Is Software Quality an Oxymoron?

Samuel Prasad, Ph.D.

∑celerSigma Inc.

ASQ After-work event: Dec 10, 2013

What is Software Quality?

Conformance to requirements (Crosby 1979)

Functional and performance requirements must be explicitly stated.
Requirements must be unambiguous.
Infrastructure requirements must be defined.
Operational instructions must also be specified.

Another definition of Software Quality

The degree to which a software application meets customer expectations. (ANSI/IEEE 828, 1990)

Customer must be able to accomplish his/her objective quickly and easily.
Customer's actions to achieve desired objective must be intuitive.
No negative consequences must be produced.

Healthcare.gov

Launched on October 1, 2013.

What was the goal?

- •Allow consumers to shop for health insurance. Compare plans and chose/buy the one that best suits their needs.

What happened?

- •Many customers were unable to buy health insurance.

Were customers satisfied? No!

Was it a surprise?

McKinsey played the role of a red team and performed the functional (black-box) testing of Healthcare.gov before its launch.

They said:
Infrastructure and business rules for consumers, employers and suppliers were not adequately defined.

Implementing the health insurance marketplaces presented unique challenges in magnitude and complexity, which have never before been attempted.

Level of complexity too high

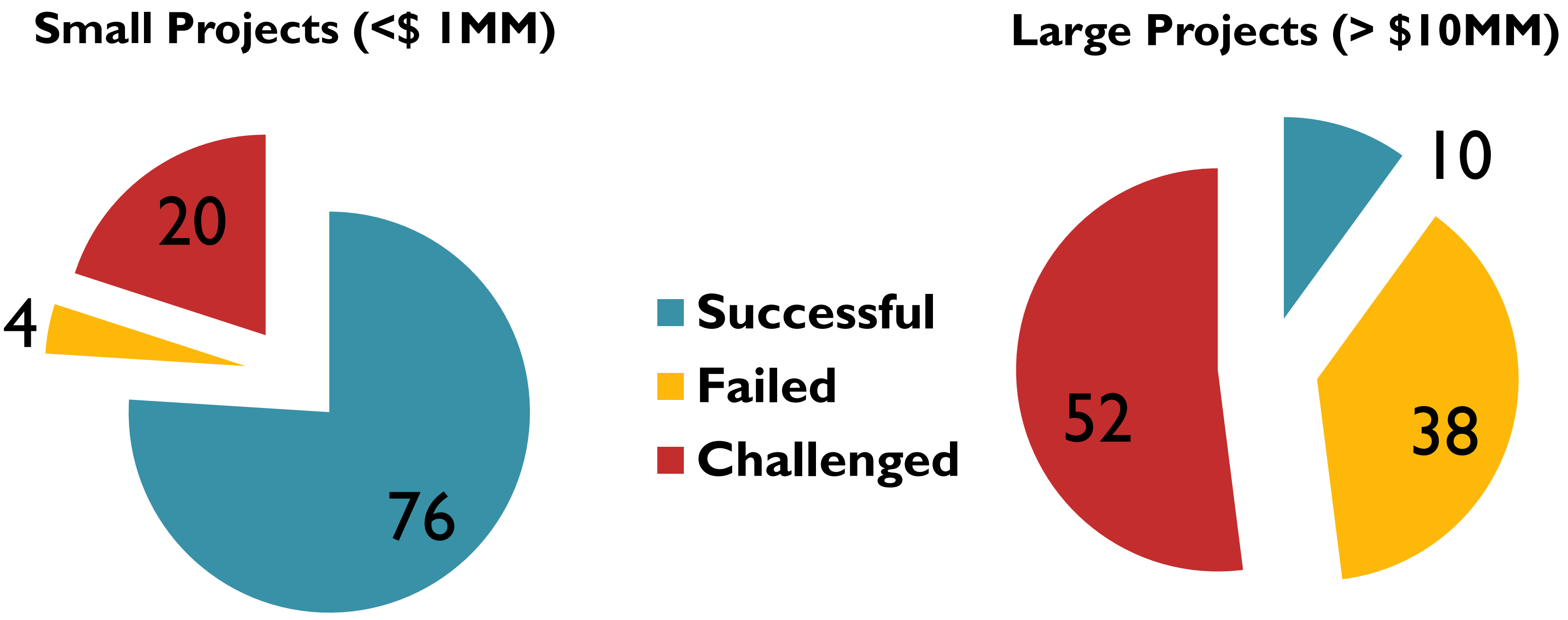
- Many interactions between IRS, Medicare/Medicaid, Social Security and insurance marketplaces.

