SS ZG622:

Software Project Management

Contact Session # 5

Prof. Narasimha Bolloju, BITS-Pilani, Hyderabad Campus
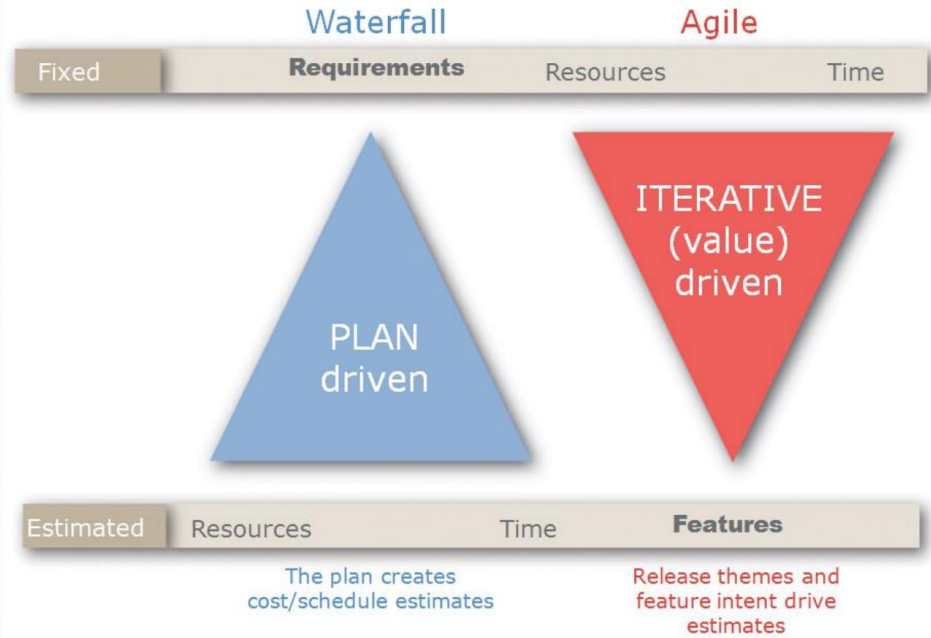
BITS Pilani
Pilani | Dubai | Goa | Hyderabad

Outline

- Effort estimation in plan-driven processes
- Function point estimation method
- Function points to effort
- Function points to SLOC

The Agile Paradigm Shift

SEER
by GALORATH

	Waterfall		Agile
Fixed	**Requirements**	Resources	Time

PLAN driven

ITERATIVE (value) driven

Estimated	Resources	Time	**Features**

The plan creates cost/schedule estimates

Release themes and feature intent drive estimates

Mux-Core Sales – Expected functionality

As a/an	I want to	So that
Supervisor	view daily sales performance of movies on dashboard	I can provide my feedback to my manager
Manager	view sales performance of various movies and screens	I can analyze sales performance
Manager	compare sales of movies with those at other multiplexes	I can analyze differences and take necessary actions
Manager	set discounts on specific shows	the multiplex can attract more customers
Manager	receive notifications about sales deviations	I can review the sales pattern and take necessary actions
Counter Staff	sign in for a sales duty session	I can sell tickets to customers
Counter Staff	sell movie tickets to customers	they can be admitted to watch movies
Counter Staff	sign out of sales duty session	my session details can be recorded and closed
Customer	search for movies and shows	I can select a movie show I am interested in
Customer	register for a loyalty card	I can buy tickets online and rate movies
Customer	buy tickets for a selected movie show	I/we can be admitted to watch that movie show
Customer	rate and review movies I have seen	other customers can read from my rating/review
Customer	view my loyalty card points balance	I can purchase tickets with those points

Activity CS5 #1

Give a rough estimate of
the total effort in person-months for developing
the **Mux-Core sales system** with the
requirements listed on the previous slide
(pollev.com/narsibolloju019)

