



Industrialized Agile Quality: Leveraging ISO Standards to Deliver Business Agility with World Class Quality

Agenda

- Agenda Review
- Quality Fundamentals
- Agile Quality Processes
- Enabling Business Agility Through Quality
- Q&A



Quality Fundamentals

Exercise I

Meets Requirements (QAI)

Quality Control – The act of testing, **Appraisal**

Product Quality Model (ISO25010) – Functional Quality

Fit for Use (QAI)

Quality Assurance – The review of the people, processes, and tools for delivering quality, **Prevention**

Quality in Use Model (ISO25010) – System Quality

Fundamentals of Quality (ISTQB)

Principle 2 – Exhaustive testing is impossible

Testing everything (all combinations of inputs & preconditions) is not feasible except for trivial cases

Principle 3 – Early testing (Shift left, Early Error Detection)

To find defects early, testing activities shall be started as early as possible

Principle 4 – Defect clustering

Testing effort shall be focused proportionally to the expected and later observed defect density

Principle 5 – Pesticide paradox

If the same tests are repeated over and over again, eventually the same set of test cases will no longer find any new defects

Principle 6 – Testing is context dependent

Testing is done differently in different contexts

ISO Standards Definitions

ISO25040: Evaluation Processes

Provides a process description for evaluating software product quality and states the requirements for the application of this process

ISO25030: Requirements Quality

Provides requirements and recommendations for quality requirements, and guidance for the processes used to define and analyze quality requirements

ISO16085: Life Cycle Processes - Risk Management

Improving the search for and identification of potential problems that can affect life cycle activities and the quality and performance of products, and for improving the active management of projects

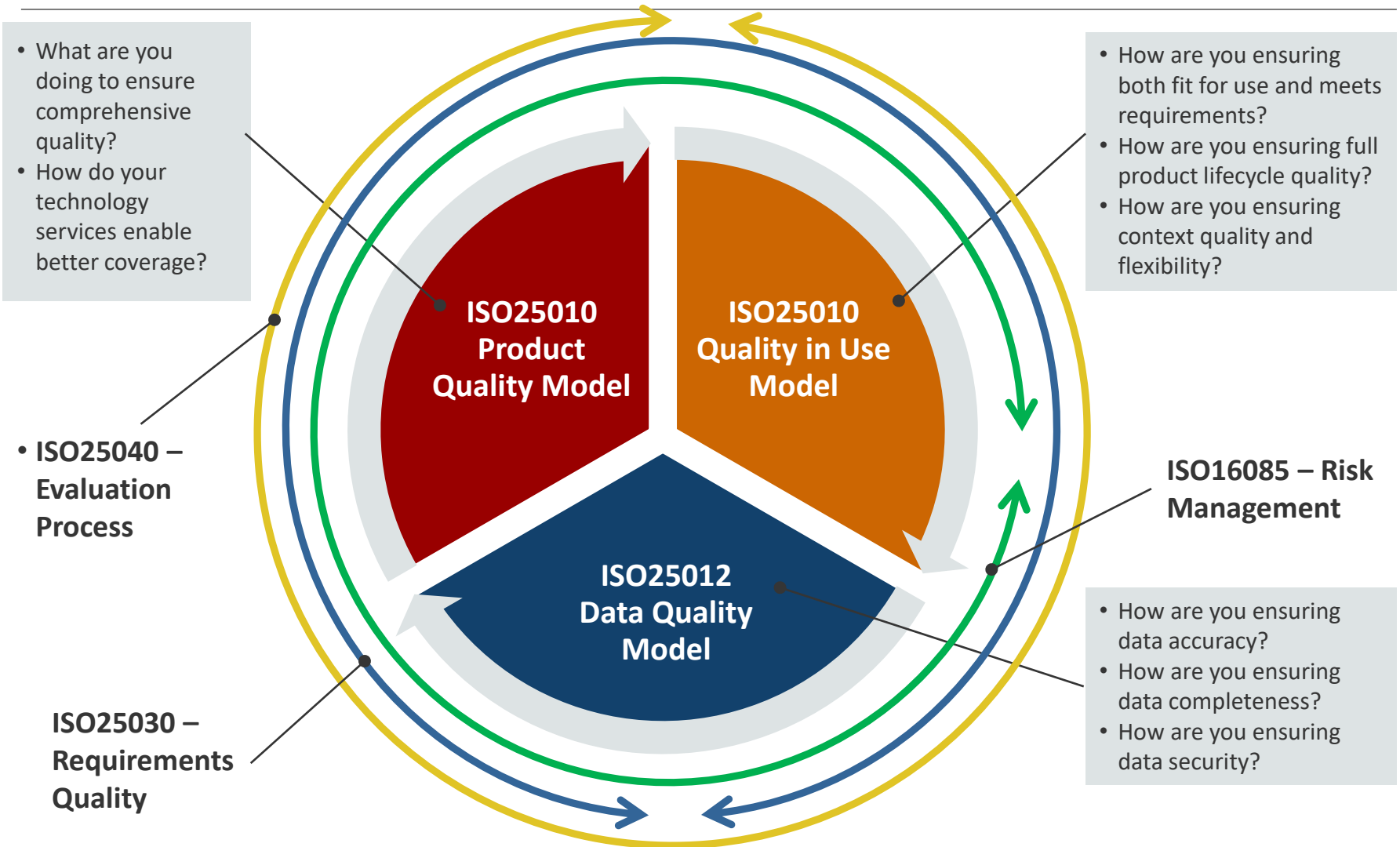
ISO25010: Product Quality & Quality In Use

