



Aalto University  
School of Arts, Design  
and Architecture

# Design Approaches to Sustainable Consumption

**Session 3 (Tuesday 16.1.):  
Project work kick-off**

*Tatu Marttila*

*Tuesday 16.1.2024*

# Agenda for session 3

**13:15–13:45** Recap of first week topics

**13:45–14:45** Sustainability in products, systems and transitions

**15:00–15:30** Kicking-off project work (& deciding groups)

**15:30–16:15** Meet your group

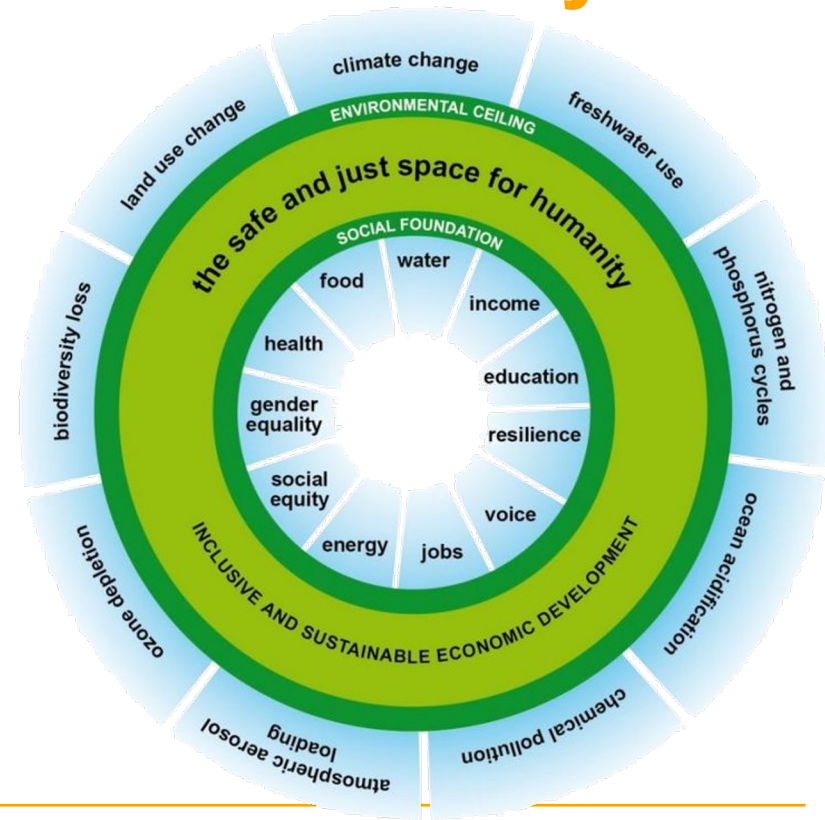
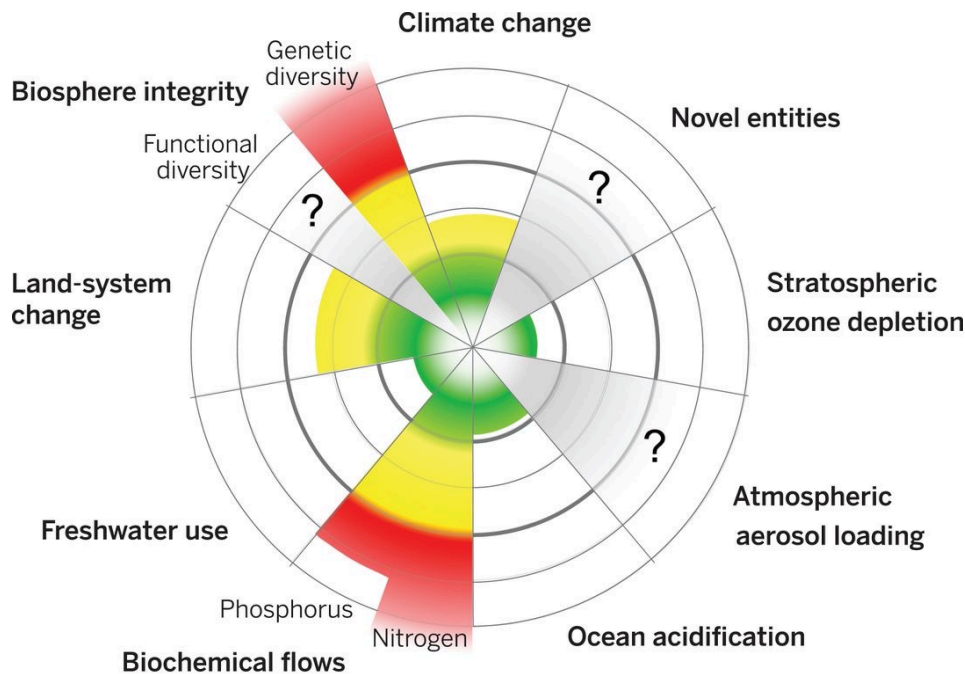
**16:15–16:45** Next steps and sessions

# Recap of first week



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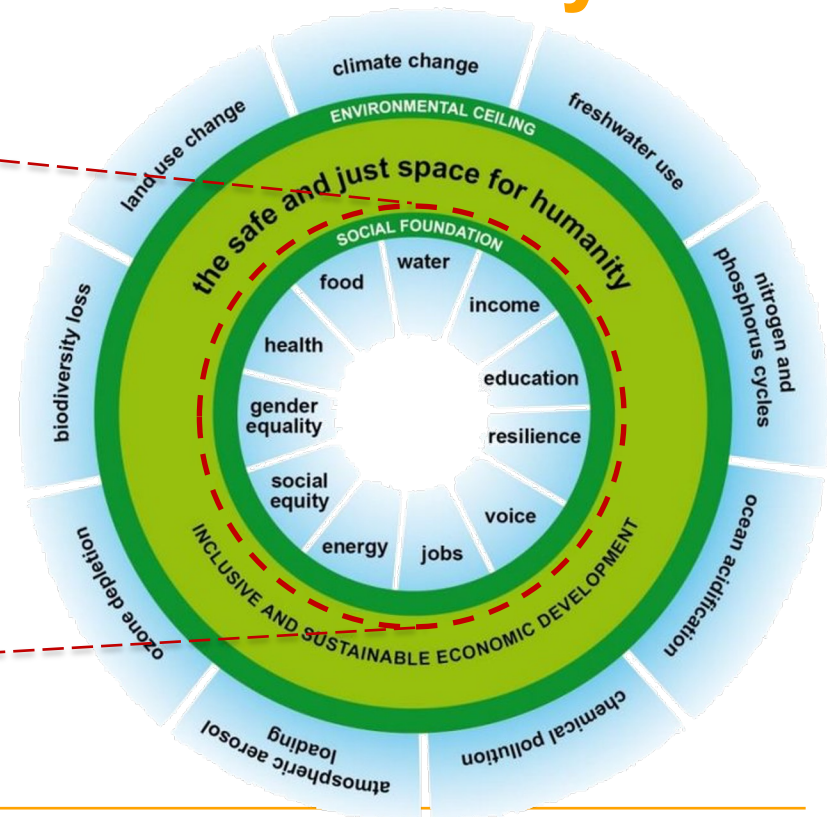
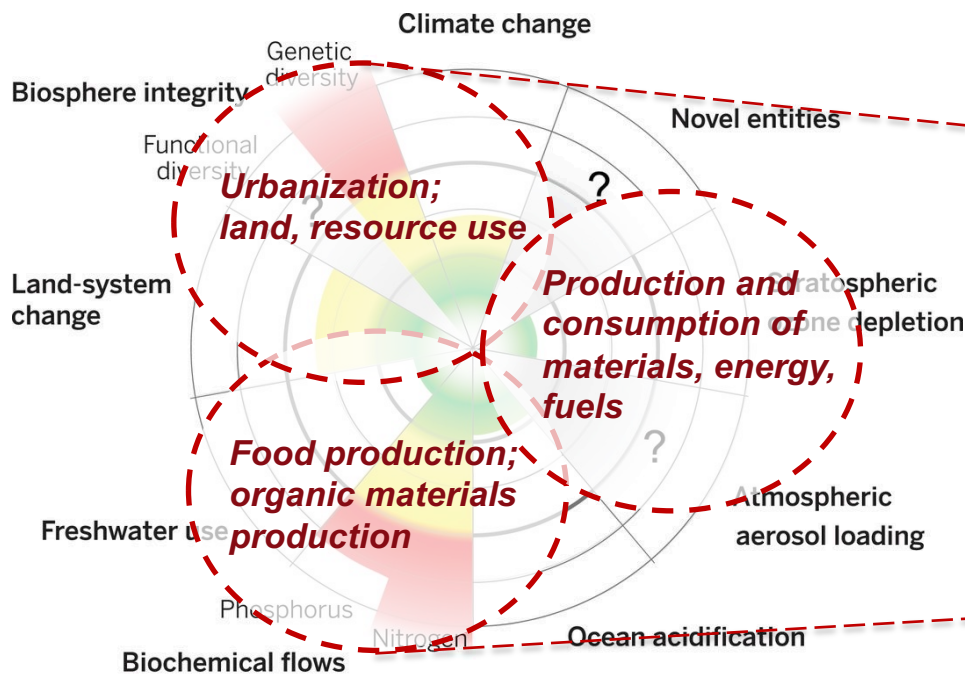
# Context of action – the planetary boundaries and social foundations for sustainability



■ Beyond zone of uncertainty (high risk)     ■ Below boundary (safe)  
■ In zone of uncertainty (increasing risk)     ■ Boundary not yet quantified



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



■ Beyond zone of uncertainty (high risk)     ■ Below boundary (safe)  
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# un THE HAPPY PLANET INDEX 2.0

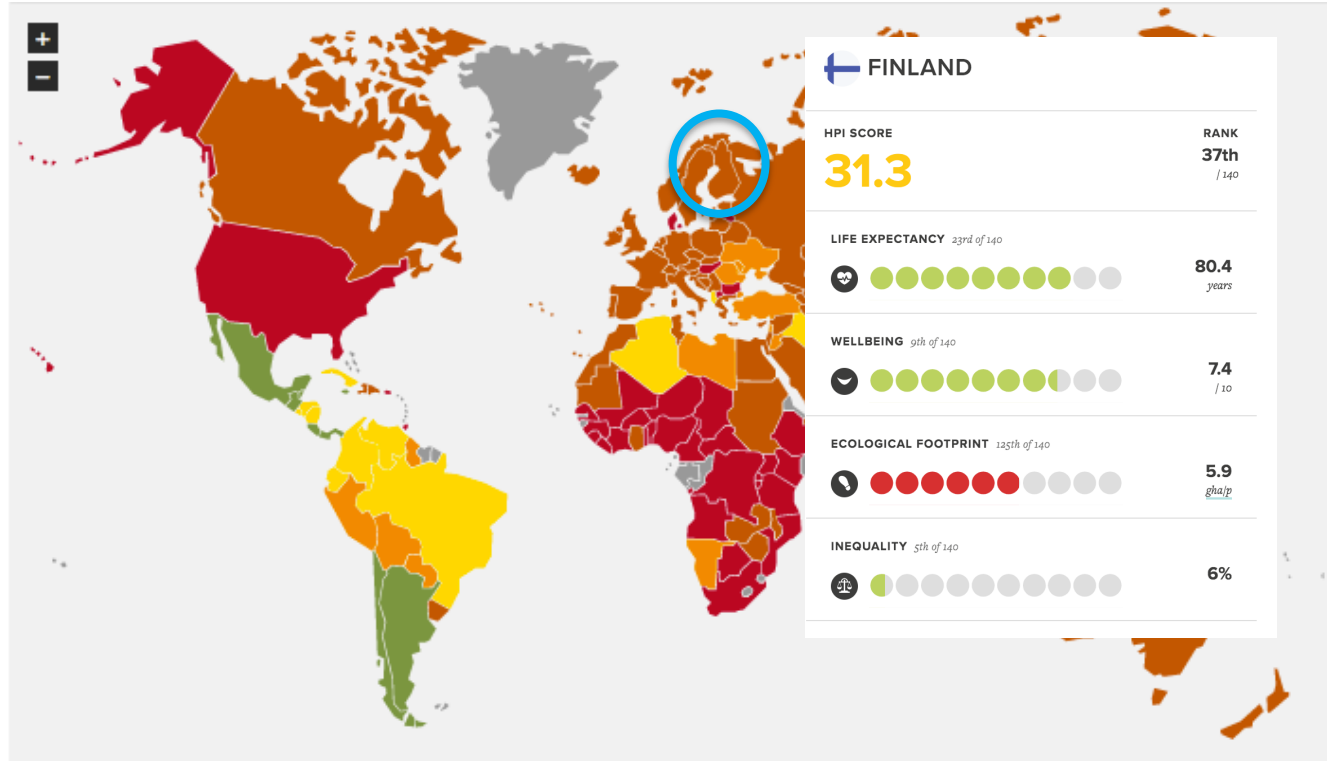
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GO

