

Proximity & Innovation: a Complexity Perspective

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Regional development and proximity relations

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Smart Specialisation (D. Foray)

- Europe needs more world class clusters of a greater size.
- This way lies in the aptitude of regions **to particularize themselves**
- Region X is not to specialise industrially in e.g. tourism & fisheries BUT ***in R&D and innovation in the sector of tourism or fisheries***
- ***In Soviet times 'Rumania, you do potatoes...'***
- ***ICT for rösti; biotech for french fries; nano for micro-chips etc., etc.***

Proximities, dominant spatial configurations and knowledge base complexity

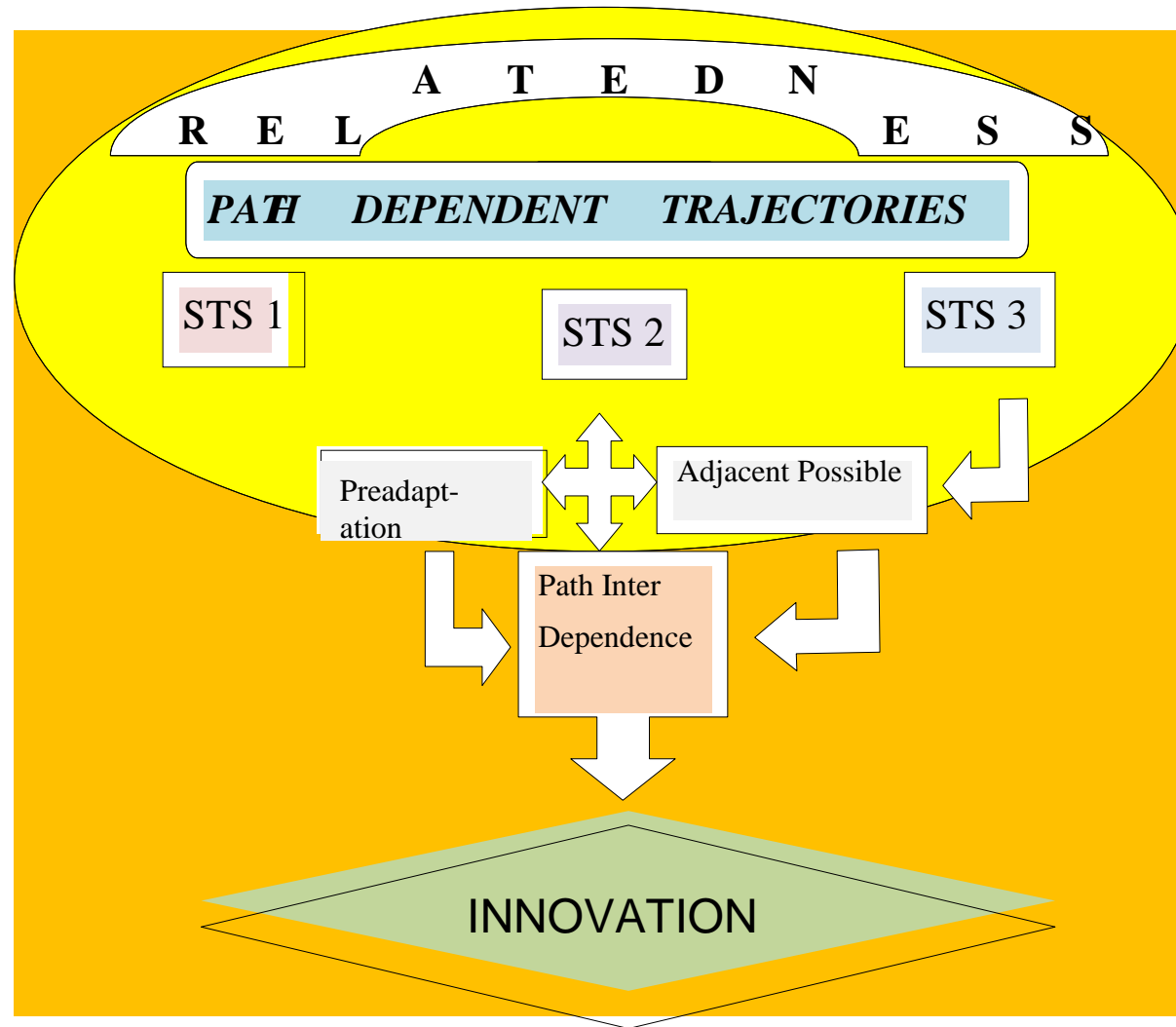
(after Carrincazeaux/Coris)

