Fall 2018

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CS 428 – SQA / Creating Your Test Plan

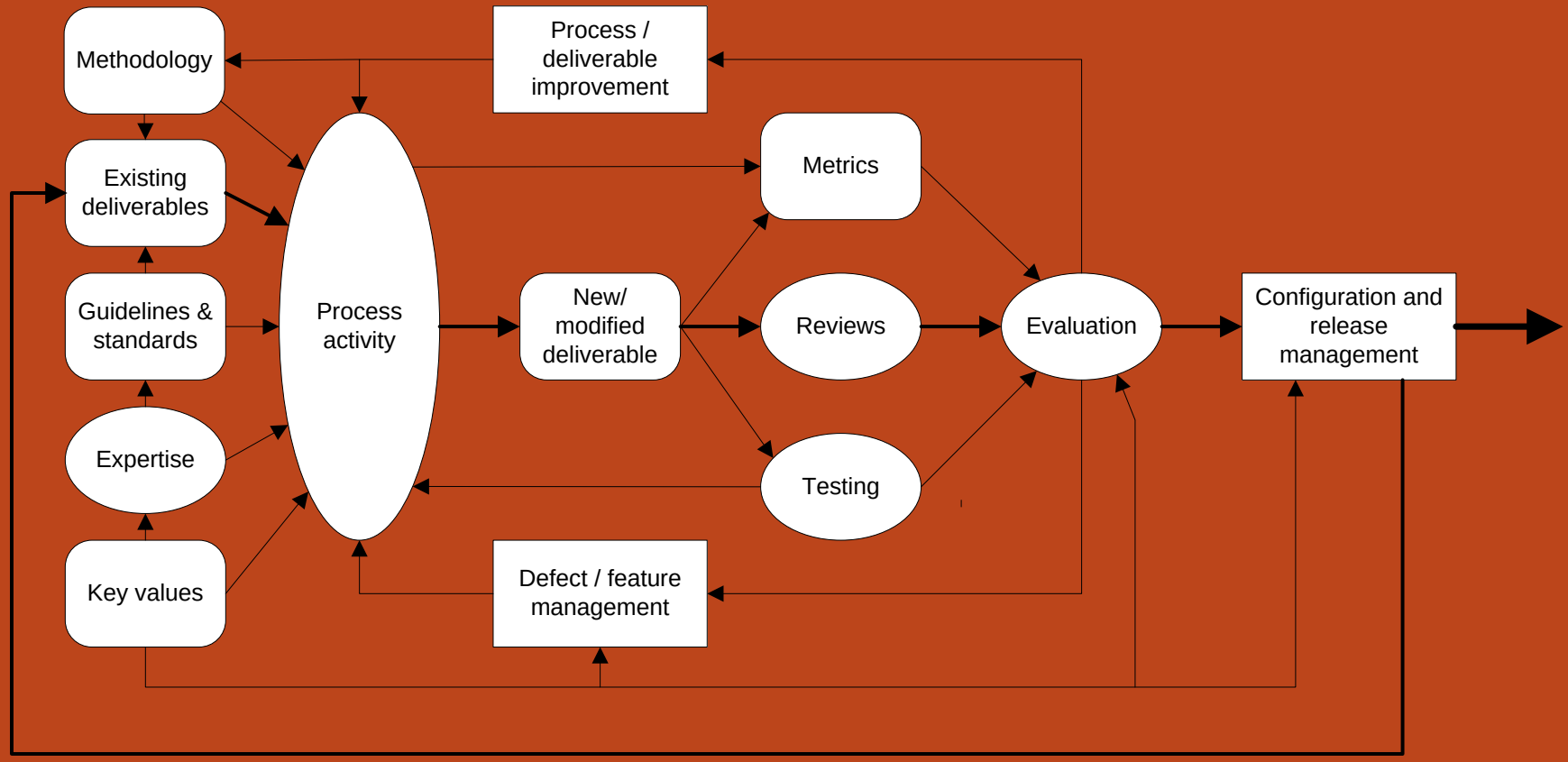
What is software quality assurance?

- As mentioned in prior lectures, SQA is the neglected stepchild of IT
- SQA applies not just to source code but to all deliverables in a software project, such as those you have created already or will create (org chart, requirements, PERT/Gantt charts, requirements, architecture, design, test plans/data, etc.)
- "Quality assurance occurs throughout the entire software development process, and each person involved in that process has an impact on the quality of the resulting application. This is critical to understand: quality assurance is not a separate activity done by a separate organization. While a given individual on a development team may oversee QA for that team, all other members of that team are equally responsible for quality assurance." – me, 1996

Core quality values in software

- **Reliability**: the system must carry out its functions without causing unacceptable errors or having an unacceptable downtime.
- **Performance**: the system must complete its various operations within timespans acceptable to the client.
- **Functionality**: the system must offer sufficient usable features to meet the client's needs.
- **Compatibility**: the system must interact effectively with existing IT systems, including appropriate external systems under the control of other entities.
- **Lifespan**: the system must continue to offer acceptable reliability, performance, and functionality over a sufficient period of time to warrant the cost to the client, including in many cases having the ability to grow with the client.
- **Deployment**: the vendor must deliver and deploy the system, and the client receive its benefits (reliability, performance, and functionality), in a timeframe acceptable to the client.
- **Support**: the system must have the capability to be upgraded and repaired over time.
- **Cost**: the cumulative expense of developing, deploying, upgrading, and maintaining the system must appear to be justified in the eyes of the client.

SQA should be tightly integrated into the entire software lifecycle



Key Aspects of SQA

- **Methodology**: defining the steps and deliverables of your process
- **Key values**: defining what is important for your product and for your company
- **Expertise**: having people who know what they're doing (TEPES)
- **Requirements and guidelines**: having consistent standards for all deliverables (not just source code)
- **Metrics**: automated, objective values that provide useful information you can use to judge progress and make improvements
- **Reviews**: ensuring that all deliverables have had human judgment passed on them by multiple persons in open discussion
- **Testing**: ensuring reliability, performance, and functionality of deliverables
- **Configuration management**: controlling the time stream
- **Defect/feature management**: prioritizing effort
- **Process/deliverable improvement**: learning from your mistakes (Armour)

Some types of software testing

- Unit/class testing (focus on smallest modules)
- Cluster testing (groups of related units/classes)
- Integration testing (putting everything together)
- System testing (trying it out in a production-like environment)
- Performance/stress testing (trying it out w/a real-world load on it)
- User acceptance/usability testing (do the users actually understand it?)
- Regression testing (re-test entire system after changes made)

Building your test plan

- Should tie back to requirements and design
- Should check for reliability, performance, functionality
- Should indicate what tests are being done and when they are done (or repeated)
- Should indicate what constitutes success for each test
- Should include some form of user-acceptance testing
- Get feedback, input from entire team
- First draft due by midnight Saturday (10/27)