The characteristics and sub-characteristics provide consistent terminology for specifying, measuring and evaluating system/software product quality. They also provide a set of quality characteristics against which stated quality requirements can be compared for completeness

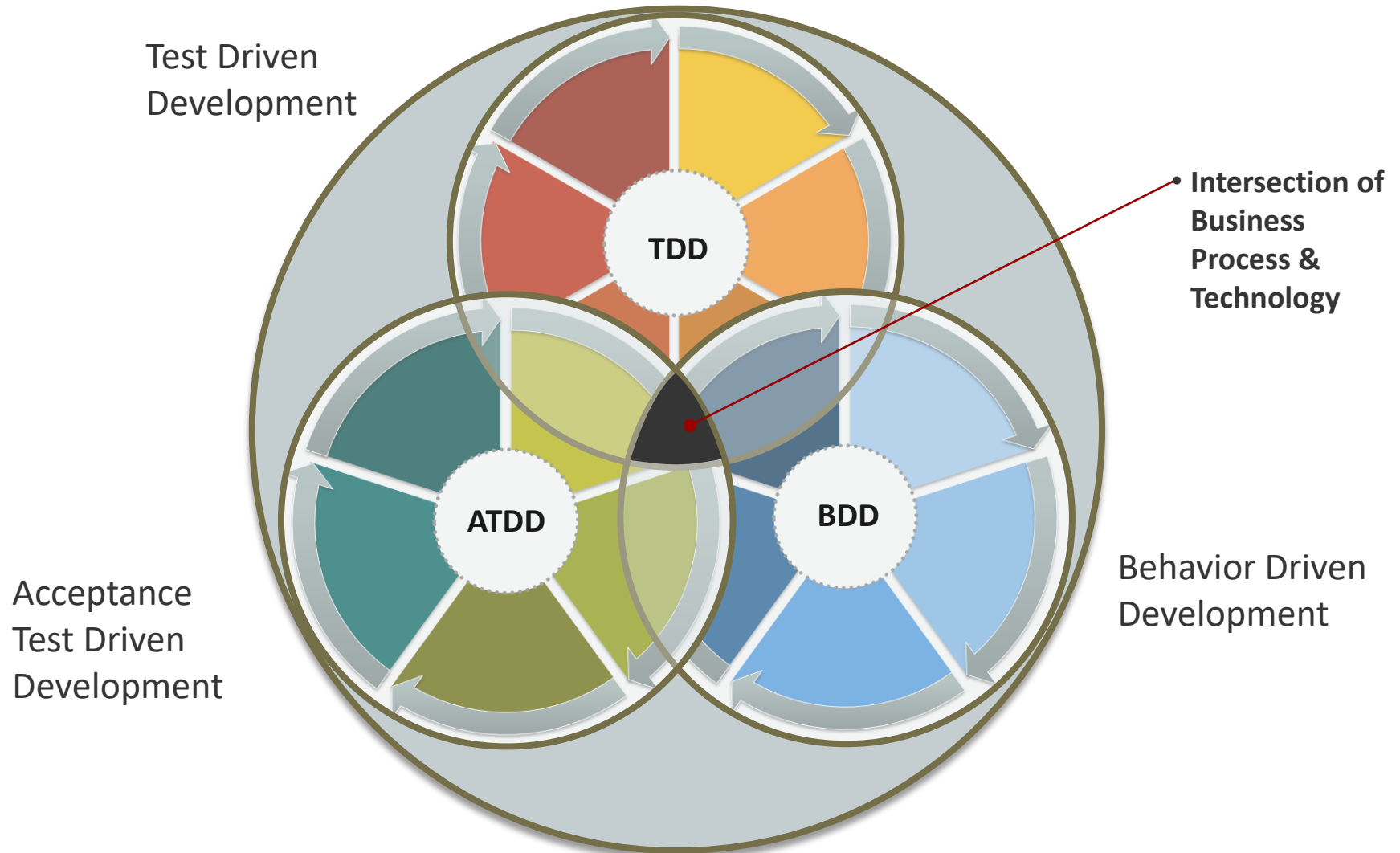
ISO25012: Data Quality

Establish data quality requirements, define data quality measures, or plan and perform data quality evaluations

