



VITALISE

Virtual health and Wellbeing Living Lab Infrastructure

Living lab innovation process and tools

Teemu Santonen

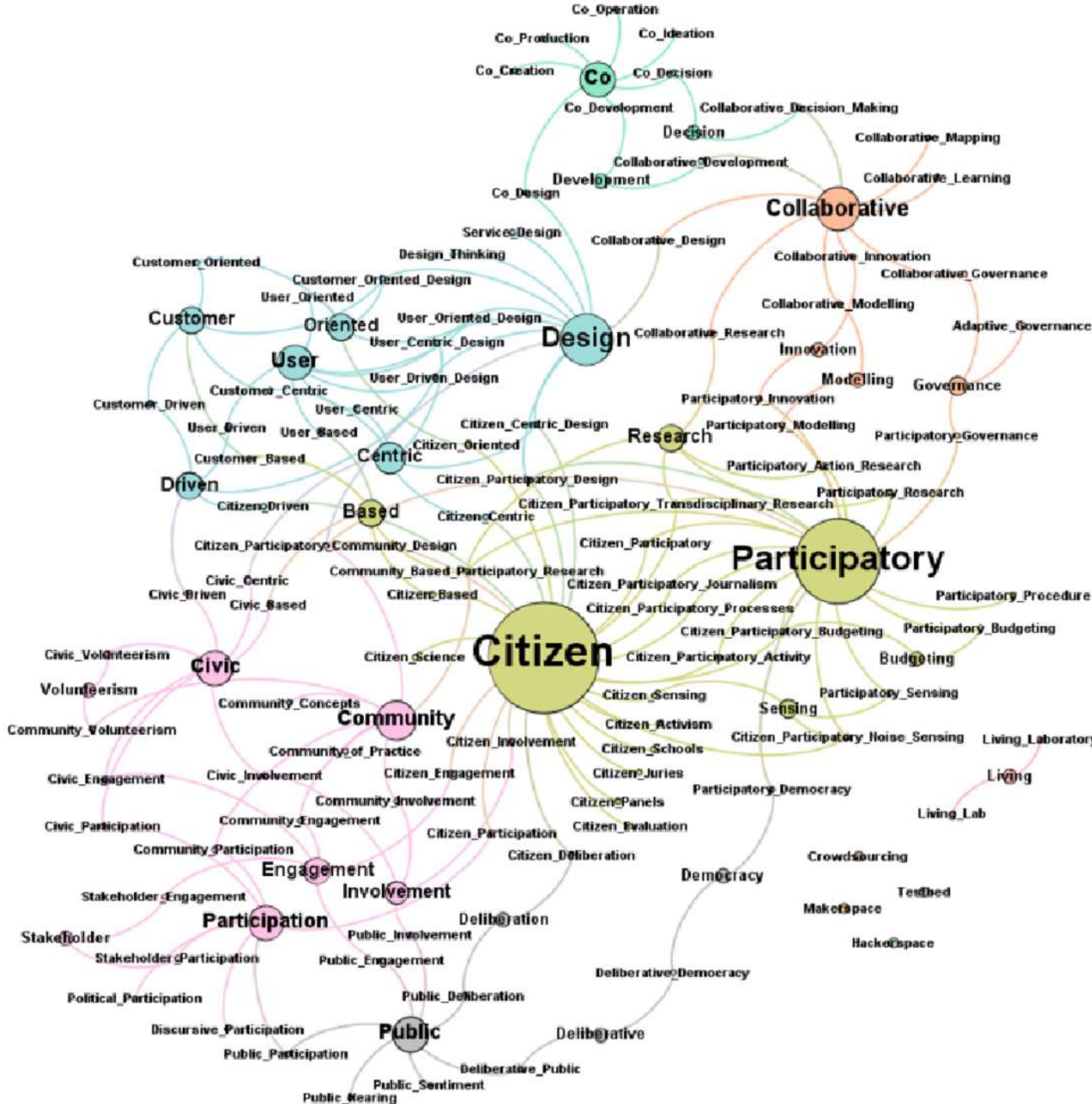


This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 101007990.

Slides can be downloaded here



<https://shorturl.at/aluw2>

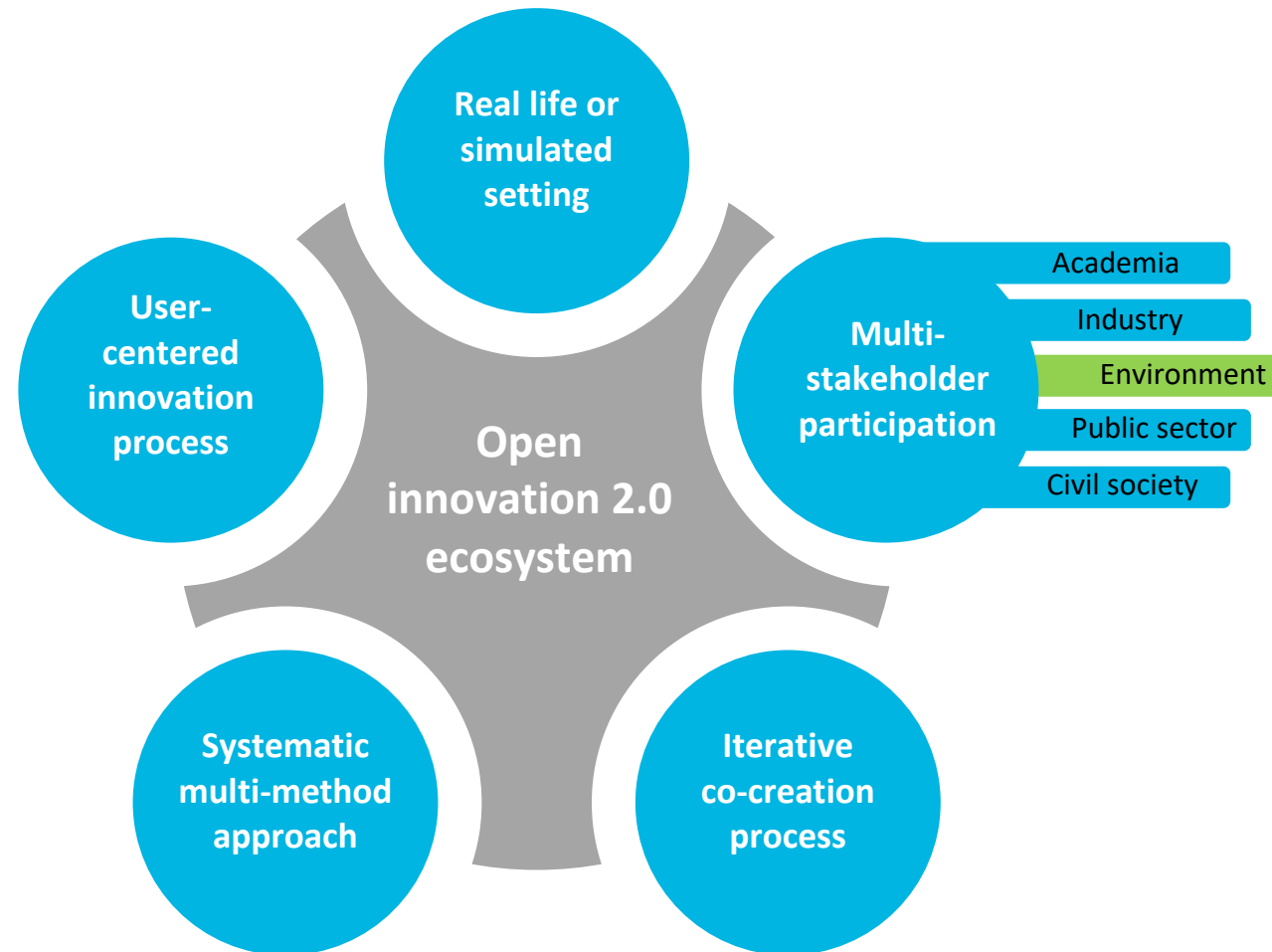


There is a large body of knowledge relating collaborative innovation

Santonen, T. (2021) Clarifying terminology for collaborative innovation and development. In Iain Bitran ; Steffen Conn ; Chris Gernreich ; Eelko Huizingh ; Marko Torkkeli & Jialei Yang (Eds.) ISPIIM Innovation Conference: Innovating our common future, Proceedings ISPIIM Berlin 2021.

What is a Living lab?

*The European Network of Living Labs (ENoLL) –
The international federation of benchmarked Living Labs in Europe and worldwide*



Quintuple helix

BM ELEMENTS	LIVING LAB BUSINESS MODEL ATTRIBUTES – RELATIVE IMPORTANCE 2021									
KEY PARTNERS	Research org. [6.87]	Regional public org. [6.13]	Municipals and cities [6.00]	Networks and Clusters [6.67]	State level org. [4.33]	Digital service providers [5.60]	NGOs, and third sector org. [4.27]			
	Education org. [6.73]	Secondary care org. [5.73]	Device manufacturers [7.00]	Tertiary care org. [4.80]	Primary care org. [5.07]	Preventive health / wellbeing service providers [4.40]				
KEY ACTIVITIES	Project mgmt. [6.20]	Testing and co-creation [7.80]	Funding support services [5.73]	Marketing and sales [4.87]	End-user services [2.13]	Support services to state authorities [3.00]				
	Education and training [6.60]	Ecosystem orchestration [6.33]	Support services to regional authorities [3.93]	Support services to local authorities [3.73]	Funding [2.27]					
KEY RESOURCES	Personnel [6.87]	Infra and technologies [6.47]	Partner(s) [5.40]	External networks [5.40]	User and patients panel [5.47]	Students [4.93]	Data and publication databases [5.67]	External experts [4.40]	IPR-portfolio [3.00]	
VALUE PROPOSITIONS	R&D Services [6.60]	With real end-user [6.40]	Customized services [4.87]	Ecosystem and project mgmt. [5.07]	Funding support [4.60]	Method development [4.00]	Funding [3.13]			
	Unique infrastructure [6.60]	Various positive arguments [6.47]	Multi-disciplinary [5.80]	Value and impact evaluation [5.07]	Education and training [4.73]	Marketing Support [3.33]				
CUSTOMER RELATIONSHIPS	Long-term relations [7.53]	Project based [6.73]	Direct personal contacts [6.47]	Networking [6.33]	Events [4.93]	Internal [4.47]	Co-Creation with various stakeholders [6.07]	Steering [3.67]	Advisory [3.47]	
CHANNELS	Co-operation projects [7.07]	Regional channel [4.93]	Educational channels [4.47]	Events arranged by LL [5.40]	Professional publications [5.20]	Scientific publications [3.47]	Online, mobile and social media [4.73]	Paid media and marketing [2.40]		
	Direct channels [6.33]	Event participation [5.27]	Networks and cluster [5.93]	Owners or key partners channels [4.13]	Municipal and city channels [4.40]	Lobbying and policy channels [4.80]	State level channel [3.13]			
CUSTOMER SEGMENTS	Education org. [5.20]	Device manufacturers [5.27]	Research org. [4.53]	Municipals and cities [4.67]	State level org. [3.33]	Tertiary care org. [3.80]	NGOs, and third sector org. [2.80]			
	Regional public Org. [4.93]	Digital service providers [6.27]	Secondary care org. [4.53]	Primary care org. [4.08]	Networks and clusters [5.00]	Preventive health/wellbeing service providers [4.47]				
COST STRUCTURE	Personnel [8.07]	Infrastructure and facilities cost [5.53]	Internal R&D development [4.80]	Travelling costs [3.20]	Consulting fees for external experts [3.07]	IPR-protection [2.60]	End-User fees and other variable costs [3.40]	Outsourced services [2.60]	Marketing and sales [3.47]	
REVENUE STREAMS	Project grants [6.33]	Fixed or permanent funding [6.40]	R&D project and consulting service sales [3.33]	Education and training services [2.40]	Device and infrastructure rental [2.27]	Donations [2.27]	Royalties [1.73]	Event and site visit fees [1.60]	Equipment and device retail [0.53]	

Living Lab Research Infrastructure

In regulation 1291/2013, the EU Parliament and Council of the EU define Research Infrastructure (RI) as “facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields”. Living lab RIs consist

- **Single-sited facility:** Unified single body of equipment at one physical location
 - Laboratory or smart home
- **Distributed facility:** Facilities, resources and services that are geographically scattered in multiple location
 - City, city district, outdoor space (e.g. nature/hiking trails)
 - Sensor networks, network of homes
- **Virtual access-based facility:** Resources and services that are exclusively available via online internet based tools.
 - Access and ability storage scientific data and repositories, tools for virtual collaboration, various computer services,
- **Mobile facility:** Facilities and resources which can be easily moved to from one place to another
 - Handheld devices and non-handheld equipment

