

IEEE Benchmark Phase V1

“Project and Process Efficiency”

Sharing of Selective Results

Key Learnings and Benefits



Marek Cichowski, Seamless QM, IEEE Benchmark Team

Report compiled: 30-01-2015

History

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Selective Results

Key Learnings & Benefits

Q & A

○ IEEE Benchmark V1 – History

- ***Workshop on Integrated Project and Quality Management***
21.06.2013 – Kick off of Benchmark V1
- ***Identify companies to participate in IEEE benchmark***
July 2013 – December 2014: target 20-50 companies
- ***Perform IEEE benchmark for selected companies***
December 2013 - January 2015
- ***Deliver results to companies and close clarifications/discussions***
January 2014 – January 2015
- ***Publish results (no details about companies included)***
January 2015
- ***Individual qualitative evaluations and follow up***
On demand

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Process definition



Deployment

*Management report,
score card*

*Root cause
analysis*

Improvement Measures

Process implementation



○ Benchmark reason – current Status Quo

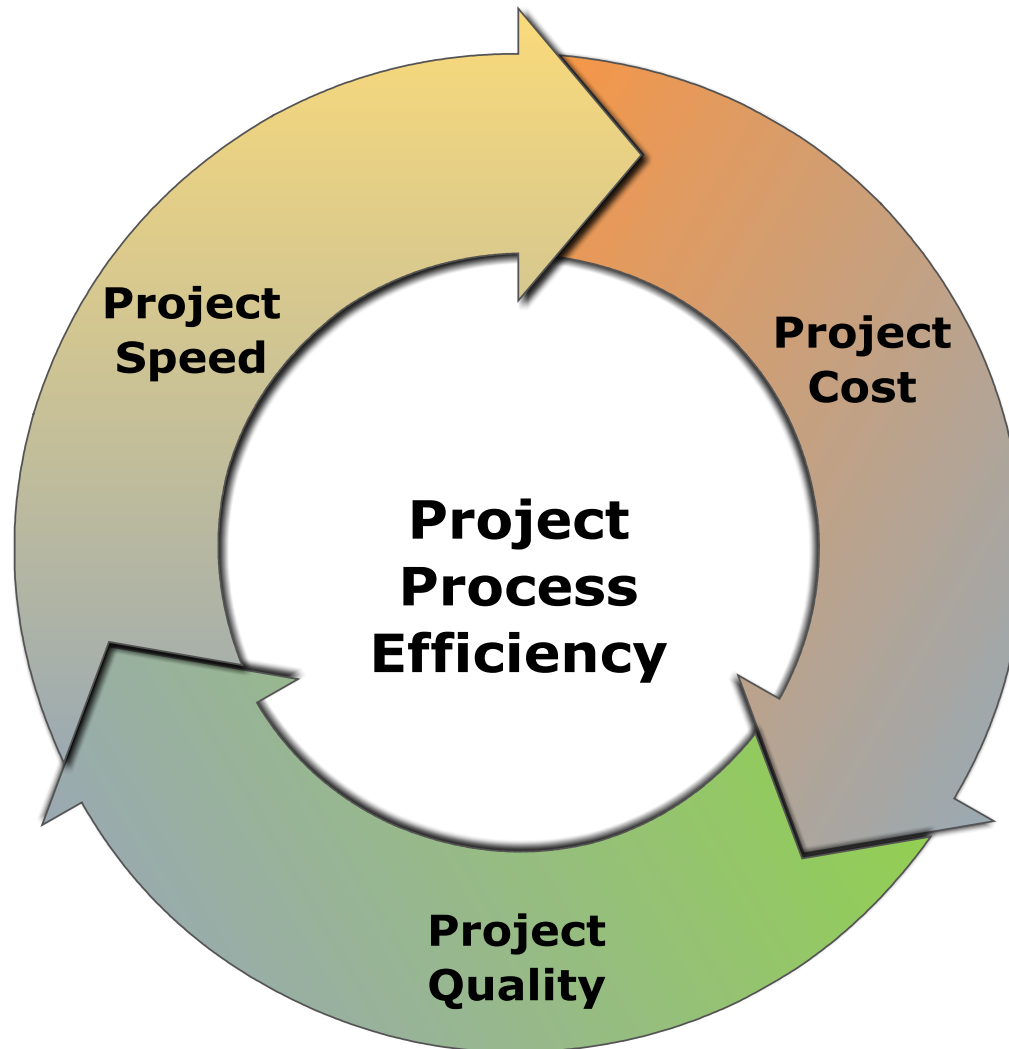
- *Process definitions and project management frameworks (what: milestones, roles and responsibility, checklists) are mature*
- *Process implementation or deployment (how: interdependent data entry for all aspects of a project) is often left to separate units or even projects*
- *Efficiency of implemented processes and “time to market” are not in focus*
- ***This may cause gaps between process definition and implementation and often result in project delay/cost overrun and quality non-compliance***
(refer Standish group chaos report 2013)

○ Target of the IEEE Benchmark study

- *Measure the gap between process definition (what) and real process deployment and implementation (how) under focus of project and process efficiency*
- *Benchmark study shall address the real process implementations in projects and companies from different industries*

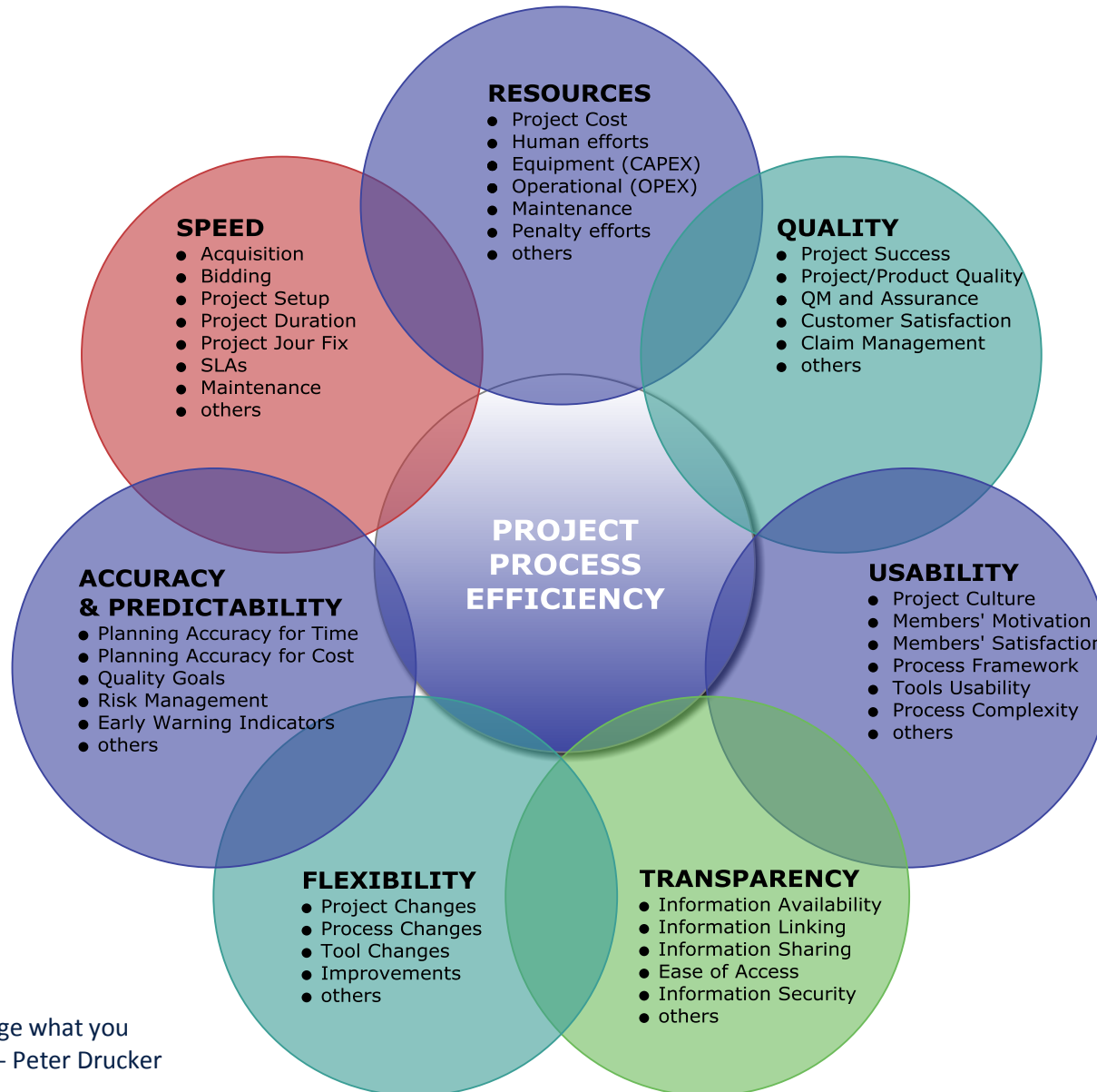
- *What is efficiency *?:*
 - *Efficiency in general, describes the extent to which time, effort or cost is well used for the intended task or purpose.*
 - *It is often used with the specific purpose of relaying the capability of a specific application of effort to produce a specific outcome effectively with a minimum amount or quantity of waste, expense, or unnecessary effort.*
 - *"Efficiency" has widely varying meanings in different disciplines.*
- *Economic efficiency *:*
 - *Economic efficiency is the use of resources so as to maximize the production of goods and services.*
 - *An economic system is said to be more efficient than another (in relative terms) if it can provide more goods and services for society without using more resources.*
- *Algorithmic efficiency*:*
 - *In computer science, algorithmic efficiency are the properties of an algorithm which relate to the amount of resources used by the algorithm.*
 - *An algorithm must be analyzed to determine its resource usage.*
 - *Algorithmic efficiency can be thought of as analogous to engineering productivity for a repeating or continuous process.*