		Technological complexity	
		Strong	Weak
K Combinatorial complexity	Strong	Geographical proximity <i>Agglomeration, clusters</i> (1)	Organisational proximity <i>Nomad organisation/transitory</i> (4)
	Weak	Institutional proximity <i>Reticular organisation/temporary</i> (3)	Weak need for proximity <i>Distant interactions</i> (2)

Related variety cross-tabulated with geographical proximity (Cooke, 2012)

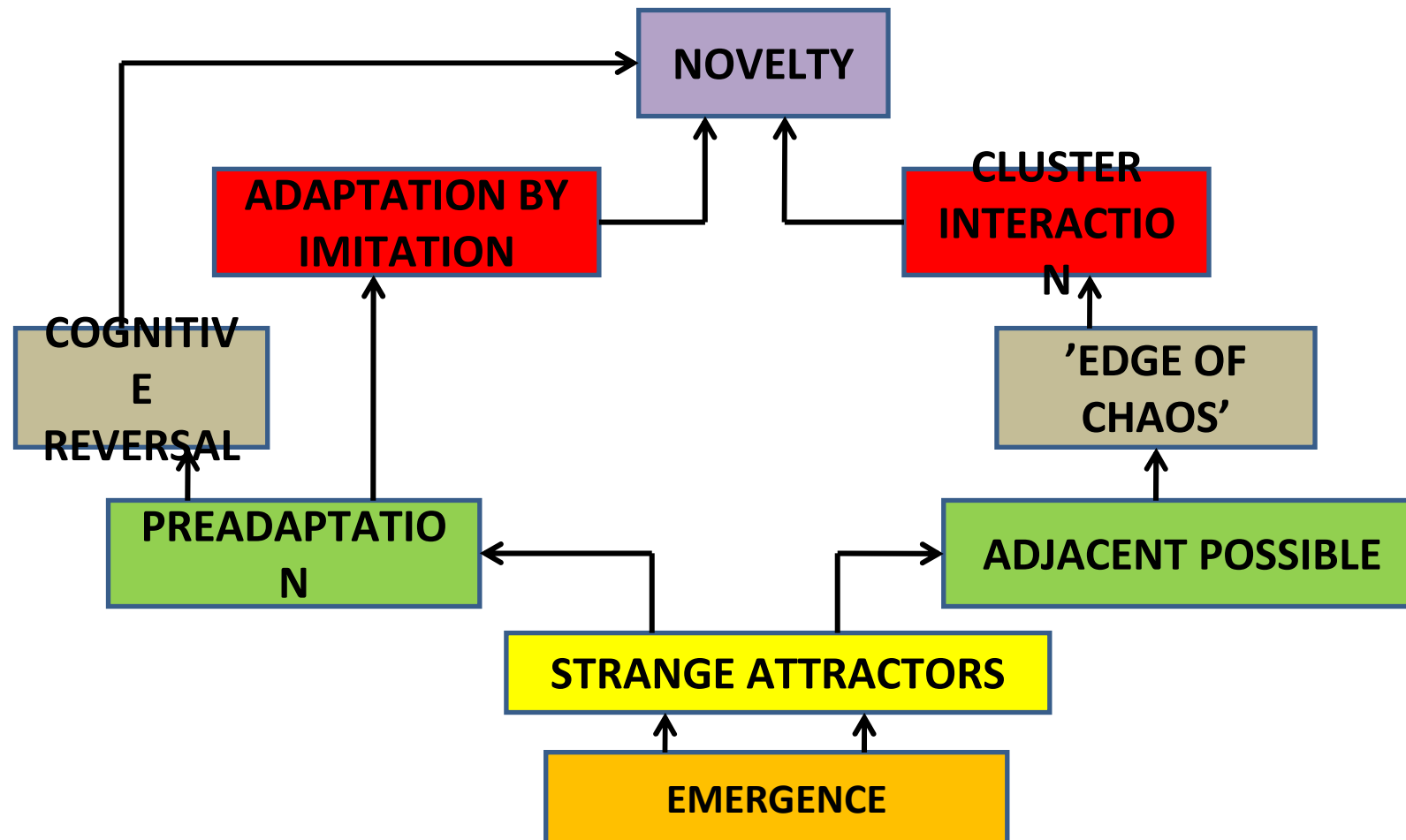
		Geographical Proximity	
		Strong	Weak
Related Variety	Strong	Cluster(s) and/or Platform (1) <i>Relatedness & Transversality</i>	Inter-corporate, boundary-spanning <i>Organisational</i> practices (4) <i>Strategic Alliances/ Joint Ventures</i>
	Weak	Localisation/Co- location proximity (3) <i>Agglomeration</i>	Company town/ Stand-alone industry (2) <i>'Cathedra in deserto'</i>

