



## **Innovation patterns for sustainability – Insights from a European Foresight Project on the Future of Innovation**

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# Research Question of the INFU Project:

## How will innovation be organised in the future?

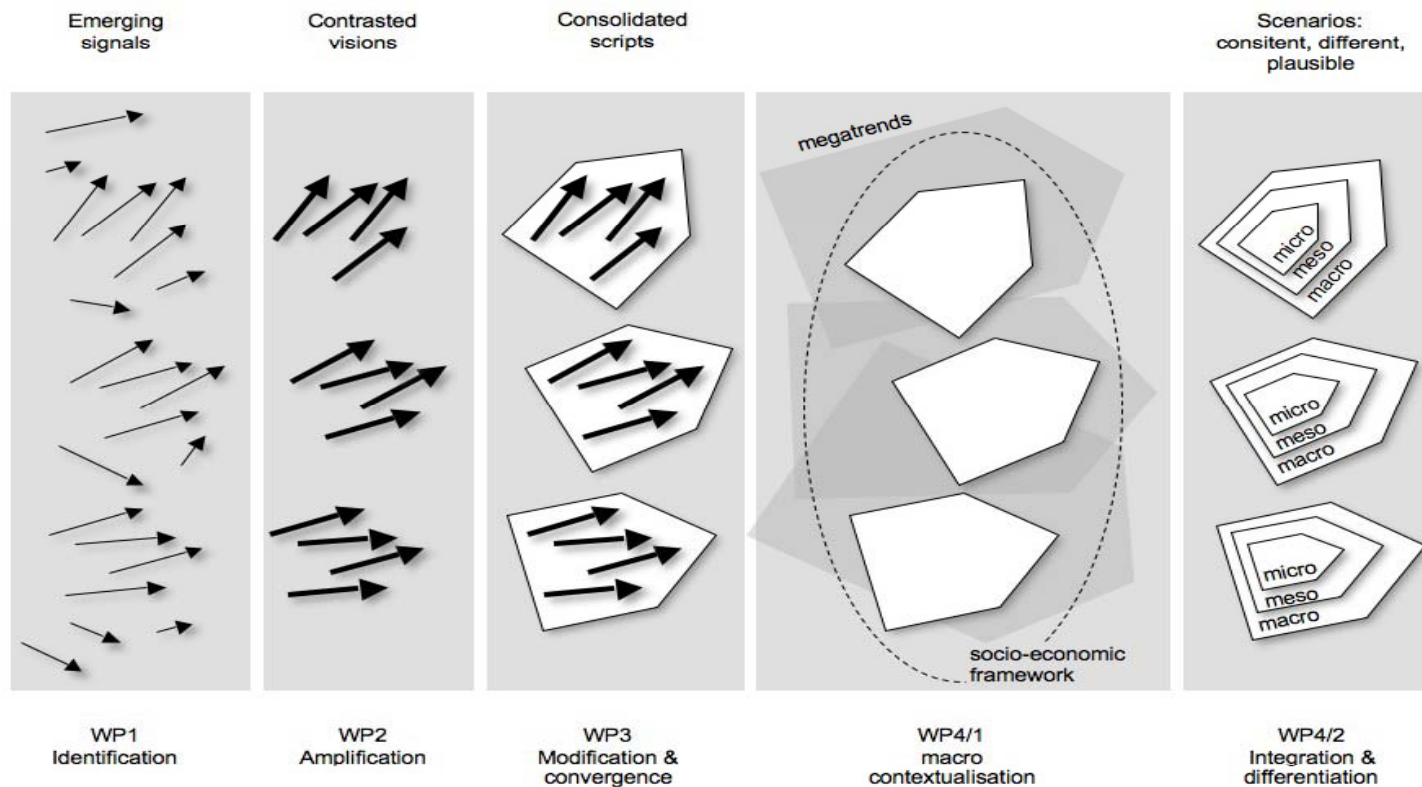
- We are interested in the question how the process of the creation, development and introduction of innovation is changing, i.e. we are dealing with “innovation patterns” or new forms of innovation ...
- There is little systematic exploration of new innovation models and visions and their implications for the innovation landscape, economy, society, and environment.
- Many experts argue that new forms of open and participatory innovation are positively associated with sustainability.
- With “new innovation patterns” we mean novel emerging concepts, ideas and strategies how innovation is organised but also well-known trends, which are of importance in specific industries or areas but may have a larger impact or potential for other areas in the future.

