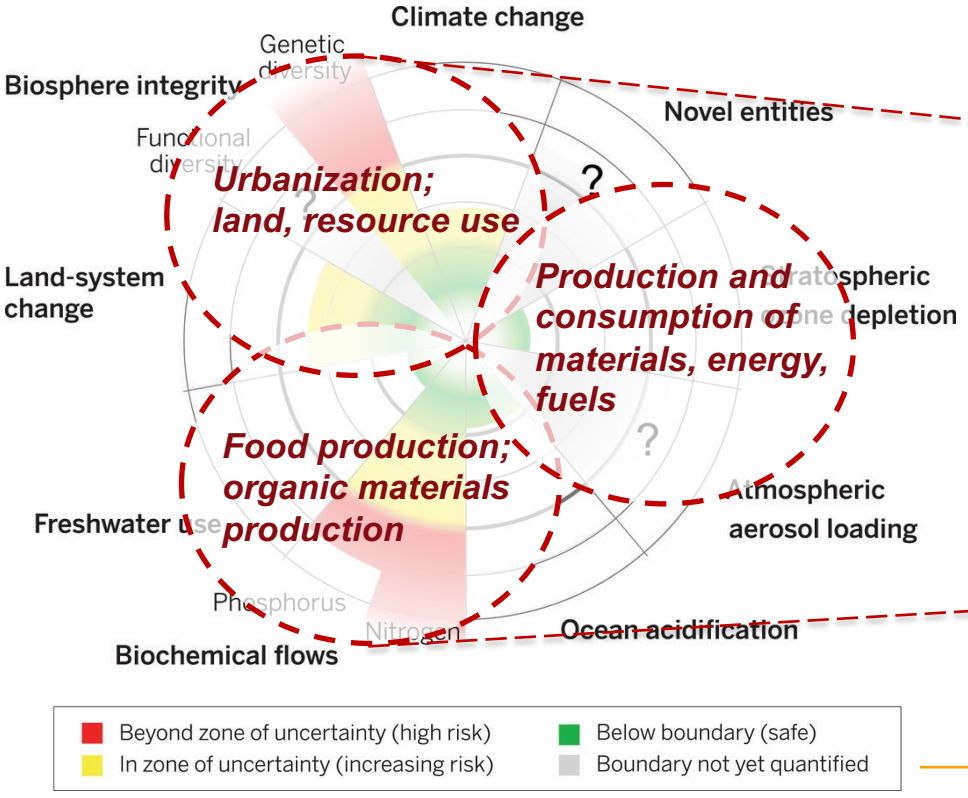
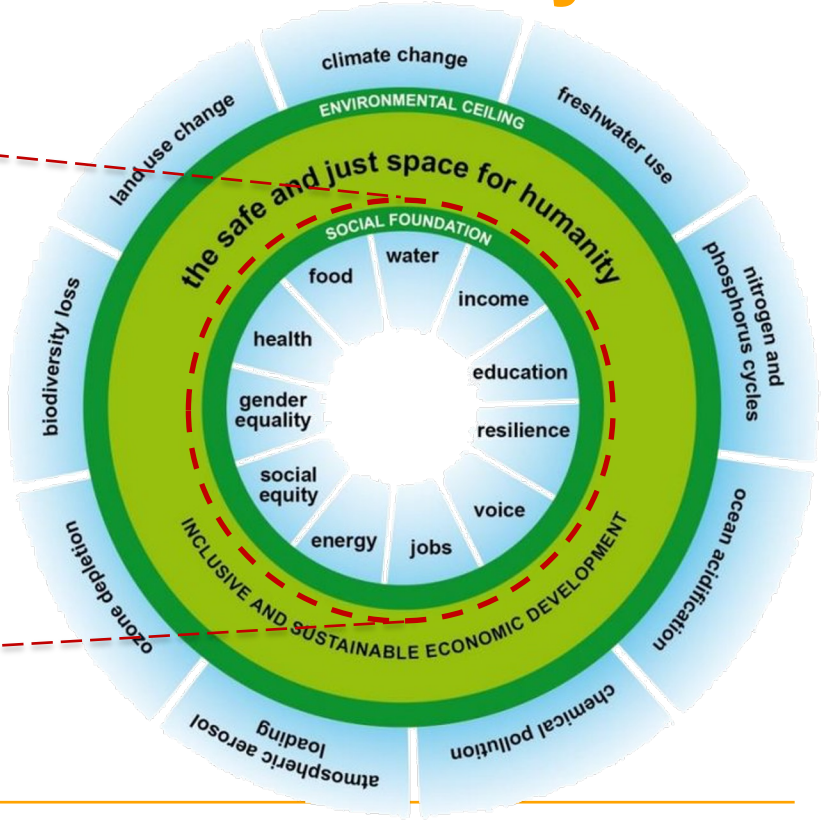
Image on left from Steffen, W. et al. (2015). "Planetary boundaries: Guiding human development on a changing planet." Science (347/6223). https://doi.org/10.1126/science.1259855

Image on right from Raworth, K. (2017). *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist.*

Context of action – the planetary boundaries and social foundations for sustainability





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Discourses of sustainable development

Some elements of discourse, and emphases in focus and practice in DfS action today:

Singular design approach	Systemic design approach	Pluralistic design approach
Technomodernism; technopositivism	Socio-technical systems theory	Deep ecology
Focus in non-human aspects, materials, actors in networks	Focus on human actors and on optimization of human-environment systems	Focus on natural systems, actors, processes
Ecodesign	Product-service system design	Design for sufficiency; critical design

Strategies for Design for Sustainability

DfS approaches can be divided in **four levels of focus** according their relation to systemic and socio-technical emphases (Ceschin & Gaziulusoy, 2020):

1. Product innovation level:

- Green design
- Ecodesign
- Emotionally durable design
- Design for sustainable behaviour
- Cradle-to- Cradle design
- Biomimicry design
- Design for the Base of the Pyramid

2. Product-Service System innovation level:

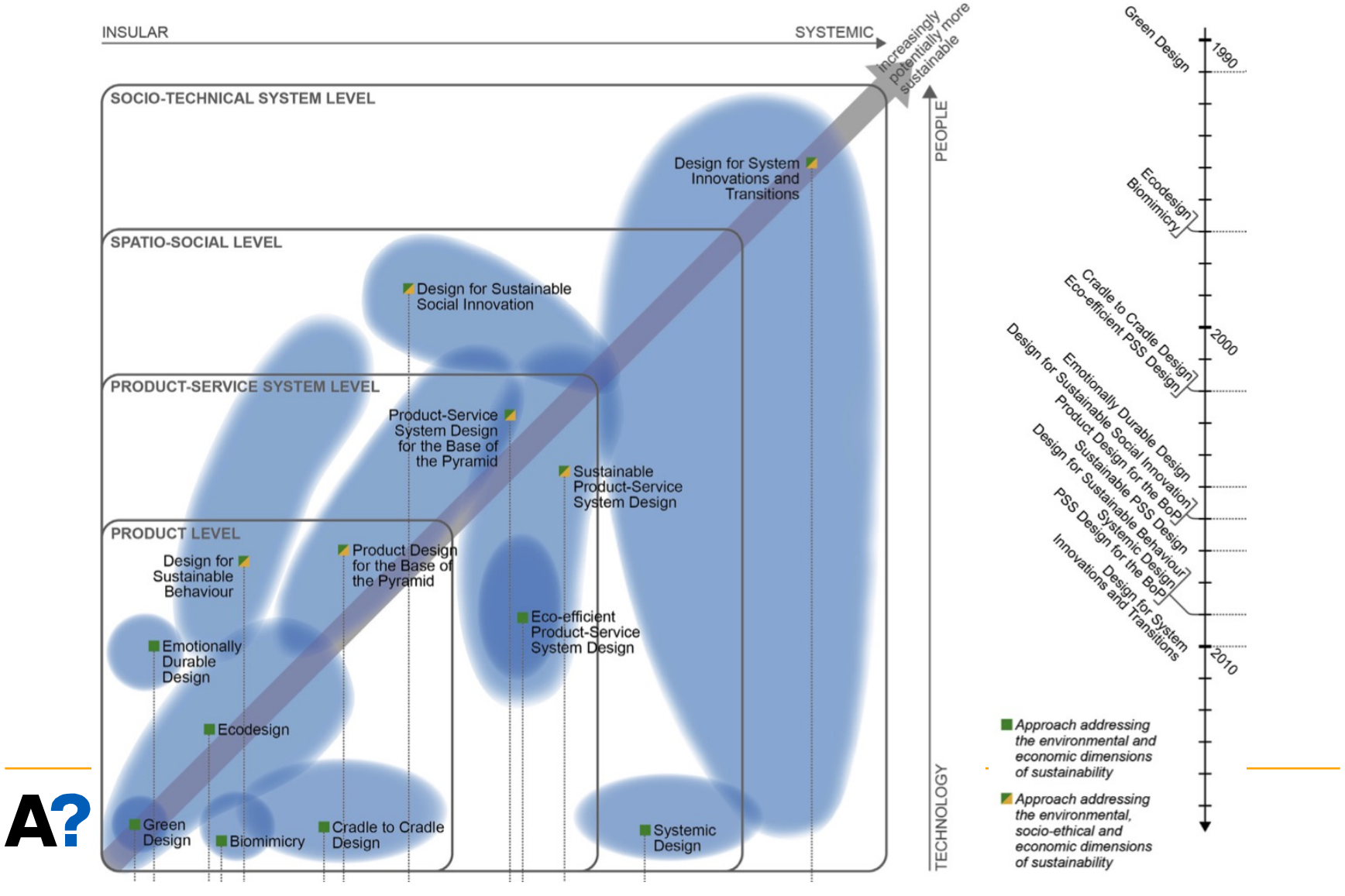
- Product-Service System design

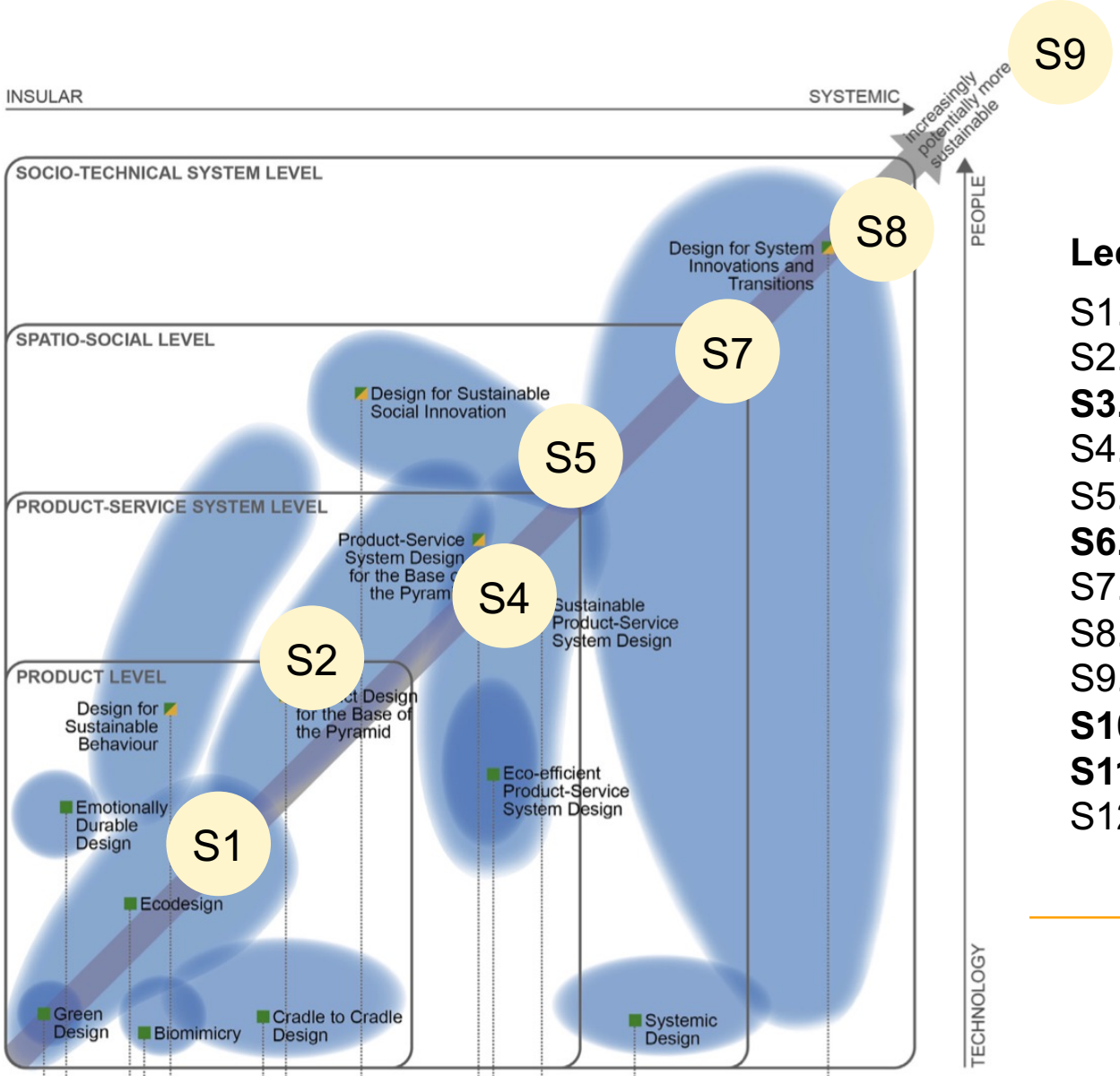
3. Spatio-Social innovation level:

- Design for Social Innovation
- Systemic Design

4. Socio-Technical System Innovation level:

- Design for System Innovations and Transitions


INSULAR
SYSTEMIC
increasingly potentially more sustainable
PEOPLE
TECHNOLOGY
SOCIO-TECHNICAL SYSTEM LEVEL
SPATIO-SOCIAL LEVEL
PRODUCT-SERVICE SYSTEM LEVEL
PRODUCT LEVEL
Design for System Innovations and Transitions
Design for Sustainable Social Innovation
Product-Service System Design for the Base of the Pyramid
Sustainable Product-Service System Design
Design for Sustainable Behaviour
Product Design for the Base of the Pyramid
Eco-efficient Product-Service System Design
Emotionally Durable Design
Ecodesign
Green Design
Biomimicry
Cradle to Cradle Design
Systemic Design
Green Design
1990
Ecodesign
Biomimicry
Cradle to Cradle Design
Eco-efficient PSS Design
2000
Emotionally Durable Design
Design for Sustainable Social Innovation
Product Design for the BoP
Design for Sustainable PSS Design
Sustainable Behaviour
Systemic Design
PSS Design for the BoP
Design for System Innovations and Transitions
2010
Approach addressing the environmental and economic dimensions of sustainability
Approach addressing the environmental, socio-ethical and economic dimensions of sustainability



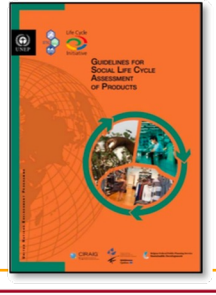
Lectures and sessions:

S1. Introduction to course & DfS
S2. Design for sufficiency
S3. Project work intro
S4. PSS & system design
S5. Sociotech. experimentation
S6. Idea presentations
S7. Design for transitions
S8. Communicating & scaling-up
S9. Sustainability games
S10. Shared tutoring
S11. Final presentations
S12. Feedback session

Golden standards for sustainability assessment

Sustainability

	Natural	Manufactured and financial	Human and social
Capitals			
Tools	(E-) LCA Environmental life cycle assessment	LCC Life cycle costing	S-LCA Social life cycle assessment
Origins	SETAC (1991 on)	Multiple – EU, US, Other	UNEP/SETAC (2009) (2)
Methods	ISO 14000 series (1997 onwards)	Technical cost modeling(1)	
EduPack Tools	Eco-audit tool	Eco-audit with cost Part-cost estimator	



(1) http://ec.europa.eu/environment/gpp/pdf/WP-LifeCycleCosting.qx.pdf

(2) http://www.unep.fr/shared/publications/pdf/dtix1164xpa-guidelines_slca.pdf

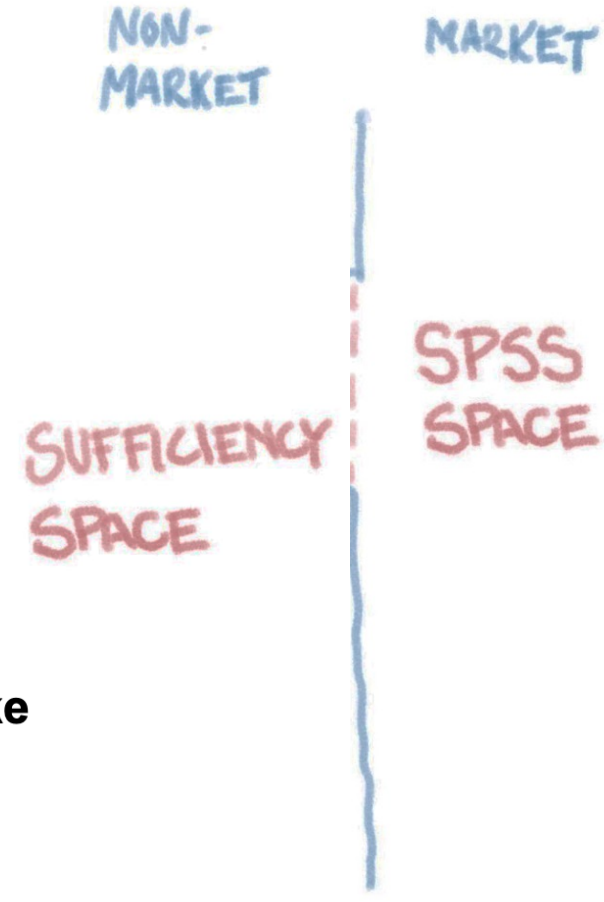
Design approaches to sustainable consumption

SPSS as seeking to increase the availability of sufficiency related services, share assets and innovate for modal shift.

Sufficiency as mainaining reintroducing meaningful productive activities as part of non-market, non-commercial human existence

Obstacles for outsourcing:
Lack of money
Taxation
Availability of services
Infrastructure
Logistics

Obstacles for meaningful participation:
Lack of time
Space
Skills
Opportunity
Health



Activities, which people like to engage and take ownership of

Activities, which people happily outsource and buy as a service

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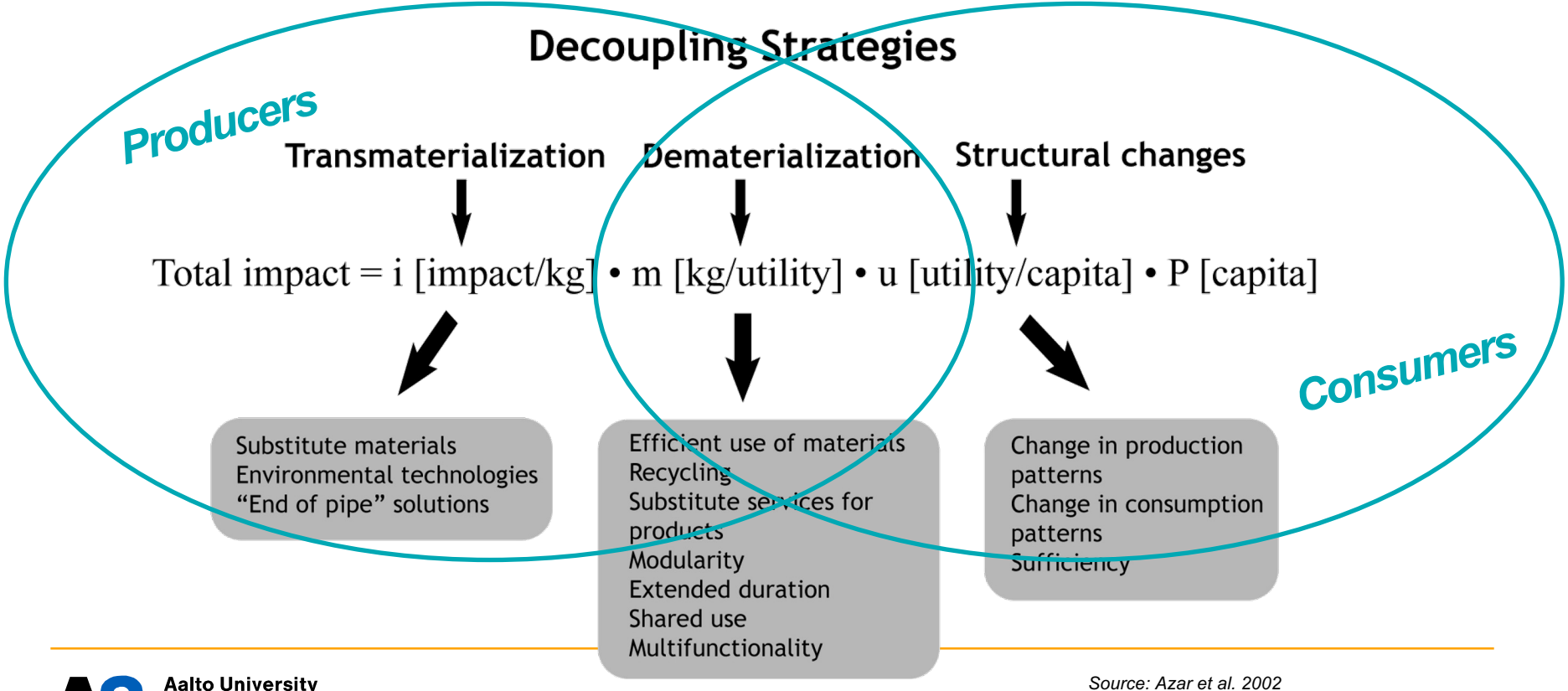
Week 2: PSS design and project work kick-off

Strategies for Sustainable Consumption and Production



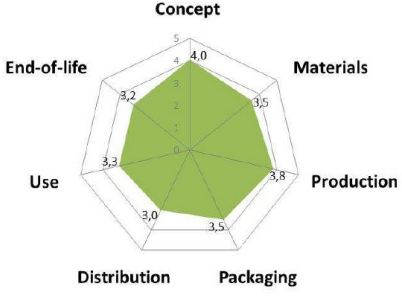
Source: Azar et al. 2002

The process and methods for PSS design

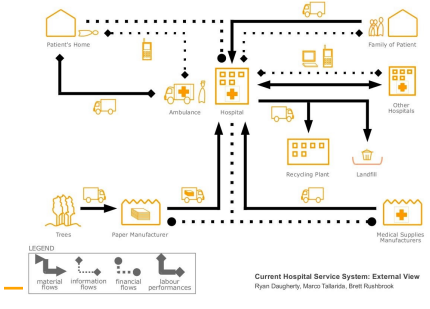
The PSS design process conforms to the conventional design process, starting from strategic analysis and opportunity exploration to ideation and system design, and to the further iteration and prototyping of the (PSS) design concept.

Methods and tools for PSS design cover various ecodesign and service design tools, and also the facilitation of strategic co-design and prototyping:

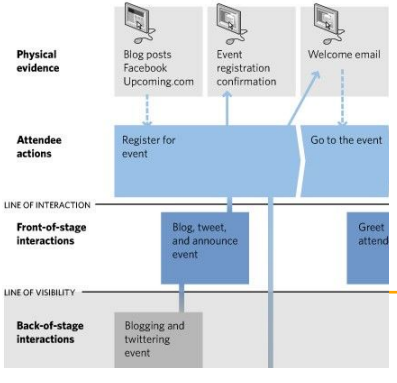
(Systemic) impact assessment



Stakeholder and system mapping



Service interaction blueprinting



Strategic co-design, collaborative prototyping

Summary of PSS design approach

- **Product-Service System (PSS) design focuses** to restructure stakeholder roles and interactions to increase the systemic efficiency in delivering a 'functional offering' (i.e., access to a selected service)
- **Types of PSS** range from product oriented, to use oriented, and to result oriented solutions
- **In the CE context, PSS design emphasis** is on efficiency in material use and circularity, and in extending product life, promote sharing, and providing efficient end-of-life systems.
- **Not all PSS designs are sustainable:** sustainability transition in production and consumption calls for further restructuring of the producer and consumer roles
- **Remember a critical perspective** in considering sustainability improvements!