** Source: Wikipedia*



‘You cannot manage what you cannot measure!’ - Peter Drucker

How to Measure “Project and Process Efficiency” ? – More “Realistic” Definition



‘You cannot manage what you cannot measure!’ - Peter Drucker

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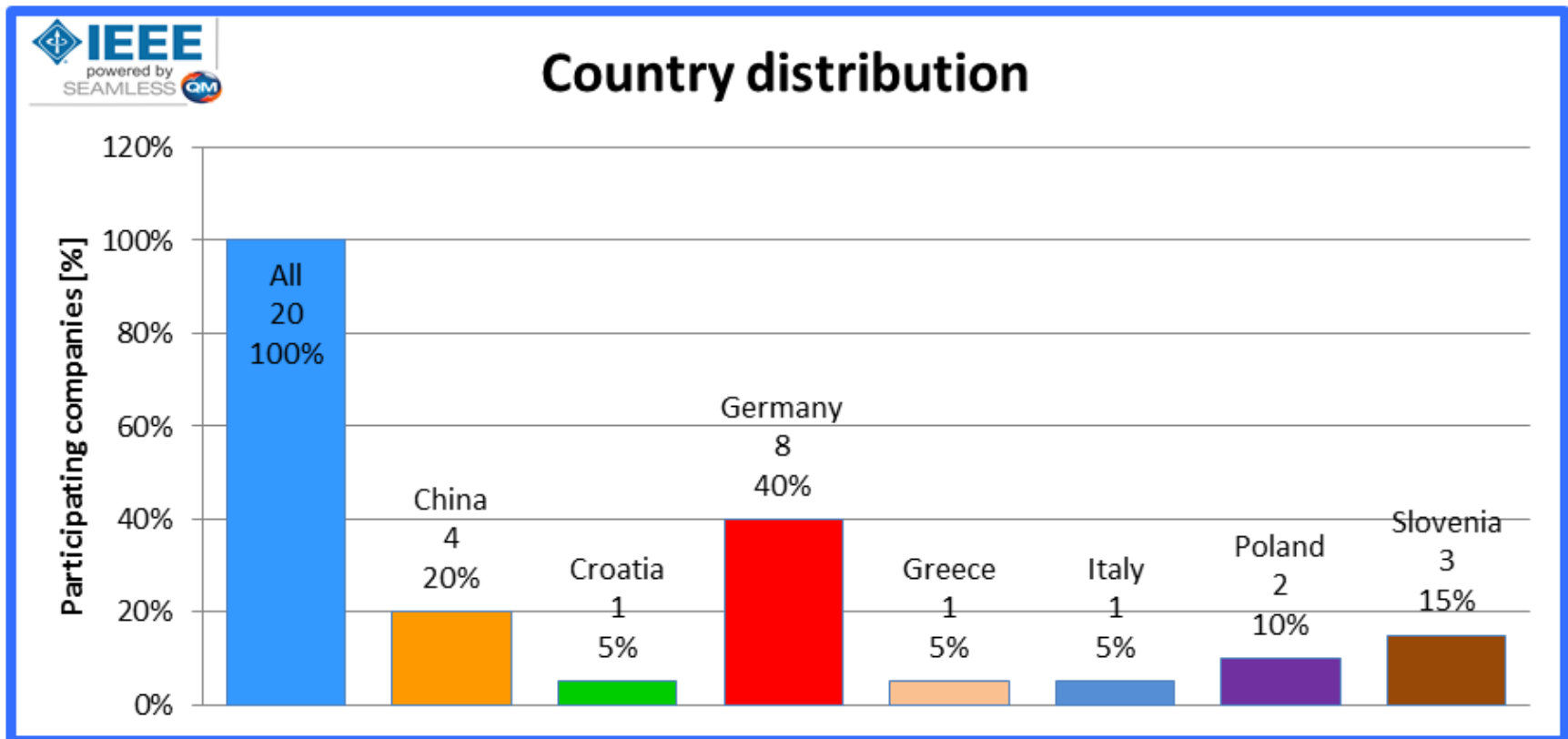
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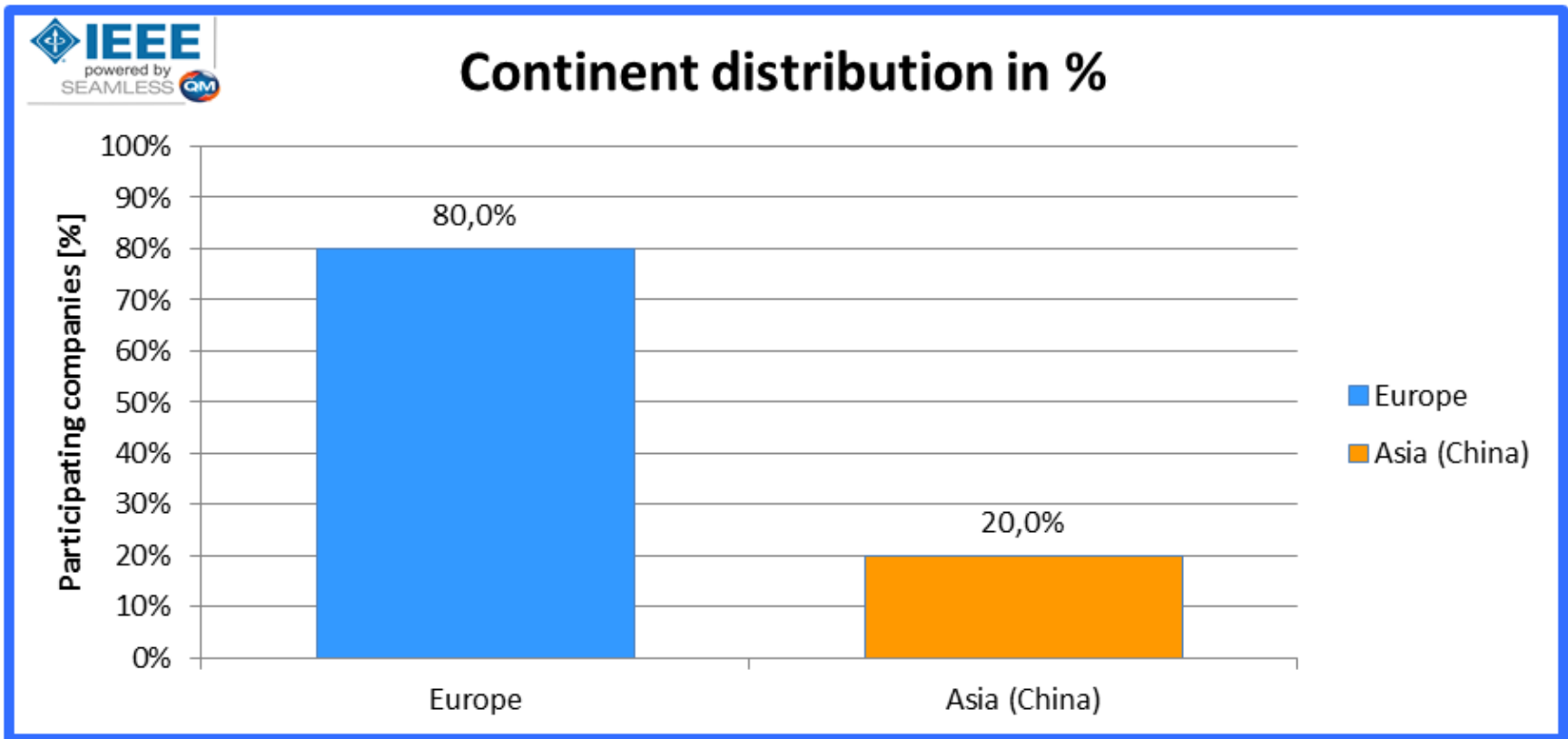
IEEE Benchmark V1 Statistics – Country Distribution

- *Main location of the company is taken into account*
- *For companies having several subsidiaries, the participating unit location is taken into account*
- ***Major focus of Benchmark V1 on companies from Germany*, China and other EU countries***

