ISO 9001:2000 and Agile Development

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- Introduction
- Why Primavera pursued a documented QMS aligned with ISO?
- Establishing a documented QMS in an Agile manner
- Continuing the momentum through reviews and audits
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Introduction

• **Faulty assumptions:**
  - Agile is about no documentation
  - ISO needs to be a burdensome process.

• **Primavera did not begin as an ISO accredited organization and then adopt agile practices**

• **Primavera had been following Scrum/XP practices and wanted to document the established processes**
Introduction

- A Quality Management System (QMS) was established “aligned” with ISO 9001:2000 as a reference and model

- QMS includes the policies and procedures of an organization:
  - Quality Manual
  - Quality Procedures
  - Work instructions
Why Primavera pursued a documented QMS aligned with ISO?

- **Internal and external motivations:**
  - Specific customer inquiries about ISO
  - Benchmark for process improvements
  - Ramp up new team members

- **No business justification for certification**

- **RCG IT provided assessment and gap analysis of current practices relative to the Standard**
Why Primavera pursued a documented QMS aligned with ISO?

- **Conclusion:**
  - Practices strongly reflect the intent in spirit and execution
  - Processes have not been documented to the letter of the Standard

- **Software development:**
  - Structured around highly evolved teams
  - Focus on customer driven requirements
  - Implement complete, tested functionality within short development cycles

- **Missing formal documentation to be in alignment with the ISO standard, replaced by:**
  - Direct communication within the teams
  - Enhanced by co-location, brief meetings and frequent reviews

- **Decision to create Policies and Procedures and maintain auditable evidence**
Establishing a documented QMS in an Agile manner

- Method was not to devise a set of procedures and then train the development teams to follow the procedures in some rigid and prescribed manner.

- Process sought to simply document processes that were already institutionalized as a result of the ongoing work of self-directed teams.

- Determining as-executed processes as well as creating and reviewing the documented procedures was facilitated and structured in a workshop format.
Establishing a documented QMS in an Agile manner

Key Procedures:
- Software Testing
- Configuration Management
- Defect Tracking
- Internationalization
- Product Maintenance
- Requirements Management
- Release Management
- Core supporting processes: Documentation, IT/Facilities, HR/Training
Establishing a documented QMS in an Agile manner

**Workshop process:**
- Over 30 workshops
- Cross section of small groups from the development team
- RCG IT Facilitator experienced with QMS development
- Procedures under 20 pages
- 10 month period to minimize impact
- Time for review and validation of documents
Establishing a documented QMS in an Agile manner

- Documenting institutionalized processes:
  - What tasks are associated with each function?
  - What has to happen before you can start?
  - What inputs do you need, and where do you get them?
  - Who is responsible to be sure the task is done?
  - How do you know how to do the task?
  - What outputs do you produce, and where do you put them?
  - How do you know you’re finished?

- Procedures reflect the sequence and dependencies of the tasks, incorporating the answers to these questions in simple narrative text
Establishing a documented QMS in an Agile manner

- **QMS development incorporating agile principles:**
  - Time-boxed with clear deliverables and team consensus
  - Capture collective consensus of the group on existing practices
  - Data gathering and reviews done collectively as a team, face to face whenever possible
  - Regular reflection and adaptation of the procedure documents done through frequent revisions and reviews
Establishing a documented QMS in an Agile manner

- **Benefits of outside facilitator:**
  - Writing of the documents
  - Allowed the team members to focus on describing the processes and reviewing the documents
  - Proved to be a critical successful factor
Establishing a documented QMS in an Agile manner

• **Benefits of information gathering process:**
  - Exposed quick opportunities for process improvement
  - Best practices and process deficiencies identified by session participants; acted upon during the QMS documentation process.
  - Countless 3rd hour meetings on improving test practices, internationalization, and build process
  - Example of a deficiency uncovered: key test server not covered by standard backup/recovery processes

• **Wiki site established:**
  - Policies and Procedures for reference
  - Work Instructions created, edited, and linked by the team members
Continuing the momentum through reviews and audits

- **Within one year of establishing the procedure documentation:**
  - Changes in development organization
  - Establishment of offshore development center comprised of two additional Scrum teams in India
  - New team members

- **Offshore fit with existing SDLC with minor changes to CM and supporting IT**

- **Formal review validated that team members understood development processes**
Continuing the momentum through reviews and audits

- Project audits provided evidence that Scrum teams were following established Agile practices

- Teams surprised by degree of change, using documents as reference:
  - Defect management practices
  - Metric collection
  - Automated testing practices
  - Planning process
Benefits Realized

- Easier Sales team response to customer inquiries regarding development process
- Can provide documentation describing Agile development methodologies and its benefits
- Sales team can respond to questions regarding ISO 9001:2000
Benefits Realized

- Documented procedures on key development processes very useful for training and for onboarding
- Evidence that processes are being followed
- Simply getting a group of developers together to discuss important development practices has resulted in improvements in processes
Benefits Realized

- Quality measured based on customer surveys and by tracking customer reported defects weighted by severity

- Trailing measures, so correlation of QMS to improved software quality is not yet conclusive

- Undoubtedly, the QMS and the workshop process helped drive process changes and measurable improvements

- Most noteworthy has been a decrease in the number of in-process defects