- Privacy and security was not adequate as data was being transferred between various agencies and their software systems.

- No phased rollout with MMP (minimum marketable product) features in version 1.

- Funding uncertainty. Project too large. (>$400MM)

Small and Large Projects



Small Projects (<$ 1MM)

Large Projects (> $10MM)

Successful: on time, within budget, customer is happy.
Challenged: late, over budget, less than MMP, customer not happy.
Failed: Cancelled, or delivered but never used.

Source: Chaos Manifesto 2013

Think Big, Act Small

Triple constraints of cost, time and scope are harder to manage in large projects.

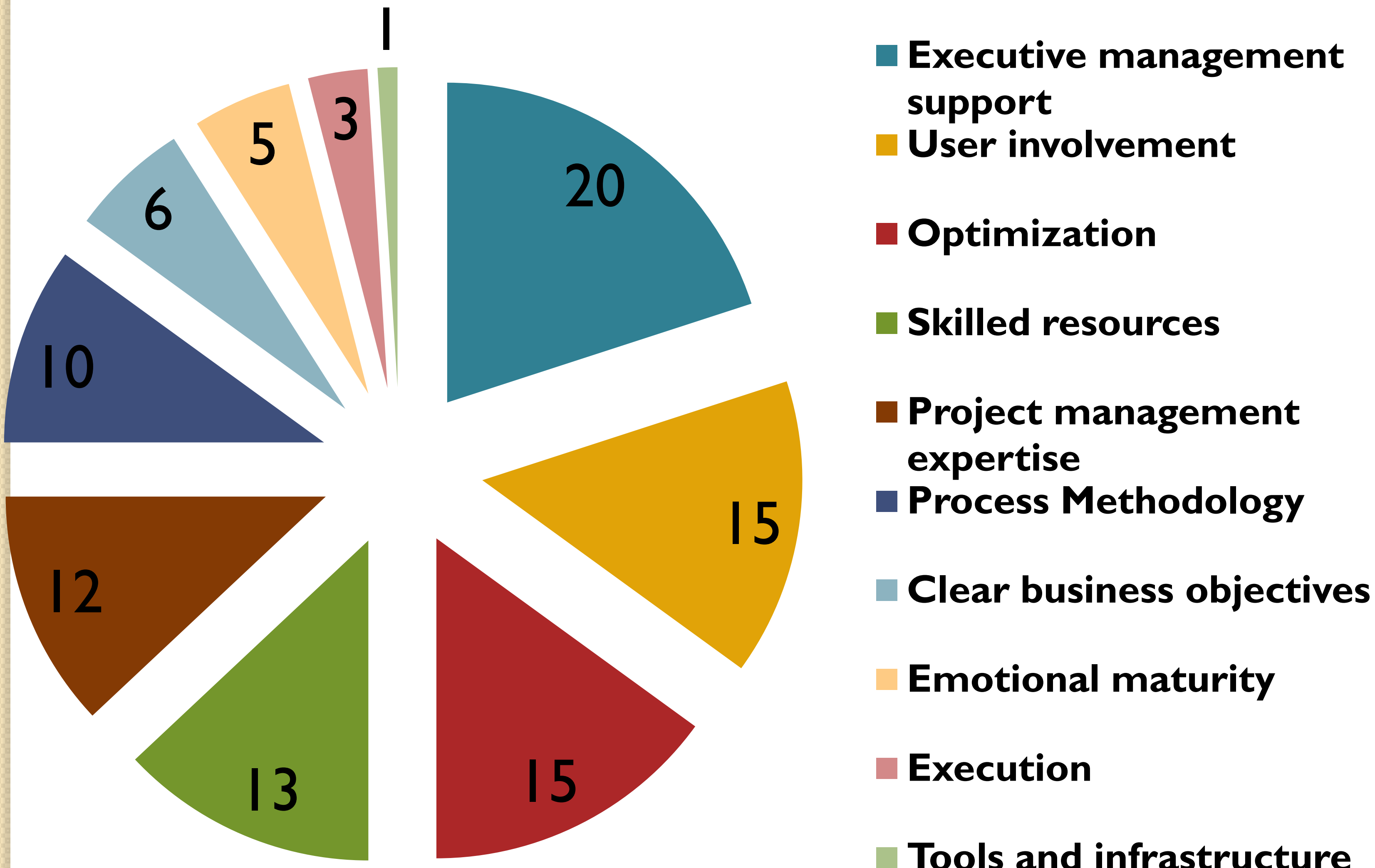
•Break down large projects into smaller ones such that each is a MMP.