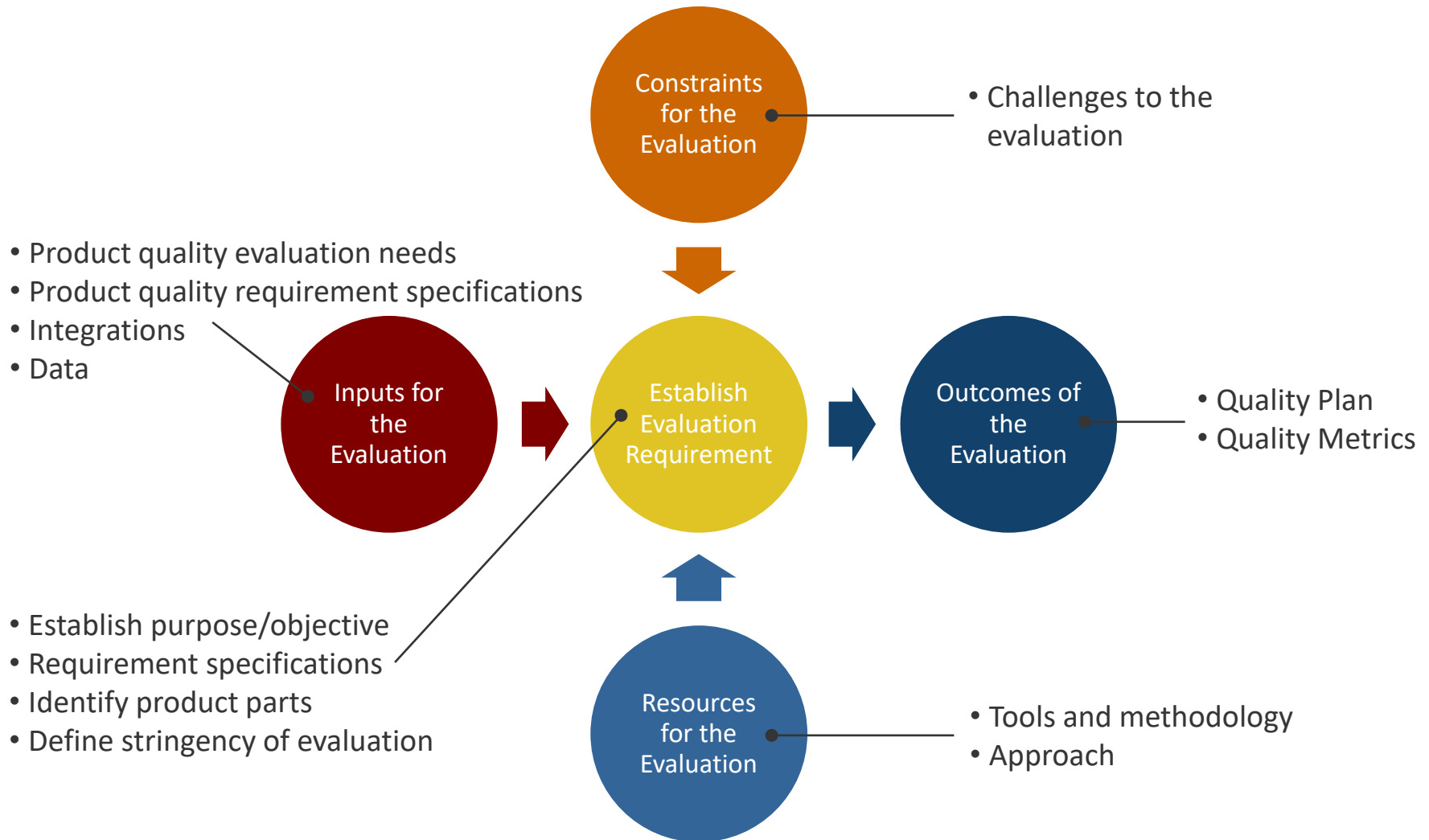
Industrialized Quality Processes



Golden Circles of Agile Quality



Evaluation Processes (ISO25040)



Shift-Left Planning

Doing the work prior to the Sprint is just as important as doing the Sprint activities. These pre-Sprint activities help QA achieve higher shift-left value.

