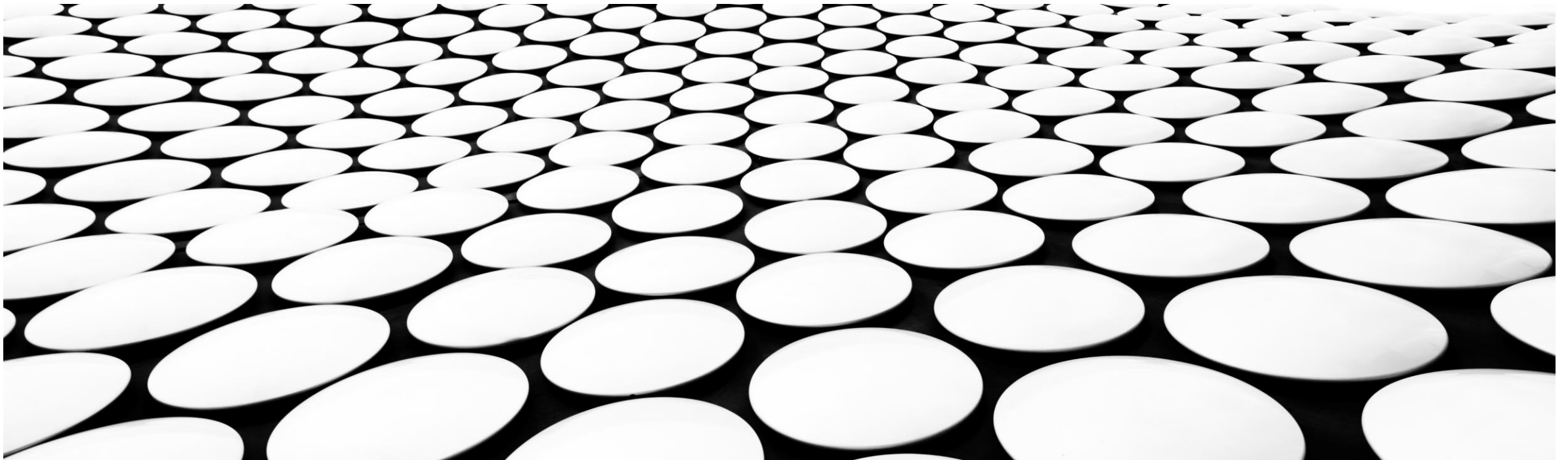

THINGS I WAS NOT TAUGHT IN COLLEGE (BUT WISH I WAS)

ANDY DENINGER



I KNEW HOW TO WRITE CODE (BUT THAT WAS ABOUT IT)

- A Typical CS Curriculum (something is missing)
 - https://cse.ucsd.edu/sites/cse.ucsd.edu/files/undergraduate/CS26%20FA20%20Checklist_0.pdf
 - <https://catalog.ucsd.edu/courses/CSE.html>
- Product Development Life Cycle (PDLC)
 - Product Requirements and Roadmap
 - Agile Development
 - Agile Isn't Enough
 - Design
 - Code Quality
 - Product Quality
 - CI/CD
 - Security and Data Privacy