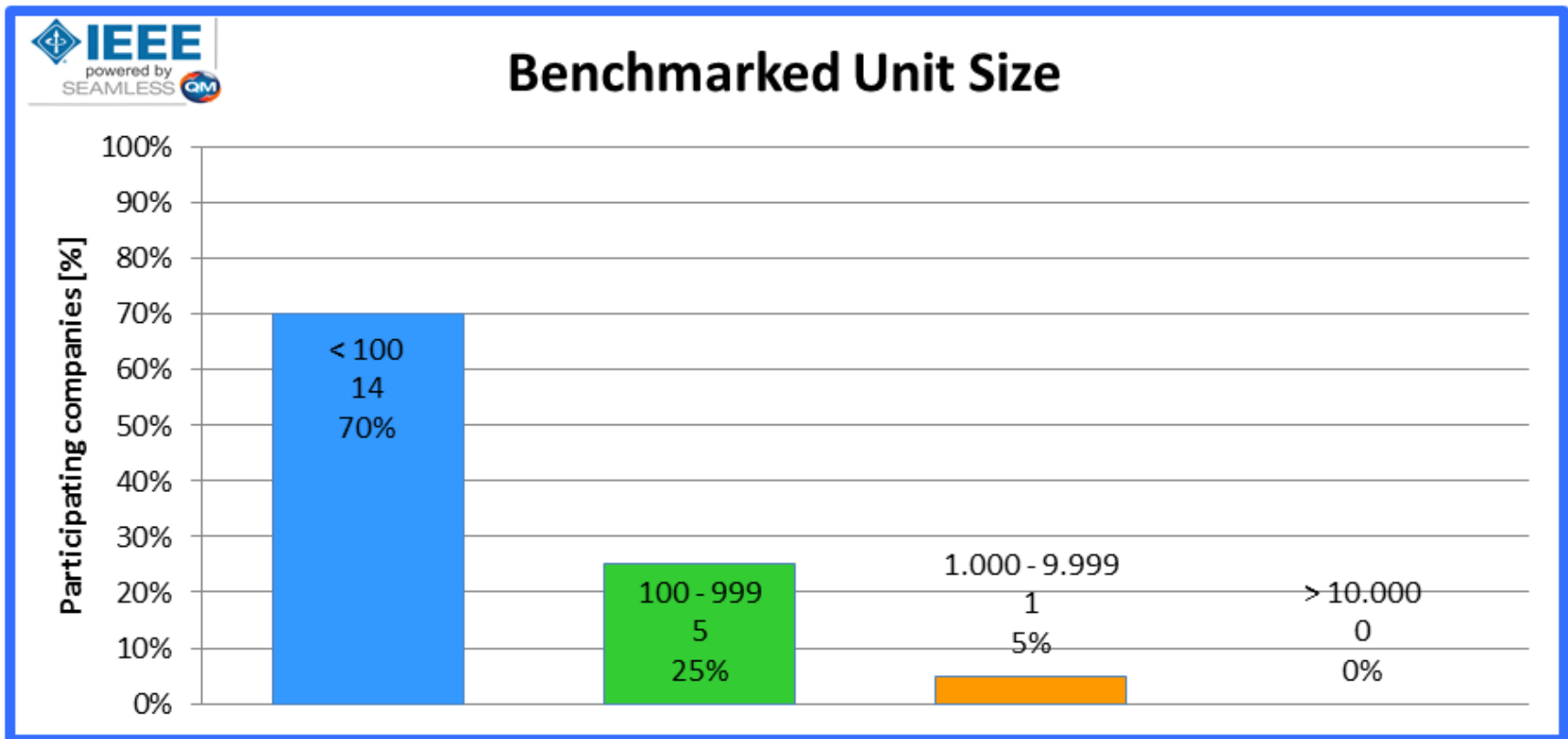
*(*countries are listed in alphabetical order)*



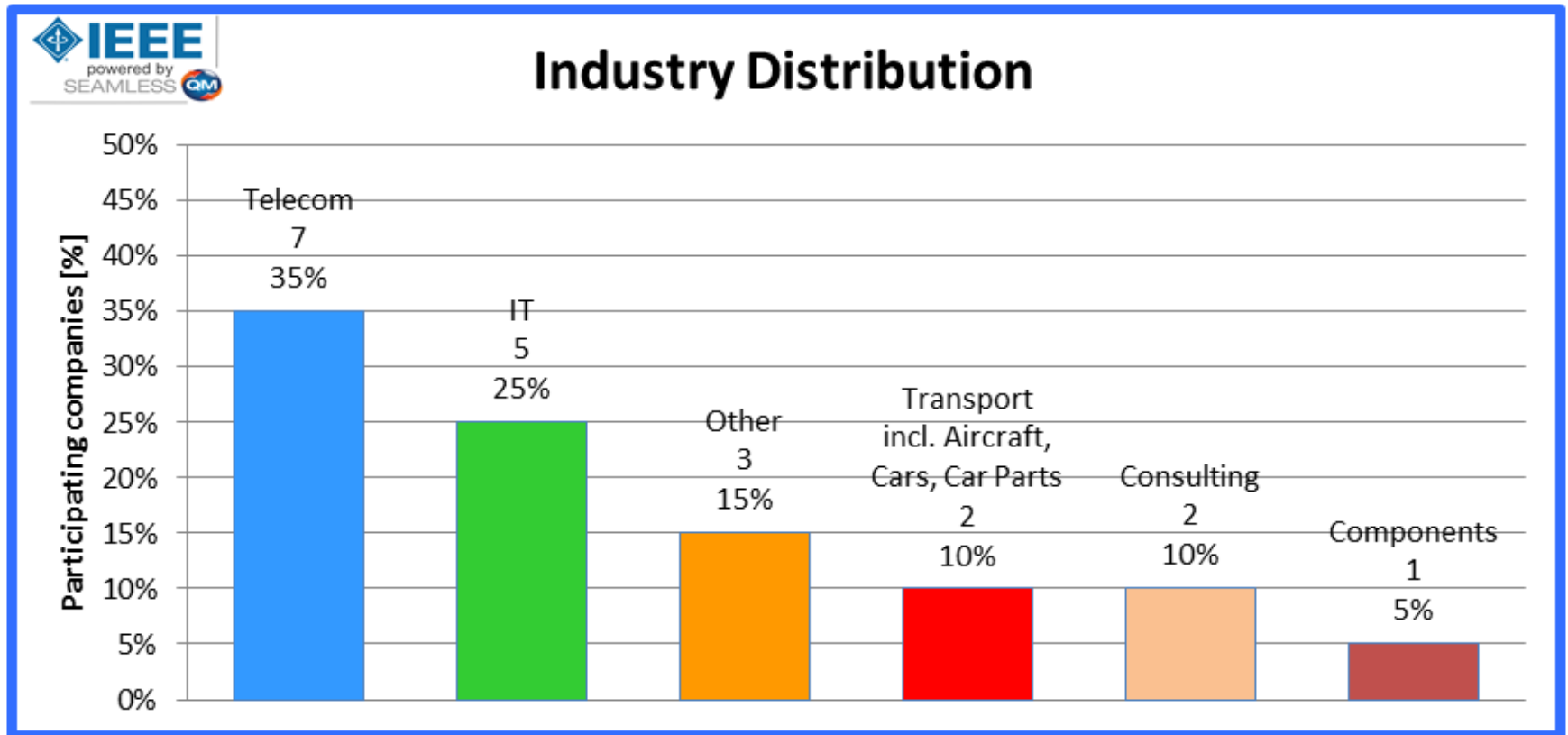
- *Main location of the company is taken into account*
- *For companies having several subsidiaries the participating unit location is taken into account*
- ***Major focus on companies from EU and Asia (China)***



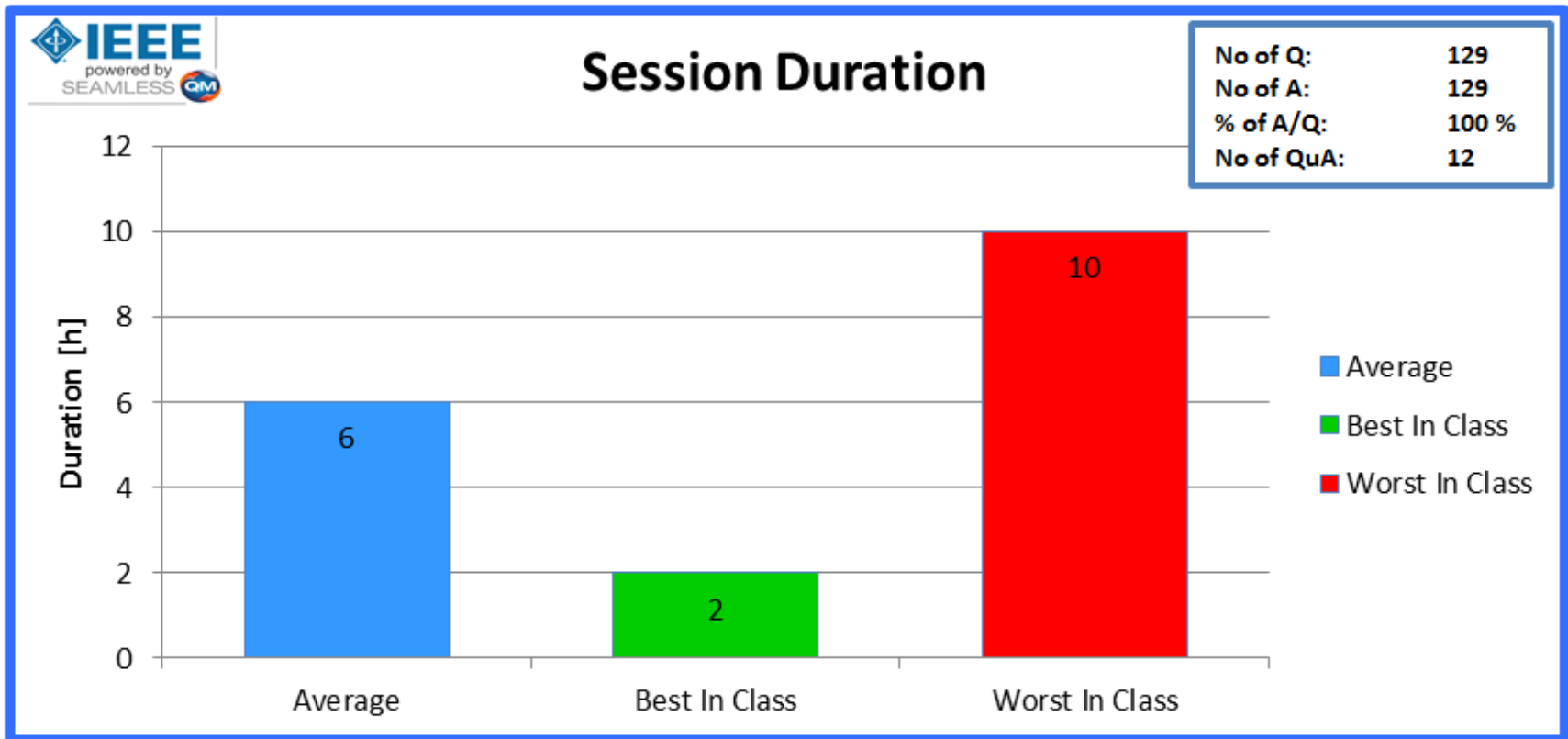
- *Size of the company is taken into account*
- *For companies having several units - size of the benchmarked unit is taken into account*
- ***Most of participating companies are SMEs!***
(Small and Medium size Enterprises)



- *Main business industry of the company is taken into account*
- *For companies having business in several industries – industry of the benchmarked unit is taken into account or “Other” is used*
- ***Most participating companies coming from “Telecommunication” (35%) and IT (25%)***



- *Shortest filling duration: 2 hours (1 session)*
- *Longest filling duration: 10 hours (4 sessions)*
- *Average duration: 4-6 hours (2-3 sessions)*
- *Presence or Webex meetings have been used preferably*
- **Major obstacle:**
Finding time and enough attention from companies for benchmark sessions!