# INFU Methodology: From Weak Signals to Scenarios

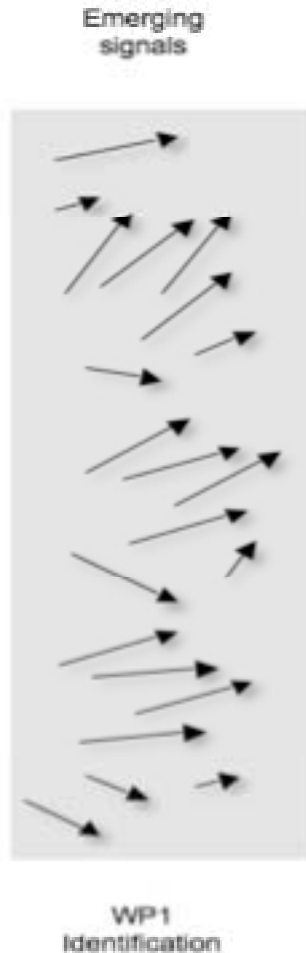
Oct 2009

Nov 2010

Jan 2012



# New Innovation patterns

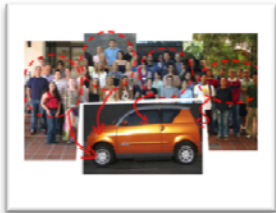


## Academic literature

- Open Innovation (Chesbrough)
- User Innovation (von Hippel)
- Crowdsourcing (Howe, Brabham)
- Personal Fabrication (Gershenfeld)
- Soft Innovation and Design Innovation (Stoneman, Verganti)
- ...

## Scanning of weak signals

- Innovation Culture of the Tata Group
- Fully Sponsored Innovation Camp for Young People
- Idea Contest “Save our Energy – The energy efficient city 2020”
- US-\$ million Reward in Open Innovation Competition
- Venlo – A Whole Town Adopts the Principle of “Waste is Food”
- From Closed Innovation to Top-Secret Innovation
- Putting the NO to InNOvation
- ....



### 1\_Open Source Society...

What if open source development becomes an all encompassing innovation pattern?



### 2\_Virtual-Only Innovation...

What if many innovations would be enjoyed only virtually?



### 3\_Negotio-Vation...

What if innovation becomes publicly negotiated?



### 4\_Innovation on request...

What if companies generate innovations from user communities?



### 5\_Public Experimentation...

What if experimentation would be at the core of innovation?



### 6\_No-innovation...

What if innovation fatigue takes over and No-Innovation is en-vogue?



### 7\_Innocamps...

What if people innovate together in proper places?



### 8\_90% Innovation...

What if innovation is directed at population living in poverty?



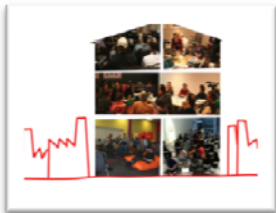
### 9\_CIY Create It Yourself...

What if people produce products themselves in fabrication laboratories ?



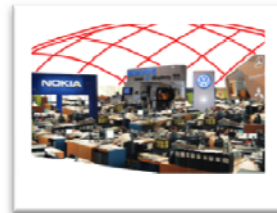
### 10\_Innovation Imperative...

What if the emphasis on innovation spreads to all workplaces?



### 11\_Innovation Marketplace...

What if companies externalise innovation to an open innovation marketplace?



### 12\_Innovation Campus...

What if companies would collaborate in joint innovation places?



### 13\_Darwin's Innovation...

What if companies use digital systems to randomly create and test innovation?



### 14\_Web-Extracted Innovation...

What if we scan the internet for ideas and automatically pick the best ones?



### 15\_Innovation meets Education...

What if innovation skills would be on the education agenda of kindergarden?



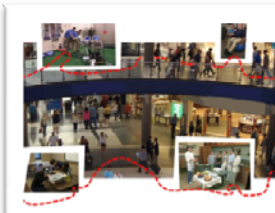
### 16\_Relocated Innovation...

What if the bulk of innovation were to come from today's emerging markets?



### 17\_Waste-based Innovation...

What if the principle of "Waste ed" / "cradle to cradle" would be adopted?



### 18\_Laboratory Stores...

What if stores were to become laboratories where companies and customers co-develop innovations?



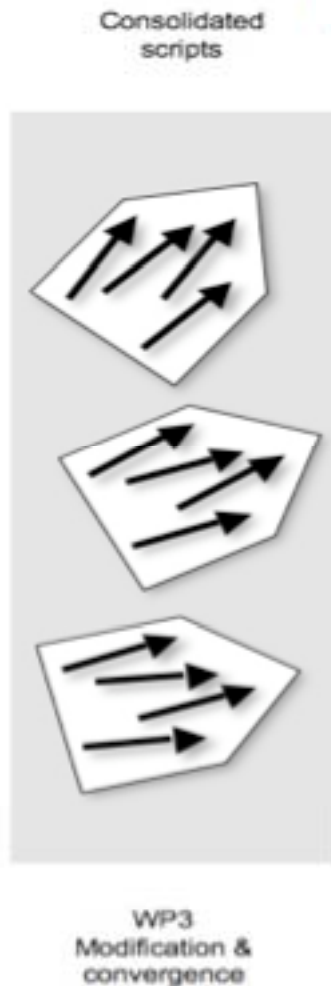
### 19\_City driven Innovation...

