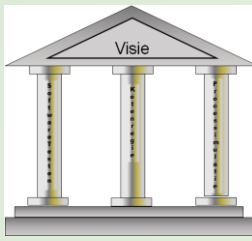# Industrial report:
The future of software testing brainstorm session
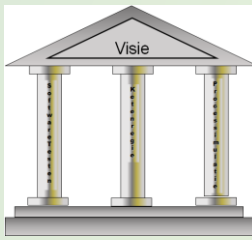
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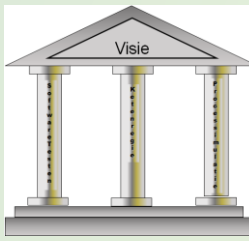
Agenda

- Introduction
- Context / historical perspective
- Brainstorm session

Introduction

- Consultant at Huis voor Software kwaliteit
- 30 years in software testing & quality management
- Co-author several quality related books
- Test expert online magazine Computable
- Publication areas; Testing, Education and quality monitoring
- Graduation supervisor Avans university of applied science
- Member of the steering committee Valid conference
- Member of the board Dutch Testing Society
- Member of the board 'historical society' city of Lingewaard
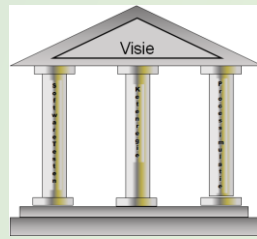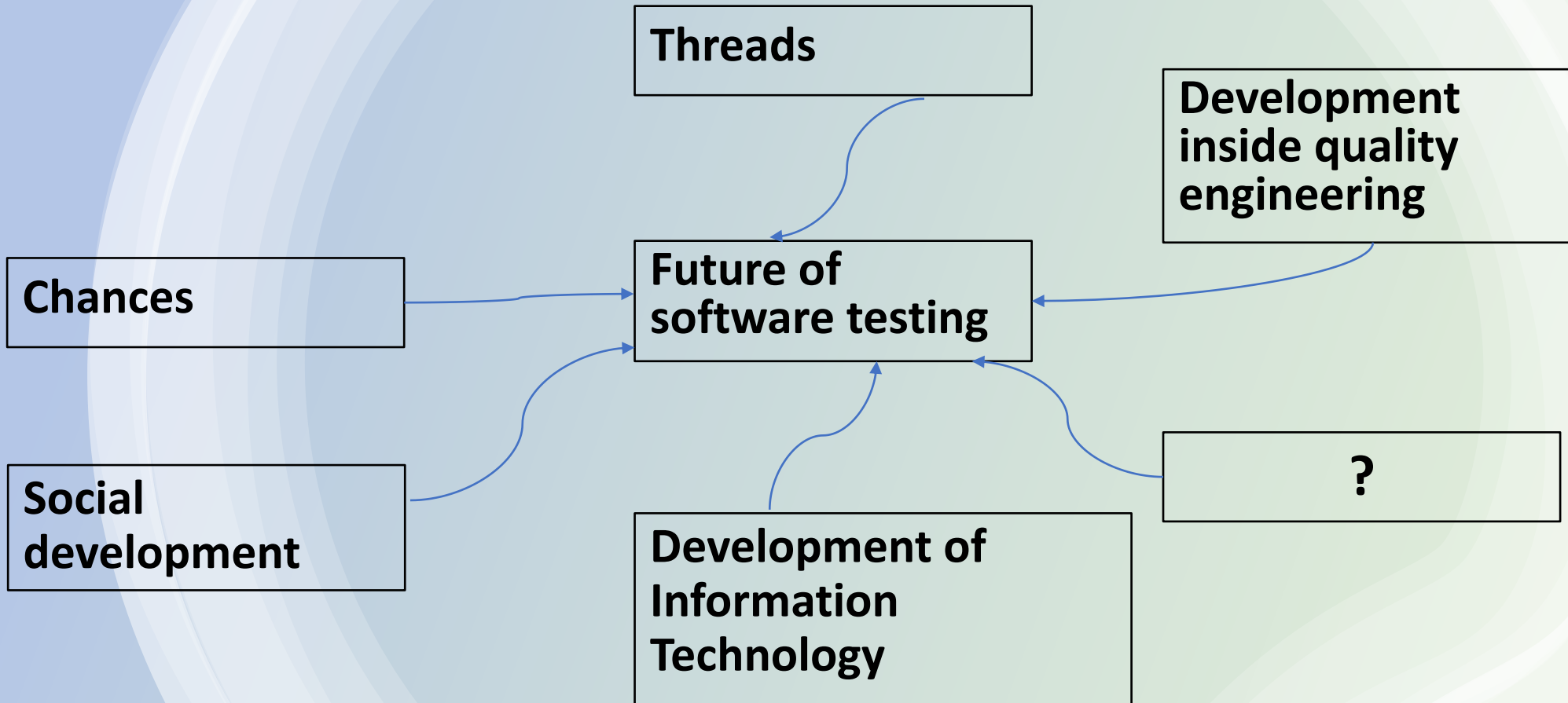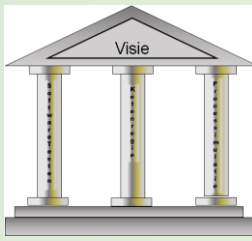
Introduction