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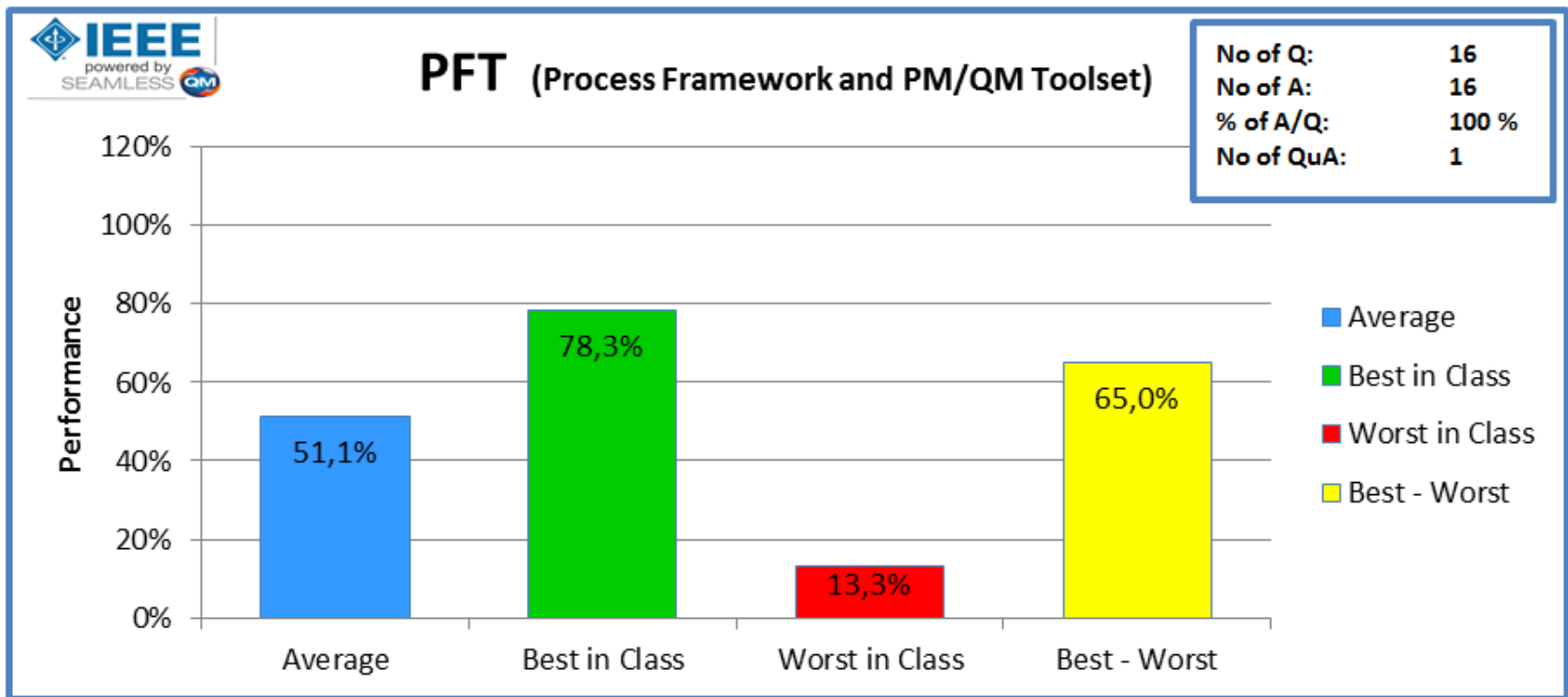
- **What was the scope of the IEEE benchmark V1?**
 - Consists of 129 questions focusing on *efficient* process implementation in several categories
 - Y/N and other selective answers (quantitative) as well as descriptive answers (qualitative)
 - More details about benchmark under http://www.ieee.de/index.php?id=iqm_bench

- **Which categories have been evaluated ?**
 - PFT: Process Framework and PM/QM Toolset (16)
 - PRC: Planning, Risk and Claim Management (20)
 - Project Management – Planning
 - Cost Integration
 - Risk Management
 - CHG: Change Management (8)
 - Process Changes
 - Tool Landscape Changes
 - IOI: Inter-Organizational Integration (8)
 - Project Management Integration
 - Integration with Customers
 - Integration with Partners
 - RPT: Reporting (8)
 - SAM: Social Aspects and Motivation, Leadership (12)
 - IL: Technical Integration – Information Linking (51)

- **Which categories have been NOT evaluated ?**
 - ORG: Organization – used for statistics only (6)

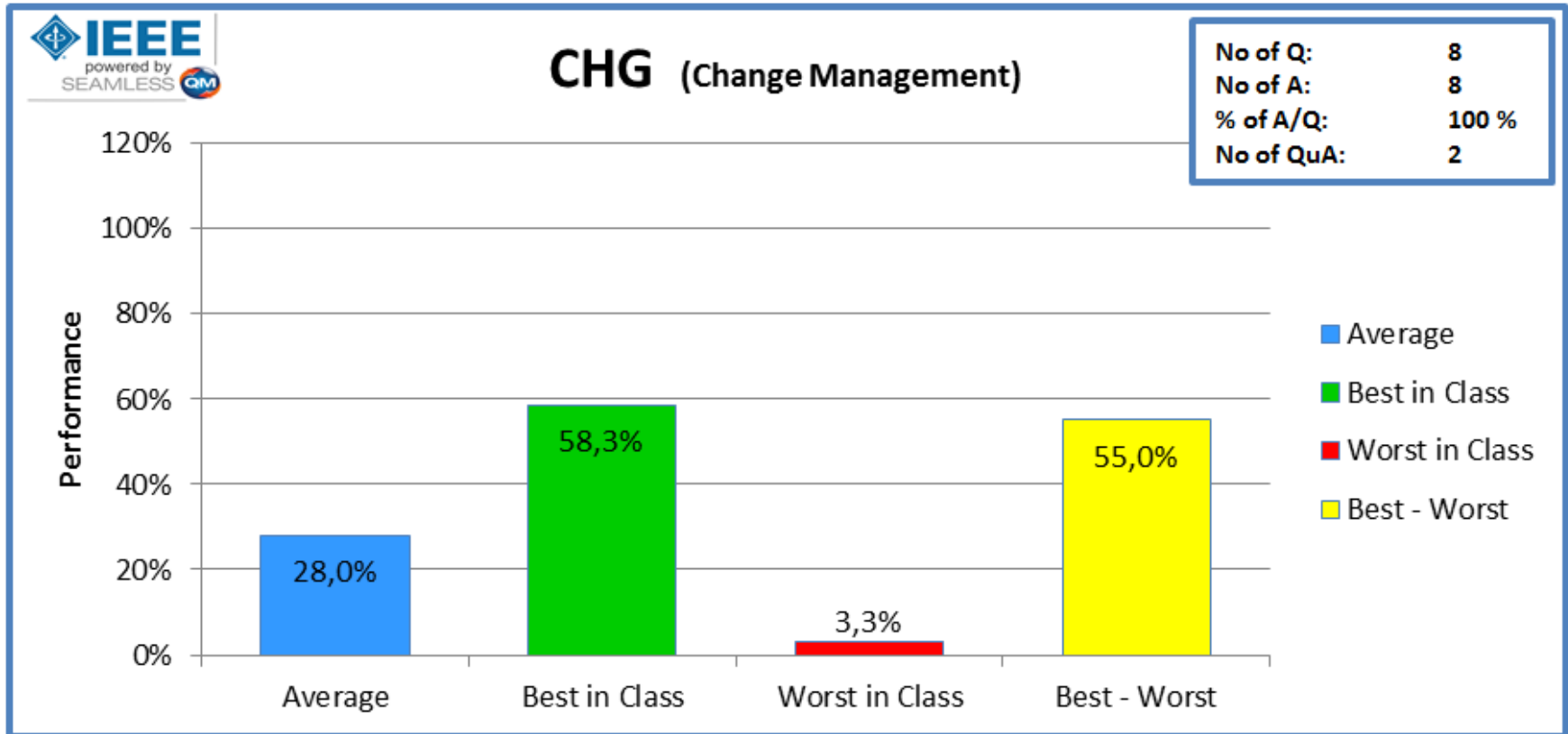
IEEE Benchmark V1 Results – PFT: Process Framework and PM/QM Toolset

