D 5.5
Organisation of 2nd European workshop and associated report

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[1] PU: Public, CO: Confidential, only for members of the consortium (including the Commission Services)
[2] RE: Report, OT: Other; ORDP: Open Research Data Pilot

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Abbreviations and acronyms

TERMS, ABBREVIATIONS AND ACRONYMS	
DoA	Description of Action
CE	Circular Economy
D	Deliverable
WP	Work package

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TABLE OF CONTENT

1 Introduction – content of this report 4
2 Invitation-only European workshops, associated to work package 3. 5
2.1 AI for manufacturing Pathway Workshop (in-presence) - 13 June 2022 5
2.1.1 The aim and essential content the workshop 5
2.1.2 Agenda of the workshop 6
2.1.3 Content and outcome generated by the workshop 7
2.2 Online ConnectedFactories Foresight & Recommendations workshop 19 October 2022 9
2.2.1 The aim and essential content the workshop 9
2.2.2 Agenda of the workshop 9
2.2.3 Content and outcome generated by the workshop 9
3 Thematic public webinars associated to work package 1 10
3.1 Online ConnectedFactories CyberSecurity for Digital Manufacturing Pathway webinar - 1 April 2022 10
3.1.1 Focus of the workshop 10
3.1.2 Agenda 11
3.1.3 Content and outcome generated by the workshop 12
3.2 Business and legal aspects of digital platforms in manufacturing - online workshop - 24 May 2022 13
3.2.1 The aim and essential content of the workshop 13
3.2.2 Agenda of the workshop 13
3.2.3 Content and outcome generated by the workshop 14

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1 Introduction – content of this report

Considering that four workshops on European level were organised during the 2nd project period that can be considered as relevant for Task 5.4, this report is providing information about these four European Workshops

- **Two thematic invitation-only workshops in support of work package 2 and 3.**

  The **two workshops** described in **section** 1 of this report are formally the most directly associated to this Deliverable D5.5:

  - **AI Manufacturing pathway workshop (12 June 2022)**
    - This workshop contributed to the Deliverable 2.6 'Pathways cross-fertilisation with Digital Technologies – Second iteration' (Work package 2)

  - **Foresight and recommendations workshop (19 October 2022)**
    - This workshop contributed to the Deliverable 3.5: 'Foresights and Recommendations of Digital Manufacturing Platforms for a Digital Europe – Second Iteration' (Work package 3)

  Both workshops were organised by EFFRA in close cooperation with FPM, the lead project participant for both deliverables. The workshops were organised for an invited audience in order to guarantee an informal 'small committee workshop' setting, aimed at collecting particular input from experts.

- **Two thematic public webinars/workshops**

  Section 2 of this report provides information on two European public thematic webinars/workshops, also organised in 2022 with a focus on specific cross-cutting factors (Work Package 1):

  - **Cybersecurity Pathway webinar (1 April 2022)**
  - **Online Business and legal aspects workshop (24 May 2022)**

Note: Three additional consortium workshops were organised in the 2nd half of 2021 in order to support information exchange on specific themes that were relevant for in work package 1 and 2:

- AI for Manufacturing – 30 September 2021
- AAS (Asset Administration Shell – IDS and IDS Connector - 12 October 2021
- Circularity – Interoperability – 16 November 2021

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2 European workshops associated to work package 3.

2.1 AI for manufacturing Pathway Workshop (in-presence) - 13 June 2022

2.1.1 The aim and essential content the workshop

The ConnectedFactories European workshop on the AI for manufacturing Pathway on 13 June 2022 was held in-presence in Brussels.

This was an invitation-only workshop, where project representatives have been invited from the following calls: ICT-38-2020, DT-ICT-07-2018-2019, DT-ICT-03-2020 and the ConnectedFactories CSA consortium.

The agenda included 8 slots for projects to summarise their objectives and pilots/demonstrators and to situate the demonstrators within the AI Pathway.

The workshop was organised by EFFRA and Fondazione Politecnico di Milano.