Pre-planning

- QA checks stories of **Next Sprint**
- QA checks stories of **Next Sprint** - Acceptance Criteria
- QA checks stories of **Next Sprint** - Automation

Grooming Sessions

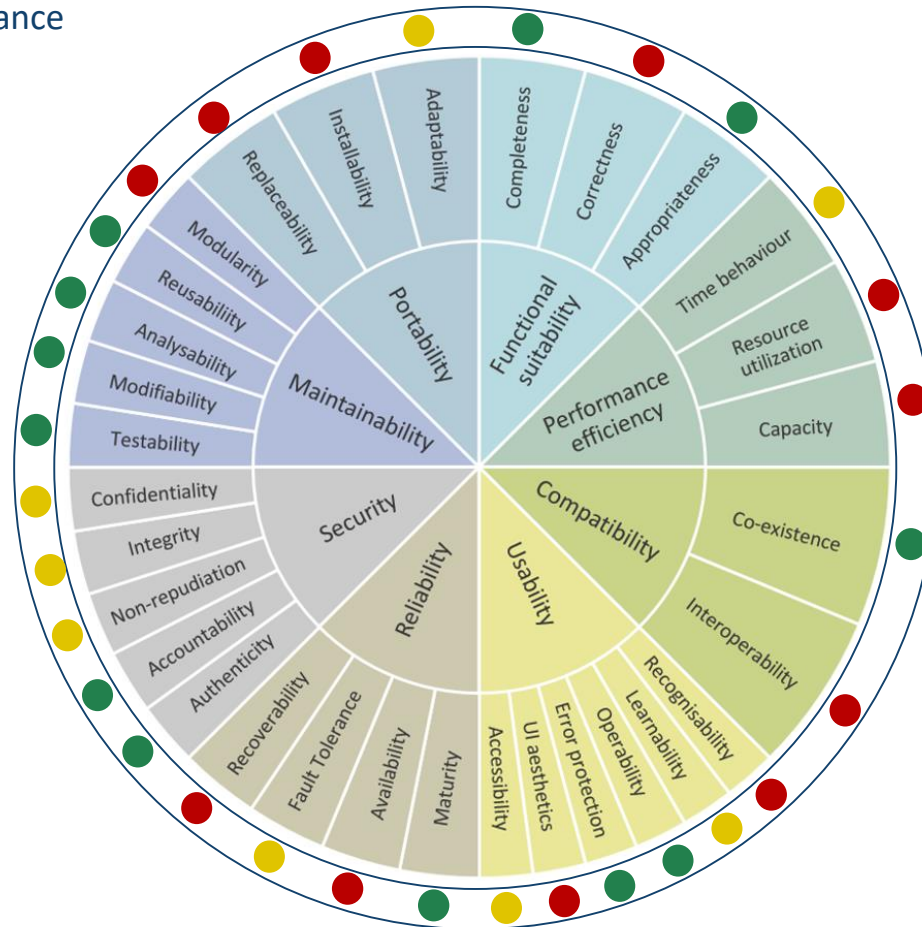
- What do I need:
 - Technology
 - Test Data
 - E2E
- Strategy:
 - How
 - High level estimate

Sprint Planning

- Story
 - Explain Strategy
 - Detail Estimate
 - Risk Assessment
 - Questions

Effective Test Planning (ISO25010)

- Prioritize Risk Areas
- Redefine the Risk Tolerance
- Assign Ownership
- Report on Risks



- Easily Identify What to Test
- Decide How Much to Test
- Understand When to Test
- Active Mitigation (Anticipate)
- Collaborate on Resolution

Test Data Management (ISO25012)

- Tie Data to Prioritized Risk Areas
- Understand Source & Method
- Create & Teardown
- Two-factor Testing



Benefits of TDM:

- Repeatable
- Reliable
- Correct
- Complete
- Appropriate
- Accessible

Risk Assessment (ISO16085)

The purpose of risk management is to identify potential managerial and technical problems before they occur so that actions can be taken that reduce or eliminate the probability and/or impact of these problems should they occur.

Event: The occurrence of a particular set of circumstances

Probability: The extent to which an event is likely to occur

Consequence: An outcome of an event

Risk: The combination of the probability of an event and its consequence

Risk Category: A class or type of risk (e.g., technical, legal, organizational, safety, economic, engineering, cost, schedule)

Risk Criteria: The terms of reference by which the significance of risk is assessed

Risk Exposure: The potential loss presented to an individual, project, or organization by a risk; a function of the probability that the risk will occur and the magnitude of the consequences of its occurrence

Risk Profiles: A project's current and historical risk-related information; a compendium or aggregate of all of the individual risk profiles in a project

Agile QA Timelines

With our guidance, clients are able to align the testing effort within the same sprint as the development team. This approach supports speed and agility, and enables the potential “shift left” value of agile/Scrum.

Pre-Sprint	Sprint Planning (Day 1)	Test Prep & Run (Day 2-4)	Test Execution (Day 5-7)	Sprint Completion (Day 8-10)
<ul style="list-style-type: none">• Risk Recommendation• Grooming future Sprint work	<ul style="list-style-type: none">• Risk Acceptance• Test Strategy• Test Prep• Grooming future Sprint work	<ul style="list-style-type: none">• Automation Scripting• Test Data• Feature Testing• Functional/Regression Prioritization• Smoke Testing Execution (CI)	<ul style="list-style-type: none">• Smoke Testing• Automated Testing• Feature Testing• Functional/Regression Testing• Defect Management• QA Sign-off (Story)• Accept Feature• Status Reporting	<ul style="list-style-type: none">• Feature Testing• End-to-end Testing• Performance Testing• Defect Management• UAT• Demo• Sign-off (Sprint)• Retrospective

Exercise II

Exploratory Testing

Elliot was at his best friend's birthday party on Saturday and having a great time when something totally unexpected happened; he hurt his arm while playing tag. This pain wasn't any normal kinda pain, it hurt a lot and Elliot was crying.