- Comparison type: “Performance” – against the theoretical maximum of 100%
- All answered quantitative question are contributing to the PFT performance result
- Qualitative (descriptive) answers are not contributing to the performance result
- PFT area reached the best average result from all categories
- Best in Class reached significantly good result in PFT category



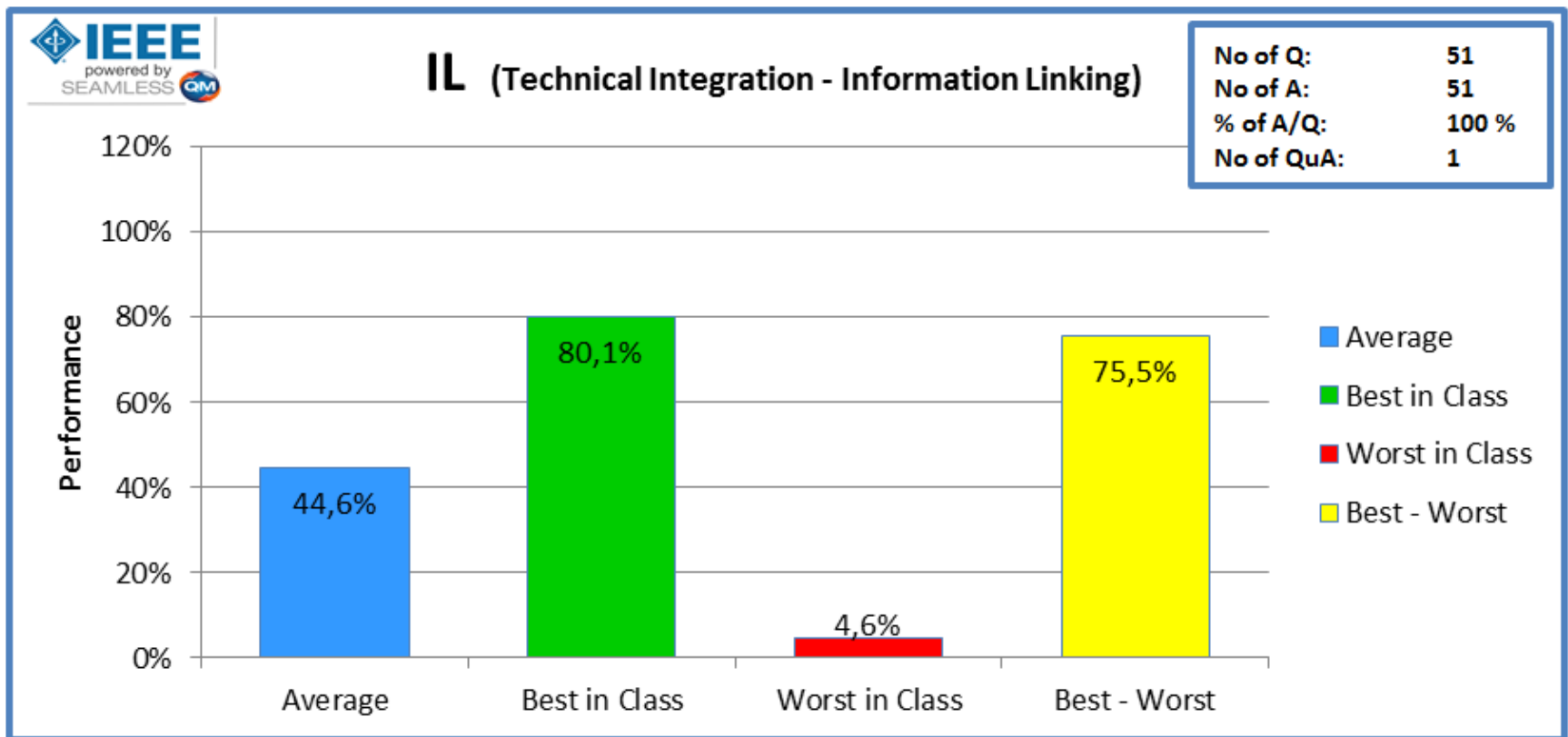
IEEE Benchmark V1 Results – CHG: Change Management

- Comparison type: “Performance” – against the theoretical maximum of 100%
- All answered quantitative question are contributing to the CHG performance result
- Qualitative (descriptive) answers are not contributing to the performance result
- CHG area reached the worst average result from all categories
- Best in Class reached moderate result in CHG category



IEEE Benchmark V1 Results – IL: Technical Integration - Information Linking

- Comparison type: “Performance” – against the theoretical maximum of 100%
- All answered quantitative question are contributing to the IL performance result
- Qualitative (descriptive) answers are not contributing to the performance result
- IL area reached the moderate average result among all categories
- Best in Class reached significantly good individual result in IL category



History

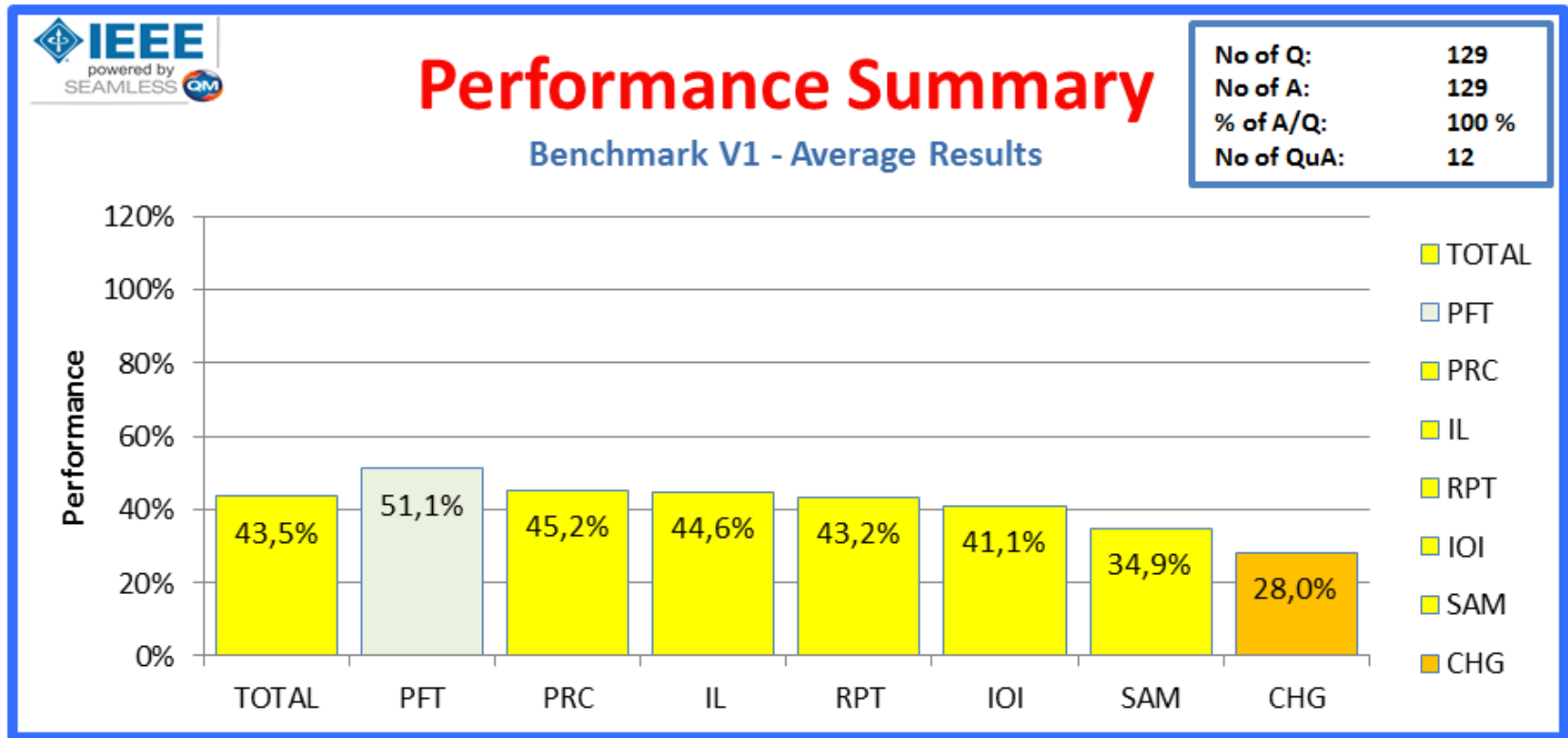
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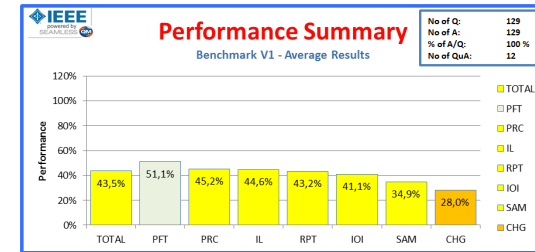


| Legend - Performance Summary | ≥ | < |
|------------------------------|-------|--------|
| Should be improved | 0,0% | 15,0% |
| Need to be improved | 15,0% | 30,0% |
| Can be improved | 30,0% | 50,0% |
| Solid | 50,0% | 70,0% |
| Good | 70,0% | 80,0% |
| Very Good | 80,0% | 90,0% |
| Champion | 90,0% | 100,0% |



○ Summary:

- Overall average result identified as “Can be improved” (43,5%)
- Average result of only one benchmark area is identified as “Solid” (PFT:51,1%)
- Average result for all remaining areas are identified as either “Can be improved” or “Need to be improved” (PRC:45,2%, IL:44,6%, RPT:43,2%, IOI:41,1%, SAM:34,9%, CHG:28,0%)
- For “IL: Technical Integration – Information Linking”, which is the major indicator of project information linking and integration (\approx equals “project efficiency”):
 - Average result is at the moderate level of 44,6%
 - It shows also one of the biggest gaps between “Best In Class” and “Worst In Class” results: 80,1% vs. 4,6%
 - Deeper look on implemented PM/QM process and tools, information linking (IL), sharing of information (IOI) and reporting (RPT) will be summarized on next slides



PFT-15: “What do you identify as the main challenge to deliver projects in time, budget and quality (apart from human factors)?”

