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Significance & Future of Certification

SIG/TÜViT Evaluation Criteria

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Arent Janszoon Ernststraat 595-H
NL-1082 LD Amsterdam
info@sig.eu
www.sig.eu

Evaluation Criteria *Overview*



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Public document

- *“SIG/TÜViT Evaluation Criteria Trusted Product Maintainability”*

What is the scope of certification?

What is measured?

How do measurements lead to ratings?

What is the scope?

Software Product

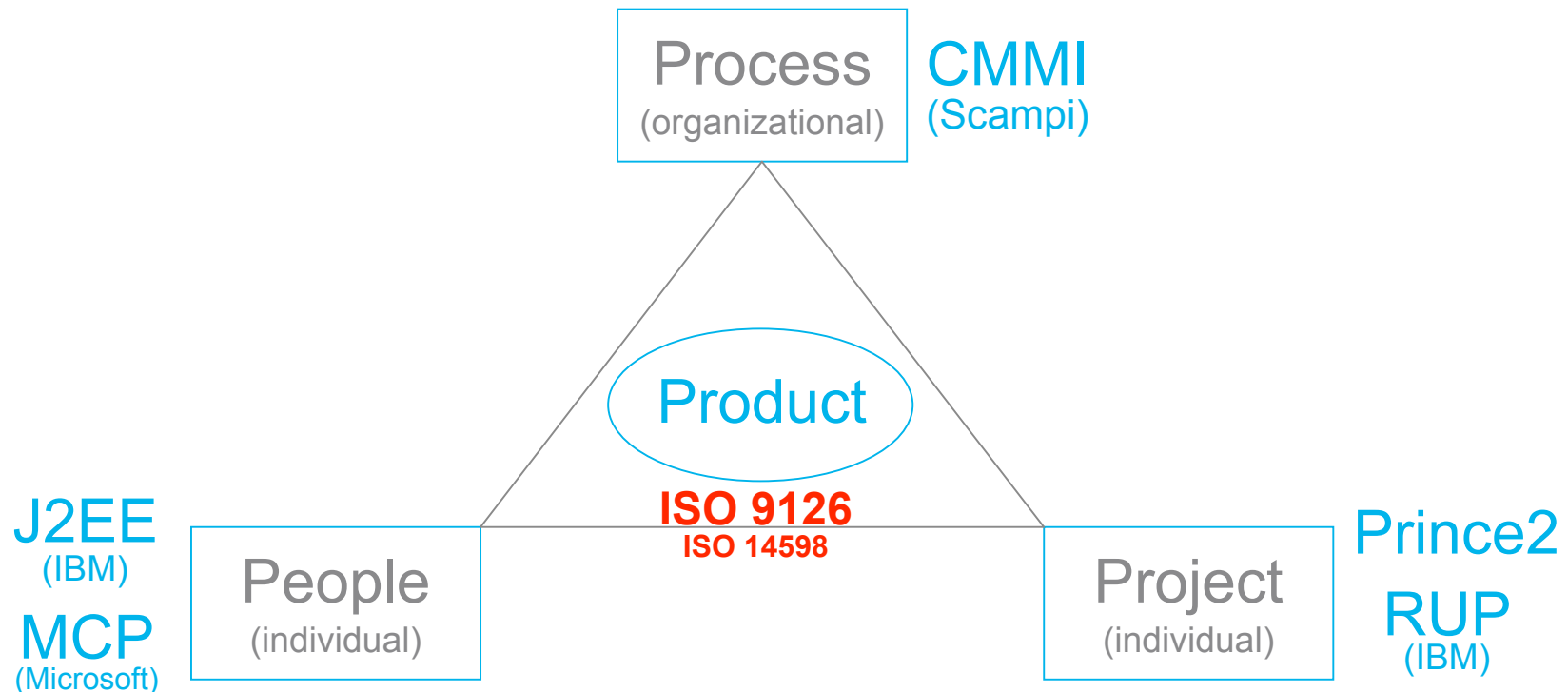


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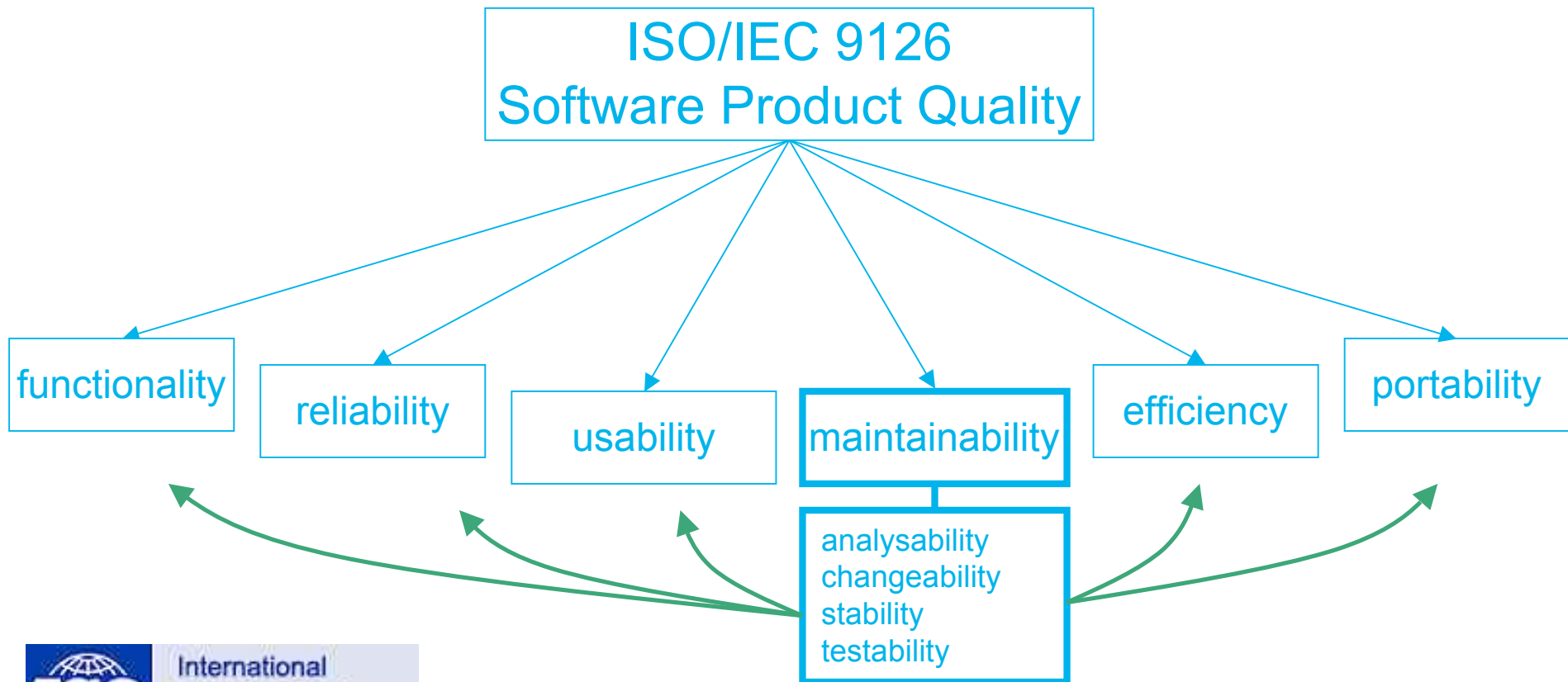
Software product

- Source code: programs, schemas, queries, active content
- *Not*: data, generated code, binaries, user documentation