- GLOBAL HPI >
- LIFE EXPECTANCY >
- LIFE SATISFACTION >
- ECOLOGICAL FOOTPRINT >
- HPI DATA OVER TIME >
- EUROPEAN HPI >



Source: <http://www.happyplanetindex.org/> (picture from before 2019 until which the site was hosted by NEF...)

# Sustainable Development Goals



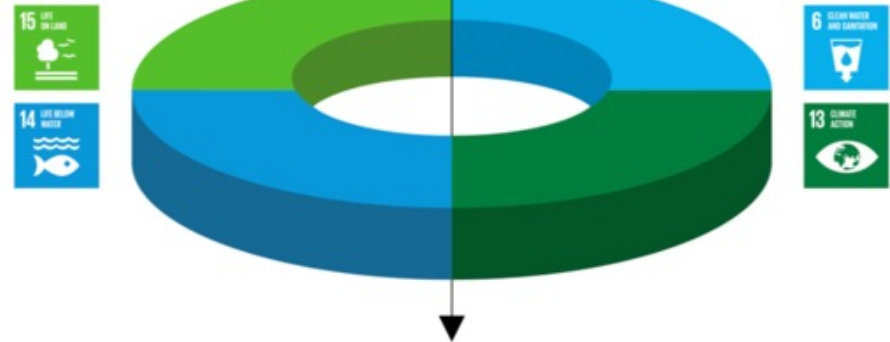
## ECONOMY



## SOCIETY



## BIOSPHERE



The SDG 'wedding cake'. Source: Stockholm Resilience Institute.

# Strategies for Design for Sustainability (DfS)

**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

➤ ***Strategies that link to materials, technologies, infrastructures etc.***

## 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

➤ ***Strategies that focus on socio-technical, socio-cultural, and socio-ecological systems***

➤ **The ‘scope of the design intervention’ axis:**

➤ **The ‘framing the design problem’ axis:**

➤ **Five levels of innovation:**

- The material/component innovation level
- The product innovation level
- The product–service system innovation level
- The spatio-social innovation level
- The socio-technical system innovation level

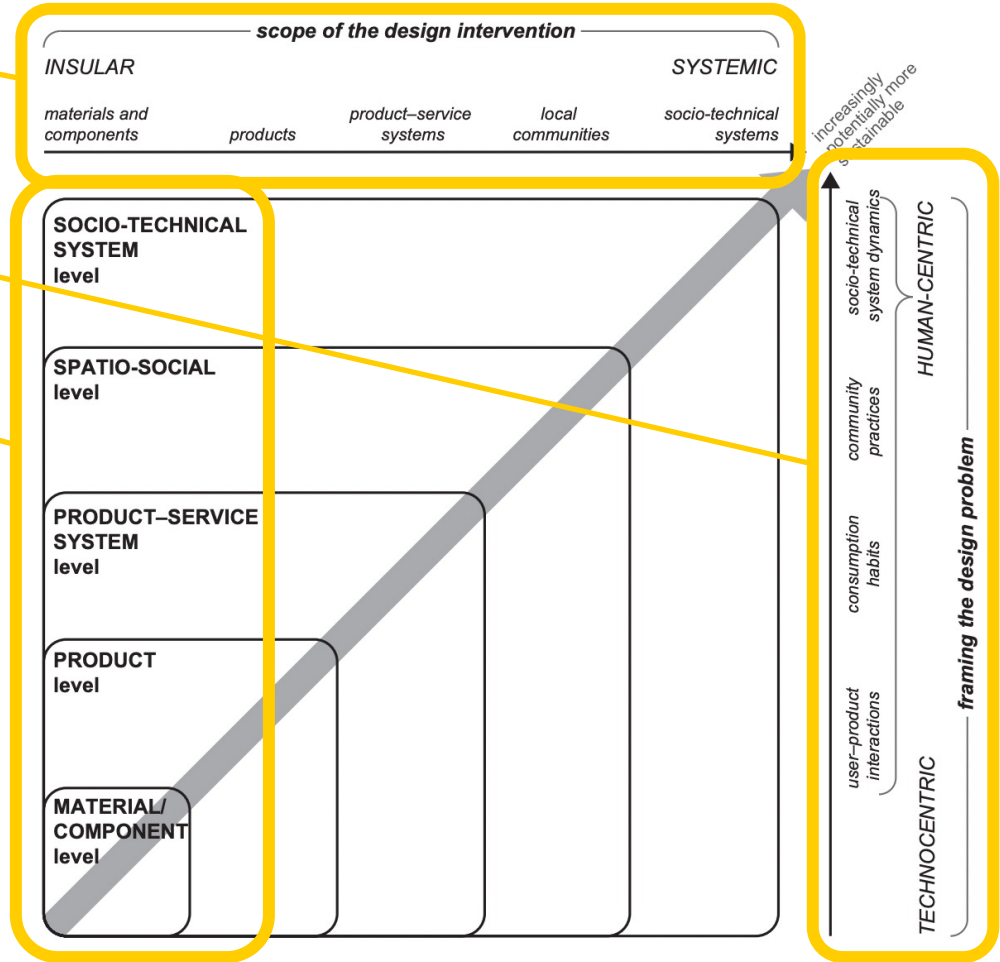
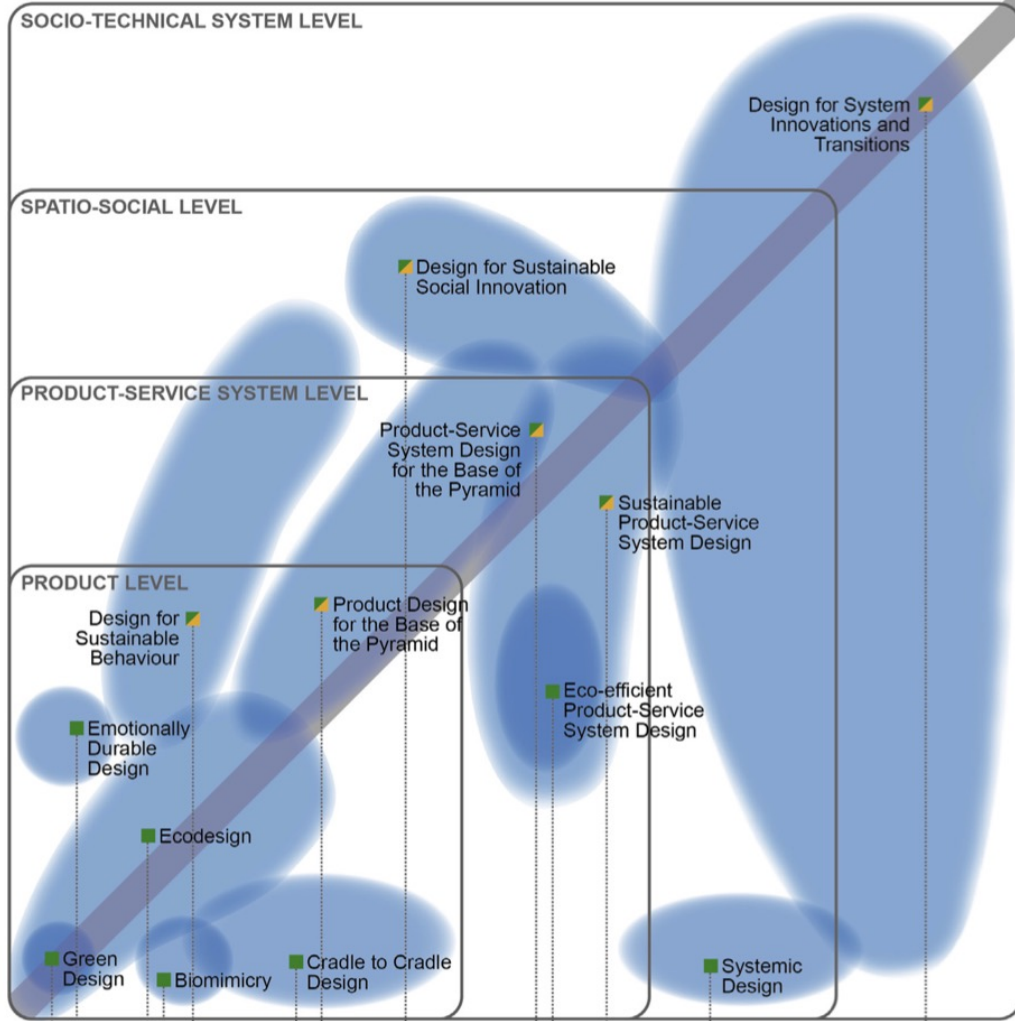


Figure 12.1 The DfS innovation framework

INSULAR

SYSTEMIC

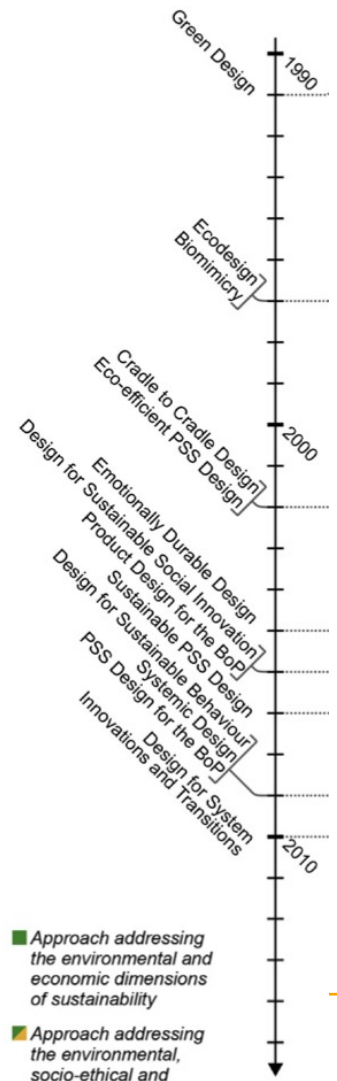
Increasingly  
potentially  
sustainable