Selected answers from some companies*

Participant 1:

- RM (Requirement Management) is the main topic - instable, often changing
- No linkage between initial requirements and growing functional requirements
- Budget constrains

Participant 2:

- Reasonable financing of projects
- Requirements from customers often not detailed enough
- Too "optimistic" expectation from customers concerning do ability and efforts

Participant 3:

- Bad or incomplete specification.
- Specification changes; only last version is considered valid without CR process.
- Specification by telephone. (Partly "healed" when our company writes RSpec. But necessary to check that customer view is reflected in this spec.)
- Distinguishing bugs and CRs.

Participant 4:

- Definition of the customer requirements is often not precise enough.
- Clarification iterations are necessary.

- Original comments may have been partly being changed for confidentiality reasons

PFT-15: “What do you identify as the main challenge to deliver projects in time, budget and quality (apart from human factors)?”

Selected answers from some companies*

Participant 5:

- quality and precision of requirements definition from customer side
- translation quality to English of QM/PM documentation
- HR management in some parts of local activities

Participant 6:

- Customer scope changes.
- Scope negotiations and definitions become rapidly obsolete.

Participant 7:

- understanding of customer requirements
- product architecture potentially not matching new requirements
- how to control project quality in agile project for BIG projects
- tools are not interconnected, potentially some inconsistencies of data and media-breaks

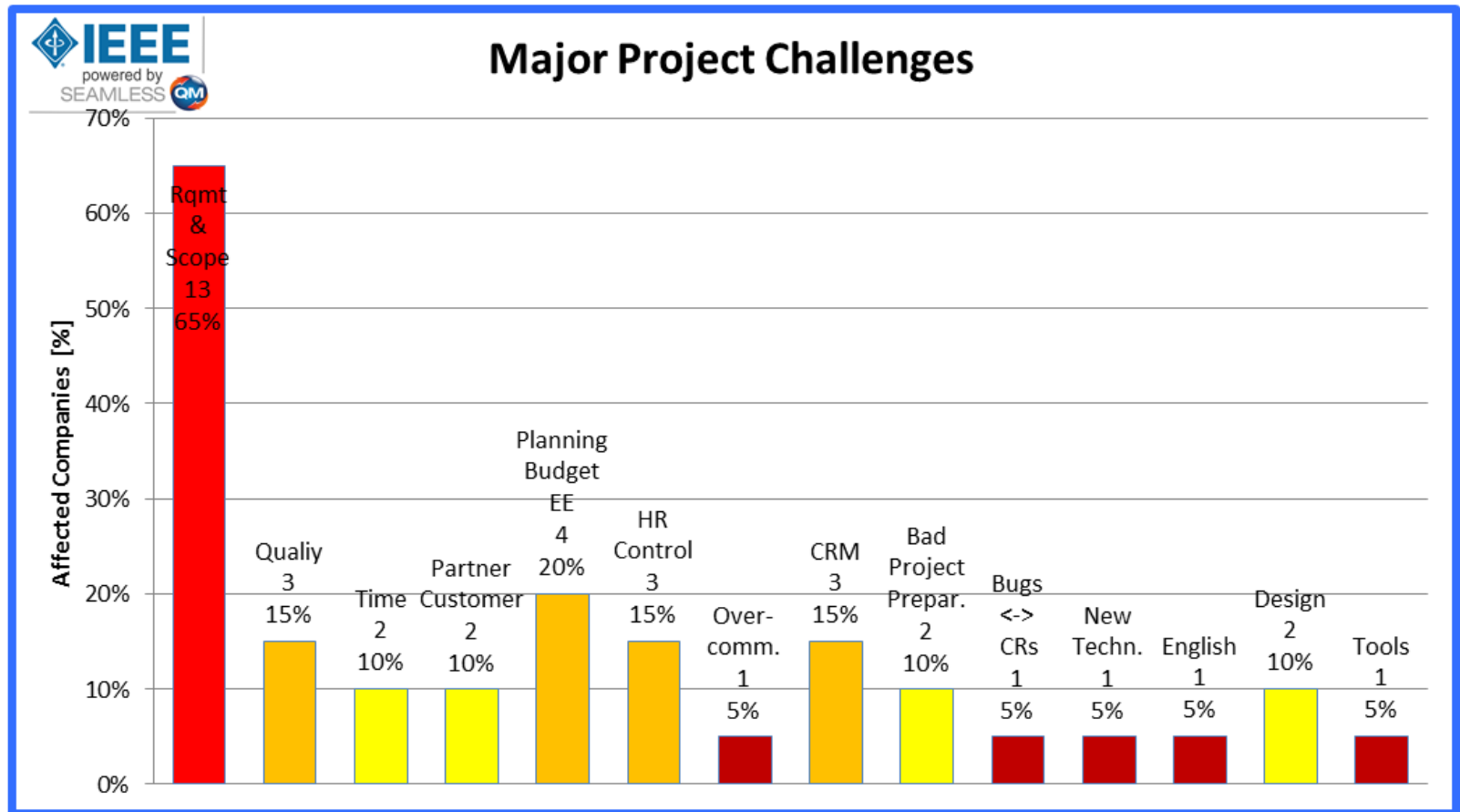
Participant 8:

- The main challenges: (sequence according priority)
- communication within project team and customer
- understanding of customer requirements / his business domain
- effort estimation accuracy

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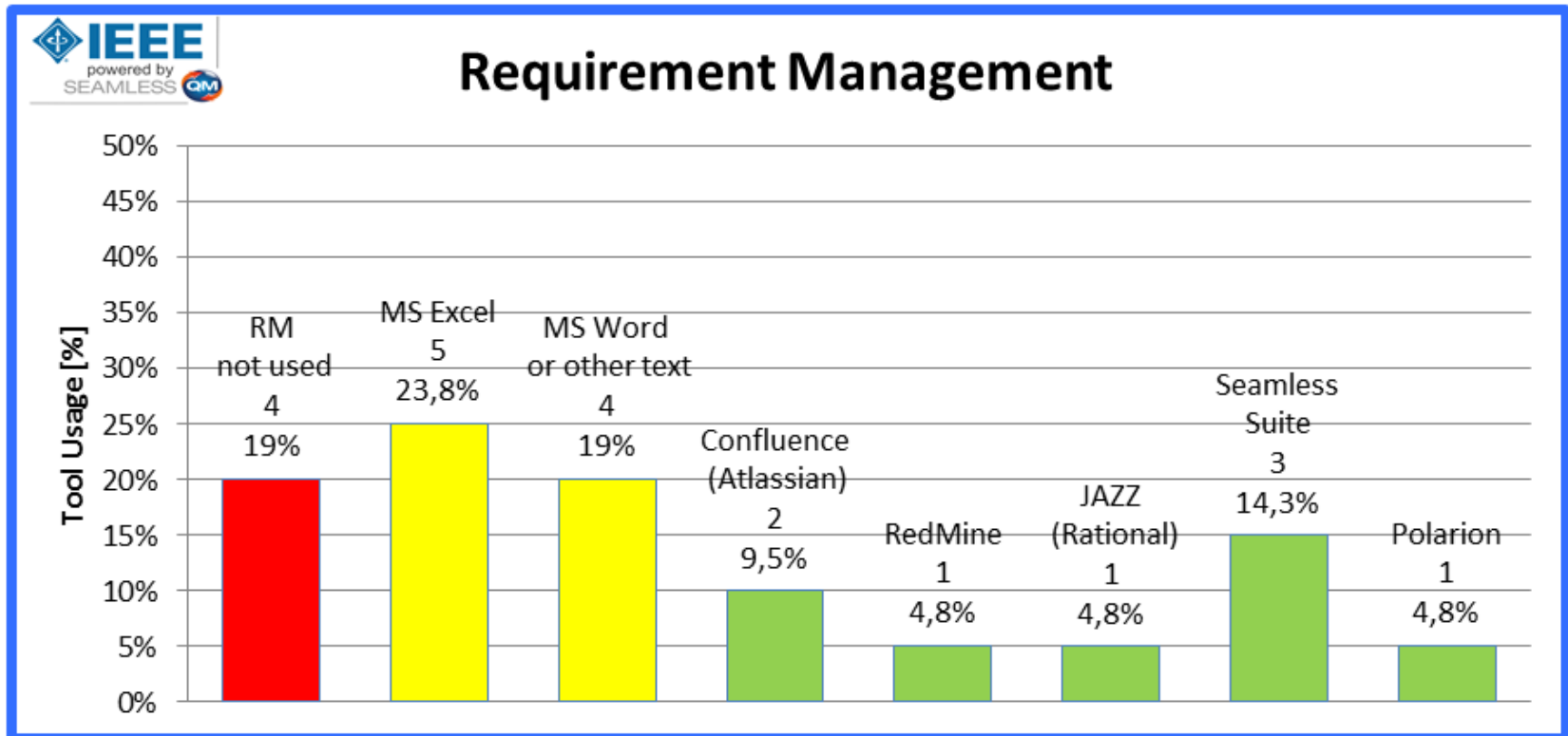
Key Learnings and Benefits – Main Challenges in Projects (3)

