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Software Cost Estimation for Project Control

ICEAA, February 26, 2024

AGENDA

Characteristics of Agile Programs

A Revised Approach to Planning Phase Estimates

Estimation for Project Control

Automated Functional Size Measurement

About Me

Managing Partner of Logapps. Over 20 years experience in cost estimation supporting Defense and Federal Civil agencies. BA and MBA.

What's Changed?

*Agile

*Product Delivery Cycles

*Contracting

Characteristics of Agile Programs

Vision and customer value driven

- Requirements are minimized and change over time

Iterative, feature driven development

- Delivery every cycle (1 – 4 weeks)

Collaborative

- Self organizing, self managing with short feedback loops

For the analyst this means:

- Fewer requirements (or only high level)
- Fixed budgets
- Fixed team size

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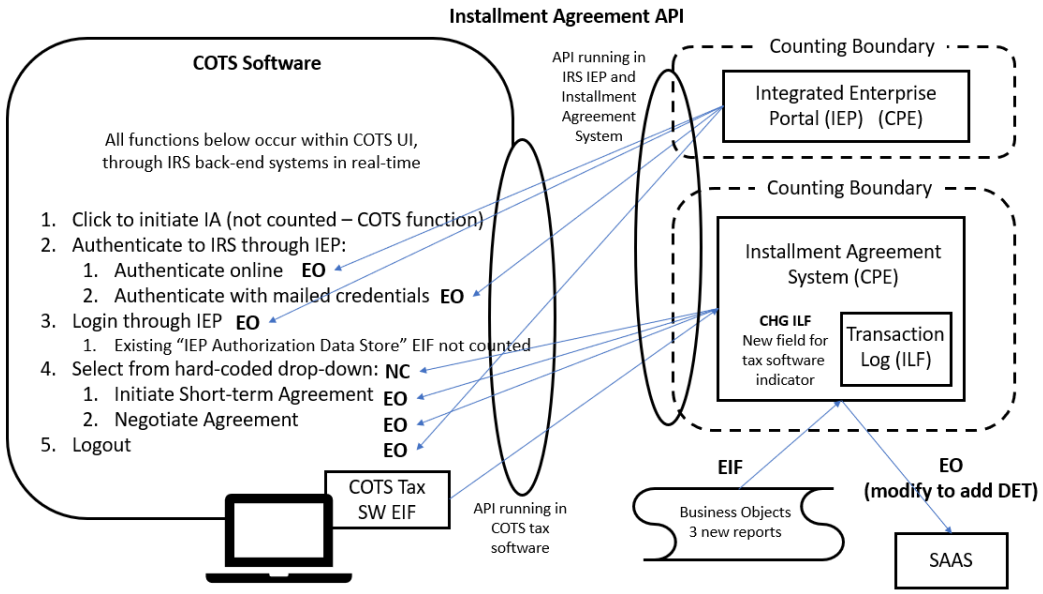
Approach – When There's No Requirements

Scope Elaboration

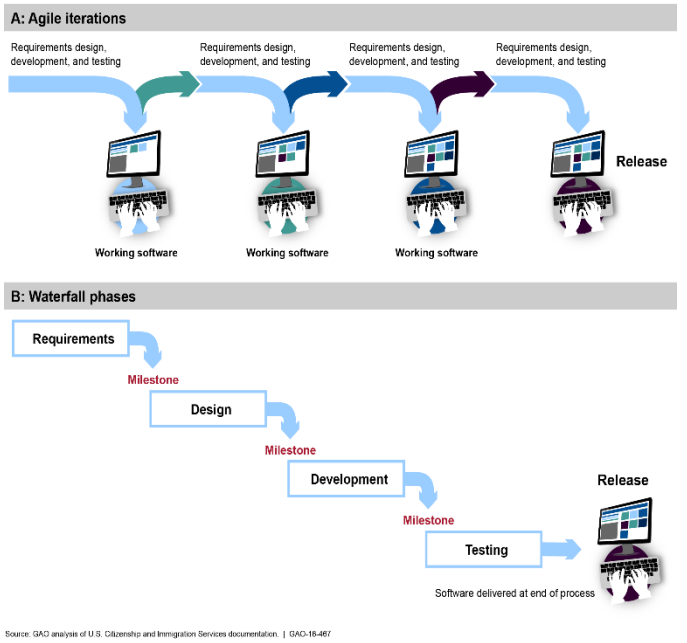
- Functional sizing expert can 'white board' system boundary, define interfaces, and diagram data flow by interviewing Product Owner or System Design SMEs
- Estimator, with PM or SME, translate the derived "solution concept" into user stories that can be measured
- Benefits:
  - Identifies scope and discrete functionality of projects
  - Identifies complexity and possible risks
  - Scope elaboration meetings also increase confidence in technical SMEs of estimation process



Approach – When There Are Requirements

Requirements Analysis

- Treat project backlog as equivalent to "functional requirements" and size in function points
- Identify delivery rate (productivity) which is a measure of the Agile teams' capacity to deliver, often characterized as function points per month or year
- Apply risk to account for evolving user requirements



*Avoid estimation based on Agile team staffing and expected sprint iterations, as the estimate should be tied to scope