TECHNOLOGY

PEOPLE

- Approach addressing the environmental and economic dimensions of sustainability
- ▣ Approach addressing the environmental, socio-ethical and economic dimensions of sustainability

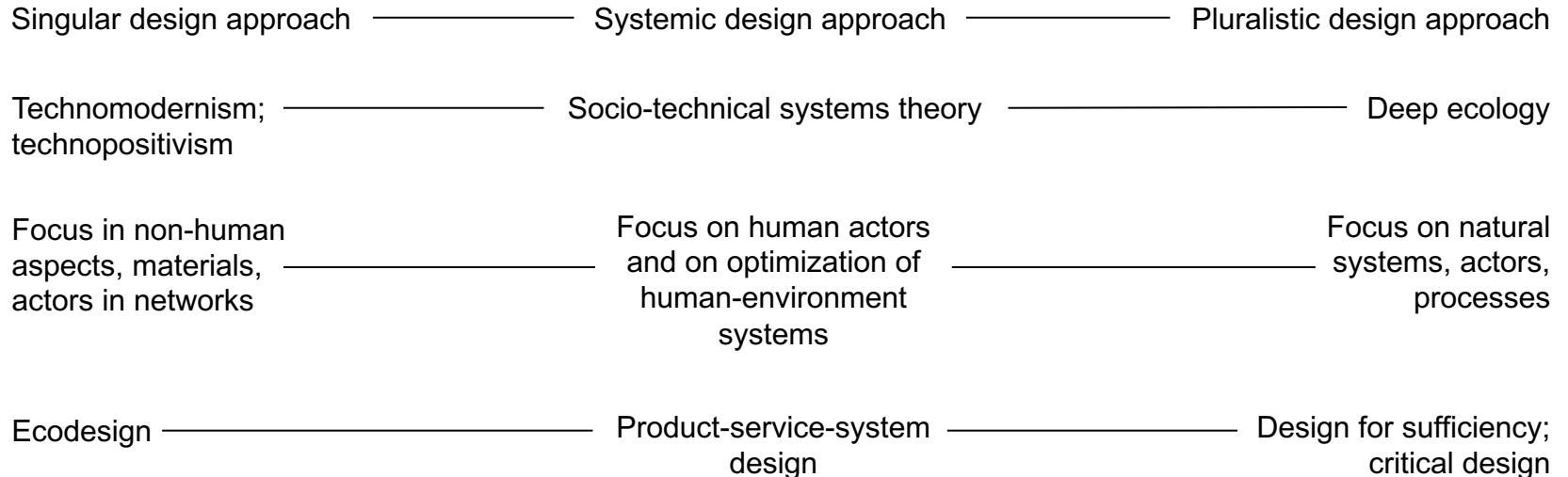


A?



# Different discourses of / approaches to sustainability

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



# Sufficiency – Enoughness

‘Non-market’ and ‘market’ activities:

NON-MARKET

What characterizes non-market activities?

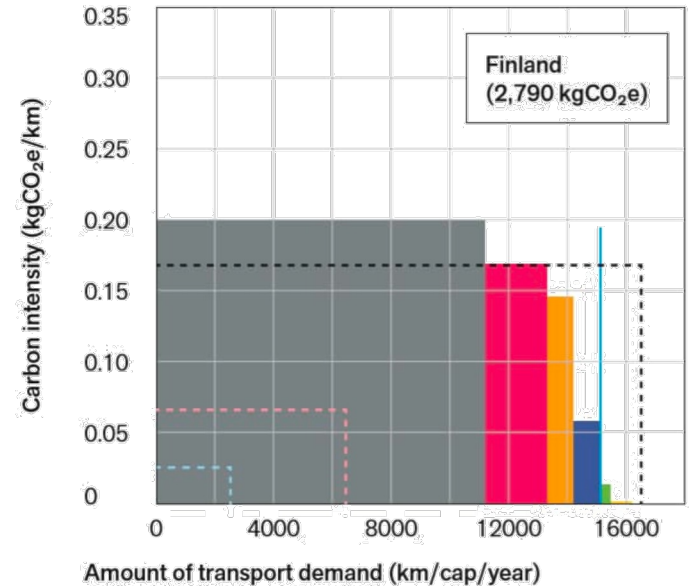
- Gray economy
- No pay
- Housework
- Community, neighbourhood help
- DIY, amateurs
- Fun, joy, meaning
- Family, friends
- Less frequent use of tools

MARKET

What characterizes market activities?

- Competition
- Need to innovate for resource and labour productivity
- Paid work
- Division of labour
- Collection of tax (most) revenue

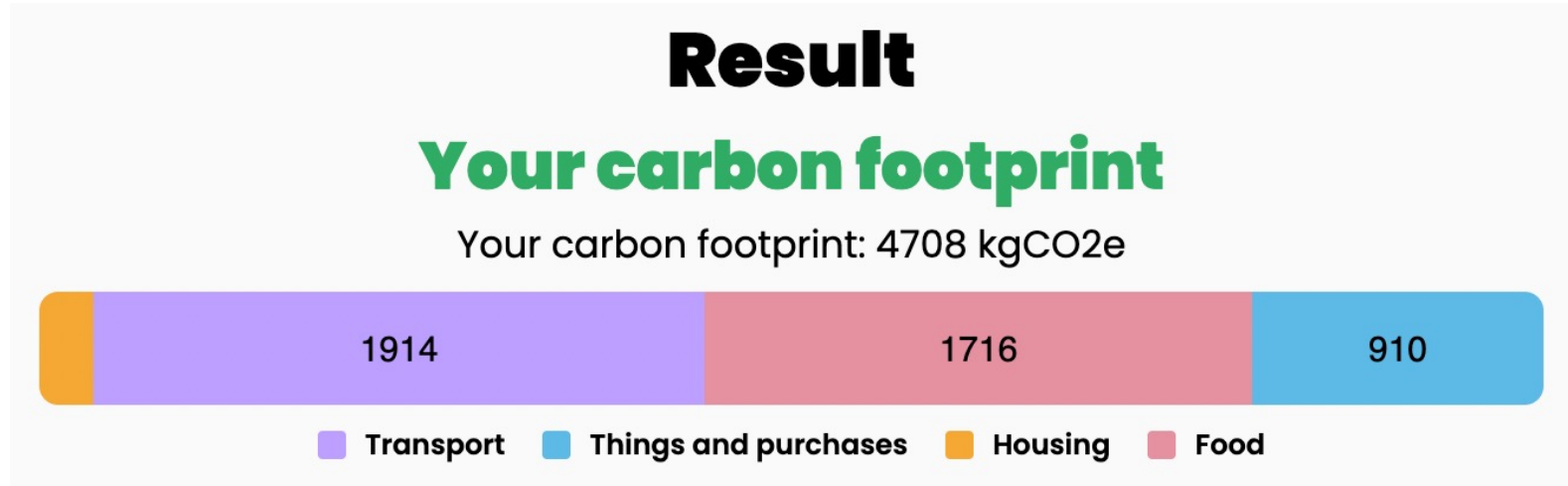
Modal shifts for lower carbon intensity:





# Lifestyle impacts

Sitra's (the Finnish Innovation Fund) lifestyle impact test helps to assess the impacts of one's lifestyle choices, and consider actions: <https://www.sitra.fi/en/projects/lifestyle-test-2/>





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# Discussion

- *How are you perceiving the contents so far?*
- *Anything missing or feels 'off-topic'?*
- *Practical issues?*

# Sustainability in products, systems and transitions



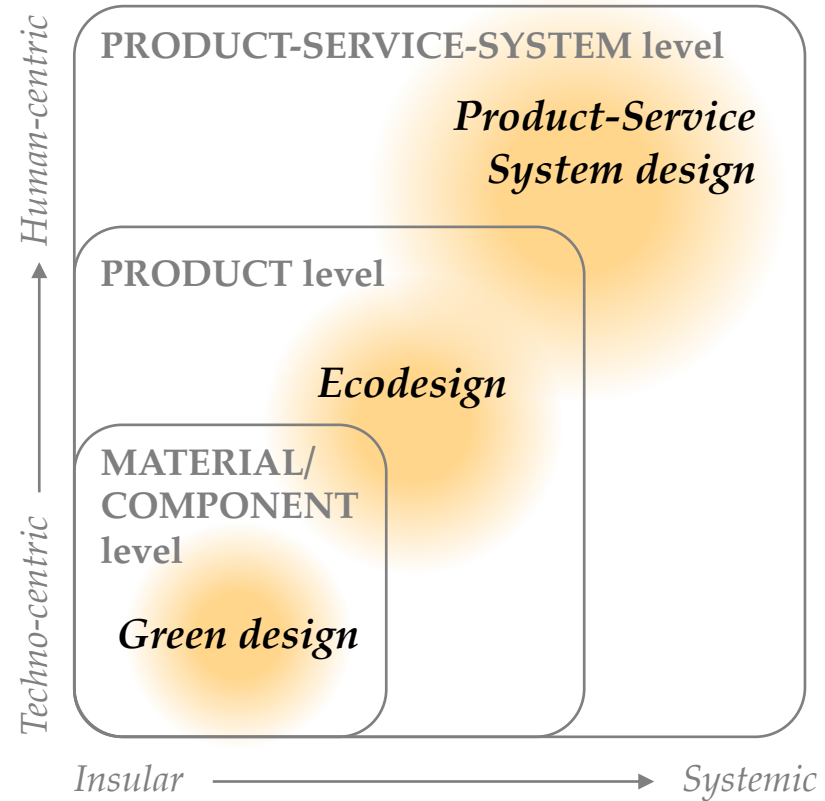
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# Expanding focus of DfS action from products to systems

**Initial DfS efforts** in the early 90's focused on material and/or component redesign ('**Green design**')

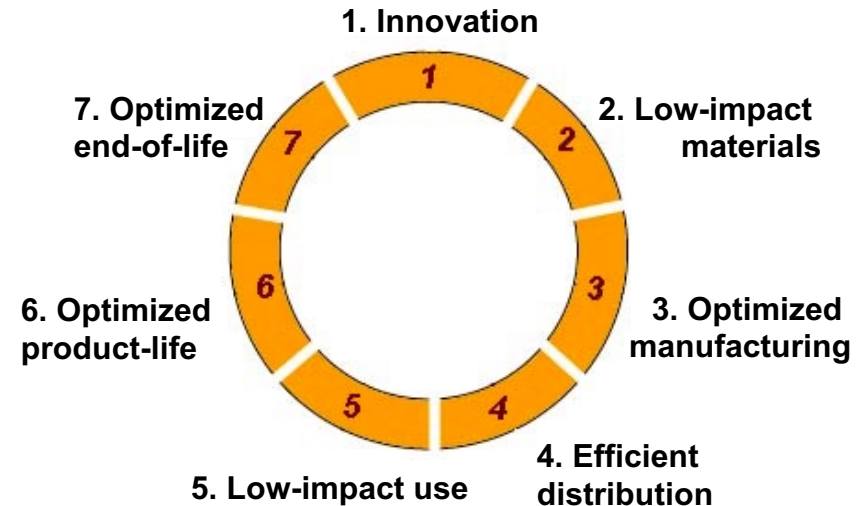
**Ecodesign** moving focus to cover all life-cycle phases of a product, from raw material extraction to end-of-life.