Variety, Path Inter-dependence, Relatedness & Regional Innovation





Complex Adaptive Systems – Emergence through Strange Attractors to Novelty



Reverse innovation: How GE is disrupting itself

Source: J. Immelt, V. Govindarajan & C. Trimble (2009) *Harvard Business Review*, October

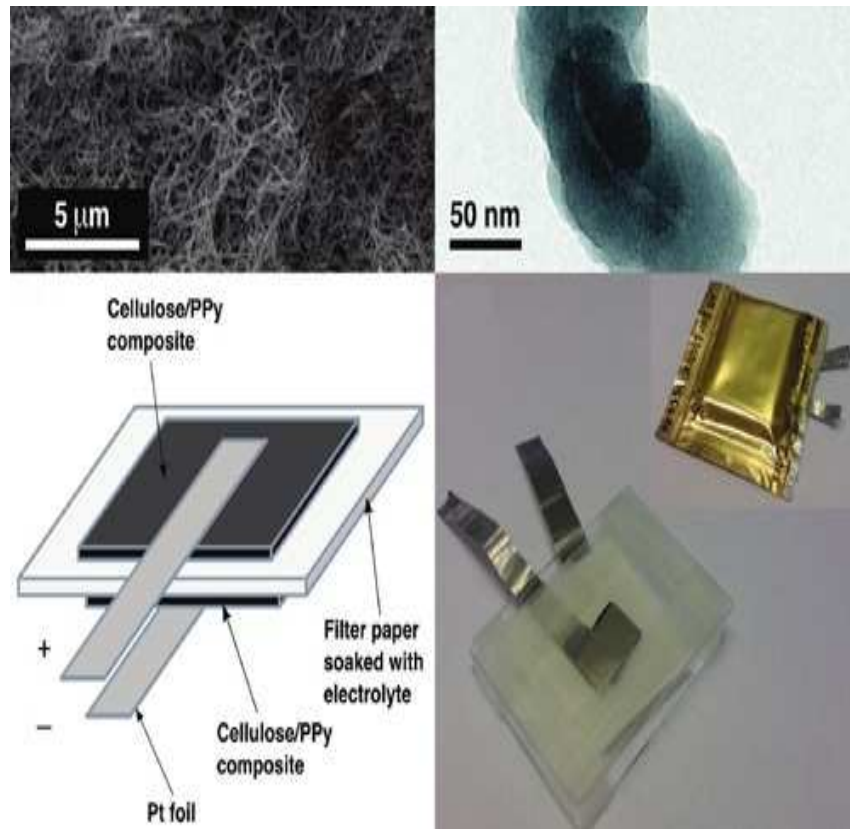
- GE Healthcare's Mac 400 *electrocardiogram* machine, was developed for markets in rural India and China.
- GE Healthcare made further improvements to the technology and brought the new model, the Mac 800, pictured inset (right)
- Next it was sold in the U.S, where it found new applications, such as at accident sites.



Connectivity to medical doctor is by SMS
message from mobile phone-style
keypad

While we are still on the subject of 'strange attractors'

UppsalaBio Algae-based Battery



Who's buying?

- **IKEA** –
- Photovoltaic textiles
- You can re-charge mobile phone with plug-in to curtains

- **Motorola** –
- EU Mobile phone recycling regulation 2014
- Paper-based batteries are 'green'

