



Co-Creation: Combining Technological and Social Innovation

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March 2020



Horizon 2020



@CocopSpire

Starting Point

Starting point:

A lot of technological innovation is not being used and implemented

- **Every technological or economical innovation is also a social innovation (process)**, which is decisive for or at least co-determining efficiency and effectiveness, success and failure of an innovation.
- Technology as an **enabler** of innovation.
“A New Nature of Innovation” (OECD 2010)

COCOP solution:

- Setting up of social innovation concept and process (innovation process design) (Key Result 1):
stakeholder and user involvement right from the beginning
considering co-creation, impact, organisational and personnel development right from the beginning

Social innovation in Horizon 2020 – A horizontal task

*"Particular attention will be paid to ensuring a balanced approach to **research and innovation**, which is not only limited to the development of new products and services on the basis of scientific and technological breakthroughs, but which also incorporates aspects such as the use of existing technologies in novel applications, continuous improvement and **non-technological and social innovation**."*

HORIZON 2020 Specific Programme



HORIZON 2020



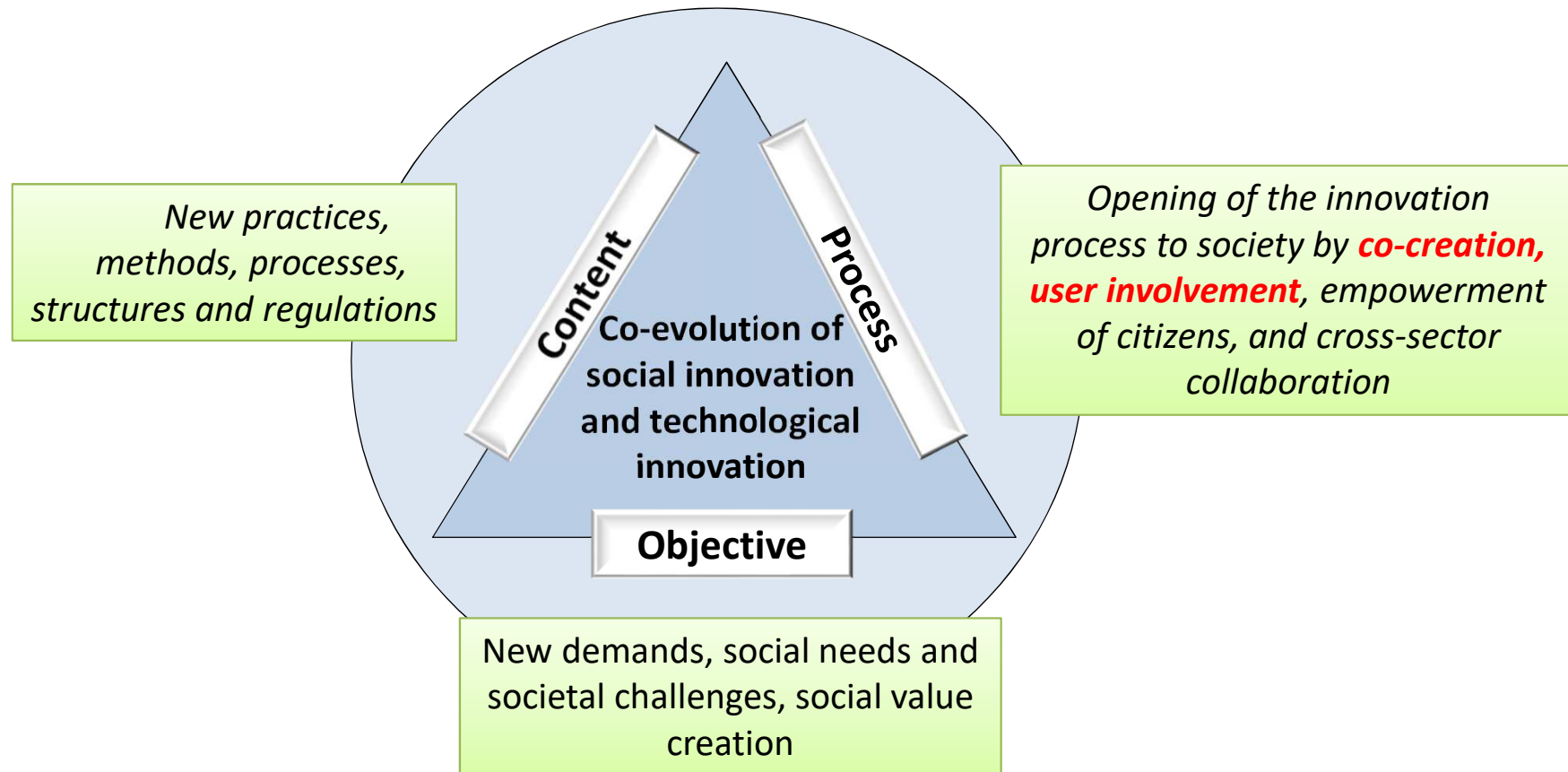
SPIRE Roadmap 2050

TRANSVERSAL TASK FORCE

Social & non-tech innovations

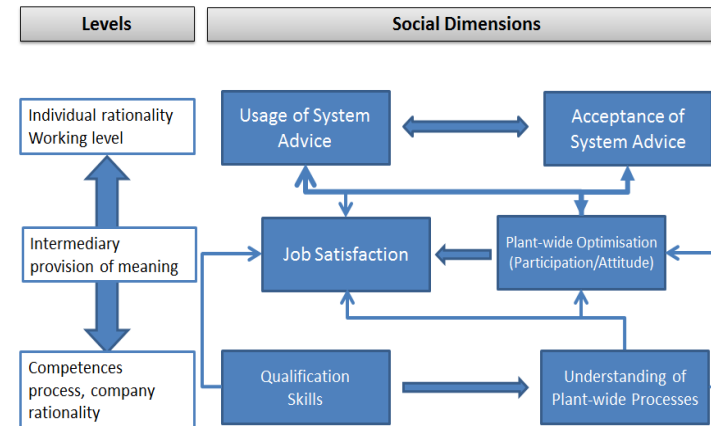
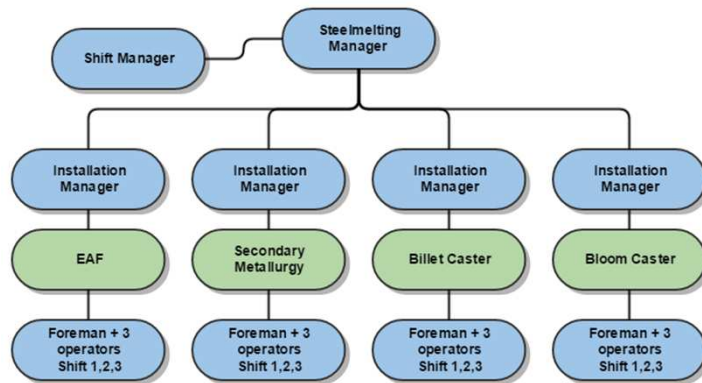


New Innovation Paradigm



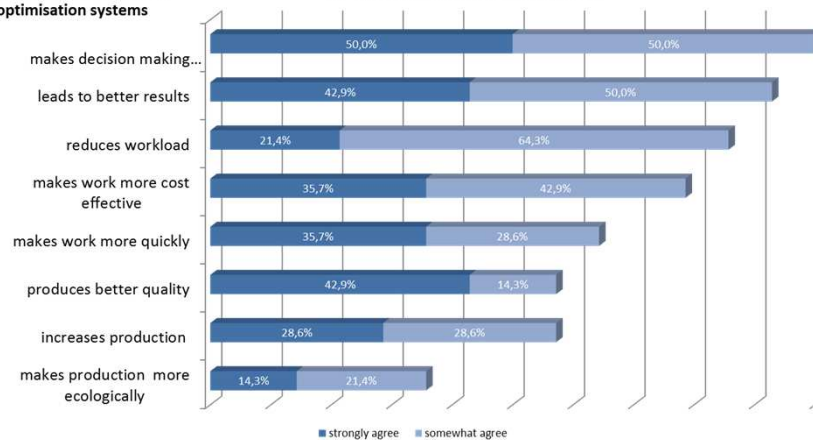
- New challenges and low impact of new software systems (e.g. by poor user acceptance) creates a need for a new innovation paradigm
- Creating an excellent system and making the best use of it needs considering the ideas of future users and internal stakeholders
- A joint optimisation of technology, people and organisation is needed to unfold the full potential of a new digital solution

