MBT & ISTQB CHALLENGES

YOUR SOFTWARE TESTING AND TRAINING SPECIALISTS

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- Product & Project Quality Assistance services

- International experience in Critical SW Development & Testing
  - Space systems, Airborne systems, Banking, Telecoms, Health, …

- Author of 2 books, and 30+ articles:
  - "Les Tests Logiciels : fondamentaux" (ISBN 978-2-7462-3155-9)
  - "Fundamentals of software testing" (ISBN: 978-1-8482-1324-1)

- Founder and Principal : TESSCO sas.

- President : CFTL French Software Testing Board

- Senior Member IEEE
  - Member: ECSS, IEC, AST, …

- Presenter & University Teacher
  - Over 40 keynotes and tutorials on 5 continents, …
  - École des Mines Paris, HEC, ENST, University Poitiers, …

Major Challenges :

- ☐ Industry acceptance
  - ☐ Dispelling illusions
  - ☐ Proofs, Evidences, …
  - ☐ Common language
- ☐ Industrial vs. Ad Hoc implementation
  - ☐ Return on Investment, granularity
- ☐ Spreading knowledge
  - ☐ Training & Certification

Dispelling illusions ...

☐ Major challenges to both ISTQB and MBT

  ◻ Quicker : how can I finish my testing faster ?

    ◼ Easy: either test early or don't test

  ◻ Cheaper : why is testing so expensive ?

    ◼ Easy: don't look for defects, don't fix the defects found
    Beware: it will be more expensive in the end

  ◻ Better

    ◼ Not possible if the two other axis remain constant

☐ Fact : we all have illusions about testing (among others)

Industry challenges
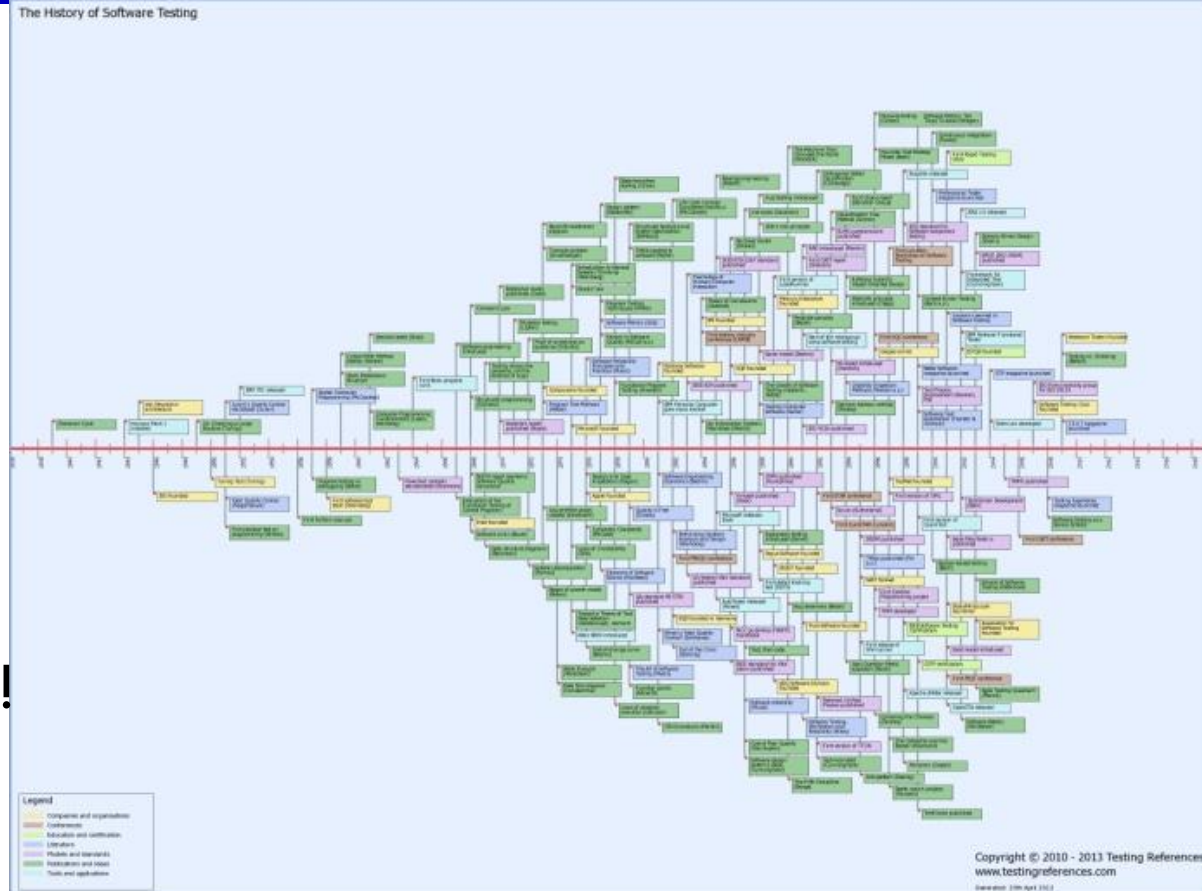## *Current status …*

