

ISO/IEC 25000 Future Directions

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Background of the Study group

- The first cycle of work for ISO/IEC 25000 (SQuaRE) series has been almost done.
- Some revision projects of the quality models have just started.

Quality requirements Division 2503n	Quality Model Division 2501n	Quality Evaluation Division 2504n
	Quality Management Division 2500n	
	Quality Measurement Division 2502n	

- We needed to plan the future of the SQuaRE series, in order for their readers to use it more effectively and efficiently.
- A WG6 study group, **Future Directions on the SQuaRE series**, have worked for one year from May 2018, to discuss and report a future plan for the SQuaRE series. Its goals include:
 - getting feedback from SQuaRE users,
 - investigating problems of the current documents, and
 - catching up the advent of new technologies.

Study group outcomes and today's topics

- Two outcomes of the study group

1. SQuaRE user feedback report

2. SQuaRE future direction study group report

=> Two consecutive talks

User feedback survey (Feb 2019)

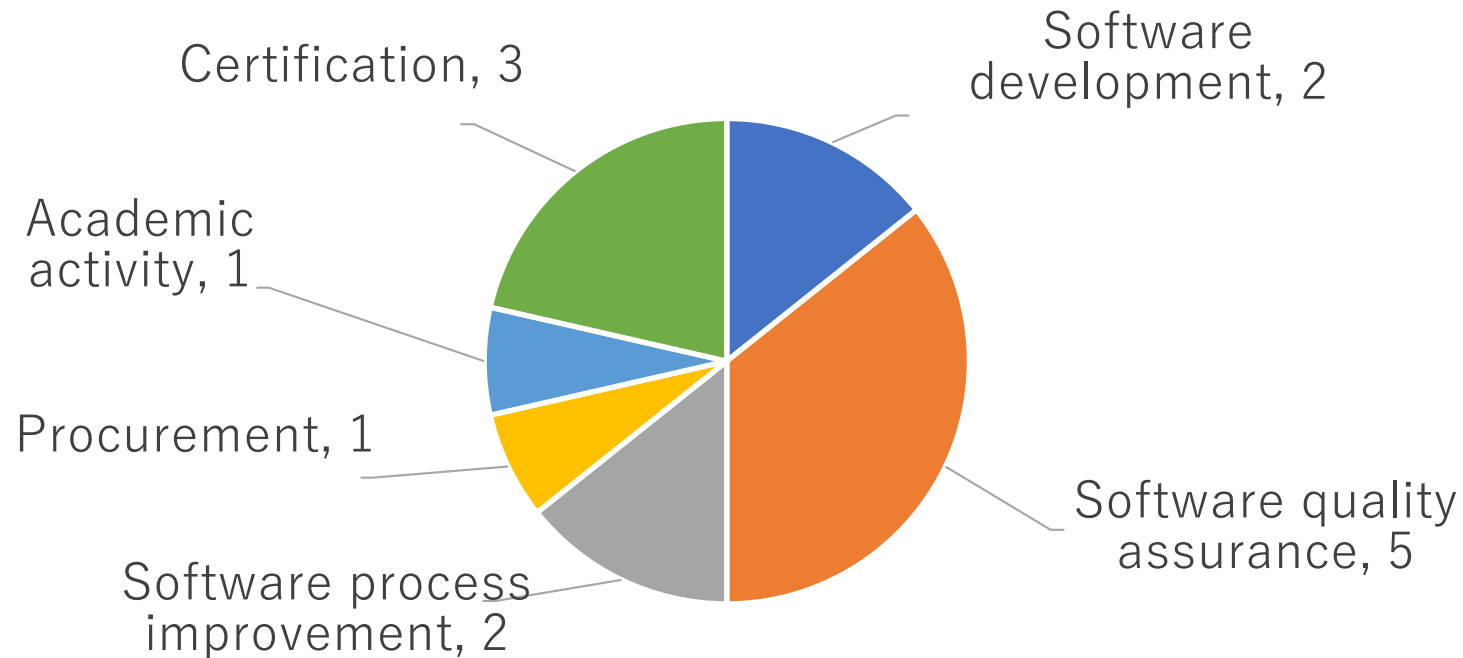
- WG6 members conducted interviews with people in different domains, who have used, tried to use, or intend to use SQuaRE series (fully or partially).
- Questionnaires
 - [Q1] In what areas of software development have you used, tried to use, or intend to use SQuaRE?
[for example, Requirements definition, Engineering, Quality assurance, Evaluation for procurement, Certification, etc.]
 - [Q2] What divisions of SQuaRE have or will you use?
[Model (Quality in Use, Product, Data, IT service), Measurement, Requirement, Evaluation, Extension, ALL]
 - [Q3] What is the primary reason for choosing SQuaRE?
 - [Q4] How well known is SQuaRE to people in your organization?
How popular is SQuaRE with people who know about it?
 - [Q5] Are there factors that make SQuaRE difficult to use?
[Complicated concept, Immature technology, Lack of details, Poor guidance, Lack of experience, etc]
 - [Q6] What improvements are needed to increase the adoption of SQuaRE in your company?