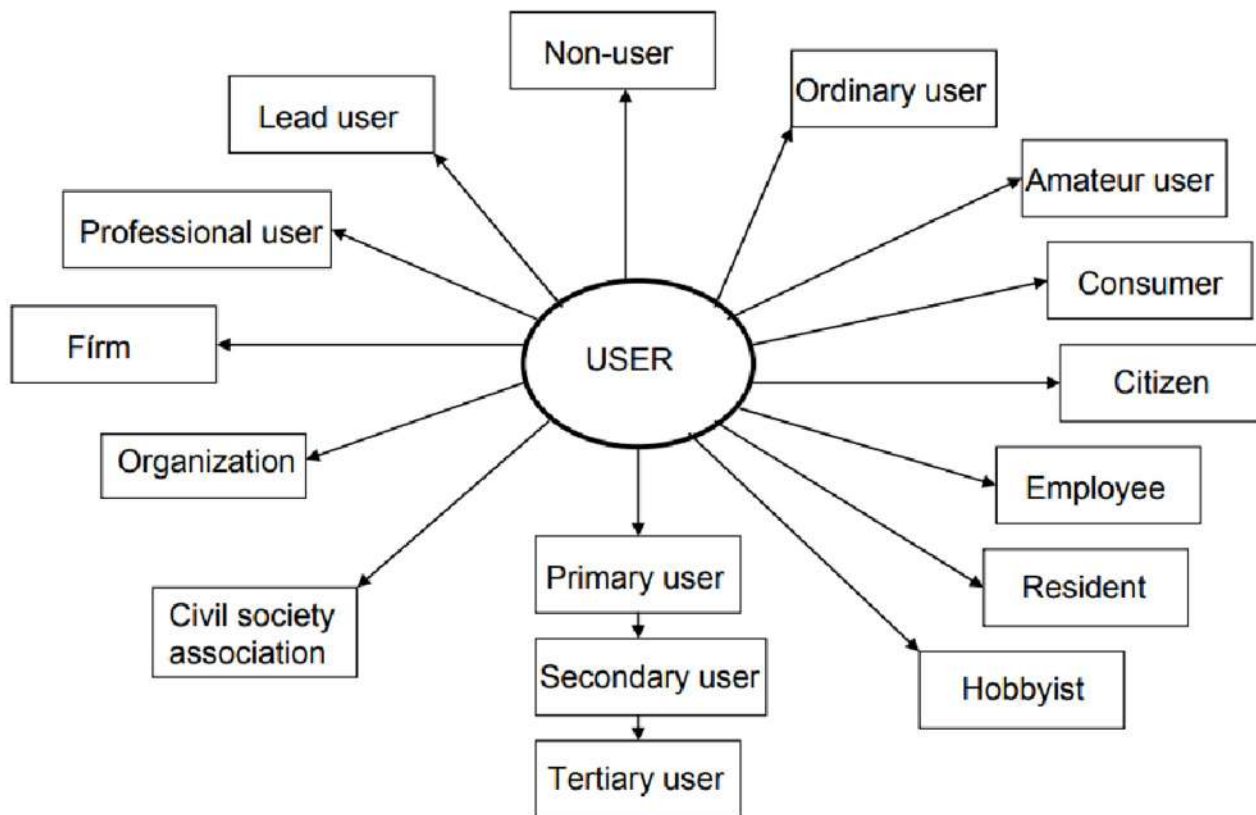
LIVING LAB SERVICE CLASSIFICATION MODEL

INNOVATION NETWORK ORCHESTRATION AND FUNDING SUPPORT	PROJECT PLANNING AND MANAGEMENT	MARKET AND COMPETITOR INTELLIGENCE SERVICES	CO-CREATING PRODUCTS, SERVICES AND PROCESSES	TESTING AND VALIDATION SERVICES	BUSINESS ADVISORY, MANAGEMENT CONSULTING	MARKETING AND SALES SUPPORT	
TYPICAL SERVICES							
Innovation network building and maintaining	Briefing	Expert opinions, sparring and advisory services					
Stakeholder identification, analysis and mapping		Key stakeholder engagement by using ad hoc or permanent innovation network members				Business contacts, sales and business leads	
Grant writing and funding application support service		End-user engagement by using ad hoc or permanent user panel members				Risk analysis	Event arrangement
Building and maintaining shared vision for innovation network	Project planning	Interviews and focus groups				IPR-support	Online/on-site visibility presence
Capacity building: Training, knowledge sharing and awareness raising, site visits and event arrangement	Project management	Surveys					Public procurement support services
User community building and user panels		User personas					"User approved" Certificate
Funding		Customer journey					Soft landing support
Equipment and facility rental service		Observations, shadowing, diary studies and ethnography studies					Showroom
		Competitor and market analysis, benchmarking and	Ideation and other	Idea selection and testing			

The Harmonized processes, services, tools and methods that living lab offer: <https://wiki.livinglab-harmonization.com/xwiki/bin/view/Main/>

Santonen, T., Julin, M., Hirvikoski, T., Salmi, A., Leskinen, J., Saastamoinen, K., Kjellson, F., Anderson, K., Baskyte, M., Nigul, M. and Englas, K., 2020. Living lab business models and services key findings from Product Validation in Health (ProVaHealth) project.

Examples of different user groups



Secondary = Use the system through an intermediary

Tertiary = those affected by the introduction of the system or who will influence its purchase

Arnkil, R., Järvensivu, A., Koski, P. and Piirainen, T., 2010. Exploring quadruple helix: Outlining user-oriented innovation models. Työraportteja, 85/2010, Working Papers, Työelämän tutkimuskeskus, Tampereen yliopisto, Tampereen yliopistopaino Oy Juvenes Print, Tampere, Finland

Age or age group			
Specific age range			
Elderly	Adults	Youth	Children

Health status			
Healthy	Patient	Rehabilitant	Recovered/Survivor

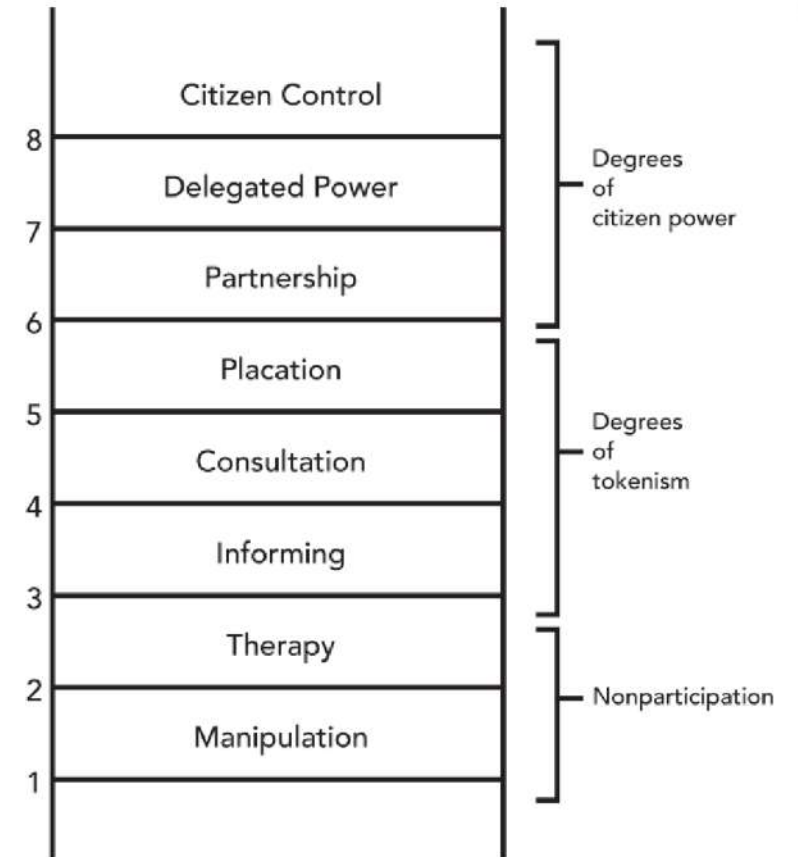
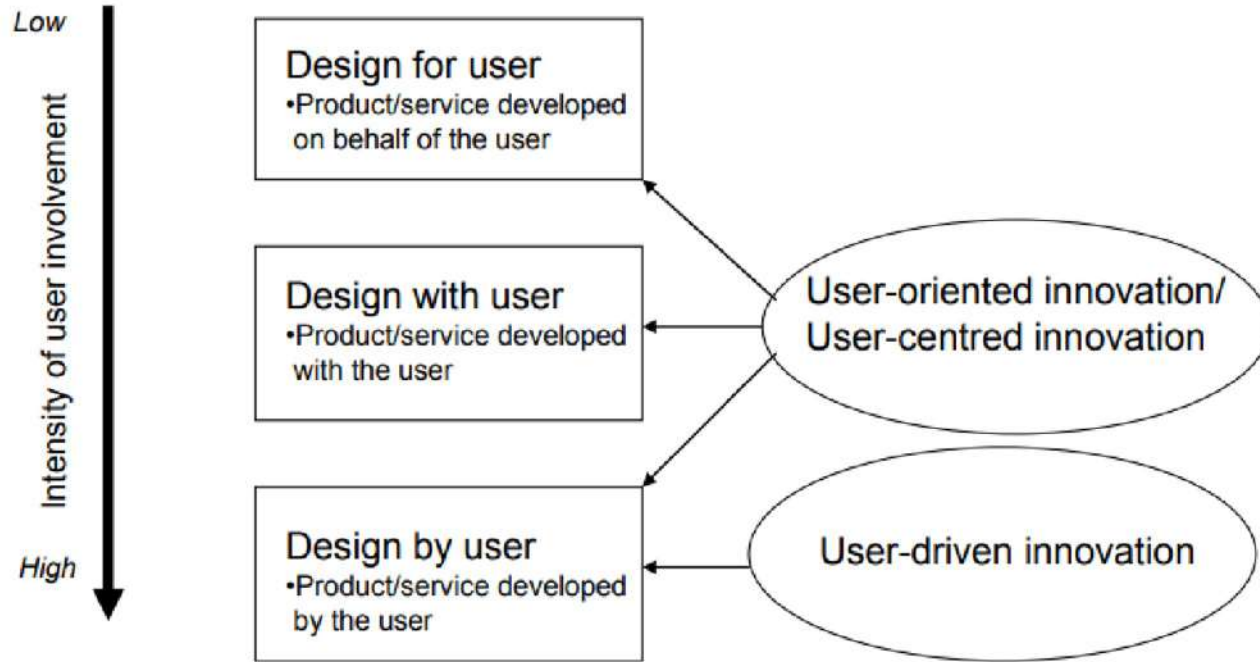
A specific disease, disorder or disability			
ADHD	Dementia	Parkinsons' disease	Loneliness and Social Isolation
Autism	Down syndrome	Physical disability	Mental health
Cardiovascular disease	Idiopathic pulmonary fibrosis (IPF)	Sleep apnea/apnea	Mild cognitive impairment
Chronic Obstructive Pulmonary Disease (COPD)	Language disability	Substance abuse (drugs, alcohol)	Multiple sclerosis
Cognitive disorder (mild, major)	Intellectual disability/ Learning difficulty/ Mental retardation	Trauma patient (e.g., a spinal cord injury)	Neurodegenerative diseases

Clients of a specific service			
Child welfare	Nursing home	Employment service	
Early childhood education	Home care		

Vulnerable groups			
Minors/Children	Single parents with minor children	Persons subjected to psychological, physical or sexual violence	Substance users (drugs, alcohol)
Disabled people	Victims of trafficking in human beings	Ethnic minorities and immigrants	Isolated people
Elderly people	Persons with serious illnesses	Homeless people	Ex-prisoners and people with criminal background
Pregnant women	Persons with mental disorders		



