

System and Software Testing at ESI

Improving Efficiency and Effectiveness of Testing in Industry

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SYSTEMS ARE ONLY GETTING MORE COMPLEX

Increasing role and complexity of software innovations
Testing is key activity to assess and improve system quality
Delivering quality within time and budget is a challenge
Innovations in test automation are not keeping pace!



MISSION

Improve efficiency and effectiveness of system testing

Faster detection of defects and bugs with less time and effort

- Keep testing in pace with system and technology developments
- Provide insights and confidence in system quality aspects
- Contribute to improved system quality

STRATEGY

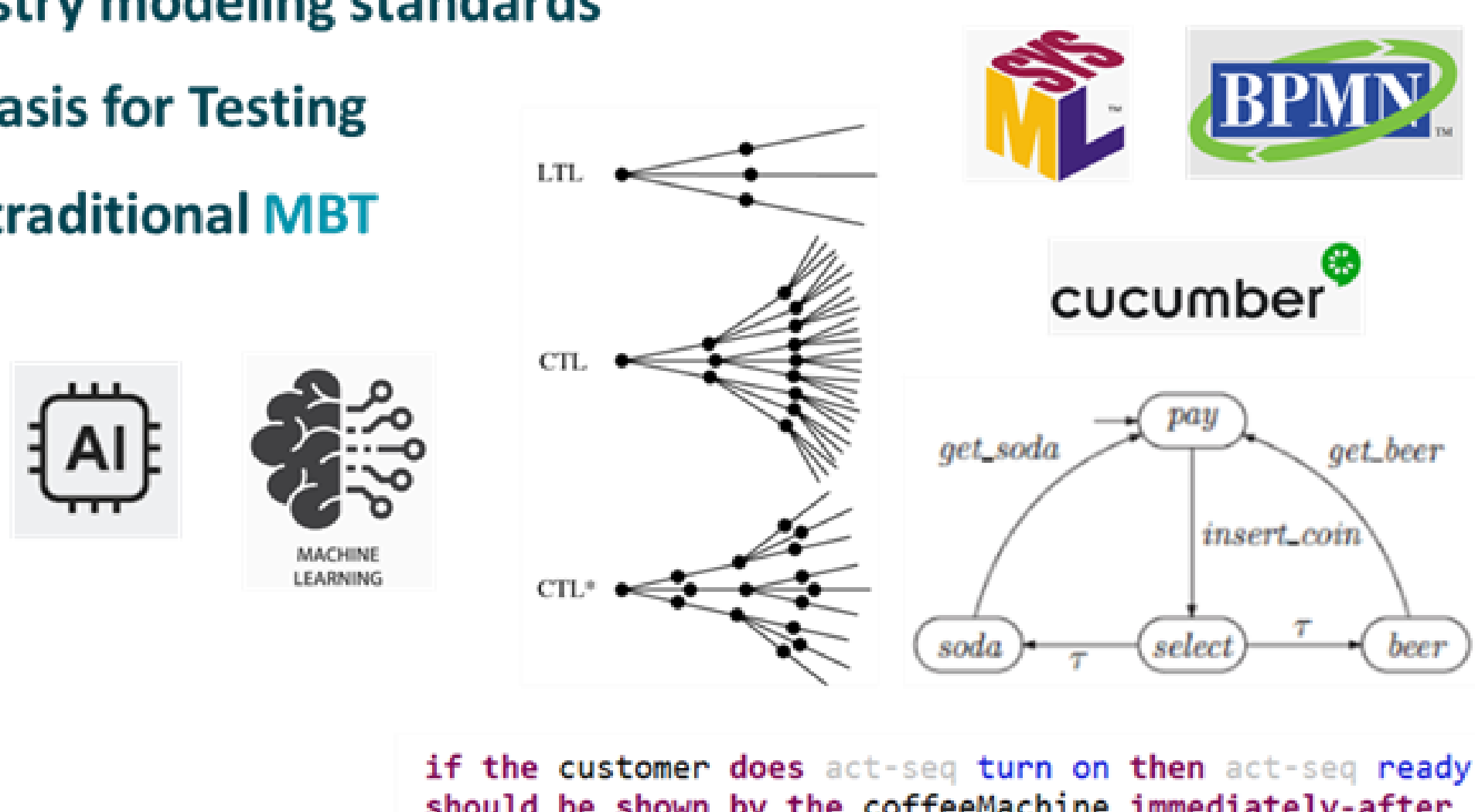
Shift Left and Shift Down the testing efforts