Overall effort estimation

- Based on specifications of a software application
- Typical approaches: function point method, SLOC/KLOC method, object points method, OR purely experience-based
- Combines programmer productivity (historical data), development and implementation technologies, and other application characteristics
- Often the effort is represented in terms of person-months

Activity CS5 #2

Give a rough estimate of
the total effort in person-months for developing
the **Mux-Core sales system** considering
individual functions/user stories

Use this Google Sheet first and then submit your
estimate in Chat

Function Points Calculation Sheet

Function Count

Function point estimation

Item	Item Description	Complexity	Count	Weight	Weighted Count	
1	Number of User Inputs	Simple	0	3	0	
		Average	0	4	0	
		Complex	0	6	0	
2	Number of User Outputs	Simple	0	4	0	
		Average	0	5	0	
		Complex	0	7	0	
3	Number of User Inquiries	Simple	0	3	0	
		Average	0	4	0	
		Complex	0	6	0	
4	Number of Files	Simple	0	7	0	
		Average	0	10	0	
		Complex	0	15	0	
5	Number of External Interfaces	Simple	0	5	0	
		Average	0	7	0	
		Complex	0	10	0	
Total Weighted Function Count (FC)					**0**	

Function point estimation

Complexity Factor

Factor	Description	Rating 0=Irrelevant 5=Essential
F1	Reliability and backup recovery	
F2	Data communications	
F3	Distributed processing	
F4	Performance	
F5	Operate on existing system	
F6	On-line data entry	
F7	Data entry over multiple screens	
F8	Master files updated on-line	
F9	Complex inputs, outputs, files & inquiries	
F10	Complex internal processing	
F11	Code needs to be reusable	
F12	Need conversion and installation	
F13	Multiple installations of the system	
F14	Easy to change and use	
Complexity Factor (CF) = sum of ratings		0

Function Points

Function Points (FP) = FC x (0.65 + 0.01 x CF)	0

Function point estimation - Complexity example

Number of **views contained**	Number and source of **data tables**		
	Total < 4 (<2 servers; <3 clients)	Total < 8 (<3 servers; 3 to 5 clients)	Total > 7 (>3 servers > 5 clients)
<3	simple	simple	average
3 to 7	simple	average	complex
>7	average	complex	complex

https://www.gristprojectmanagement.us/software-2/albrecht-function-point-analysis.html
https://www.gristprojectmanagement.us/software/albrecht-function-point-analysis.html

CS5 #3 - FP estimation

Estimate the function points for the specified functionality of Mux-Core system

Instructions:

- Make a copy of this document "[CS4 estimating function points](#)"
- Estimate function points for F2 to F6 (for F1 it is already estimated)
- Post the estimated function points into the chat window

FP productivity based on programming language (only an example)

Language	Hours per FP	FP per month
ASP*	06.1	28
Visual Basic	08.5	20
Java	10.6	16
SQL	10.8	16
C++	12.4	14
C	13.0	13
PL/1	14.2	12
C#	15.5	11
COBOL	16.8	10
ABAP	19.9	9

http://www.webratio.com/website/documentation/Case_Study_Productivity_with_WebRatio.pdf

SLOC for function point - programming languages

	QSM SLOC/FP Data			
Language	Avg	Median	Low	High
ABAP (SAP) *	28	18	16	60
ASP*	51	54	15	69
Assembler *	119	98	25	320
Brio +	14	14	13	16
C *	97	99	39	333
C++ *	50	53	25	80
C# *	54	59	29	70
COBOL *	61	55	23	297
Cognos Impromptu Scripts +	47	42	30	100
Cross System Products (CSP) +	20	18	10	38
Cool:Gen/IEF *	32	24	10	82
Datastage	71	65	31	157
Excel *	209	191	131	315
Focus *	43	45	45	45
FoxPro	36	35	34	38
HTML *	34	40	14	48
J2EE *	46	49	15	67
Java *	53	53	14	134
JavaScript *	47	53	31	63

BITS Pilani, Deemed to be University under Section 3 of UGC Act, 1956