32 participants attended the workshop (mainly from research & technology organisations representing the ConnectedFactories consortium and the invited AI projects)



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2.1.2 Agenda of the workshop

12:00 -13:30 Welcome Lunch

13:30 - 13:45 CF2 Introduction and its pathways: **Chris Decubber**, EFFRA

13:45 - 14:00 The AI for Manufacturing pathway: **Sergio Gusmeroli**, POLIMI

14:00 - 14:50 Series of cases from projects:

- AI REGIO: positioning AI REGIO experiments in the AI for Manufacturing pathway - **Sergio Gusmeroli**, POLIMI e **Fabiana Pirola**, UNIBG
- KYKLOS 4.0: using AI to leverage Circular Economy: The KYKLOS 4.0 Approach - **Jason Mansell**, Tecnalia
- SHERLOCK: AI seamless enabled Human-robot collaboration - **Sotiris Makris**, University of Patras
- KITT4SME: making AI affordably usable for SMEs - **Andrea Bettoni**, SUPSI

14:50 - 15:15 Coffee break

15:15 - 16:15 Series of cases from projects:

- TEAMING.AI: Dynamic knowledge graph approach for human-centred manufacturing in I5.0 - **Mario Pichler**, SCCH
- MAS4AI: optimization agents coordination in a bearing production line - **Luis Usatorre**, Tecnalia
- MAS4AI: agents for planning activities in the bicycle industry - **Kosmas Alexopoulos**, University of Patras
- ASSISTANT: data-driven production management - **Simon Thevenin**, IMT-Atlantique
- knowlEdge: understanding the AI roadmap in the knowledge project - **Stefan Walter**, VTT

16:15 - 17:30 Interactive session

17:30 Conclusion

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2.1.3 Content and outcome generated by the workshop

The outcome of the workshop was included within the deliverable **D 2.6 Pathways cross-fertilisation with Digital Technologies - Second Iteration** (section 4.3 **'Validation of the "AI for Manufacturing" CF2 Pathway in DMP Cluster'**, Page 39 to 44). This deliverable is publicly available via the ConnectedFactories website (https://www.connectedfactories.eu/wps-deliverables) or via this link.

All presentations are available via this link.

Short summary of the interventions.

In the first session, Sergio Gusmeroli was joined by Fabiana Pirola (UniBG), to present the regional initiatives and industrial experiments in "AI for Manufacturing", the AI REGIO Project and Lombardy AI Roadmap, going into detail about some of the 17 experiments and their positioning. The speakers also highlighted the AI roadmap in Regione Lombardia and the main research and innovation priorities, namely human centered processes, design and use of intelligent products, and forecasting lean and resilient planning, as well and the R&I priorities for the machinery, textile, and metal sectors.

Andrea Bettoni (SUPSI) followed with a presentation about KITT4SME's tools and piloting activities for scope-tailored and industry-ready hardware, software and organisational kits to integrate AI in SMEs and mid-caps, highlighting the barriers for AI in manufacturing, namely lack of data, cost assessment methods, and customised solutions, as well as the complexity in using solutions and underskilled employees.

Stefan Walter (VTT) gave his insights in regarding the AI roadmap in the knowlEdge project, highlighting how the project addresses manufacturing optimisation through AI and providing use cases; following an identification of the challenges and barriers, the speaker also suggested that the AI pathway should be embedded in appropriate enabling technologies and that businesses should be convinced to be open to AI.

Sotiris Makris (LMS/University of Patras), followed with an exposition on AI enabled seamless human-robot collaboration through the Sherlock project, its objectives, enablers, and challenges, based on industrial cases as-is and to-be levels; based on the identified barriers in AI adoption, the speakers recommended human-centered designs, and advance in collaboration, middleware development and training services delivery.

Jason Mansell (Tecnalia)'s presentation was on the topic of using AI to leverage circular economy, anchored on the approach of KYKLOS 4.0, a project that promotes massive, personalized, and sustainable manufacturing, and its AI applications to wheelchairs' footrest design, customisation, and mass production, and predictive maintenance.

Mario Pichler (SCCH)'s presentation was dedicated to the dynamic knowledge graph approach for human-centred manufacturing in I5.0, anchored on the teaming.ai, a project with the objective of developing a new paradigm of human-AI collaboration embedded in a societal dimension that ensures the role of the human being in the future industrial scenario; the speaker explained knowledge graphs in detail and presented several use cases, additionally identifying problems and challenges.