Address challenges of brown-field development

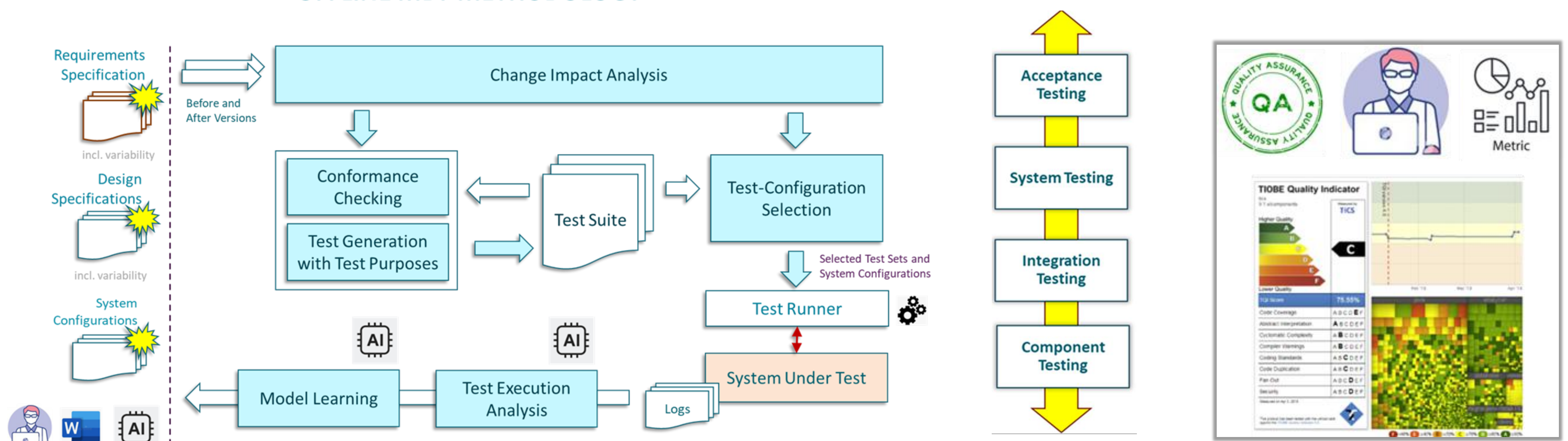
Fill the gaps in industry modeling standards