Operationalisation



Following the advices of optimisation systems

Usage of Optimisation System



Interviews at SIDENOR – Requirements

Requirements – general matters

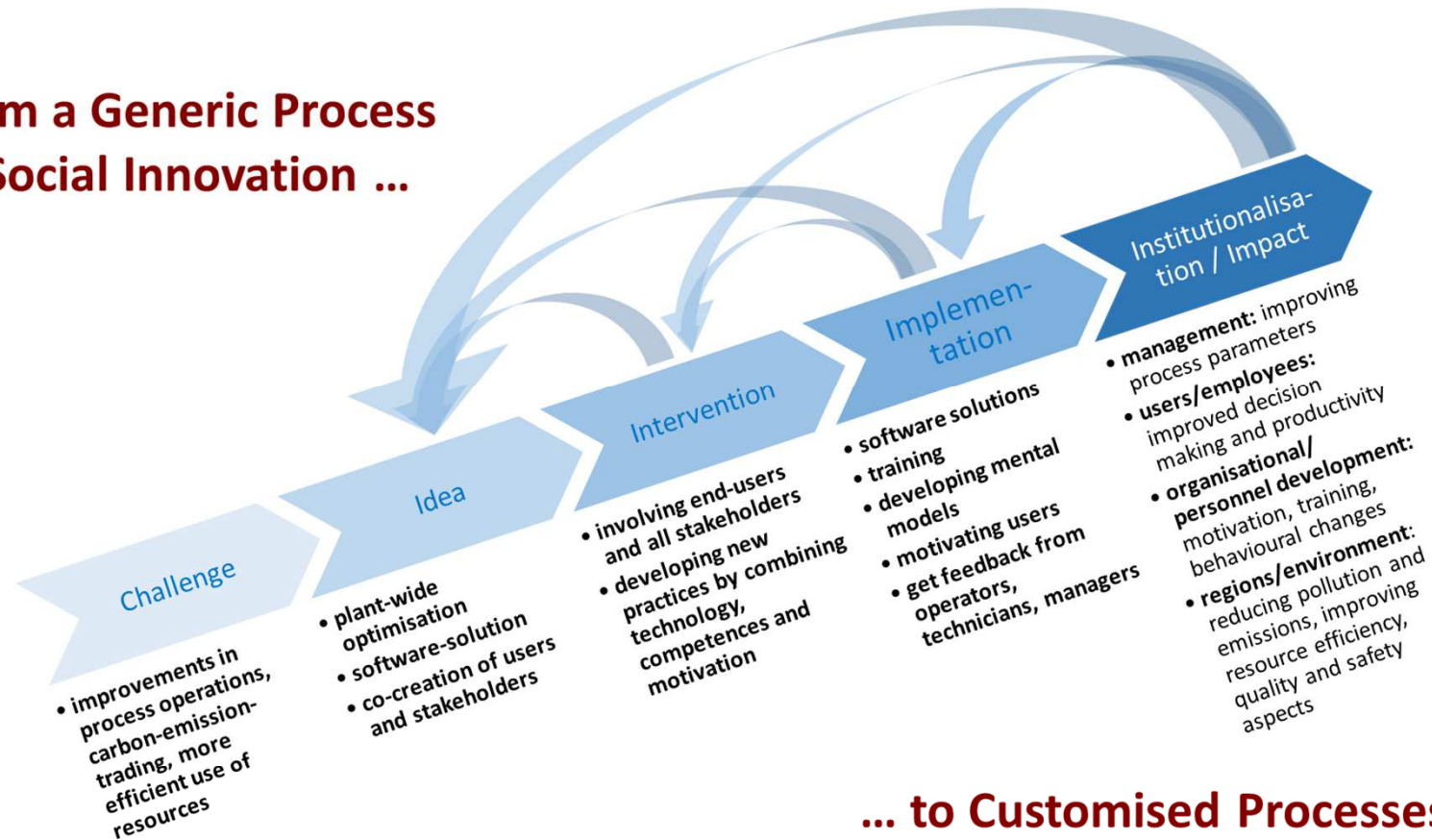
- The COCOP system should support the work of users: problem solving, ensuring quality, environmental and safety issues
- (Future) users are missing data and evaluation procedures for existing data
- They want to get to know the effects of other sub-processes on their owned process
- They want to get to know the effects on other sub-processes and on the final product

People-related requirements

- Education and training will be a relevant condition for successful implementation
- Operators should be involved in developing new skills for PWO
- "If *all involved employees understand* this kind of optimisation and if it is achieved that all these employees *benefit* from optimisation, the goal of optimisation will be achieved."