Simon Thevenin (ASSITANT) focused on data-driven production management, detailing how the project uses AI for decisions in manufacturing and developing intelligent digital twins while maintaining a human

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centric and ethical design architecture; the speaker concluded that actions should be taken in relation to price, maturity and knowledge of AI in manufacturing.

Luis Usatorre's presentation (TECNALIA) on optimization agents interaction in a bearing production line, made use of MAS4AI as point of departure, detailing the project's holistic system architecture encompassing smart factories, smart machines and smart components, hierarchy layers, objectives and vision, anchored in five industrial pilot cases; the speaker identified heterogeneous data, data preprocessing, process modelling and scalability as the main barriers preventing the adoption of AI in manufacturing.

Building on the previous session, Kosmas Alexopoulos (LMS), also based his presentation on the MAS4AI project, detailing the agents for planning activities in the bicycle industry at factory level, specifically the planning of the painting department.

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2.2 Online ConnectedFactories Foresight & Recommendations workshop 19 October 2022

2.2.1 The aim and essential content the workshop

The ConnectedFactories Foresight & Recommendations workshop was held on 19 October 2022 from 14:00 to 16:30 CET. The workshop was organised by EFFRA and Fondazione Politecnico di Milano.

This workshop was inquiring a selection of ongoing projects about the following aspects.

- Added value - Impact - Value proposition
- Significant innovations and achievements
- Key Exploitation Results.
- Gaps and challenges regarding digital manufacturing

2.2.2 Agenda of the workshop

14:00 Welcome by EFFRA and Politecnico di Milano

14:10 Interventions on current outcomes and future requirements/challenges (10' minutes each)

- QU4LITY - Jorge Rodriguez, ATOS
- SHOP4CF - Sladjana Martens, TUM
- DIMOFAC - Kunal Suri, Cécile Girardot, CEA
- 4ZDM Cluster - Juanan Arrieta, IDEKO
- Foresee Cluster – Nikolaos Nikolakis, LMS
- XMANAI - Michele Sesana, TXT
- AI PROFICIENT - George Triantafyllou, ATC
- CAPRI – Anibal Reñones, CARTIF
- DIGIPRIME - Marcello Colledani, Polimi
- KYKLOS4.0 - Jason Mansell, Tecnalia
- AI-REGIO - Sergio Gusmeroli, Polimi

16:00 Q&A and discussion

16:30 Conclusion of the workshop

2.2.3 Content and outcome generated by the workshop

The outcome of the workshop was included within the Deliverable 3.5: 'Foresights and Recommendations of Digital Manufacturing Platforms for a Digital Europe – Second Iteration' (Work package 3). The deliverable, including summaries of the interventions, can be found here

The presentations are available here.

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3 Thematic public webinars associated to work package 1

3.1 Online ConnectedFactories CyberSecurity for Digital Manufacturing Pathway webinar - 1 April 2022

3.1.1 Focus of the workshop

In 2021 the Manufacturing industry sector was the number one target for CyberSecurity attacks, replacing the financial services industry and representing nearly one out of four attacks, one out of four being ransomware. This trend is continuing in 2022. With emerging digital manufacturing platforms, the Connected Factories 2 project (CF2) aims to inform manufacturing companies and digital manufacturing platform developers on best practices, methodologies and technologies to improve the CyberSecurity Posture and overall maturity and offer guidance through the developing CF2 CyberSecurity pathway. The pathway will continue to guide controls and technologies linked to various industry standards (IEC, CIS, NIST, ISO, …).

During the CF2 CyberSecurity for Digital Manufacturing Pathway webinar, we have followed up on the webinar of the 20th of January 2021, and it had focused entirely on best practices and experiences shared from top leading experts from European and international research projects QU4LITY, SECOIIA, COLLABS, InfraStress, TRINITY, …), industrial partners, policymakers and international CyberSecurity Manufacturing experts.

The webinar's agenda was composed by Ulrich Seldeslachts from LSEC, also moderating the webinar.