**Product-Service System (PSS) design** continues to expand to systemic direction, moving the focus towards the 'functional' service offering, and systemic efficiency and/or value addition within.



# Green design and ecodesign on product level

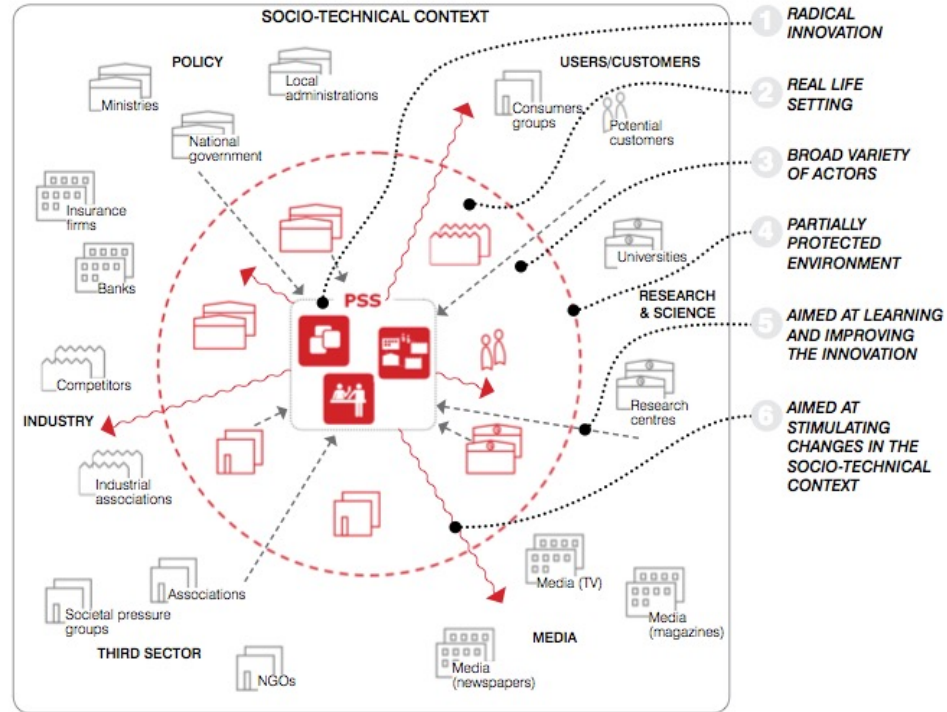
- **Design focus on materials, components, product-level considerations**
- Ecodesign based on life-cycle approach: Design considerations including all life-cycle phases
- Assessing impacts on a product level (e.g. 2kg CO<sub>2</sub>/kg)
- Product- and end-of-life and use-phase scenarios expanding to systems perspective
- Expanding also to sociocultural considerations



Ecodesign strategy wheel by TU Delft

# Towards system efficiency with PSS design

- **Design focus on system efficiency and efficiency per service unit**
- Redesign of stakeholder interactions/dynamics for increased value
- New type of service offerings (expanding to other values than just economic)
- Assessing impacts on a level of a functional service/interaction (e.g. CO2/1km of driving)



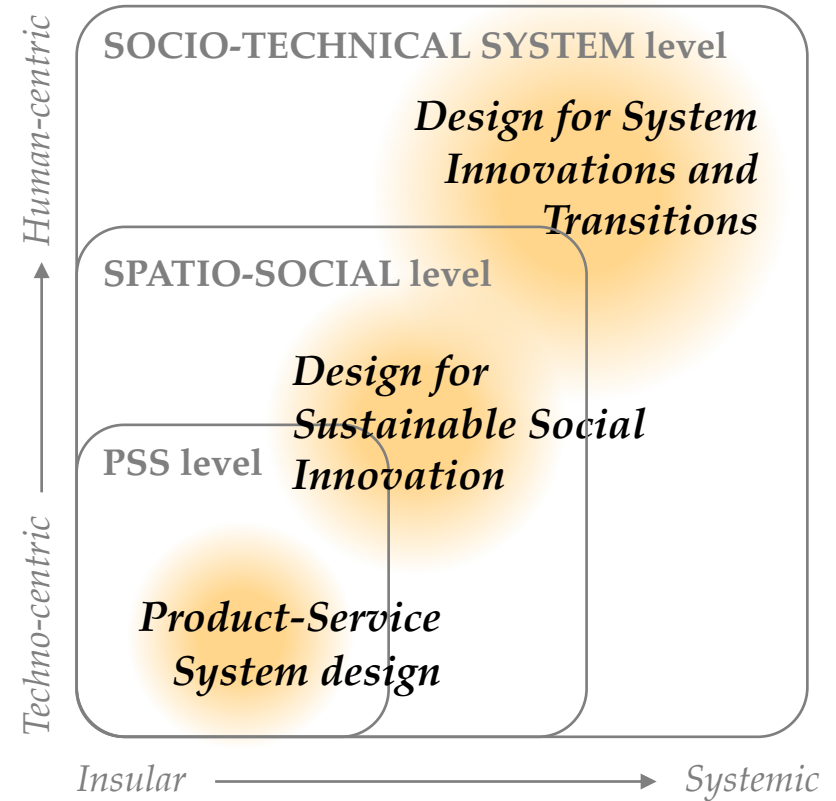
Source: Ceschin (unpublished work)

# Moving focus of DfS to system innovations & societal transformations

**After 2000**, the focus in design action has gradually expanded to cover design for societal change.

## Design for sustainability transitions and systemic change:

- Sustainable PSS, social and system innovation
- Design for sustainability transitions
- Speculative design, critical design



# Social innovation and 'PSS for sufficiency'

- **Design focus on empowering communities in tackling sustainability challenges**
- In developed contexts of Global North, connects often to urban sustainability but also various eco-communities
- 'Eco-acupuncture' as means to propose alternative ways for sustainable life
- Connects also to Global North – Global South discourse; Including approaches aiming for 'bottom of the pyramid'

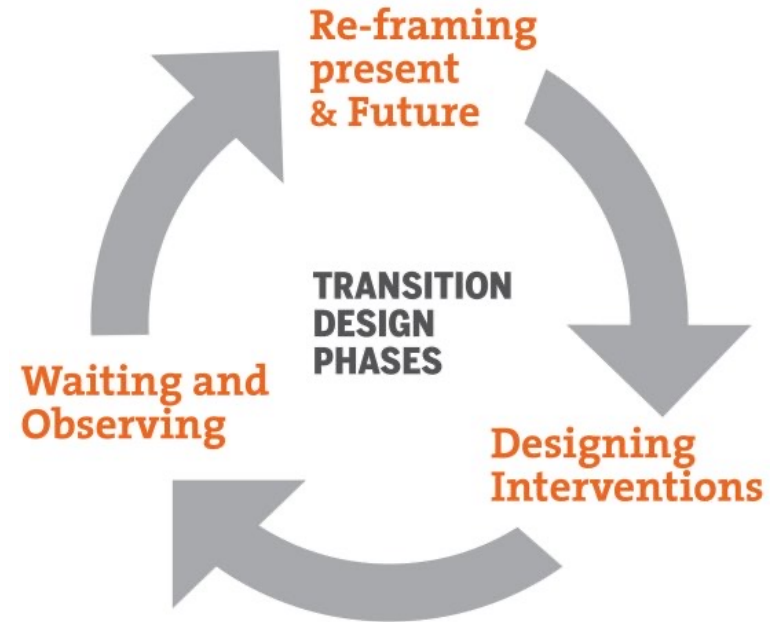


Picture from <https://www.ecoacupuncture.com/>



# Design for Transitions

- **Design focus on strategic considerations of future transitions**
- Connects with urban transitions of various kinds, can be also applied in other contexts
- Transition management framework (Geels 2002) as the basis
- Often includes series of interactions with expert forerunners, local representatives, citizen activists etc.
- Aims in developing future-vision based 'transition agenda' to guide future action



Source: Irwin, 2018

# Speculative, critical, radical design

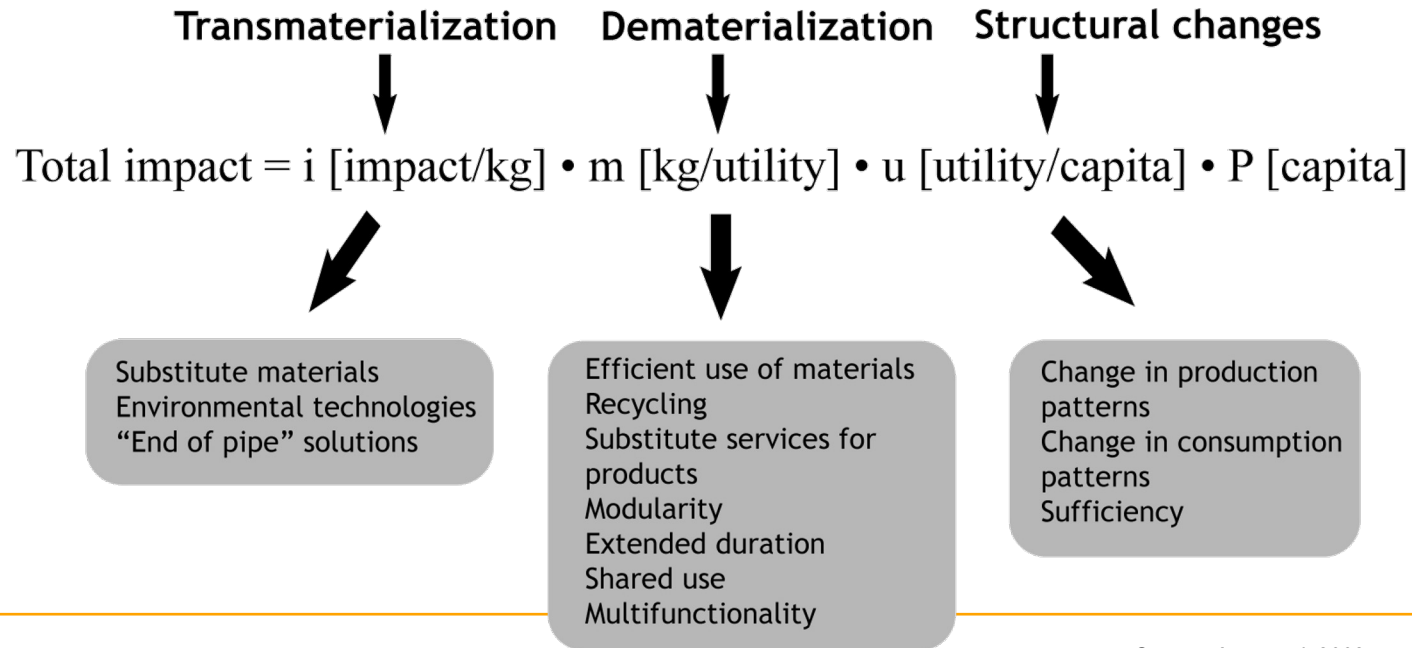
- **Design aiming to make people consider their everyday actions and environment**
- Can be applied on a product-level or system-level, or in relation to behavior, information, and future transitions
- Introducing 'social friction' and alternative perspectives to everyday life and interaction
- Designing for 'the real world' – continuing critical discourse against mass consumption
- A famous example is Adbusters collective:  
<https://www.adbusters.org/>



