

The Key to Success





This session is being recorded.



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CS352 Project Management for Computer Scientists

10. Finale / You Decide



interact at:

warwick.ac.uk/pm4cs/10

Dr. Ian Saunders

Week	Lectures		Seminars			Individual Report		
	Topic	Guest	Case Study	Exercises	Submission	Chapter	Submission	Marking
1	Specification			Specification				
2	Initiation		Selection		Pitch			
3	Scope / Time			Scope/Time				
4	PRINCE2	PRINCE2	Initiation			Ch.1 Initiation		
5	Budgeting			Budgeting			Self-assess	
6	Lean/Agile 1	Waterfall / Agile	Planning			Ch.2 Planning		
7	Lean/Agile 2	Lean		Scrum/Kanban		Ch.1-2		
8	Risk	Risk / Finance	Monitoring				Review Ch.1-2	
9	Teamwork	Large Projects	Prepare	Risk		Ch.3 Execution		
10	Revision		Presentation		Presentation	Ch.4 Monitoring		
11						Ch.1-4		
Term 2							Review Ch. 1-4	

Skipped content

CS352 Project Management for Computer Scientists
3. Scope & Time Management
CPM: Crashing, Float Time

CS352 Project Management for Computer Scientists
3. Scope & Time Management
PERT and Normal Distributions

CS352 Project Management for Computer Scientists
2. Project Initiation
4. PRINCE2®
PMBOK vs PRINCE2®

CS352 Project Management for Computer Scientists
7. Lean and Agile
Part 2
Scaling Agile

Quiz

Quiz!
warwick.ac.uk/pm4cs/10

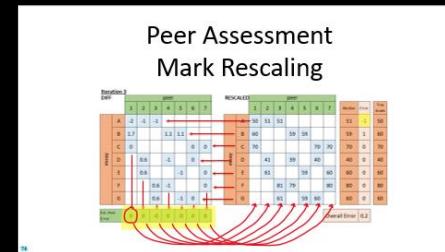
Survey

CS352 was brought to you by:
Ian Anna Ayse Hok Paritosh
warwick.ac.uk/pm4cs/survey/
HAVE YOUR SAY
Your feedback is greatly appreciated ☺
5 MINS

Q&A



Miscellaneous



Project Presentation
warwick.ac.uk/pmc/s/assignments/presentation/

- 5 minute "business pitch" + questions
- You don't all need to speak, but you should all contribute (and attend session)

Wrap Up





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3. Scope & Time Management

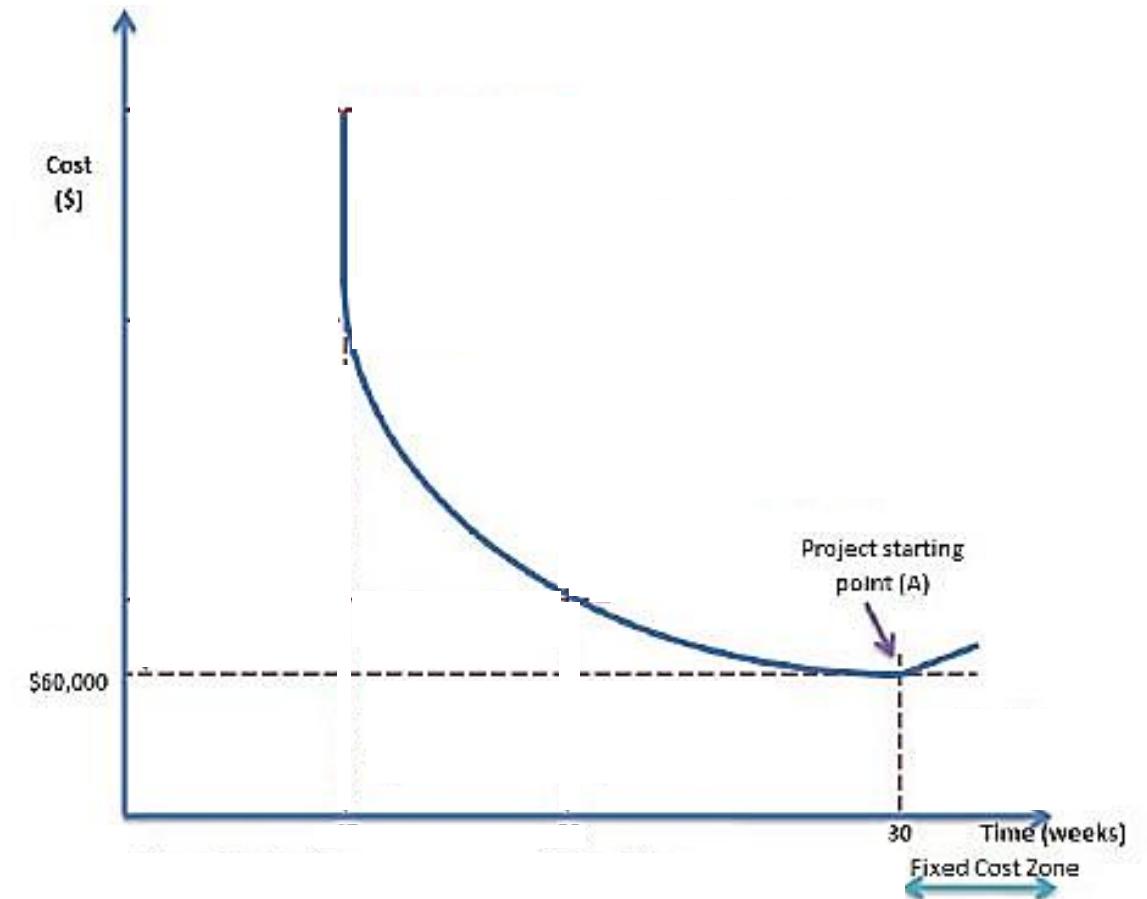
CPM: Crashing, Float Time

CPM: Crashing

Crashing

“A schedule compression technique in which costs and schedule trade-offs are analysed to determine how to obtain the greatest amount of compression for the least incremental cost.” - PMBOK® Guide

- (A) The lowest cost point
 - Lowest point on curve
 - Starting point – fewest resources, lowest cost
 - Taking longer would actually cost more, due to **overheads**

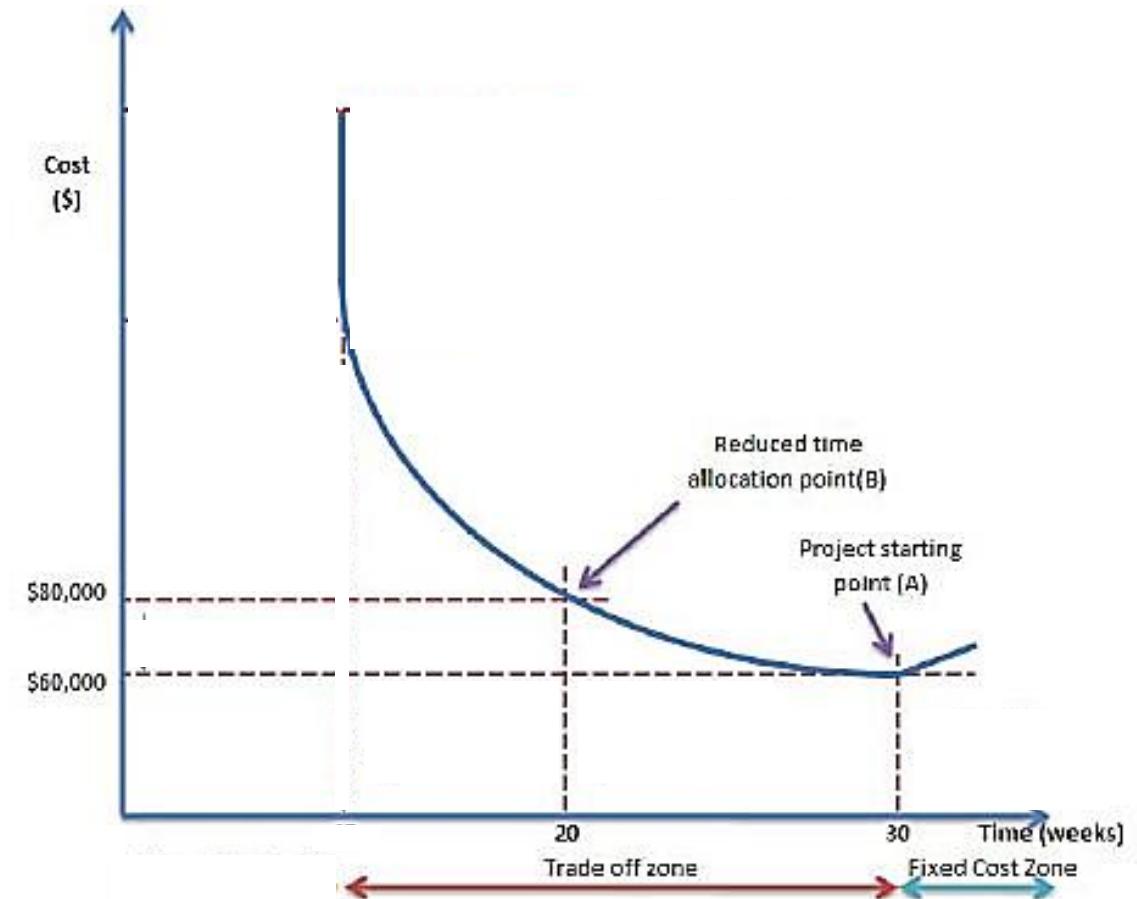


CPM: Crashing

Crashing

“A schedule compression technique in which costs and schedule trade-offs are analysed to determine how to obtain the greatest amount of compression for the least incremental cost.” - PMBOK® Guide

- (B) Crash incrementally
 - reduce duration in the most cost effective manner
 - Moving left along the curve, schedule shrinks, cost increases
 - Curve gets **steeper** – each crash costs more than the last



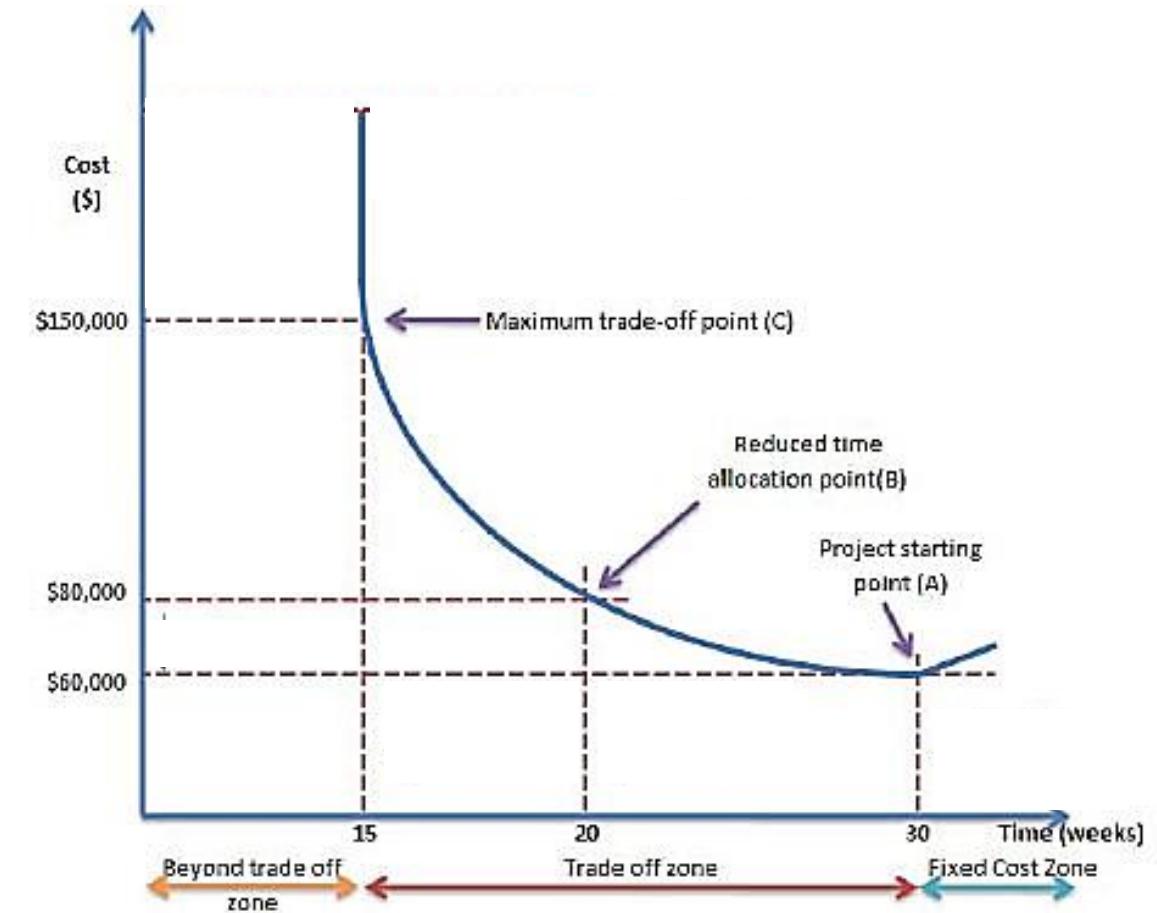
<https://www.pmi.org/learning/library/performing-crash-analysis-alternative-cost-schedule-6750>