Project work – different SCP and DfS focus

Each group has a theme of SCP and also preferred DfS approach(es)

Focus themes of sustainable consumption and production:

I	II	III	IV	V
Food systems and services	Mobility systems and services	Housing and buildings	Textile, clothing, fashion	ICT & domestic appliances

Focus DfS approaches for the project work:

A	B	C	D	E
Ecodesign & PSS design	Behavioral communication and information design	Participatory and collaborative design	Strategic and transition design	Speculative, critical, radical design

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Week 3: Socio-technical experimentation & innovation

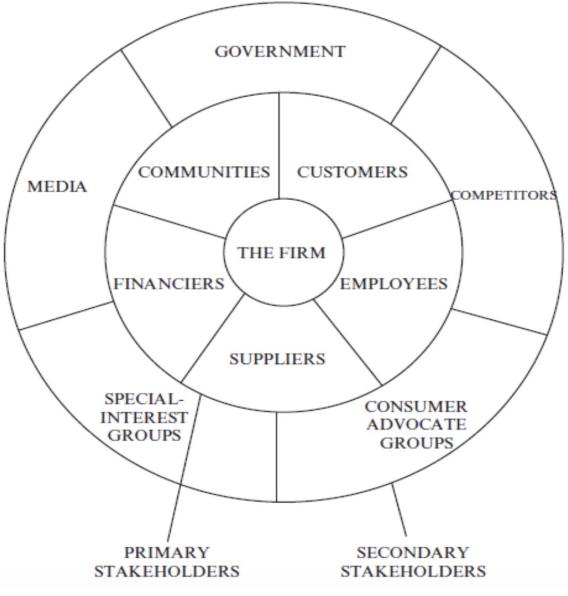
Stakeholder mapping for sustainability

Business management primarily use stakeholder analysis to mobilize, neutralize or defeat stakeholders, to meet the strategic objectives of firms. But increasingly also as partners for R&D.

Within policy, development, and natural resource management, stakeholder analysis is seen as an approach that could empower marginal stakeholders to influence decision-making processes.

Primary stakeholders:

- A group without whose "continuing participation the corporation cannot survive as a going concern" (Clarkson 1995).
- Typically include: investors, shareholders, employees, customers, suppliers and communities

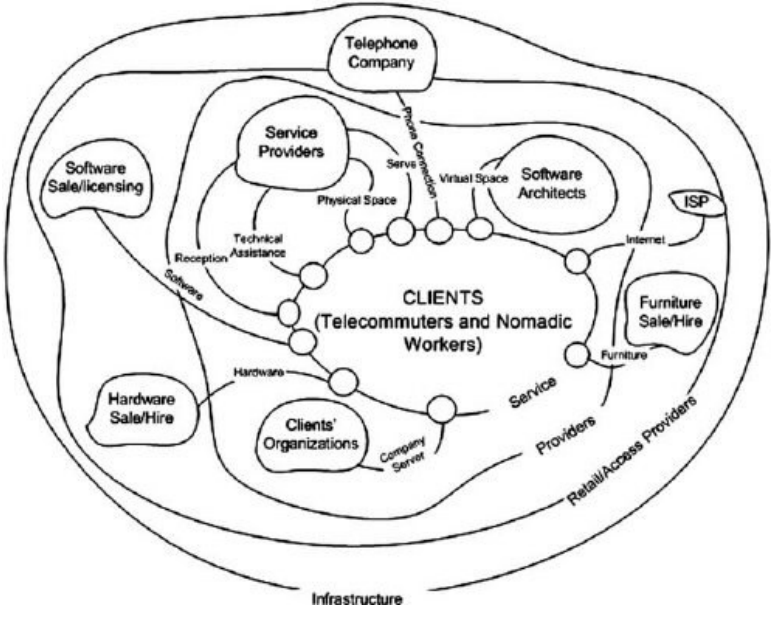


Secondary stakeholders:

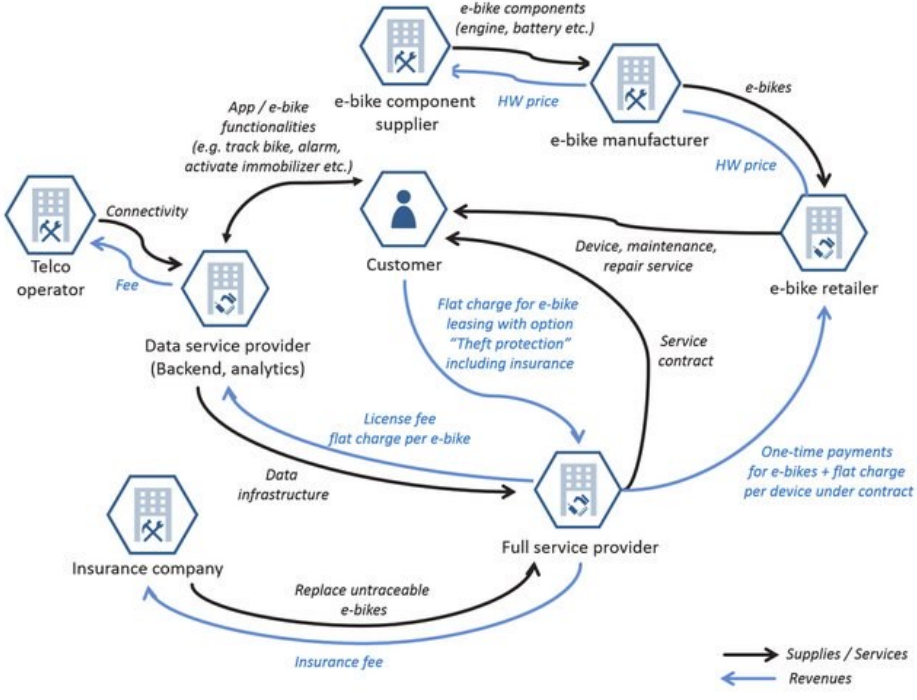
- "Those who influence or affect, or are influenced or affected by, the corporation, but they are not engaged in transactions with the corporation and are not essential for its survival" (Clarkson 1995)
- Typically include: media, special interest groups, government

Developing *stakeholder interactions:*

- Mapping stakeholders and redesigning stakeholder-system interactions



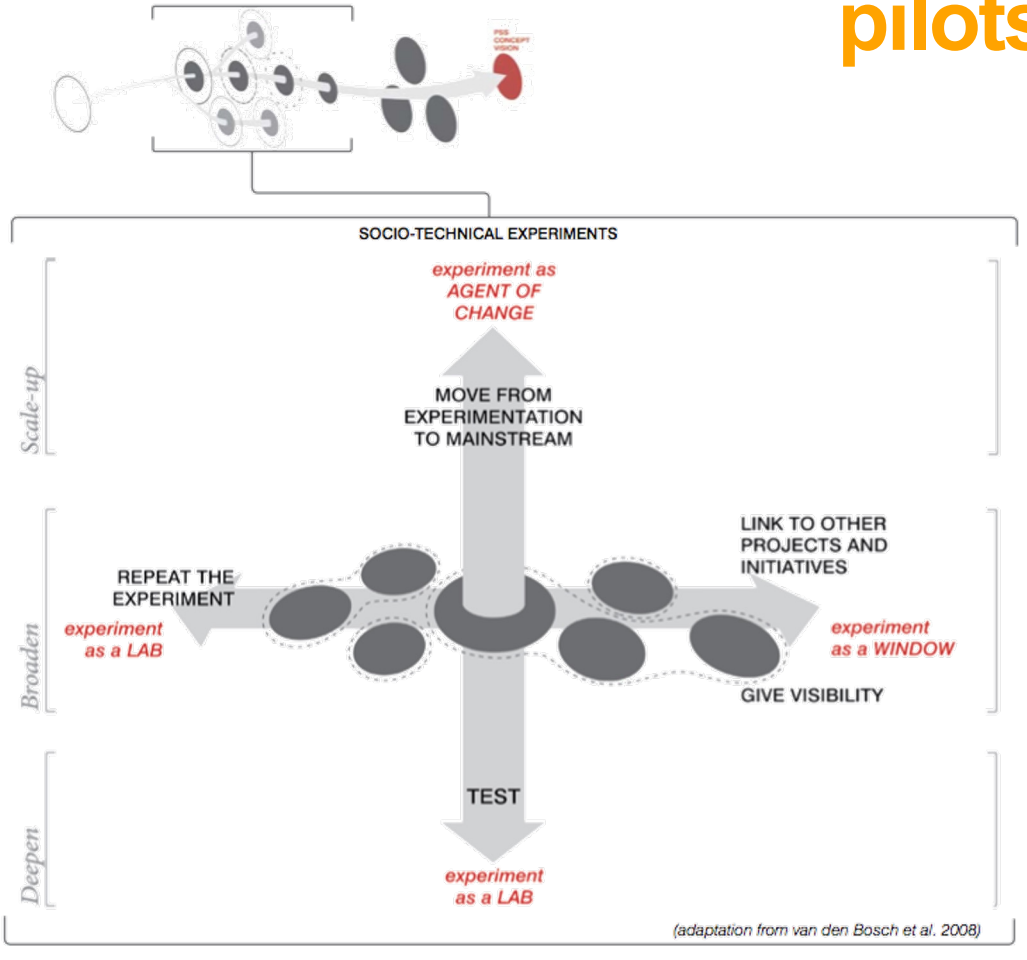
Morelli, Nicola. (2006). Developing new product service systems (PSS): methodologies and operational tools. 10.1016/j.jclepro.2006.01.023.



Bilgeri, Dominik & Brandt, Veronika & Lang, Marco & Tesch, Jan & Weinberger, Markus. (2015). The IoT Business Model Builder.

