Value co-creation in innovation eco-systems

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Agenda

- Value
  - Towards value based exchange and co-creation
  - Created in dyadic interactions and multi-actor systems
- Network and ecosystem approaches to value creation and innovation
  - Business and innovation network approaches
  - From networks to ecosystems

VALUE

- "the best value for the price"
- "the trade-off of the benefits and sacrifices"
- Value is co-created between seller and buyer (Service-Dominant logic):
  - Value proposal
  - Value in use
- Value is co-created in the wider stakeholder and network context

Value (co-)creation: Interaction

Value is co-created in interaction

– actors' resources and dialogue are needed

  – Dyadic interaction

  – Actor-to-Actor system,

   System approach

Value (co-)creation: Developmental

- How to create more/better/etc. value
- Problem-solving: Co-identifying a problem/need; co-solving a solution for the problem/need
- Incremental or radical
- Contant changes in the market

Value is a multidimensional object

- The process(es) of value co-creation
- The value of the object of exchange
- Value outcomes, value-in-use:
  - Monetary
  - non-monetary benefits
- Value analysis: what creates value

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Value (co)creation can be complex:

- Innovation
- Customization, solutions
- Services, KIBS

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To co-create value, some capabilities are increasingly relevant: collaboration and interaction

- A firm's *abilities to create and provide value in conjunction with its partner* to meet market requirements in a wider supply chain or value chain context

  > the extent of relational power becomes relevant; i.e. the partner with the greater capabilities may have more power. (see e.g. Lindgreen et al. 2011)

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The speed for "value improvements" accelerates

- The fast-pace of markets today also demand continuous innovation or improvement in the value proposition

- Firms must assess their resources and capabilities to be innovative and develop innovations with their partners to again increase benefits to all.
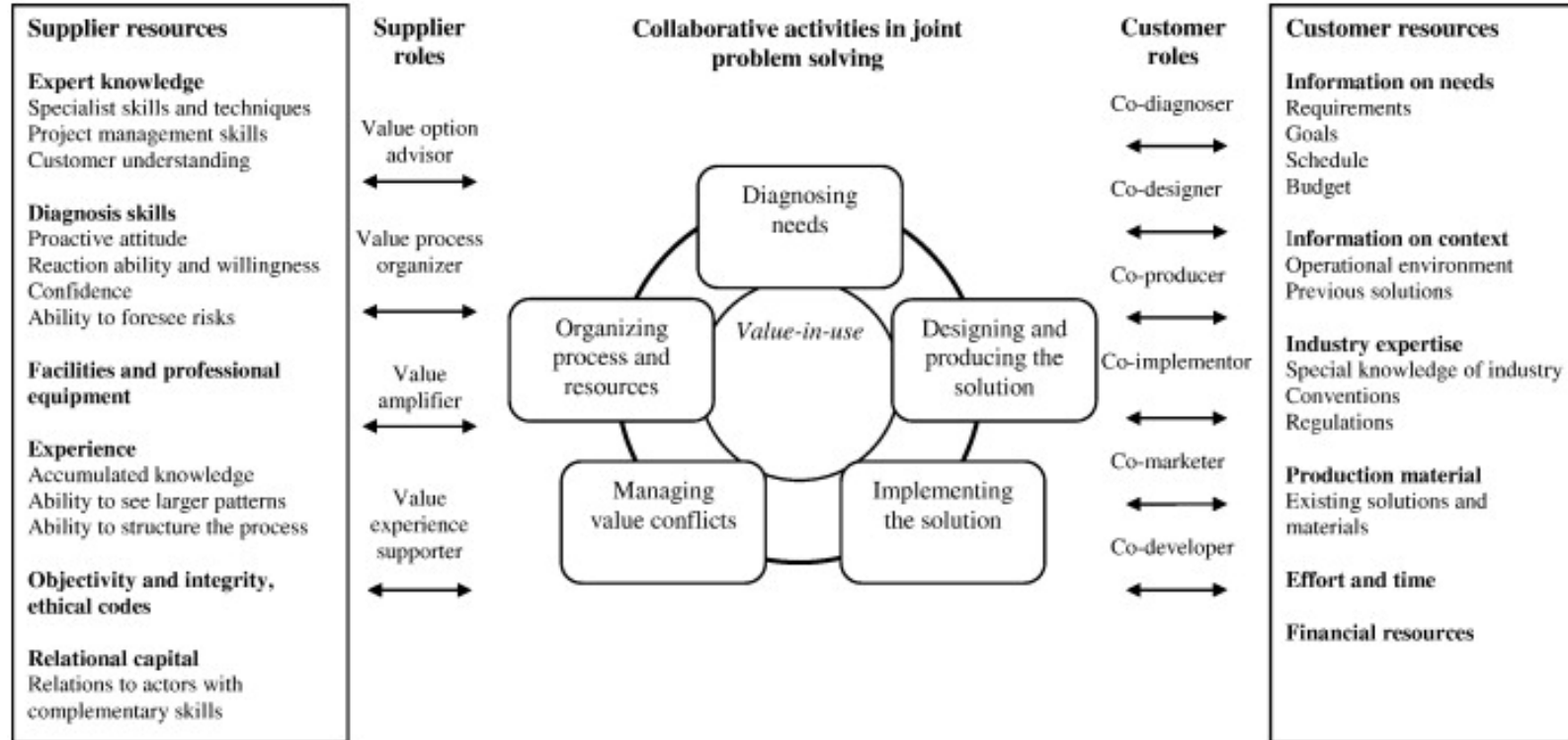
Dyadic approach to value co-creation

- How do the supplier and the customer actually "co-create value"?
- Complexity of value co-creation
  - Interaction?
  - Actors' roles and resources?
  - Outcomes?

How value co-creation happens in KIBS?