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3.1.2 Agenda

09.30 - 10.00	**Welcome & introductions: Ulrich Seldeslachts, LSEC**
10.00 – 11.00	CyberSecurity regulatory developments in Europe: NIS(2), CyberAct & certification, 5G-toolbox, Resilience, … : **Renate Verheijen**, ENISA
11.00 – 11.30	Keynote-cybersecurity for manufacturing research experiences for manufacturing practices & innovations: **Luigi Romano**: ICAR CNR - University of Naples
11.30 – 13.15	**Cybersecurity for manufacturing research experiences and practices**
	SECOIIA - Human - Machine experiences and use cases: **Reda Yaich**, IRT-SystemX
	COLLABS -Collaborative Manufacturing examples: **Valerio Senni**, Collins Aerospace
	SESAME - Development of an open and modular model-based approach for the systematic and secure engineering of dependable multi-robot systems: **Simos Gerasimou**, University of York
	InfraStress - experiences and best practices from critical infrastructure protection for manufacturing: **Lorenzo Sutton**
	Panel discussion
13.15 – 15.00	**Cybersecurity for manufacturing industry experiences and practices**
	From industrial firewalling to self-managed network security: **Bram de Blander**, Fortinet
	CyberPhysical Security for OT: **Ryan Heartfield**, Exalens
	Antonio La Marra, Security Forge
	X-Force perspectives on manufacturing incidents – analyzing an attack and mitigating measures : **Eben Louw**, IBM
	Panel discussion
15.00 – 17.20	**Closing notes & follow-up**
15.20	**End of webinar**

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3.1.3 Content and outcome generated by the workshop

The publicly available presentations and recordings are available via the following public links: Recordings & Presentations

Associated deliverables: D 1.4 Report summarizing main contributions to other WPs – Second iteration (from https://www.connectedfactories.eu/wps-deliverables)

This online event attracted 84 registered participants

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3.2 Business and legal aspects of digital platforms in manufacturing - online workshop - 24 May 2022

3.2.1 The aim and essential content of the workshop

Digitalisation and servitisation have already changed and will continue to shape the operating environment of manufacturing and the ways in which cooperation towards sustainability/green transition occurs. Digital solutions and the data flows collected by platforms enable novel ways of value co-creation within manufacturing and up-scaling on these business models as we are able to make a shift from data sharing to joint processing of information.

At the same time, servitisation increases the need for combined interfaces so that end users can have access to a seamless service package in a multi-channel operating environment of manufacturing companies. The aim of the workshop was to build a shared understanding of how digital platforms are changing the value networks of manufacturing and enabling customer-driven, sustainable, as well as agile/resilient manufacturing.

The workshop was organised and hosted by EFFRA in cooperation with VTT and TNO

3.2.2 Agenda of the workshop

9:15 - 9:30	Participants connecting
9:30 – 9:35	Welcome and short introduction to the workshop
9:35 – 10:05	The European data strategy and what it means for the digitalisation of manufacturing, **Malte Beyer-Katzenberger**, European Commission (CNECT.G.1)
10:05 – 10:10	Interaction / poll
10:10 – 10:35	Business aspects of digital platforms for manufacturing by **Katri Valkokari**, VTT
10:35 – 10:40	Interaction / poll
10:40 – 11:05	Introduction of Legal aspects of digital platforms for manufacturing by **Carlos Montalvo**, TNO
11:05 – 11:10	Interaction / poll
11:10 – 11:35	Digitalisation and subscription business models, FIR e.V at RTWH Aachen University
11:35 – 11:40	Interaction / poll
11:40 – 12:05	Standard Essential Patents (SEP) and the Common Patent Policy of ISO, IEC, ITU, CEN and CENELEC, **Karl Grün**, Austrian Standards

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12:05 – 12:10 Interaction / poll