- Requirements and scope definition is the major project challenge for 65% of companies (!)
- Most of the companies “blame” about:
 - Unclear scope, not understood, not well defined Rqmts (“Specification by telephone”)
 - Instable and often changing and “growing” Rqmts (partly no CR process used!)
- “Planning, budget and EE accuracy” is listed as 2nd major source of challenge (20% of companies)
- “Quality issues”, “HR Control” and “CRM issues” are listed as 3rd major source of challenge (each one affecting 15% of companies)



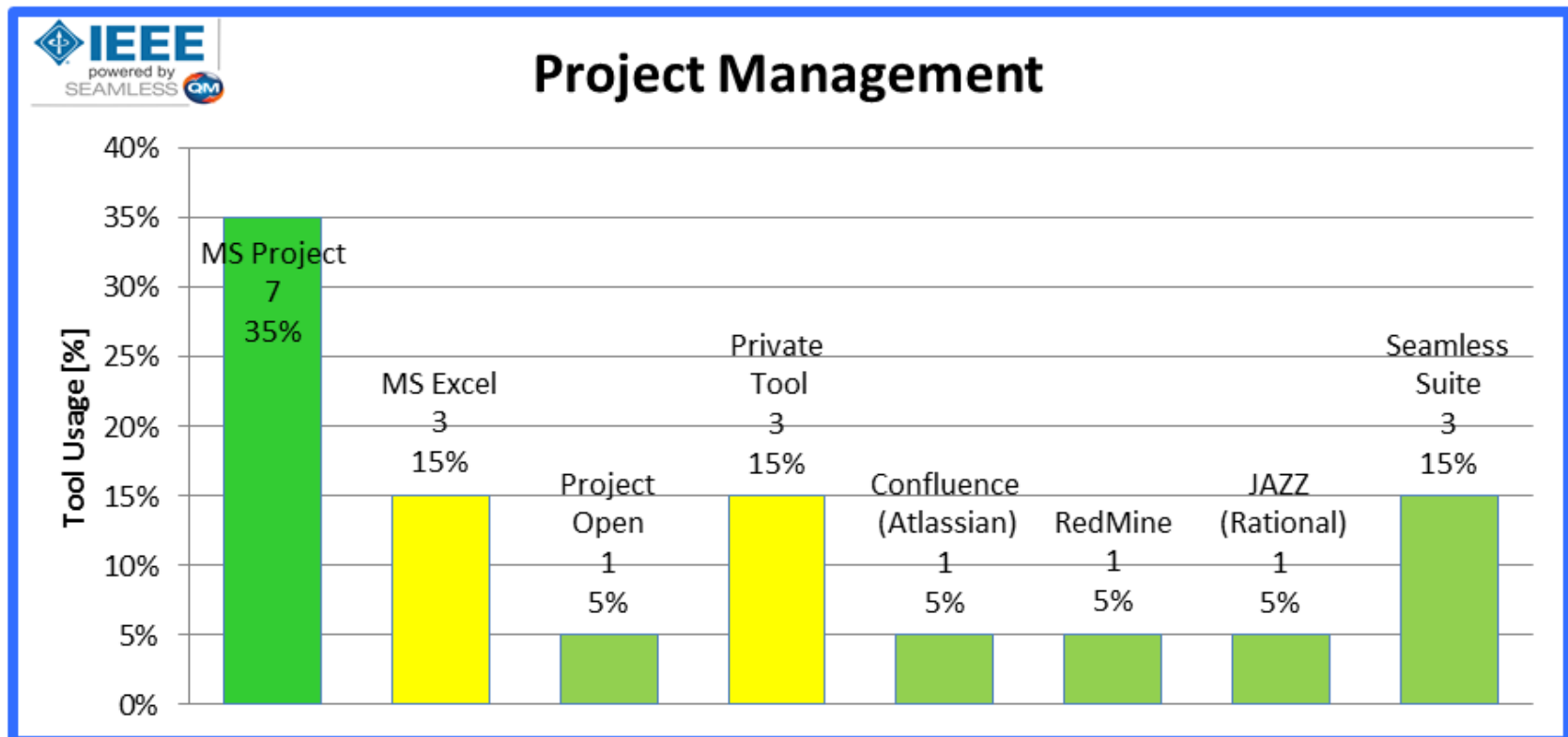
Requirement Definition vs. Requirement Management Implementation (Paradox 1):

- Requirement definition is the main challenge in the projects (65% companies) but at the same time RM is the “weakest link” in process and tool landscape (!):
 - \cong 20% of participating companies don't use RM at all or don't formally use RM (!)
 - \cong 45% companies trace Rqmts only in Excel or Word (or through other text/PDF documents)
 - Only few companies track Rqmts in DB and tools and follow formal design break-down linking internal design requirements to customer requirements, or/and CRs (requirement coverage checks! – “forgotten” features?)
 - Usually “no access” is granted to design requirements to customers
 - Requirements are usually not linked to TCs, Bugs, release information etc. or linked only informally



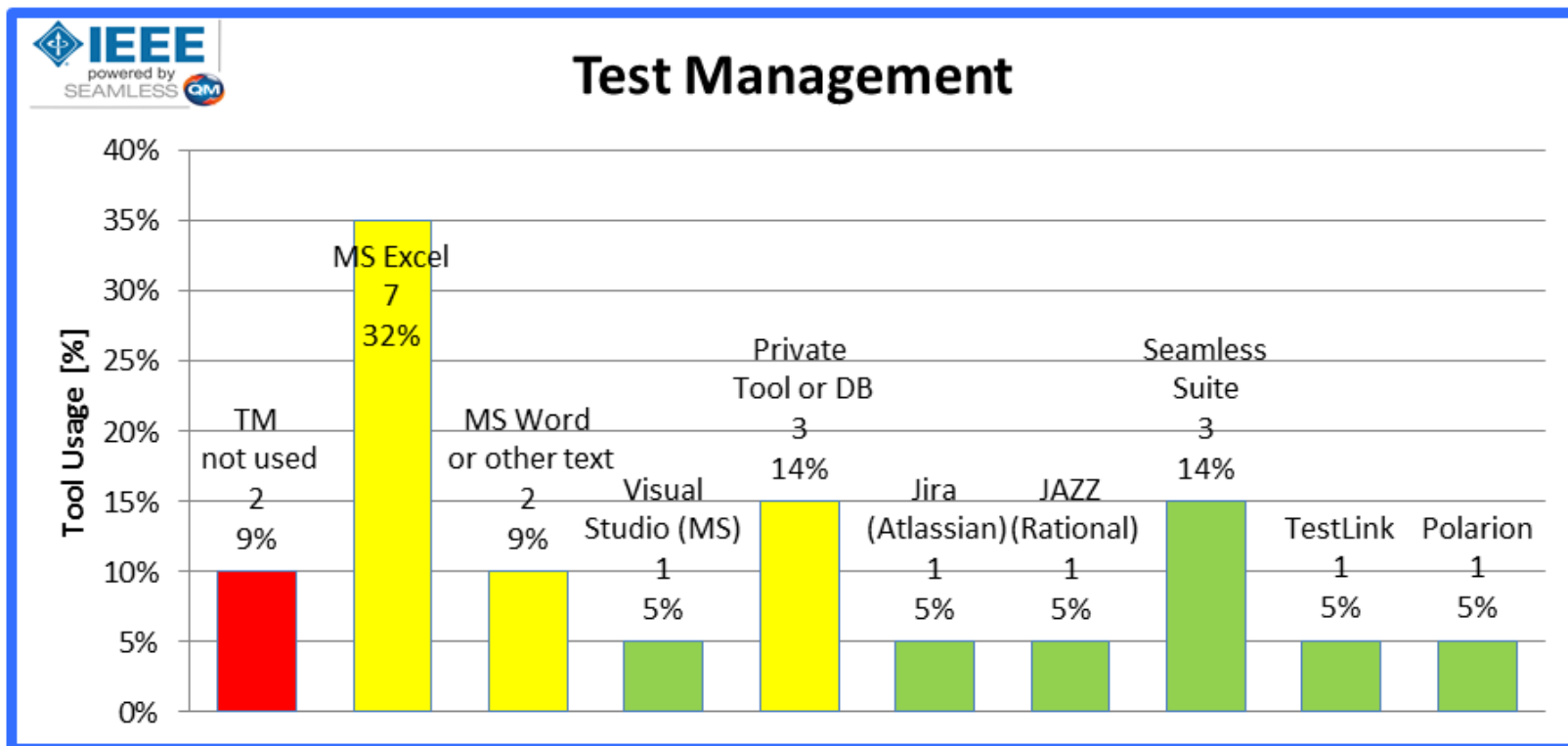
“Planning, budget and EE accuracy” vs. Project Management Implementation (Paradox 2):

- PM (Project Management) is treated in most cases in professional way, but having limitations:
 - MS Project used in most cases (35%) but not connected to other tools (RM, FM, TM)
 - MS Project server based versions seldom used (resource (over-)allocation among projects not synced or other separate EE tools used)
 - 15% use private tools for PM not based on open source (!)
 - 15% companies manage projects using Excel only (!) (“Can Excel handle PM complexity?”)
 - Usually no access (!) is granted for customers to “their” project plans (neither parts of it) (→ Fact: External vs. Internal Reports → Danger: External vs. Internal Project Status (!))
 - Original effort estimations are often performed “outside” of used PM/EE tools and “imported” back later (“Let us win the project first – afterwards we will find resources!”)
 - Time administration and booking (TA) is performed in most cases in another separate tool (not PM)