Value co-creation as a joint problem solving process (KIBS context)

Supplier resources

Expert knowledge
Specialist skills and techniques
Project management skills
Customer understanding

Diagnosis skills
Proactive attitude
Reaction ability and willingness
Confidence
Ability to foresee risks

Facilities and professional equipment

Experience
Accumulated knowledge
Ability to see larger patterns
Ability to structure the process

Objectivity and integrity, ethical codes

Relational capital
Relations to actors with complementary skills

Supplier roles

Value option advisor

Value process organizer

Value amplifier

Value experience supporter

Collaborative activities in joint problem solving

Diagnosing needs

Organizing process and resources

Value-in-use

Designing and producing the solution

Managing value conflicts

Implementing the solution

Customer roles

Co-diagnoser

Co-designer

Co-producer

Co-implementor

Co-marketer

Co-developer

Customer resources

Information on needs
Requirements
Goals
Schedule
Budget

Information on context
Operational environment
Previous solutions

Industry expertise
Special knowledge of industry
Conventions
Regulations

Production material
Existing solutions and materials

Effort and time

Financial resources

- How interaction happened?
- How value creation process proceeds?
- What is required from the parties involved?

Comments and answers

- The context of value-co-creation
  - KIBS and Information asymmetry: what does information asymmetry imply?
  - How about joint problem solving for value-co-creation "in different joint business operation like pooled r&d or even within the open source community"?
  - Can the model be applied in product-dominated industries?

- Engagement and willingness to enter into time taking interaction
  - "In some contexts lead users are willing share their knowledge, insights and ideas" vs. "if a company has multiple collaborative activities with all its suppliers, should it make a selection?" > to engage or not to engage
  - How to engage end-users on to value-co-creation (developer communities)? > Studies on motivation, engagement, etc.

- Interaction related questions
  - Trust?
  - How to manage value conflicts?
  - Is any one of the five collaborative activities superior in its contribution to value although it is a process?
  - During the process of problem solving customers act as a co-developer and learn a lot about how to identify a problem, how to design and implement a solution, etc. in their typical field. > Does this harm the KIBS providers future business?

- How do papers Aarikka-Stenros & Jaakkola 2012 on joint value co-creation and Aarikka-Stenroos et al. 2014 on commercialization networks relate? And do they relate?

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Towards more compex systems in value co-creation

- Example: Electronic prescribing, example on an A2A network

Electronic prescribing

- Prescribing goes digital, around the Europe, in the Netherlands, in Finland, in many countries
- Value propositions
  - "Smoother and safer transactions"; Prevents transcription errors of unreadable handwritten prescriptions.
  - "Preventive checking"; Improves medication safety by crosschecking on double medication, contraindications, dosage and medication interactions at the moment of prescribing. Preventive checking is more effective than medication safety checking at the moment of dispensing.
  - "Save costs"; Logistic improvements and lowering in the costs of handling. Particularly with repetitive prescriptions the handling would yield tremendous logistic advantages.

Actors co-create value each other

- Prescribers accurately and clearly enter complete medication orders > the system can advice, warn and provide relevant patient information, for example on allergies, as well as details about drugs.

- Health care personnel: Prescription data can be stored securely and communicated to other members without the risk of paper records being lost.

- Pharmacists can access drug orders remotely using the computer, and check and amend as required.

- Nurses who administer medicines have clear and legible medication orders. The system may help them to prepare for drug rounds, confirm the identity of patients, and record administration.

- Medication records can be accessed remotely by healthcare professionals.

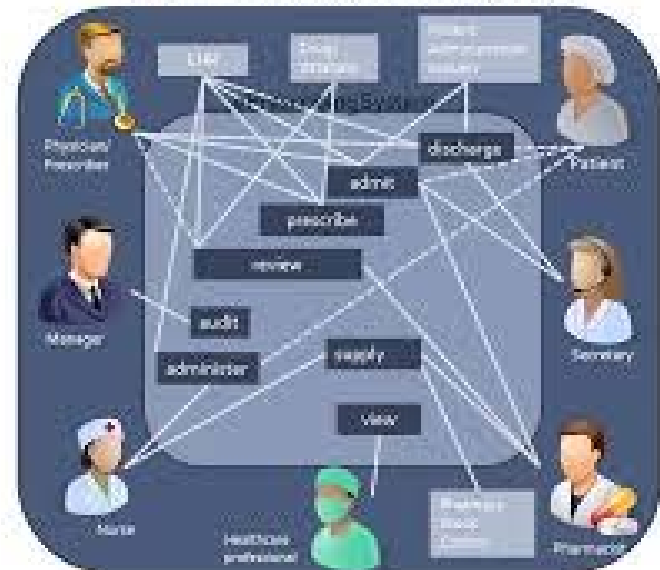- End-user; the citizen: is safe; more information, smoother processes

Complexity of the systemic value-co-creation
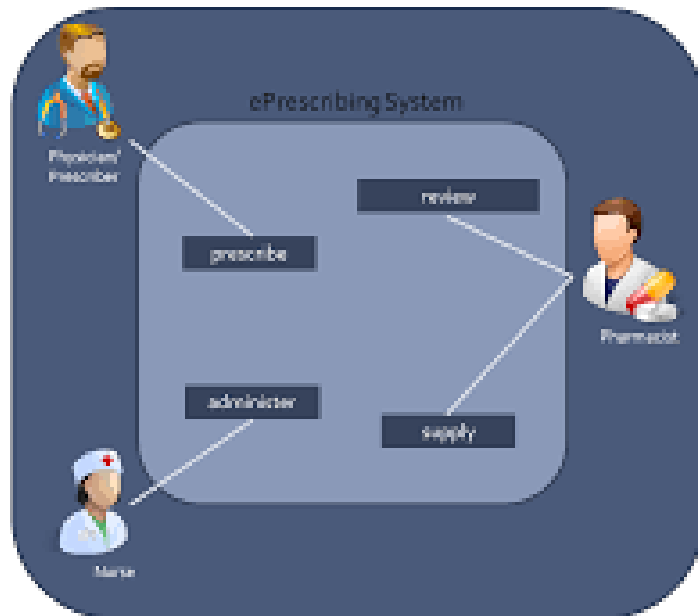
At the same time, elsewhere in Europe, in Finland