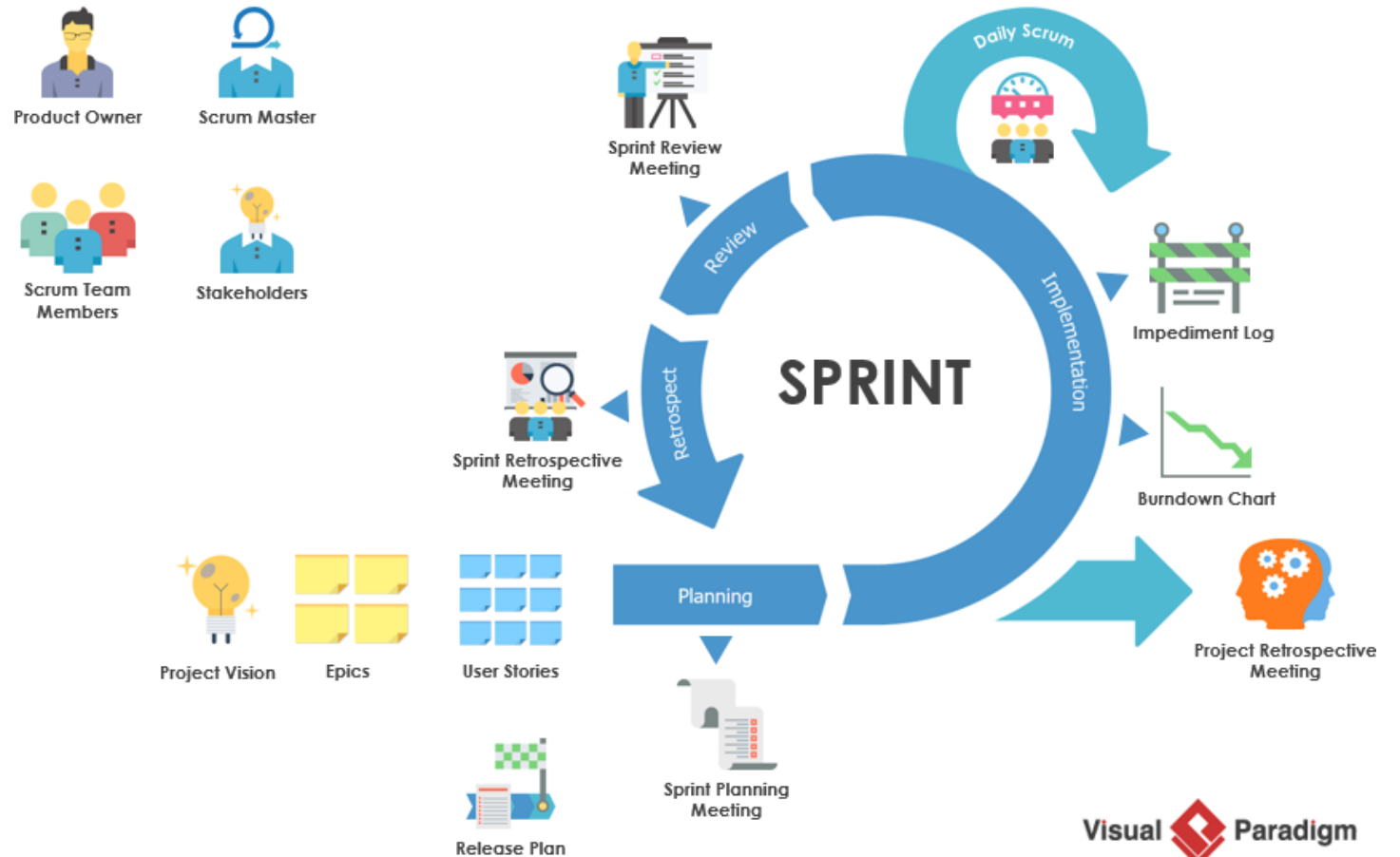
PRODUCT REQUIREMENTS AND PRODUCT ROADMAP

- What makes a good set of product requirements?
 - They are written down
 - They have enough detail
 - They have acceptance criteria
 - They are prioritized
 - They are reviewed with the team
 - They are managed by a sophisticated work management system (Jira, etc.)
 - More here: <https://www.atlassian.com/agile/product-management/requirements>
- Product Roadmap
 - What is your MVP (minimal viable product)?
 - What is the feature set you wish to release together at periodic intervals?
 - More here: <https://www.atlassian.com/agile/product-management/product-roadmaps>

AGILE DEVELOPMENT (SCRUM)

- Practice the SCRUM Rituals Religiously
 - Backlog Grooming
 - Sprint Planning
 - Daily Standup
 - Sprint Demos & Retrospective
 - More here: <https://www.scrum.org/>