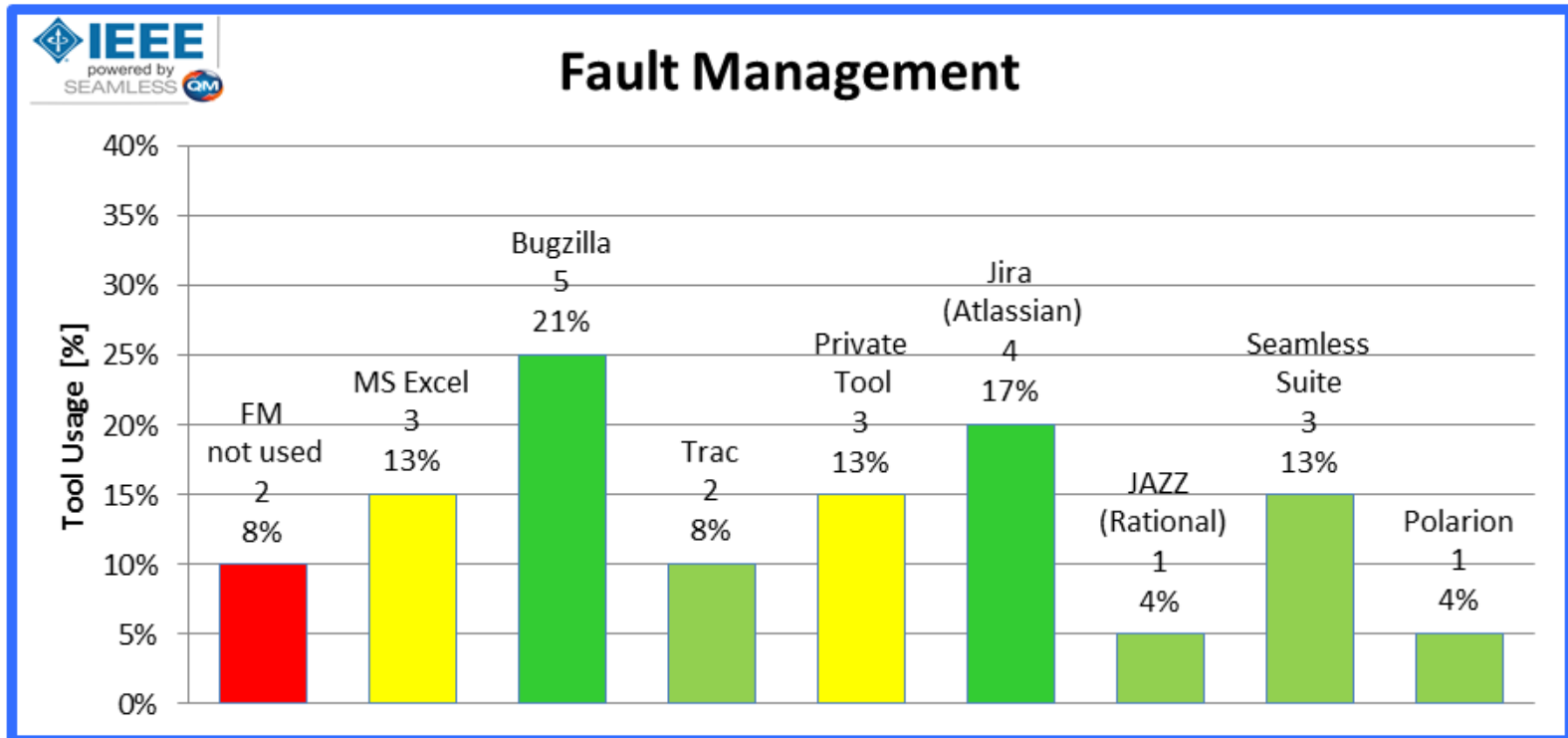
“Quality issues” vs. Test Management Implementation (Paradox 3):

- *TM (Test Management) is implemented at most companies – but having limitations:*
 - *>30% manage TCs and Test Results entirely in Excel (!)*
 - *Some companies maintain TCs in documents and Test Results in Excel/private tools or DBs (better – but why not use DB based TM tool and generate T-Specs from here?)*
 - *Usually no access (!) is granted for customers to “their” project test results (neither parts of it) (“Are we afraid about our current test results?”)*
 - *TCs are in most cases not linked to Requirements, CRs, bugs, releases etc. or linked only informally via text remarks (high post processing efforts = low efficiency)*
 - *Very few companies apply test automation for e.g. regression tests*



“Quality issues” vs. Fault Management Implementation (Paradox 4):

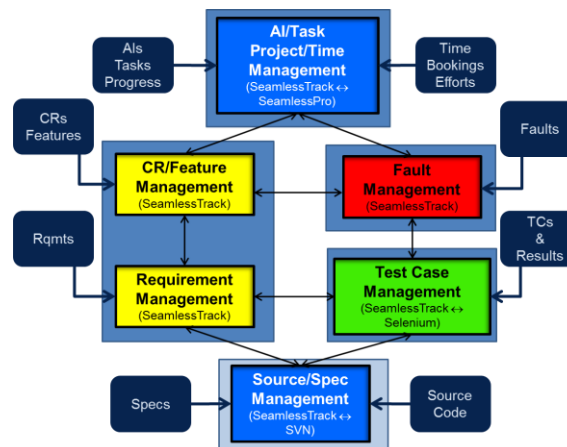
- *FM (Fault Management) is treated in most cases in professional way – but having limitations:*
 - *Diversity! - very different tools are used (Bugzilla, Jira, Trac, SeamlessSuite, Jazz, Polarion, “private”)*
 - *Some companies use several different tools at the same time for different projects/customers with partly synchronization of bugs in different tools (effort and risk of inconsistency!)*
 - *Even two different FM tools are sometimes used in the same project (!)*
(“Can you win Formula 1 race using 2 different speed control displays in your cockpit ?”)
 - *> 10% use private tools (!) and > 10% companies manage faults using Excel (!)*
 - *Usually no access (!) is granted for customers to project “internal” bugs (neither parts of it)*
 - *Few companies use FM synced with customer SLAs (Service Level Agreements)*



- **Three Common* Recommendations (for all benchmark participants):**
 1. Introduce professional Requirement Management and tracing for your projects:
 - RM shall be based on real DB behind (rather than using Excel tables)
 - Information from RM shall be linkable from/to other PM/QM tools (e.g. FM, TM, delivery info etc.) and “real” linking shall be applied (rather than “text remarks”)
 - Share and review your design break down and design requirements with your customers (when necessary in several (many!) iterations)
 - In case of changing requirements apply change request methodology
 - Share implementation details with customer as soon as possible and adjust expectations (and requirements) (when necessary in several (many!) iterations)
 - “Shared Information” \cong “Shared Responsibility”
 2. Maintain “permanent” clarification and communication loops with your customer and share selective project information to your customer directly:
 - Regular meetings, regular communication and information exchange with customers (not only for requirement clarifications) are **MUST!**
 - Share project relevant information with your customer (anyway it is your customer project!)
 - Allow direct (selective) access to project status (summary), test status (summary), internal bugs (summary) etc. – normally there should be “nothing to hide”
 - “Transparent Information” \cong “Trust”

- Individual recommendations can be provided upon request for detailed benchmark analysis report for each company

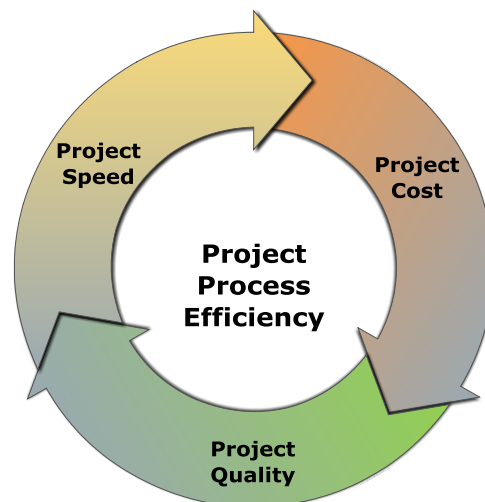
- **Three Common* Recommendations (for all benchmark participants):**
 3. Implement as much of project information linking as possible in your environment to improve project efficiency!
 - Use either e.g. SeamlessSuite (license free , “optimized for efficiency” and fully integrated PM/QM system)
 - or add more “real” linking to your already used and implemented systems (however Excel is not the best choice)
 - or introduce any other integrated PM/QM system solution available on the market
 - Recommended, general “rule” concerning number of used PM/QM Tools: Less is more !
 - Don’t maintain redundant information among the tools and systems! (“link information” rather than “copy information”)
 - It is not that important which PM/QM tools you use but how you use them for your process and project implementations!



- Individual recommendations can be provided upon request for detailed benchmark analysis report for each company

We (IEEE TEMS/(TMC)) are convinced that efficient implementation of processes is the main differentiation factor and key to project efficiency and project success!

Have we made you curious?



○ Next activities

- *Continue phase V1 until having reached ca. 50-100 companies*
 - *Cover more countries and continents*
 - *Perform empiric verification of correlations between benchmark results and real project results at selected companies*
- *Start in parallel preparations for benchmark phase V2:*
 - *More HW related questions*
 - *More production plant related questions*

○ Appreciation

- *Many thanks to all participating companies in V1!*
- *Without your “curiosity”, drive for improvement and finding “free” time slot this study would not have been possible!*

**THANK
YOU**

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*People say QM is a
money-munching monster
sucking the joy
out of your work.*



Contact:

marek.cichowski@ieee.org or marek.cichowski@seamless-qm.com

Phone: +49 89 20084481