Statistics of the survey

Number of Answers:

11 (Japan 5, Italy 4, US 1, Argentina 1)

Usage types of the series:



Survey result: How SQuaRE is used

- **Japanese** 🇯🇵 companies often use **PQ model** to evaluate the results of SRS review and system testing for software products.
- **US** 🇺🇸 (CISQ) use **PQ model** and create their own measures to evaluate the results of static testing.
- Three countries use **PQ and/or DQ models and their measures** for quality certification of target entities.
 - **Italy** 🇮🇹 (**PQ and DQ models, and their quality measures**)
 - **Japan** 🇯🇵 (**PQ model and its quality measures**)
 - **Argentina** 🇦🇷 (**PQ model**): their certification system does not work effectively because of not having sufficient set of quality measures.
- Some **PQ and DQ measures** are used for certification, but the developers use them to a limited extent.
- There is a case to use **QiU model** for evaluation of IT services.

PQ: Product Quality

DQ: Data Quality

QiU: Quality in Use

Survey result: Listed problems

Quality Model

- The definitions of some quality charas/subcharas have defects:
 - difficulty or ambiguity to interpret,
 - and conceptual overlapping among them.
- This causes:
 - Many users feel difficulties to use it easily, especially for evaluation.
 - Some leading organizations have interpreted quality models for themselves, establishing their own methods for quality measurement.

=> Suggested approach:

- For fixing the defects, some changes to names and/or definitions of some quality charas/subcharas need to do.
- But the changes have to be done carefully enough not to ruin users' currently established methods.

Survey result: Listed problems (Cont.)

Measures

- Users often need to define new measures to evaluate their products and services, but only a little support is provided.
- Few static quality measures are provided, which can be measured directly from design artifacts or source code.

General

- SQuaRE looks outdated to many developers, because know-hows to apply it to new technologies (Agile, Cloud computing, AI) are not supported.
- Needs for guidelines with examples for its applications.