Degrees of user involvement



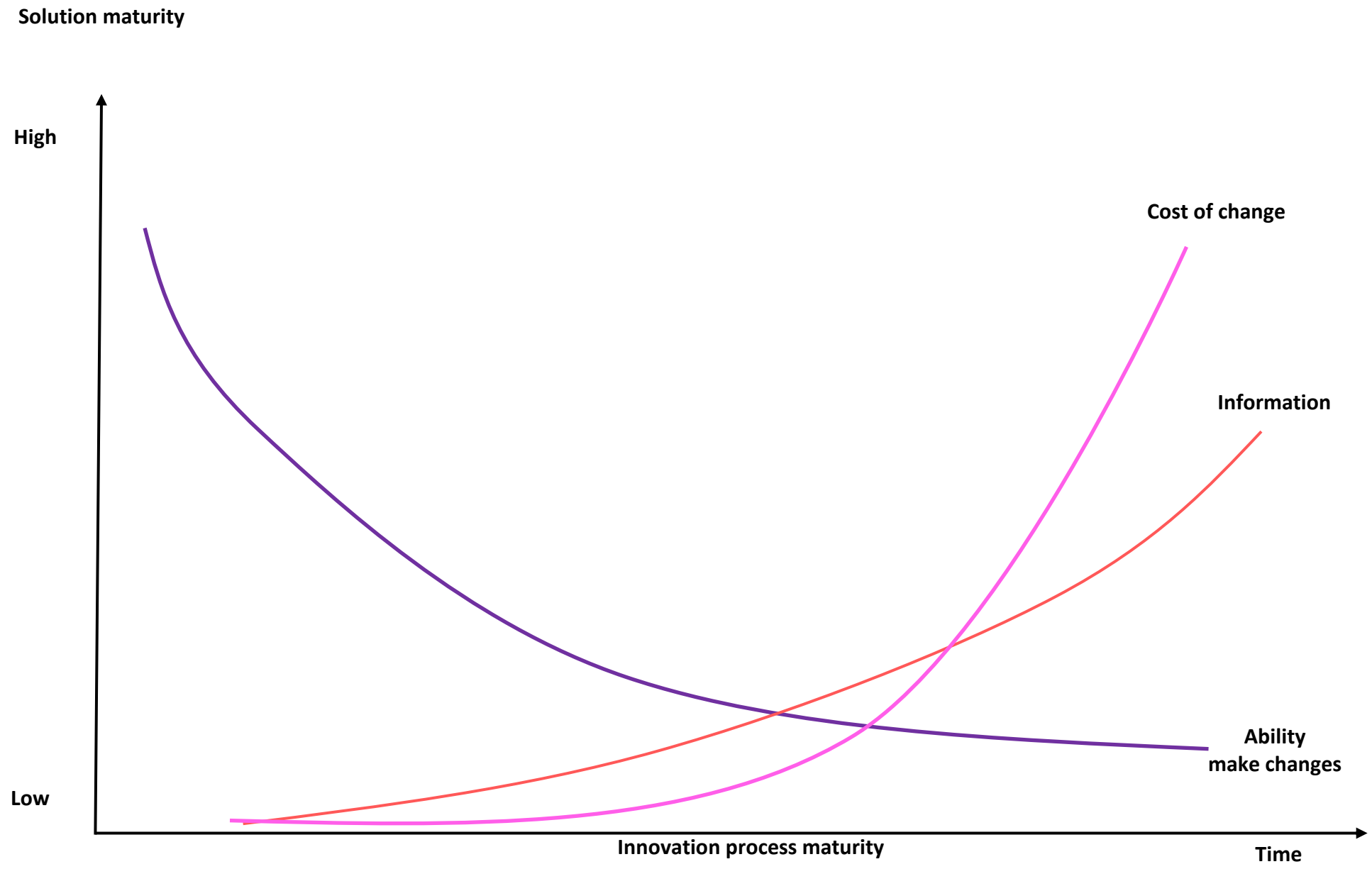
Arnkil, R., Järvensivu, A., Koski, P. and Piirainen, T., 2010. Exploring quadruple helix: Outlining user-oriented innovation models. Työraportteja, 85/2010, Working Papers, Työelämän tutkimuskeskus, Tampereen yliopisto, Tampereen yliopistopaino Oy Juvenes Print, Tampere, Finland

Arnstein, S.R., 1969. A ladder of citizen participation. *Journal of the American Institute of planners*, 35(4), pp.216-224.

Theoretical foundations of Living lab innovation process



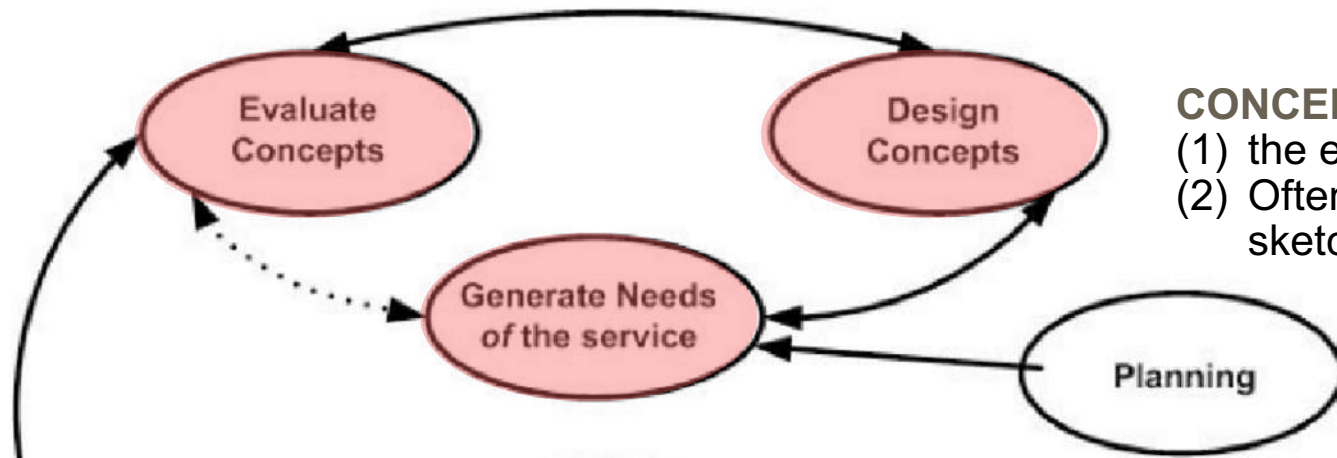
- Living lab approach is a **multi-staged innovation process** in which the focus and shape of the **solution enrich and clarify the further the process proceed**
 - Bergvall-Kareborn, B., Hoist, M. and Stahlbrost, A., 2009, January. Concept design with a living lab approach. In 2009 42nd Hawaii international conference on system sciences (pp. 1-10). IEEE.
- There is **no clear consensus** what are the stages, and how many stages there should be
 - Arnkil, R., Järvensivu, A., Koski, P. and Piirainen, T., 2010. Exploring quadruple helix: Outlining user-oriented innovation models. Työraportteja, 85/2010, Working Papers, Työelämän tutkimuskeskus, Tampereen yliopisto, Tampereen yliopistopaino Oy Juvenes Print, Tampere, Finland
- Examples from (1) living lab literature, (2) product and service development literature and (3) user-centered and design literature
 - Santonen T, Julin M, Hirvikoski T, Salmi A, Leskinen J, Saastamoinen K, et al. Living lab business models and services key findings from Product Validation in Health (ProVaHealth) project. Laurea-ammattikorkeakoulu. 2020.



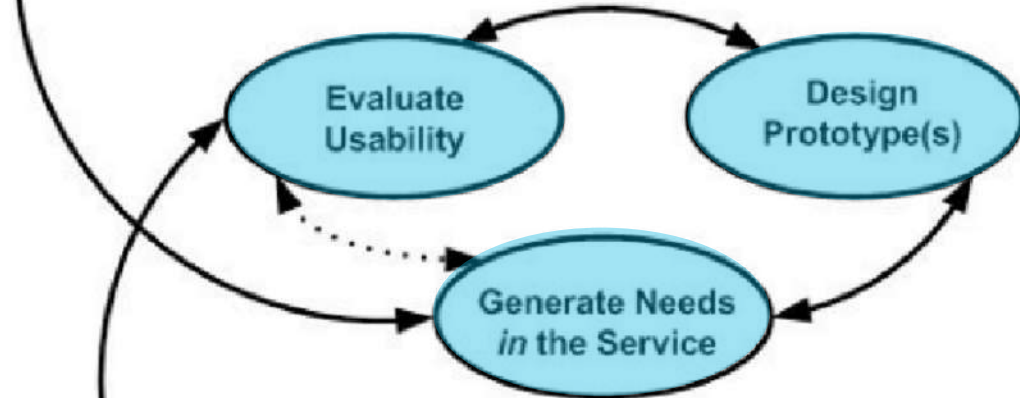
Examples from living lab literature

CONCEPT DESIGN =

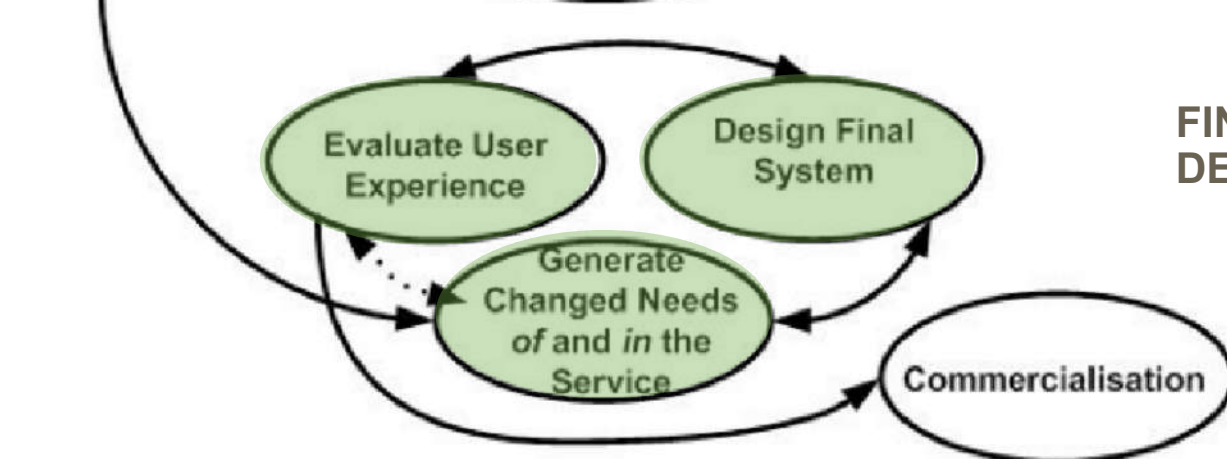
- (1) the essence of your idea
- (2) Often explained via a collection of sketches, images, and a written statement



PROTOTYPE DESIGN



FINAL SYSTEM DESIGN



Bergvall-Kåreborn, B. and Ståhlbröst, A., 2009. Living Lab: an open and citizen-centric approach for innovation. *International Journal of Innovation and Regional Development*, 1(4), pp.356-370.13

Prototype strategies

Scale:

- ‘High fidelity prototypes’ vs. ‘Low fidelity prototypes’
- ‘Full Size model’ vs. ‘Scaled model’

Integration

- ‘Sub-System’ vs. ‘Entire System’

Logistics

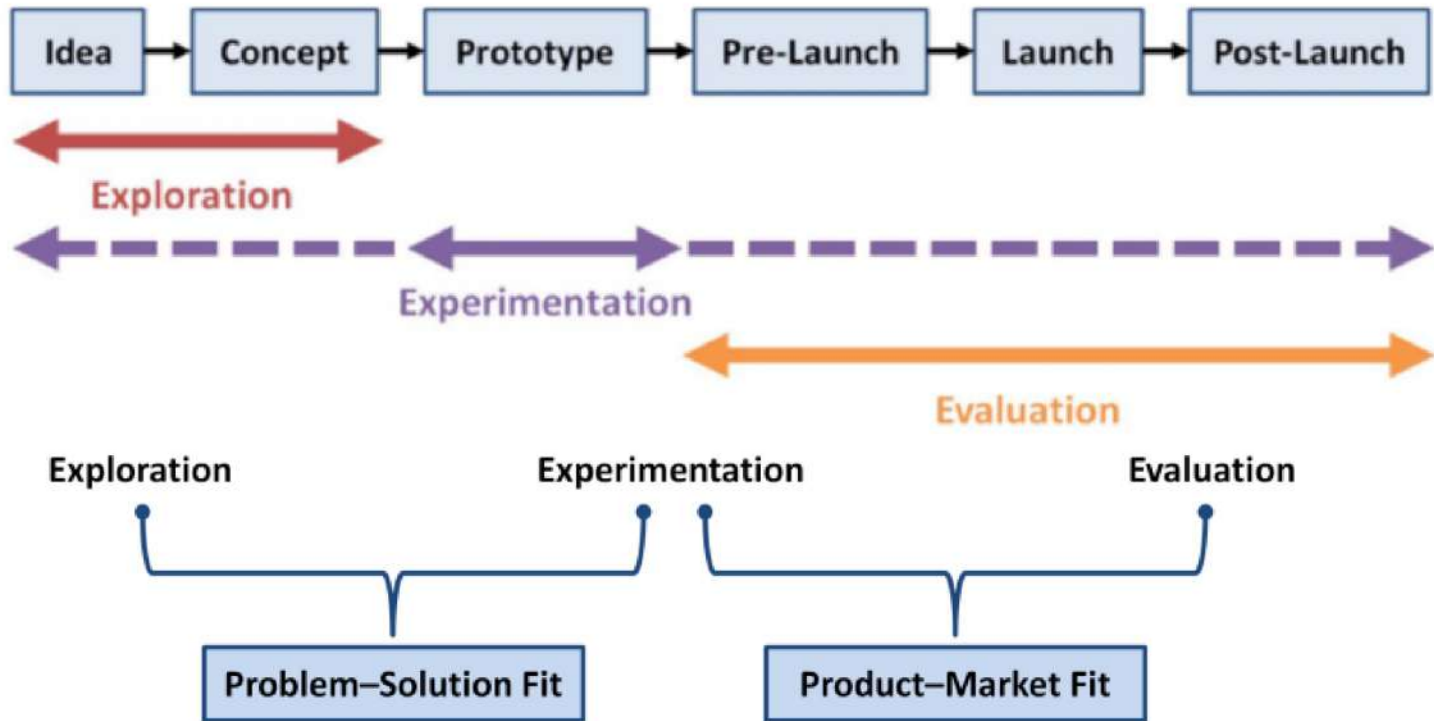
- ‘Informational value of prototype’ vs. ‘Cost of prototype’
- ‘Time constraints’ vs. ‘No time constraints’
- ‘Cost constraints’ vs. ‘No cost constraints’
- ‘Resource (material) constraints’ vs. ‘No resource constraints’
- ‘Parallel concepts’ vs. ‘Single concept’
- ‘Iterative approach’ vs. ‘Single model per concept’

Embodiment

- ‘Virtual models’ vs. ‘Physical models’
- ‘Test (easily available) materials’ vs. ‘Final (manufacturing) material’
- ‘Outsource work’ vs. ‘Internal resources’

Evaluation

- ‘Relaxed requirements’
- ‘Generative nature’ vs. ‘Analytical nature’



Schuurman, D., De Marez, L. and Ballon, P., 2016. The impact of living lab methodology on open innovation contributions and outcomes. *Technology Innovation Management Review*, 6(1), pp.7-16.