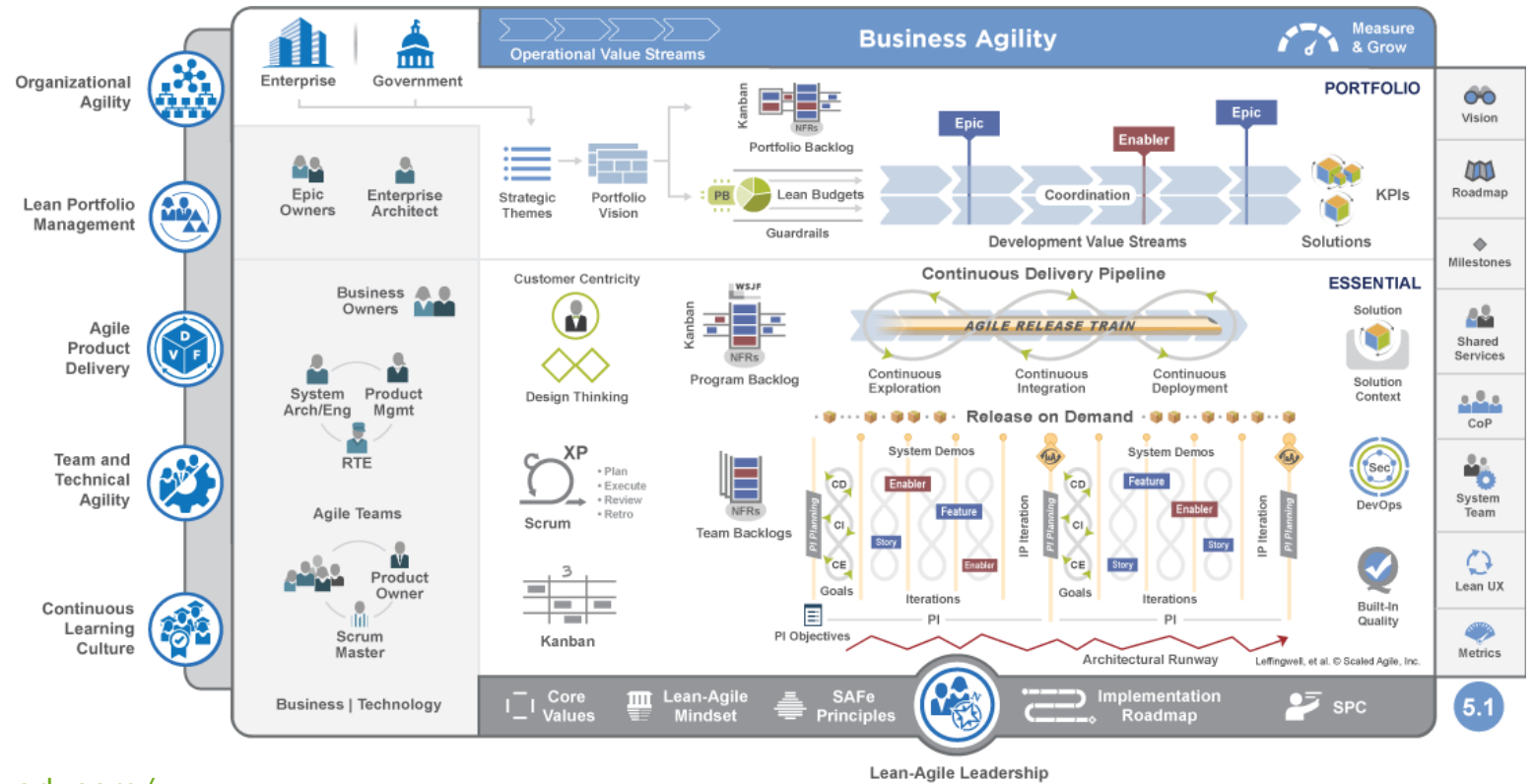
The Agile – Scrum Framework



AGILE ISN'T ENOUGH

- SAFe(ish) - Critical Items

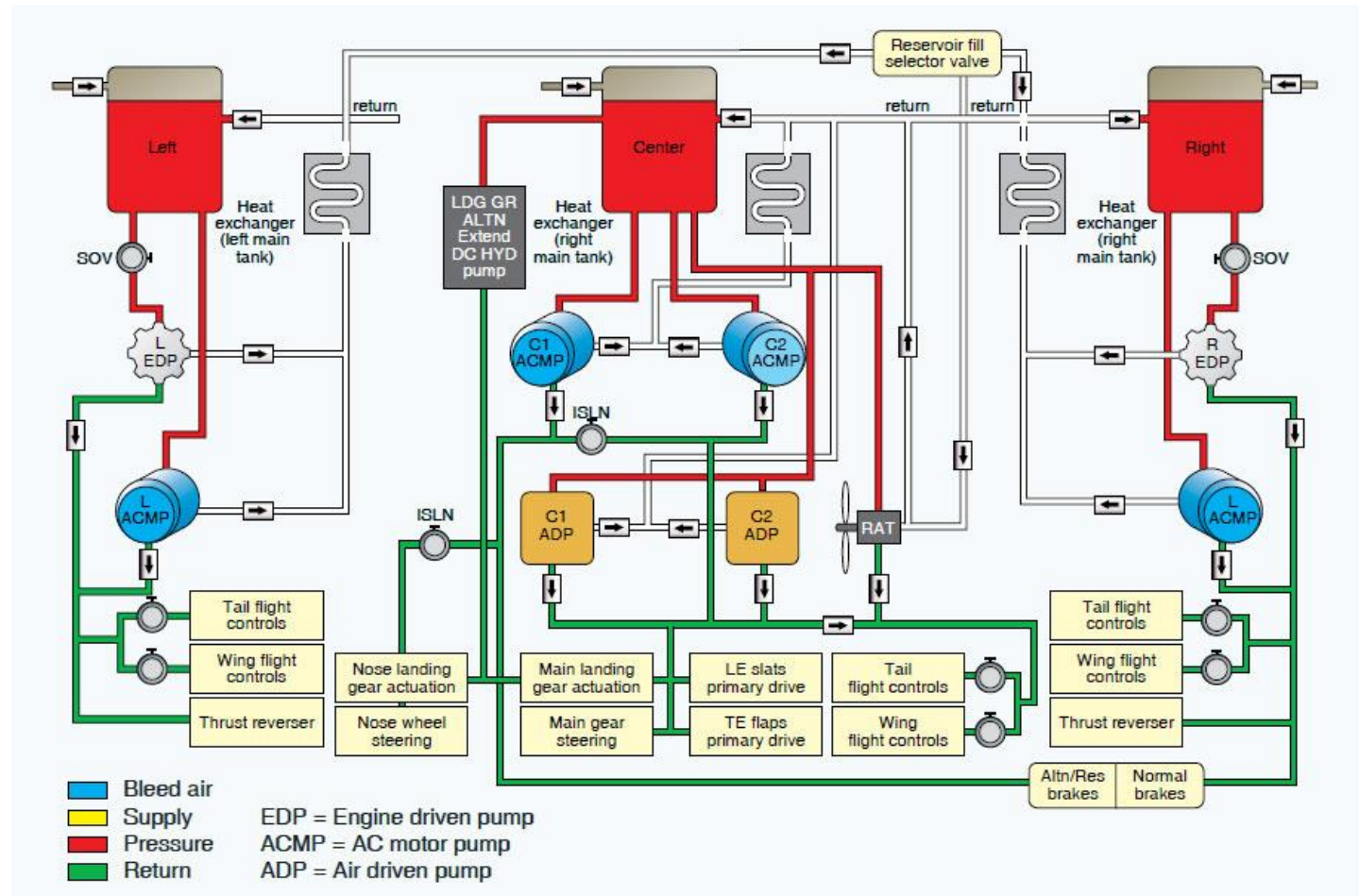
- Program Increment Planning
- Program Increment Tracking
- Release Planning and Readiness
- Scrum of Scrums
- Triage
- Quality Tracking