His parents came and took him to urgent care. The doctor said it might be broken and ordered an x-ray for him. When the x-ray came back, the doctor confirmed Elliot had a broken arm, BUMMER! The doctor placed a cast on Elliot's arm and sent him home with a lollipop for his troubles.

That's when the really bad stuff started to happen for Elliot's parents. Because they were in a rush to get Elliot seen for his arm, they took him to the nearest urgent care facility which turns out is out-of-network. What's more, they hadn't met any of the deductibles for the year and their out of pocket expenses were pretty high.

Elliot's parents called their insurance company and negotiated a monthly payment plan to cover the cost of services. They were gonna have to pay for it over 6 months. On Monday, Elliot's parents sent in the first monthly payment.

Shared QA Responsibility

Analyst (Any)

- Story
- Test Data
- Functional/Regression Prioritization
- Feature Testing

- Transparency, updates to sprint goals

Shared

- Risk Recommendation
- Backlog Maintenance
- Risk Acceptance
- Test Strategy
- Definition of Ready
- Definition of Done
- Sizing
- Defect Management
- Commitment to Sprint goals
- End-to-end Testing
- QA Sign-off (Story)
- Demo
- Retrospective

Engineer (Any)

- Automation Scripting
- Smoke Testing
- Automated Testing
- Functional/Regression Testing
- Performance Testing
- Alignment to architecture

Tying the Approach Together



Risk Recommendation (1)

Responsible: PO
Accountable: Leadership
Consulted: Product Team
Informed:

Tasks	Owner
Build Risk Level Definitions	Product Team
Build Risk Traceability	PO

Frequency Quarterly




Risk Acceptance (2)

Responsible: Test Leads
Accountable: PO
Consulted: Product Team
Informed: Leadership

Tasks	Owner
Fill out risk level template	Test Leads
Review Sprint Risk Level	Test Leads
Accept Sprint Risk Level	PO

Frequency Sprint Planning

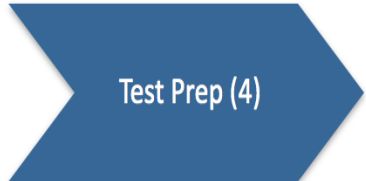


Strategy (3)

Responsible: Testers
Accountable: Test Leads
Consulted: Product Team + PO
Informed: Leadership

Tasks	Owner
Create Test Strategy	Test Leads
Review Test Strategy	Test Leads
Approve Test Strategy	PO

Frequency Post-Sprint Planning




Test Prep (4)

Responsible: Testers
Accountable: Test Leads
Consulted: Product Team
Informed:

Tasks	Owner
Test Data Management	Test Leads
Test Scenario Definition/Traceability	Testers
Test Automation Scripting	Engineers
Environment Readiness Test	Testers

Frequency Sprint



Test Execution (5)

Responsible: Testers
Accountable: Test Leads
Consulted: Product Team
Informed:

Tasks	Owner
Execution of Test Strategy	Testers
Defect Management	Testers/Devs
Stating	Test Leads

Frequency Sprint



Metrics & Reporting (6)

Responsible: Test Leads
Accountable: SM
Consulted: Product Team
Informed: Leadership

Tasks	Owner
Identify Risk(s) & Mitigation Strategies	Test Leads
Align Risk(s) to Business Impact(s)	Test Leads
Create Release Readiness Report	Test Leads
Schedule Release Acceptance Review	SM

Frequency End of Sprint




Sprint Acceptance (7)

Responsible: Test Leads
Accountable: PO
Consulted: Product Team
Informed: Leadership

Tasks	Owner
Review Release Readiness Report	Product Team
Review Risk(s) & Mitigation Strategies	Product Team
Accept Release	PO

Frequency End of Sprint



Retrospective (8)

Responsible: Product Team
Accountable: SM
Consulted:
Informed:

Tasks	Owner
Review what went well	Product Team
Review what can be done better	Product Team
Assign Accountable Owner	SM