- Ministry of Social Affairs and Health (MSAH) steers the national development of healthcare IT
- The Social Insurance Institution (KELA) is responsible for national ePrescription Center National Authority of Medicolegal Affairs is responsible for PKI and certificate services
- National Institute for Health and Welfare (THL) is responsible for common code sets and classifications
- HL7 Finland (association for organizations that are interested in systems integration issues and solutions in healthcare and social services) created implementation guidelines for ePrescribing
- Healthcare organizations
- Pharmacies
- Providers of hospital and pharmacy software and servers (Fujitsu, Logica, PharmaData, Tieto, Receptum)
- Service providers
- Currently National Supervisory Authority for Welfare and Health (Valvira)
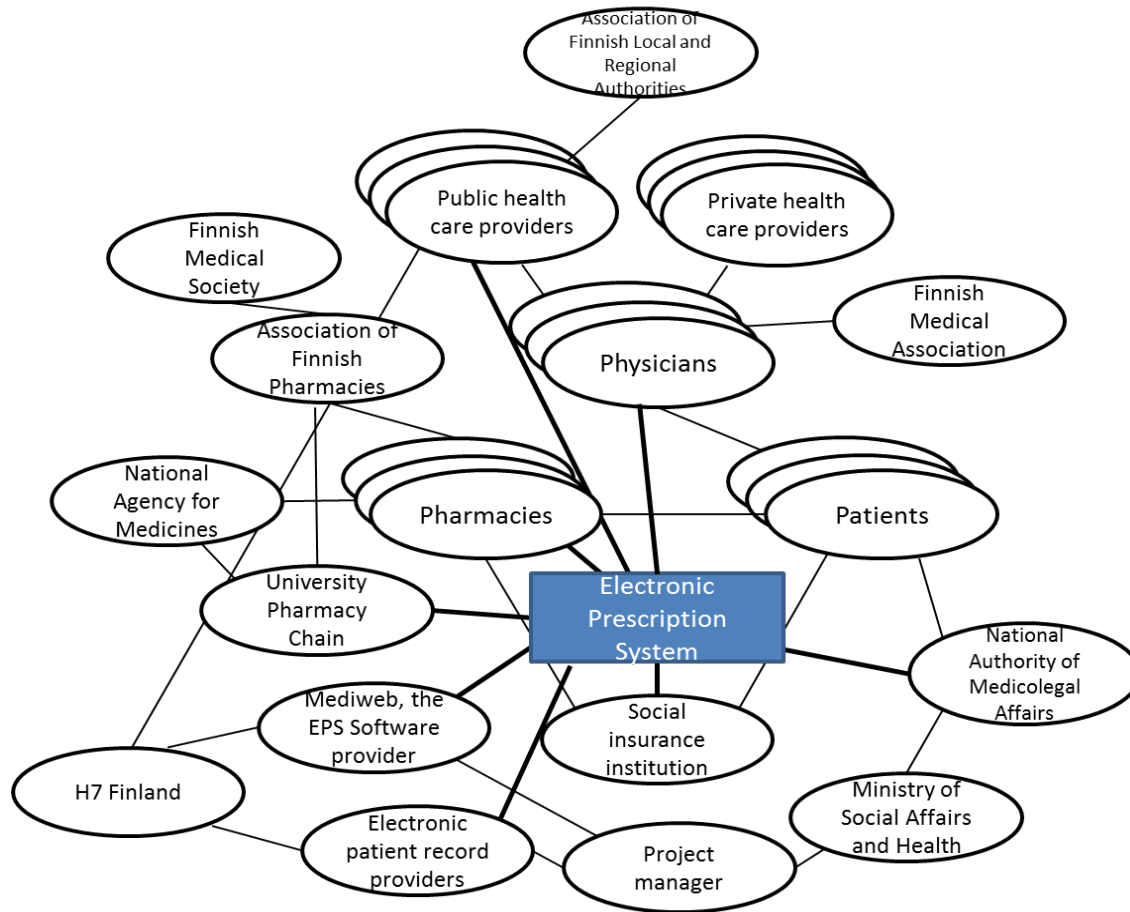
Who co-creates value and for whom?

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- End-user; the citizen: is safe; more information, smoother processes

30 clics

Loosing business for ebusiness?

Security?

Lessons learnt: What does systemic value co-creation require? (Wieland et al. 2012)

- A full understanding of the market and the co-creation interaction requires both *a holistic view of the whole* and *the analysis of individual elements and their relationships*.

- Value is created *by multiple actors*; vanishing borders between actors within markets.

- Compatibility between systems elements and harmonious interaction among actors represent a model describing *ideal* co-creation exchanges among actors of service experiences.

- Networks of relationships within which interactions take place. The complexity of such networks is a problem in terms of the knowledge and cognitive alignment that is required between the decision-makers' system and the observed reality.

From value co-creation to
1) networks
2) ecosystems

What constitute "networks" or "ecosytems"