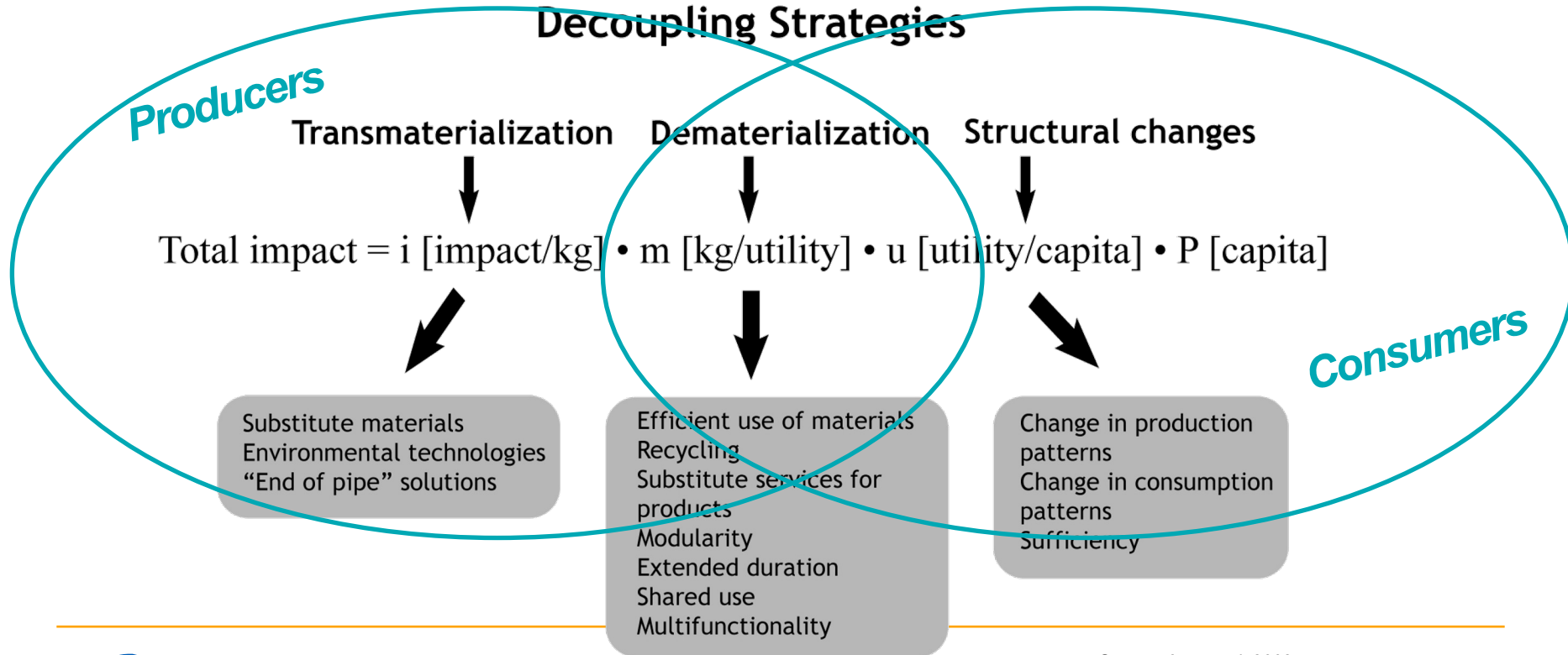
*Merry-Go-Round* by Nuno Pimenta

# Strategies for Sustainable Consumption and Production (SCP)

## Decoupling Strategies



# Strategies for Sustainable Consumption and Production (SCP)



# Sustainable production

**Efficient transformation of natural resources into goods and services**

**Reorganization of supply chains and changing consumption patterns**

**Policies, regulation; Standards and best practice**

***'Eco-efficiency', 'Decoupling'***



# Sustainable consumption

**Reducing consumption, the economy and the scale of environmental flows**

**Countering the capitalist push to consume more**

**Redistributing consumption opportunities globally**

**Consumer guidance & policies**

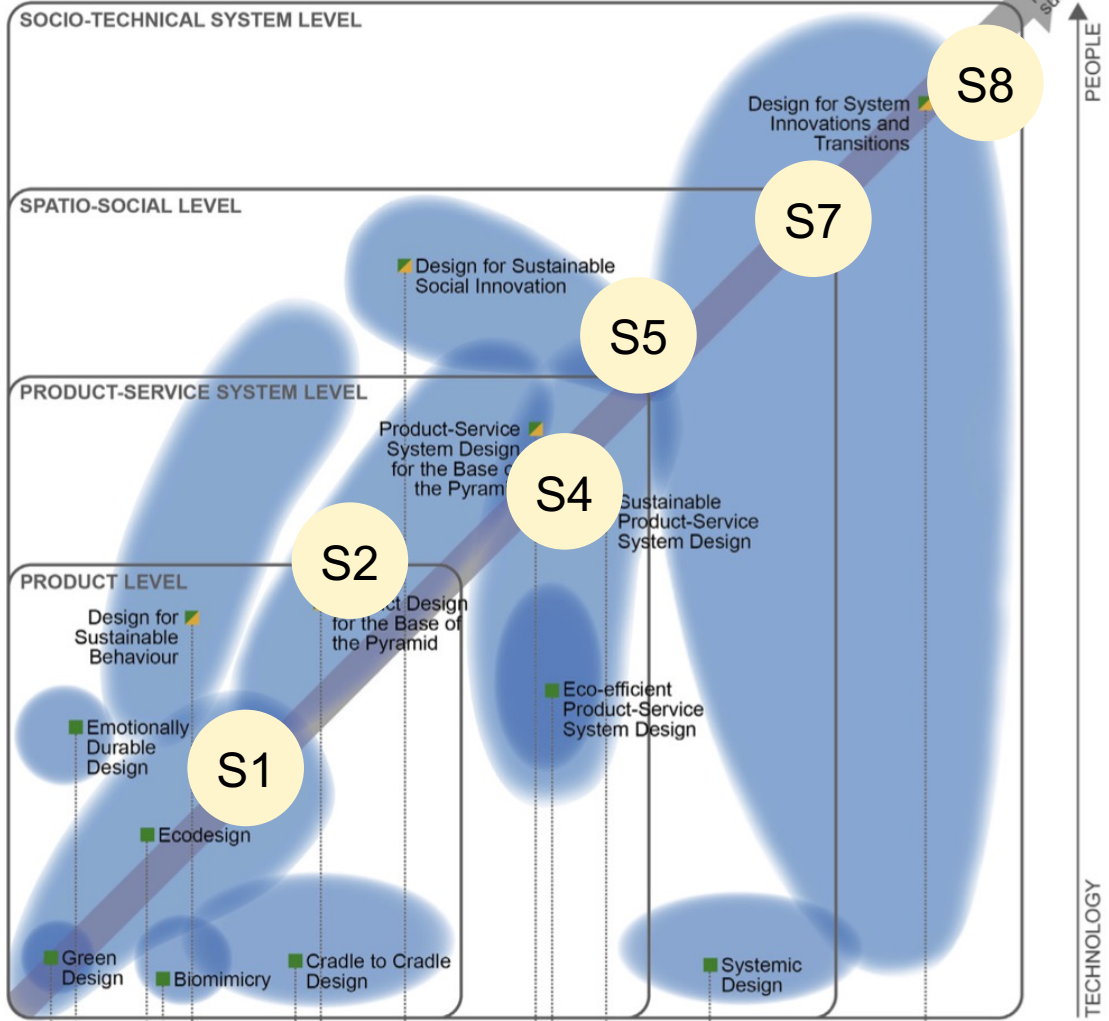
***'Degrowth', 'Scale', 'Abundance', 'Needs'***

INSULAR

SYSTEMIC

Increasingly  
potentially  
sustainable

S9



## 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



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# Example: Design Out Waste

*by The Agency of Design, a multidisciplinary design studio in the UK*

# Design Out Waste -project

- **Design Out Waste** -project in 2013 by a multidisciplinary design studio in the UK
- Focus in home appliances that are medium sized and can easily fit into household carbage bin (such as a toaster), and of which 90% ends up into landfill instead of recycling
- Looking into alternative design possibilities to answer to the challenge of this type of waste issue
- Three approaches and types of redesign: *Optimist*, *Pragmatist*, and *Realist*
- See: <https://agencyofdesign.co.uk/design-out-waste/>



## Optimist:



- Designed to last generations, simplest possible design
- Cast Al from recycled cans; Repairable; Longevity aspects



## Pragmatist:

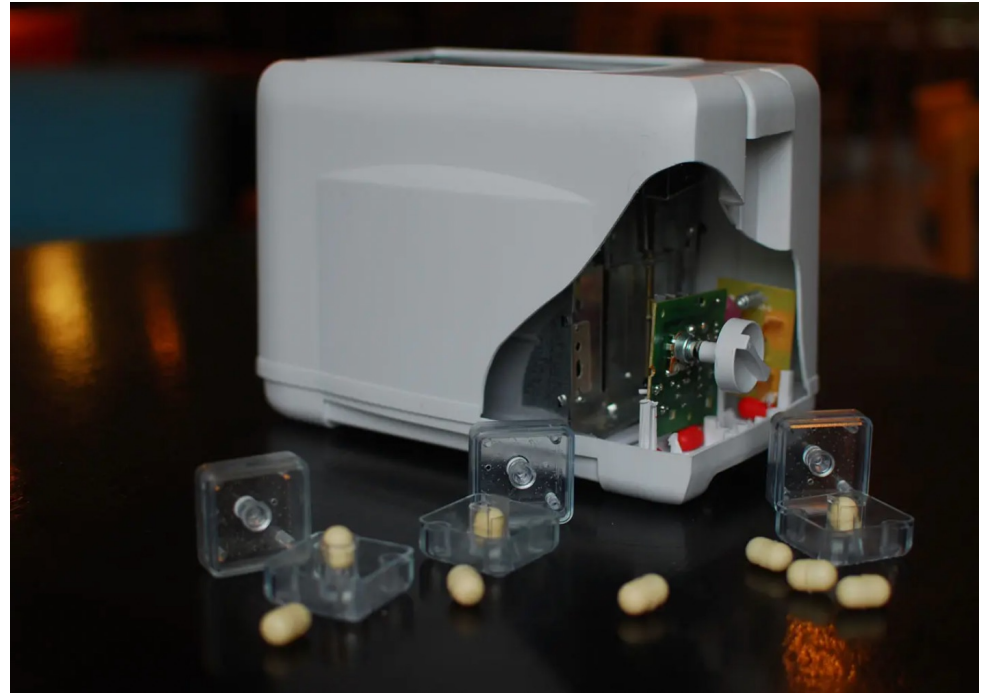


Images copyright: The Agency of Design

- Modular design and a product-service-system scheme
- Separable components and mailing service for repairs



## Realist:



- Simple and cheapest possible innovation for dismantling the product for recycling
- 'Snap fits' for heat-assisted disassembly

## Realist:



- Focus in ecodesign
- Requires only little redesign in production and disassembly
- Collaboration of producers, designers, recyclers
- Transitions towards more sustainable product design

## Pragmatist:



- Focus in PSS design
- Requires redesigned production, PSS, and consumer behavior
- Collaboration of market actors, interest groups and consumers
- Transitions to servicization and circular economy

## Optimist:



- Focus in speculative/critical design
- Requires changes in perceptions of roles of consumer and of the artifact
- Activist/artistic collaboration and crafts
- Transitions to critical sufficiency

# Project work kick-off



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# Project work at the course

# Project work: Conceptual design ideation

- **During the course, you will work in groups to ideate a design concept to utilize learnings from the course**

## Themes of SCP:

1. Food systems and services
2. Mobility systems and services
3. Housing and buildings
4. Textile, clothing, fashion
5. ICT & domestic appliances

## DfS approaches/strategies:

- a. Ecodesign & PSS design
- b. Behavioral communication and information design
- c. Participatory and collaborative design
- d. Strategic and transition design
- e. Speculative, critical, radical design

# Project work – ways of working...

- **Groups have been formed according to primary or secondary preference of theme**
- Groups can reorient their design during work
- Groups work independently: You are responsible of the progress of your work, so keep us teachers informed if there are issues
- You can assign a project leader who takes lead in meetings and in organizing work, or then share this responsibility
- There is a peer-review of your group members at the end of the course!