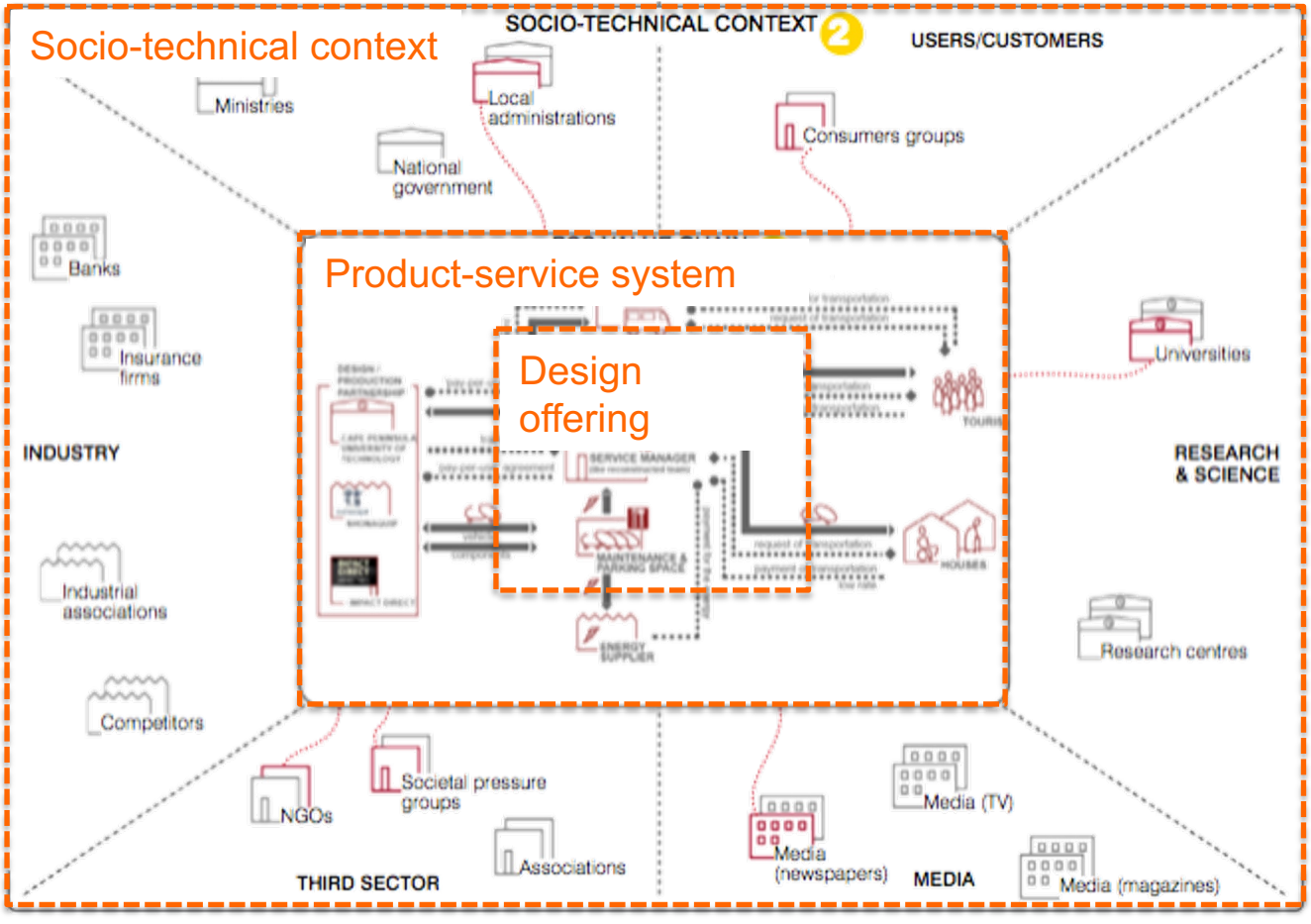
Designing socio-technical experiments and pilots

In the testing, piloting and scaling-up phase the design process has an emphasis on creating **socio-technical experiments** that help to *test* and *link* the design idea and to *move it towards the mainstream.*



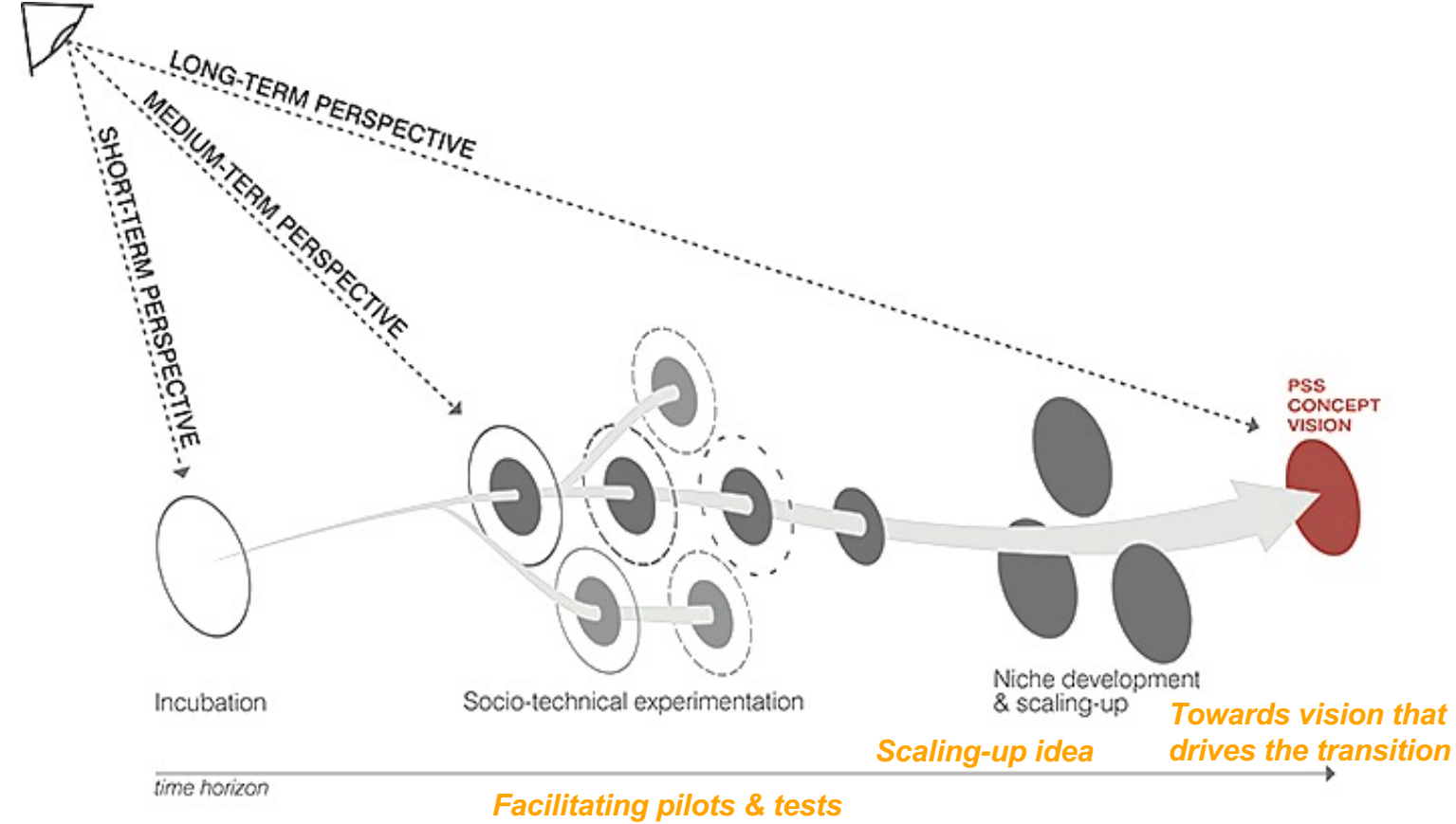
Source: Ceschin, 2013

Working with system level to redesign *system interactions* and the *design offering*:



Source: Ceschin, 2013

Multi-term design attitude, with focus on different time perspectives:



Source: Ceschin, 2014

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Week 4: Design for transitions and one-planet lifestyles

Socio-technical systems and sustainability transitions

Transition Management (TM) methodology is based on a *multi-level perspective* on sustainability transitions within the socio-technical system context, with focus on:

- **Macro-level (landscape)**
- **Meso-level (regimes)**
- **Micro-level (niches)**

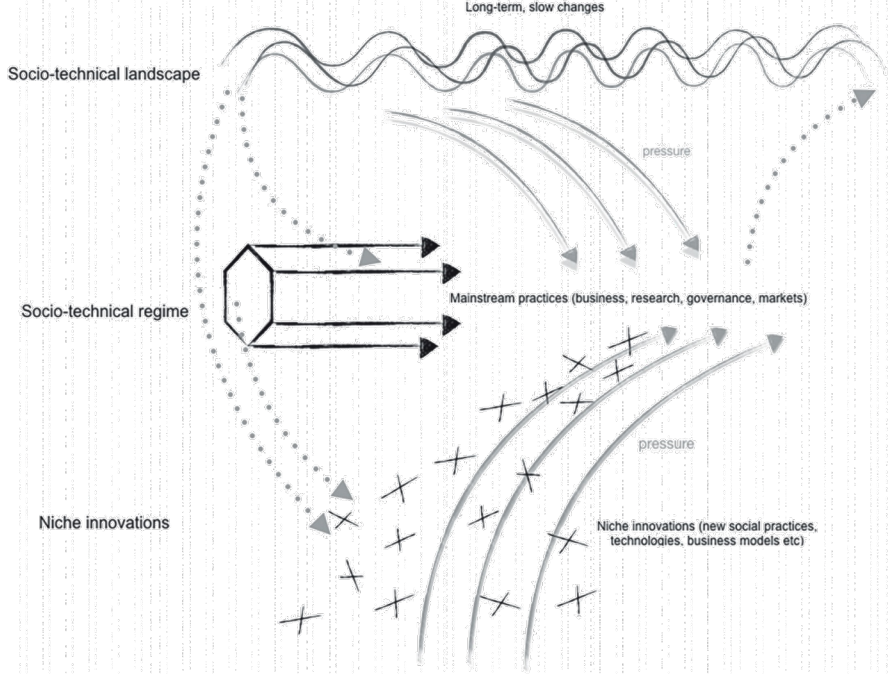
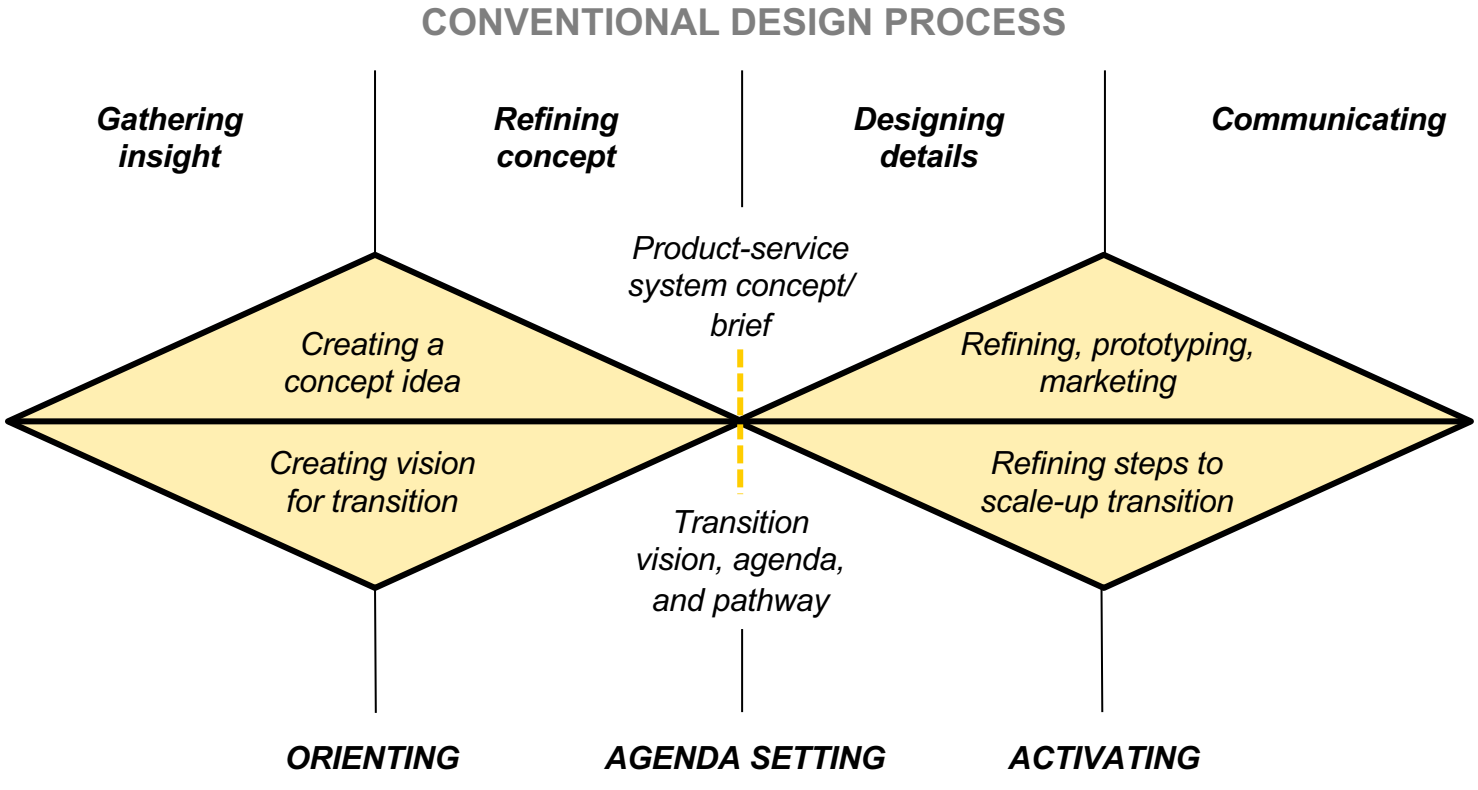