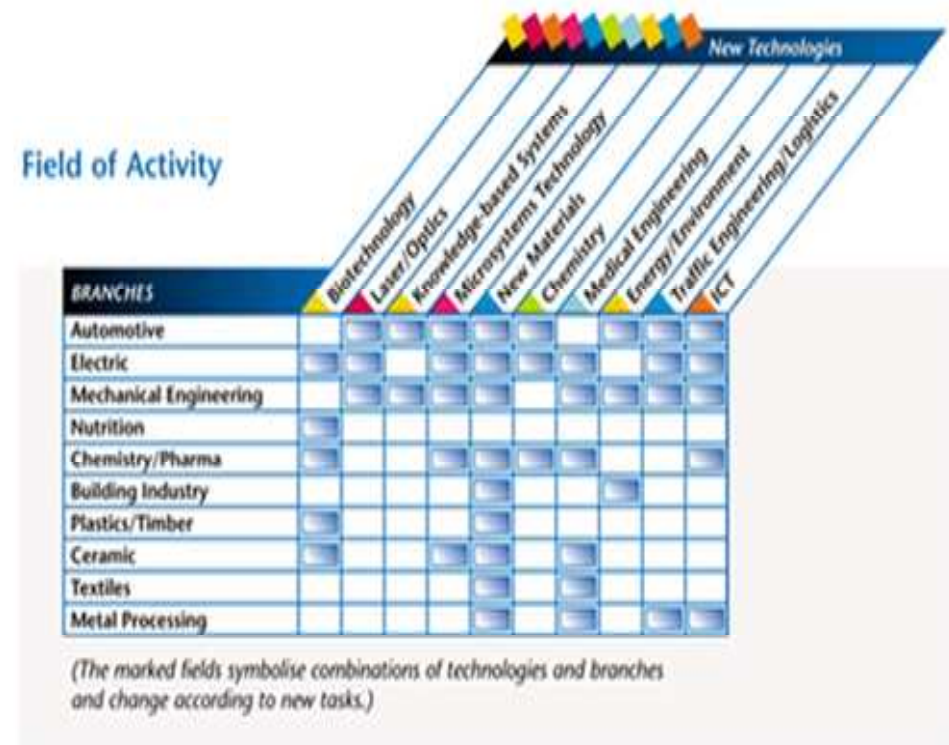
'Storytelling' Innovation Model: Bavaria's Innovation Matrix

- Bayern Innovativ's innovation platforms
- Orchestration & Narrative (e.g. 'Living Lighter')
- More than **1,000 new co-operations** initiated annually:
- Some 10% become **commercial innovations**

Examples

- **Laser technology** adapted to beam nanoscale droplets onto microarrays for rapid bioanalysis
- **Mechatronic systems** for car engine management that have been transferred to bus steering systems
- **Portable fuel cells** that have been applied in automotive electronics
- **Plastic injection moulding** processes from button manufacturing which have been implemented in automotive plastic components
- **A logistics and transport** company that has secured a contract with one of the world's largest Internet suppliers
- **A technical textile producer** won a contract in medical engineering

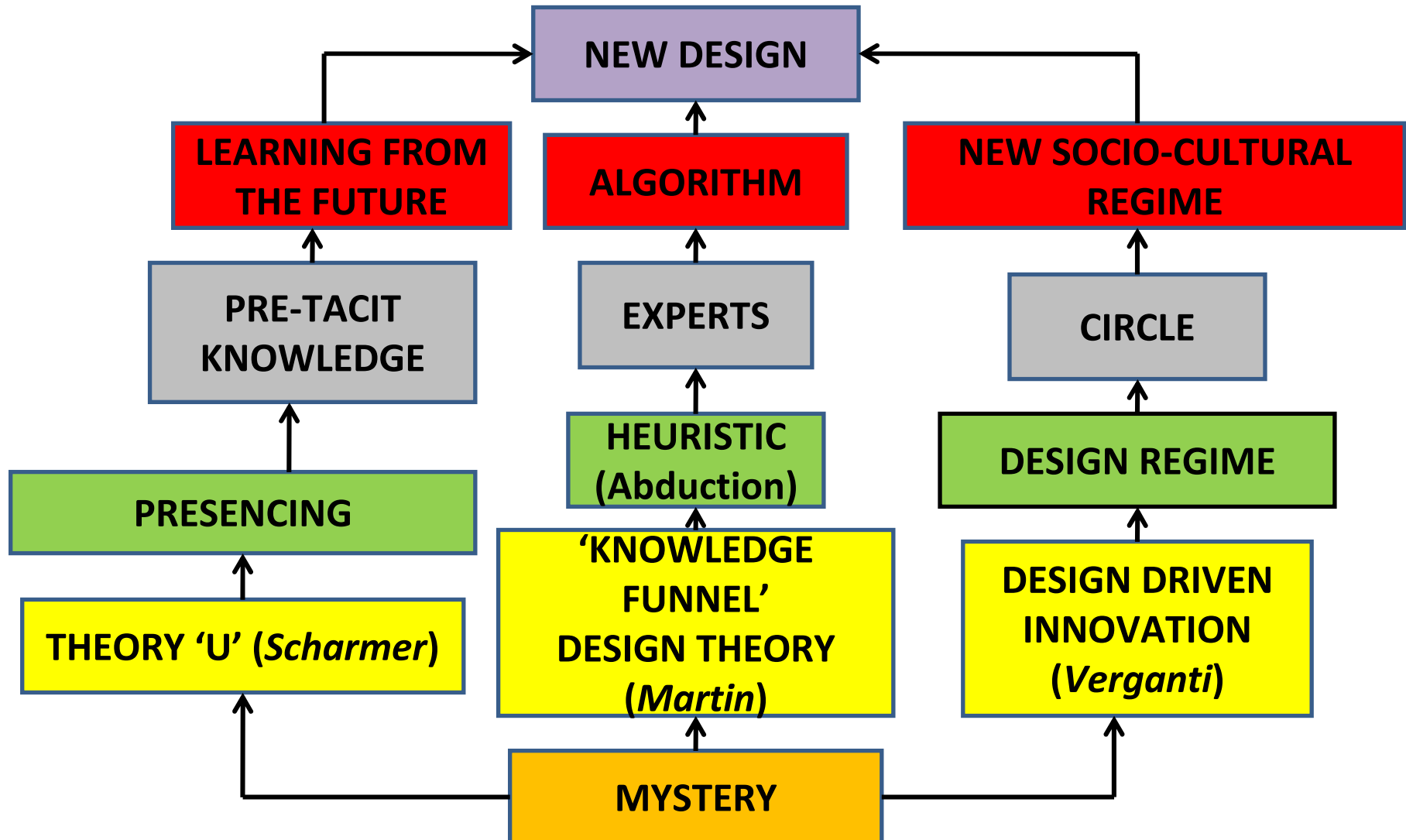
Bayern Innovativ: Technology Platforms Matrix