12:10 – 12:30 Conclusions and closing of the meeting

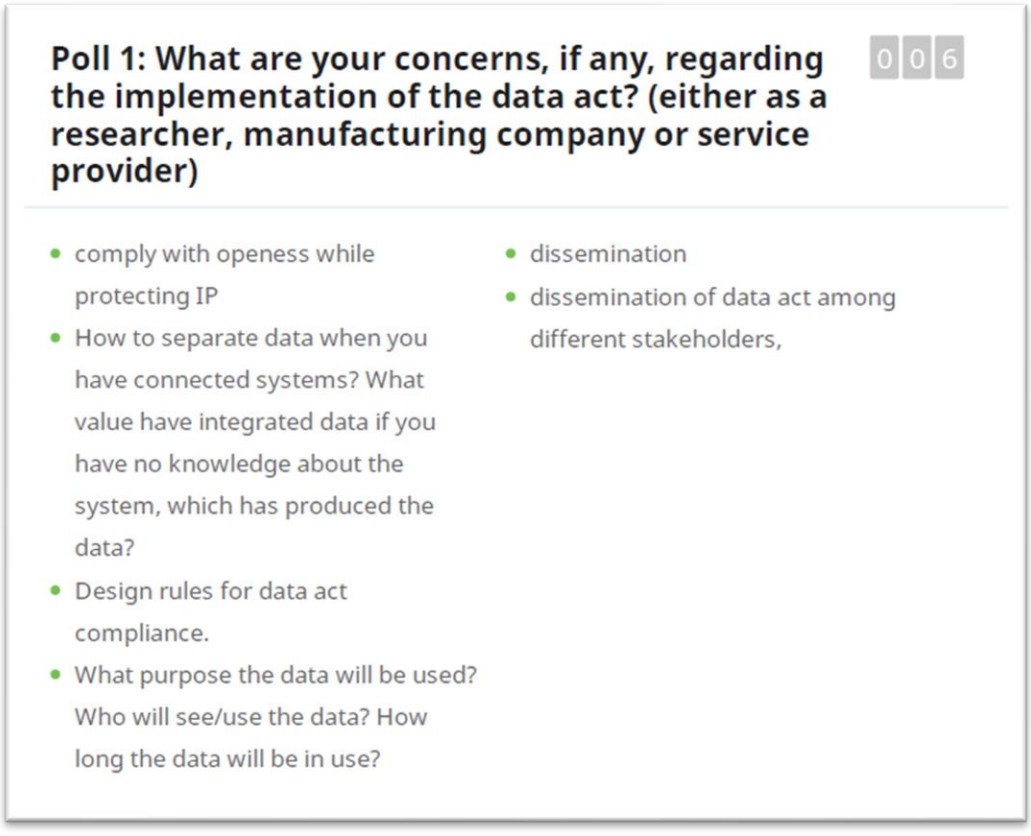
3.2.3 Content and outcome generated by the workshop

All presentations are available via this link, and the session's recordings are also available in our YouTube playlist.

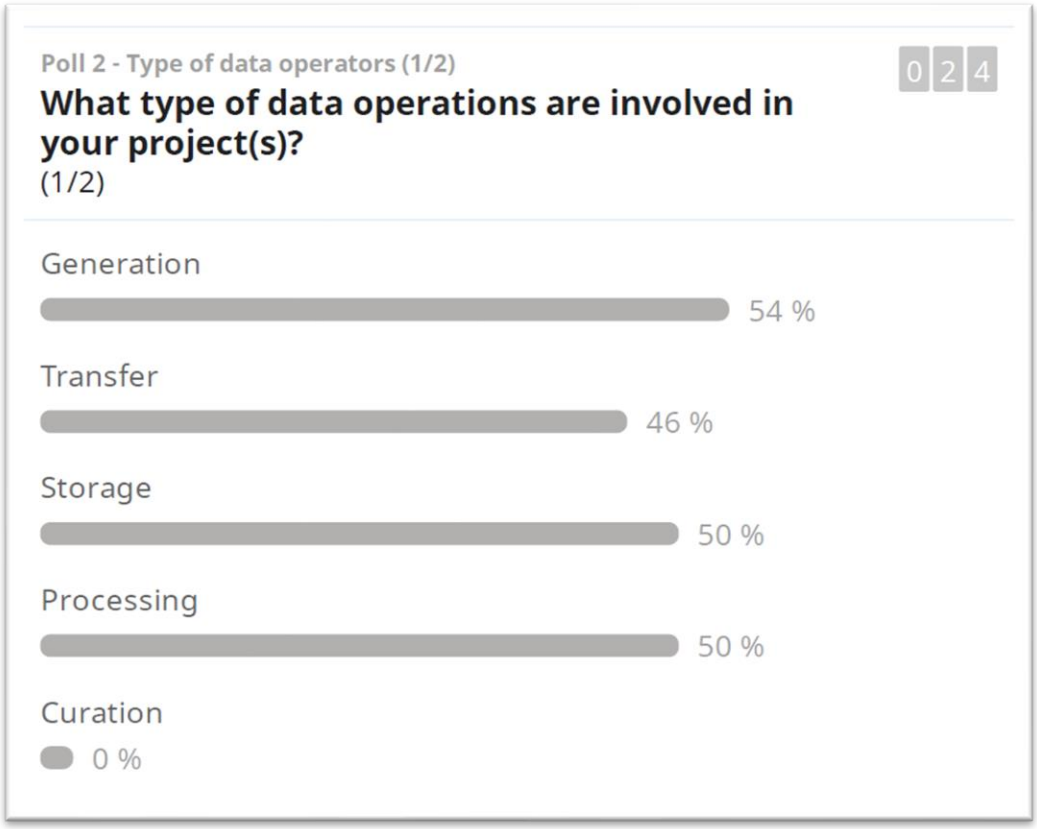
This online event attracted 71 registered participants.

