Final Report of the Joint MSP/DEI WG

It is recommended that the outcome of the MSP/DEI WG helps to achieve, inter alia, the following results:

- Reinforcing R&I projects’ contributions to standardisation – especially platform development and piloting projects, steered by industrial groups.
- Linking standardisation activities to testbeds and Digital Innovation Hubs (DIHs), which play a role in supporting SMEs in gaining experiences with emerging standards.
- Reflecting on shared standards and common rules governing the platforms development at European level, e.g. the Reference Architectural Model Industrie 4.0 (RAMI 4.0), the Industrial Data Space (IDS) or emerging standards for semantic interoperability.
- Defining a short list of DEI standardisation issues which need to be urgently addressed at the EU level.

In terms of deliverables, the MSP/DEI WG is expected to:

- Provide an interim report (the present document) with a first set of recommendations to be presented to the MSP and to the High-Level Governance Meeting of the European Platform of National Initiatives on Digitising Industry by mid-June 2018.
- Issue a final report with proposed concrete actions at EU level and implementation means, including existing tools, and providing an estimation of the budget and resources needs, to be presented to the MSP and to the High-Level Governance Meeting of the European Platform of National Initiatives on Digitising Industry by November 2018.

Contents

Mission .......................................................................................................................................................... 3
Values ......................................................................................................................................................... 3
Task 1. Standardisation ................................................................................................................................3
  1.1. Regulation ........................................................................................................................................ 5
  1.2. Interoperability .......................................................................................................................... 5
  1.3. Integration ....................................................................................................................................... 5
  1.4. Gaps ................................................................................................................................................ 6
Task 2. Activities ...................................................................................................................................... 7
  2.1. M2M Communications .................................................................................................................... 7
  2.2. E-Skills .............................................................................................................................................. 7
  2.3. Standards ....................................................................................................................................... 7
  2.4. Interoperability, Overlap, Redundancy & Fragmentation .............................................................. 8
  2.5. Security & Communications ........................................................................................................ 8
  2.6. Privacy .......................................................................................................................................... 8
  2.7. Interaction ..................................................................................................................................... 8
  2.8. Additive Manufacturing ................................................................................................................... 8
  2.9. Materials ....................................................................................................................................... 9
Task 3. Model ........................................................................................................................................... 10
  3.1. Networking .................................................................................................................................... 10
  3.2. Solutions ....................................................................................................................................... 10
  3.3. Cooperation .................................................................................................................................. 10
  3.4. Transparency ................................................................................................................................ 11
  3.5. Representation ............................................................................................................................... 11
  3.6. Funding ....................................................................................................................................... 11
  3.7. Informality ..................................................................................................................................... 11
  3.8. Governance ................................................................................................................................... 11
Task 4. Roadmap ...................................................................................................................................... 12
  4.1. Information & Analysis ................................................................................................................ 12
  4.1.1. Actions ....................................................................................................................................... 12
  4.1.2. Progress ................................................................................................................................... 12
4.1.3. Output .......................................................................................................................................... 12
4.2. Research & Innovation ................................................................................................................... 12
4.3. National Roadmaps ........................................................................................................................ 13
  4.3.1. Input ............................................................................................................................................ 13
  4.3.2. Information .................................................................................................................................. 13
  4.3.3. Cooperation ................................................................................................................................. 13
4.4. Initiatives ........................................................................................................................................ 13
4.5. Needs & Activities .......................................................................................................................... 13
Administrative Information ........................................................................................................................ 14
Joint MSP/DEI Working Group on standardisation in support of Digitising European Industry (MSP/DEI WG)

Description:

... a Joint MSP/DEI Working Group was setup, bringing together nominated representatives of the MSP members, complemented by nominated representatives of the DEI high-level governance group, including national ministries and initiatives on digitising industry, PPPs, and relevant European associations. The Working Group acts as joint ad hoc reflection group, and reports to both the DEI high-level governance group and the MSP.

Stakeholder(s):

European Union

Manufacturing Sector:
industry is one of the pillars of the European economy – the manufacturing sector in the European Union accounts for 2 million enterprises, 33 million jobs and 60% of productivity growth.