# Project work process & deliverables

Groups produce design concepts communicated in presentations and a project report.

## Presentation days:

- Idea presentations on Thursday 25.1. (short <10 min pitches with few slides, 15 min slots)
- Final presentations on Tuesday 13.2. (<15 min presentation, 20 min per group including feedback)

## Project report:

- Should revisit your theme and challenge, background research, design ideation, interaction with stakeholders and the development of the final concept
- Can be an expanded version of the final presentation or then a separate document
- More detailed guidelines TBA

# Focus location: Aalto campus

Consider the Aalto campus at the focus site, and begin to think of your focus theme.





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# Project work approaches and themes

# Project work – different DfS approaches

For the project work, you will need to select your preferred DfS approach to tackle your project case...

*Focus DfS approaches for the project work:*

**A**  
Ecodesign &  
PSS design

**B**  
Behavioral  
communication  
and information  
design

**C**  
Participatory  
and collaborative  
design

**D**  
Strategic and  
transition design

**E**  
Speculative,  
critical, radical  
design

# A. Ecodesign & PSS design

## Focus and scope:

- Material, product, product-service system level innovation

## Framing of challenge:

- User-product interactions and consumption habits

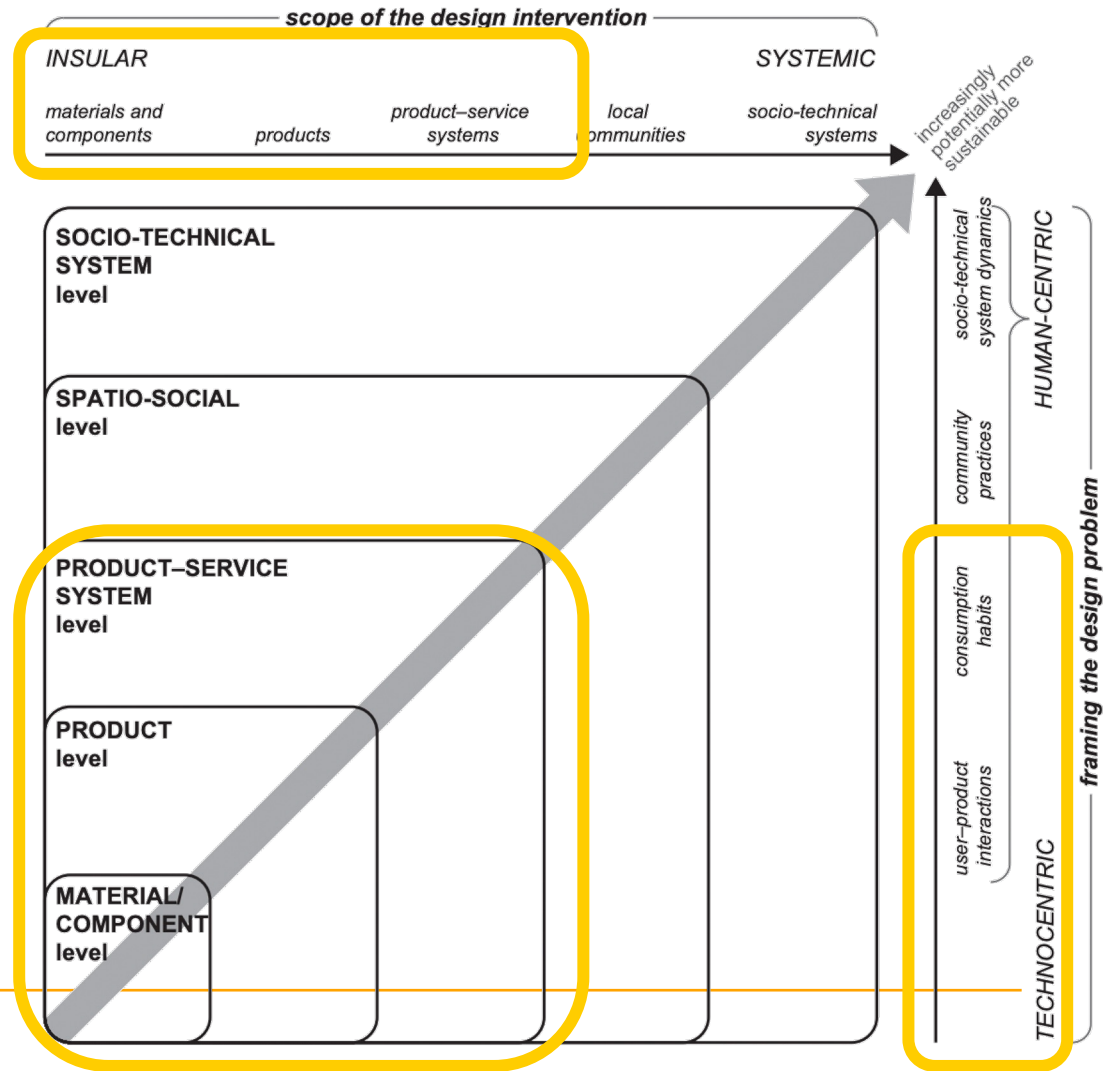


Figure 12.1 The DfS innovation framework