•Do not parallel stack. Prioritize based on business value.

• Use a cross-functional team (optimal size of 8 to 10 members) that uses an iterative approach in the execution or construction phase of the project life cycle.

Source: Chaos Manifesto 2013

Success Factors for Small Projects



Source: Chaos Manifesto 2013

Executive Management Support (20%)

- Simple vision
- Strong commitment
- High Velocity
- Roadmap
- The Kill Switch

Source: Chaos Manifesto 2013

User Involvement (15%)

- Identification
- Communication
- Feedback and input
- Consensus building
- Working agreement

Source: Chaos Manifesto 2013

Optimization (15%)

- Scope
- Team size
- Estimates
- Risk Mitigation
- Continuous delivery
- Yield

Source: Chaos Manifesto 2013

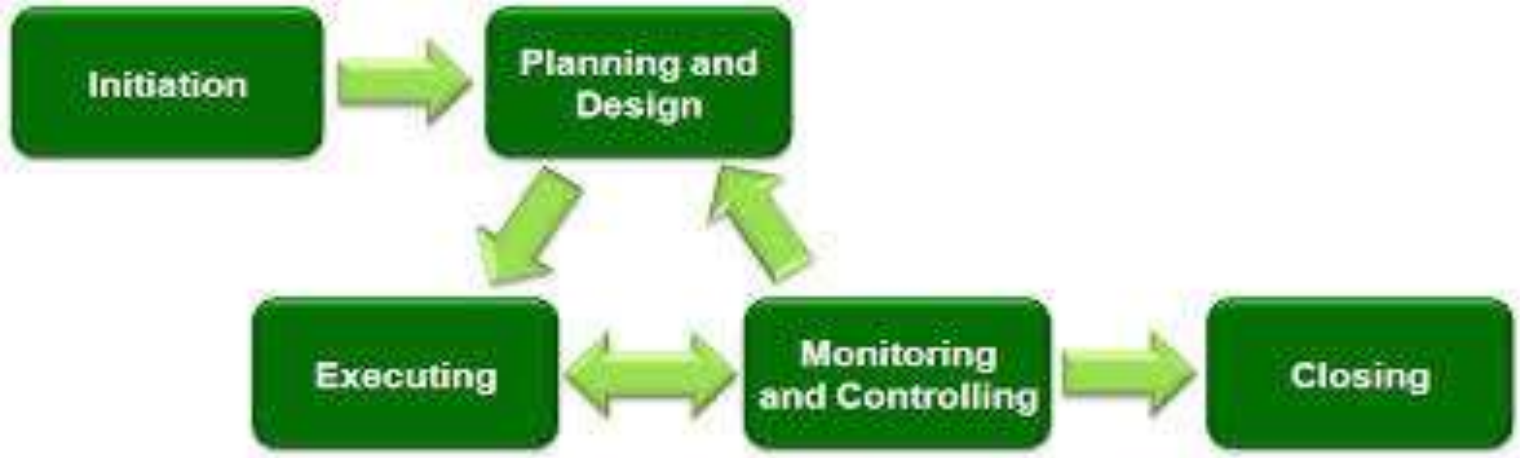
Skilled Resources (13%)

- Competency
- Chemistry
- Training & Education
- Turnover
- Toxic
- Mentoring
- Cross functional

