Method Points

Towards a Metric for Method Complexity

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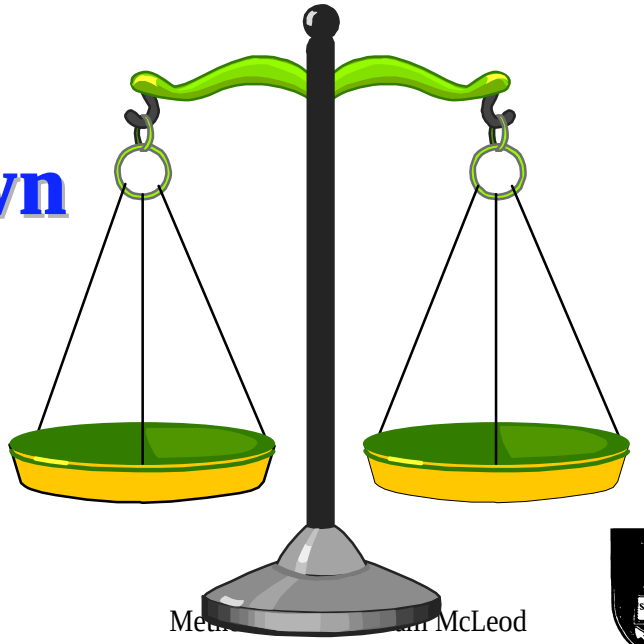


Outline

- Methods Engineering
  - Definition
  - Objectives
  - Need for Complexity Metric
- Method Modeling
- Function Points
- Method Points
  - Graphic, Tabular and Textual Deliverables
  - Task Complexity
  - An example(I.E. vs UML)
- Suggestions for Future Work

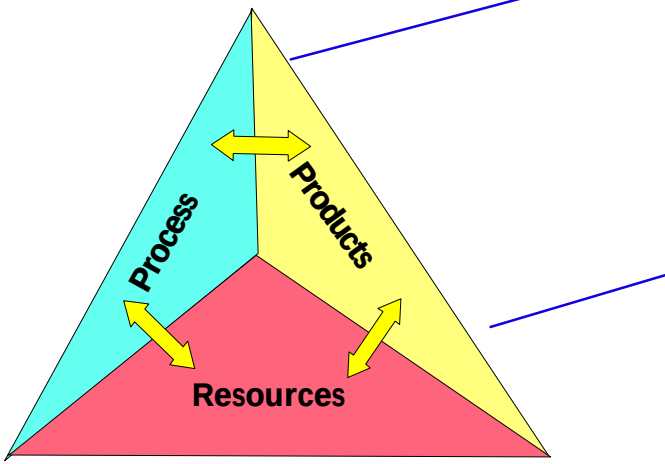
Methods Engineering

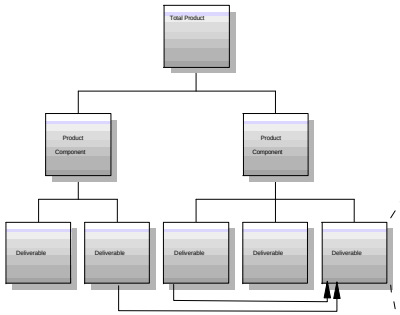
- The process whereby methodologists develop and enhance methods related to information systems in a disciplined way
- "Method engineering is the coordinated and systematic approach to establishing work methods" - James Odell
- Objectives
  - Structured, repeatable process for practitioners
  - Integration of techniques -> comprehensive approach -> broader problem
  - Incorporation of more powerful / sophisticated techniques
  - Specification of capable model notation and representation
- Difficulties
  - Method success dependent upon fit to problem and
  - difficulty of becoming proficient in the use of method
  - Complexity affects ease of use and quality of application
  - BUT no published techniques to measure complexity of methods to make quantitative comparisons
- Proposal
  - Develop a metric along similar lines to function points for information systems
  - Measure complexity via meta-data not size via deliverables

Modeling Methods

Product Facet Node Structure

McLeod Method Model





Product Name
Parent
Children
Prerequisites
Subsequents
Representation
Data Content
Purpose
Validation Rules
Example
Quality Standards
Associated Tasks
Associated Resources
Permitted States
Estimating Method
Tool Support

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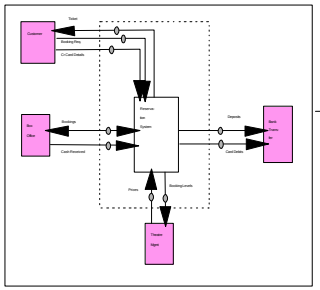
Function Points

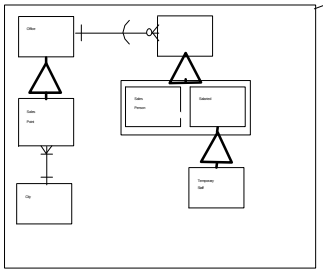
Function Point Calculation



Context Diagram

Inputs, Outputs, Queries, Interfaces

Main Files



Entity or Object Model

Environmental Factors

Determine Raw FP Count

Determine Adjustment

Calculate Adjusted FP Count

Method Points Process

- Express the method i.t.o. tasks, resources and deliverables
- Determine the counts for each type of deliverable
  - Graphic, Tabular, Textual
- Determine and add the count for task complexity

- Graphic Deliverables(weight)
  - Symbol types(1), Link types(.5), Embelishments(.5), Decomposition(.5,.5)
- Tabular Deliverables (Col .25,Embel .25, Decomp .5)
- Textual Deliverables (Sect .25,Pg .25, Hyperlink .5, Hierarchy .5)
- Compensate for Task Complexity

An Example: UML vs I.E.

- Static Structure Diagram vs Entity Relationship Diagram
- Use Case Diagram vs Context Diagram
- Static Structure Diagram (Score: 16.5)
  - Symbols: Class, Type, Template, Ternary Association (4)
  - Link types: Interface, Imports, Binary Association, Generalisation, Dependency, Refinement (3)
  - Embellishments: Bound Element, Utility Modifier, MetaClass Modifier, Pathname Modifier, Various on Associations, Details, Constraints, Derived Element, Navigation Expression (7)
  - Decomposition (2.5)
- ERM (Score: 4.5)

Example Continued

- Use Case Diagram (Score: 5.5)
  - Symbols: Actors, Use Case (2)
  - Link types: Communication, Extension, Uses, Refinement (2)
  - Embellishments: Boundary (.5)
  - Decomposition (1)
- Context Diagram (4)
- Findings and field validation
  - UML SSD considerable more complex than IE ERD
  - Use Case only somewhat more complex than Context
  - Practitioners very this

Further Work

- Complexity is one half of the story
- also need *comprehensiveness*
  - Lifecycle Coverage
  - Dimensions
  - Integration
- Adjustment for resource demands
- Uses
- Refinement of weights in the model
- Benchmark = 1 for I.E. improving with time
- Help me!

LiveMethod