Network approaches

- **Interorganizational network approaches (IMP and strategic network)**
  - Actor is a firm; focus on relationships, partnerships, alliances and collaborations between organizations
- **Social networks**
  - Actor is a person or a group of persons; focus on user or opinion leader individuals or communities
- **Innovation networks**
  - Focus on the innovator firm's networks and collaborations throughout the innovation process
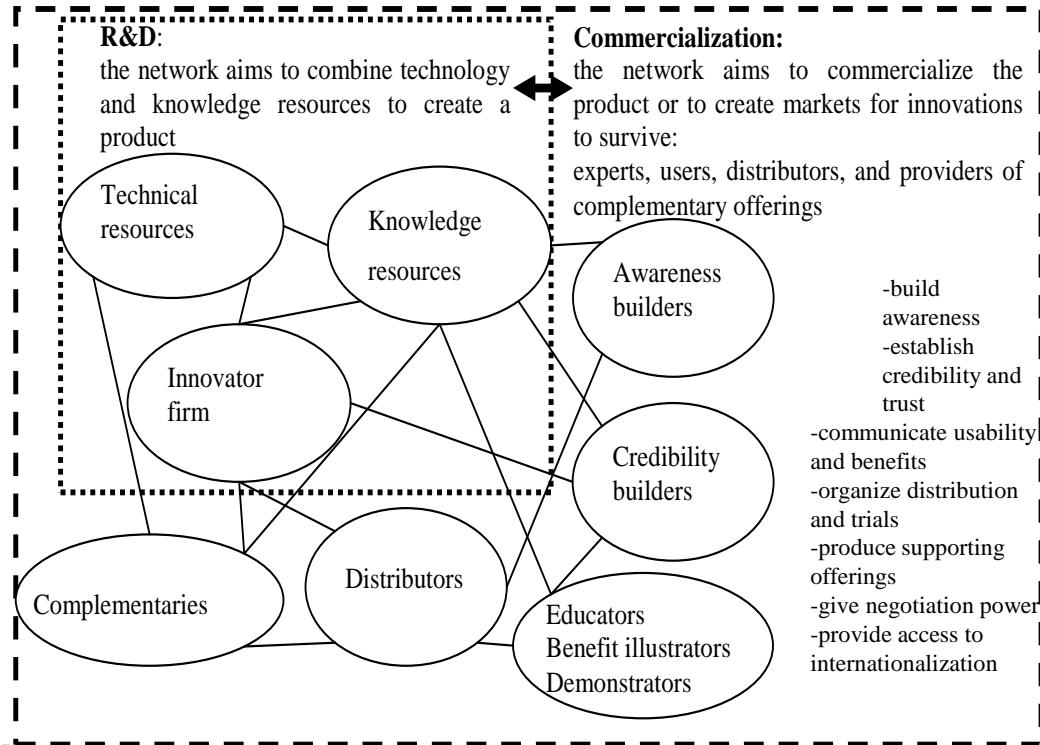
Innovation networks: From R&D networks to commercialization networks

- Starting point, 2006: Firms increasingly employ networks for R&D, but how about for commercialization?

- Aim: to analyze how firms aim to employ relationships with divergent stakeholders to facilitate the commercialization of innovations

- Case research
  - 2-3 cases: Exel, Newtest and Benecol
  - Health related innovations where "the network" played important role in commercialization and advancing adoption/diffusion

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Commercialization network
Different roles/activities by involved actors

R&D:
the network aims to combine technology and knowledge resources to create a product

Commercialization:
the network aims to commercialize the product or to create markets for innovations to survive:
experts, users, distributors, and providers of complementary offerings

Technical resources

Knowledge resources

Awareness builders

Innovator firm

Credibility builders

Complementaries

Distributors

Educators
Benefit illustrators
Demonstrators

-build awareness
-establish credibility and trust
-communicate usability and benefits
-organize distribution and trials
-produce supporting offerings
-give negotiation power
-provide access to internationalization

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Main implications for innovation business

- Use your network resources and stakeholders not only for R&D but also for commercialization
- Extend your R&D network step by step to a commercialization network
  - ➢ involve commercialization actors already during the R&D activities to make them committed
 - ➢ recruit new relevant complementary actors, particularly expert actors and lead-user groups

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Going deeper into "Commercialization networks"

- "Commercialization network" in JBR, "Adoption network" by Chiesa & Frattini in JPIM; Lead-user network by Harrison & Waluszewski in Research Policy

- The starting point: what we know about *networks for commercialization* by this far?

- Aim: to aggregate the current knowledge on
    - *Who are the stakeholders/network actors that can contribute to commercialization*
    - *how divergent stakeholders can facilitate commercialization*

- Systemic literature review (81 articles)

Commercialization network: the integrative framework
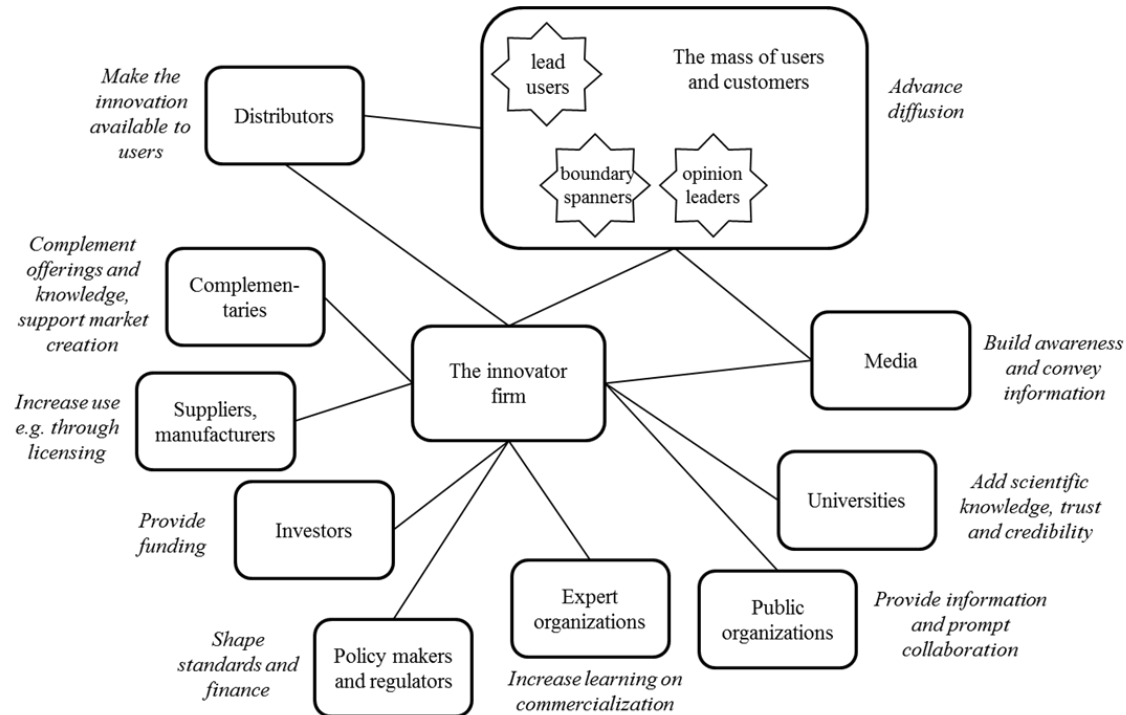
Main implication for innovation business

- There is a plenty of actors with divergent resources in networks (knowing, power and other resources)
  - ➤ Identify actors and their resources
  - ➤ Employ them for multiple commercialization tasks; motivate and activate actors for commercialization tasks.