The 4 I Innovation Process

From a Generic Process
of Social Innovation ...



... to Customised Processes
for Different Use Cases

Based on Hochgerner 2013

Human Factor Requirements and Workflow



1. Setting up an interdisciplinary team of HF experts, KPI experts and software developers elaborating a workflow that covers all milestones of a software development process
2. Defining human factors requirements (incl. HF activities assigned to each milestone)
3. Deriving an action plan (incl. bundled HF activities to be executed at certain milestones, needed participants, estimated time consumption)
4. Tracking progress adding status information to the action plan
5. Using final status information for validating HF requirements (incl. social KPI)

Co-Creation Validation



Source: El Pantera / CC BY-SA 4.0

HF Progress Tracking

Interviews

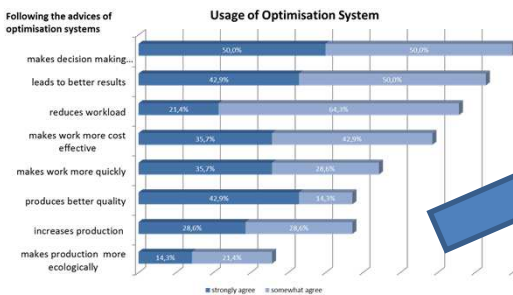
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Following the advice of optimisation systems