Formal Models as basis for Testing

Use AI to augment traditional MBT



OFFLINE MBT METHODOLOGY



TESTING CHALLENGES

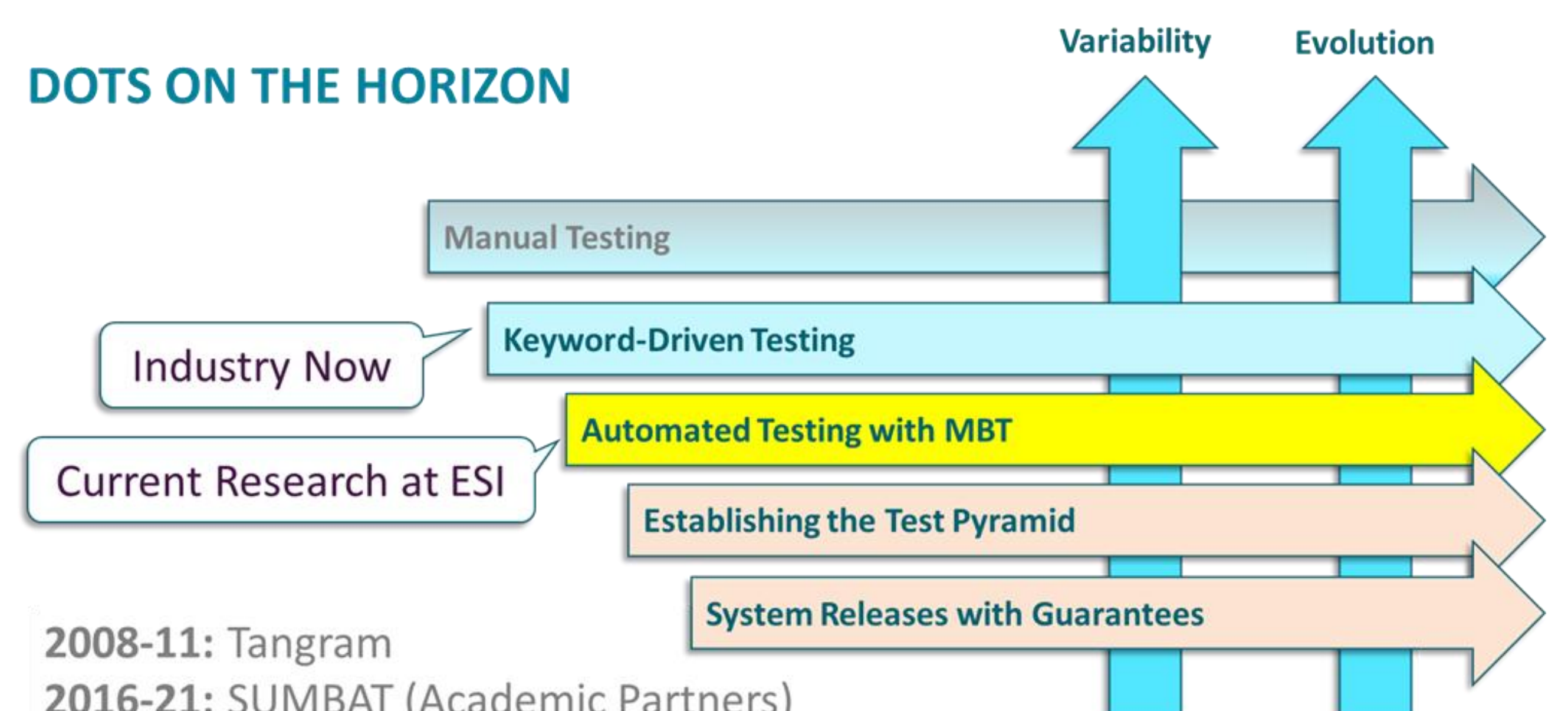


How to enable faster time to market with promised quality and lower costs?

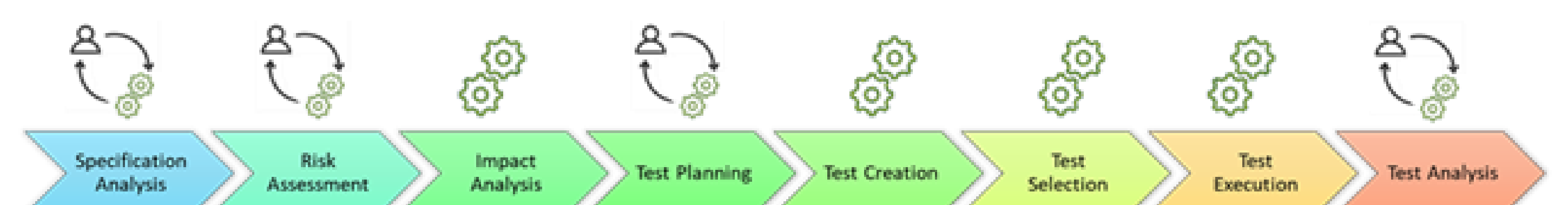


Automation of Manual Testing	Risk Management and Mitigation	Costs of Test Infrastructure	Lack of Available Hardware
Handcrafting of Test Suites	Traceability of Specifications and Tests	Maintenance of Test Suites	Test Execution Analysis
Dealing with Updates and Upgrades	Selection of Tests and Configurations	Coverage and Quality Metrics	Defect Leakage and Exploiting Usage Profiles
Scarcity of People			

DOTS ON THE HORIZON



- 2008-11: Tangram
- 2016-21: SUMBAT (Academic Partners)
- 2016-21: Themis, Thema and TheXel @ ASML
- 2017-19: EnableS3 (TorXakis) @ Philips IGT
- 2019-25: Model-based Testing with ComMA @ Philips IGT
- 2020-23: Impact Analysis and Regression Test Selection @ Philips IAC
- 2021-26: TiToC (Mascot Program with Academic Partners)
- 2022-26: Model-based Testing of SoS in Context @ ASML
- 2025-26: Applications of LLM in BDD @ Philips IGT



Partners:

ASML

PHILIPS

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