CPM: Crashing

Crashing

“A schedule compression technique in which costs and schedule trade-offs are analysed to determine how to obtain the greatest amount of compression for the least incremental cost.” - PMBOK® Guide

- Until (C) all critical tasks have been crashed
 - no more gains are made beyond the **crash limit**



<https://www.pmi.org/learning/library/performing-crash-analysis-alternative-cost-schedule-6750>

CPM: Float Time

Float Time

- The critical path has a *Total Float (Slack)* of 0
- An activity can be delayed by its float time without causing other delays
- **Total Float (TF):**

The total amount of time that an activity may be delayed from its early start date without delaying the **project finish date**.

$$= LF - EF = LS - ES$$

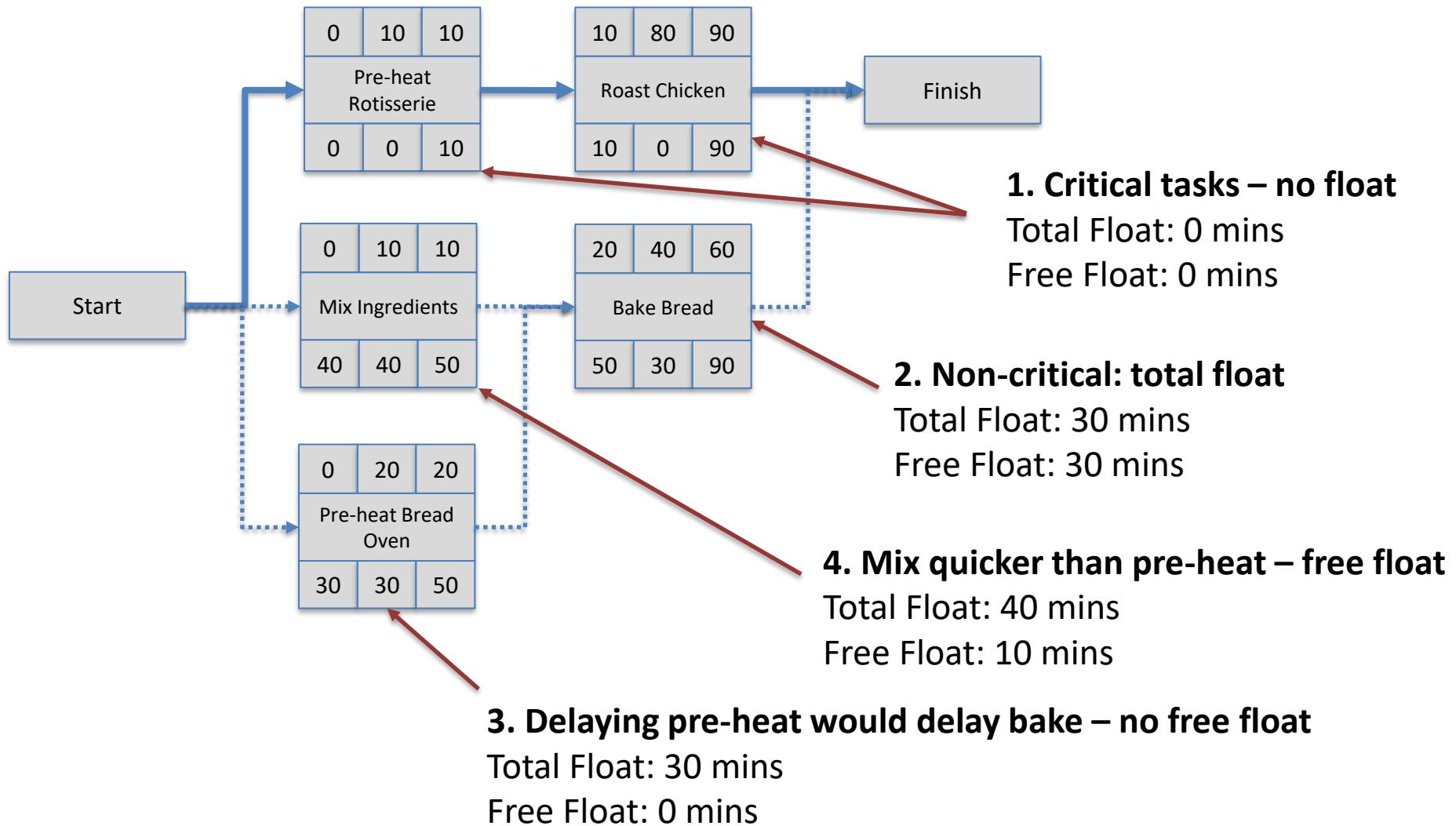
- **Free Float (FF):**

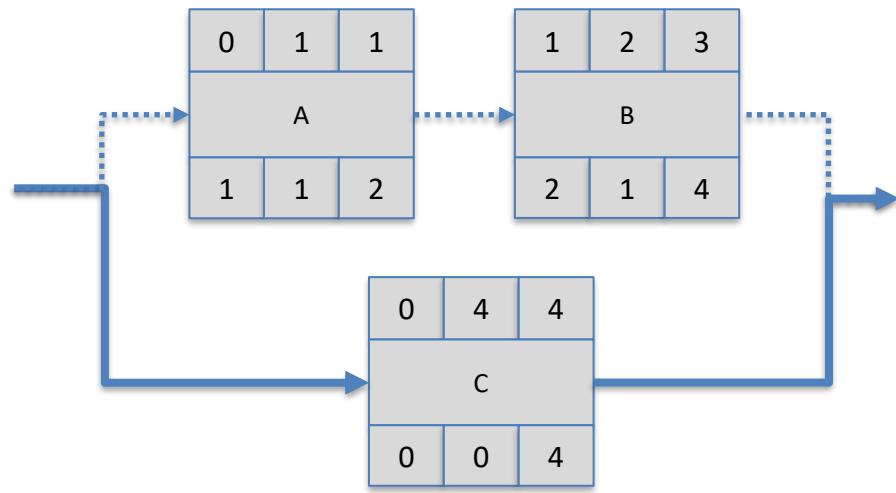
The amount of time that an activity can be delayed without delaying the early start date of any **subsequent activities**

$$= ES_{\text{next}} - EF$$

- $FF \leq TF$

CPM: Float Time





Which has Free Float?
What is it?

Which has Drag?
What is it?



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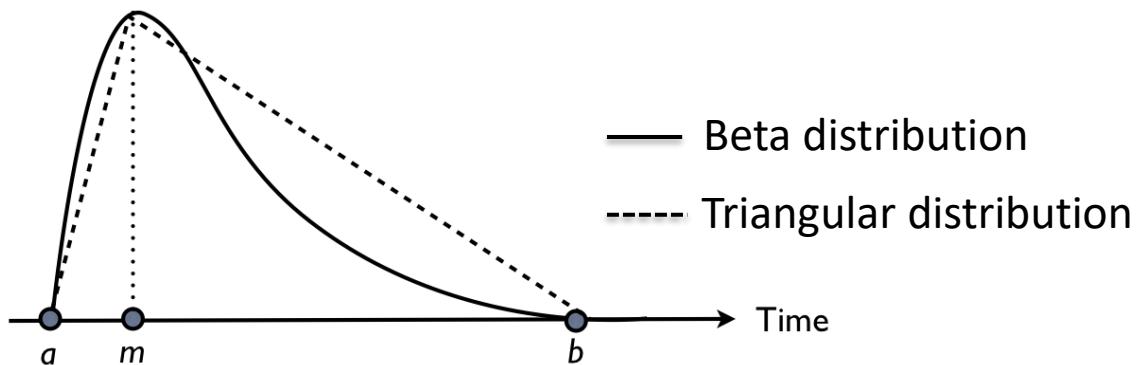
CS352 Project Management for Computer Scientists

3. Scope & Time Management

PERT and Normal Distributions

Program Evaluation and Review Technique (PERT)

- Takes skeptical view of time estimates
- Variation on CPM using **Three-point** estimation:
 - Shortest possible time each activity will take (a)
 - Most likely length of time (m)
 - Longest time, if the activity takes longer than expected (b)



Program Evaluation and Review Technique (PERT)

——— Beta distribution

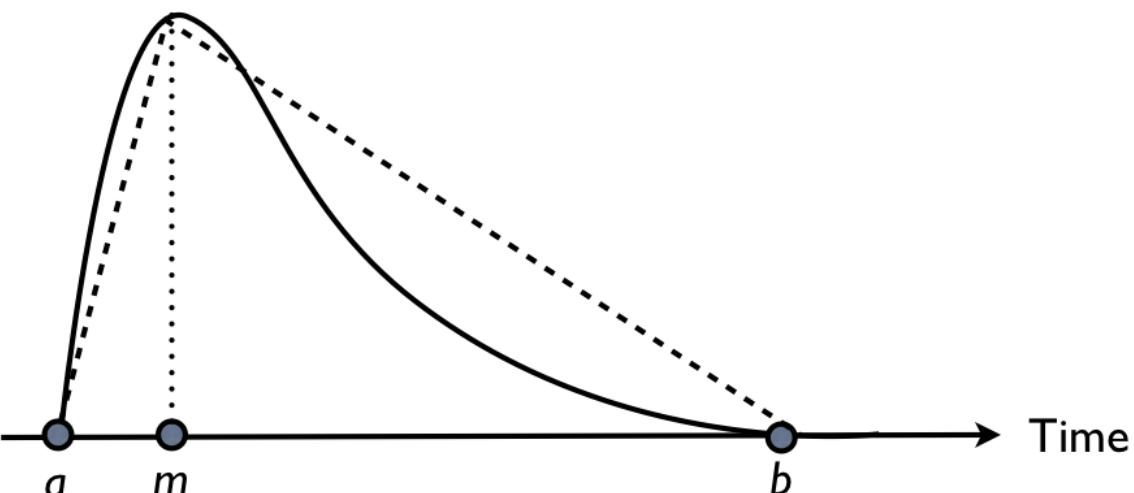
$$\text{Mean } t = \frac{a + 4m + b}{6}$$

$$\text{Variance } \sigma^2 = \left(\frac{b - a}{6}\right)^2$$

----- Triangular distribution

$$t = \frac{a + b + m}{3}$$

$$\sigma^2 = \frac{a^2 + b^2 + m^2 - ab - am - bm}{18}$$

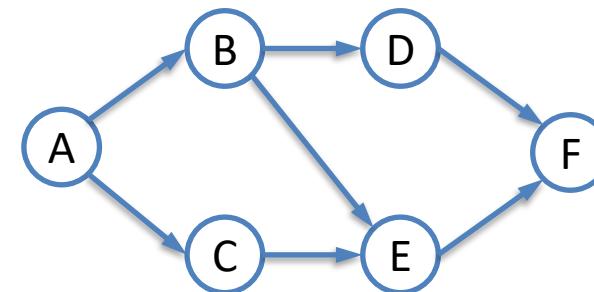


CPM and PERT

Task	Predecessors
A	-
B	A
C	A
D	B
E	B, C
F	D, E

CPM and PERT

Task	Predecessors
A	-
B	A
C	A
D	B
E	B, C
F	D, E

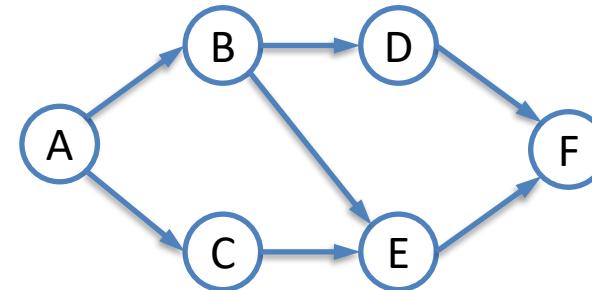


CPM

Fixed Duration

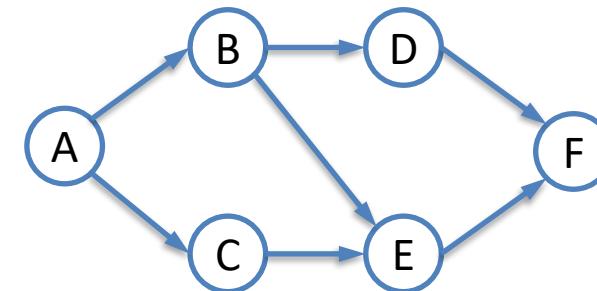
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Task	Predecessors	m
A	-	5
B	A	2
C	A	0.5
D	B	1
E	B, C	2
F	D, E	3

