Lecture 17
Validating the Requirements:
Function Point Counting


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Com S/SE 409/509

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SRS Project Assignment due 10/28

How much will it cost? (Appendix C in textbook)

You'll sometimes be asked to estimate the cost of developing a software product. What can you say?

1. Labor is the biggest part of product's cost. So, how much effort will it take?
2. Effort depends mostly on product's size. So, how big will it be?
3. Size depends mostly on product's capabilities. So how much functionality will it have?

* *Function points* measure the amount of functionality in a software product

Measuring effort

- Rule of thumb #1, based on many systems, where FP = number of function points [C. Jones, in Robertsons]:

Effort in person months = (FP/150) x ($FP^{0.4}$)

Ex:

FP for a new product = 1000

Effort in person months = 1000/150 x $1000^{0.4}$

Effort to build new product ~ 106 person months

- Rule of thumb #2: **Effort for RE is about 1/3 of this total**

Effort for RE of this new product ~ 35 person months

Underlying assumptions

- The amount of functionality in the work is a direct result of the data it processes
  - the more data there is & the more complicated it is, the more functionality is needed to process it
  - we can measure amount of data & extrapolate the functionality from it
- the more functionality in the work, the more effort
- the more effort, the more cost

Counting the Function Points

- FP count is based on 5 parameters: inputs, outputs, inquiries (=time-triggered outputs), internal files, external files
- Data flow in context diagram gives you the first 3 of these 5 parameters (what we'll use)
  - each flow triggers some functionality or is produced by some functionality
- Function point counting uses table lookups

Ex: Counting the Function Points for an input use case

input use case = an external system supplies data

Ex: "Record reading transmitted by Weather station"

- references 2 classes: weather station and temperature reading
- weather station has 7 attributes (estimate): station id, temp, moisture content of road surface, data, time, & 2 other attributes
- Table lookup for input: Fig. C.4:
- See Appendix C for other tables

	Data Attributes:	1-4	5-15	16+
Classes Referenced:				
< 2		3	3	4
2		3	4**	6
>2		4	6	6

4 function points

Range of uncertainty

What if you don't have enough info to do all 5 parameters?

Then there's more uncertainty about the number of FPs:

Range of uncertainty based on # of parameters:

- only 1 parameter: +/- 40%
- the 3 in context diagram: +/- 15% [inputs/outputs/timed events]
- All 5: +/- 5%

Risks to avoid


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- Iterate through the life of the project to avoid inaccuracy
- Use ranges in your estimates
- Use multiple models (COCOMO is a widely used alternative; more references at end of App. C)
- Avoid silver bullet fallacy
- Note: many organizations use their own rule of thumb (based on their experience with past projects)