Coorevits, L., Georges, A. and Schuurman, D., 2018. A framework for field testing in living lab innovation projects. *Technology Innovation Management Review*, 8(12), pp.40-50.

Exploration

- (1) Studying the “current state” of users
- (2) Identifying the problem,
- (3) Matching a new solution to the problem while taking into account the specific contexts in which these problems occur

Experimentation

- (1) A prototype = something being built to represent a product or experience before the actual artefact is completed
- (2) the experimentation stage puts the designed solution to the test, as much as possible in a real-life context

Evaluation

- (1) Innovation has a rather high level of maturity
- (2) How to enter the market, (e.g. determining which users will adopt first, how to communicate with them, and which features should be launched to maximize uptake and continued use)

Report of implementing living labs and ACSI-events and recommendations in the future circular economy efforts

<https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5c1ef0b12&appId=PPGMS>



Figure 1 Phases Living Lab case 1

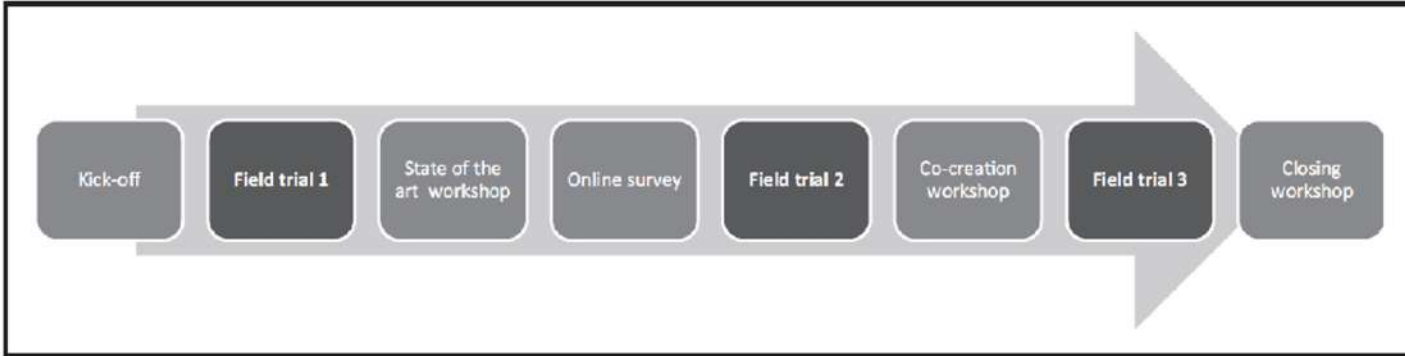


Figure 2 Phases Living Lab case 2

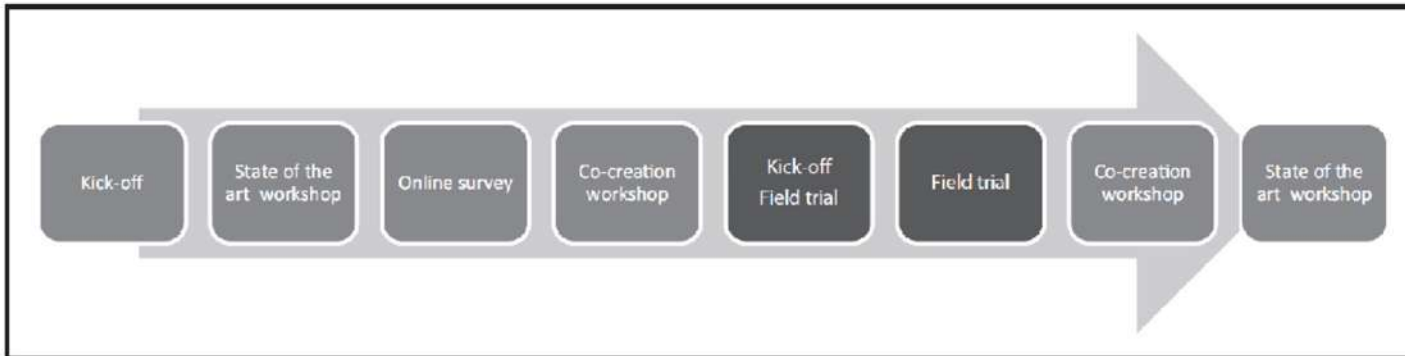
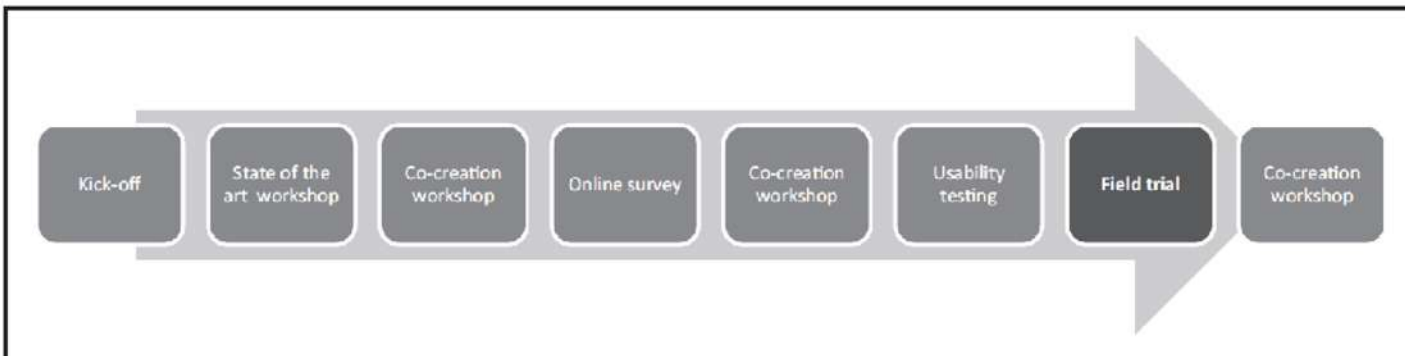


Figure 3 Phases of Living Lab case 3



A. Georges, D. Schuurman, B. Baccarne, L. Coorevts User engagement in living lab field trials *Info*, 17 (4) (2015), pp. 26-39

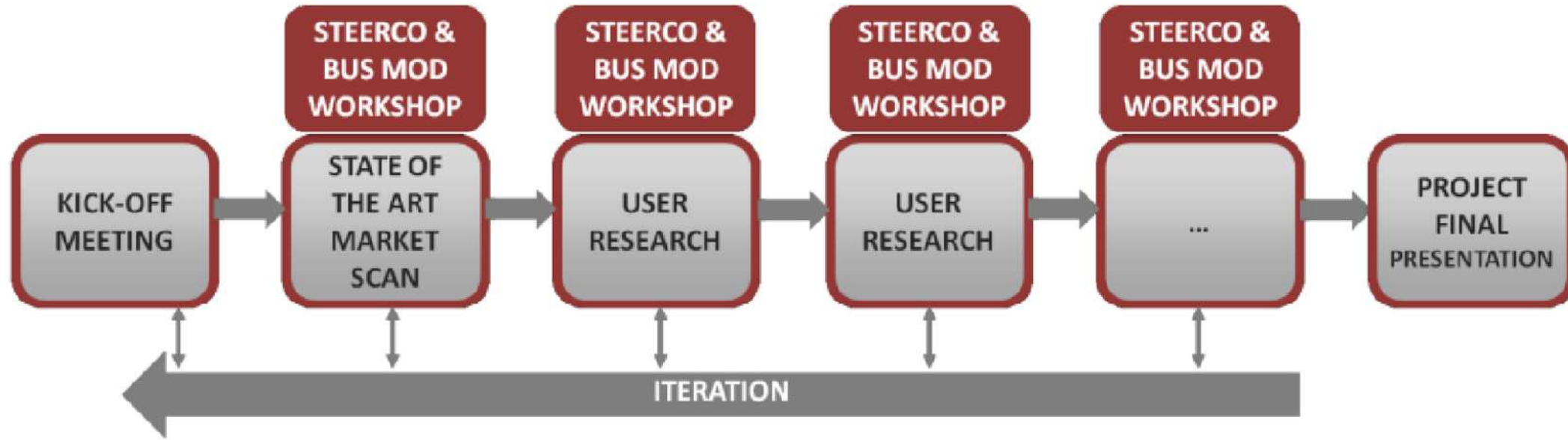
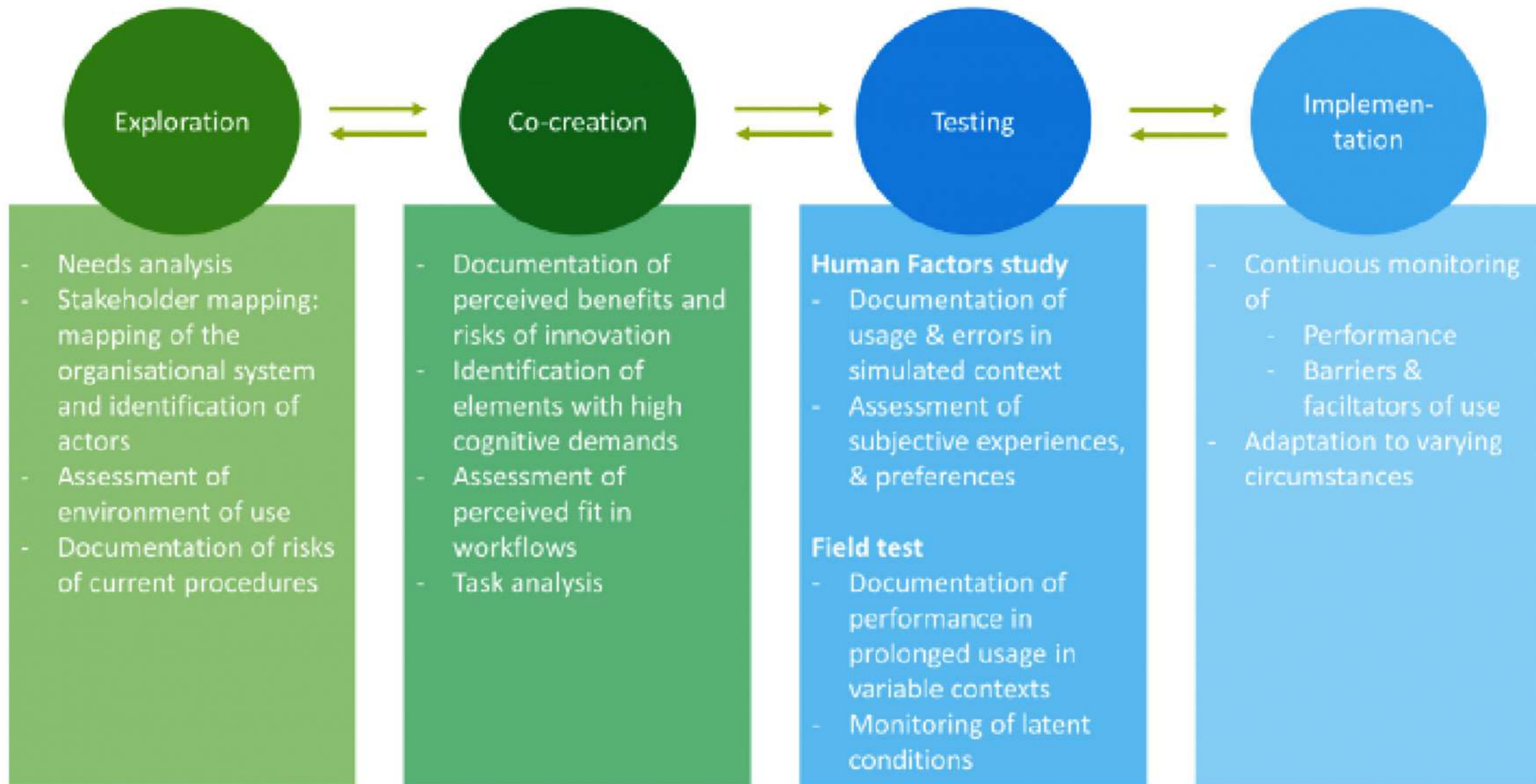