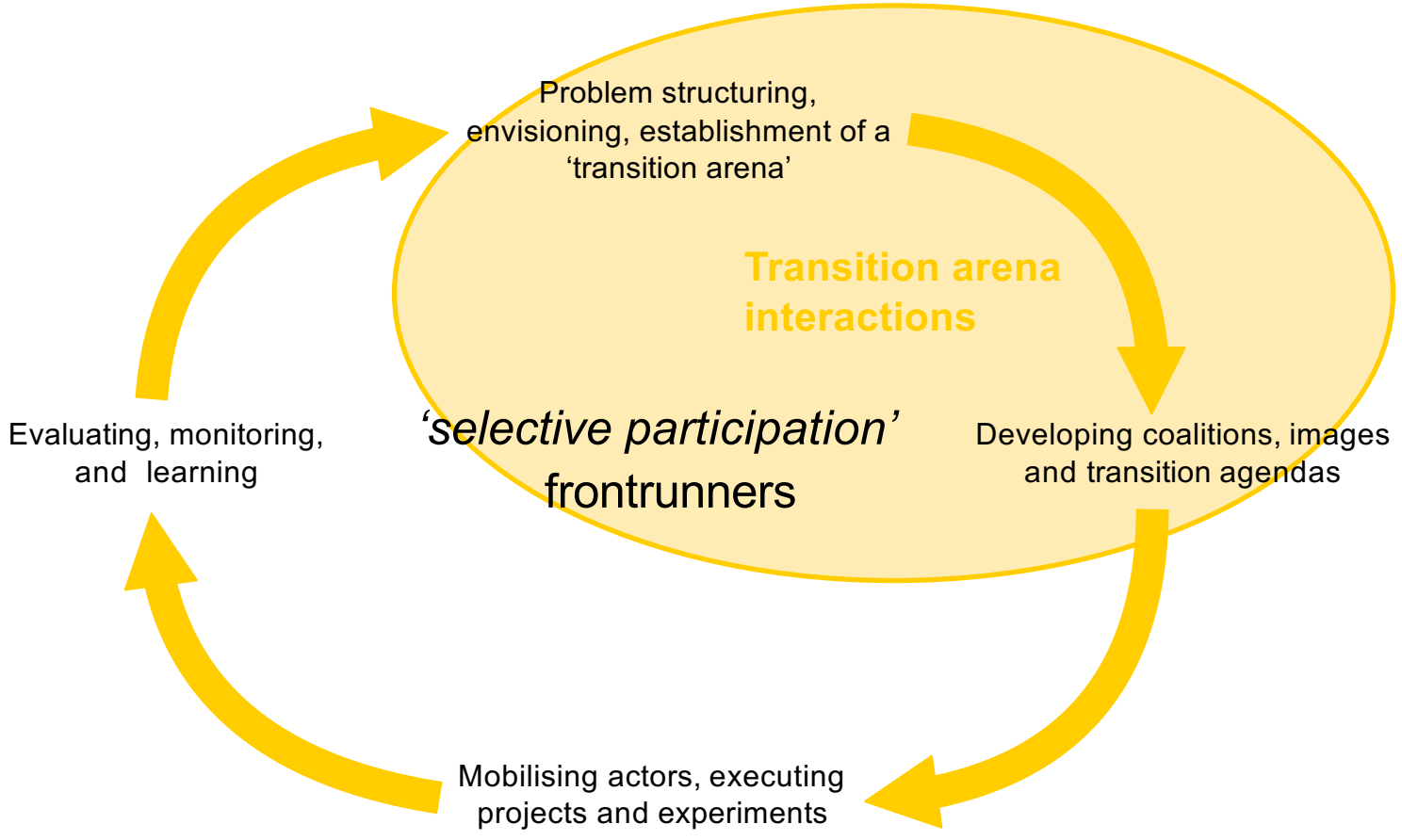
Figure 11.1 The MLP of system innovations model

Source: Adapted from Geels (2005a, 2005b) and Geels & Schot (2007).

Transition design – process and phases

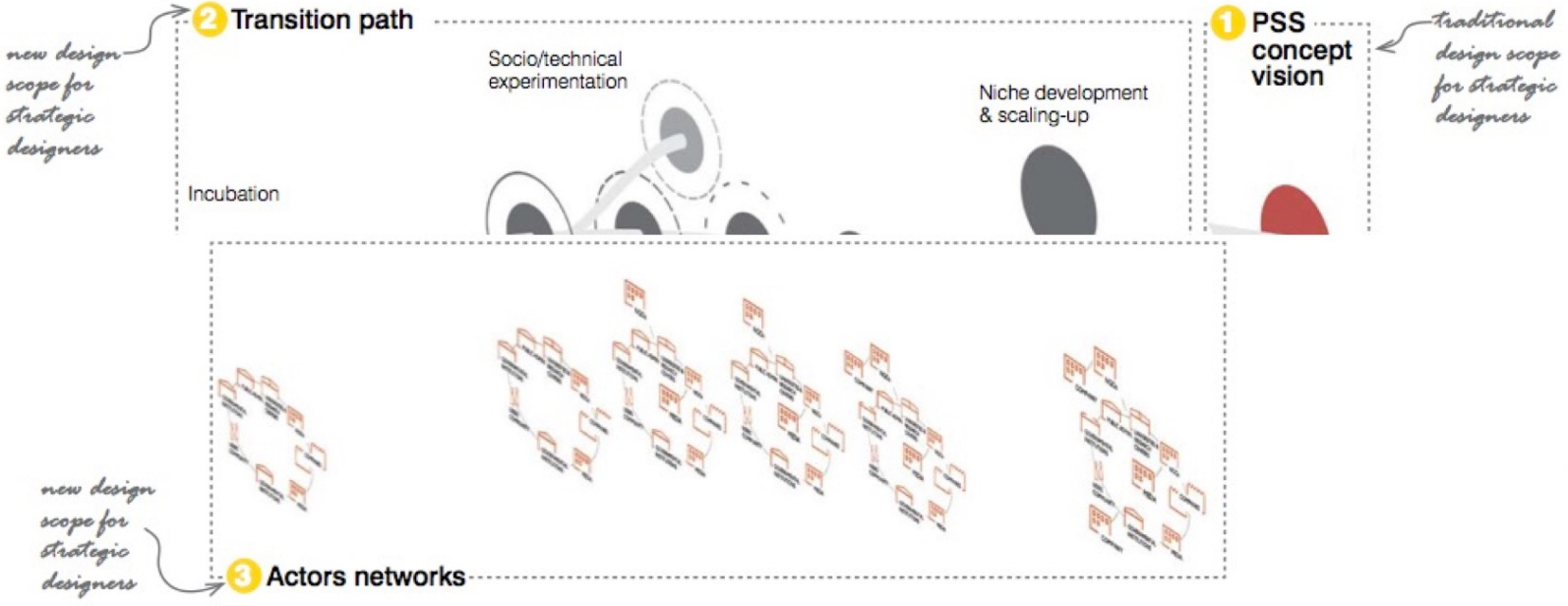


Transition Management (TM) cycle:



Loorbach & Wisjman, 2013

Designing transition pathways:



Transition management process:

Initiate Transition arena	*Discuss starting points:* Current situation, drivers, and first steps	*Develop vision and its elements:* Transition targets and goals	*Design and prioritize different steps on the timeline:* Actor networks, interactions, connections to further action	*Getting into action*

Scaling-up transition ideas

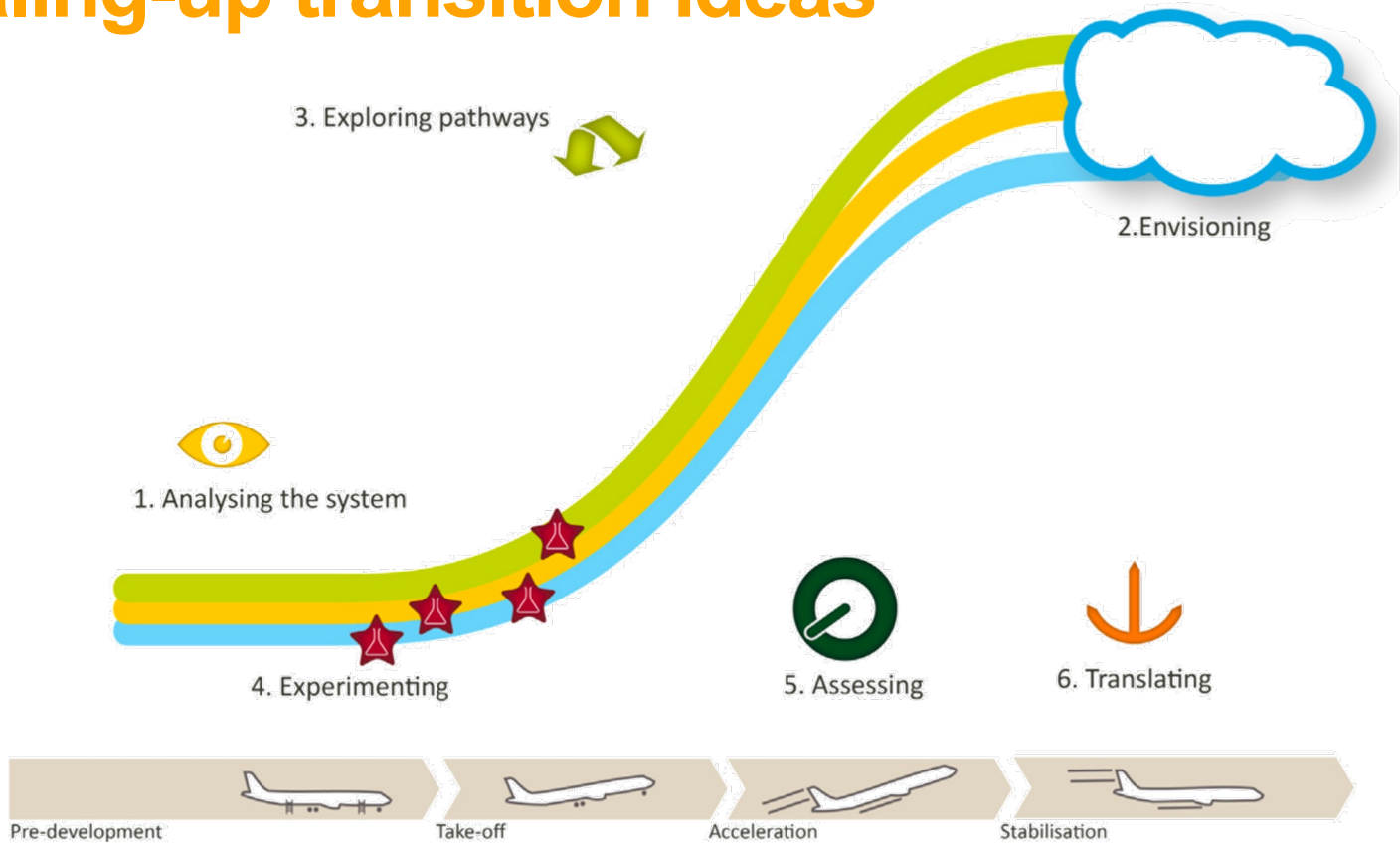
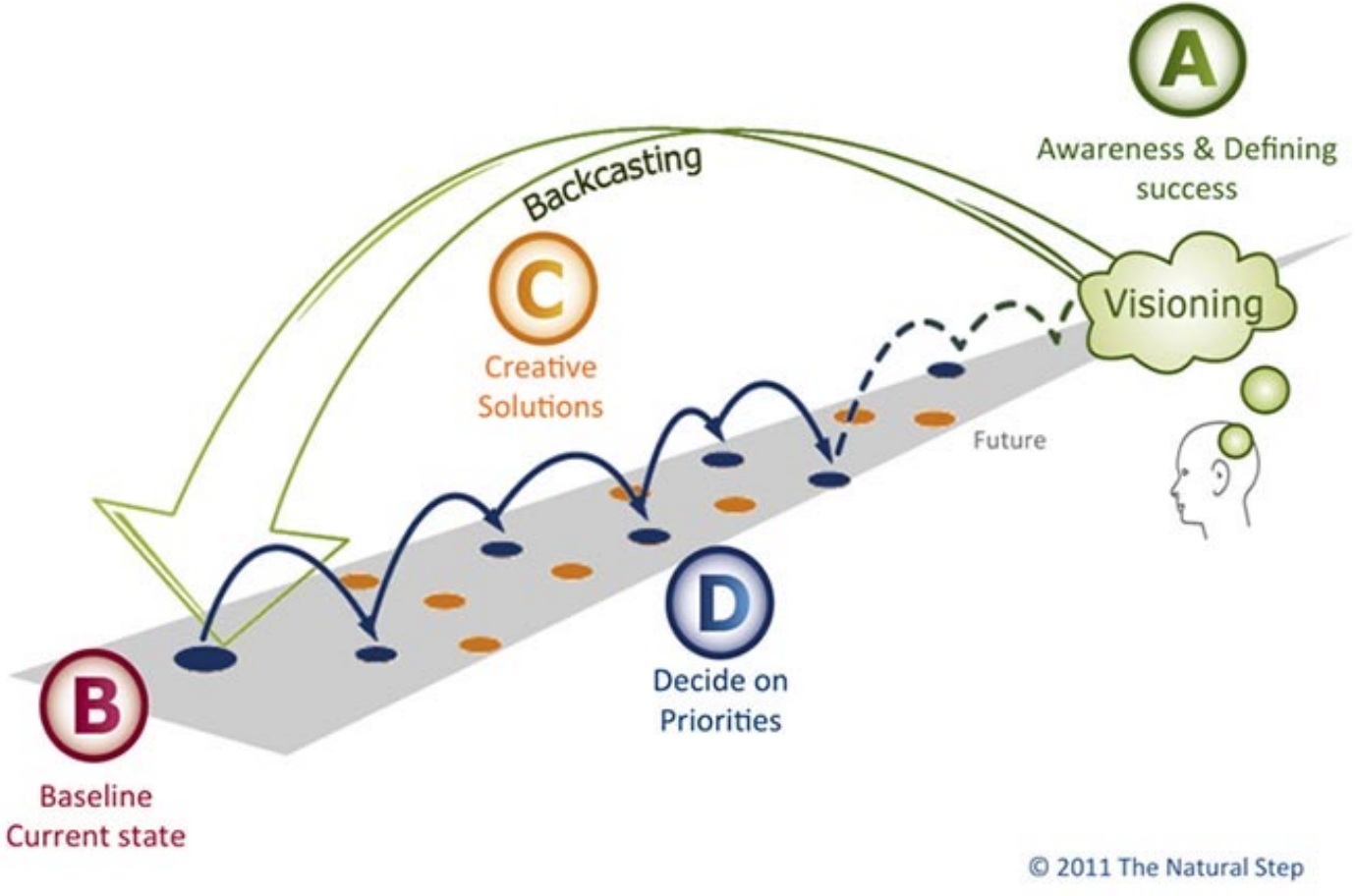