- Current status of testing :
  - Technology : quickly evolving complex (mobile devices, etc.)
    - Solution: test early, automate (but what?) or limit scope (is it realistic?)
  - Time : unrealistic schedules and scope
    - Solution: test early (static testing) or limit scope (is it realistic?)
  - Money : defects cost money, avoid defects introduction
    - Solution: training and cross-training
      - For developers, designers, managers, customers and … testers
  - Other techniques such as Agile
    - Sometimes more reactive, seldom efficient, neither quick, nor cheap
- How can we remove (y)our illusions ?

Industry challenges
Technology and Methodology ... Explosion

- □ Explosion of
  - ◻ Methods
  - ◻ Techniques
  - ◻ Tools
  - ◻ Ideas
- □ Still missing
  - ◻ Evidence, proof!

The History of Software Testing

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Industry challenges
Proof & Evidences …

- ☐ Evidences are available & referenced in ISTQB
  - ◘ In standards (IEEE, ISO, etc.)
  - ◘ In publications (e.g.; C. Jones, Chaos reports, etc.)
- ☐ Some references are available for MBT
  - ◘ In standards (ETSI, formal notations such as UML & BPMN…)
  - ◘ In publications (e.g.; H. Buwalda, B. Legeard, etc.)
- ☐ Are theses accepted in the industry ?
  - ◘ What proof / evidences do we have ?
  - ◘ Will it work in your environment ?

Common language

- ☐ Common definitions are hard to find:
  - ◘ What is a "test plan" ?
    - ■ A list of actions or a description of some test strategy ?
    - ■ A false-negative or a false-positive ?
  - ◘ A common glossary is needed :
    - ■ For software testing an ISTQB Glossary exists (ongoing work in progress)
- ☐ Common certification
  - ◘ Worldwide acceptance
  - ◘ ISTQB Syllabus (FL+AL+EL)

→ Promotes common understanding and limits explosion

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Industrial vs. Ad Hoc implementation
Industry : One size fits all

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- NO:
  - One size does <u>*NOT*</u> fit all (unfortunately)

- We are all different:
  - Each company has its own context and challenges
  - Benefits will vary or could even be non-existant
  - A tool (even an MBT-tool) is not a substitute for a brain

- → We must identify <u>OUR OWN</u> reasons for MBT

- Is the solution good enough ? (Effectiveness)
  - Ability to find all the defects using the technique
- Is the solution cheap enough ? (Efficiency)
  - Ability to find the defects using the least effort possible
- Is the solution all we need ? (Scope)
  - Is the solution complete, did we miss anything?
  - Do we need other techniques, methods, etc. ?

Industrial vs. Ad Hoc implementation
ROI challenges : Effectiveness

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- ☐ Is the solution effective ?
  - ☐ Can we find <u>all</u> the defects using the technique ?
  - ☐ What about gaps in functional coverage ?
  - ☐ Are all techniques implemented, how are they selected?
- ☐ Do we have evidences supporting our claim?
  - ☐ Do we have numbers, statistics, etc. ?

- ☐ Is the solution cheap enough ?
  - ☐ Can we find defects with the <u>least effort</u> possible
  - ☐ Do the tools help prevent defects?
    - ◼ It's cheaper than to create and remove them.
- ☐ What about early testing, static testing, reviews?
  - ☐ These have been confirmed as most efficient methods
  - ☐ Measuring / anticipating the number of defects to find

- ☐ Is the solution <u>enough</u> ?
  - ◻ Did we miss anything?
    - ■ In terms of testing categories (functional vs. non-functional)
    - ■ In terms of defects prevention and process improvement
  - ◻ Do we need other techniques, methods, etc. ?
    - ■ Independent testers
    - ■ Focusing on "important" tests, but what "is" important ?
    - ■ Do we know how many defects are still in the software ?