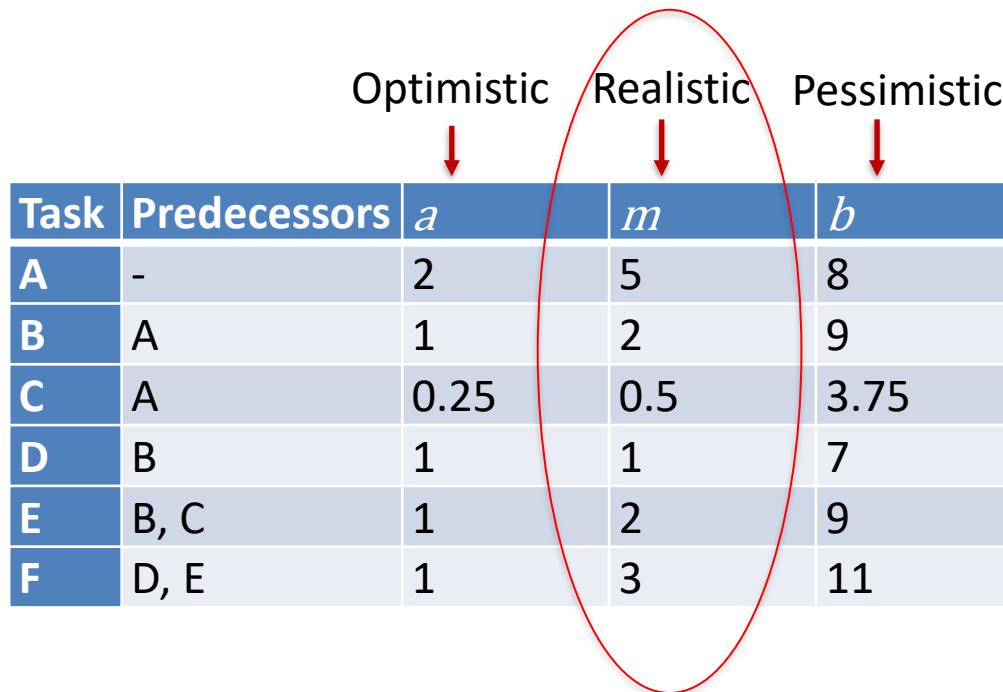


PERT

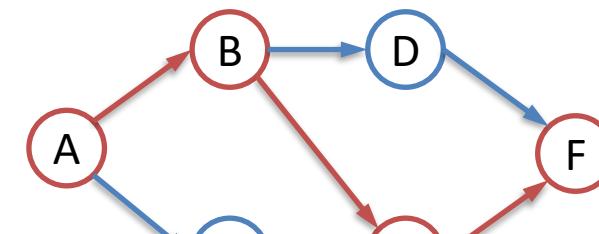
Task	Predecessors	Duration (days)		
		Optimistic <i>a</i>	Realistic <i>m</i>	Pessimistic <i>b</i>
A	-	2	5	8
B	A	1	2	9
C	A	0.25	0.5	3.75
D	B	1	1	7
E	B, C	1	2	9
F	D, E	1	3	11



PERT

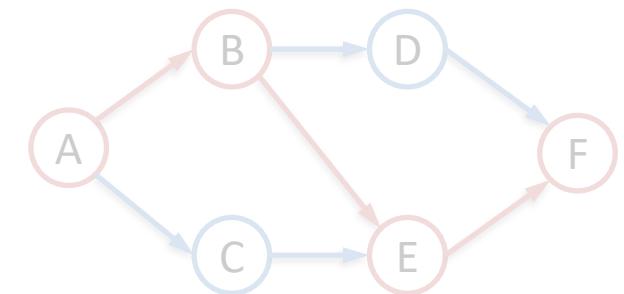


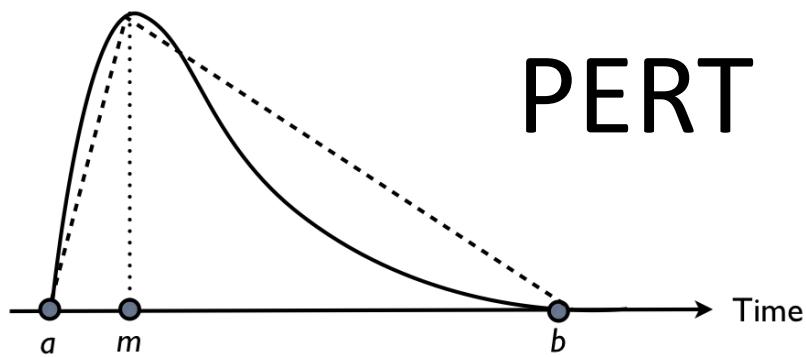
Use CPM!



PERT

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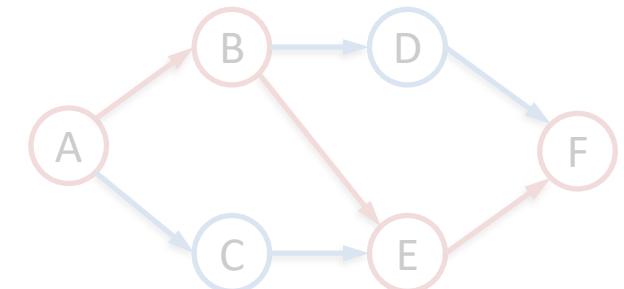


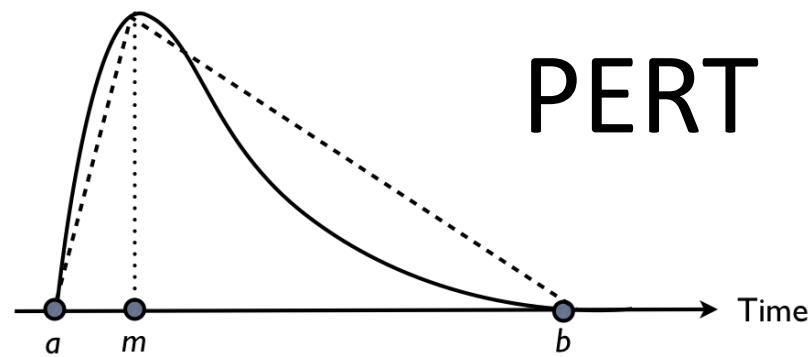
PERT

Optimistic Realistic Pessimistic



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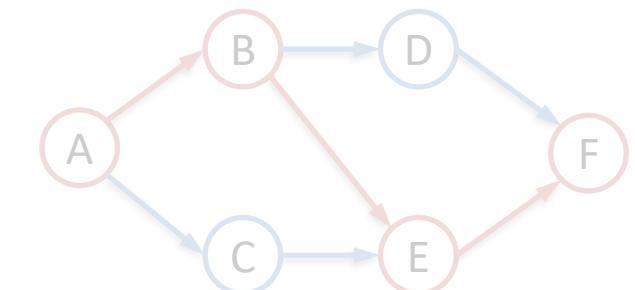


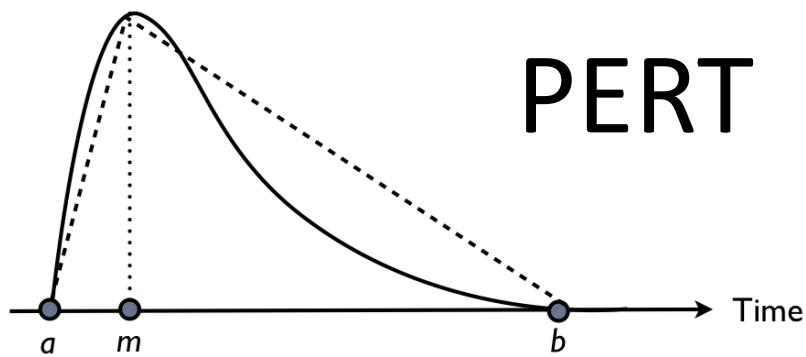
PERT

$$\text{Mean } t = \frac{a + 4m + b}{6}$$

$$\text{Variance } \sigma^2 = \left(\frac{b - a}{6}\right)^2$$

Task	Predecessors	a	m	b	t	σ
A	-	2	5	8	5	1
B	A	1	2	9	3	$8/6$
C	A	0.25	0.5	3.75	1	$3.5/6$
D	B	1	1	7	2	1
E	B, C	1	2	9	3	$8/6$
F	D, E	1	3	11	4	$10/6$



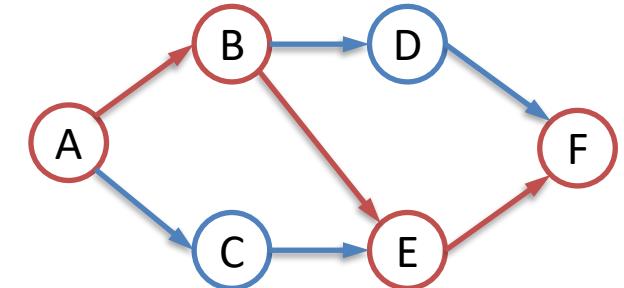


PERT

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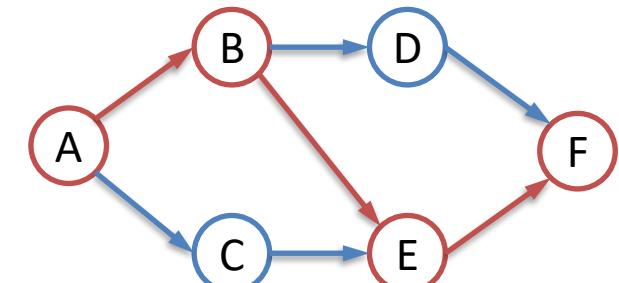
PERT

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Assume Normal Distribution:

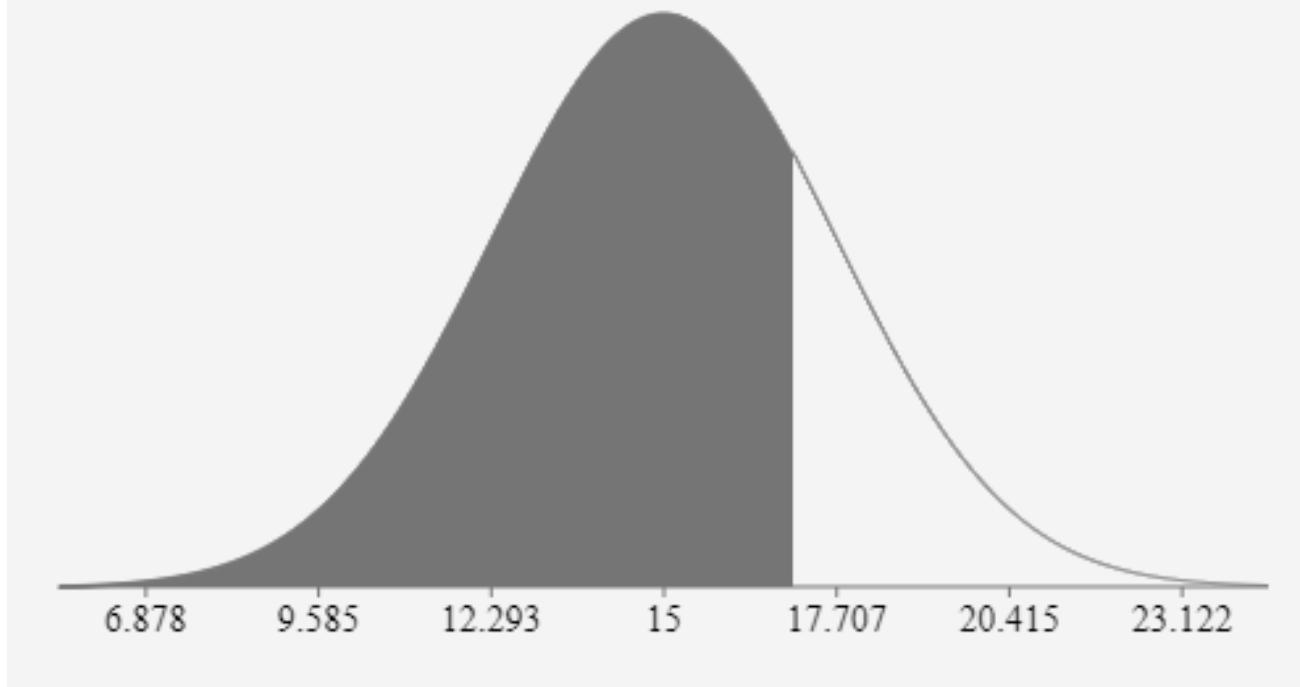
$$\text{Mean} = 5 + 3 + 3 + 4 = 15$$

$$\text{SD} = \sqrt{1^2 + \frac{8}{6}^2 + \frac{8}{6}^2 + \frac{10}{6}^2} = \sqrt{7.33} = 2.7$$



PERT

$$\Pr(t \leq 17) = 77\%$$



Assume Normal Distribution:

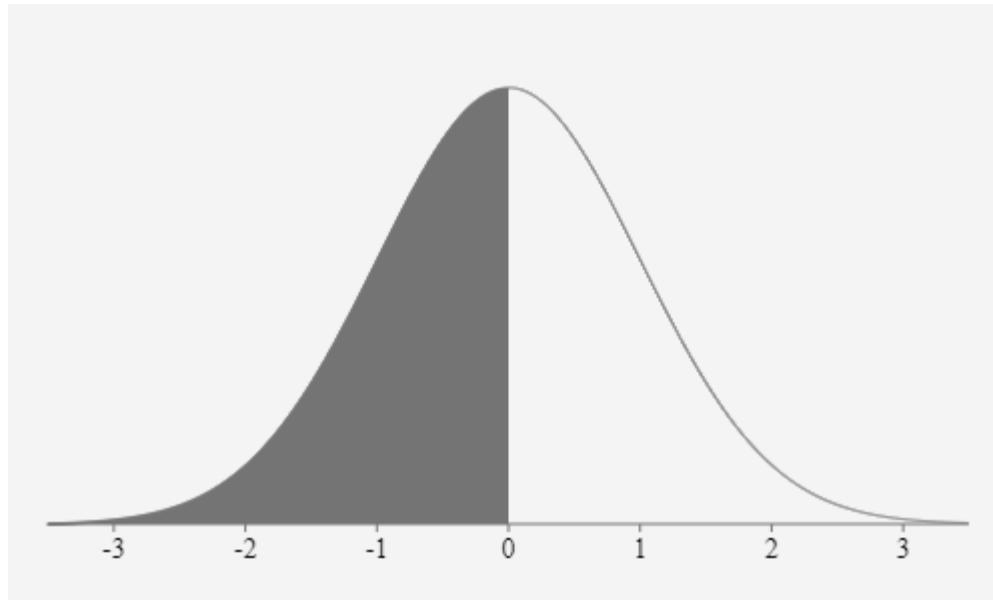
Mean = 15

SD = 2.7

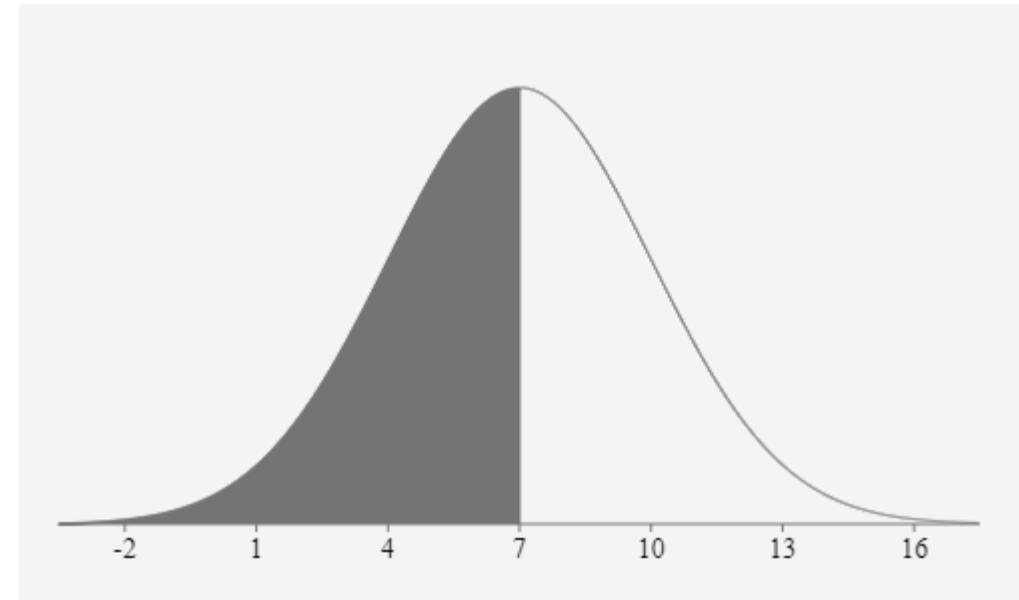
https://onlinestatbook.com/2/calculators/normal_dist.html

Aside: Normal distribution

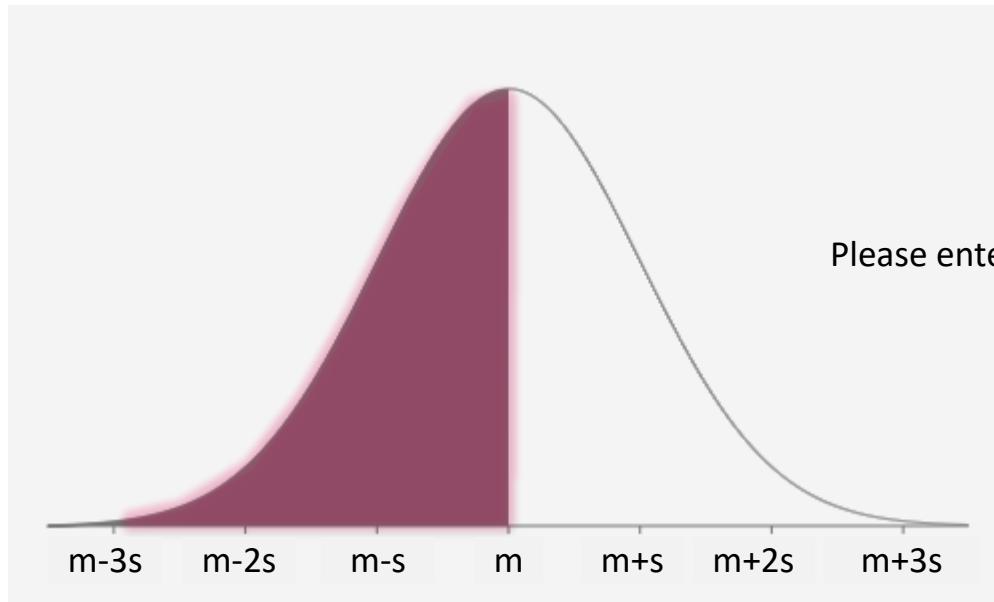
- Probability = area under the curve
- Bell shape; mean and standard deviation



Standard Normal (mean 0, SD 1)



Normal (mean 7, SD 3)

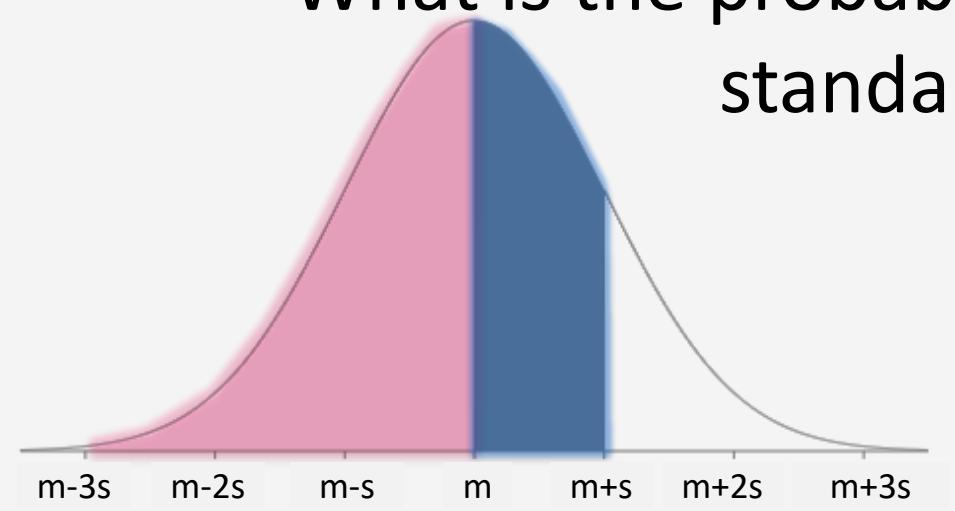


What is the probability that the project does not take longer than estimated (as a %)?

1 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Answered Correctly: 0%

What is the probability that the project is no more than 1 standard deviation late (as a %)?



Below is a probability table for the standard normal distribution (mean = 0, variance = 1), where P gives the probability that a normally distributed random variable X is between 0 and Z :

Z	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
P	0.04	0.079	0.118	0.155	0.192	0.226	0.258	0.288	0.316	0.341

Summary

- PERT
 - like CPM but with **uncertainty**.
 - Uses a **probability distribution**, not a fixed estimate.
 - Allows us to make statistical inferences (not promises we are likely to break).
- But
 - Makes assumptions of normality,
 - Requires uncertainty estimation,
 - Gives a false sense of precision



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2. Project Initiation

4. PRINCE2®

PMBOK vs PRINCE2®

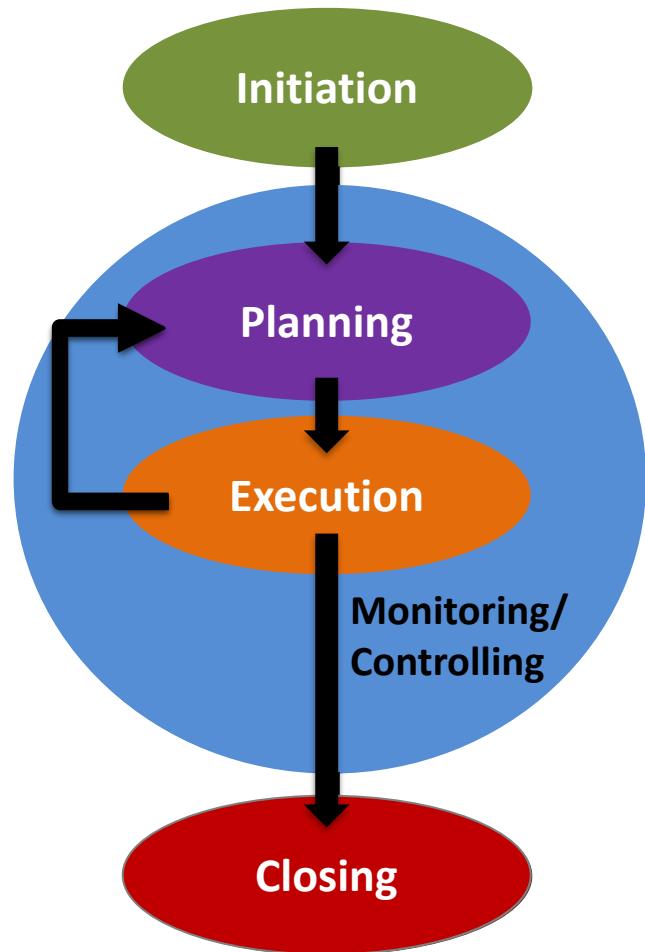


PMBOK® vs PRINCE2®

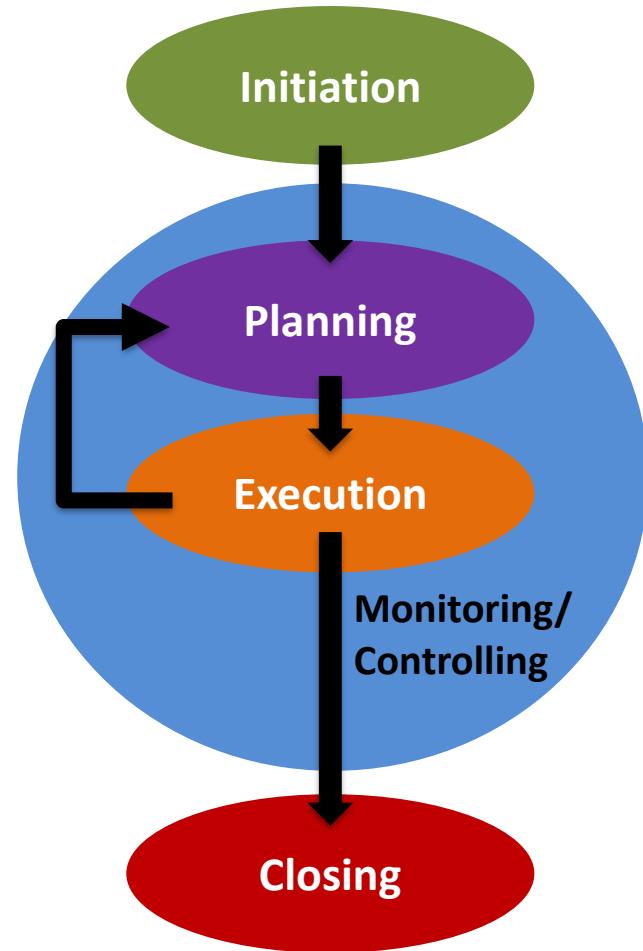
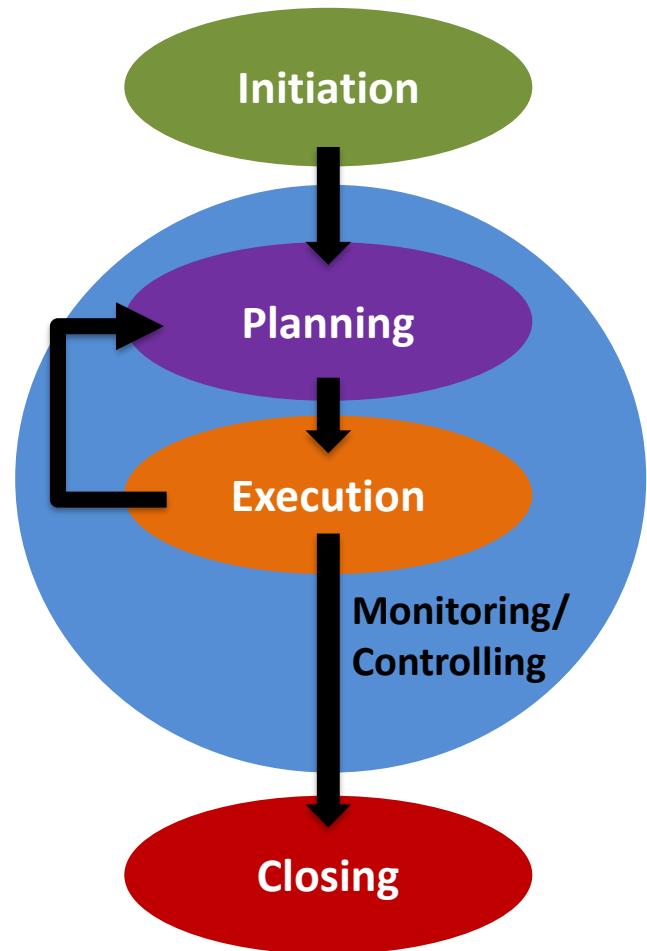


