Measures for DevOps Pipelines

Evolving Software Measurement

Dr. Bill Curtis
Executive Director

CISQ
Consortium for Information and Software Quality
New CISQ Project on DevOps Measurement

DevOps Measurement Framework

- Value chain philosophy
- Business outcome measures
- Flow measures for cycle time, waiting time, productivity, etc.
- Architecture measures for flow optimization, blockages, etc.
- Local measures aggregated across flow to predict outcomes

Prediction

Business and operational outcomes
Measuring the DevOps Pipeline

Development  Operations  Business outcome

Traditional productivity  DevOps productivity  Business productivity

• Flow measures:
  - cycle time
  - work in process
  - throughput

• Support issues:
  - waiting time
  - blockages
  - arrival rate
  - departure rate
Measuring Architectural Impact on DevOps

Theory

Microservices architecture

Reality

Potential Measures:
- Architectural complexity
- % app potential for micro-services
- # of architectural rules violated
- Rate of architectural degradation
- Flow impedance of dependencies
- Actual vs potential flow rate

Extracting communities of cohesive functionality
Technical Debt and Pipeline Impedance

Technical Debt — the future cost of defects remaining in code at release, a component of the cost of ownership

**Technical Debt**

- **Principal borrowed**
- **Interest on the debt**
- **Opportunity cost**
- **Liability from debt**

**Business Risk**

- **Opportunity cost** — potential benefits from new capability rather than retiring technical debt
- **Liability** — business costs related to outages, breaches, corrupted data, etc.

**Interest** — continuing IT costs attributable to weaknesses causing technical debt, i.e., higher maintenance costs, greater resource usage, etc.

**Principal** — cost of fixing problems remaining in the code after release that must be remediated

- % work in progress
- Business outcome
- Blockages
- Throughput
- Cycle time
- % work in progress
Dr. Bill Curtis  
Executive Director  
bill.curtis@it-cisq.org

Tracie Berardi  
Program Director  
tracie@omg.org

Send feedback on the Data Privacy and Protection Measure to  
info@it-cisq.org

www.it-cisq.org