Industrial vs. Ad Hoc implementation

ROI challenges : Evidences ?

- Do we have proof ?
  - Are there statistically valid samples and measurement ?

Industrial vs. Ad Hoc implementation
How to select the correct tool(s) ?

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- ISTQB suggestions (from ISTQB Foundation syllabus)
  - Organizational Testing Maturity evaluation
    - To identify where the highest benefit will occur
  - Proof of concept in YOUR environment
    - To make sure the tool fits your needs
  - Evaluation of vendor (training, support, etc.) as well as of the tool (benefits vs. costs, internal & external, etc.)
  - Pilot project using the selected tool / technology

Industrial vs. Ad Hoc implementation

Can one tool fit all your needs ?

- ☐ Granularity
  - ◘ Why would ONE tool fit all your needs ?
  - ◘ Most likely you will need multiple tools:
    - ◾ Requirements management
    - ◾ Traceability to test conditions and test cases + execution
    - ◾ Defect management, reporting, etc.
  - ◘ And of course MBT tools ☺

→ This means that your implementation will be specific, *and … so will any benefit.*

Industrial vs. Ad Hoc implementation
The ISTQB implementation

- Provides multiple techniques, solutions and measures
  - EP, BVA, DT, STT, RCA, FMEA, …
  - DDP, closure rate, defect aggregates, …
- Highlight the need for adaptation & management
  - Test Planning & Control, Measurement, etc.
  - Test Closure activities with "lessons learned"

→ Allow multiple, different, testing implementations fitted to your specific (customer's) environment and goals

Major Challenges :

- ☑ **Industry acceptance**
  - ◻ Dispelling illusions
  - ◻ Proofs, Evidences, …
  - ◻ Common language
- ☑ **Industrial vs. Ad Hoc implementation**
  - ◻ Return on Investment, granularity
- ☐ **Spreading knowledge**
  - ◻ Training & Certification

Spreading the knowledge
Why and how ?

- A major challenge …
  - To make the industry aware of this technique
  - Advantages
    - By using similar terms & languages users will be able to compare the tools and benefits
  - Drawbacks
    - Commercial tools vendors may focus on their own solutions, leaving customers more bewildered than satisfied

Spreading the knowledge
About testing …

- Current status
  - ISTQB and national boards such as CFTL
    - Common glossary, and Syllabus, career paths
    - Reach industry, managers, universities and end-users
    - Non profit associations
    - Certifications and localization
  - Outlook :
    - Very slow progress, but … improving (300.000+ certifications)
    - Syllabus translated in French, German, Spanish, etc.
    - New syllabi arriving (incl. about Test Automation and about MBT)

Spreading the knowledge
About MBT …

- Current status
  - Local initiatives
    - TTCN-3 (Germany and telecom industry)
  - No coordinated activities worldwide
    - Non profit associations
  - No Certifications yet
  - Outlook:
    - There are still many – small to very small – actors
    - Need some level of standardization

Spreading the knowledge
Knowledge Base and Certification …

- Current status
  - ISTQB is coordinating an MBT FL-AddOn syllabus
    - To raise awareness of MBT in the industry
    - To provide some level of standardization and common glossary
  - Trainings will be available on MBT
    - TPs will provide specific trainings
  - Outlook:
    - Certification (ISTQB-FL level, future AL level possible)
      - Should be available within the next 2 years
    - Increase of awareness by all actors.

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Conclusion

- Definition of simple, common terminology
  - Is it possible if you are business driven ?
    - Creation of ISTQB helped
- Identification of clear boundaries, or else …
  - "One size fits all" does not work … find what does
    - A layered solution, common reporting framework ?
- Identify your targets, customers and users
  - MBT seems to be for mature industries
    - A proven solution or a set of proven solutions ?
- Don't be a "sect", be inclusive, not exclusive

Major Challenges, conclusions:

Different challenges

- Market size and organization
  - MBT is only <u>one</u> part of the Testing market addressed by ISTQB
- Follow a clear process (remember, it is slow)
  1. Become better known to your – current and future – stakeholders
  2. Always challenge your knowledge and your solution to improve
  3. Provide clear evidence to convince
  4. Start again at 1
- It is a long term endeavor
  - ISTQB started more than 10 years ago and we have not finished

Domains of Expertise :
- Aerospace
- Airborne systems
- Systems-of-Systems
- Banking
- Telecom

Thank you – Merci

Your Software Testing & Training Specialists

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