- More here: <https://www.scaledagileframework.com/>

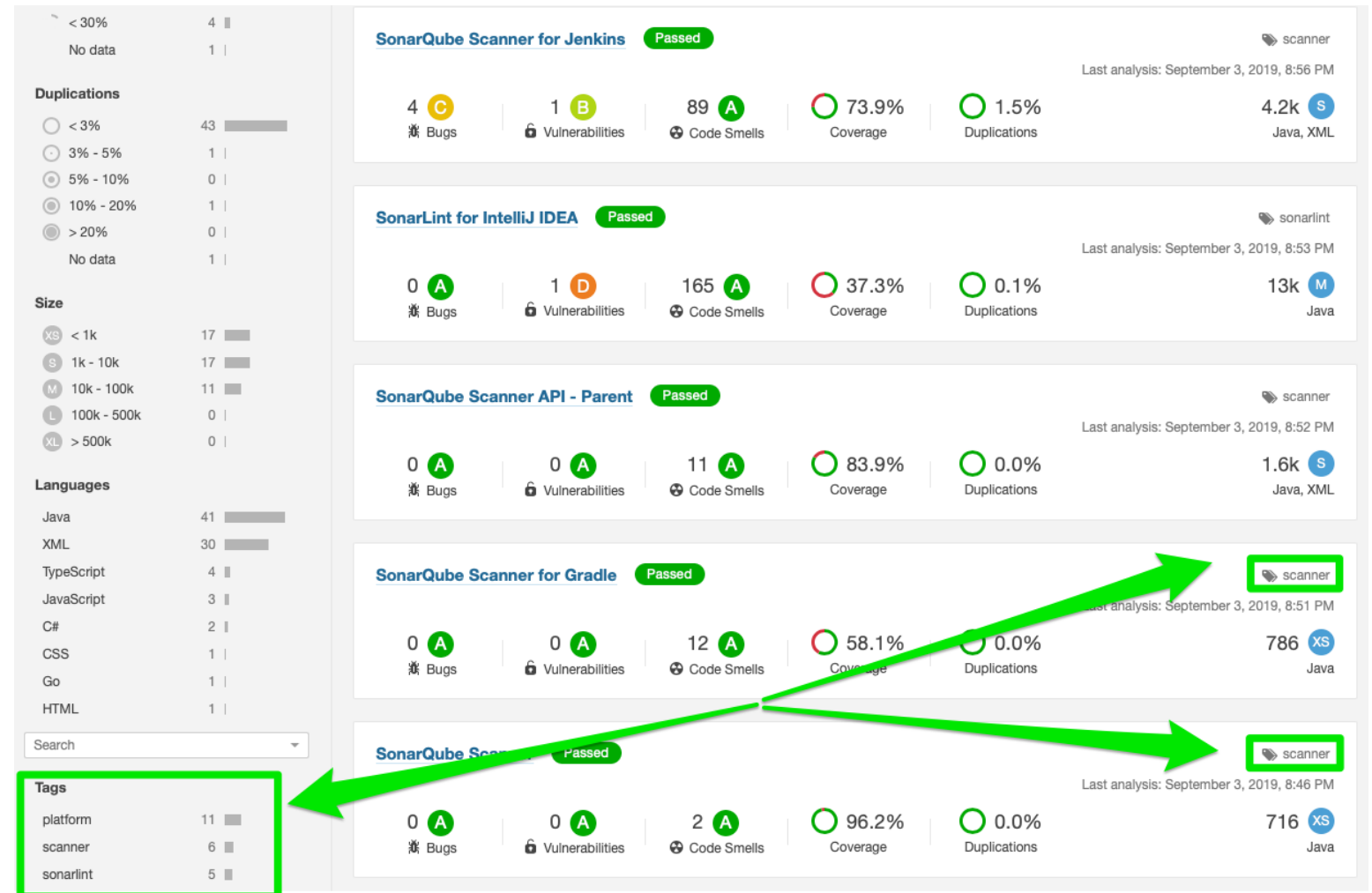
SYSTEM AND COMPONENT LEVEL DESIGN

- System Flows and Sequence Diagrams
- Internal and External System Interfaces
- Billing
- Security
- Documentation & Training
- Installation & Maintenance
- Regulatory
- Performance
- Monitoring
- Scalability
- Support
- Manufacturing
- IT and Networking
- Test
- Deployment
- Environments
- Pro Tips
 - Use a wiki, not Word docs
 - Agile is not a reason to not to design docs