ISO/IEC 9126, Part 1

Software product quality characteristics



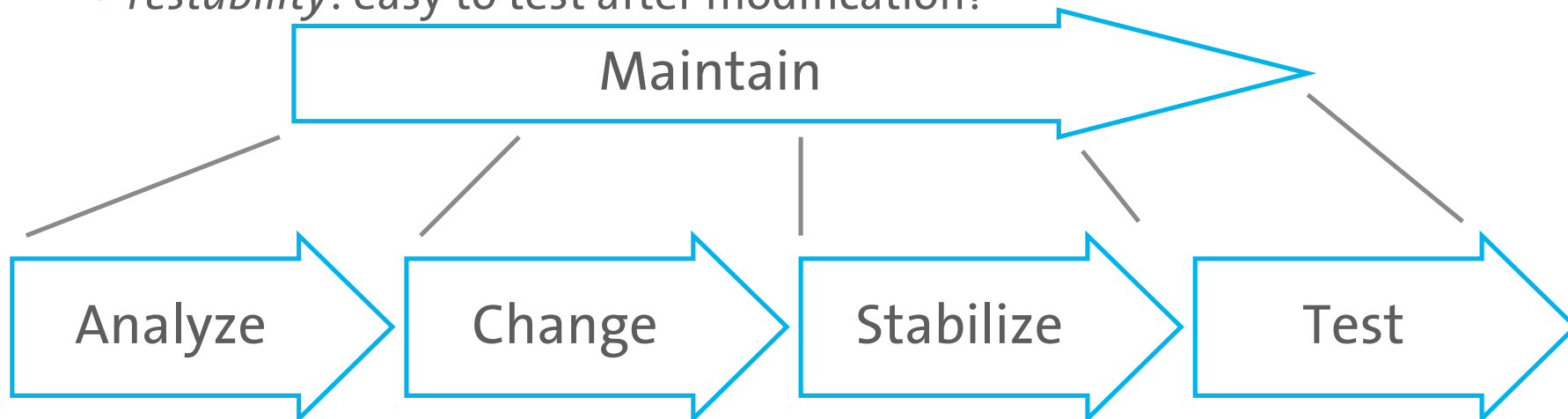
ISO/IEC 9126, Part 1

Maintainability

ISO/IEC 9126: Software Engineering - Product Quality

Maintainability =

- *Analyzability*: easy to understand where and how to modify?
- *Changeability*: easy to perform modification?
- *Stability*: easy to keep coherent when modifying?
- *Testability*: easy to test after modification?



Evaluation Criteria

What is measured?



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Quantifiable properties

- Volume, Duplication, Complexity, Interfacing, Coupling, ...:
- Source code metrics with broad acceptance and applicability
- Quantified at the level of lines, units, modules
- Aggregated into “Quality Profiles”

High-level description

- System boundaries, top-level components, source code modules
- Confirmation of conformance to minimal requirements

Evaluation Criteria

How do measurements lead to ratings?



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A practical model for measuring maintainability

Heitlager, Kuipers, Visser in QUATIC 2007, IEEE Press

- a. Aggregate measurements into “Quality Profiles”
- b. Map measurements and quality profiles to ratings for system properties
- c. Map ratings for system properties to ratings for ISO/IEC 9126 quality characteristics
- d. Map to overall rating of technical quality



Evaluation Criteria



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Eligibility for quality mark TÜViT Trusted Product

- High-level description: fulfill minimal requirements
- Quality ratings: 2 stars or more
- Overall rating: 3 stars or more

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Calibration w.r.t. SIG Benchmark Repository

- At level of property ratings
- Against large set of systems
- Multiple technologies, multiple domains
- E.g. about 5% of all systems reach 5 stars for the *complexity* property

High-level description
√ √ √
Quality Ratings
★★☆☆☆
★★☆☆☆
★★★☆☆
★★★★☆
Overall Rating
★★★☆☆