Study group outcomes and today's topics

- Two outcomes of this study group

1. SQuaRE user feedback report

2. SQuaRE future direction study group report

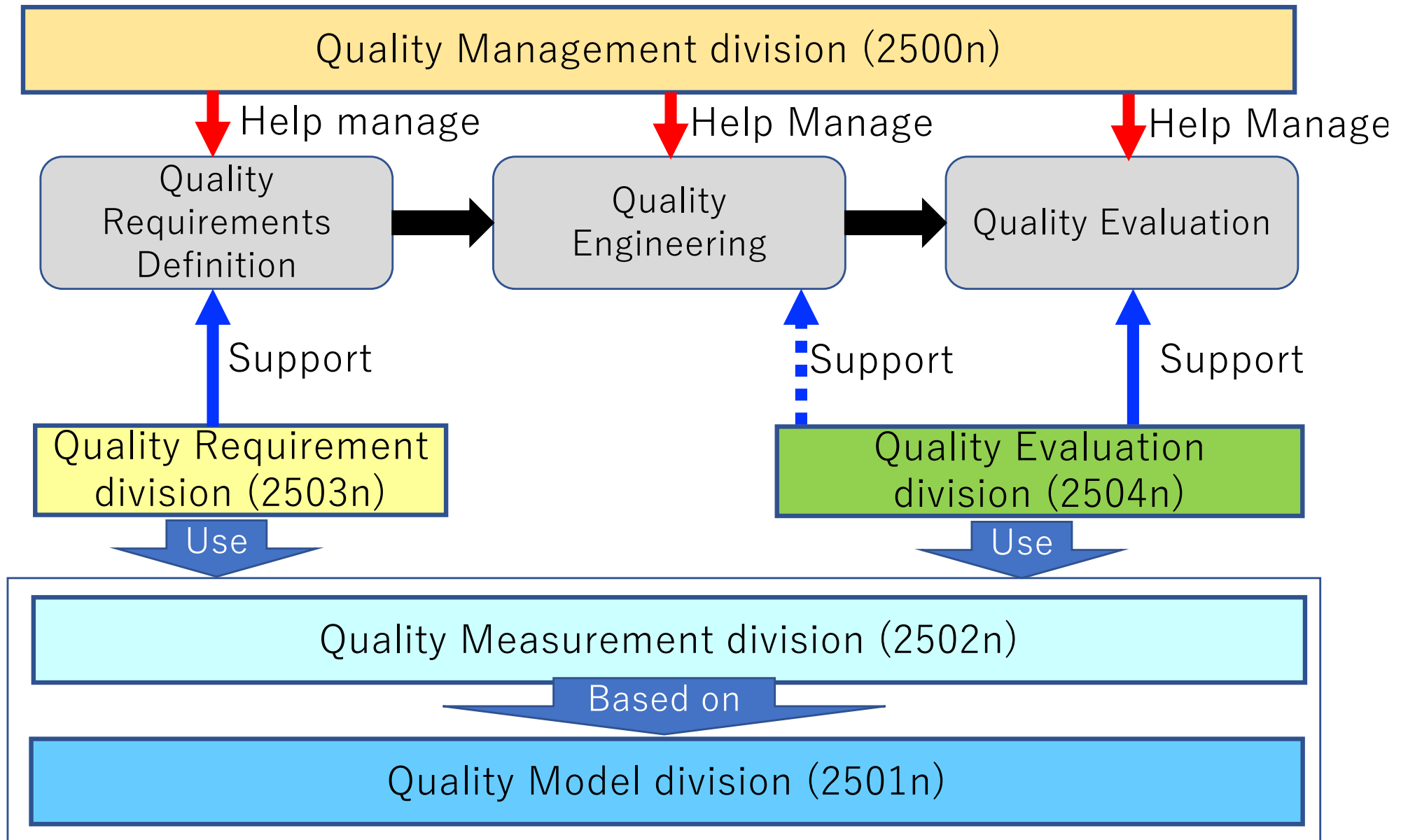
=> Two consecutive talks

Study group's activities (2018.5-2019.5)

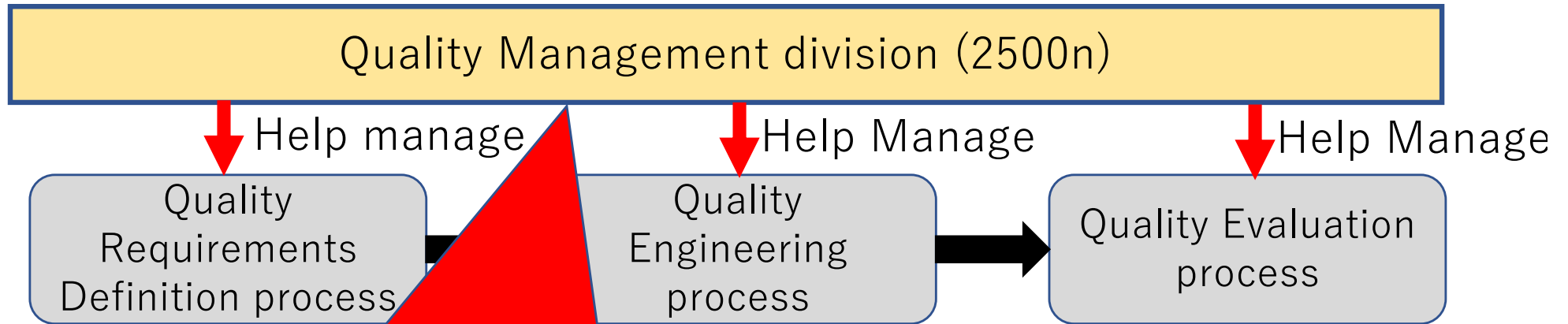
The activities and outcomes:

- Surveying what will be needed for SQuaRE users,
- Reviewing Future Watch Report to identify new items,
- Prioritizing them based on their importance, feasibility and other restriction, and
- Creating a plan for ISs / TRs, including:
 - what should be addressed
 - problems and its proposed solutions
 - basic approach, study group, candidate of chair)

Relationship among the SQuaRE divisions



Proposals: Quality Management

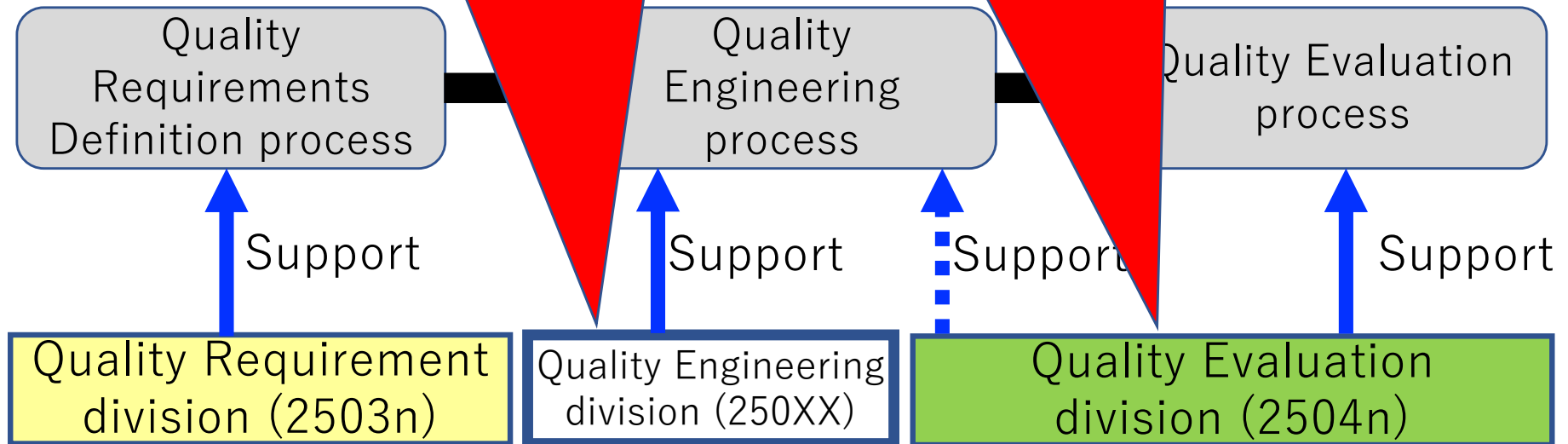


- **Guiding to use the documents in the whole series**
- **Establishing a mechanism to evolve and maintain terms and definitions for the SQuaRE series**

Proposals: Quality Requirements/Engineering/Evaluation

- **New division for quality engineering**

- **Define methods and techniques (25042)**



- **Guiding for various types of systems and IT services: System of systems, IoT, XaaS, Cloud service (with SC38)**
- **Guiding for applying to various development processes: Agile / DevOps**

Proposals: Quality Model and Quality Measurement

- **Enriching static quality measures (directly measured from artifacts)**
- **Establishing a mechanism for evolution of quality measures**