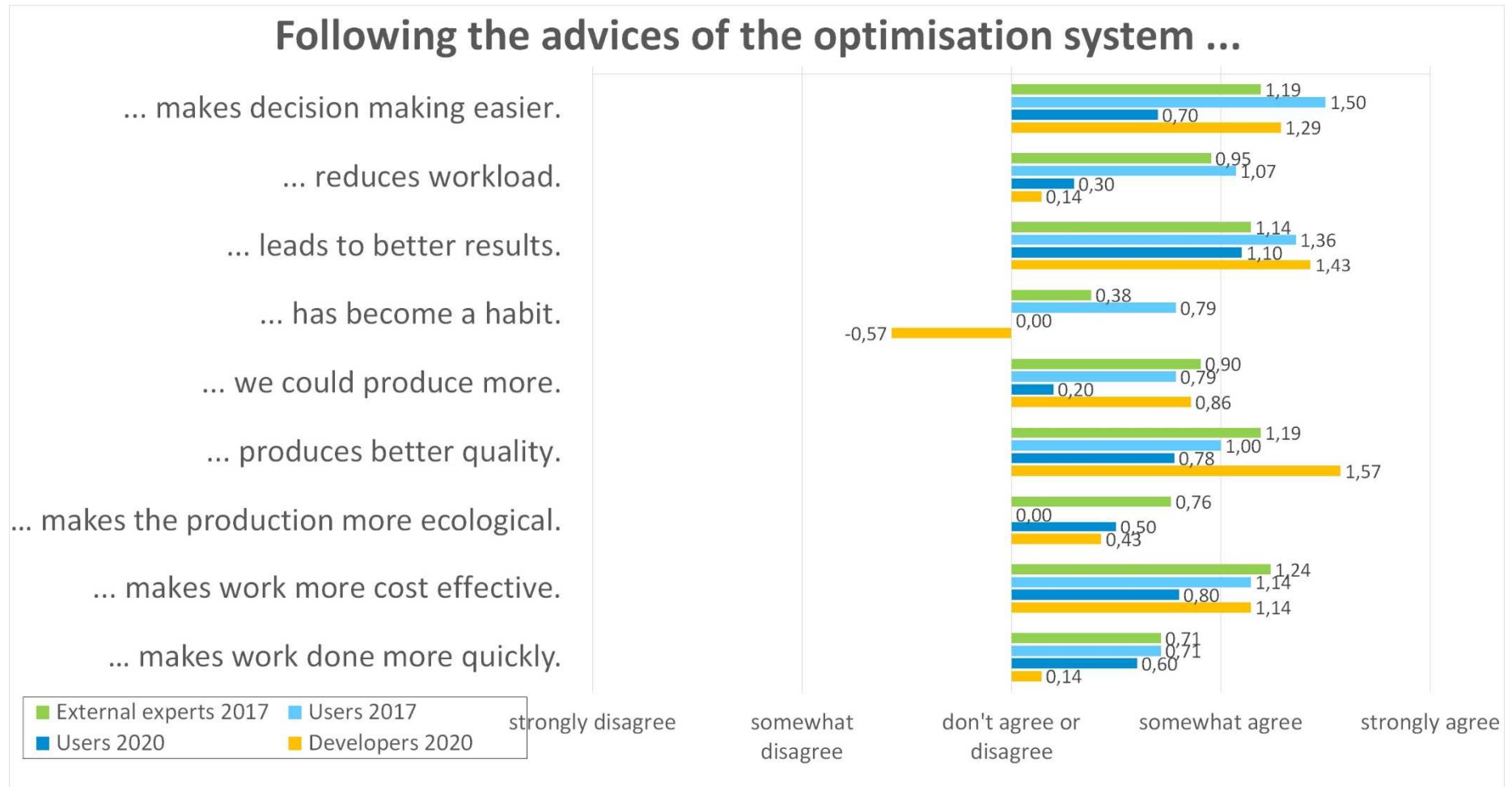


M3-2	Workshop	P-P2P-6.3 (feedback on mock-up) P-P2S-2.1 (effects of decisions)	HF, developers, end users	End users from each sub-process	0,5 day	P-P2P-6.3 ∅ Has been started with a workshop at SIDENOR in January 2019. P-P2S-2.1 ∅ See R-P2S-3.1
M3-3	Regular meetings	P-P2S-1.1 (practical knowledge)	Developers, (HF)	Process experts, end users	0,5 day	P-P2S-1.1 ∅ Meetings with steelmelting manager at SIDENOR have already taken place.
ID	Action	ID	COCOP participants	Customer Participants	Estimated time consumption on customer side	Status
M4-1	Workshop	P-P2P-1.1 (new skills) P-P2P-1.2 (new skills) P-P2S-2.1 (effects of decisions)	HF, developer, end users	End users	1 day	P-P2P-1.1 ∅ Has been started with a workshop at SIDENOR in January 2019. Further workshops will follow in summer and autumn 2019. P-P2P-1.2 ∅ See P-P2P-1.1 P-P2S-2.1 ∅ See P-P2P-1.1
M4-2	Workshop	P-P2P-2.1 (plan training)	HF, developer	End users, process experts, training expert	1 day	P-P2P-2.1 ∅ Training matrix is currently in a process of redefining.
M4-3	Triggering decisions of the company	P-P2P-4 (scope of decisions)	Triggered by HF	Decided by plant manager and HR Management	(To be discussed with customer manager)	P-P2P-4 ∞ Text

1. Unhandled ∞
2. In Progress ∅
3. Completed ♣
4. Partially completed ♥
5. Failed to Execute ♦
6. Will not be executed ✖

Co-creation process in COCOP project, March 2020

Usage of Optimisation Systems



Main Conclusions from a Stakeholders / Users Perspective



- High relevance and added value of plant-wide optimisation in general (experts, developers, users).
- Overestimated expectations of the (future) users in the beginning of the project, becoming more realistic at the implementation phase.
- High user friendliness and functional stability is given.
- Functionality for the production process (speed, productivity, performance) could be further improved, based on suggestions of the users.
- While a mix of different training measures is demanded by the users, (process) simulation is the most preferred one.

Benefit: Co-creation ...