Figure 5. Outline for a living lab project labeled as 360° innovation

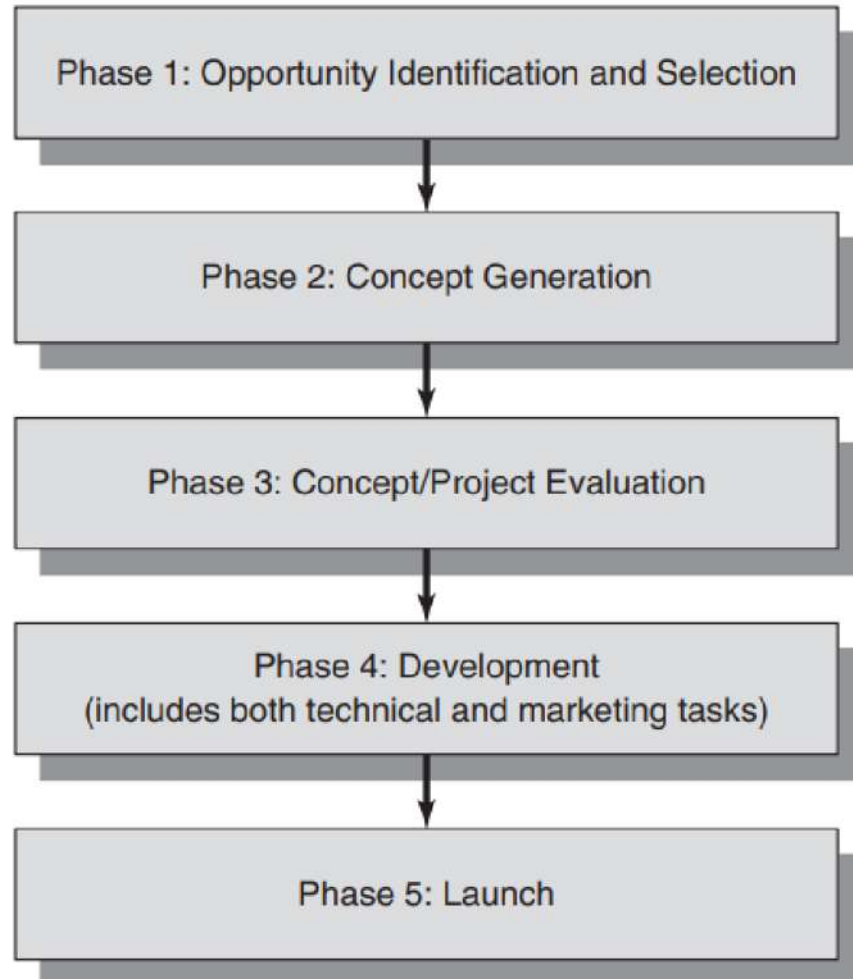
Rits, O., Schuurman, D. and Ballon, P., 2015. Exploring the benefits of integrating business model research within living lab projects. *Technology Innovation Management Review*, 5(12), pp.19-27.



De Witte, N.A., Broeckx, L., Vermeylen, S., Van Der Auwera, V. and Van Daele, T., 2021. Human Factors in Living Lab Research. *Technology Innovation Management Review*, 11(9/10).

Examples from product and service development literature

The Basic New Products Process



Crawford, C.M., 2008. *New products management*. Tata McGraw-Hill Education.

New Product Development Process Activities

Activity
Concept Search This includes brainstorming and other creativity-stimulating techniques, preliminary discussions about the product's design, and identifying new product opportunities.
Concept Screening This may include scoring and ranking concepts according to some criteria and eliminating unsuitable concepts.
Concept Testing This covers preliminary market research to determine market need, niche, and attractiveness.
Business Analysis An evaluation of the product concept in financial terms as a business proposition
Product Development The technical work to convert a concept into a working product.
Product Use Testing, Field Testing, and/or Market Testing Offering the product to a preselected group of potential buyers to determine its suitability and/or marketability.
Commercialization Launching the new product into full-scale production and sales.
Other Process Activities Includes regulatory approval/registration and patent process filing.

Page, A.L., 1993. Assessing new product development practices and performance: Establishing crucial norms. *Journal of product innovation management*, 10(4), pp.273-290.

User vs. data

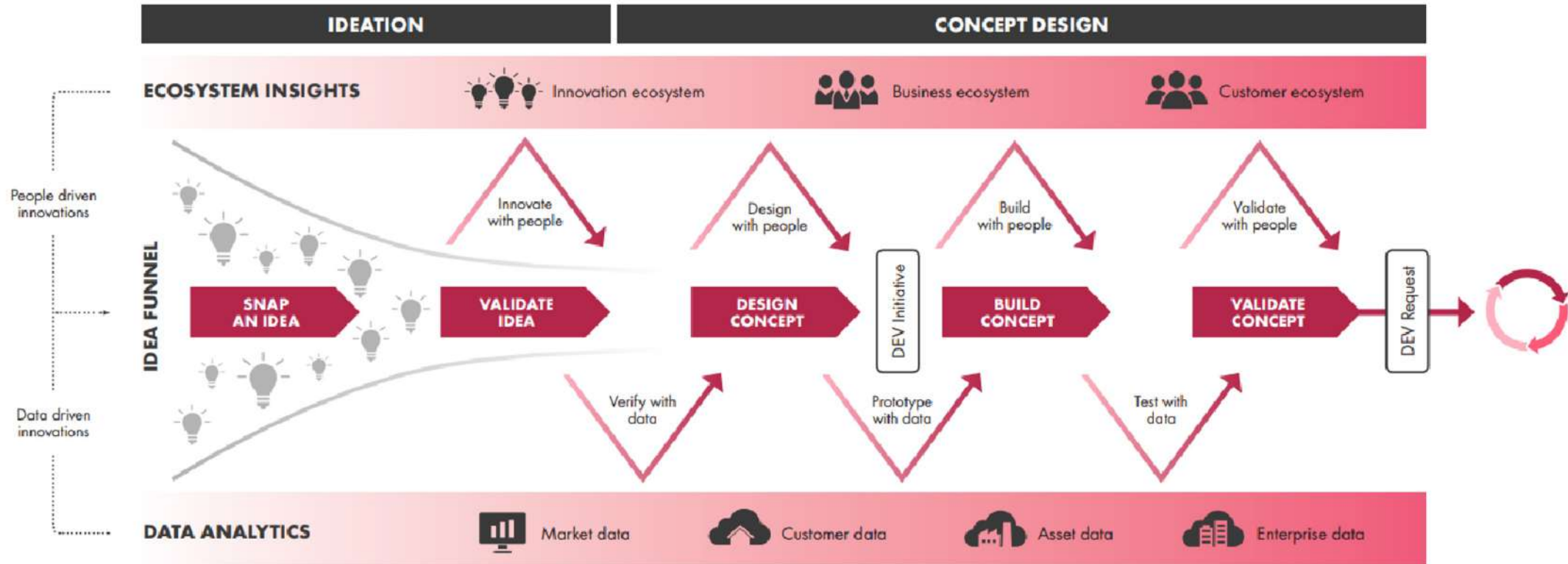


Figure 2.5.1 Innovation management process

Business Technology Standard:

https://www.managebt.org/content/uploads/Business_Technology_Standard_Book_20220510.pdf

Devices and technologies for data collection



Categories of devices for data monitoring and collection	Environmental monitoring	characterize and monitor the environment, establish environmental parameters and conditions. As environment we refer to the person's surroundings either indoors or outdoors.
	Biometrics	biological measurements — or physical characteristics — that can be used to identify individuals and their unique characteristics such as fingerprint scanning or voice recognition
	Biosignals and physiological monitoring	physiological and physical measures of the human body's functions, in individuals. This can occur in a resting condition or in response to certain bodily or environmental conditions. It includes also fitness related metrics
	Human monitoring	
	(Primary) Vital signs	a group of the six most important medical signs that indicate the status of the body's vital function (diastolic/systolic blood pressure, body temperature, heart rate, respiratory rate, oxygen saturation, body height, body weight, BMI, head circumference)
	Cognitive ability and mental processes	Measuring the processes involved in the acquisition of knowledge, reasoning and management of information and the brain-based skills we need to carry out any task
	Activity and behavioral monitoring	monitoring the individuals' physical activities and tracking their performance. Monitoring behavior and activities of daily living (ADLs)
Categories of technologies for interventions	Assistive Technology	technologies used to increase, maintain, or improve the functional capabilities of individuals, the feeling of autonomy, safety and general wellbeing or also supporting participation.
	Extended reality - XR (VR & AR)	allows for a two-way flow of information through an interface between the user and the technology through a simulated experience that can be similar to or completely different from the real world
	Mobile and Computer Games	all the digital games that are used as interventions for health and wellbeing not including XR

Agile-Stage-Gate

R.G. Cooper, A.F. Sommer / *Industrial Marketing Management* 59 (2016) 167–180

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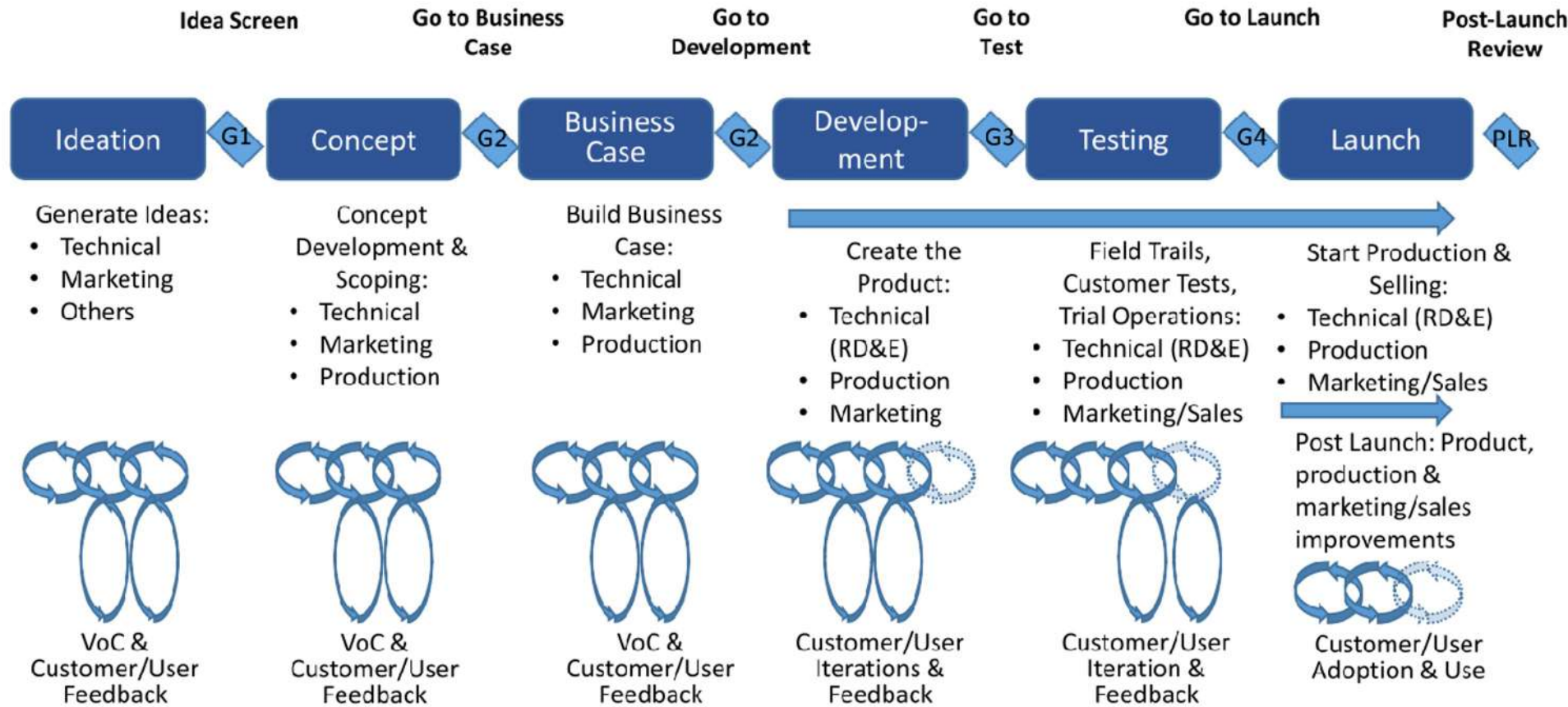
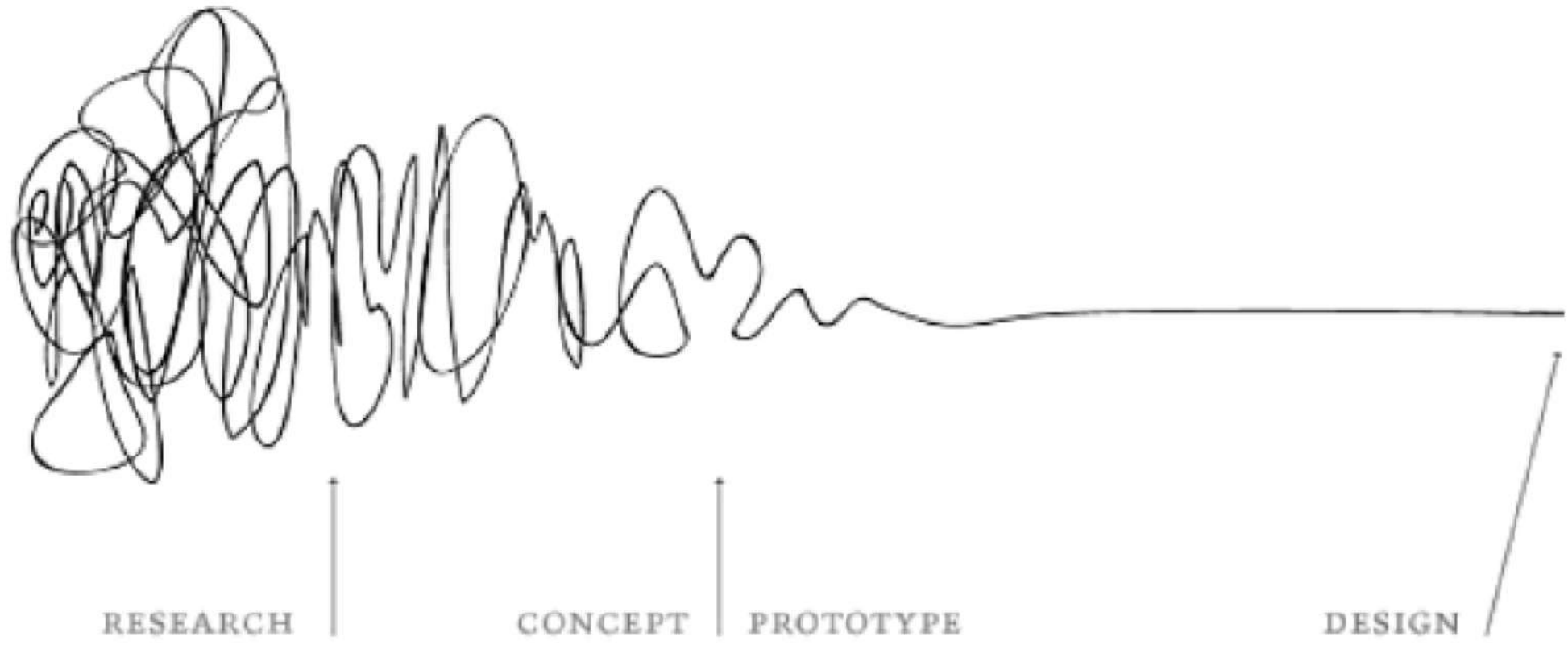