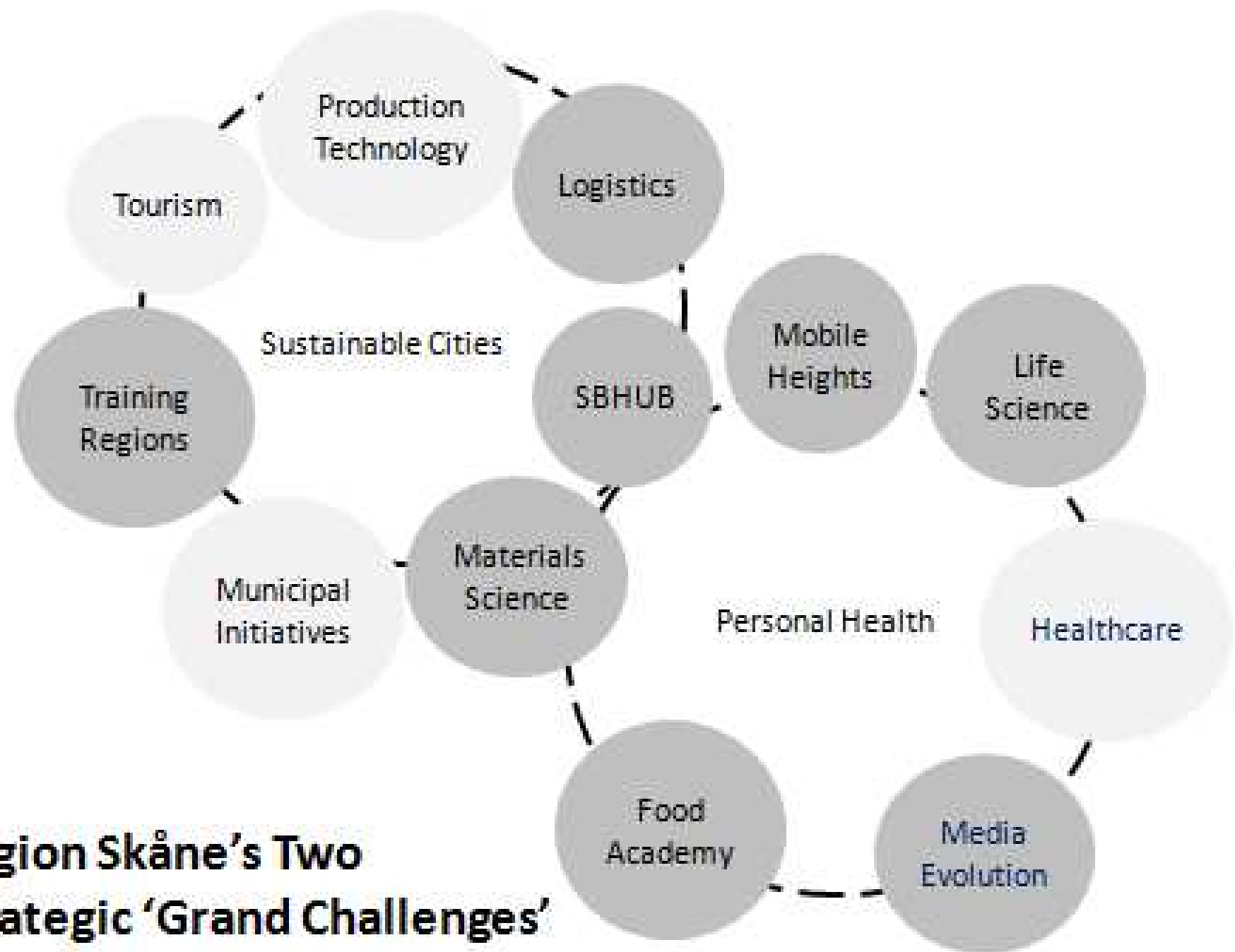


So what is this design process?