# B. Behavioral communication and information design

## Focus and scope:

- Material, product, product-service system, and community level innovation

## Framing of challenge:

- User-product interactions, consumption habits, community practices

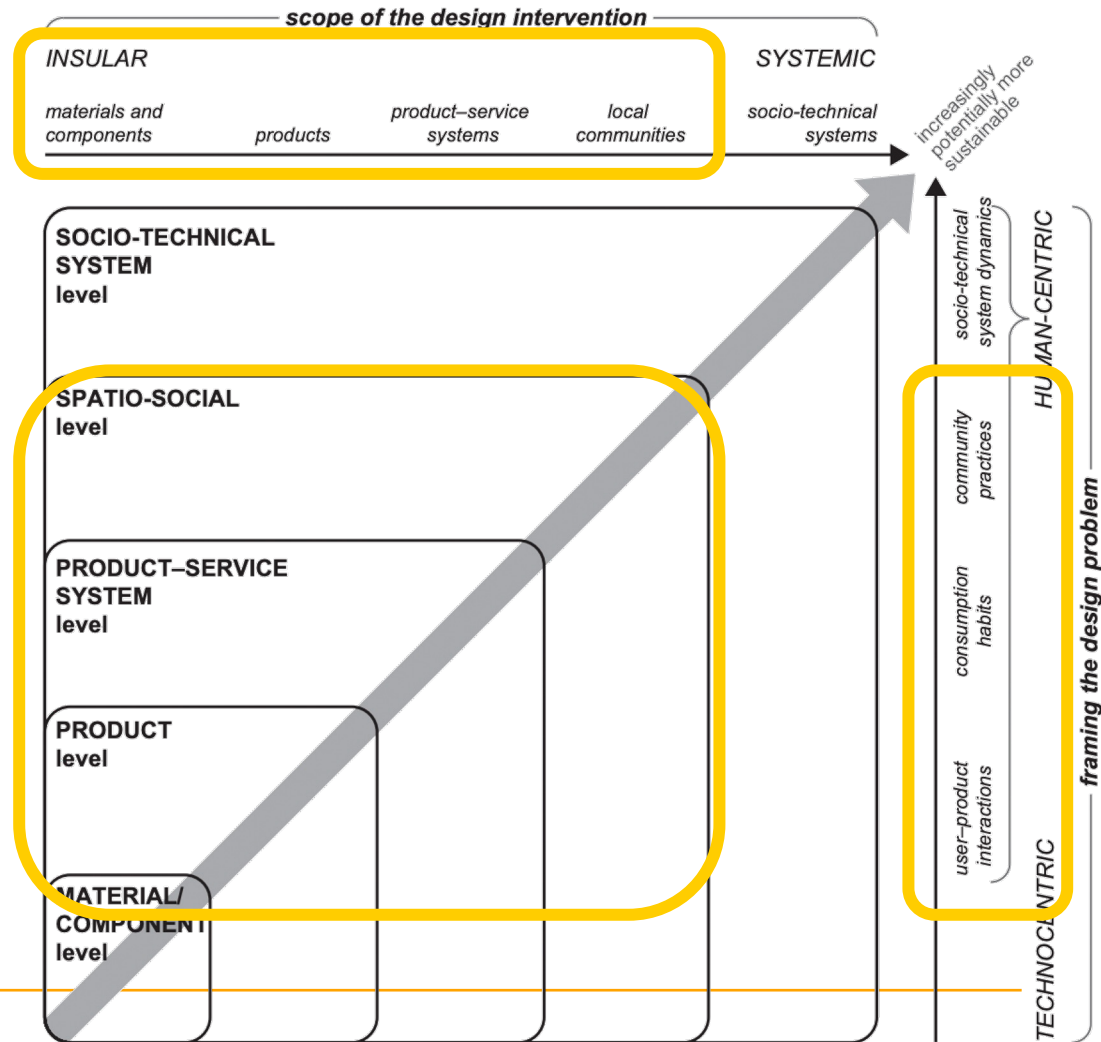


Figure 12.1 The DfS innovation framework

# C. Participatory & collaborative design

## Focus and scope:

- Product, product–service system, and community level innovation

## Framing of challenge:

- Consumption habits, community practices
- Participatory strategies

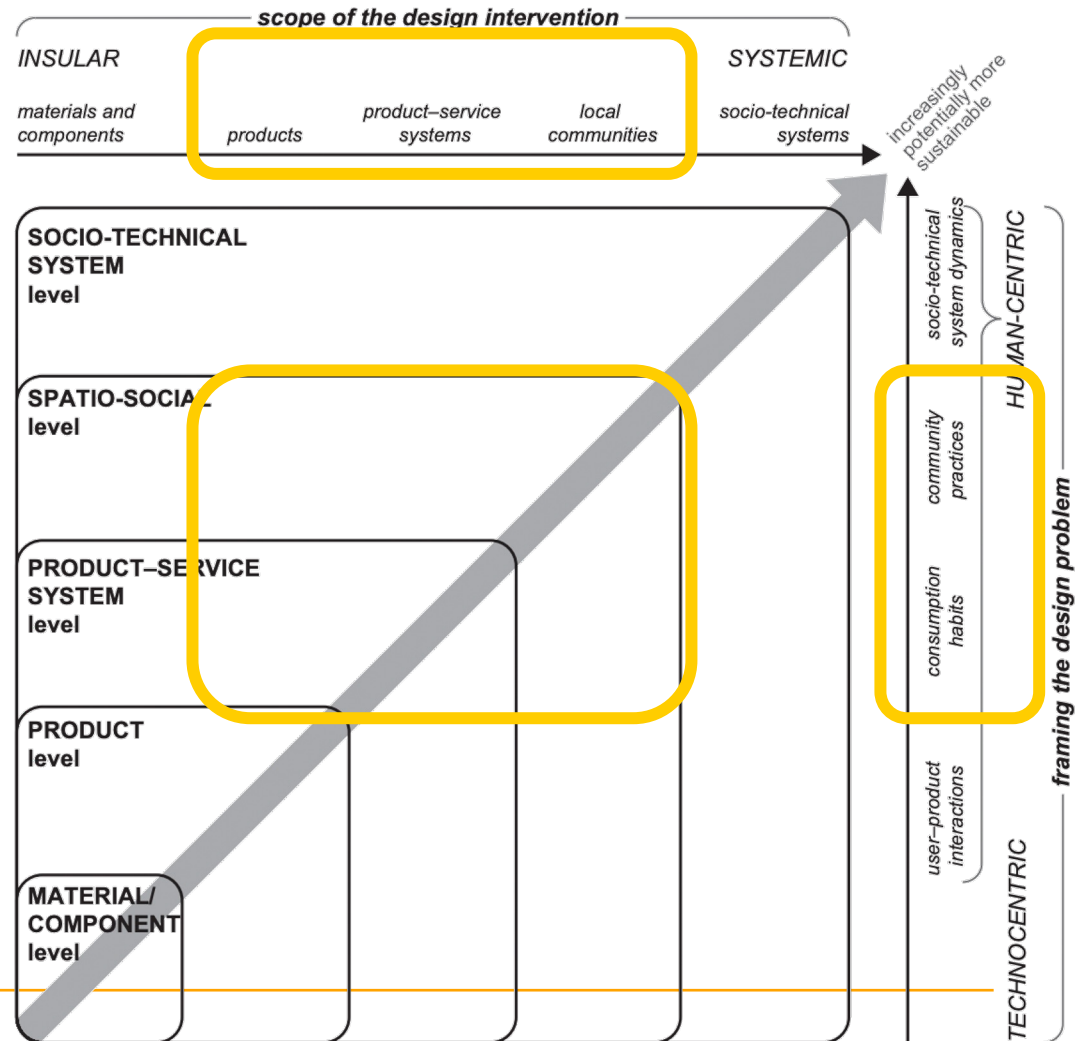


Figure 12.1 The DfS innovation framework



# D. Strategic and transition design

## Focus and scope:

- Product–service system, community and socio-technical system level innovation

## Framing of challenge:

- Consumption habits, community practices, socio-technical system dynamics
- Transition management dynamics

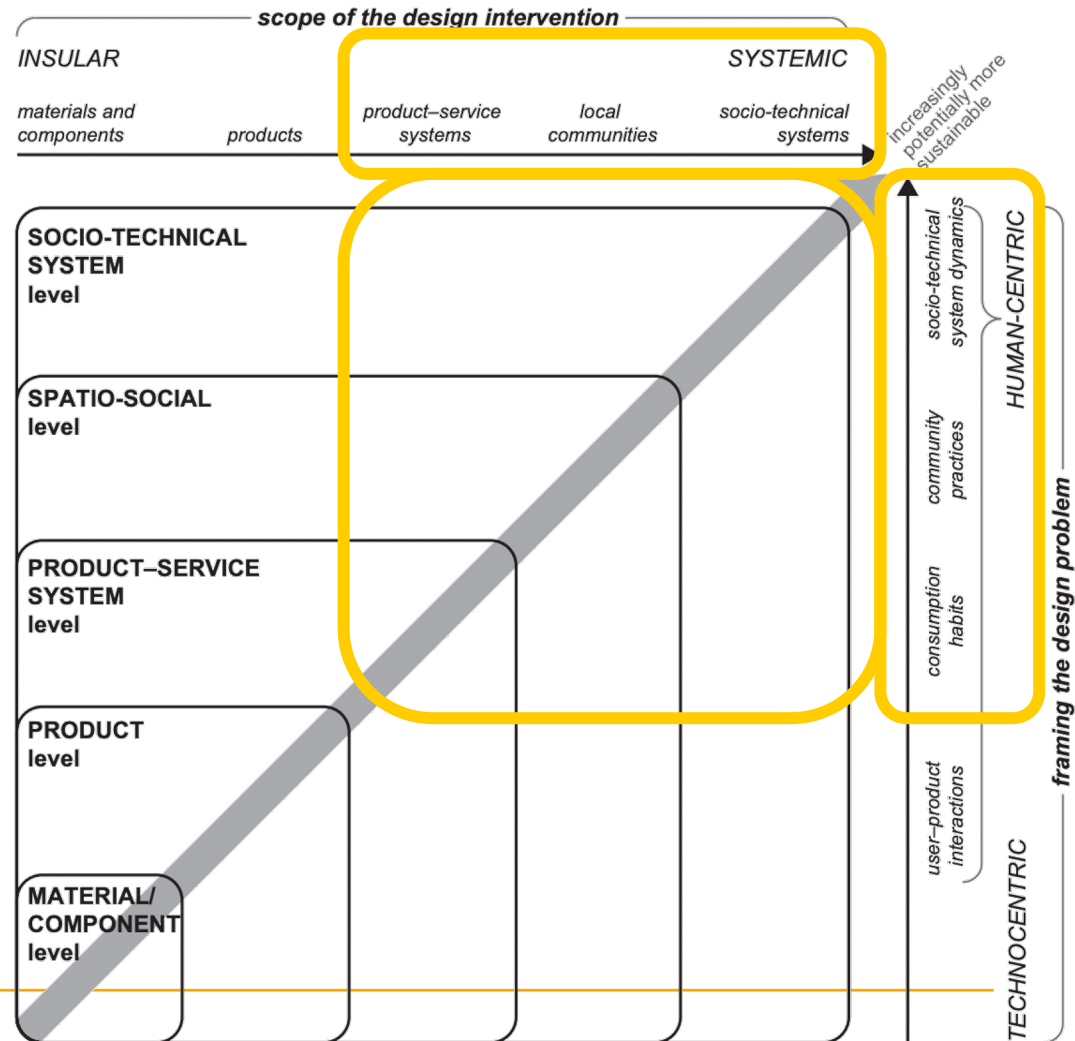


Figure 12.1 The DfS innovation framework

# E. Speculative, critical, radical design

## Focus and scope:

- From products and PSS to socio-technical system level innovation

## Framing of challenge:

- From user-product interactions to socio-technical system dynamics
- Speculative futures/realities
- Critical and radical dynamics

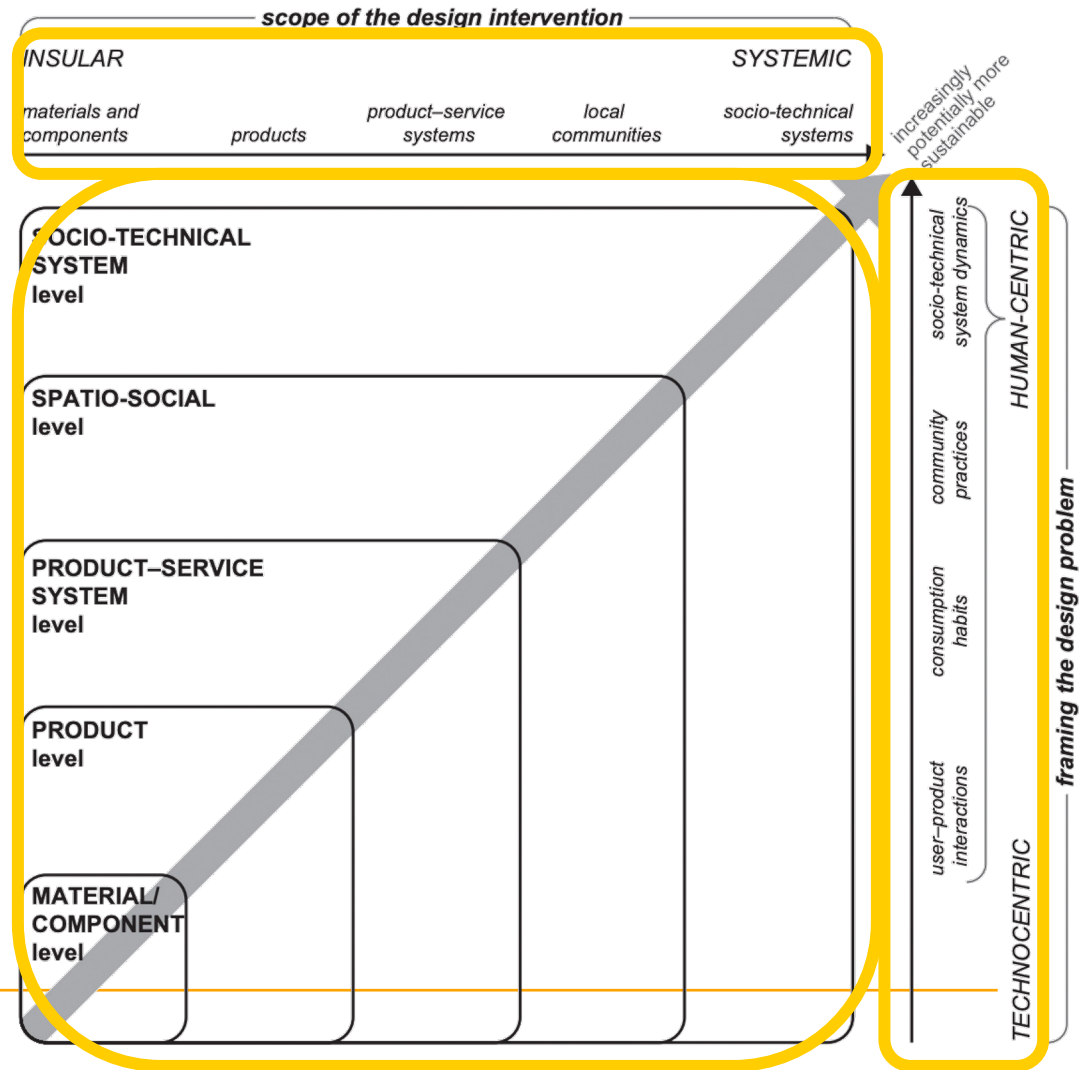


Figure 12.1 The DfS innovation framework

# Project work focus themes – areas of sustainable consumption and production

For the project work, you will also need to select your preferred theme of sustainable consumption and production.