Fig. 1. Transitions to sustainable development: A logical combination of reinforcing steps and associated activities.

Nevens F, N. Frantzeskaki, L. Gorissen, and D. Loorbach. 2013. "Urban Transition Labs: co-creating transformative action for sustainable cities."

Backcasting (from The Natural Step framework):



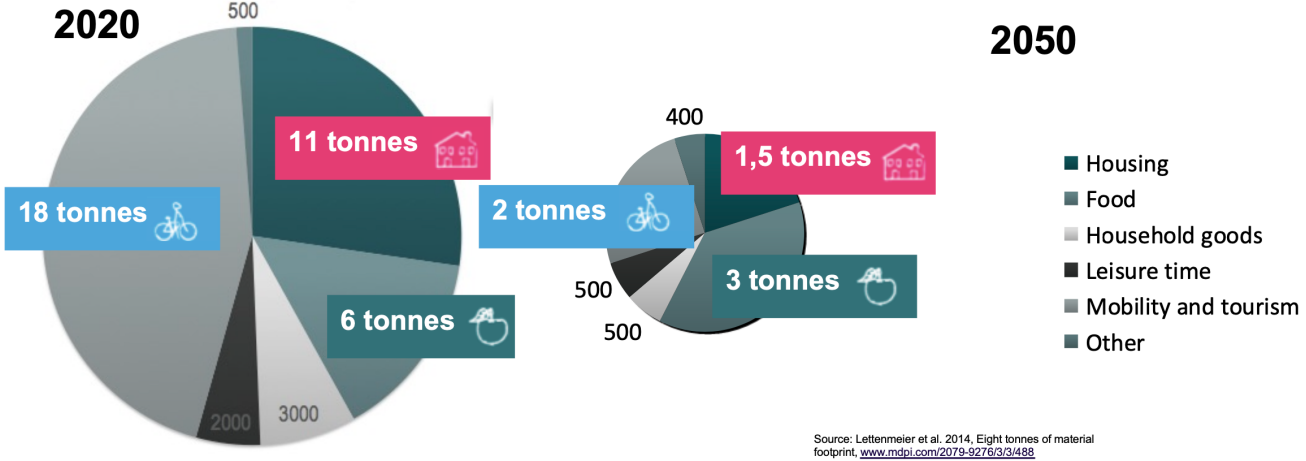
One-planet lifestyles (Michael Lettenmeier)

One-planet lifestyles –
And how make people aware of their relevance?

Michael Lettenmeier
Post-doc researcher, CEO
Michael@d-mat.fi
Michael.Lettenmeier@helsinki.fi
+358 40 541 2876

The Sustainable Consumption Challenge
Lifestyle Material Footprint from 40 to 8 Tonnes

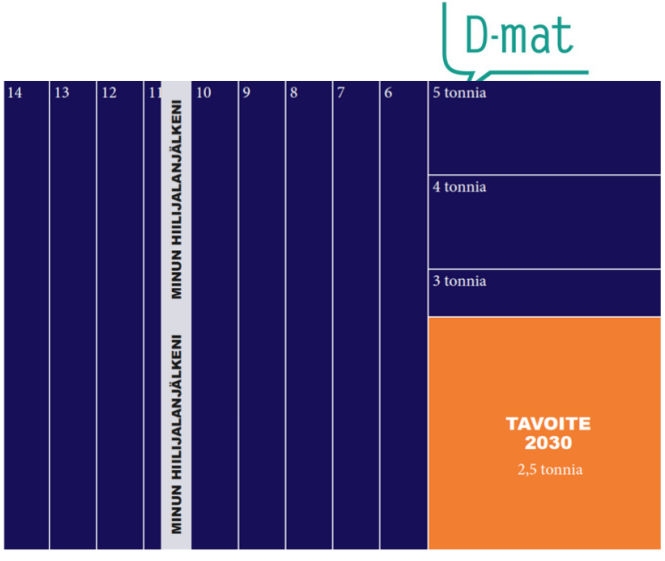
D-mat

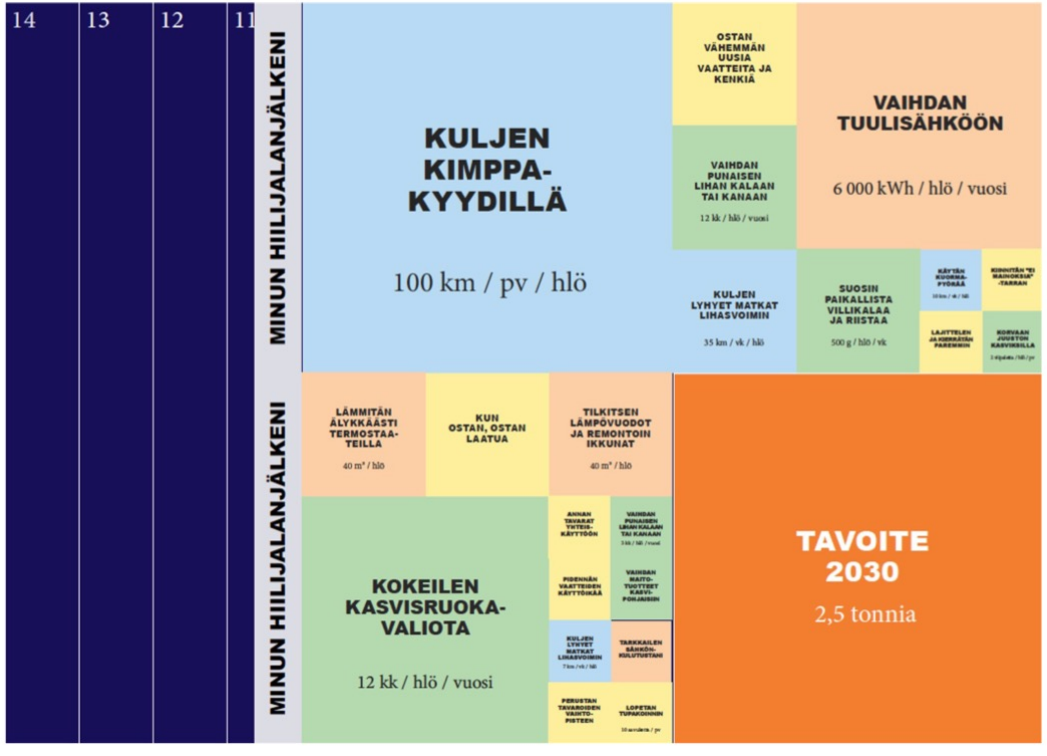


Source: Lettenmeier et al. 2014, Eight tonnes of material footprint, www.mdpi.com/2079-9276/3/3/488

Lettenmeier 2024

Studying different actions (and interactions) to mitigate life-style impacts:





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Week 5: Sustainability games

Sustainability games and role-playing

Tommi Vasko

Doctoral researcher, Aalto DoD

Gaming Sustainability Transitions
- Transition games as mechanisms for emergent transition narratives

What is role-playing? How does it work?

Immersion
- First person perspective (characters)
- Game world / Magic circle
- Playful seriousness

No right or wrong way to interpret the character and the game world!

What ever happens is real in the game!

Collective Writing
- Writing as worldbuilding

Safety Mechanisms
- Off game interaction
- Leave the scene
- Metagame

Debrief
- What happened?
- Why players did what they did? (chance to say sorry!)
- What does all this mean?