Evaluation Procedure

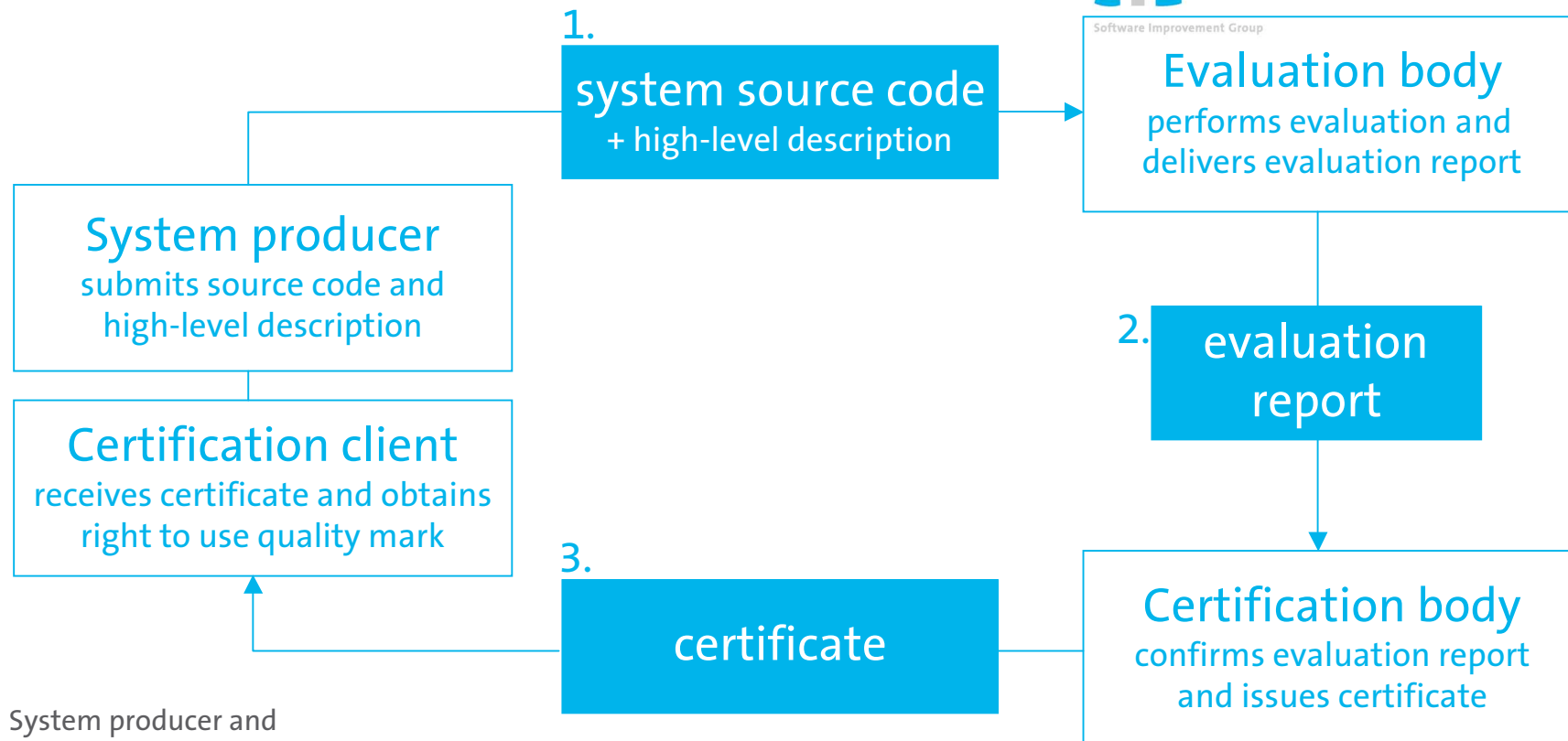
What are the steps?



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System producer and certification client can be the same organization



Evaluation procedure

What are the results?



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Evaluation report

- Defines scope of the evaluation
- Summarizes measurement results
- Provides ratings (properties, quality, and overall)
- May provide hints for the producer to improve ratings

Certificate

- States conformance to *SIG/TÜViT Evaluation Criteria*
- Confers right to use quality mark “TÜViT Trusted Product *Maintainability*”



Voluntary Validation

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Dr. Christoph Sutter

E c.sutter@tuvit.de

W www.tuvit.net

T +49 201 8999-582



Dr. ir. Joost Visser

E j.visser@sig.eu

W www.sig.eu

T +31 20 314 0950