Frequency End of Sprint

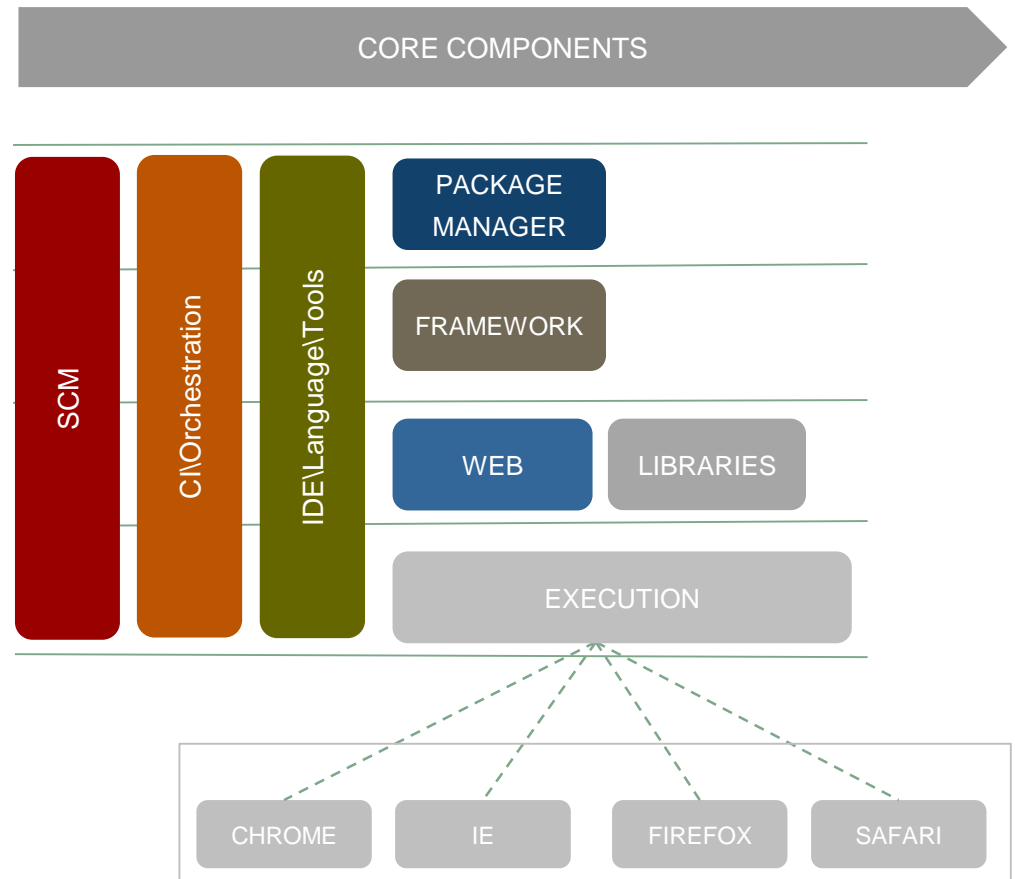


Enabling Business Agility Through Quality

Utilizing Intelligent Test Architecture

Understanding Needs, Building Strategies, and Pragmatically Executing

- Vision & Strategy
- Best Practices
- Quality as a Service
- Enterprise Frameworks
- Product Quality
- Quality in Use
- Data Quality
- Analytics Services (Metrics)
- Innovation (AI, MBL, BI)
- Predictive Quality
- DevOps
- Tools Consolidation



Paired Testing

Who:

- QA Analyst – SME
- SDET – Technical solutions

What:

- Knowledge transfer
- Peer reviews
- Test case design sessions

Why:

- Allay fears and give purpose
- More complete technical solutions
- Better total quality
- Collaboration

How:

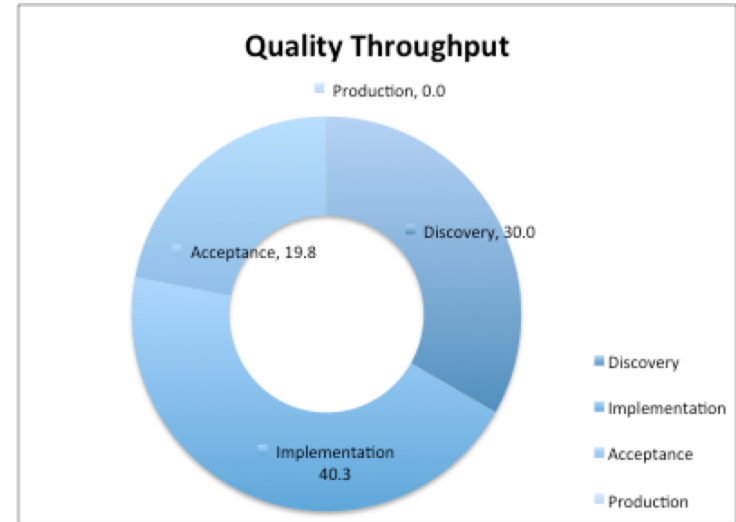
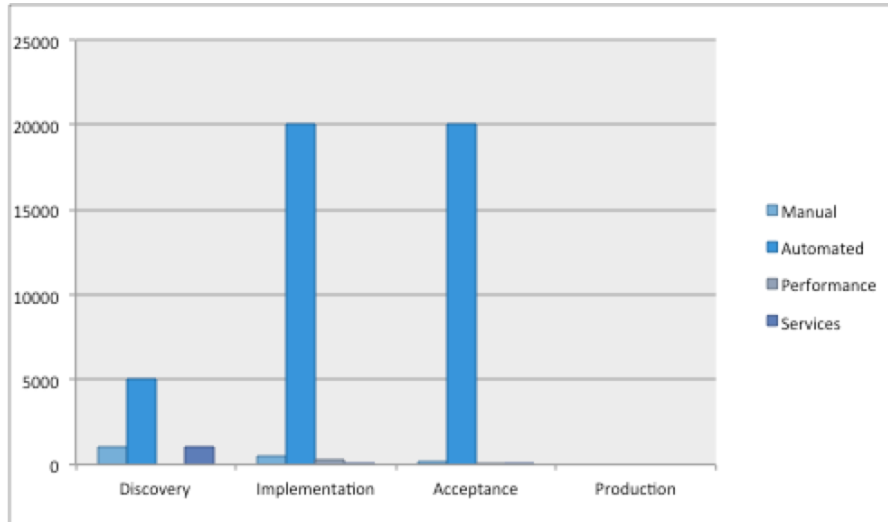
- One hour a day, every day
- Rotate the focus
- Keep a log