Comments and answers

- Commercialization vs. Adoption, diffusion – how the network actors adopt the novelty
- How a firm can utilize this kind of set of commercialization contributors
    - Putting efforts to building such relationships: Does this imply that the earlier firms invest into social capital the more successful their commercialization of products will be?
    - Is there an ulitmate combination of involved network actors which enhance the success of the commercialization?
    - How to apply the model suggested in practice – how a firm can apply this?

- How do commercialization networks vary in different situations
    - The degree of novelty: Does commercialization of RI and incremental innovation differ? Which type of network is most suitable of incremental innovations and which type of network is most suitable for radical innovations?
    - The industry: Are there differences for different industries for the network commercialization? Or those the integrate model only give a general overview?
    - Seeing all those network actors, how to evaluate which ones are the most crucial and top priority to boost the
    - commercialization? Depending on industry or stage of the company different ones could be the best choice. Where to start?

- Lead users – they are relevant but…
    - how can a company find those and convince them to work with their product? Or is the contact generation even the other way around, that key users contact companies? > engagement and motivation studies

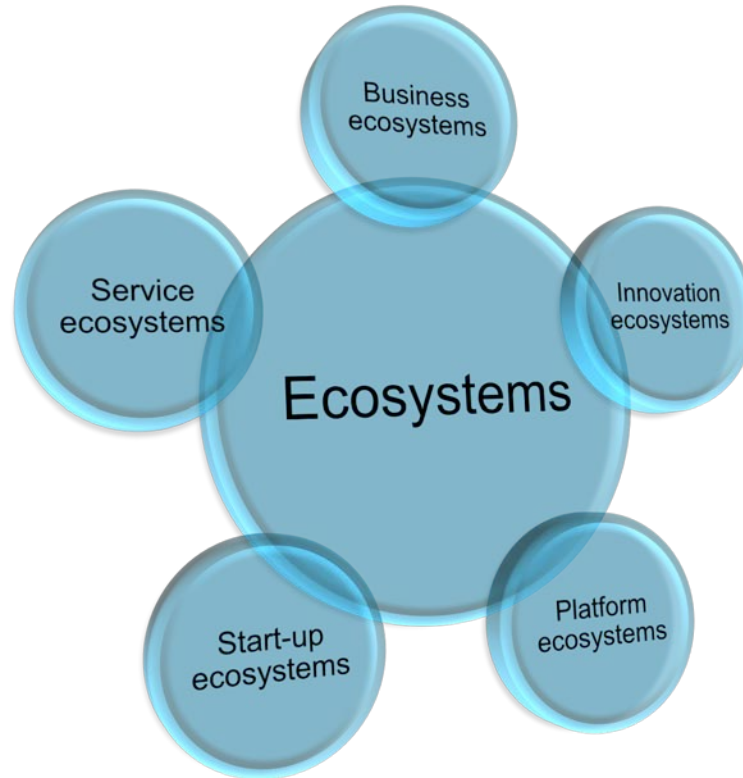TAMPERE UNIVERSITY OF TECHNOLOGY

From networks to ecosystems

- Rapid increase of term "ecosystem" from year 2010 on

- Is "ecosystem" just a buzz word?

- What the term emphasizes:
  - System-like entity, systemic nature
  - Actor diversity
  - Co-evolution

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Approaches to ecosystems: an overview

Ecosystems differ with regard to

- Hub-centered or not
- Actors: firms or "organizations" or people
- Logic and aim
- Boundaries

Business ecosystems

Ecosystem consisting of both **upstream and downstream value network actors** and related technologies and institutions, including the following:

a) Business ecosystems emphasizing collaboration and supply chain aspects (e.g., Iansiti & Levien, 2004; Adner & Kapoor, 2010)

b) Business ecosystems emphasizing the co-evolution of competition and collaboration (e.g., Moore, 1993)