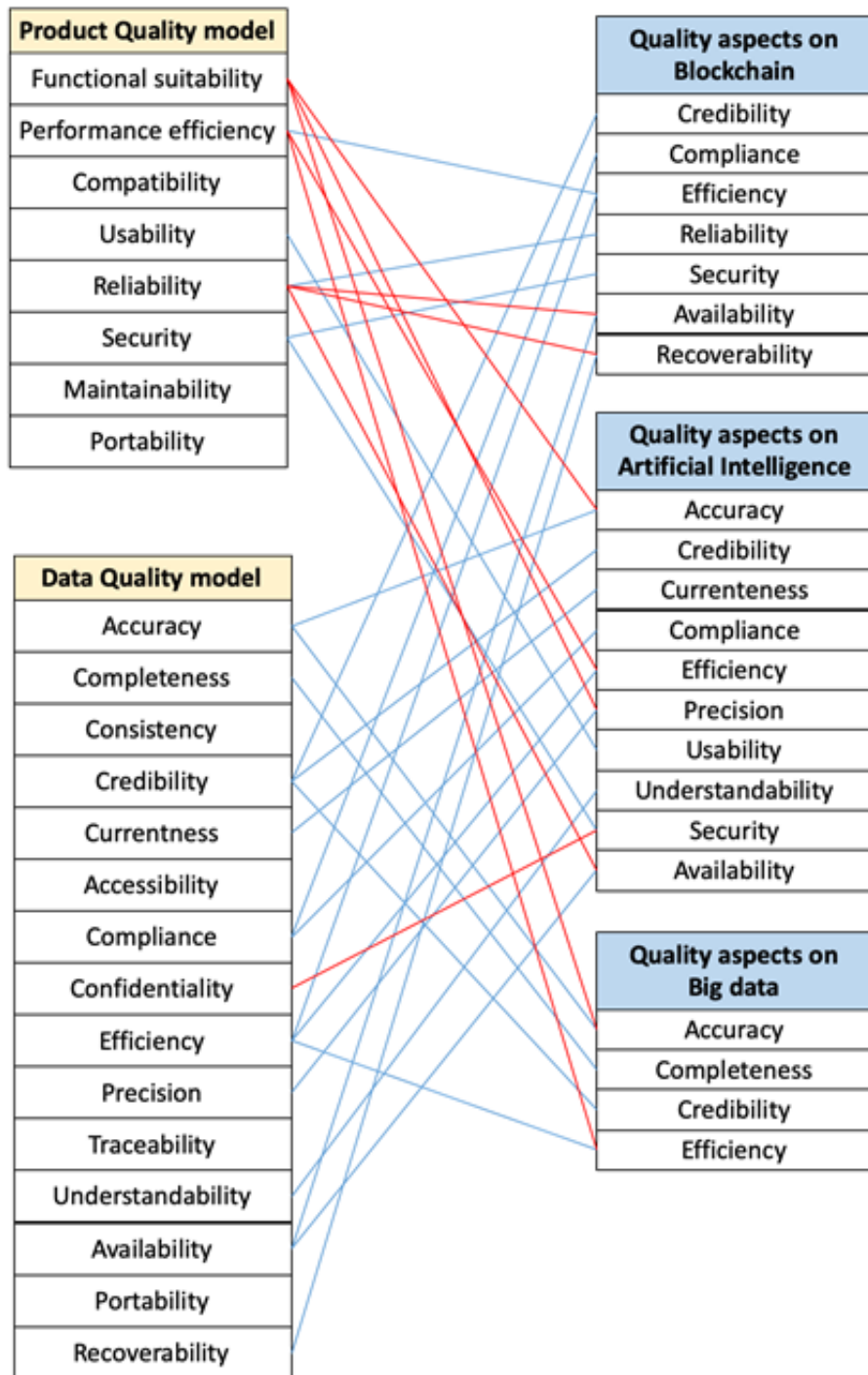
**Adapting to new technologies:
AI (with SC42/WG3), Big data, Block chain**

Quality Measurement division (2502n)

Based on

Quality Model division (2501n)

Issues on SQuaRE quality models for new technologies



- The line shows a word-matching-level correspondence between SQuaRE quality models and quality aspects of new technologies.
- The aspects are extracted from literatures relating to the technologies.
- Some potential problems exist, which need the following future investigation:
 - The reason why some characteristics are not connected with any aspects of a new technology
(The tech. does not really need them?)
 - Gaps of meanings between the aspects and SQuaRE characteristics
(Some inconsistency exists.)
 - Completeness of the characteristics
(SQuaRE has not dealt with it yet.)



Thank you.