	PMI PMBOK® Guide	PRINCE2®
What is it	Framework / Industry standard	Methodology
Focus	Activities	Deliverables ("Products")
Driver	Customer requirements	Business Case
Structure	Process 'groups'	5 Process Groups
	Knowledge areas	10 Knowledge Areas
	Process 'steps'	49 Processes
		7 Processes
		7 Themes
		40 Steps

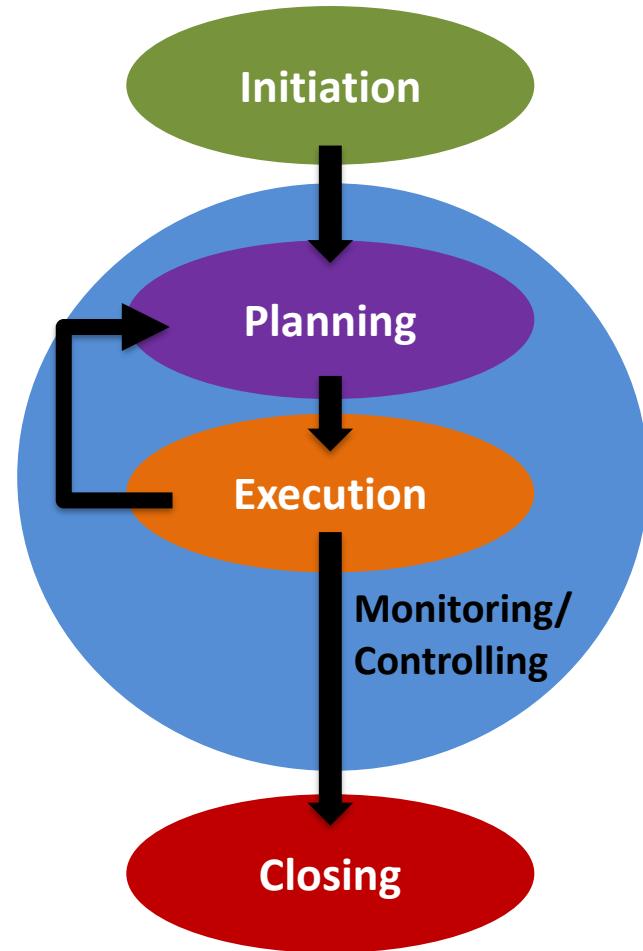
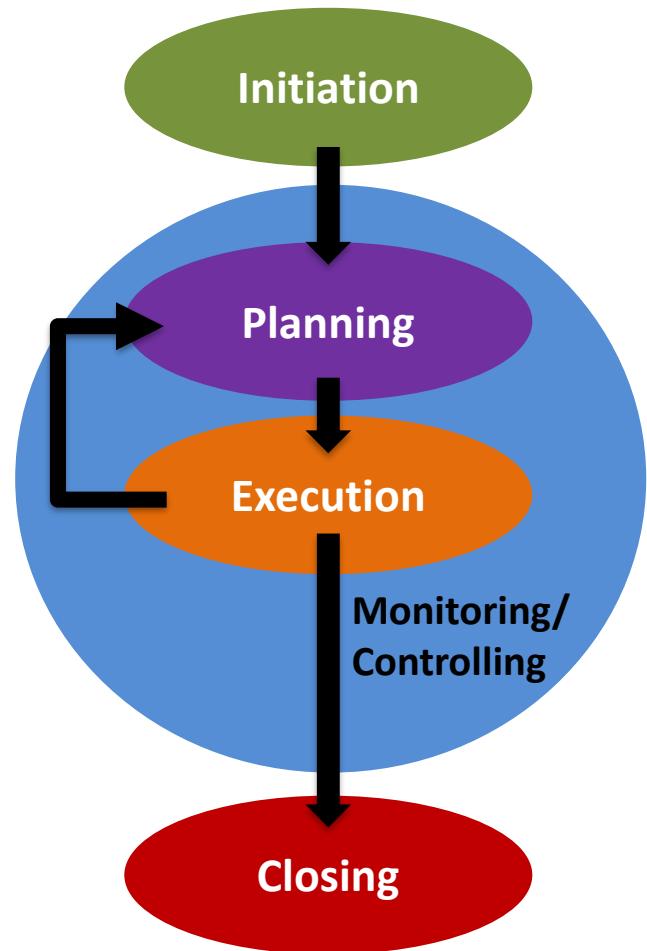
PMBOK® Process Groups



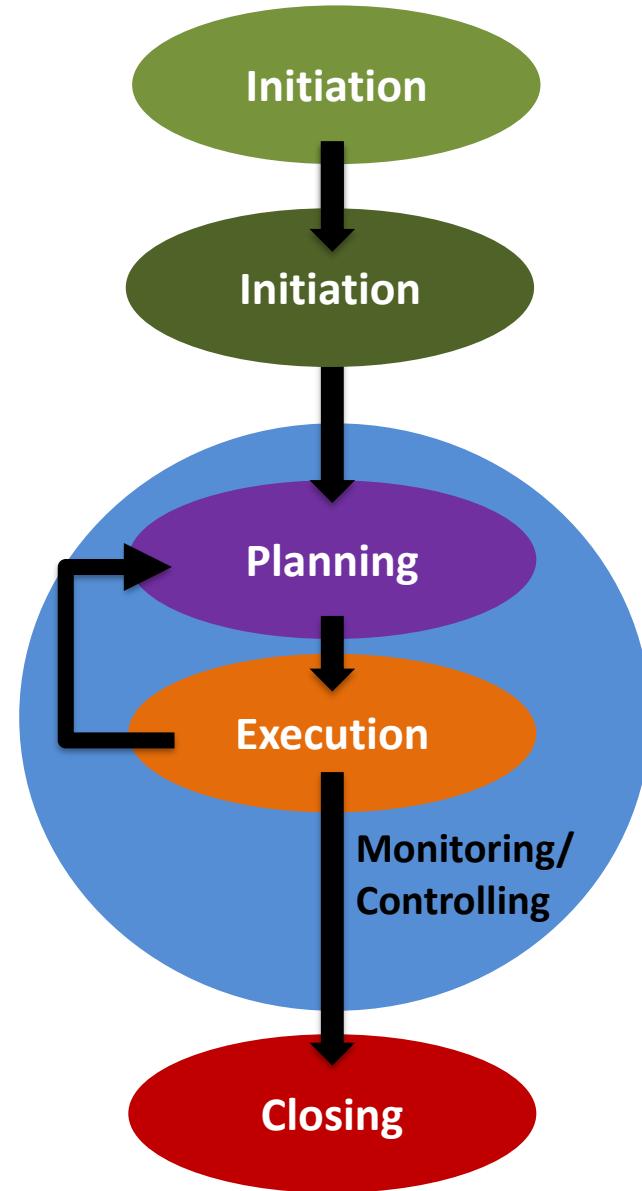
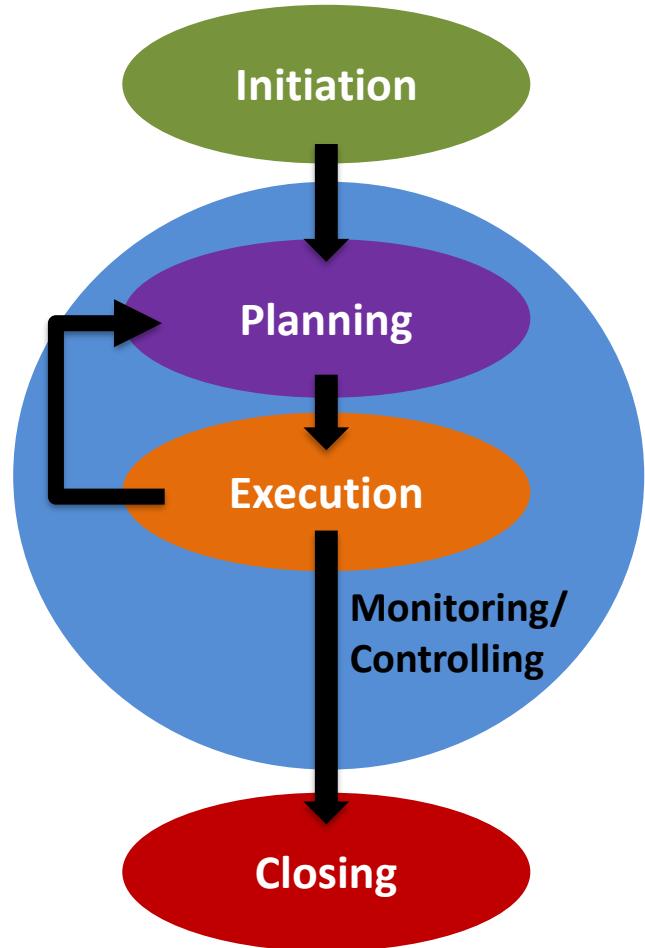
PMBOK® Process Groups