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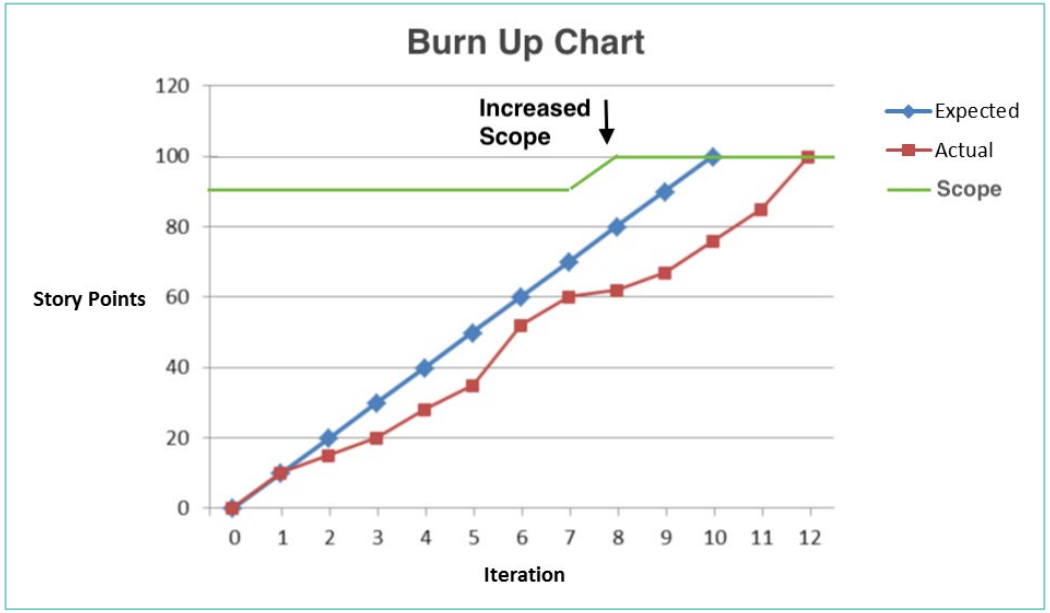
Project Control: In-Flight Projects

Burn Down / Burn Up Charts

- For projects that are partially complete, Burn Up charts are an excellent tool to forecast remaining effort
- Burnup charts track iterations and velocity, identify bottlenecks, and forecast completion date
- Burnup charts typically list Story Points on Y axis, though function points would also be suitable



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Project Control: O&M

- Software maintenance has often been estimated as level of effort, or as a function of software development which tends to overestimate software maintenance in Agile environment
- Most delivery organizations have backlog of trouble tickets in tools like Jira
- Recommendations
  - Track defect repairs to develop maintenance productivity
  - Use Automated Function Point Counting tools to estimate effort and cost of maintenance (especially useful for Continuous Integration/Continuous Development (CI/CD) model, and the DevSecOps framework)
  - Forecast software maintenance effort from defect backlog using FPs

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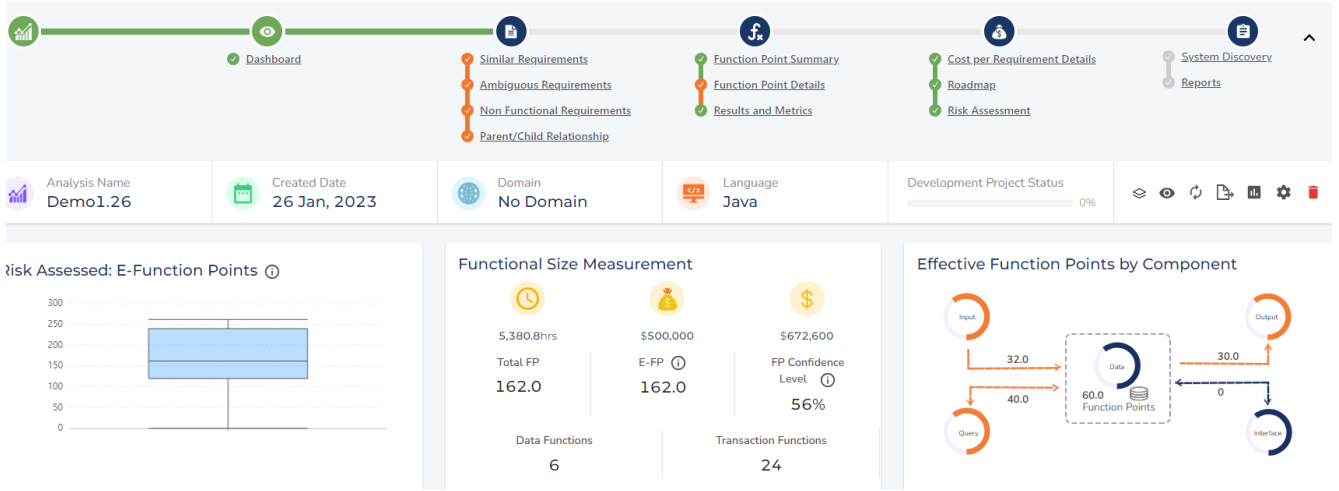
Automated Functional Size Measurement

- With significant sizing analysis required with Agile Project analysis, tools can be leveraged to streamline the sizing process
- Logapps' Cadence is a SaaS tool designed to ingest and validate software requirements, estimate software size and produce cost estimates
  - Using natural language processing (NLP) and a robust rules engine, you can reduce the time it takes to inspect and plan projects.
  - By maintaining counts down to the requirement or user story, you can keep pace with Agile projects and adjust estimates as you go.



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Summary

- Project control is a part of solution delivery that needs cost estimation
- SW Cost Estimators
  - have to think differently (even creatively) in order to meet the needs of Program Managers or Product Owners
  - have to become agile themselves - working at the speed and cadence of the program
- Software Cost Estimation should be involved in all phases of a program, even O&M to make an impact on budgets

Contact us
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THANK YOU

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