Consensus Measures for Continuous Iterative Development

An industry/DoD collaboration

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for PSM / NDIA / INCOSE CID Measurement WG

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Overview – SW Measurement Framework

PSM, NDIA, and INCOSE are collaborating on development of a consensus industry measurement framework for agile/CID

NDIA/INCOSE/PSM Continuous Iterative Development and Sustainment WG
PSM CID Measurement Framework

Continuous Iterative Development (Agile) Measurement Framework

The draft materials on this web site provide recommendations for measurement of continuous iterative developments (CID). The white paper includes an overview, and a series of diagrams and an ontology, to describe for the development approaches and terminology used. The paper includes a measurement framework detailing common information needs and measures that are effective for evaluating CID approaches. This is documented in the “Information Category-Measurable Concept-Measures” (ICM) Table. The information needs address the enterprise, product, program, and team perspectives, as described in the ICM table. The framework also identifies an initial set of measures that have been identified as being practical measures to address these information needs. For the highest priority measures, sample measurement specifications have been developed that detail the information needs, concepts, and measures currently being updated by the working group. An updated release is scheduled for 20 December 2019.

Welcome to the Official PSM Web Site!

http://psmsc.com/CIDMeasurement.asp

Work products (v0.5 draft > v1.0 final Dec 2019)

ICM Table (Information needs, Concepts, Measures)

White paper (intro, concepts, terms)

NDIA Continuous Iterative Development and Sustainment WG

NDIA Continous Iterative Development and Sustainment WG

PSM, NDIA, and INCOSE are collaborating on a consensus industry/government measurement framework for continuous iterative development. Final products will be distributed for NDIA approval to publish in December.
## Candidate Measures

### DSB Measures
- **Deployment Rate**
  - Sprint burndown
  - Epic and release burndown
  - Velocity
  - Cycle time (control chart)
  - Cumulative flow

### DIB SWAP Measures
- **Time from launch to MVP** (initial lead time)
- **Time to field high priority functions** (incremental lead time)
- **Time to fix new security hole** (patch cycle time)
- **Time from code commit to use** (factory cycle time)
- **Time for automated regression test**
- **Time required to restore service** (MTTR)
- **Automated test coverage**
- **# of bugs caught in test vs. field** (defect containment)
- **Change failure rate** (rollback)

### Agile Metrics
- **Agile Process Metrics**
  - Velocity
  - Cycle time
  - Cumulative flow
- **Agile Quality Metrics**
  - Defect count
  - Number of blockers
  - Defect containment
- **Agile Product Metrics**
  - Delivered features
  - Delivered value points
  - Level of user satisfaction
- **DevSecOps Metrics**
  - Mean Time to Restore (MTTR)
  - Deployment frequency
  - Change failure rate – defect counts
  - Total cost estimate

### Code Quality Metrics
- **Automated test coverage of test specs / code**
- **# of bugs caught in test vs. field** (defect containment)
- **Change failure rate** (rollback)

### Draft OUSD A&S SW Policy
- **Story points**
- **Velocity**
- **Story completion rate**
- **Sprint burndown chart**
- **Recidivism rate**
- **Defect count**
- **Number of blockers**
- **Delivered features**
- **Delivered value points**
- **Level of user satisfaction**
- **Mean Time to Restore (MTTR)**
- **Deployment frequency**
- **Change fail rate – defect counts**
- **Total cost estimate**
- **Burn rate**

### PSM **Draft** Measures
- **Burndown (sprint/release)**
- **Velocity**
- **Acceleration**
- **Cycle time**
- **Lead time**
- **Release frequency**
- **Defect containment**
- **Defect escapes**
- **Defect resolution**
- **Automated test coverage**

Core PSM framework:
- Cost (est. vs. actual)
- Schedule (est. vs. actual)
- Staffing
- ...etc.

See PSM framework for details. Additional candidate measures are defined in draft ICM table but not implemented in first release.
Aligning the PSM framework and measures with DoD SW policy and enterprise improvement

Measures, goals, and priorities are tailored and aligned based on objectives and information needs

Program ➤ Product ➤ Enterprise

Consistent measures with operational definitions

References:
- Defense Science Board, Design and Acquisition of Software for Defense Systems, Feb 2018
- Defense Innovation Board Metrics for Software Development, version 0.9, 9 Jul 2018