European Industry:
We stand on the brink of a new industrial revolution, driven by new-generation information technologies such as the Internet of Things (IoT), Cloud Computing, Big Data and Data Analytics, Artificial Intelligence, Robotics and 3D Printing. While many parts of the economy have been quick to take up digital technologies and processes, European industry across sectors and regardless of a company’s size must fully use digital opportunities if it is to be globally competitive.

Traditional Sectors:
Traditional sectors (like construction, agri-food, textiles or steel) and SMEs are particularly lagging behind in their digital transformation. Recent studies estimate that digitisation of products and services will add more than €10 billion of revenue for industry per year in Europe in the next five years.

Construction Sector
Agri-Food Sector
Textiles Sector
Steel Industry

Mission

To support of Digitising European Industry

Values

Digitisation

EU Member States:
Several EU Member States have already launched strategies to support the digitisation of industry. But a comprehensive approach at European level is needed to avoid fragmented markets and to reap the benefits of digital evolutions such as the internet of things.

European Commission:
After the announcement in April 2016 of a set of measures in support of the digitisation of the European industry (DEI) [1], the European Commission held a workshop on the 17/10/2017 with a view to identify common high-level standardisation issues to be tackled by European or national initiatives and the kind of support, mediation or coordination that would be needed at EU level. The workshop [2] highlighted the need to gather the key ICT standardisation actors in order to tackle the fragmentation of the various initiatives and address in more detail how the identified issues and recommendations can be taken forward. A following working-level workshop on Public Private Partnerships (PPPs) and Platforms, held on the 21/11/2017 in the framework of the High-level governance meeting of the European platform of national initiatives on digitising industry [3], endorsed the Commission to act as a facilitator for synchronisation and acceleration of standardisation efforts based on an existing infrastructure. Similar endorsement was received by the MSP on the 7/12/2017.

Marco Carugi:
MSP/DEI WG Rapporteur — This Final Report has been prepared by the MSP/DEI WG Rapporteur, Mr. Marco Carugi, whose mandate is to assist the relevant services of the Commission in the preparation of various working documents and reports pertaining to the activities of the MSP/DEI WG.
Standardisation
Task 1. Standardisation

Identify the standardisation needs in the manufacturing sector.

Stakeholder(s)

Manufacturing Sector

Identify, as a starting point, the standardisation needs in the manufacturing sector, which might serve as a blueprint for other domains in the future... Inputs for possible recommendations on future work have been collected, with a focus on standardization gaps, and different perspectives related to gaps have been considered, including the ones building on the IoT-specific standardization gaps analysis developed within AIOTI (based on outcome of ETSI STF 505) as well as on major gaps perceived by the H2020 IoT Large Scale Pilots (H2020 CREATE-IoT CSA). The document has also collected recommendations from the German Roadmap Industry 4.0 as input for further possible actions. Details on the work done are provided in clause 3.3 of this report in terms of recommended actions.

1.1. Regulation

Provide a comprehensive regulatory framework for the safety and compliance of industrial products

Concerning standards in the context of regulatory requirements, the New Legislative Framework (NLF) and the product related Union harmonisation legislation provide all the elements required for a comprehensive regulatory framework to operate effectively for the safety and compliance of industrial products with the requirements as laid down in this Union harmonisation legislation apply in the context of industry and hence equally in the context of digitising industry. All companies involved in manufacturing must have their manufacturing machine processes in compliance with the Machinery Directive 2006/42/EC. Harmonised Standards provide the details that assist and enable companies to conform to and be certified to the Machinery Directive. Within the NLF there are other legal requirements stemming from legal acts outside of the NLF, and, in the context of DEI, these are, for instance, the more recent legal acts in the area of privacy and security. The topic of new standardisation activities in response to regulatory requirements will continue to be an ongoing activity in the context of digitising European industry.