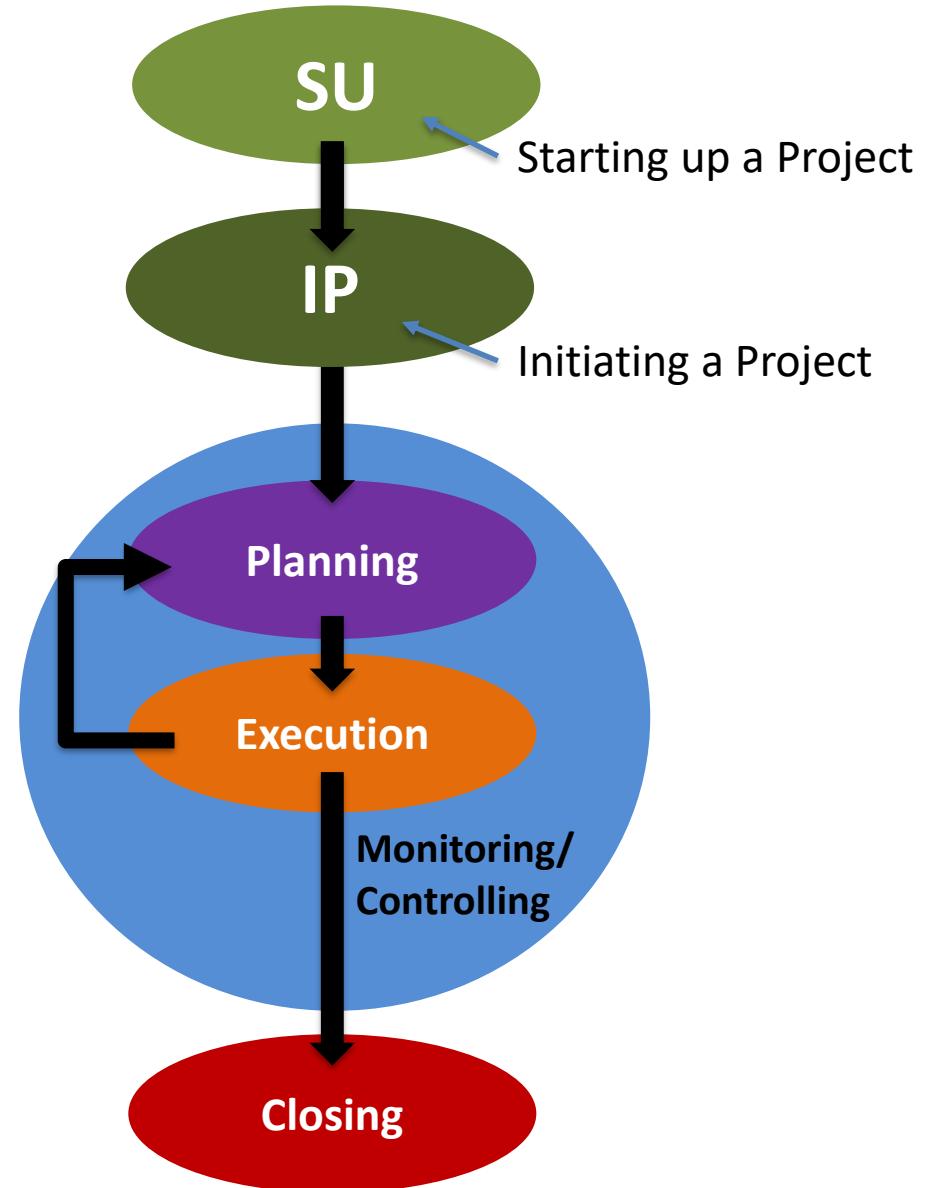
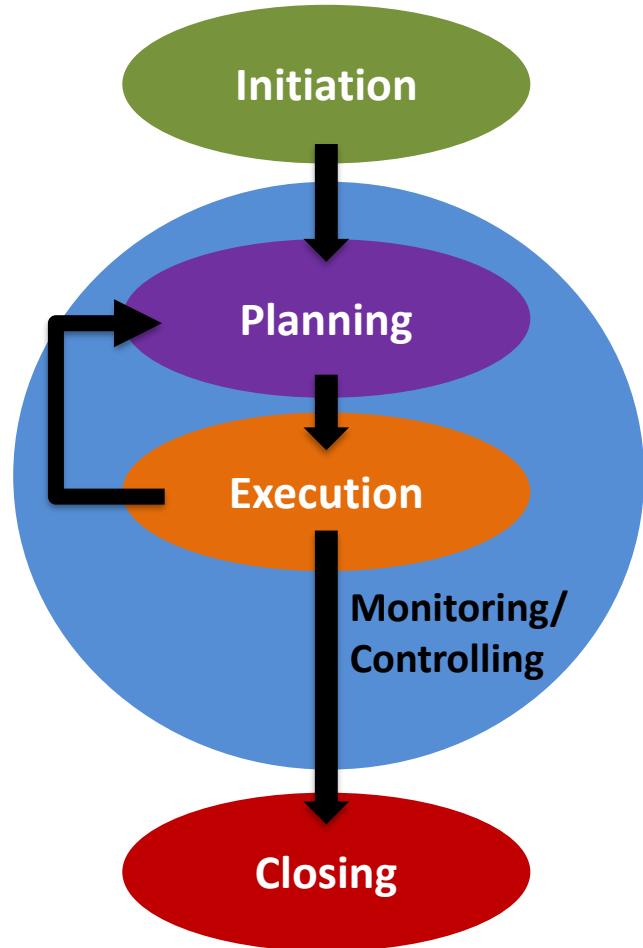
PMBOK® Process Groups



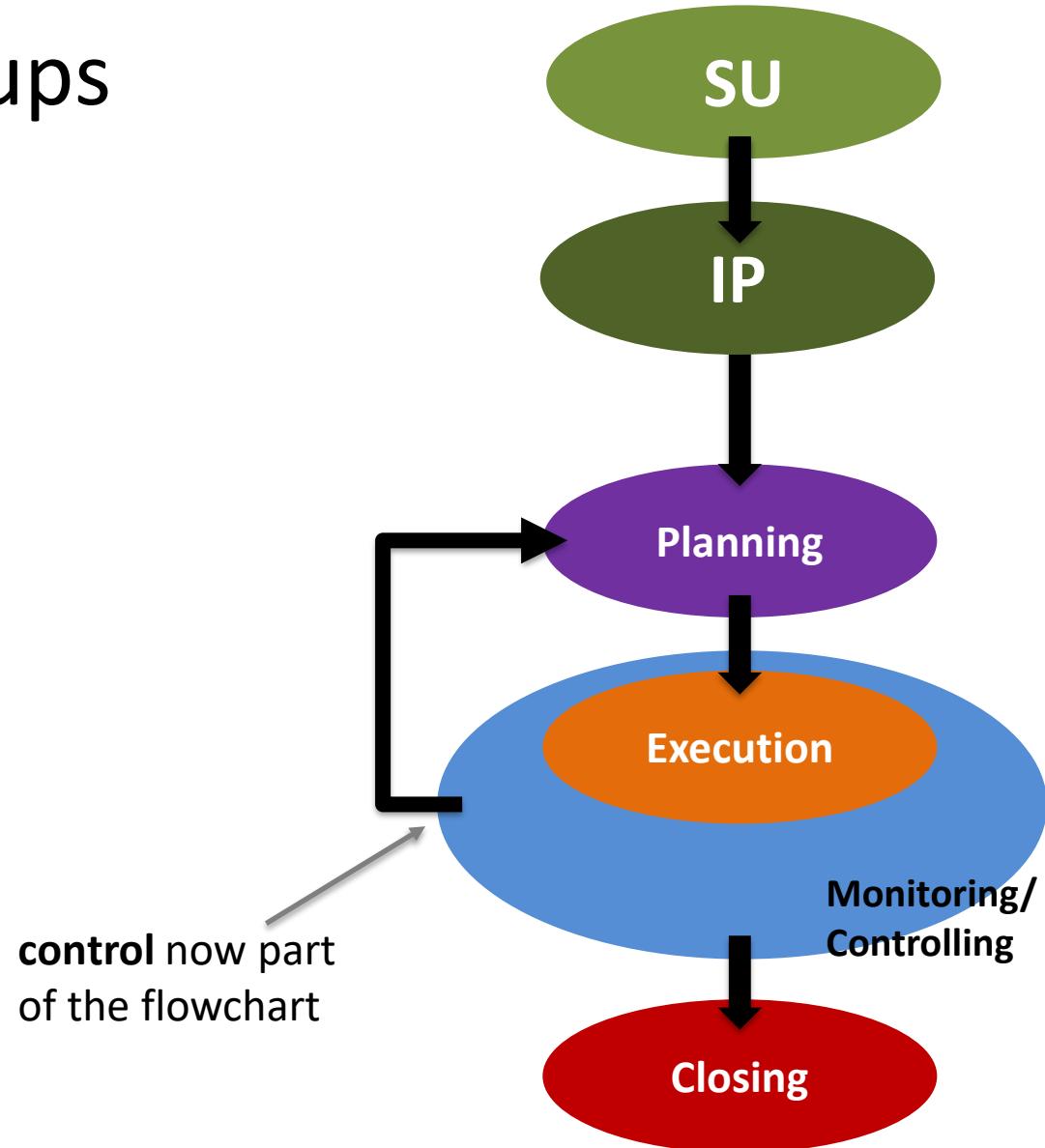
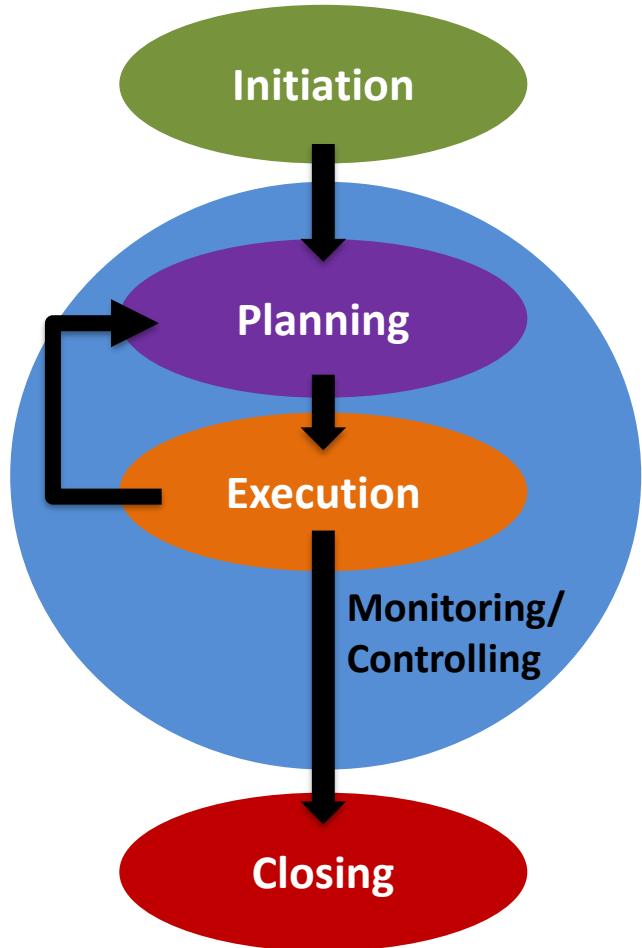
PMBOK® Process Groups



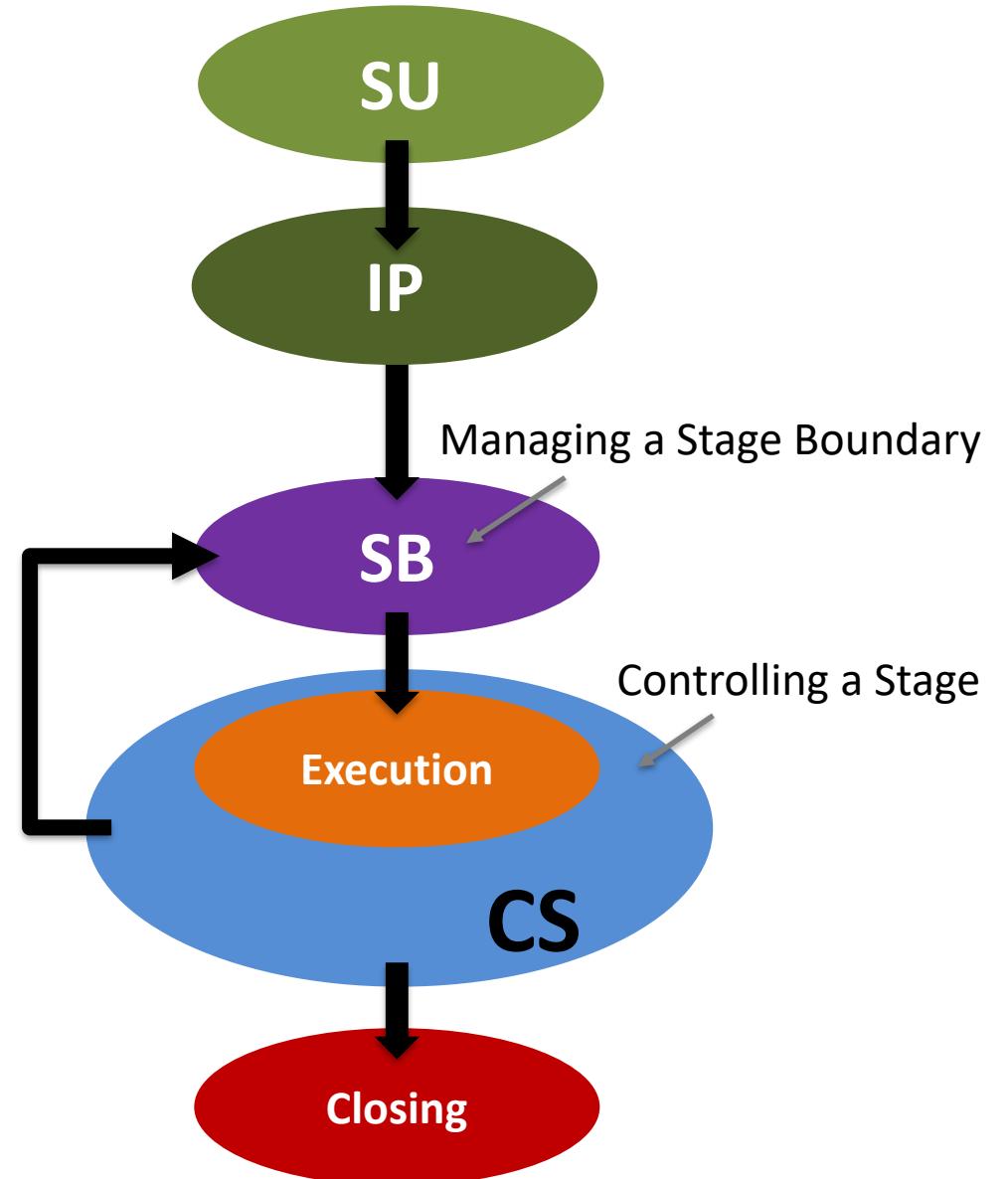
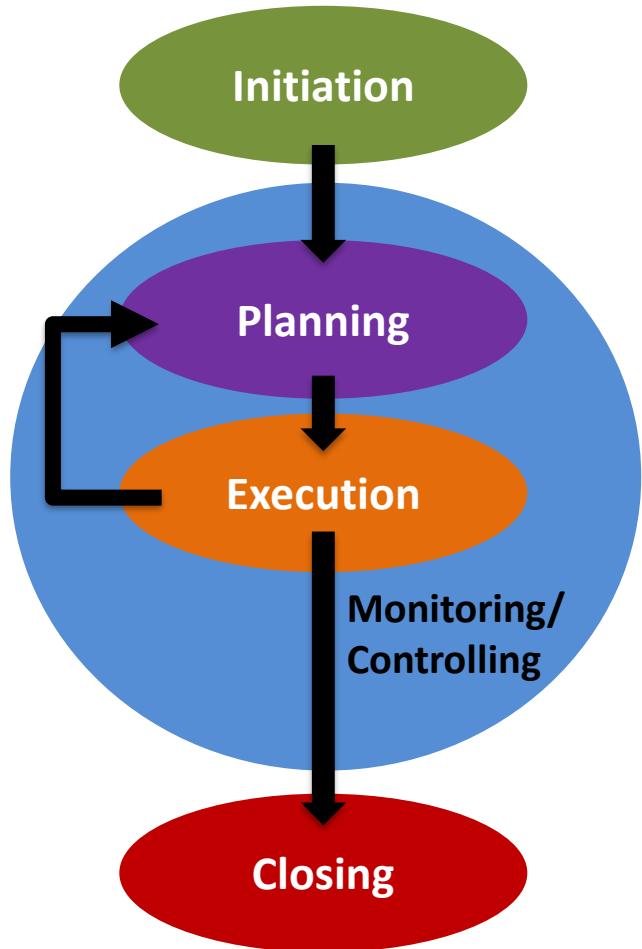
PMBOK® Process Groups