What if cities became stronger actors in the field of innovation?

Source:  
Jegou et al. (2010)

SLIDE 5

# From Innovation Visions to Consolidated Visions



- Evaluation of 19 visions in an online survey (60 participants) according to clarity, newness, impact, desirability, likelihood
- Discussed in detail with 20 experts from industry & academia

Clustering & Selection

**Outcome: 9 consolidated visions were created. These visions (vision-clusters) were elaborated in Mini-Panels by self-organised expert groups organised across Europe involving about 70 experts**

For a trailer on the visions see: [innovation-futures.org](http://innovation-futures.org)

## Selected Findings of the Panels

- Several visions are incorporating fundamental changes in the **mechanisms mediating between innovation demand and innovation supply**. In most cases, the role of companies as dominant broker between needs and solutions is seen to be shrinking and more direct involvement individual or (more often) collective innovation users is described. A wide variety of **hybrid value creation business models** is being proposed.
- The issue of defining adequate **enabling platforms** between innovation demand and innovation supply and the adequate level for establishing these innovation support infrastructures is addressed in several visions (e.g. Fab-Labs, 3D printing facilities).
- Most visions emphasise the need to **address societal challenges and in particular environmental issues** as a key driver of change not only for the target of innovation but also for innovation patterns.
- Some visions describe **fundamental changes in the macroeconomic environment** such as “economy of contributions”, “on demand economy” or “surplus ecosystem”.

# Consolidated visions explicitly discussing sustainability



<b>Waste-based Innovation</b>	The establishment of innovation patterns that are fully consistent with a circular flow of resources was unanimously assessed as top priority in the INFU experts' dialogue. How can novelties emerge out of used products, what kind of consumer types are associated with the pattern?
<b>City-driven systemic innovation</b>	Cities are increasingly expected to play a major role as innovation drivers. In particular systemic sustainability innovations may best be implemented on a city level. What are adequate mechanisms for cities to reap the benefits of this potential?
<b>Social Experimentation</b>	Social innovation is more and more recognised as highly relevant for developing innovative solutions addressing societal challenges. Various forms of bottom-up innovation ranging from crowdsourcing to small local collaboration. Participatory experimentation will play a key role but what are the right instruments and levels required for successful solutioning?



# Innovation and sustainability

- „Waste-based innovation“ is suitable as a transition paradigm towards a circular economy where resource flows are fully circular and tailored to demand without any “waste stages”. However, too much emphasis on producing new things from old ones may create a lock-in situation which hinders the transition towards the circular economy.
- Experts of the „City-driven systemic innovation” panel argued that successful sustainability innovation requires an open, user-driven approach, municipal institutions govern the provision of platforms and infrastructures (e.g. interoperability).
- The „Social experimentation“ panel pointed towards some trade-offs:
  - Supporting small groups individually for a long period is a rather unsustainable (economically) process.
  - Up-scaling is needed, which can be done by translating part of the experts’ knowledge into toolkits or by teaching and coaching (capabilities and incentives).
  - Some experts argued that high levels of participation tend to produce average quality and will lead to lukewarm solutions.
  - Equally important is the fact that local experimentations should be strongly connected to learn one from the other.
  - What is the adequate level and format of enabling platforms?

# Conclusions

- All INFU visions that described successful sustainability transitions also featured innovation patterns with strong involvement of citizens and users. However, the other way round, there are no indications that a wide adoption of open innovation will automatically foster sustainability transition.
- Some experts warned that fully bottom-up participation alone is not likely to bring about the system changes required: too much participation and experimentation may not result in stable (optimal) solutions
- The full responsibility for governance by citizens and users without providing the adequate means is not likely to bring about a sustainable innovation culture. Thus, the provision of the enabling infrastructure and platforms seems to require strong macro level governance and co-ordination.
- Our findings indicate that in sustainable innovation landscapes business driven innovation will only be one element of the “transition” towards a new way of fulfilling basic needs and the organisation of production and consumption.
- Finally, it seems likely that elements of local self-production will play a role in future, however, there is no automatic sustainability gain. On the contrary, scenarios of fully individualised self-production may well be problematic in terms of sustainability.

# Information and contact

For more information, publications  
and a trailer of the innovation visions, see:  
[www.innovation-futures.org](http://www.innovation-futures.org)

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