Business ecosystem of Trimenzo (a Dutch care organization; Smart house) by Ehrenhard, M., Kijl, B., & Nieuwenhuis, L. (2014).
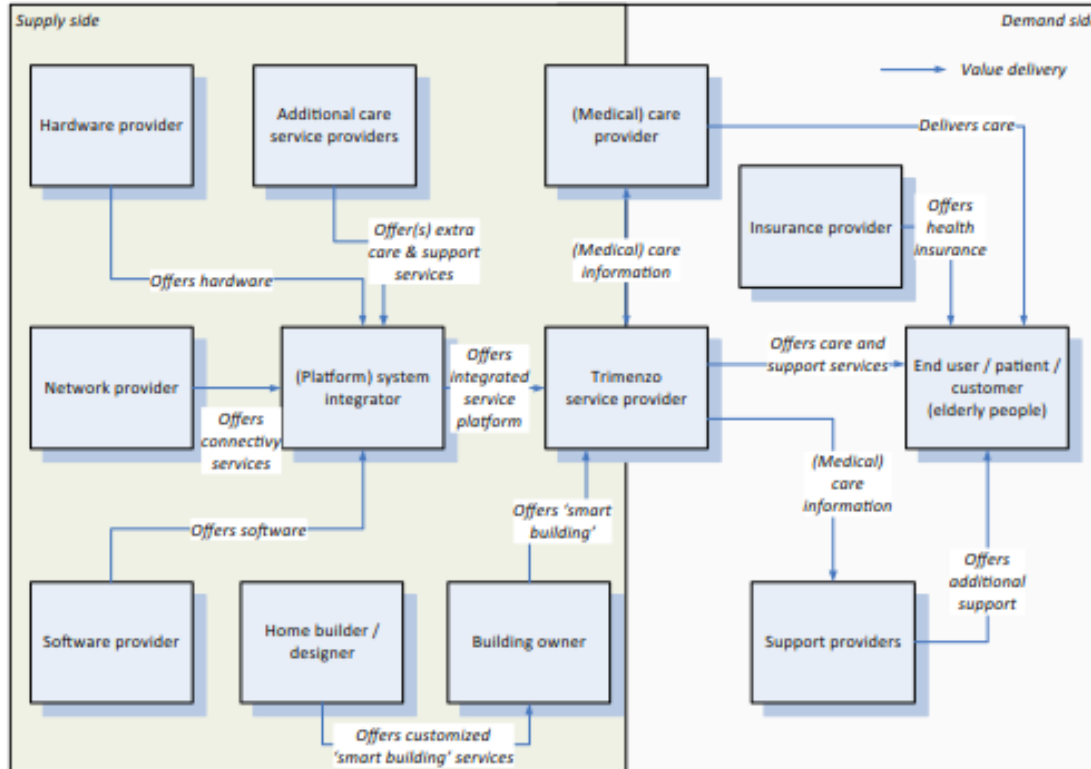

Fig. 1 Value network Trimenzo

Innovation ecosystems

Ecosystem consisting of actors, technologies, and institutions that enable innovation, including the following:

a) Firm-centric innovation ecosystems related to the focal actor and its technology, platform, brand, etc., connecting various actors/stakeholders around it (e.g., Rohrbeck et al., 2009; Ritala et al., 2013; Autio & Thomas, 2014)

b) National or regional innovation systems

- (e.g., Fukunada & Watanabe, 2008; Clarysse et al., 2014)

a) Technological innovation systems

- (e.g. Markard & Truffer, 2008).

Deutsche Telecom by Rohrbeck et al. 2009

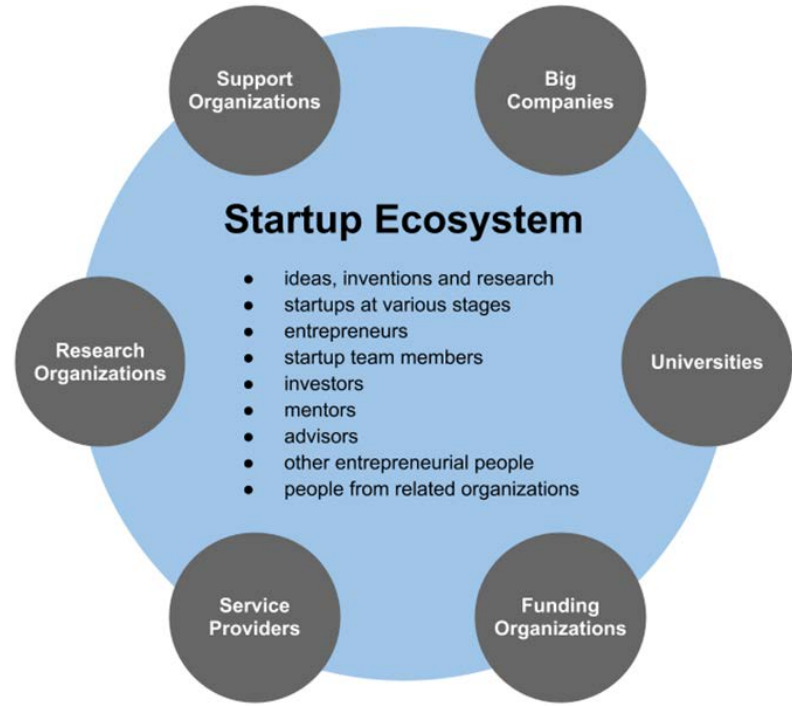- Rapid changes in telecommunication operator industry: declining revenues and fierce competition

- Deutsche Telekom, the German national telecommunication operator started to apply the open innovation paradigm; it enhanced its innovation capacity by opening up its traditional development process and embracing external creativity and knowledge resources.

Open Innovation ecosystem at Deutsche Telekom

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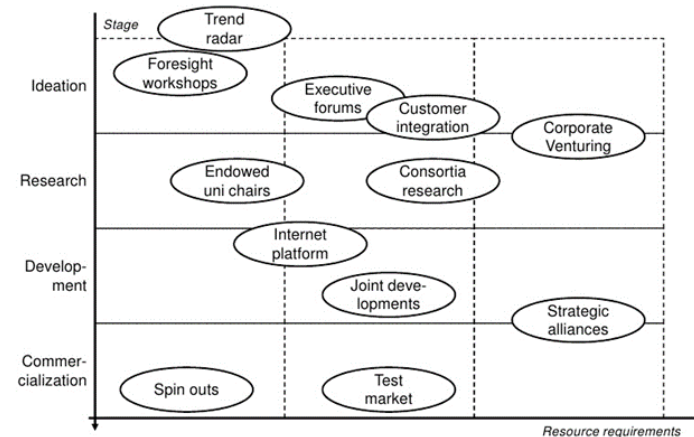
Start-up and entrepreneur ecosystems

Ecosystems enabling the emergence and growth of new businesses, including start-up and entrepreneur ecosystems (e.g., Berger & Kuckertz, 2016; Isenberg, 2010)

Startup Ecosystem

- ideas, inventions and research
- startups at various stages
- entrepreneurs
- startup team members
- investors
- mentors
- advisors
- other entrepreneurial people
- people from related organizations

Support Organizations · Big Companies · Research Organizations · Universities · Service Providers · Funding Organizations