1.2. Interoperability

Ensure and facilitate interoperability

Standards ensuring and facilitating interoperability are key for digitising industry. They enable the integration of technologies, adding digital functionality to physical layers, and collecting, transmitting and analysing data for the optimisation, automation and integration of processes. They support integration platforms for interconnecting different layers and levels. And the related deliverables can also provide use cases, reference architectures and other guidance and overview documentation promoting the uptake of new technologies and the transformation towards a digitised industry.

1.3. Integration

Integrate processes and value chains both within one organisation and across organisational boundaries

Digitising industry implies the integration of processes and value chains both within one organisation and across organisational boundaries (the second case typically referring to supply chains as well as delivery and post-production processes). These integration aspects also imply various needs for using standards and technical specifications.
1.4. Gaps

Identify standardisation gaps

The identification of gaps on standardisation takes place in many organisations and at various levels. It is important – at the European level – to take note of all of these activities and not repeat work that is already done elsewhere, but consolidate on actions that have impact on the implementation of policy objectives in the area of industry digitisation and derive from there a set of recommended actions to be included into the EU Rolling Plan on ICT Standardisation.
Task 2. Activities

Map the ongoing activities relevant to the digitisation of European industry.

Stakeholder(s)

ESOs  LSPs
SDOs  PPPs

Consortia

Map the ongoing activities carried out by ESOs, SDOs, fora & consortia, LSPs, PPPs, DE/IT/FR trilateral cooperation, other research projects, etc. that are relevant to the digitisation of European industry... Recommendations from the activities related to Tasks 1 & 2 — The following nine high-level or summarized actions have been provided to be included into the EU Rolling Plan on ICT Standardisation for 2019. These actions will therefore be provided as proposals for activities to the ICT standardisation community and actual work will be reviewed and recorded in the context of the work of the MSP.

2.1. M2M Communications

Prioritize common communications standards and a reference architecture for connections between machines (M2M) and with sensors and actuators

Action 1: Common communications standards and a reference architecture for connections between machines (M2M) and with sensors and actuators in a supply chain environment are a basic need and a priority. Specific industrial needs must be included, like standards which support communications on broadband infrastructures and data formats in order to allow for the quick transfer of large volumes of data over networked industries. This could ease the ability to switch between platforms. Analysis is required as to how to provide industries with a solution enabling wireless communications without interfering with other wireless networks. In particular, a check should be run on M2M standards against requirements like real-time capability and close to hardware runtime codes.

2.2. E-Skills

Check whether the e-skills standards sufficiently account for the manufacturing skills of KETs

Action 2: As part of the new skills agenda for Europe, ESOs could check whether the e-skills standards sufficiently account for the manufacturing skills of KETs, including future manufacturers, M2M, rapid prototyping and others.

2.3. Standards

Identify and analyse opportunities for revisions of existing standards

Action 3: Conduct a study to identify and analyse opportunities for revisions of existing standards (communications, M2M) or new standards with a particular view on new production technologies, manufacturing processes including lifecycle operations (circular economy), functional safety issues and skills-deficit reduction.
2.4. Interoperability, Overlap, Redundancy & Fragmentation

*Improve interoperability and reduce overlap, redundancy and fragmentation.*

Action 4: Improve interoperability and reduce overlap, redundancy and fragmentation. Often there are several standardisation activities ongoing in the same area in parallel. Standardisation activities should be encouraged for making standards to work together and integrating existing protocols. Moreover, standards bodies should aim for a coordinated approach regarding different reference architectures and measures should be taken to reduce overlap, redundancy and fragmentation.

2.5. Security & Communications

*Work on interoperability standards for security and for linking communication protocols*

Action 5: Interoperable and integrated security – SDOs should work on interoperability standards for security and for linking communication protocols in order to provide end-to-end security for complex manufacturing systems including the span of virtual actors (from devices and sensors to enterprise systems). Standards should take into account risk management approaches as well as European regulation and regulatory requirements.

2.6. Privacy

*Create a hierarchical catalogue of technical and social measures for assuring privacy protection*

Action 6: Create a hierarchical catalogue of technical and social measures for assuring privacy protection and task all SDOs impacting the DEI domain in general and the advanced manufacturing domain in particular to comment on and prioritize the elements in the catalogue. Digitising industry implies processing of data which includes personal data within the definition of the GDPR. That means, in addition to technical measures to ensure the security of the data, additional technical and social measures are needed to protect the privacy of personal data. Such social or non-technical measures will include, e.g. Codes of Conduct, Charters and Certifications, best practice guidelines, collection of evidence of privacy protection assurance, etc.