- Facilitate idea generation (mind maps & dialogue)
- Negotiate value (interactive trade-offs)
- Visualise the intangible (systems expression)
- Navigate complexity (explore the 'adjacent possible')
- Mediate stakeholders (transverse governance)
- Synthesise strategy (create innovative system of the future)

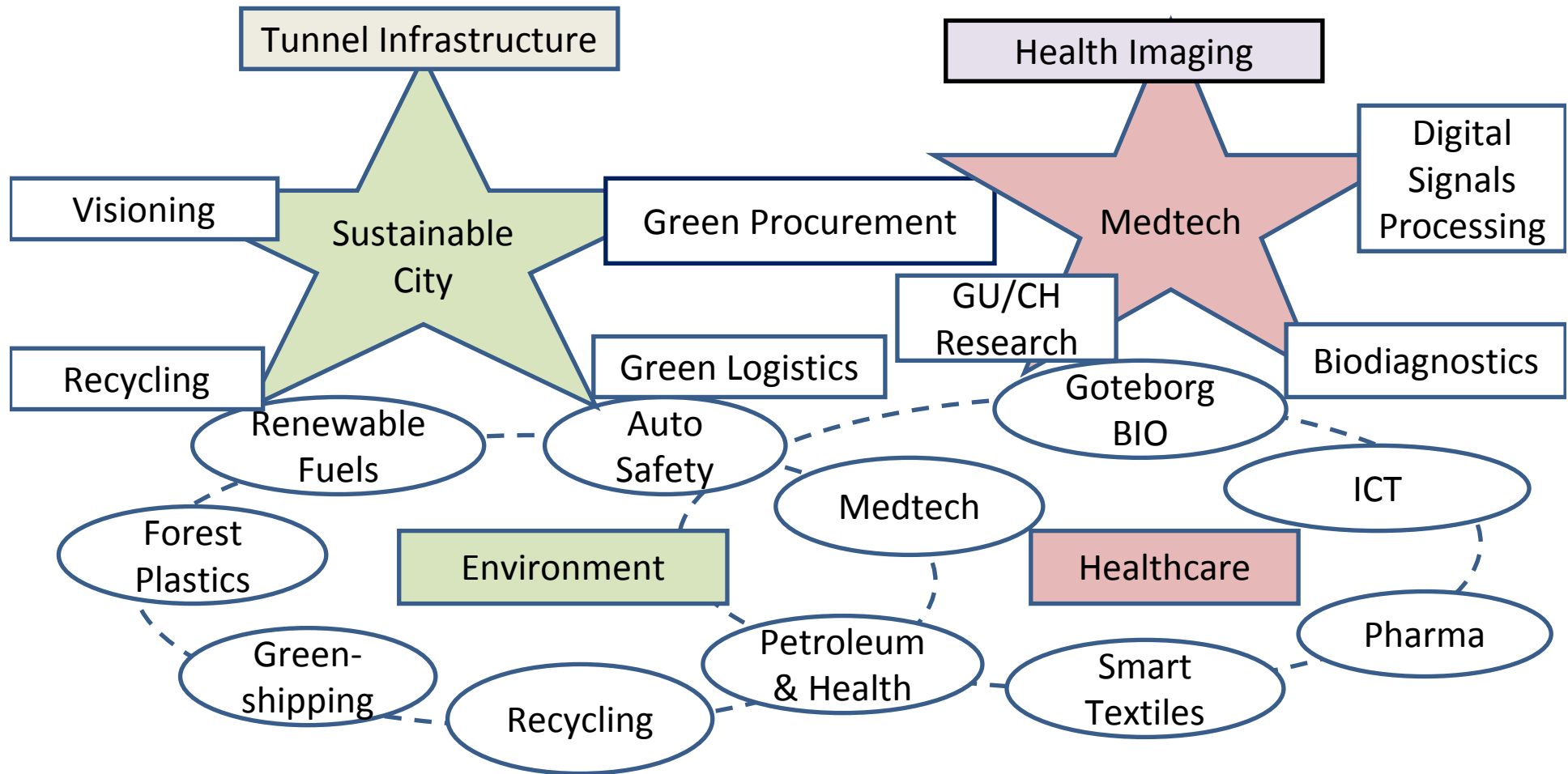
What Can Happen in the Adjacent Possible