Enovo: Idea on smart waste management

Frederik Kekäläinen

- IoT, increasing waste management costs, 3D graphics; http://www.enevo.com/
- Idea: Let's make business with smart waste collection/management
- Business idea and logics: Enovo sells analysis service
- With thousands of sensors deployed in already 25 countries, Enevo already the leading smart sensor and analytics based logistics optimization solutions provider globally.
- 2014: 6,1 million euros of international funding
- Key reference customers:
  - Rotterdam city;
  - Nottingham city, saves over one million euros

"We're very happy working with Enevo. We feel that the combination of Enevo technology and the knowledge and expertise of our waste collection team has resulted in an effective solution for the city. Using Enevo we've increased the mean fill level of containers saving us time, fuel, service costs and emissions."
– Joost van Maaren, Head of Collection and Reuse of Waste, The Municipality of Rotterdam

Platform ecosystem

- **Ecosystems based on a platform – typically owned by a "hub actor" – that connects markets**

- **e.g., Gawer & Cusumano, 2002; Basole, 2009; Li, 2009; Wareham et al., 2014**

Service ecosystems

- Ecosystem approach based on service-dominant logic, emphasizing the systemic and institutional nature of value (co-)creation with a focus on service exchange and resources

- e.g., Vargo & Lusch, 2010; Lusch & Nambisan, 2015; Vargo et al. 2015

Ecosystem vs. network perspective

- Starting point: Why B2B and business&innovation network researchers apply ecosystem terminology instead
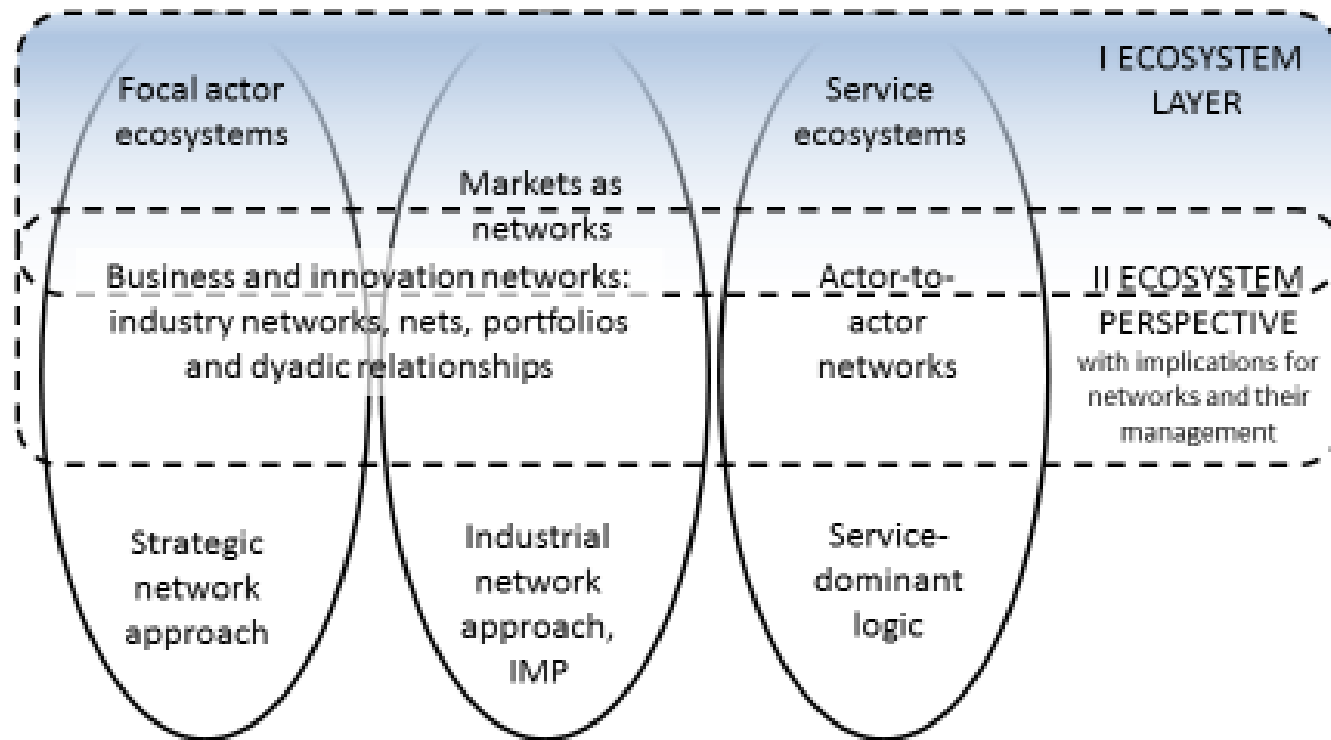
- Research design: Systematic literature review (240 > 70 articles)

1: Competing and evolving business systems
- Co-evolutionary logic: Growth and competition, Schumpeterian destruction, adoption of new connections and disconnection of old ones
- Boundaries and composition: Constant inflows and outflows
- Management: Actors, technologies, and institutions compete for dominance and ecosystem leadership

2: Emergent and disruptive systems
- Co-evolutionary logic: Renewing, disrupting, and replacing existing systems, creating new evolutionary connections and knowledge that create value for customers and other stakeholders
- Boundaries and composition: Blurry, non-linear, growing
- Management: Orchestrating emergent actors, technologies, and institutions

Ecosystem approach in B2B research

3: Stability-seeking business exchange systems
- Co-evolutionary logic: Seeking to maintain stability and incremental improvement of organizing
- Boundaries and composition: Relatively stable and determined
- Management: Coordination distributed across set focal actors, with varying levels of legitimacy and power

4: Value co-creation systems
- Co-evolutionary logic: Developing customer and actor-to-actor value-provision and value co-creating exchange
- Boundaries and composition: Evolving around actor-to-actor service provision and customer value demands
- Management: Cultivating actor-to-actor exchange and value creating processes

Interdependence type

Change and renewal

Stability and symbiosis

Interaction focus

Market structure and organizing

Customer and stakeholder value

Focal actor ecosystems — Service ecosystems — I ECOSYSTEM LAYER

Markets as networks

Business and innovation networks: industry networks, nets, portfolios and dyadic relationships — Actor-to-actor networks — II ECOSYSTEM PERSPECTIVE with implications for networks and their management

Strategic network approach — Industrial network approach, IMP — Service-dominant logic

Moving toward "ecosystems"

What does it imply?