Source: Chaos Manifesto 2013

Project Management Expertise (12%)

- Leader
- Bonding
- Business Understanding
- Ownership
- Non-prescriptive



Source: Chaos Manifesto 2013

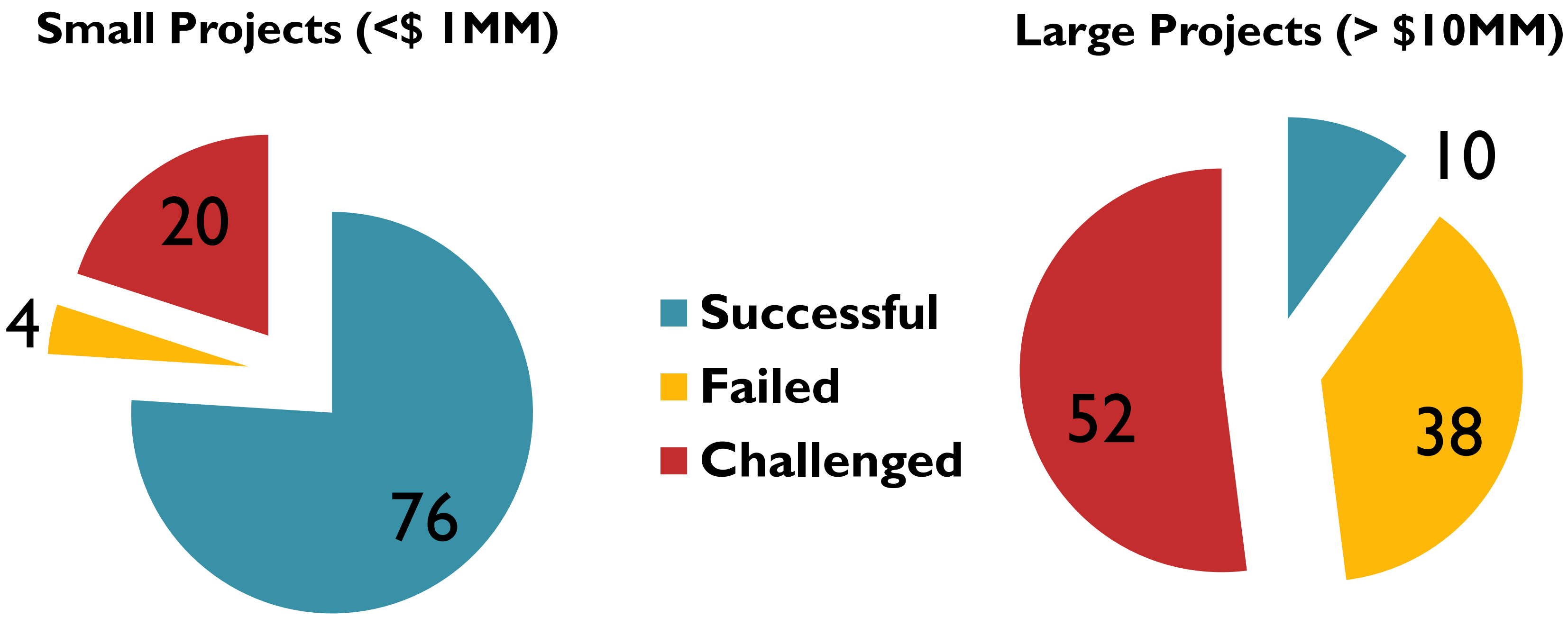
Top 75% of Success Factors

- Executive Management Support (20%)
- User Involvement (15%)
- Optimization (15%)
- Skilled Resources (13%)
- Project Management Expertise (12%)

If we adopted the above approach, our success rate should go up to 75% from the current 10%.