2.7. Interaction

*Define the main characteristics for all levels of the interaction*

Action 7: Standards should be developed to define the main characteristics for all levels of the interaction from mechanical to electrical to protocol to semantic levels between robot and tool to ensure the exchangeability and to enable the design of generic tooling (plug-and-play). There are 2 main types of End Effector: "Off-the-Shelf" and "Bespoke". It is desirable that off-the-shelf end effectors operate on a single software protocol. There is a need for Industry 4.0 to standardise this. It would then become Plug- &- Play. For "Bespoke" end effectors (most commonly purchased) the system integrator specifies the software protocol for the Robot and End Effector.

2.8. Additive Manufacturing

*Develop harmonised standards in the area of additive manufacturing.*

Action 8: Start the discussion about the possible development of harmonised standards in the area of additive manufacturing. Currently, there are no harmonised standards under the Machinery Directive for Additive Manufacturing (AM) equipment. The availability of these standards could facilitate the manufacturer conformity assessment process. The European Commission should discuss together with SDOs and AM equipment manufacturers the possible need for harmonised standards in this area.
2.9. Materials

*Develop standards for ensuring long-term traceability of material to enable re-use and recycling.*

Action 9
Task 3. Model

*Develop a model for the synchronisation of the various standardisation activities.*

**Stakeholder(s)**

- **Dr. Stefan Weisgerber:** (CEN representative) Leader for Task 3

**Synchronisation Platform Stakeholders:**

The synchronisation platform can only be successful if all relevant stakeholders are present, either directly on the platform or through cooperation. The stakeholder groups to be involved for effective synchronisation include:

- **Smart Manufacturers:** National initiatives on smart manufacturing
- **European PPPs:** European PPPs, Large Scale Pilots
- **Test Bed Operators**

**Researchers:** Research in academia, industry, EU co-funded settings

**Standardisation Bodies**

**Consortia:** Consortia & alliances (of industrial partners)

**Open Source Communities**

**Industry:** including SME, start-ups and consulting companies

**Societal Stakeholders**

**Policy Makers**

**Regulators**

The Task 3 of the MSP/DEI WG’s Terms of Reference is: 3) Develop a model for the synchronisation of the various standardisation activities, at the Member State level and at the European level – and in a global context... The essence of the Task 3 results is the Recommendation to implement a Networking Platform which will aim at synchronising the various Standardisation activities in support of Digitising European Industry and which will support cooperation of the existing platforms. Eight Recommendations have been identified concerning the operation and the organization of the platform:

### 3.1. Networking

*Implement a Networking Platform to support cooperation.*

The synchronisation of the various standardisation activities in support of Digitising European Industry should be implemented by means of a Networking Platform to support cooperation of the existing platforms.

### 3.2. Solutions

*Facilitate and support the advancement and promotion of standards solutions.*

In support of its mission, the Networking Platform should offer working elements that facilitate and support the advancement and promotion of standards solutions for digitising manufacturing, driven by strategic requirements and in close alignment with results from research, pilots and testbeds.

### 3.3. Cooperation

*Stimulate active, open and fair cooperation of stakeholder groups.*

Terms of Reference, Rules of Procedure and in particular the way how the Networking Platform works should be tailored to stimulate active, open and fair cooperation of the involved stakeholder groups.
3.4. Transparency

   Work in a highly transparent way.

   The Networking Platform should work in a highly transparent way.

3.5. Representation

   Strive for appropriate representation of all stakeholder groups.

   The Networking Platform should strive for appropriate representation of all stakeholder groups involved in or affected by standardisation in support of digitising manufacturing.

3.6. Funding

   Adequately fund the Networking Platform.

   Adequate funding of the Networking Platform should be foreseen in order to allow for sustained and successful operation.

