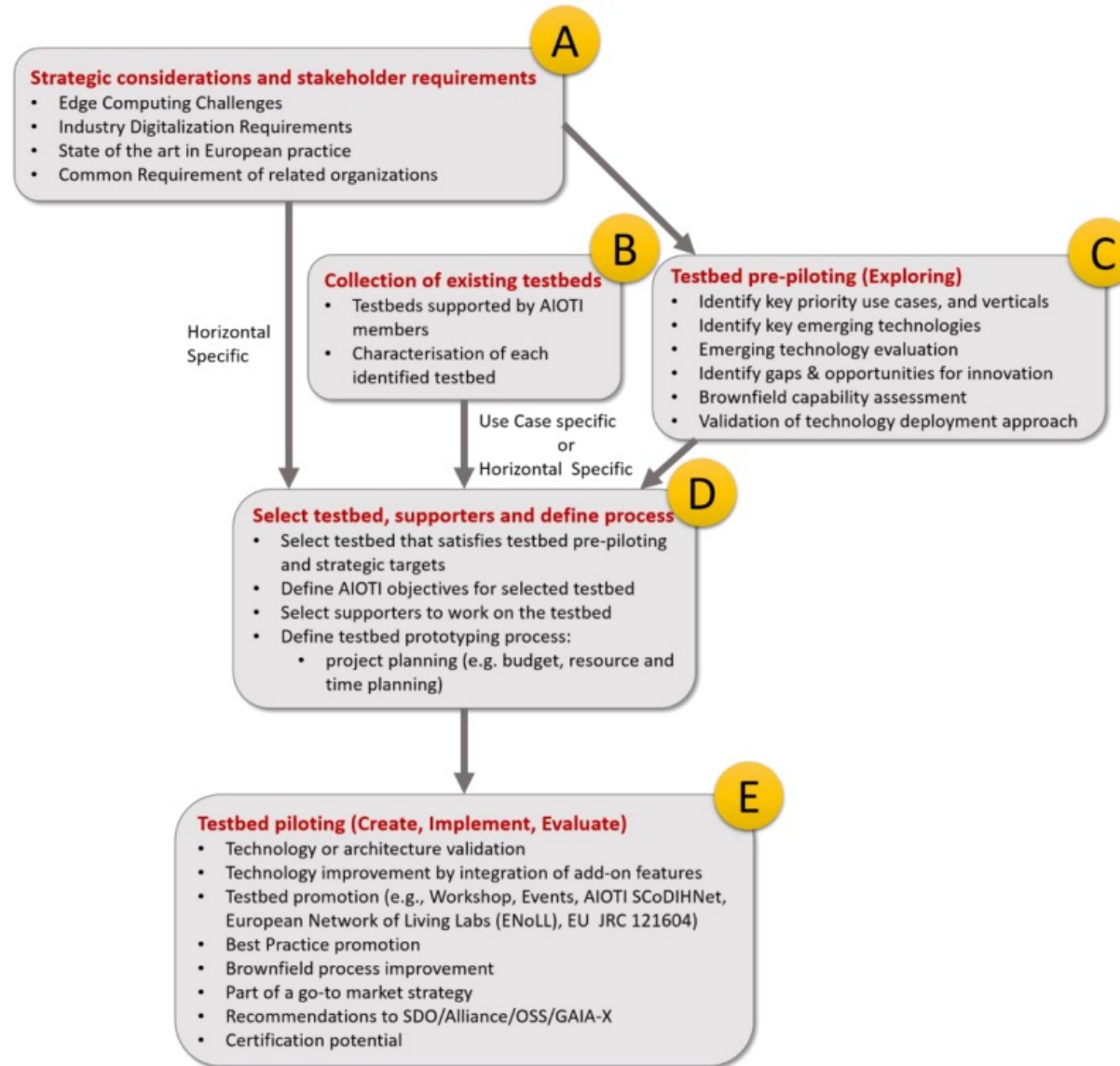# Alliance for Internet of Things Innovation

AIOTI Signature Event • 27 September 2022

AIOTI Testbeds Methodology and Catalogue

Georgios Karagiannis
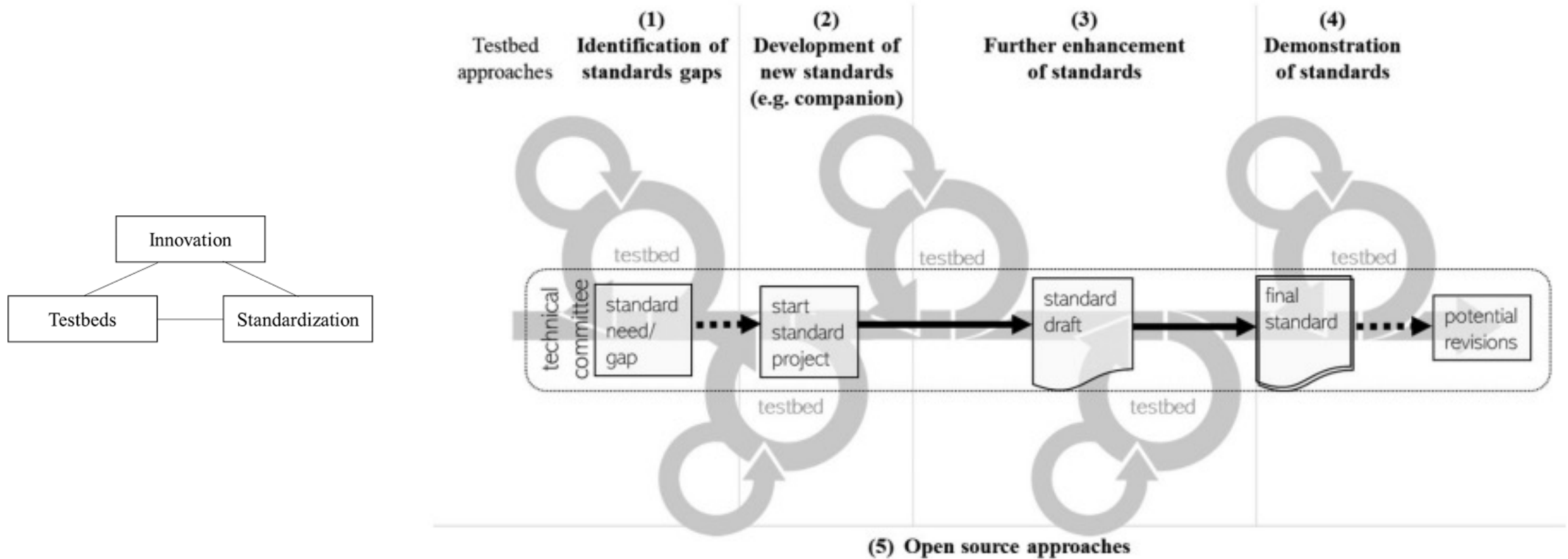
Chairman of AIOTI WG Standardisation (Huawei)