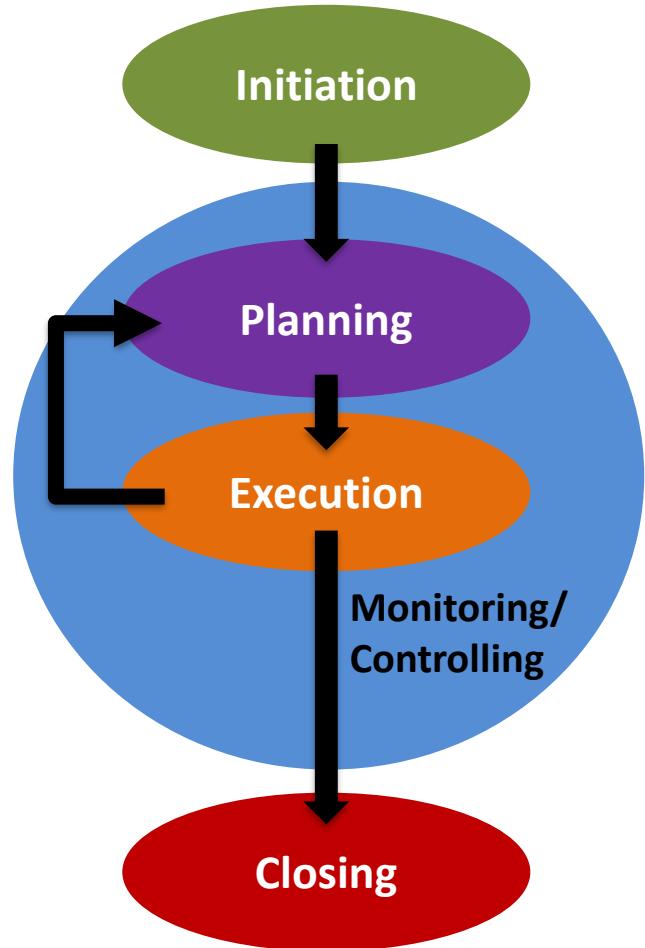
PMBOK® Process Groups



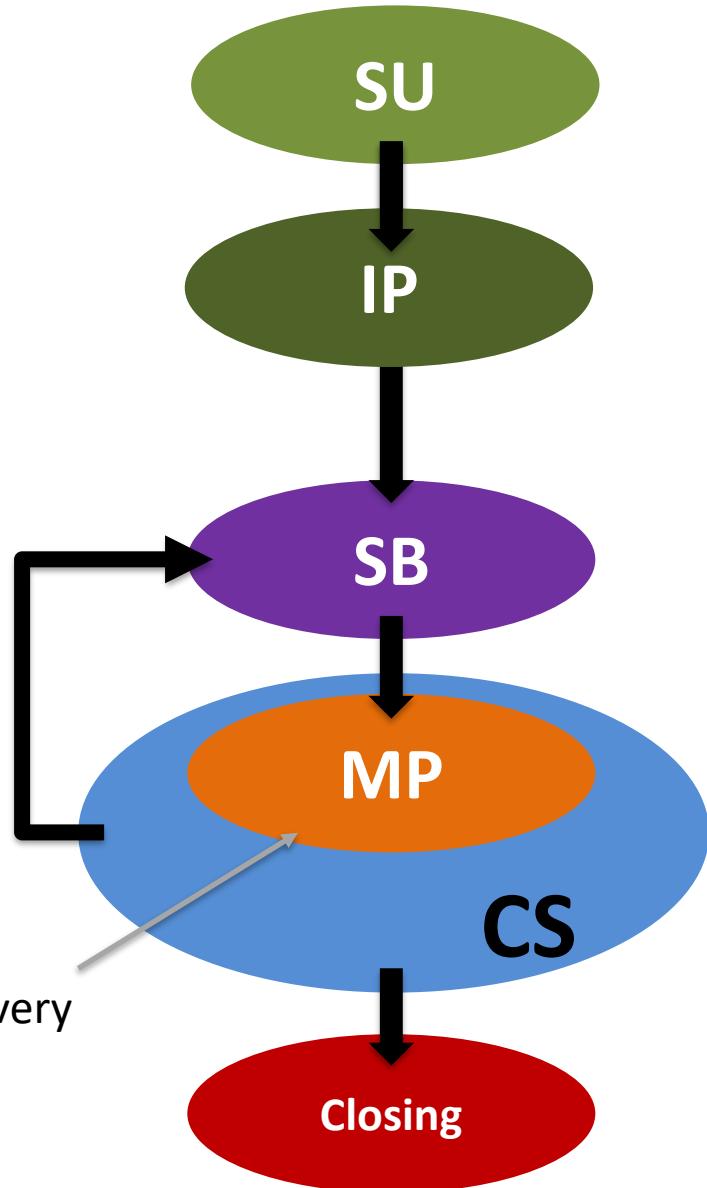
PMBOK® Process Groups



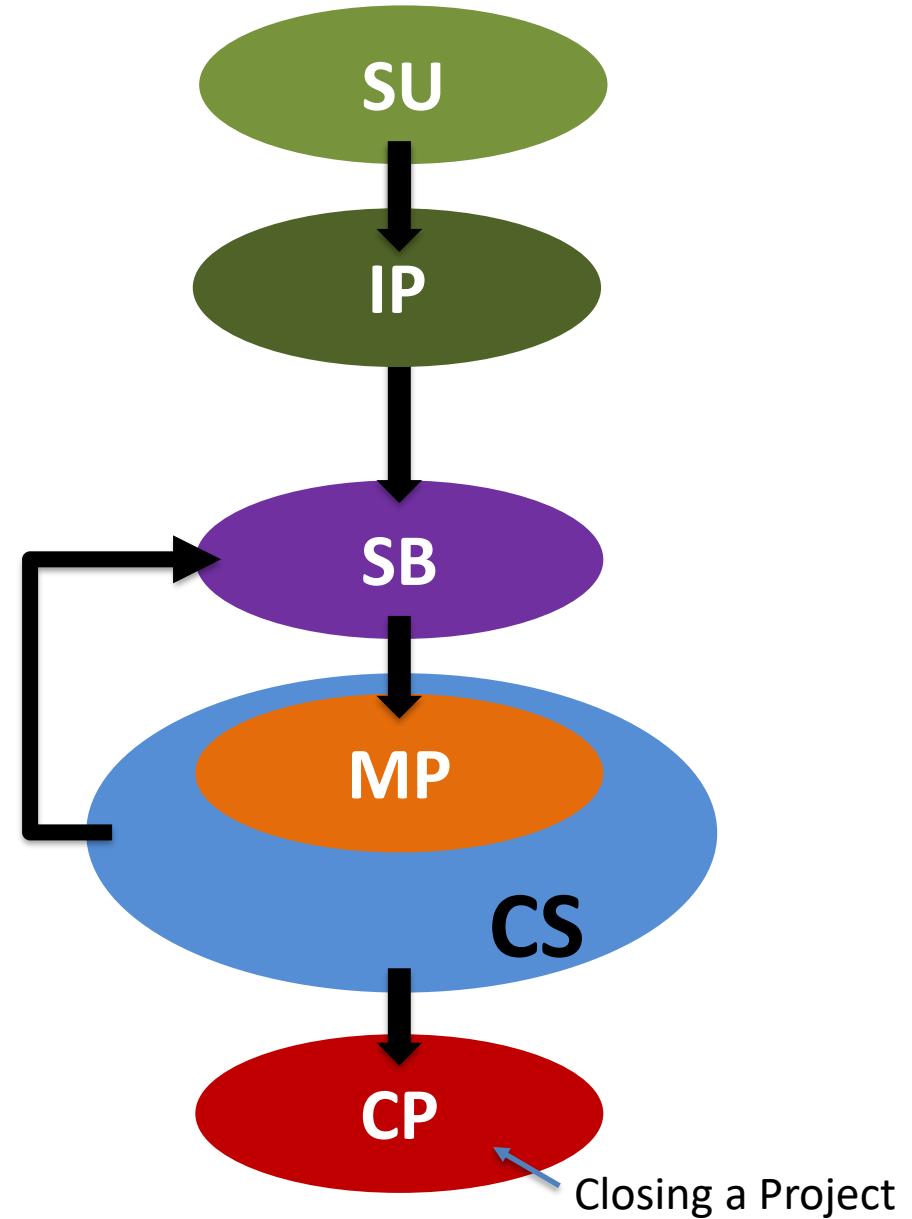
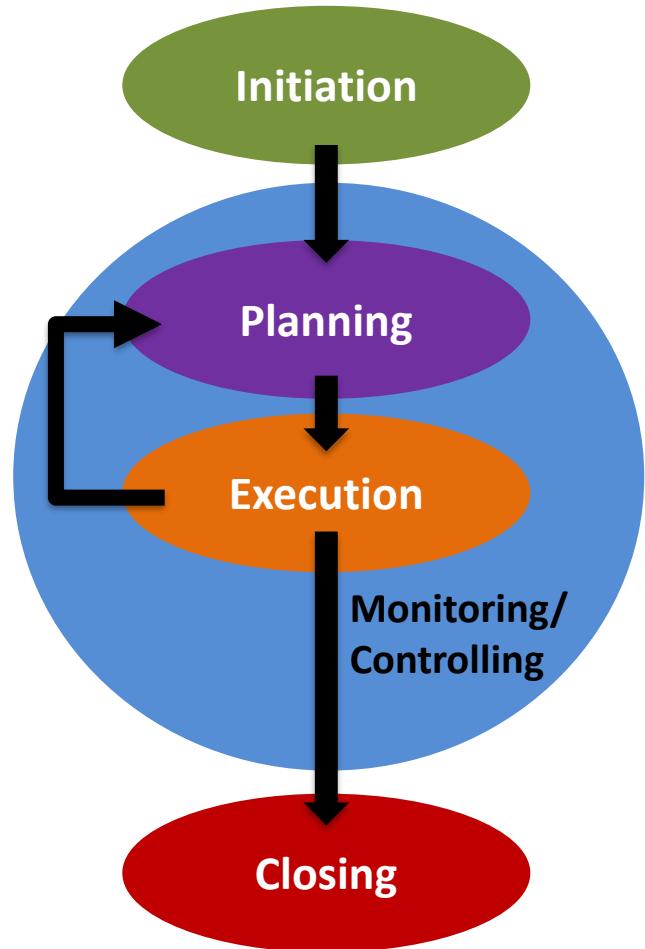
PMBOK® Process Groups