Region Skåne's Two Strategic 'Grand Challenges' Innovation Platforms

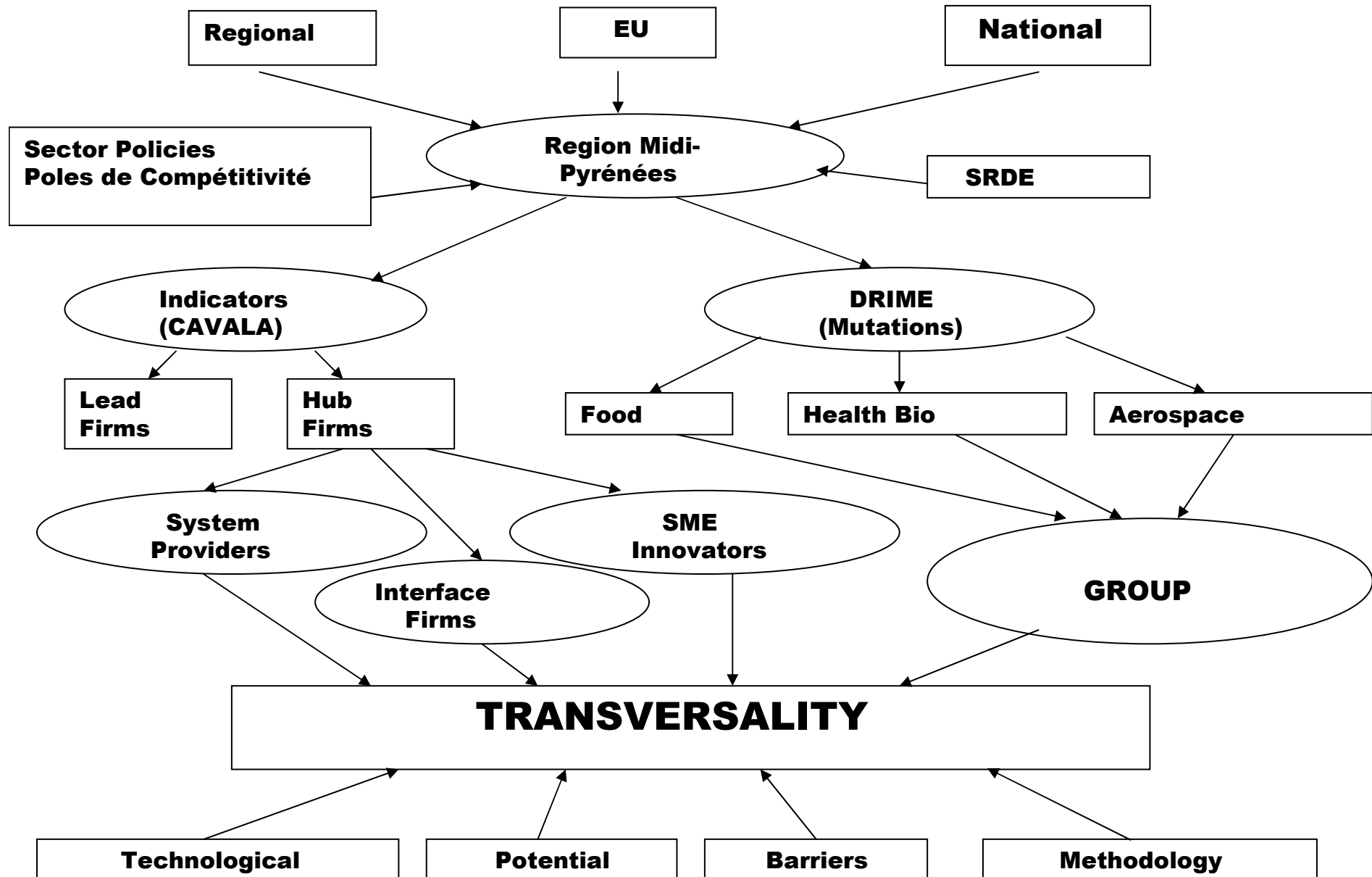
Gothenburg region's 'Iconic Projects'