## *Focus themes of sustainable consumption and production:*

Food  
systems and  
services

Mobility  
systems and  
services

Housing and  
buildings

Textile,  
clothing,  
fashion

ICT & domestic  
appliances

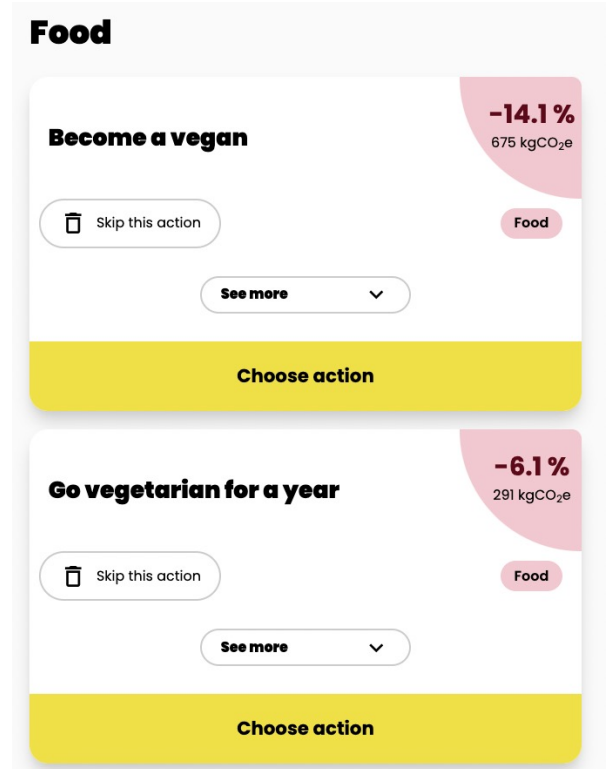
# I. *Food systems and services*

## Thematic focus:

- Systems and services for food production and consumption

## Consider, for example:

- Carbon footprint (inc. logistics) of production and consumption, foodwaste, recycling
- Health aspects, social aspects, ethical aspects
- Community aspects?



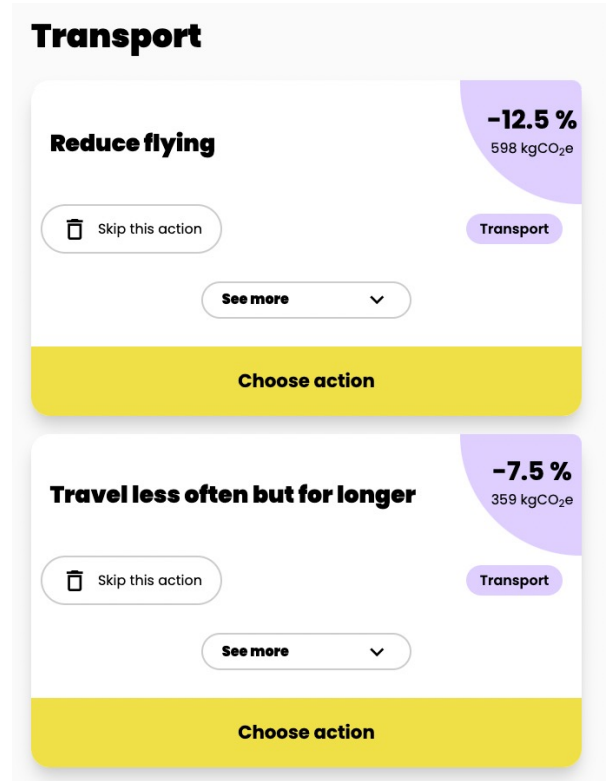
# II. *Mobility systems and services*

## Thematic focus:

- Systems for personal travel and transport and logistics more broadly

## Consider, for example:

- Energy use and carbon footprint (i.e. fuels, electricity), raw material use
- Modal shifts, reduction/efficiency of travel/logistics, accessibility



# III. *Housing and buildings*

## Thematic focus:

- Systems for housing (both short-/long-term) and buildings, also including the related elements of impacts of energy and material use


## Consider, for example:

- Carbon impact of energy use (e.g. heating, electricity), and also the impact of building and renovation
- You may also consider tourism, or interior materials (inc. furniture) and so on...

## Housing

**When you move, move to a smaller home**

**-1.8 %**  
87 kgCO<sub>2</sub>e

 Skip this action


Housing

See more 

Choose action

**Rent a guest room to visitors**

**-1.3 %**  
62 kgCO<sub>2</sub>e

 Skip this action

Housing

See more 

Choose action

# IV. *Textile, clothing, fashion*

## Thematic focus:

- Systems of textile and clothing production, and fashion more broadly, potentially including luxury products


## Consider, for example:

- Environmental impact of production, short product-life and end-of-life, social and ethical aspects
- New types of services and circular solutions, critical approach to throw-away fashion

## Things and purchases

### Care and repair

**-4.7%**  
226 kgCO<sub>2</sub>e

 Skip this action


Things and purchases

See more 

Choose action

### Borrow, rent out and share goods



 Skip this action

Things and purchases

See more 

Choose action



# V. ICT & domestic appliances

## Thematic focus:

- Systems for information and communication technology (ICT) products, also domestic electric appliances


## Consider, for example:

- Energy use of home appliances and ICT, environmental impact of production, raw material use, product-life and end-of-life
- New types of services and circular solutions

## Things and purchases

### Care and repair

-4.7 %  
226 kgCO<sub>2</sub>e

 Skip this action


Things and purchases

See more 

Choose action

### Invest in sustainable solutions



 Skip this action

Things and purchases

See more 

Choose action



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# Project work groups

# Project work: Meet your group

- **Meet your group according to listing on next slide**
- Spend ~30 minutes to get introduced and to discuss of your thematic SCP challenge and thoughts of your preferred DfS approaches
- Get introduced and explain your background and a bit of expectations
- Exchange contacts and discuss responsibilities (if some members are absent, contact them by email)
- Discuss of your overall theme, and think of the related materials, products, product-systems, involved practices of consumption and production, and the potential changes towards sustainability

## Groups for the project work:

<p><b>Group 1:</b> <b>Food systems + Ecodesign &amp; PSS</b></p> <ol style="list-style-type: none"> <li>1. Miina Heikkinen</li> <li>2. Trine Leisso</li> <li>3. Minerva Laitinen</li> <li>4. Aqib Javed</li> <li>5. Petra Salkoviiri</li> <li>6. Nina Sirén</li> </ol>	<p><b>Group 2:</b> <b>Food systems + Strategic/transitions</b></p> <ol style="list-style-type: none"> <li>1. Veera Parkkonen</li> <li>2. Devayani Mohanraj</li> <li>3. Ni Luh Nyoman Shita Sekar Padmi</li> <li>4. Jimin Hong</li> <li>5. Salla Kyyrö</li> <li>6. Eeli Haapala</li> </ol>	<p><b>Group 3:</b> <b>Food systems + Speculative/strategic</b></p> <ol style="list-style-type: none"> <li>1. Vilma Ylösjoki</li> <li>2. Elli Törnqvist</li> <li>3. Manuel Díaz Tufinio</li> <li>4. Valeria Escobar Molina</li> <li>5. Dinah Ellen Coops</li> <li>6. Freja Schalin</li> </ol>	<p><b>Group 4:</b> <b>Mobility systems + Strategic/transitions</b></p> <ol style="list-style-type: none"> <li>1. Beste Polatkal</li> <li>2. Tianyi Yu</li> <li>3. Sari Kukkasniemi</li> <li>4. Roosa Laakso</li> <li>5. Sonja Mäkelä</li> <li>6. Ilmari Olavi Hieta</li> </ol>	<p><b>Group 5:</b> <b>Mobility systems + Participatory/strategic</b></p> <ol style="list-style-type: none"> <li>1. Nathan Pottier</li> <li>2. Laura Pohto</li> <li>3. Chin-Ying Chu</li> <li>4. Leevi Kangas</li> <li>5. Regina Kazanjian</li> <li>6. Siiri Aaltola</li> </ol>
<p><b>Group 6:</b> <b>Housing &amp; buildings + Ecodesign/strategic</b></p> <ol style="list-style-type: none"> <li>1. Sandra Sonneborn</li> <li>2. Yury Tupikin</li> <li>3. Lien Pham</li> <li>4. Anna Farrell</li> <li>5. Sofia Pascolo</li> <li>6. Jenni Lehtinen</li> </ol>	<p><b>Group 7:</b> <b>Housing &amp; buildings + Ecodesign/speculative</b></p> <ol style="list-style-type: none"> <li>1. Dumindu Fernando</li> <li>2. Kamilla Gramer</li> <li>3. Tuomas Laakkonen</li> <li>4. Niilo Tenkanen</li> <li>5. Jason Selvarajan</li> <li>6. Dorotyya Füleki</li> </ol>	<p><b>Group 8:</b> <b>Housing &amp; buildings + Participatory &amp; collab.</b></p> <ol style="list-style-type: none"> <li>1. Jaana Pippola</li> <li>2. Callisté Mastrandréas</li> <li>3. Mayu Matsuyama</li> <li>4. Meri-Tuuli Moilanen</li> <li>5. Annette Asplund</li> <li>6. Skye Van Thanh Pham</li> </ol>	<p><b>Group 9:</b> <b>Textile &amp; fashion + Ecodesign &amp; PSS</b></p> <ol style="list-style-type: none"> <li>1. Thekla Weißkopf</li> <li>2. Jan Kulhánek</li> <li>3. Monika Kokko</li> <li>4. Tiia Kiuru</li> <li>5. Saara Luukkainen</li> <li>6. Shuyi Liu</li> <li>7. Ada Tola</li> </ol>	<p><b>Group 10:</b> <b>ICT &amp; appliances + Strategic/transitions</b></p> <ol style="list-style-type: none"> <li>1. Md Asadur Rahman Khan</li> <li>2. Jeanne Lallemand</li> <li>3. Martina Maci</li> <li>4. Ronja Chydenius</li> <li>5. Atte Kuparinen</li> <li>6. Topias Elg</li> </ol>

- In case you did not define your preferences, select groups that have max. 6 students...
- Changing groups is possible, but aim to max. 6 per group

# Next session & tasks



Aalto University  
School of Arts, Design  
and Architecture

# Course and project work schedule

*Please note the change in location for several sessions to A-Grid Mordor!*

Working days	Tuesdays (13-17)	Thursdays (9:15-12)
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.)	<b>Project work: Kick-off</b> (A-Grid Mordor)	Sustainable PSS design & systems design (Q201)
Week 3 (23.1. & 25.1.)	Socio-technical experimentation & social innovation (F101)	<b>Presenting case work ideas</b> (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)	<b>Project work tutoring &amp; finalisation</b> (Q101)
Week 6 (13.2. & 15.2.)	<b>Project work: Final presentations</b> (F101)	Feedback session (A-Grid Mordor)

# Next steps in project work

- **Consider your focus theme of sustainable consumption and production, and the possible focuses within life around campus premises**
- Begin by site assessment and by considering potential areas of intervention for your theme: Consider your overall theme, and think of the related materials, products, product-systems, involved practices of consumption and production, and the potential changes towards sustainability
- Begin initial ideation and brainstorming for your design concept idea...
- Project work continues on this Thursday!
- Idea presentations on next week Thursday (25.1.)!



# This week sessions: Topics & readings

**Tuesday (16.1.):**

**Project work: Kick-off**

**Task to do before lecture:**

- Use the survey link (on previous slide) to select your preferred theme of sustainable consumption and production, and your preferred DfS approach

***Remember to begin to reflect on weekly topics and progress in your learning diary!***

**Thursday (18.1.):**

**Sustainable PSS design & systems design**

**Lecture reading:**

- Ceschin & Gaziulusoy (2020) Design for Sustainability, Chapter 7: Product-service system design for sustainability (in MyCourses)
- Supplementary reading (if you feel like it): Chapter 10: Systemic design; Joore & Brezet (2014) Multilevel perspective in design (in MyCourses)

# Thank you!