Associated deliverables: D 1.4 Report summarizing main contributions to other WPs – Second iteration (from https://www.connectedfactories.eu/wps-deliverables)

Overview of feedback obtained via slido



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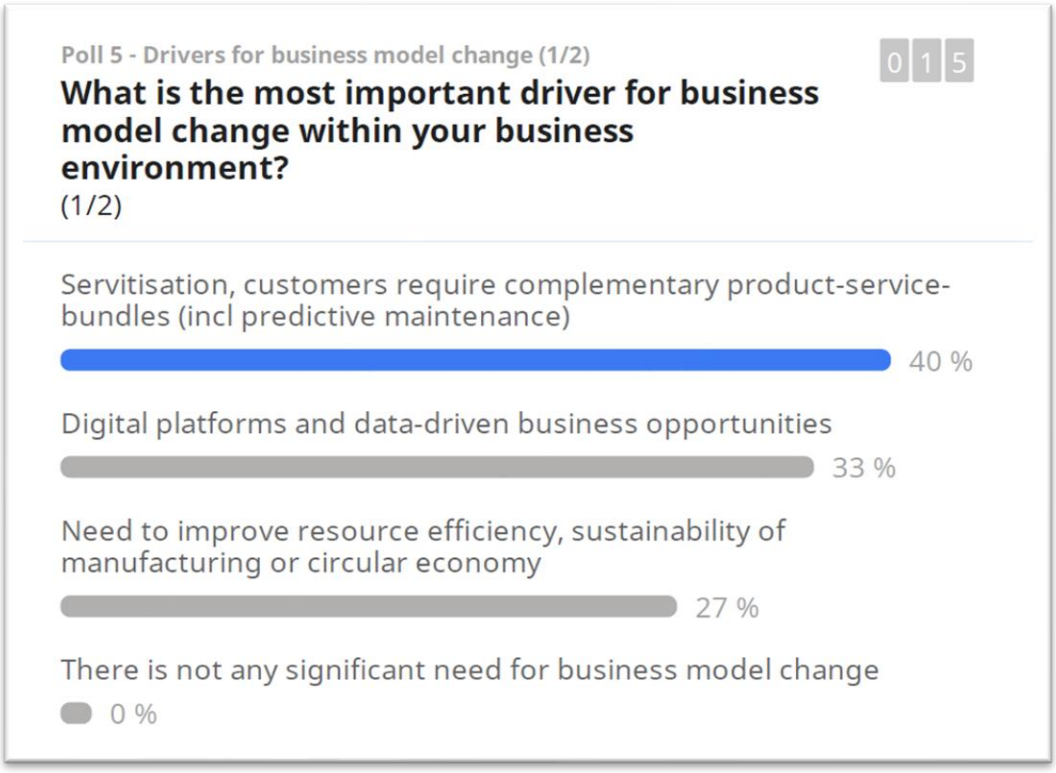