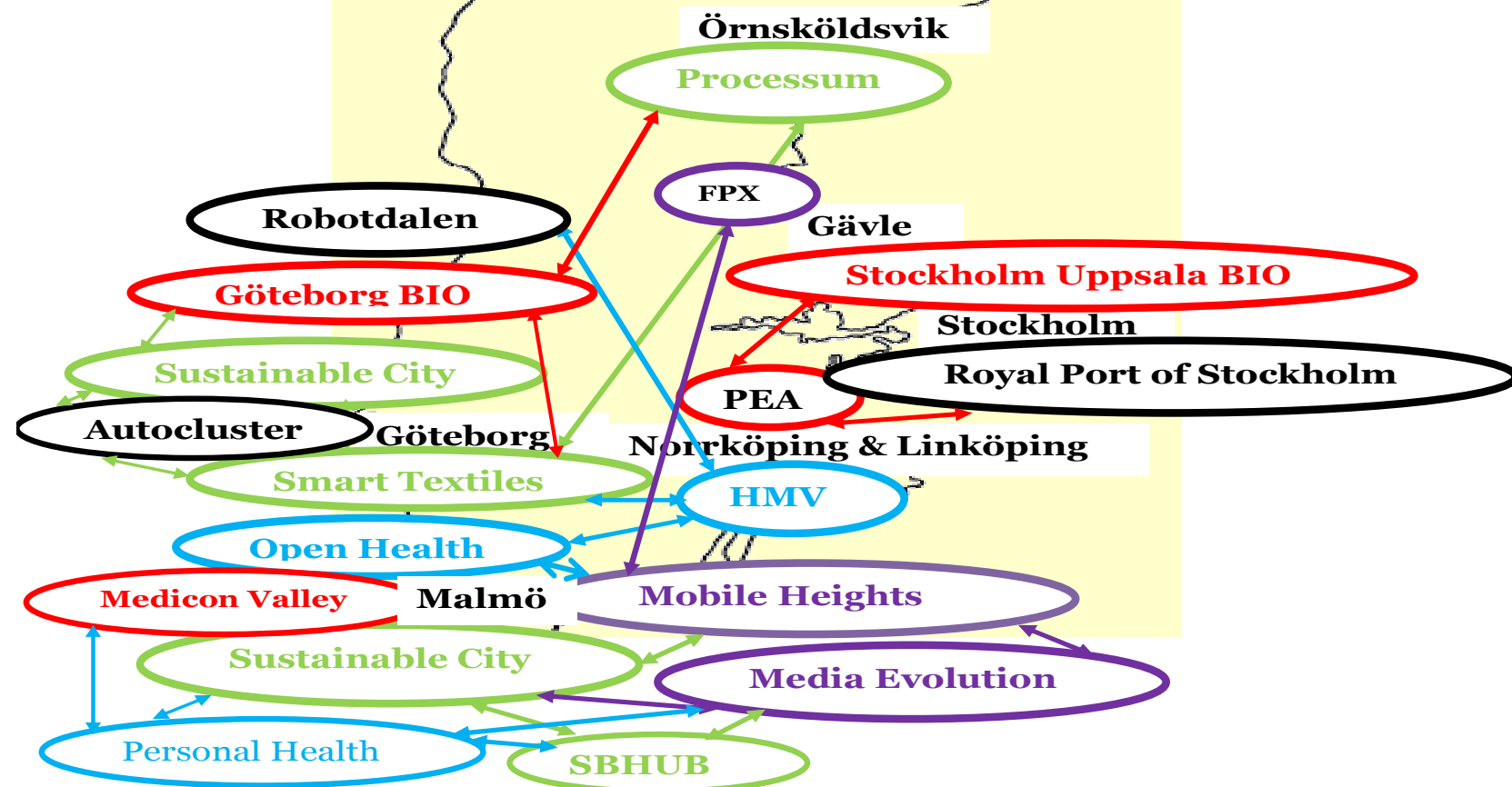
Regional Innovation System Design

Region Dimension	Lahti	Skåne	Lombardy
Focus	Furniture	Shipbuilding	Design goods
Shocks	Hollowing-out	Deindustrialisation	Socio-cultural regime
Responses	Platform method	‘White Spaces’	Regime change
Linkage	Expert panels	‘Sounding Board’	Design Circle
Technologies	Cleantech	Sustainable City	Design innovation

Midi-Pyrénées Transversal Innovation Group Model



Main Inter-Cluster Innovation Platforms in Sweden



Conclusions

- The regional system 'self-designs'
- It unfolds what is enfolded in the system
- The complexity approach has no 'global designer'
- But the 'system', in practice, has 'designers'
- Novelty is emergence from system continuity, co-evolution and transition 'by design'
- Novelty exploits 'cluster cross-over' - variety by 'smart stimulation'
- Value Variety valorises regional 'diversity', 'relatedness' and path inter-dependence
- However, innovation, as with evolution, is unpredictable