Fig. 1. The integrated Agile-Stage-Gate hybrid model – a typical 5-stage, 5-gate Stage-Gate idea-to-launch system, with Agile built into each of the stages.

Examples from user-centered innovation and design literature

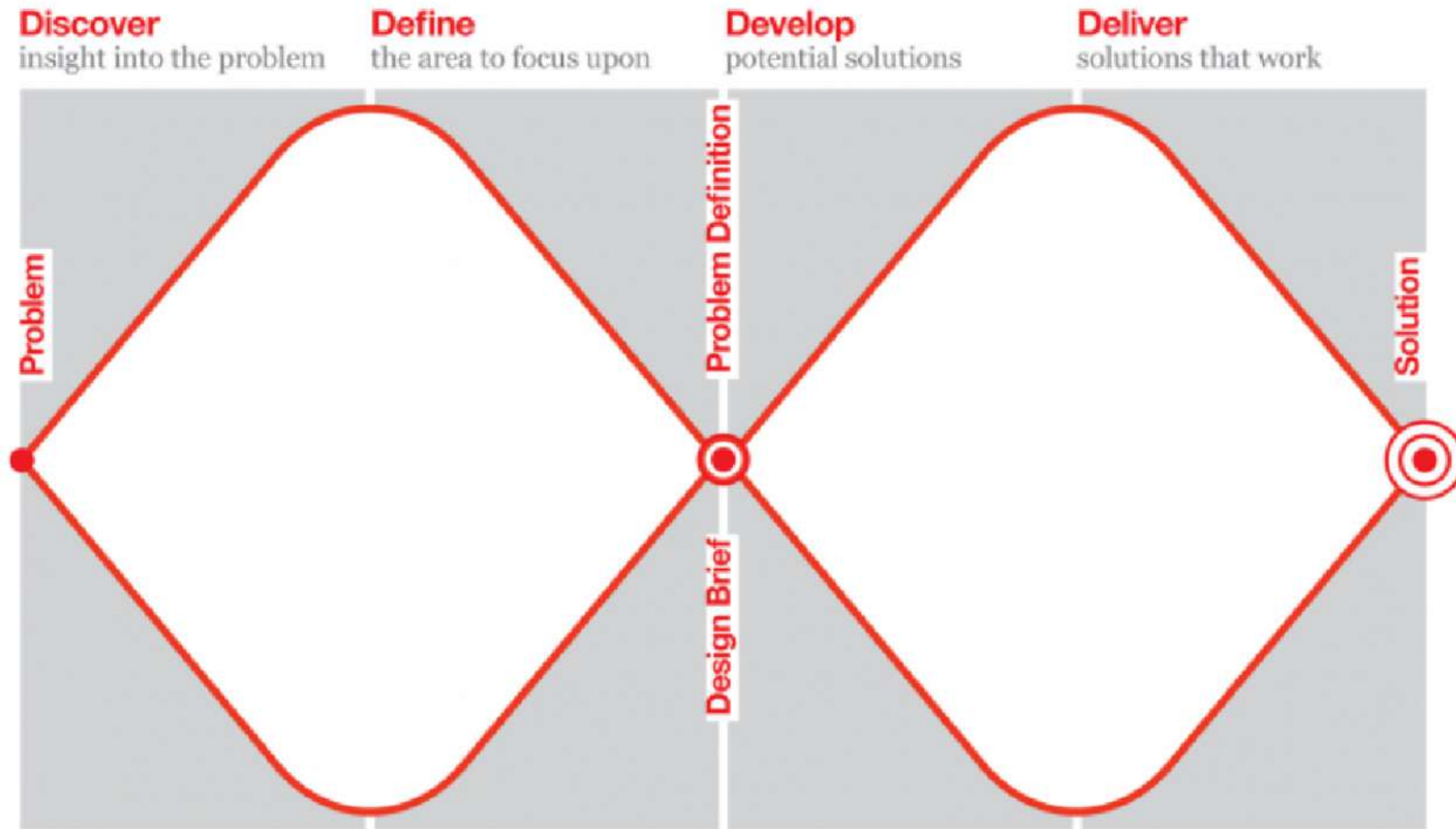
UNCERTAINTY / PATTERNS / INSIGHTS

CLARITY / FOCUS



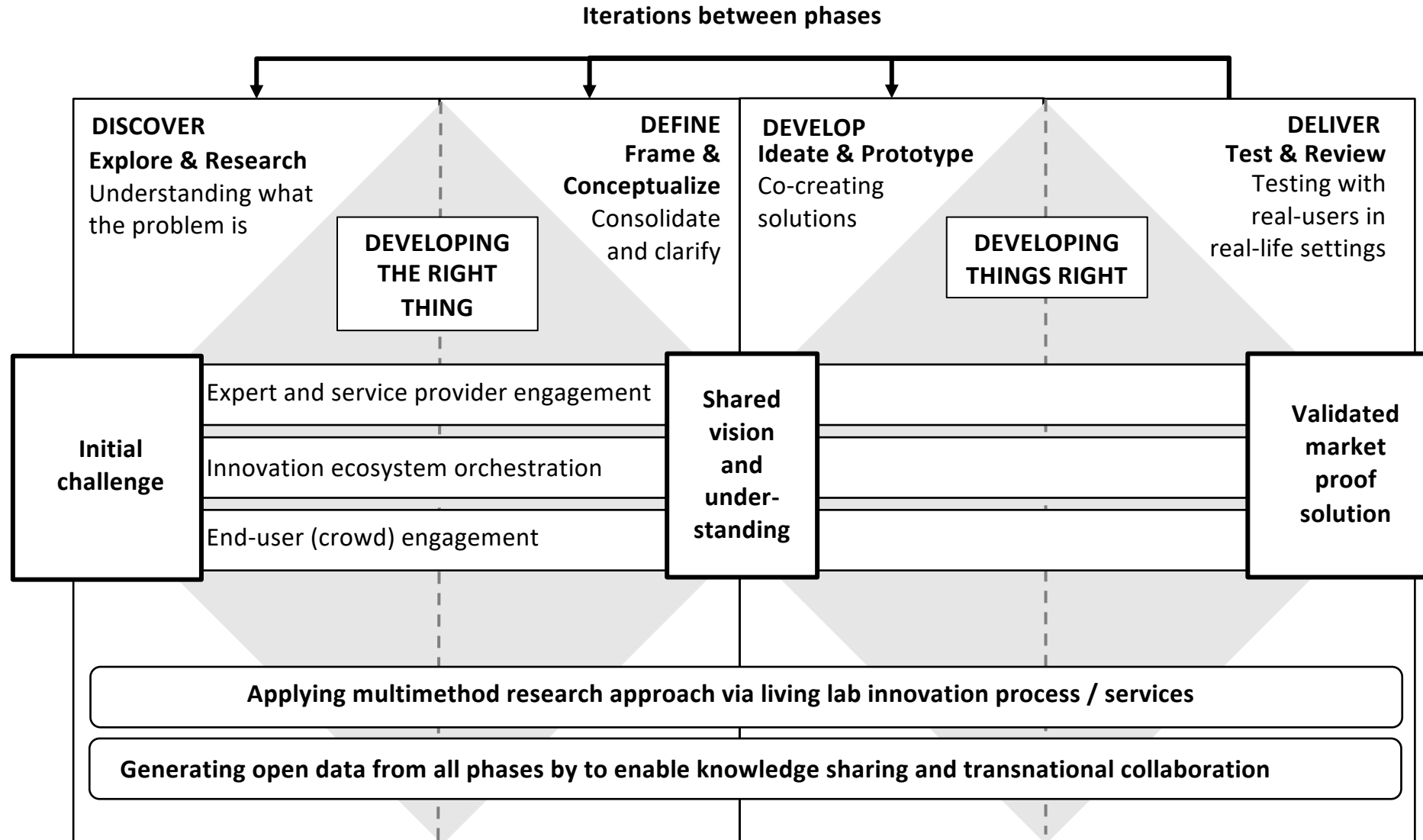
Squiggle by Damien Newman

The original Double Diamond model

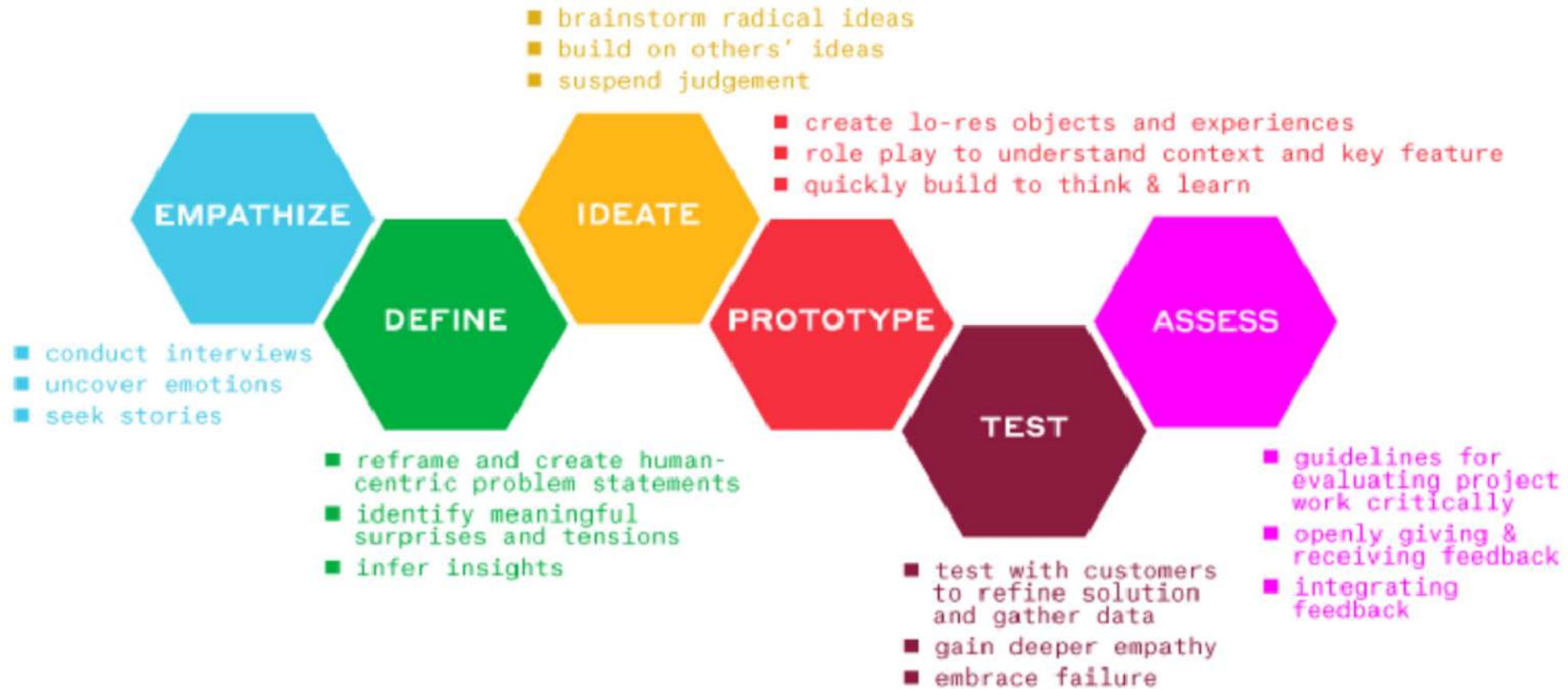


The original Double Diamond model

Double diamond aligned to living lab approach



Design Thinking Process Diagram*



d.school Executive Education

Hasso Plattner Institute of Design at Stanford University

*not necessarily linear, apply as needed ©2019

5 steps design thinking model proposed by the Hasso-Plattner Institute of Design at Stanford (d.school)