AIOTI Testbed methodology

A — Strategic considerations and stakeholder requirements
- Edge Computing Challenges
- Industry Digitalization Requirements
- State of the art in European practice
- Common Requirement of related organizations

Horizontal Specific

B — Collection of existing testbeds
- Testbeds supported by AIOTI members
- Characterisation of each identified testbed

C — Testbed pre-piloting (Exploring)
- Identify key priority use cases, and verticals
- Identify key emerging technologies
- Emerging technology evaluation
- Identify gaps & opportunities for innovation
- Brownfield capability assessment
- Validation of technology deployment approach

Use Case specific
or
Horizontal Specific

D — Select testbed, supporters and define process
- Select testbed that satisfies testbed pre-piloting and strategic targets
- Define AIOTI objectives for selected testbed
- Select supporters to work on the testbed
- Define testbed prototyping process:
  - project planning (e.g. budget, resource and time planning)

E — Testbed piloting (Create, Implement, Evaluate)
- Technology or architecture validation
- Technology improvement by integration of add-on features
- Testbed promotion (e.g., Workshop, Events, AIOTI SCoDIHNet, European Network of Living Labs (ENoLL), EU JRC 121604)
- Best Practice promotion
- Brownfield process improvement
- Part of a go-to market strategy
- Recommendations to SDO/Alliance/OSS/GAIA-X
- Certification potential

Source: AIOTI Testbed Methodology, AIOTI Testbed Group, November 2021

Testbeds and Standardisation process

Recommendations

- Consider that there is a relation between Innovation, Testbeds and Standardisation

- Several methodologies are available to guide the initiation and the realization of testbeds, where the AIOTI testbed methodology is one of them

- When testbeds become part of a standardisation and innovation ecosystem, e.g., being incorporated an EU funded project or in an association such as AIOTI:

  - can accelerate the standardisation and technology deployment processes

  - supports the provision of validated solutions to standards development process allowing for a faster specification of standards with no decrease of quality

- Example: for Step A of AIOTI testbed methodology (strategic considerations) consider the standardisation gaps that have been identified by the AIOTI IoT and Edge computing stand. Gap Analysis taskforce

Edge Computing standardisation gaps

Section	Standards	Section	Standards	Section	Standards	Section	Standards
2.1	26	2.11	30	2.15.7	1	2.15.17	0
2.2	41	2.12	15	2.15.8	3	2.15.18	5
2.3	12	2.13	9	2.15.9	2	2.15.19	1
2.4	1	2.14	3	2.15.10	7	2.15.20	3
2.5	1	2.15.1	7	2.15.11	1	2.15.21	2
2.6	2	2.15.2	6	2.15.12	0	2.15.22	4
2.7	1	2.15.3	6	2.15.13	0	2.15.23	4
2.8	7	2.15.4	6	2.15.14	14	2.15.24	6
2.9	1	2.15.5	4	2.15.15	2	2.15.25	2
2.10	6	2.15.6	4	2.15.16	3		

= Less priority gap, more standardisation work ongoing

= High priority gap, some standardisation work ongoing

= Considerably high priority gap

- Considerable (high priority) standardisation gaps related to AIOTI identified edge computing challenges of (red color):
  - Digital Twins (and Green Deal) (Sections 2.4, 2.5, 2.9); ⟶ Sessions 1, 2, 3
  - ICT/IoT and policies description and languages supporting the Environmental, Social and Governance (ESG) monitoring (Sections 2.6, 2.15.11, 2.15.12); ⟶ Sessions 1, 3
  - Federated Learning and AI (Sections 2.7, 2.15.7, 2.15.19); ⟶ Sessions 1, 2, 3
  - Devices and IoT swarm systems management (Sections 2.15.13, 2.15.17). ⟶ Sessions 1, 2, 3
- Activities could be initiated for creation of standardization specifications covering challenges of (brown color):
  - IoT and edge computing coexistence/integration/interoperability and continuum across several sectors and platforms (Sections 2.14, 2.15.6, 2.15.5, 2.15.6, 2.15.15, 2.15.16, 2.15.20, 2.15.21, 2.15.22, 2.15.23); ⟶ Sessions 1, 2, 3
  - Services discovery and authentication – in the context of multiple edges (Sections 2.15.8, 2.15.9). ⟶ Sessions 1

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Thank you for listening

Any questions?

You can find us at @AIOTI_EU or email sg@aioti.eu

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