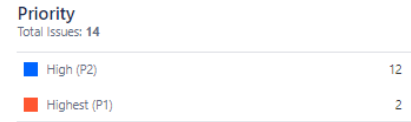
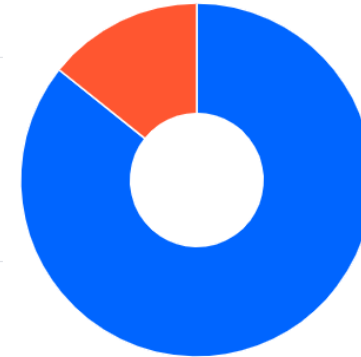
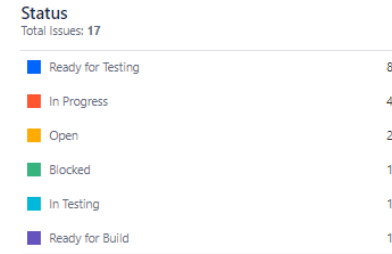
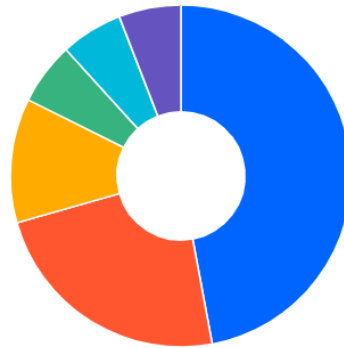
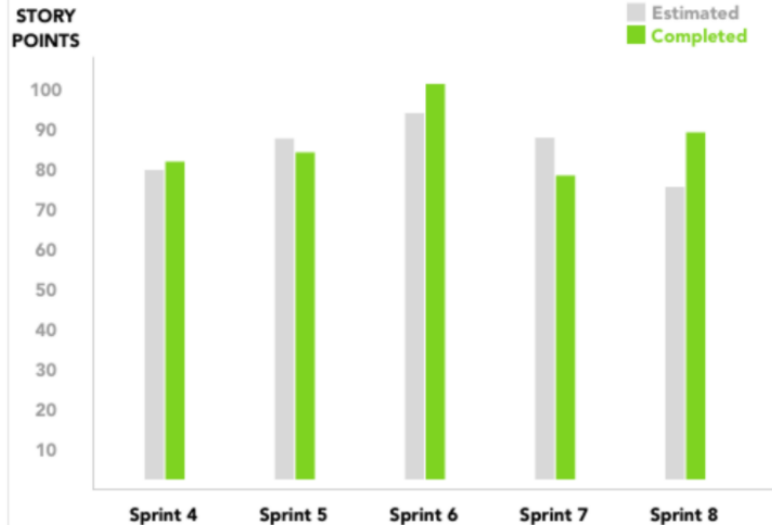
CODE QUALITY

- Work on a branch
- Merge back
- Copyright your source files
- Function Headers
- Comment your code
- Understand your Open Source
- Unit Test
- Static Analysis
- Peer Review

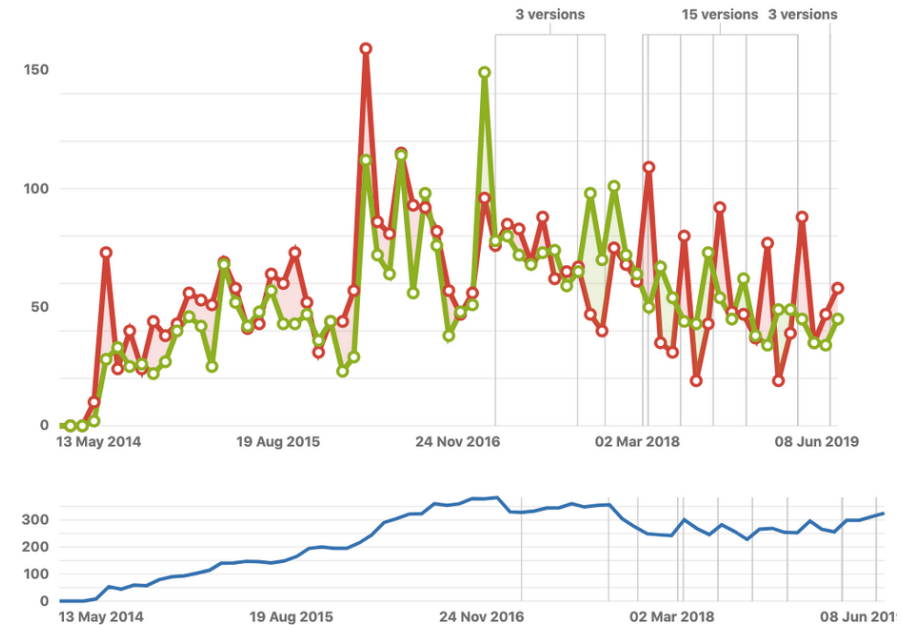


PRODUCT QUALITY

- Don't let Velocity fool you...
- Need a total view of product quality
- Priority and Severity for every bug
- Triage daily, Bug Scrub monthly