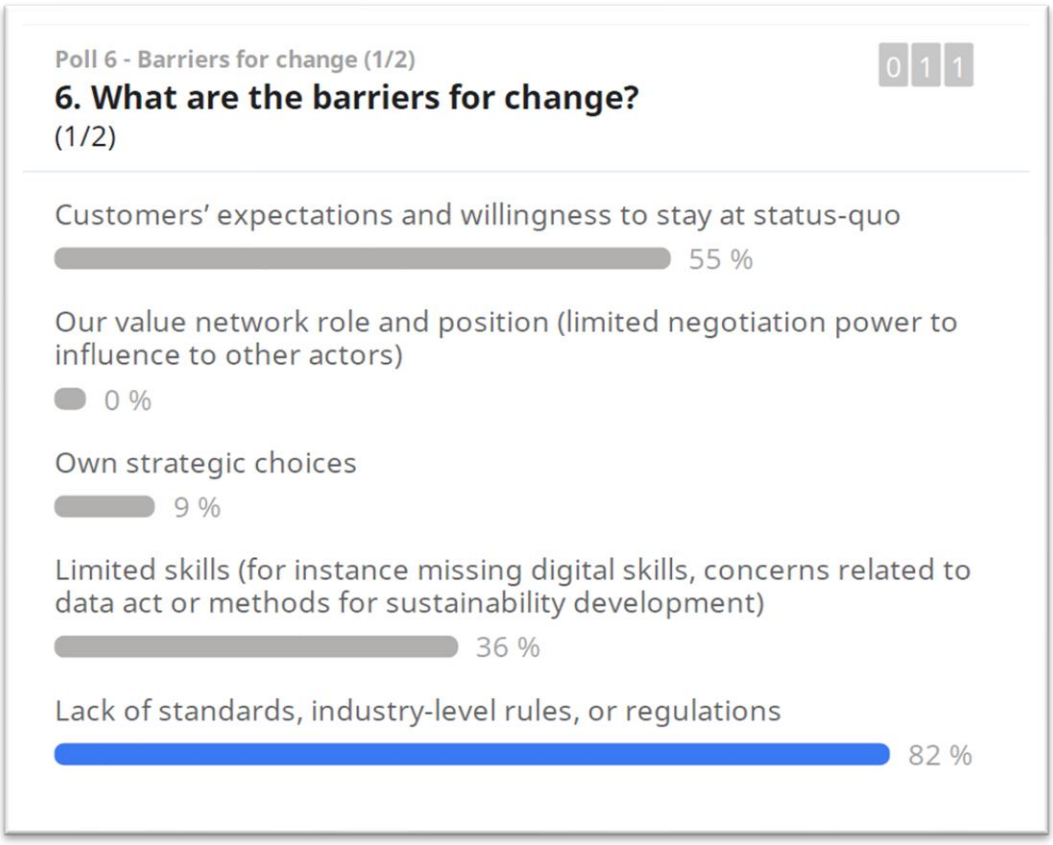
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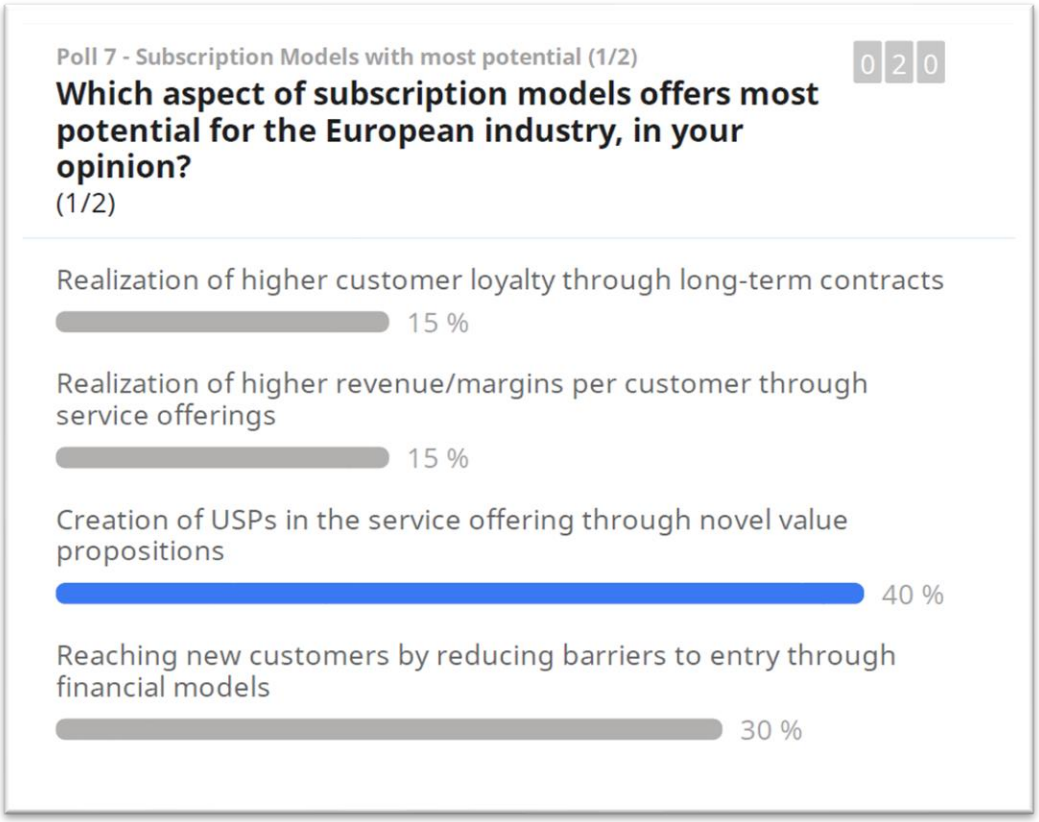