Best Practices:

- Rotate partners every other Sprint
- Communication should be dialogues
- Be customer-driven
- Think operationally
- Create a community of practice forum
- Encourage “natural” synergies

Holistic Views of Quality

Quality Throughput by Product



Product A					
Phase of QA	Discovery	Implementation	Acceptance	Production	Total Test Cases
Manual	1000	500	200	0	1700
Automated	5000	20000	20000	0	45000
Performance		300	100	0	400
Services	1000	100	100	0	1200
Total	7000	20900	20400	0	48300

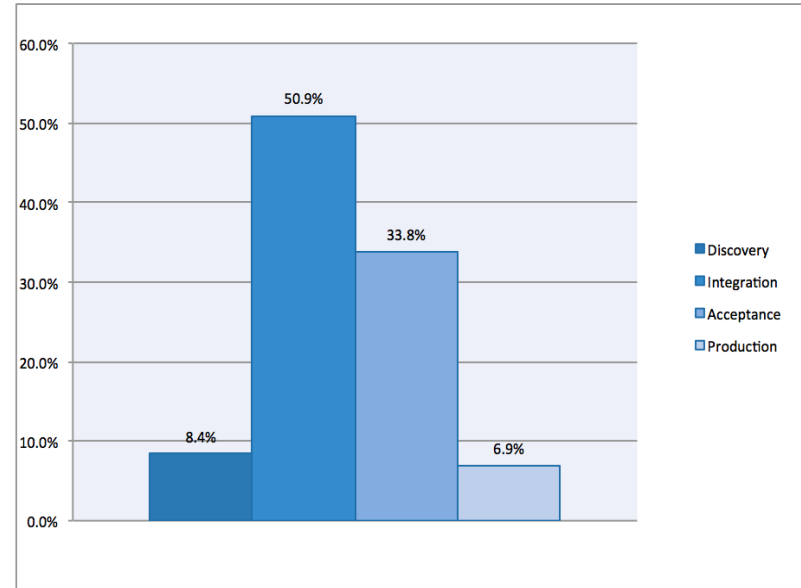
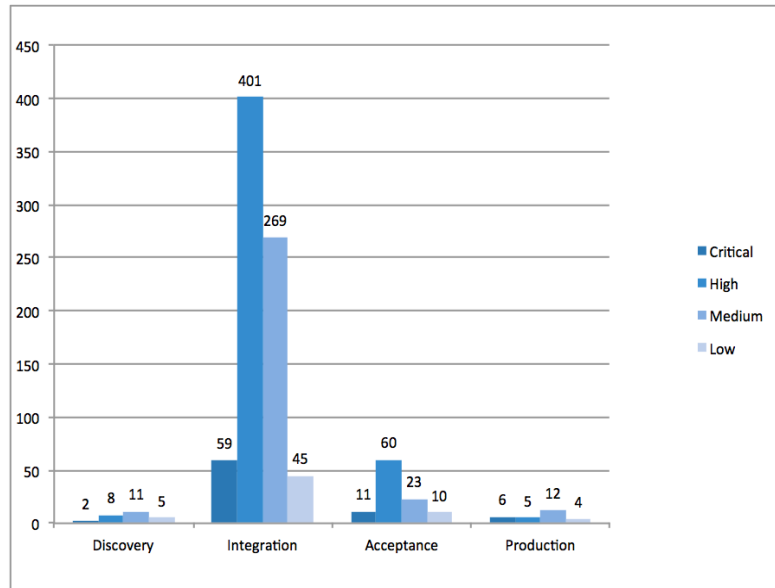
Product A	
Phase of QA	Quality Throughput
Discovery	30.0
Implementation	40.3
Acceptance	19.8
Production	0.0
Total	90.1