3.7. Informality

   Set up the Networking Platform as an informal entity.

   The Networking Platform should be set up as an informal entity.

3.8. Governance

   Keep the governance structures at a minimum.

   The governance structures of the Networking Platform should be kept at a minimum, mainly focusing at fostering an agile and smooth interaction of all its members.
Task 4. Roadmap

Propose a roadmap specifying actions to be included in the plan for ICT standardisation.

Stakeholder(s)

Dr. Jochen Friedrich:
(OFE representative) Co-leader for Task 4

Dr. Stefan Weisgerber:
(CEN representative) Co-leader for Task 4

Propose a first roadmap taking into account existing work, such as national standardisation roadmaps and other related work, and specifying concrete actions that may be included in the Rolling Plan for ICT standardisation... It is recommended the extension of the mandate of the MSP/DEI WG in order to support the implementation of the outcome of the Tasks 1-3. Work Packages — Five Work Packages (WP) are recommended based on the outcome of the Task 1 & 2: their purpose is to ensure the maintenance and improvement of the produced documentation, and to carry out further work beyond the current time frame of the WG. NOTE 1 – The establishment of the Networking Platform according to this model is recommended as well. NOTE 2 – The Work Packages below are still to be detailed further. The five Work Packages are:

4.1. Information & Analysis

Continue to exchange information and analyze needs for new standardisation activities.

WP1: Continued exchange on, and analysis of, needs for new standardisation activities. Scope: continue the analysis of standardisation needs and the update of the set of proposed actions; record the progress against actions; continue to provide input to the EU RP on ICT standardisation. NOTE – Tasks 1 & 2 of the MSP/DEI WG have provided a detailed analysis and, as described in clause 3.3 of this report, identified concrete proposals for actions to be included in the EU RP on ICT Standardisation 2019 as well as developed a set of more detailed proposed actions. Identified deliverables and milestones: input to RP 2020, further improvements of the mapping of ongoing activities, especially with focus on fostering cooperation – TBD

4.1.1. Actions

Update of the set of proposed actions

4.1.2. Progress

Record the progress against actions

4.1.3. Output

Continue to provide input to the EU RP on ICT standardisation.

Stakeholder(s):
EU RP

4.2. Research & Innovation

Provide input on areas for research and innovation

WP2: Input to the EU research agenda. Scope: provide input on areas for research and innovation where pilot projects or collaborative advanced technology work within an EU R&I framework will be important. Identified deliverables and milestones: input to a DEI research and innovation agenda – TBD
4.3. National Roadmaps

*Follow-up on existing work and national roadmaps.*

WP3: Follow-up on existing work and national roadmaps. Scope: gather input from different national roadmaps and other activities; contribute to information exchange; promote cooperation on pan-European level. Identified deliverables and milestones: update of the document from Tasks 1 & 2.

4.3.1. Input

*Gather input from different national roadmaps and other activities*

4.3.2. Information

*Contribute to information exchange*

4.3.3. Cooperation

*Promote cooperation on pan-European level*

4.4. Initiatives

*Develop an overview of policy/government initiatives in other (non-European) countries and regions.*

WP4: Overview on policy/government initiatives in other countries or regions. Scope: develop an overview of policy/government initiatives in other (non-European) countries and regions, i.e. policy instruments, PPPs and private initiatives, which have been set up with the objective to promote digitising industry. NOTE – This is not about standardisation development, but about standardisation promotion or pre-standardisation work. Identified deliverables and milestones: overview document or other representation as appropriate – TBD

4.5. Needs & Activities

*Pursue standardisation needs and ongoing activities beyond the manufacturing sector.*

WP5 (agreed based on feedback received at the second open workshop): Standardisation needs and ongoing activities beyond the manufacturing sector. Scope: develop an analysis of standardisation needs and ongoing activities in other sectors of digitizing industry. NOTE – The WG ToR already recognized this intention stating “Identify, as a starting point, the standardisation needs in the manufacturing sector, which might serve as a blueprint for other domains in the future”. Identified deliverables and milestones: similar outputs than those developed for the manufacturing sector are likely – TBD
Administrative Information
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