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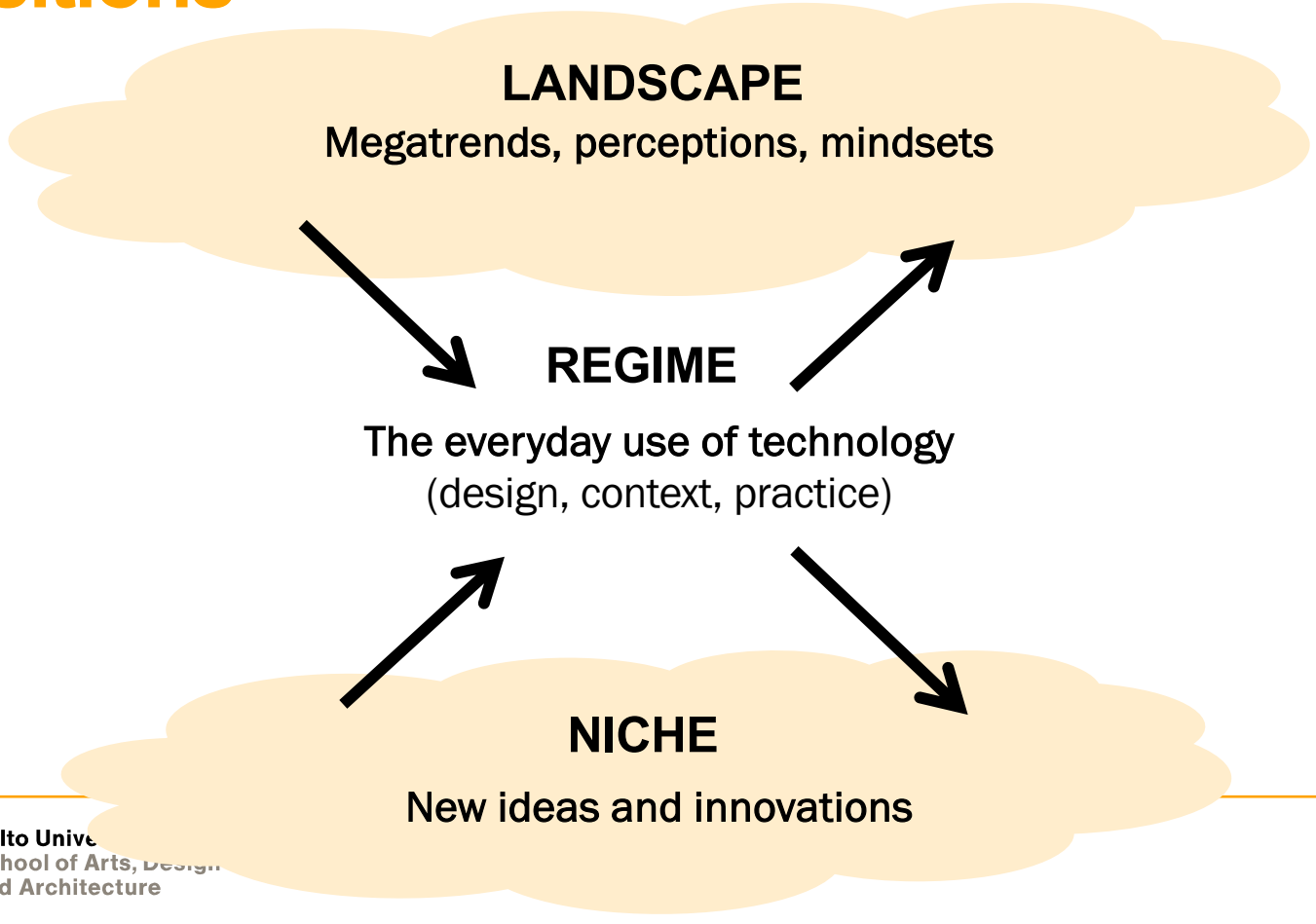
Summary

Multilevel perspective to sustainability transitions

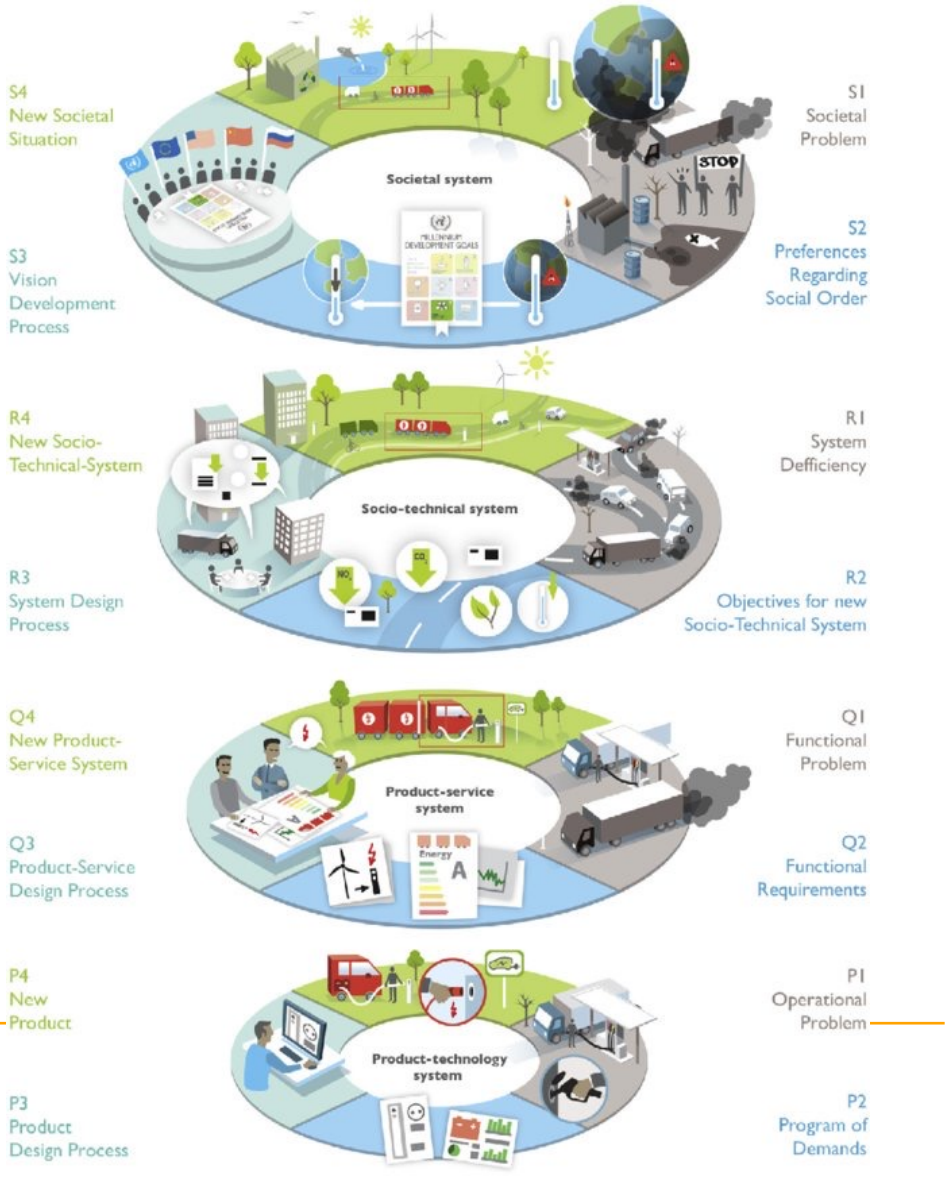


Multilevel focus for design

Multilevel perspective adapted to design:

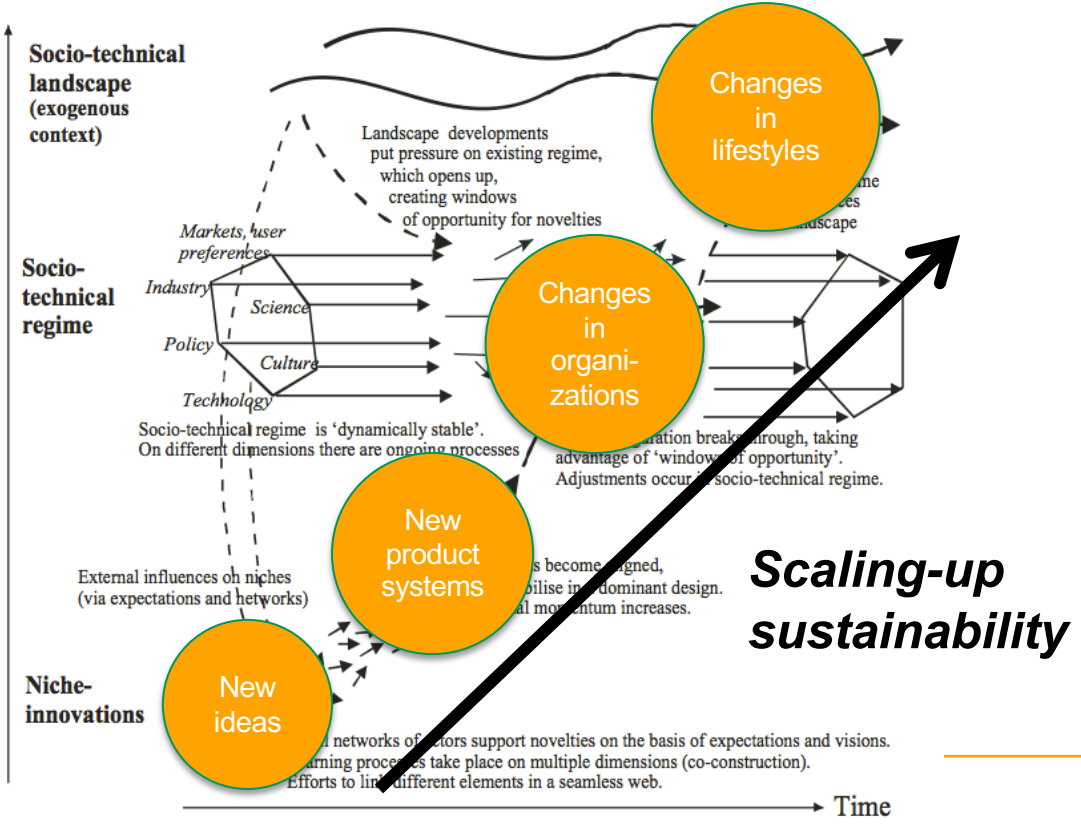
”The role of designers is broadening, from the creators of physical arte-facts to the potential role of facilitators of complex societal change processes. To support the widening role of the designer, there is a need for a design supportive model.”

Multilevel Design Model (MDM) by Joore & Brezet (2014)



Design connecting with potential for scaling-up

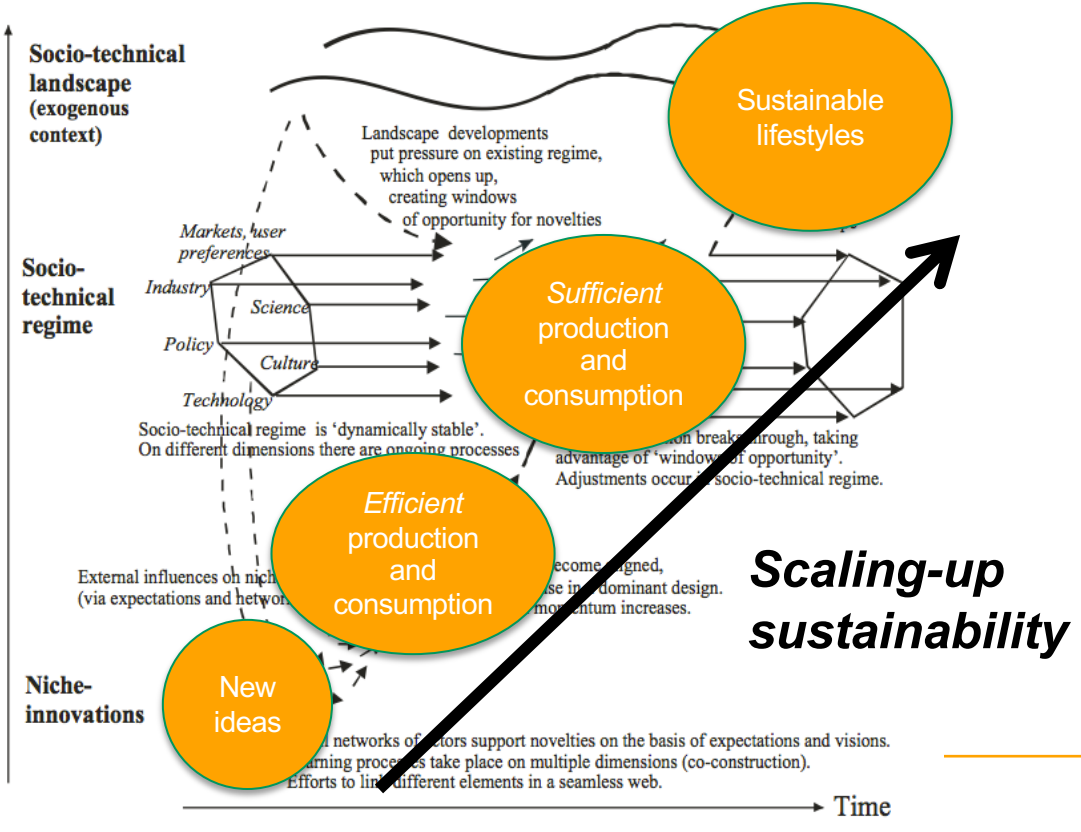
Scaling-up sustainability transitions within the socio-technical context:



Source: Geels, F. (2011) Multi-level perspective on sustainability transitions

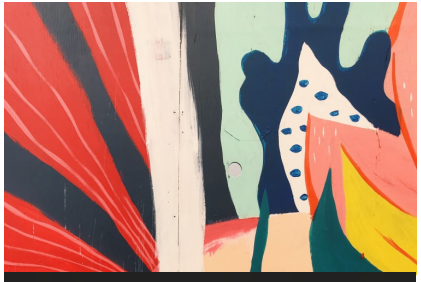
Design connecting with potential for scaling-up

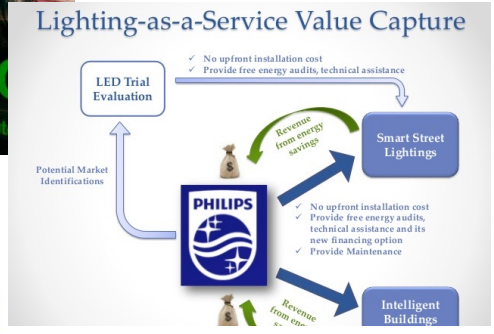
Scaling-up sustainability transitions within the socio-technical context:



Source: Geels, F. (2011) Multi-level perspective on sustainability transitions

Connecting (design) action on several levels:





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couchsurfing

Product level:
Green design, ecodesign, etc.

Product-service-system level:
Servicization, functional approach to products

Societal level:
Transitions design & management

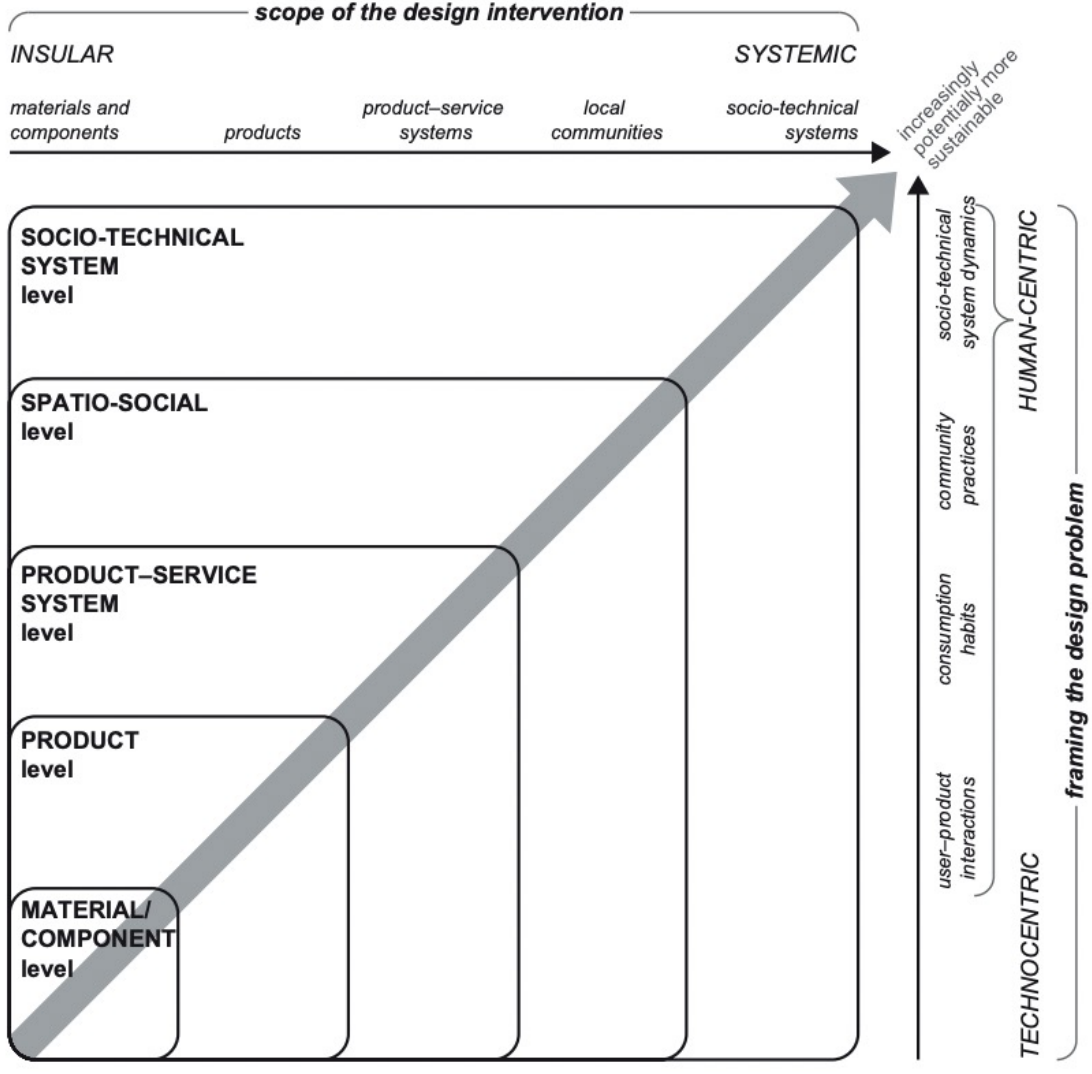

Figure 12.1 The DfS innovation framework

Completing the course – final tasks

Course deliverables and evaluation

To pass, the students are required to attend the lectures and perform all the assigned exercises, readings and written tasks.

Assessment methods and criteria:

- Individual writing task: Learning diary = 30%
- Active presence at the course = 20%
- Case work, inc. presentations & final report = 40%
- Peer evaluation in groups = 10%

Work-time allocation (totals 6 ECTS = 162 hours):

- Lectures: 36 hours / Group work: 50 h
- Reading & writing: 50 h / Personal reflection: 16 h
- Feedback and activities outside of the classroom: 10 h

Attendance should be over 75% if no special excuses (3 sessions absence max.) – I will contact these students at the end with one extra assignment for diary (if you don't disagree).

Learning diary

During the course students will write a learning diary. The learning diary consists of reflection on weekly readings, lecture contents, and also on your group work progress.

Learning diary (around 8-10 pages or 2500-4000 words) – for each week, write:

- A brief summary of the readings and reflection on selected topics
- Reflect on some topics of the session(s): What was most interesting? Preferably, expand selected topics also with external sources and material, perhaps also some figure
- Project work: How was it progressing? Challenges, reflection?
- No strict structure, but you could follow weekly structure or then the diary could be divided in above sections or so…
- Add also a short introduction on your motivations and yourself as a sustainable designer, and reflections to the course as a whole to the end
- Academic output: Add references to the text and as a list to the end

Will be submitted via MyCourses; Deadline after the end of course (Mon 26.2.)

Learning diary (evaluation matrix):

Grade:	Grade 0 (Fail)	Grade 1 (Pass)	Grade 2 (Satisfactory)	Grade 3 (Good)	Grade 4 (Very good)	Grade 5 (Excellent)
Evaluation:	*The learning diary fails to meet minimum requirements in length and contents.*	*The learning diary fulfills the bare minimum requirements in regard to contents and length; The language and formatting has severe shortcomings.*	*The learning diary fulfills requirements in regard to essay contents and length; The language and formatting is sufficiently comprehensible.*	*The learning diary fulfills requirements in regard to essay contents and length, and the reflections are creating connections to topics; The language and formatting is rather fluent.*	*The learning diary fulfills requirements easily in regard to contents and length, and reflections are personal and also connecting to external materials; The language and formatting is rather flawless and fluent.*	*The learning diary fulfills requirements extensively in regard to contents and length, and reflections are personal and creating connections between lecture topics and external materials; The language and formatting is academic, flawless, and fluent.*

Project work on the course

Besides lectures, there is a project work assignment in which the students work in 5–7 person groups. Groups work independently and produce design concepts that are communicated in idea and final presentations and in a project report.

Case presentation days:

- Idea presentations on Thursday 25.1.
- Final presentations on Tuesday 13.2.
- Discussion on results on Thursday 15.2.

Deliverables:

- Presentation materials (e.g., PPT or PDF)
- Project report (PDF)

Project work deliverables

Idea presentations on Thursday 25.1. and **final presentations** on Tuesday 13.2.

Project report: Besides the presentations you produce a project report as a group. The project report is in a way an expanded version of the final presentation, and could even be based on the same visual style/layout, but should probably include more details as a text. Length 25-40 pages (including images), 2500-4000 words;

Submit project report to MyCourses by 20.2.

Peer feedback: As a part of case evaluation, there's peer assessment. Please review your group members with an anonymous survey (see instructions in 'Announcements' next week).

Project work (evaluation matrix):

Grade:	Grade 0 (Fail)	Grade 1 (Pass)	Grade 2 (Satisfactory)	Grade 3 (Good)	Grade 4 (Very good)	Grade 5 (Excellent)
Evaluation: *(including the analysis of the thematic challenge, ideation and the presence of your chosen DfS approach, and the overall communication, with the project report)*	*Group fails to deliver project deliverables.*	*Analysis is non-existent without focus; Proposed solution is very limited and does not relate to challenge, and there's no connection to the DfS approaches and methods; Communication in presentations is unorganized and unprepared.*	*Analysis is shallow and fails to identify focus; Proposed solution barely connects with the challenge, and the connection to the DfS approaches and methods is very limited; Communication in presentations feels unorganized.*	*Analysis is sufficiently performed with focus; Proposed solution to the challenge sufficiently connects with the chosen DfS approaches; Communication in presentations is adequate.*	*Analysis is well-performed and focused and involves stakeholder interaction; Proposed solution to the challenge is well-thought and showcases the chosen DfS approaches; Communication in presentations is clear.*	*Analysis is very well-performed and focused and involves well-thought stakeholder interaction; Proposed solution to the challenge is interesting and it exemplifies the chosen DfS approaches; Communication in presentations is clear, focused, well-performed and interesting.*

Project reports (upload by 20.2.)

As the last part of the project work, you will produce a project report as a group. The project report is in a way an expanded version of the final presentation, and could even be based on the same layout, but should include more details as a text. Include also reflection on your group work process to the end.

The project report (25-40 pages, 2500-4000 words) should cover:

- Original focus theme and research, its potential challenges and iteration
- Initial ideation and its results; potential redirection of work
- Description of process, reflection on your selected DfS approach
- Stakeholder interaction (implemented & envisioned activities)
- Outcomes (could be visualisation of space, draft of a materials package, service blueprint, PSS description, transition agenda, depending on the final orientation)
- Reflection on your process and outcomes

Will be submitted via MyCourses (one group member uploads)…

Feedback on course

Feedback on course topics and overall organisation

Please think of some feedback in regard to the overall course:

- What was working and what could be improved?
- What to keep and what to drop?
- Same Miro-canvas for course feedback (see separate board): https://miro.com/app/board/uXjVNsiM6Yk=/?share_link_id=231255251301

What to improve for the future…

Some things that already came up:

- Presemo for feedback during course and during presentation sessions
- Learning diary improvements (e.g. more like in Materials in the world… -course)
- Book sufficiently large rooms, ensure sufficient breaks
- Weekly workload described more clearly in beginning
- Less recap on lectures, more structured timeslot for group work, possibly supported by a ‘palette’ of exercises to choose from
- Idil giving lecture on their framework, visitors were appreciated!
- Keep role-playing, but with improvements!
- **After session, also please also fill in course feedback!**

Course and project work feedback:

Thank you for the course!

Please, remember to fill in peer review and course feedback by next Tuesday!