Source: Chaos Manifesto 2013

Small and Large Projects

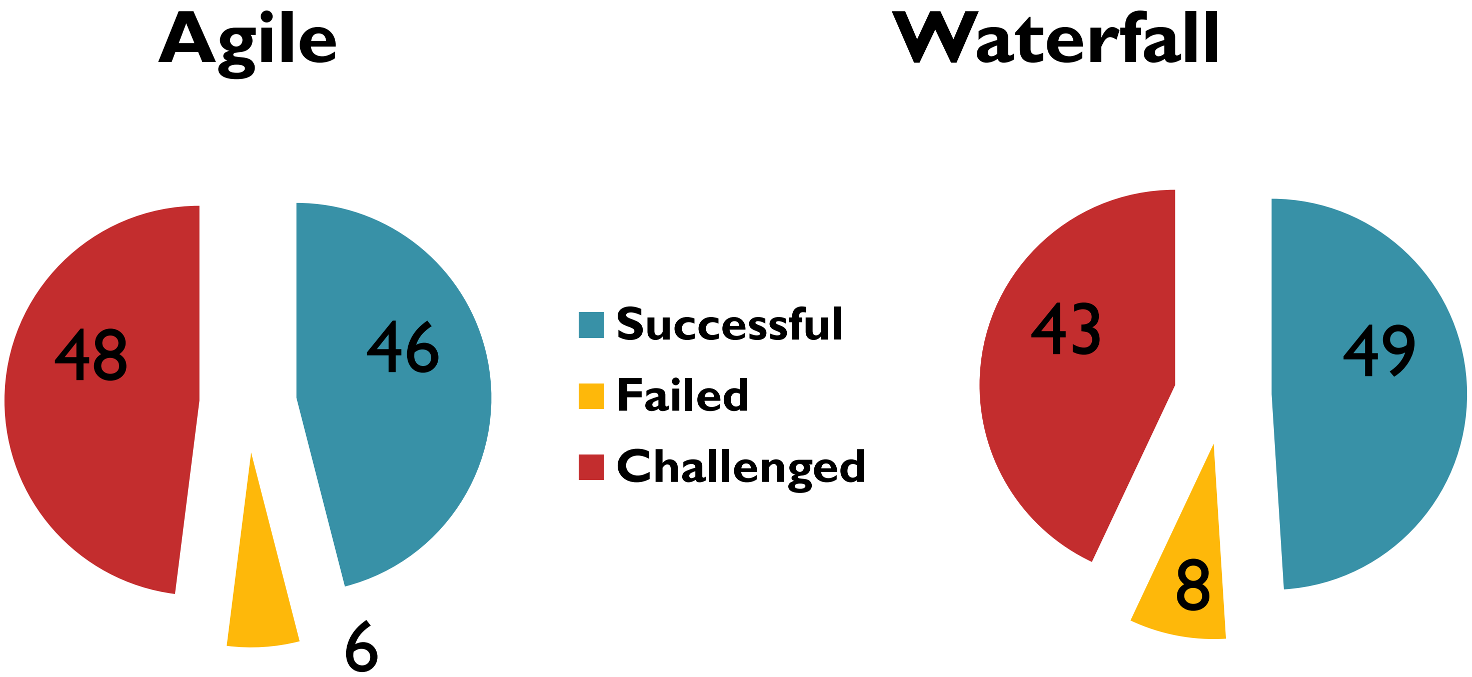


Successful: on time, within budget, customer is happy.
Challenged: late, over budget, less than MMP, customer not happy.
Failed: Cancelled, or delivered but never used.

Source: Chaos Manifesto 2013

Process Methodology (10%)

When we've adopted the top 5 success factors, we get a bonus. Regardless of the methodology, an automatic boost of 10% bringing the probability of success to 85%.



ASQ After-work event: Dec 10, 2013

Source: Chaos Manifesto 2013

∑celerSigma Inc.

Summary

Executive support is very important to a project's success.

Definition of MMP is crucial. Typically, 80% of a product's features rarely get used.

A large project is 10 times more likely to fail than its smaller counterpart.

Stakeholders want it all and want it now. Breaking up a larger project and/or getting them to focus on the critical 20% is not easy. But, unfortunately controlling scope and using a phased approach of incremental delivery of product features is the only viable solution to deliver SOFTWARE THAT WORKS!!

Source: Chaos Manifesto 2013

Thank you.

Samuel Prasad, Ph.D.

∑celerSigma Inc.

sprasad@celersigma.com

631-368-8130