PROCESS STAGE		KEY ACTIVITIES DURING THE PHASE		AIM OF THE PHASE	TYPICAL METHODS	OUTCOME OF THE PHASE
1	NEED, CHALLENGE AND OPPORTUNITY IDENTIFICATION	Discover	Identify various market demand, user needs, challenges, and competitive landscape including ecosystem conditions to get inspired and empathize with end-users.	Increase options by collecting market and user insights	Desk research, interviews, surveys and observations	Unstructured insights and market intelligence data
		Define	Analyse prior discoveries to understand the users and market niche. Select the most potential opportunities and define clear challenge(s) to be solved or vision(s) to be achieved.	Decrease options by analysing prior insights	Content analysis and statistical methods	Shared understanding of the challenges, problems and needs (a.k.a. opportunities)
2	IDE GENERATION AND IDEA TESTING	Co-create	Co-create and generate as many high level ideas as possible with real end-users and other relevant stakeholders, which could solve the defined challenge or fulfil the vision. Use insights from prior stage as stimulants for ideation.	Increase options by ideating with end-user and other relevant stakeholders	Interactive workshops utilizing co-creation methods	Large quantity of high-level ideas, functionalities, features and hypothesis for value promise
		Idea selection	Test your ideas with real end-users and other relevant stakeholders and select the best ones for further development. Keep your options open for different development paths.	Decrease options by selecting the best ideas based on collected feedback	Idea selection methods, interviews and surveys	Ranking of high-level ideas, functionalities, features and hypothesis for value promise
3	CONCEPTING AND PROTOTYPING	Co-create	Co-create with end-users and other stakeholders concept(s), which describe in written or visual format what user-needs are to be satisfied and how and prototypes enables a limited end-user interaction in real or simulated environment.	Clarify idea(s) by explaining the core features of the suggested solution(s)	Workshops, hackathons and design sprints	A set of concepts or concept alternatives grounded on verified ideas
		Proof-of-concept test and prototyping	Test your low-fidelity/tech concepts and hi-fidelity interactive prototypes with real end-users and other relevant stakeholders. Select the best one for final co-creation phase.	Make a decision, which concept(s) is going to be fully developed	Concept and feasibility testing methods, interviews and surveys	Concept accepted by the end-users and other relevant stakeholders
4	DETAILED PRODUCT AND SERVICE DEVELOPMENT	Detailed development and design	Product and service development activities while collecting input from end-users and other relevant stakeholders when needed.	Develop fully functional solution	In house testing, unit testing, expert opinions	Fully (or almost fully) functional solution ready to be tested in real environment
		Small-scale real life test and piloting	Conduct usability testing and small-scale validation tests in real life or simulated environments.	Verify that everything is working before heading to large scale or final impact assessment	Usability and integration testing	Small-scale exercise or pilot study to demonstrate and verify that a certain features or the general concept has practical value in real world
5	VALIDATION AND IMPACT ASSESMENT	Impact evaluation and large-scale piloting	Validate the full scale and fully functional product(s) or service(s) at system level in real environment with real end-users. Regulatory approvals and clinical test when needed.	Validate value promise, reliability and scalability	System level and large-scale piloting and impact assessment methods including clinical trials when needed	Fully working product or service intend benefits, value and compatibility with in the ecosystem is confirmed.
6	MARKET LAUNCH AND POST-MARKET	Market acceptance	Make product or service available for potential customers via trail production and market launch activities. Establish a post market surveillance system if needed and evaluate solution market performance.	Collect feedback for next version revision and tracking solution performance in the market	Interviews, surveys, observations	Providing input for product or service improvement

Santonen, T., Julin, M., Hirvikoski, T., Salmi, A., Leskinen, J., Saastamoinen, K., Kjellson, F., Anderson, K., Baskyte, M., Nigul, M. and Englas, K., 2020. Living lab business models and services key findings from Product Validation in Health (ProVaHealth) project.

Examples of tools and methods

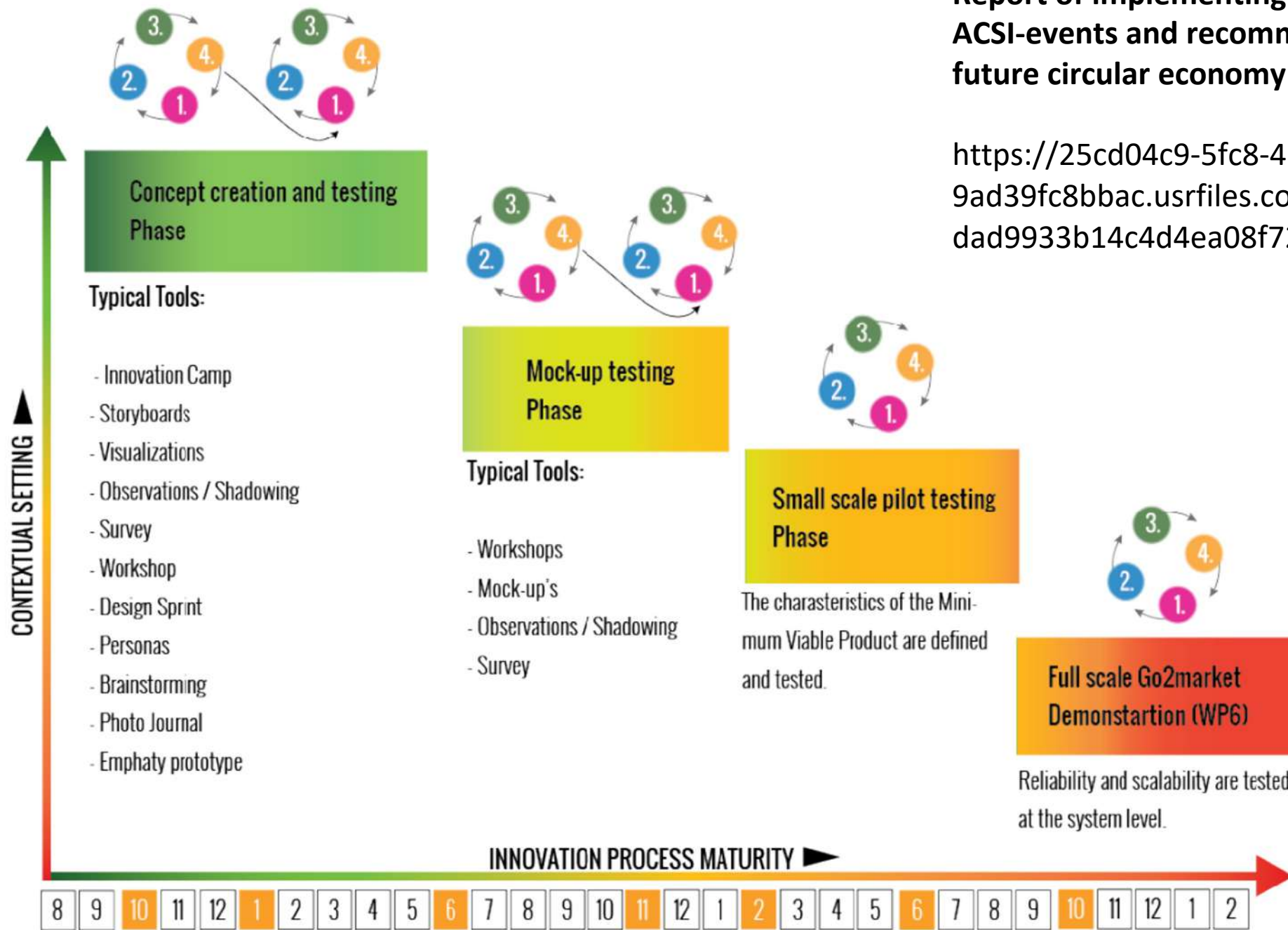
Most typical tools and methods

- [Intake and matching](#)
- [Stakeholder \(and partner\) analysis and mapping](#)
- [Co-creation session](#)

- [Idea selection and testing](#)
- [Concept and proof-of-concept tests – concept feasibility study](#)
- [Prototyping test](#)
- [Simulation test](#)
- [Usability testing](#)
- [Small-scale real-life testing and experimentation](#)
- [Large-scale real-life testing and piloting](#)

Report of implementing living labs and ACSI-events and recommendations in the future circular economy efforts

https://25cd04c9-5fc8-4b44-8c3c-9ad39fc8bbac.usrfiles.com/ugd/25cd04_3dad9933b14c4d4ea08f729cea7ba2f0.pdf