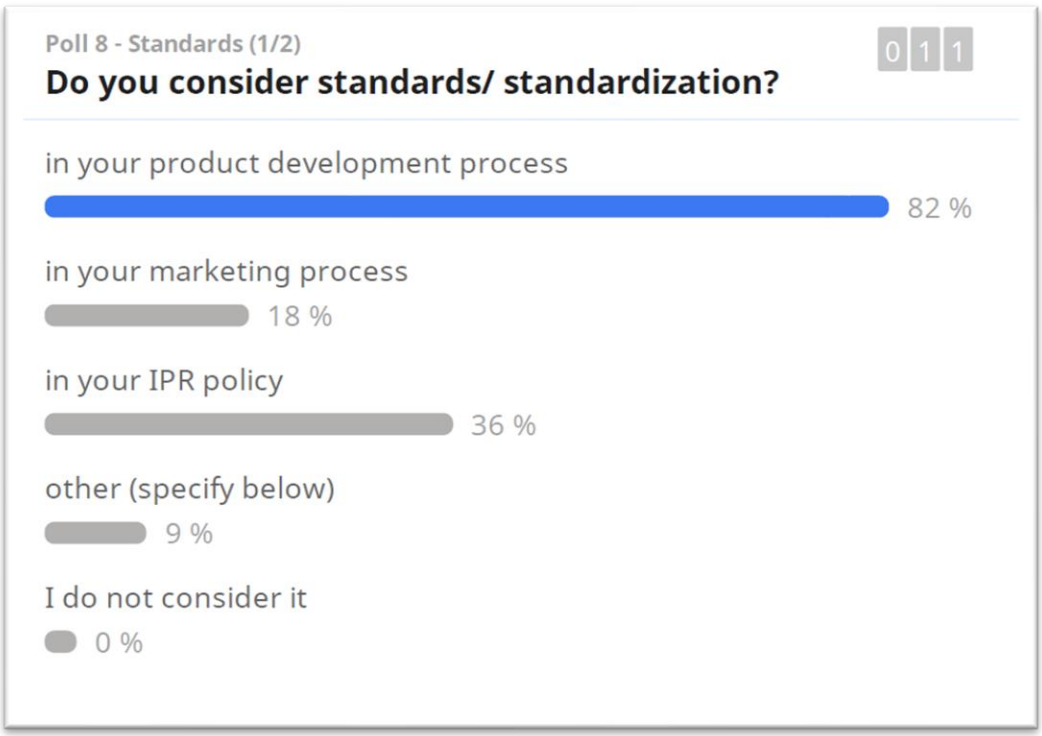
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