Ecosystem – Evolving market structure

- An ecosystem is a way in which a market is structured; it is *a dynamically evolving structure*.

- The market ecosystem has balance and symmetry, but this can be disrupted via market shaping as an actor introduces new ideas or new business model elements to which "the market ecosystem" responds by seeking to recover (Storbacka & Nenonen, 2011).

Ecosystem – more information

- **Firms learn, discover, and acquire information from the "market": the whole "ecosystem" is a source of information**
- **Knowledge acquisition from the internal and external actors of a value-co-creation ecosystem via social media and a market orientation strategy builds a firm's competitive advantage (Nguen et al., 2015).**
- **"Market sensing" is the ability of a firm to "anticipate [the] future evolution of markets and detect emerging opportunities based on information collected from its business ecosystem" (Mu, 2015, p.154).**

Ecosystem vs. value networks

- **An ecosystem is close to a value network: the firm *chooses and operates a network of collaborating actors* who help provide an offering.**

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Ecosystem and business model

- **Business models are embedded in an ecosystem context.**
- **Firms' business models and ecosystems co-evolve. Firms must constantly develop their business models taking into account the co-evolvement of others business models and ecosystem**
- **Competition and collaboration occur on an ecosystem level.**
- **Business models differ in terms of how firms relate to the surrounding ecosystem, i.e., other players**

Ecosystem and innovation

- Ecosystem actors are contributors to innovation (providing different perspectives).

- New tools and methods are needed to enable "ecosystem" actors to contribute: social media; crowdsourcing, etc.

- Market innovations are the result of "co-creation" and institutionalization by ecosystem actors.

- Radical innovation requires a (business) ecosystem, though this is often absent.

Start-ups and ecosystem

- **A new business requires support from multiple actors and institutions.**
- **Ecosystems, as industry clusters, support entrepreneurship.**

Ecosystem: social processes become relevant

- Brand, "goodwill" and positive co-creating actions are earned in ecosystems that include multiple stakeholders (Sheth & Sinha, 2014).

- Multiple stakeholders, even those that are distant, opposing, and at the periphery of an ecosystem, can contribute to the co-creation of a brand (online and offline) via their values, cultural complementarities, and valuable adjustments at the core of the ecosystem (Gyrd-Jones & Kornum, 2013).

Ecosystem: The boundaries of industries become blurred

- The increasing *ambiguity of market and industry structures leads to the creation of overlapping and parallel industry networks,* spanning industry borders.

- Many recent innovations concurrently affect *technology, medicine, policy, and business* (e.g., Crie & Chebat, 2013).

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Example: hygiene technology
From products towards hygiene solution

STARTING POINT

AIM

Products and knowledge

Individual products, services, knowledge

Indoor hygiene (air, water, surfaces) concept and business field

Target markets:
Primary markets: hospitals, 24/7 intensive care units, day care centers, sheltered homes, etc.

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Hygtech ecosystem
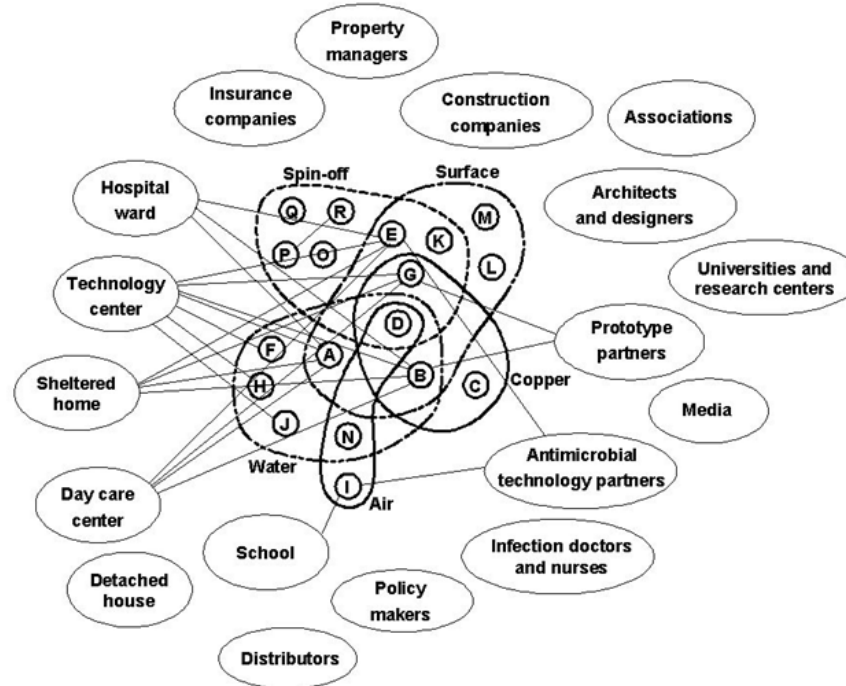
The extended innovation network resembling an ecosystem:
the innovators (in the middle) and the other significant stakeholders (the outer circle of actors).

Ecosystem: The boundary between B2B and B2C diminishes

- The clear boundary between the B2B and business-to-customer (B2C) markets and "conventional" and "untypical and therefore peripheral actors" can be questioned.

Ecosystem: The convergence in disciplines and approaches

- Disciplines become more close to each other, e.g. marketing, management, innovation, and socio-technological perspectives.

- The ecosystem concept is more broadly applied in technology and management streams, now it is expanding.