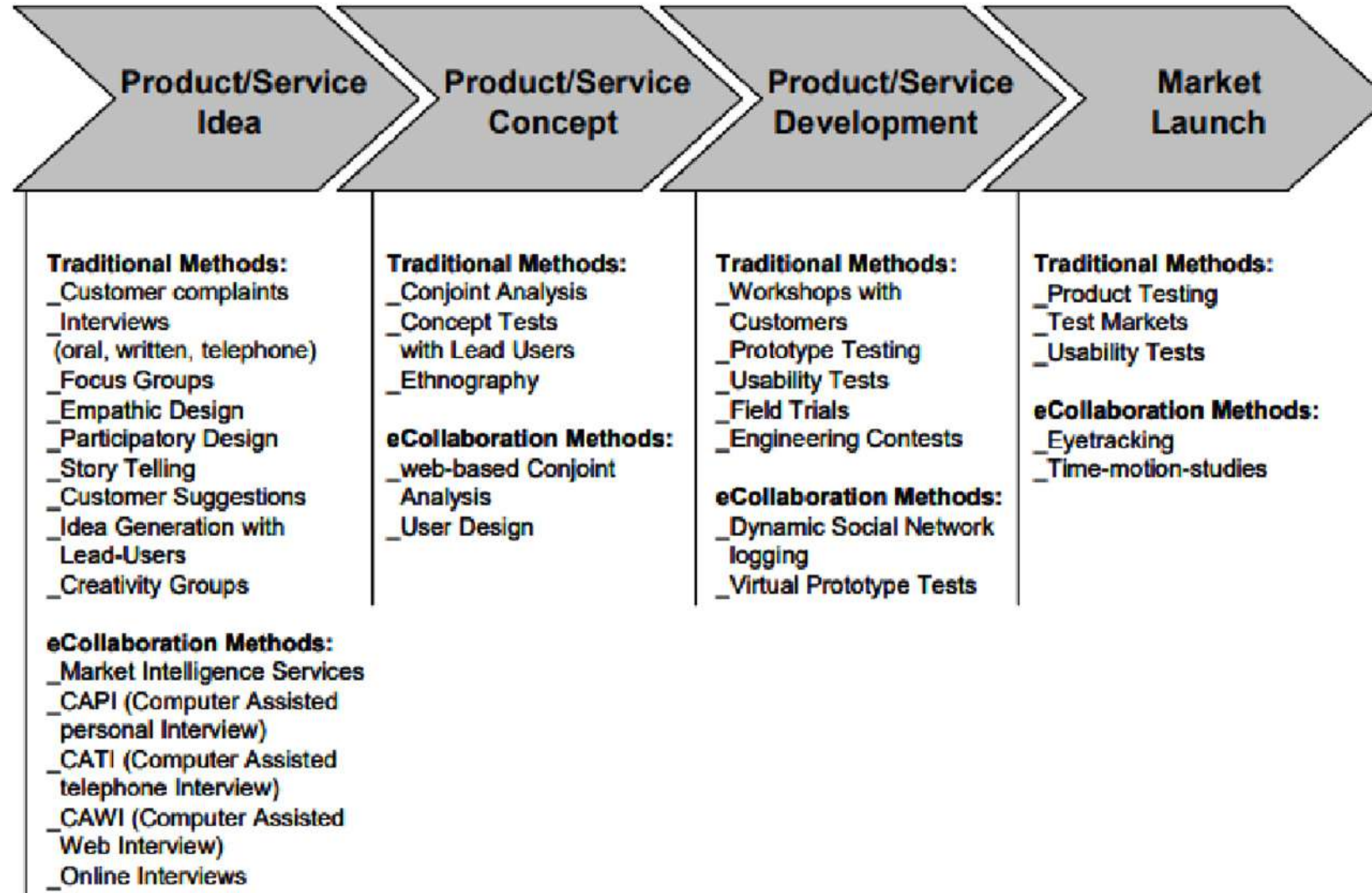


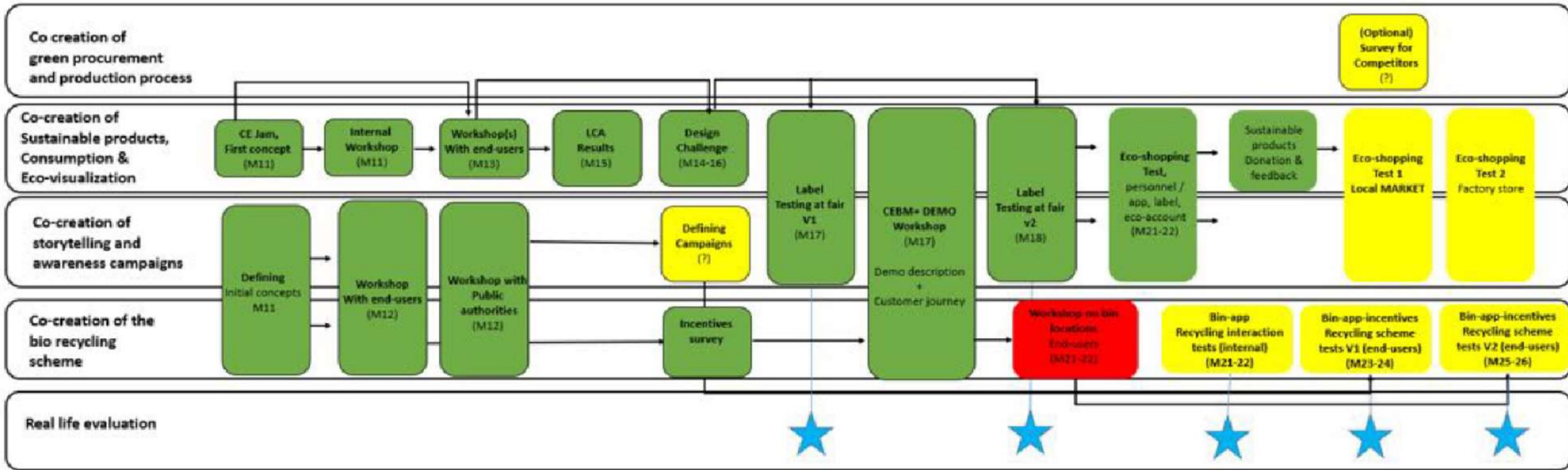
Figure 1.2: Methods Used Within Existing Living Labs

Feurstein, K., Hesmer, A., Hribernik, K.A., Thoben, K.D. and Schumacher, J., 2008. Living Labs: a new development strategy. European Living Labs-a new approach for human centric regional innovation, pp.1-14.

How to document agile piloting

	Method	Conducted by	Target group
Before	Pre-pilot questionnaire	Facilitator or research partner	Piloting teams and/or key stakeholders
	Pre-pilot interviews	Research partner or facilitator	Piloting teams
	Observation (kick-off meeting)	Research partner	Facilitator, piloting teams and/or key stakeholders
During	Mid-term questionnaire	Facilitator or research partner	Piloting teams
	Observation (workshops, events, meetings, pilot implementation)	Research partner	Facilitator, piloting teams, key stakeholders and/or end-users
	End-user surveys and interviews	Research partner, facilitator or piloting teams	End-users
After	Post-pilot questionnaire	Facilitator or research partner	Piloting teams and/or key stakeholders
	Post-pilot interviews	Research partner or facilitator	Piloting teams and/or key stakeholders

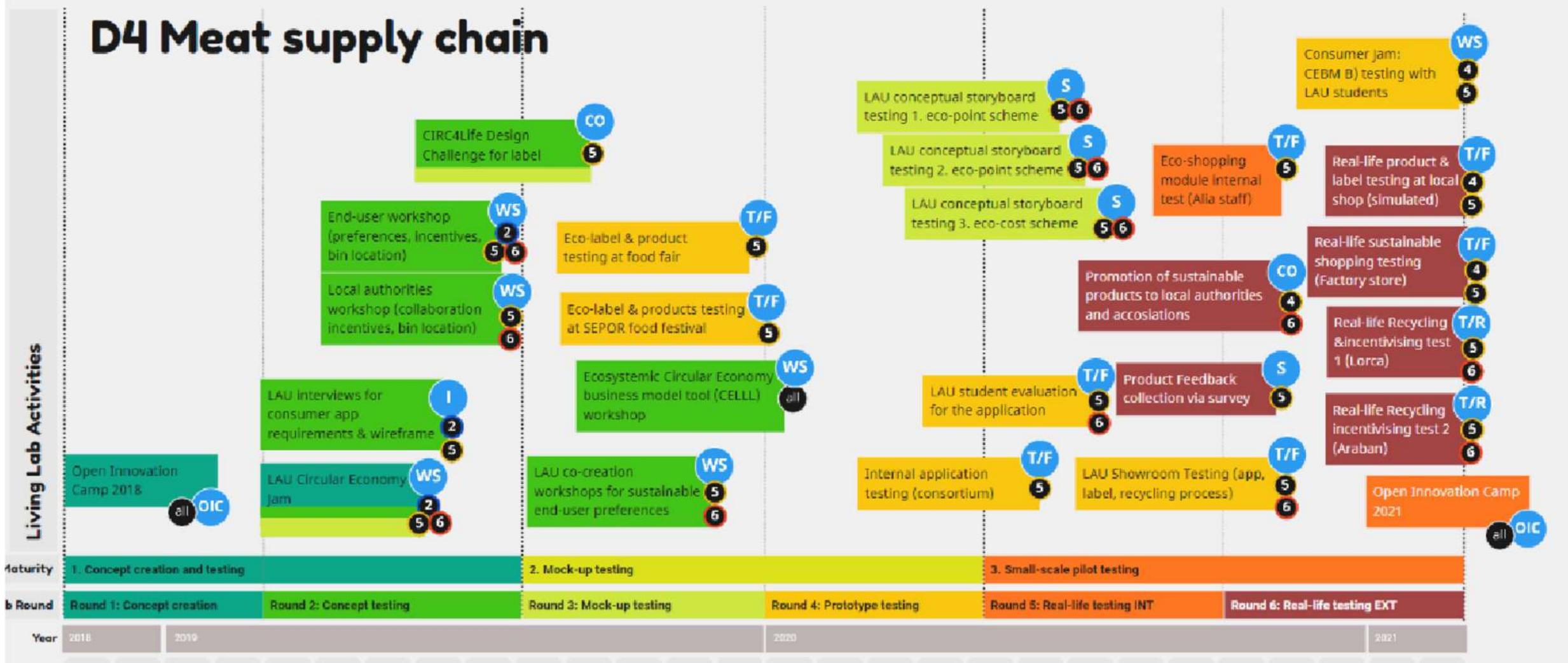
LL PROJECT PLAN, DEMO 4 ALIA, LL ROUND 4



Report of implementing living labs and ACSI-events and recommendations in the future circular economy efforts

https://25cd04c9-5fc8-4b44-8c3c-9ad39fc8bbac.usrfiles.com/ugd/25cd04_3dad9933b14c4d4ea08f729cea7ba2f0.pdf


D4 Meat supply chain



Report of implementing living labs and ACSI-events and recommendations in the future circular economy efforts

[https://25cd04c9-5fc8-4b44-8c3c-](https://25cd04c9-5fc8-4b44-8c3c-9ad39fc8bbac.usrfiles.com/ugd/25cd04_3dad9933b14c4d4ea08f729cea7ba2f0.pdf)

[9ad39fc8bbac.usrfiles.com/ugd/25cd04_3dad9933b14c4d4ea08f729cea7ba2f0.pdf](https://25cd04c9-5fc8-4b44-8c3c-9ad39fc8bbac.usrfiles.com/ugd/25cd04_3dad9933b14c4d4ea08f729cea7ba2f0.pdf)

Activity #23 details:	
CIRC4LIFE partner(s) involved:	ALIA, LAU
Engagement Activity	Real-life testing of the eco-label (2)
Linkage to CEBM(s)	CEBM B)
Activity date and place	7 TH – 15 TH October 2019 Lorca Spain (SEPOR FOOD FESTIVAL)
Participants	End-users 19 participants
LL activity details	Collecting feedback on end-user attitudes and preferences towards the eco-label concepts selected based on the Design Challenge 2019 results, by applying the label on the actual packaging and presenting it at the SEPOR food fair.
Main Result	 <p>'Traffic light' color-scheme well understood in label design. Eco-point value not understood. No clear preference in the visual design.</p>

Report of implementing living labs and ACSI-events and recommendations in the future circular economy efforts
(Includes 49 different living lab activity examples)

https://25cd04c9-5fc8-4b44-8c3c-9ad39fc8bbac.usrfiles.com/ugd/25cd04_3dad9933b14c4d4ea08f729cea7ba2f0.pdf

	2020				2021				
	May.	Jun.~Aug.	Sep.~Nov.	Dec.~Feb.	Mar.	Apr.~Sep.	Aug.~Sep.	Oct.	Nov.~
Stages of the Process	Research and Preparation				Invitation	Co-production		Establish	Operation
Activities	Listing of Stakeholders	Interview	Qualitative Data Analysis, Structuring	Developing a Vision	Vision Workshop	Design	Renovation	Opening Event	Participant Activities, Design Projects
						Action Plans	Pilot Implementation		
Details of implementation	Made a list of stakeholders who should be involved in Oyamachi Living Lab.	Conducted in-depth interviews with 33 people in four fields: education, local economy, medical welfare, and environment.	Coded and structured the interview transcripts. Extracted the 13 values of Oyamada.	Based on the results of the data analysis, we brainstormed the ideal form and function of an LL that is unique to Oyamada.	A workshop was held with about 50 local residents and stakeholders, including interviewees, to discuss the vision.	Several workshops were held to specifically discuss the design of the renovation and activities after the opening.	Conduct a DIY workshop on renovation with participants. Try out and practice the activities.	Plan and produce an opening event with participants and invite local residents and stakeholders.	Open the café space for participants' activities. Work with participants on design projects.
Participation opportunities		●			●	● ●	● ● ●	●	● ● ● ●
Participant experience		Talk about their thoughts and hopes of the community, their awareness of the issues, and their own feelings and activities.			Listen to the results of the interview and the plans for the LL. Talk with other participants about their vision of LL.	Think about specific activities and space design for LL with other participants.	Try to formulate our own ideas. Create something together with other participants.	Organize an opening event together. Explain the lab to other residents.	Visit the lab often. Sometimes participate in design projects. The lab becomes their place to live.
Goals and degree of commitment		Forming a connection			Understanding and empathy, Interaction among participants	Continuing Participation, Envisioning Together	Action, Building Together	Role Acquisition, Ownership	Proactive Activities, Sustained commitment

Sakakura, K., 2021. Co-creating a Living Lab for Sustainable Community Engagement. In *Digital Living Lab Days Conference* (p. 249).

Living lab research can be also short and simple

PRODUCT VALIDATION IN HEALTH: Evaluating transnational testing in Baltic Sea Region Living Labs:
<https://scanbalt.org/wp-content/uploads/2020/03/ProVaHealth-Evaluating-transnational-testing-in-Baltic-Sea-Region-Living-Labs.pdf>

The collaboration

The purpose of the test was to evaluate the use of an audio guide, CoNurse, with guidelines for the most common procedures, in a Danish hospital setting. The test took place in CoLab Plug & Play, a test environment that provides facilities on commercial terms, combined with technological service and guidance.

Product or service for validation

CoNurse by Cognuse is an audio solution designed for nurses. It is a voice-guided tool for improving the quality of the procedures, and reducing medical errors and unforeseen incidents. This tool is to be integrated into the clinical workflow to help ensure procedural protocols, guidelines and checklists are followed every time, and it helps the nurse to remember over 300+ protocols.

Services provided / work done

Two nurses from the acute unit at the Hospital of Southern Jutland were testing CoNurse one person at a time. Normally the nurses do not use audio guides; instead, they carry a booklet in their pockets, which includes guidelines for the most common procedures. The tested scenario was Glasgow Coma scale. By instructions from the representatives from Cognuse, the nurses followed the guide on a tablet, and performed the procedures on a mannequin. After the test, the nurses shared their experiences with CoNurse.

The collaboration

The objective of the test was to test the needs and usability of MyPlan in the Swedish public health care.

Product or service for validation

MyPlan is a self-help tool for the management and prevention of personal crises, it is built on evidence-based research within the area of suicide prevention. Users enter their personal signs of a looming crisis, a list of their own coping strategies, and details of their friends and family members to contact if needed. The app has different features such as a map showing directions to the nearest psychiatric emergency department and direct links to suicide prevention hotline.

Services provided / work done

To understand the Swedish market and the healthcare system and structure regarding suicide prevention, an interview with the suicide prevention coordinator within Region Skåne was arranged. The role and responsibilities of the coordinator within Region Skåne and the action plans for the coming years on national as well as regional level were discussed and documented.

In order to get an understanding of Swedish viewpoints from clinicians' point of view about MinPlan as a possible solution in the regional healthcare usability workshop with researchers and healthcare personnel from primary care and specialist care were conducted assessing the solution (English version) from a; strengths, weaknesses, opportunities and threats perspective in a regional healthcare context.

Templates for co-creation

- <https://servicedesigntools.org/tools>
- <https://www.servicedesigntoolkit.org/downloads.html>
- <https://mycourses.aalto.fi/mod/folder/view.php?id=395049>
- <https://en.dt-toolbook.com/tools>