Quality should not be measure by a two-dimensional metric like Velocity. Instead use a multi-dimensional metric like Throughput to truly understand the whole picture

Exercise III

Understanding Your Agile Health

Defect Discovery Rate by Phase



Current Product

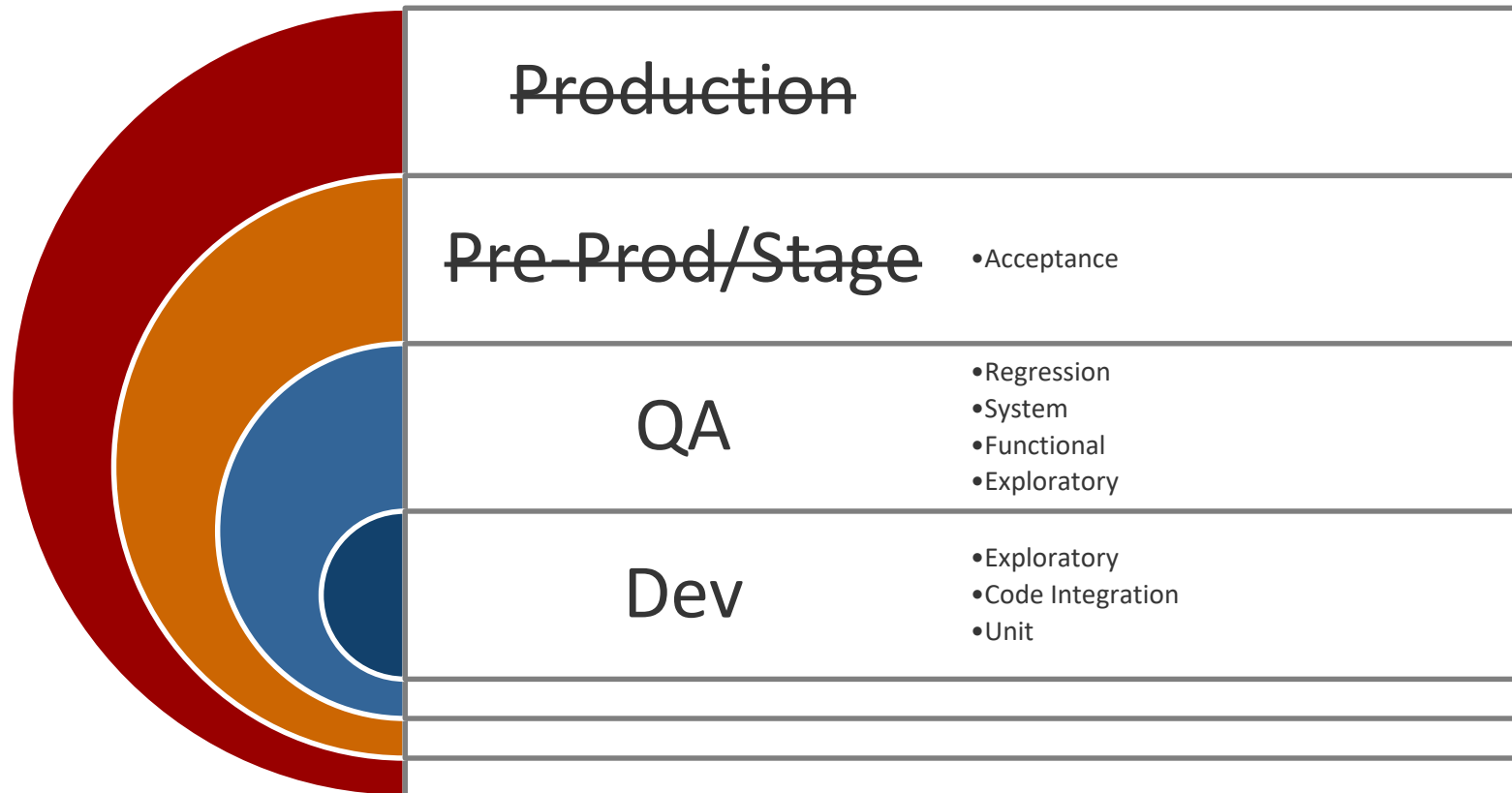
Phase of QA	Discovery	Integration	Acceptance	Production	Total Defects
Critical	2	59	11	6	78
High	8	401	60	5	474
Medium	11	269	23	12	315
Low	5	45	10	4	64
Total	26	774	104	27	931

Breakdown by Phase

Phase of QA	Percentage
Discovery	8.4%
Integration	50.9%
Acceptance	33.8%
Production	6.9%
Total	100.0%

Making sure your enterprise automation framework enables “shift left” by your QA teams is also important to track. Keeping an eye on where defects are discovered is a great indicator of shift left.

Let's Change Our Mindset



In order to truly “shift left”, our destination is no longer production, its Acceptance Testing

Questions?

Q&A



Thank you for your attention