- Software testing is still really traditional

- Innovation and research is below par

- The (so called) innovation concentrates:
  - How to apply test in a new development method
  - Test tooling

- Hardly none testing techniques to beat future challenges we have to face, like:
  - Self driving cars
  - Code development by hand of AI (how to prove the code)
  - Dependencies of medical devices
  - Smart devices connected to everything and everywhere
  - Etc.

The context (2)

Threads

Development inside quality engineering

Chances

Future of software testing

Social development

Development of Information Technology

?

# Some challenges per perspective

Developments of Information Technology:

• Increasing complexity systems connected with everything and everywhere

• Variability information systems is increasing

• Complexity of the configuration of business processes increases

• Unknown where the system start or stops

Developments Quality Engineering:

• Increasing dynamics. Development of information systems is never finished. So testing is also never finished!

• Increasing complexity

• Bugs appears on different levels. Configuration, integration or parametrisation
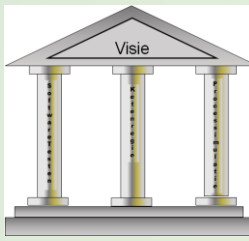
Some challenges per perspective
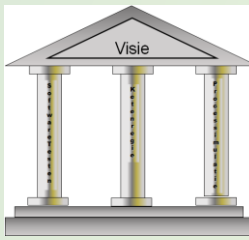
Threads:

- Low chance, high impact

- Aging

- Complexity

- Self learing information systems; we don't know any more how the information system works

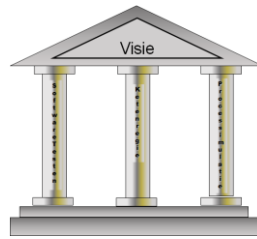- Lack of cooperation between the industry and academia

Chances:

- Can we test the situation of tomorrow instead of today? Can we look ahead?
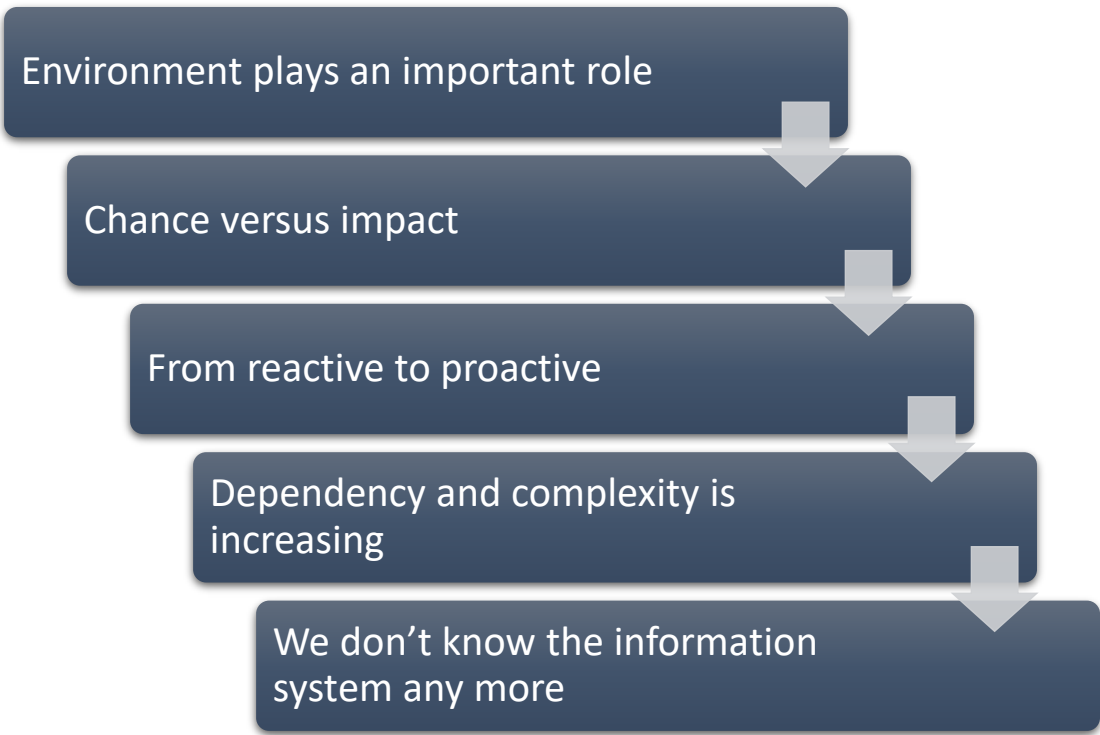
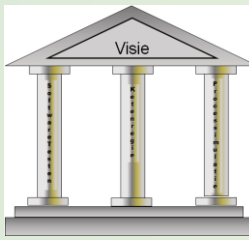# Some challenges per perspective

Social domain:

- Complexity of the environment in relation to self-driving cars, smart devices etc.

- Increasing stimuli

The Red Thread

Environment plays an important role

Chance versus impact

From reactive to proactive

Dependency and complexity is increasing

We don't know the information system any more

What are the measures we have to take?

- What kind of techniques / approaches we have to develop?

- Is there something available?

- Traditional test approaches are not applicable anymore

- Ideas / remarks such as:
  - AI of course
  - Formal methods
  - Neuro linguistic software testing
  - Model Based testing

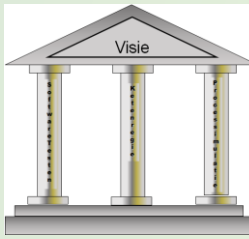- Suggestions / input / feedback / ideas

Input:
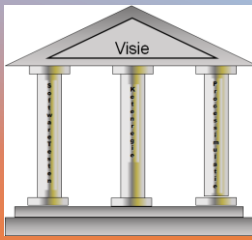
- Design for testing

- Setting up trials

- Scope of innovation; functional or non functional

- Modelling

- Formal correctness

- Statistical / dynamic analysis

- Understanding the context combines with requirements. Smart requirements→ how to validate them

- Prototyping the system itself. Not only the UX

- Looking for the application of AI

Summary
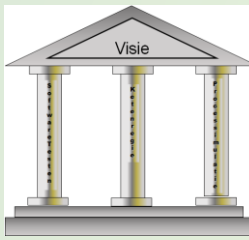
- Software testing is at the moment really traditional
- The question which rise; is the software test community prepared for the future challenges?
- The statement is that this is not really the case
- Input from this session will be used to develop further a vision document how to innovate the area of software testing

References

- Working party 'Dutch testing society' – the future of software testing
- https://www.getxray.app/blog/the-top-5-software-testing-trends-of-2023
- https://medium.com/@realtestify/the-road-ahead-8-trends-in-software-testing-for-2024
- https://testsigma.com/blog/software-test-automation-what-to-expect-near-future/
- The future of Software Quality Assurance, Stephan Goericke, 2020

- TBC; work in progress

Questions?

Thanks for
your attention.

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