Created vs. Resolved Chart: All-ECSE-CMRSCI



Issues in the last 2,000 days (grouped monthly) [View in Issue Navigator](#)

- Created issues (3846)
- Resolved issues (3521)

CI/CD – CONTINUOUS INTEGRATION & DELIVERY

- Every check-in

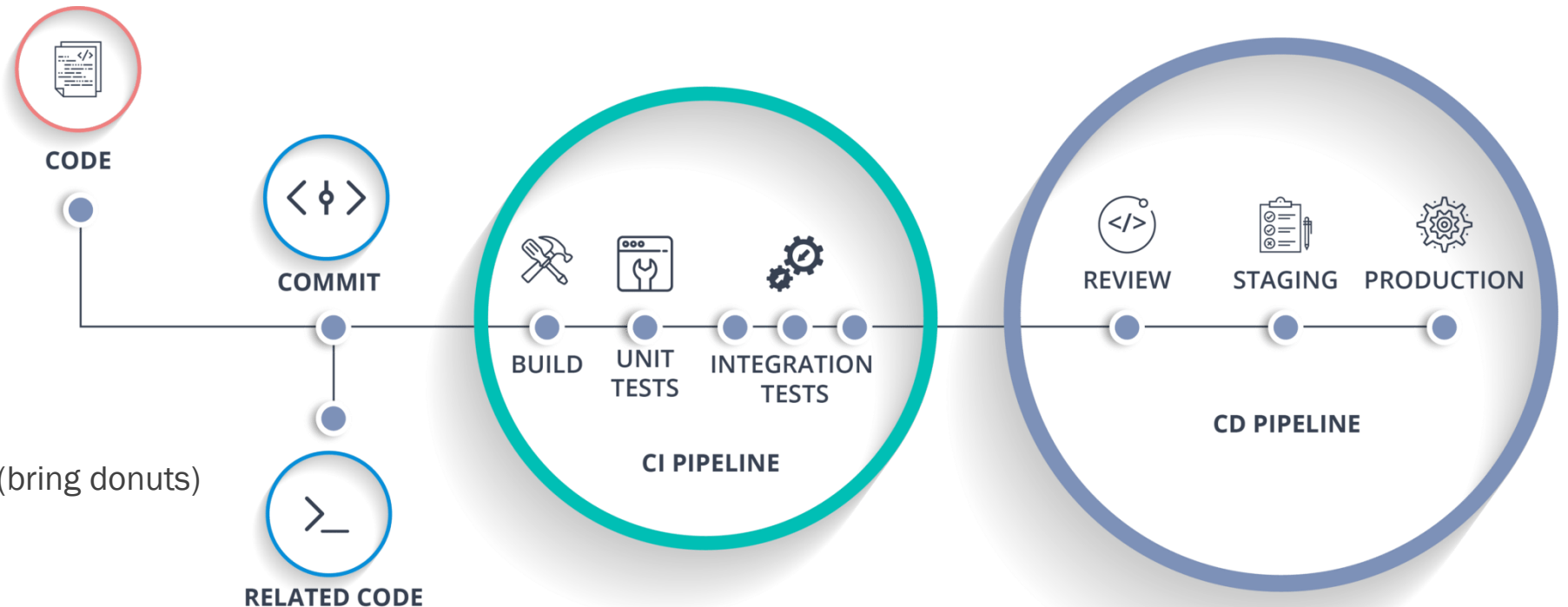
- Build
- Unit tests
- Static Analysis
- Report

- Extra credit

- Integration Tests

- Pro Tip

- DevOps is your friend (bring donuts)



<https://www.jenkins.io/>

SECURITY AND DATA PRIVACY

- Utilize Security and Data Privacy experts in your organization (if they exist)
- OWASP Top 10 - <https://owasp.org/www-project-top-ten/>
- NIST Cybersecurity Framework - <https://www.nist.gov/cyberframework>
- IOT Security - [California SB-327](#)
- California Consumer Privacy Act - <https://oag.ca.gov/privacy/ccpa>
- General Data Protection Regulation - <https://gdpr-info.eu/>