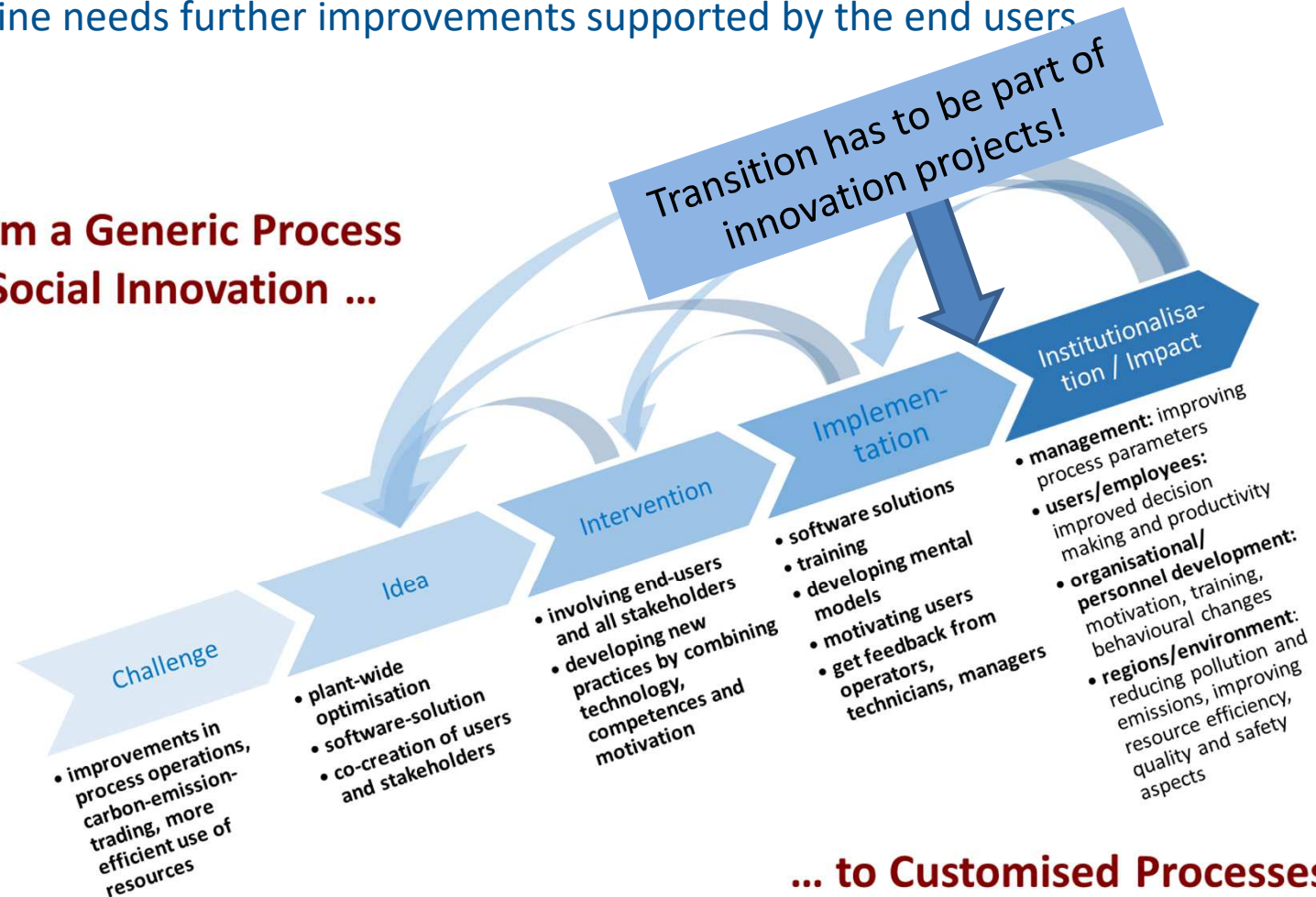


- Enables that plant-wide optimisation brings the envisioned benefits
- Supports that the system fulfils the end user needs
- Improves user acceptance and motivation to improve the system
- Supports mutual learning of end users and software developers
- Helps the end user to use the COCOP system more effectively
- Contributes to better process operation via best fit between technological tools, organisational practices and user skills

Ongoing Co-creation

- Co-creation does not end at the implementation phase:
to **change social practices** the **institutionalisation** of the COCOP system in the production line needs further improvements supported by the end users

From a Generic Process of Social Innovation ...



... to Customised Processes for Different Use Cases

Matériaux & Techniques **107**, 107 (2018)
© EDP Sciences, 2019
<https://doi.org/10.1051/mattech/2018065>

Topical issue on: Society and Materials (SAM12)

REGULAR ARTICLE

A new innovation paradigm: combining technological and social innovation

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Received: 15 June 2018 / Accepted: 7 December 2018

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© Springer Nature Switzerland AG 2019

W. Karwowski and T. Ahram (Eds.): IHSI 2019, AISC 903, pp. 517–523, 2019.

https://doi.org/10.1007/978-3-030-11051-2_78

Matériaux & Techniques

Available online at:
www.mattech-journal.org

290 *Int. J. Technology Transfer and Commercialisation*, Vol. 16, No. 3, 2019

Sociotechnical perspectives on digitalisation and Industry 4.0

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Thank you for your attention!

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723661