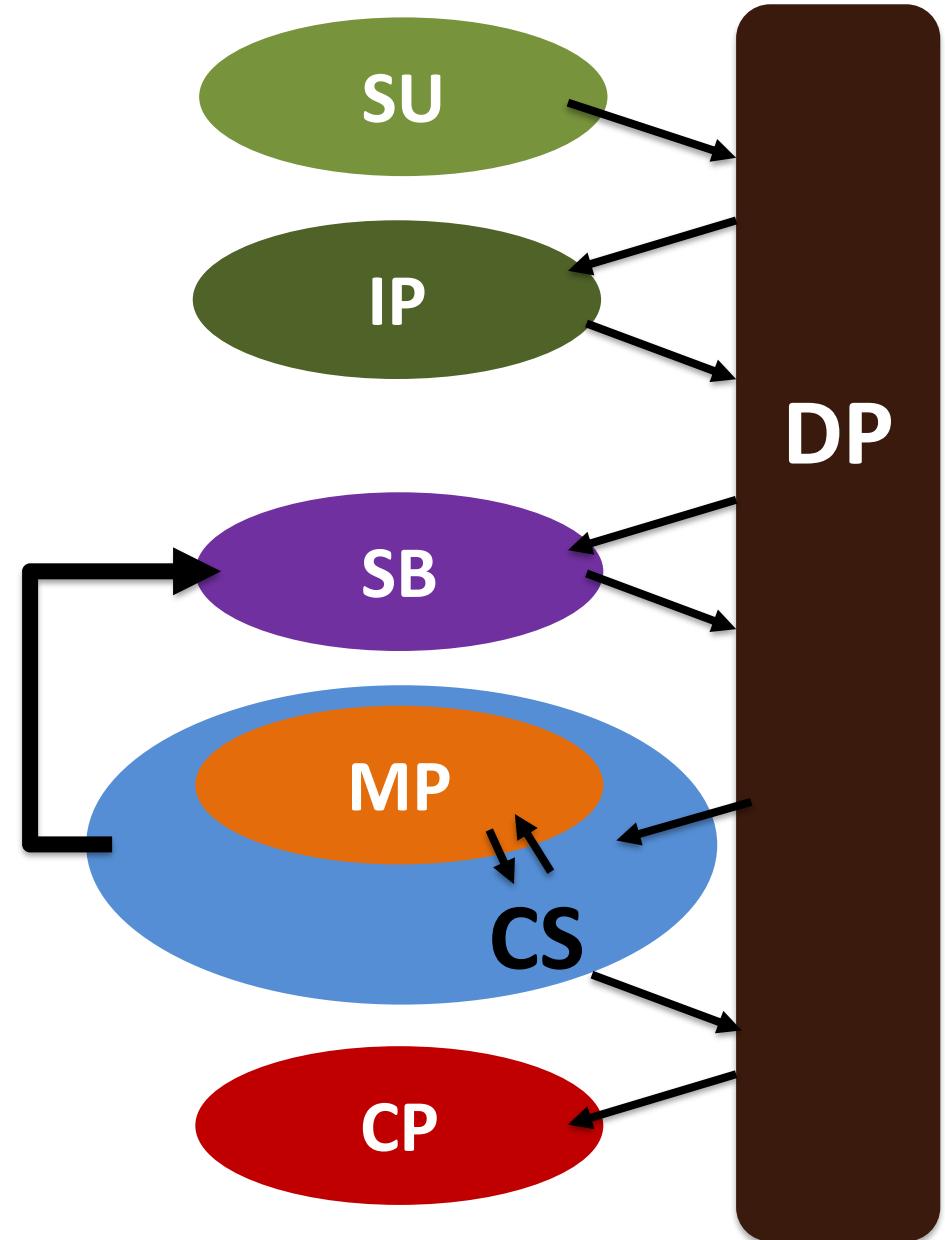
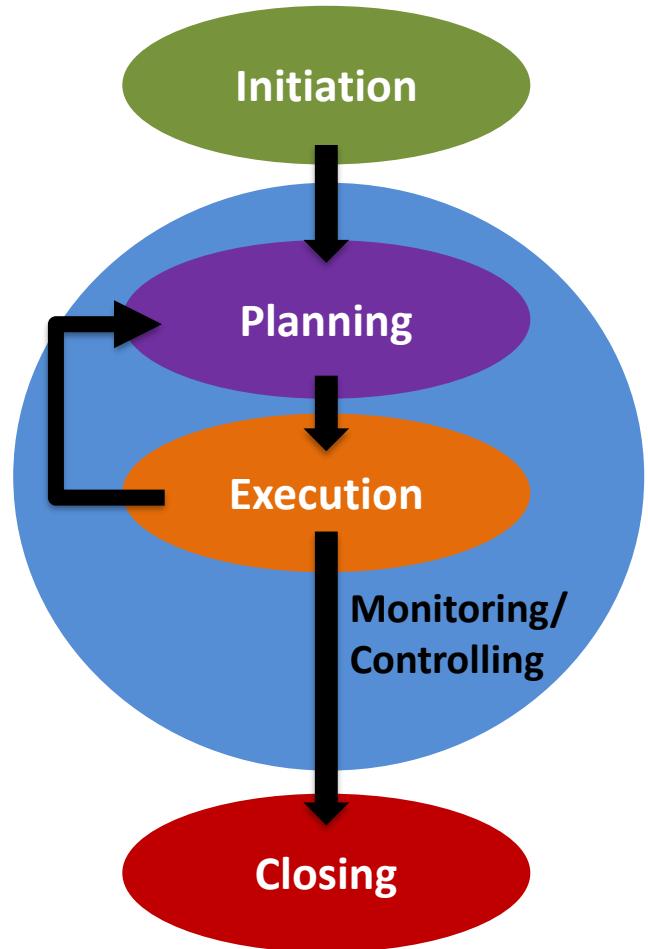
Managing Product Delivery



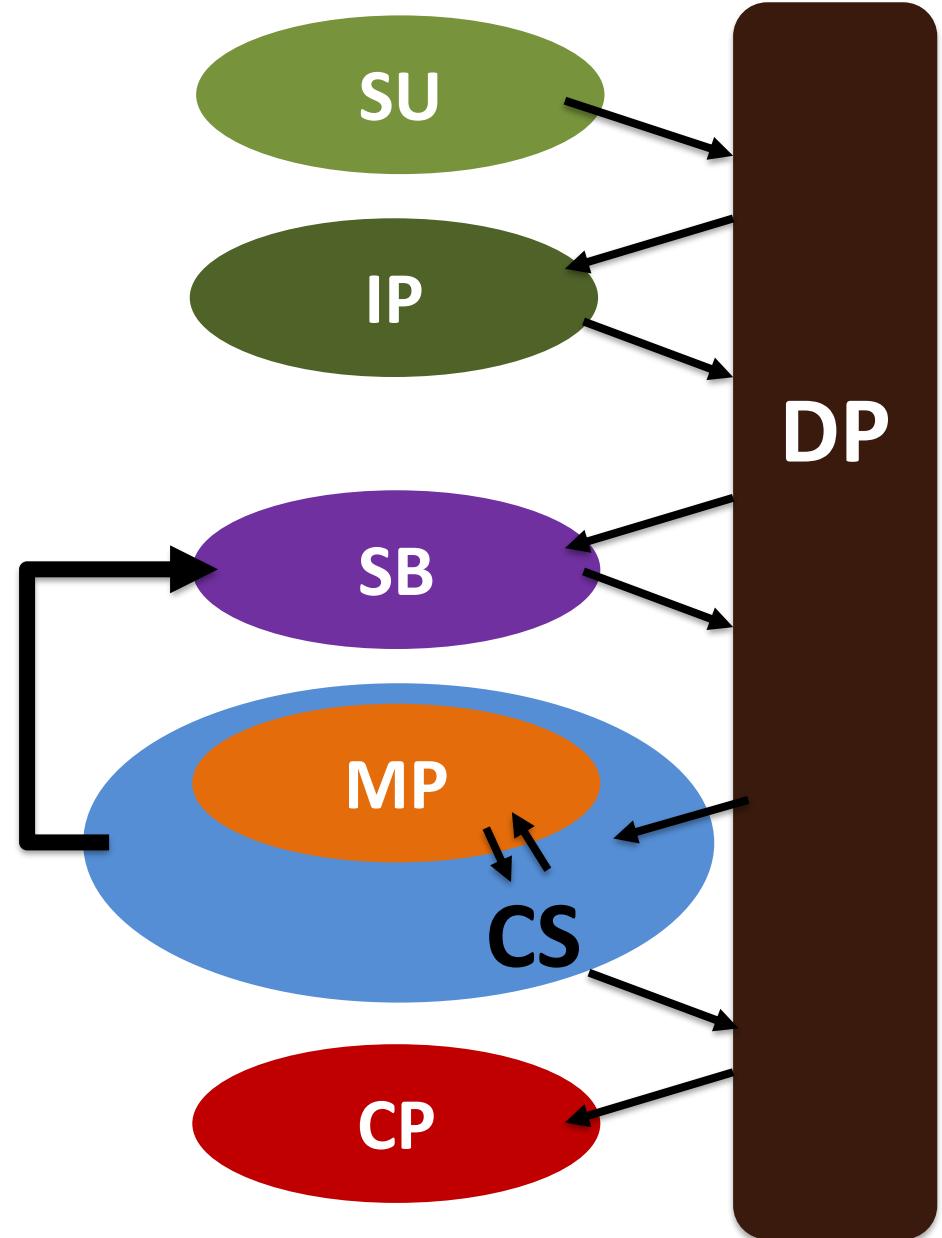
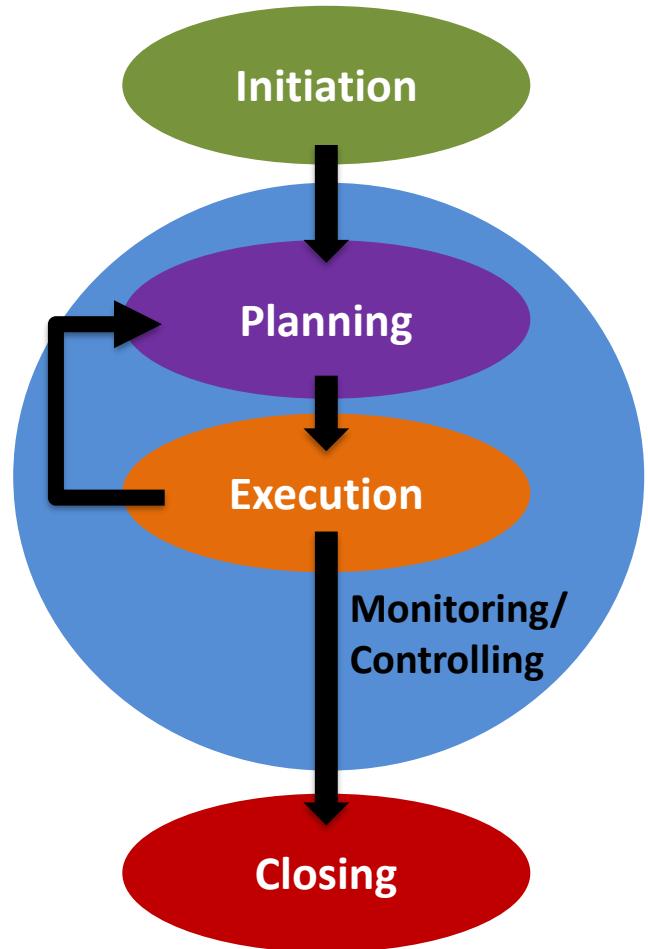
PMBOK® Process Groups



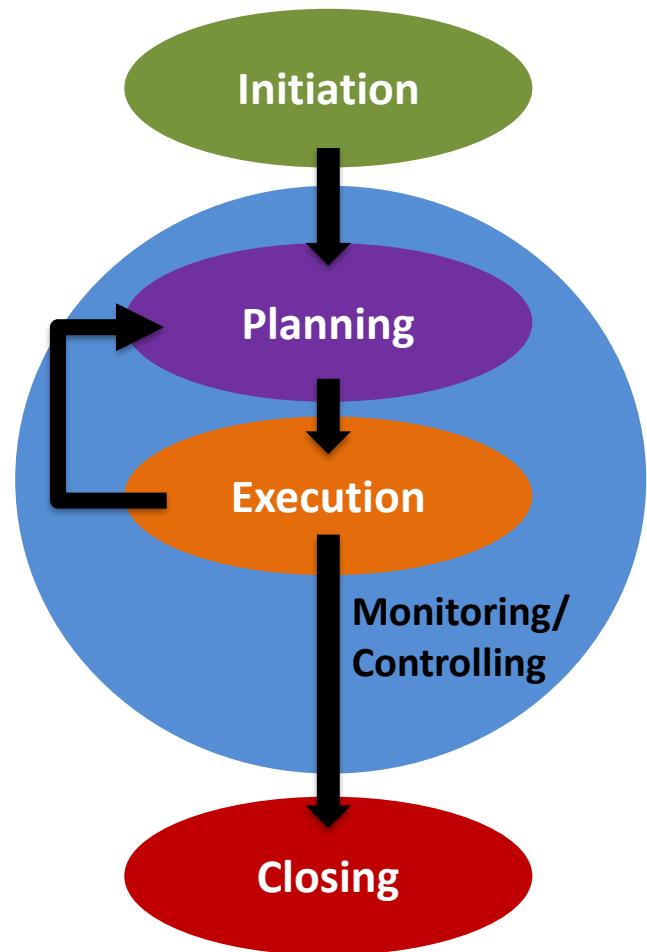
PMBOK® Process Groups



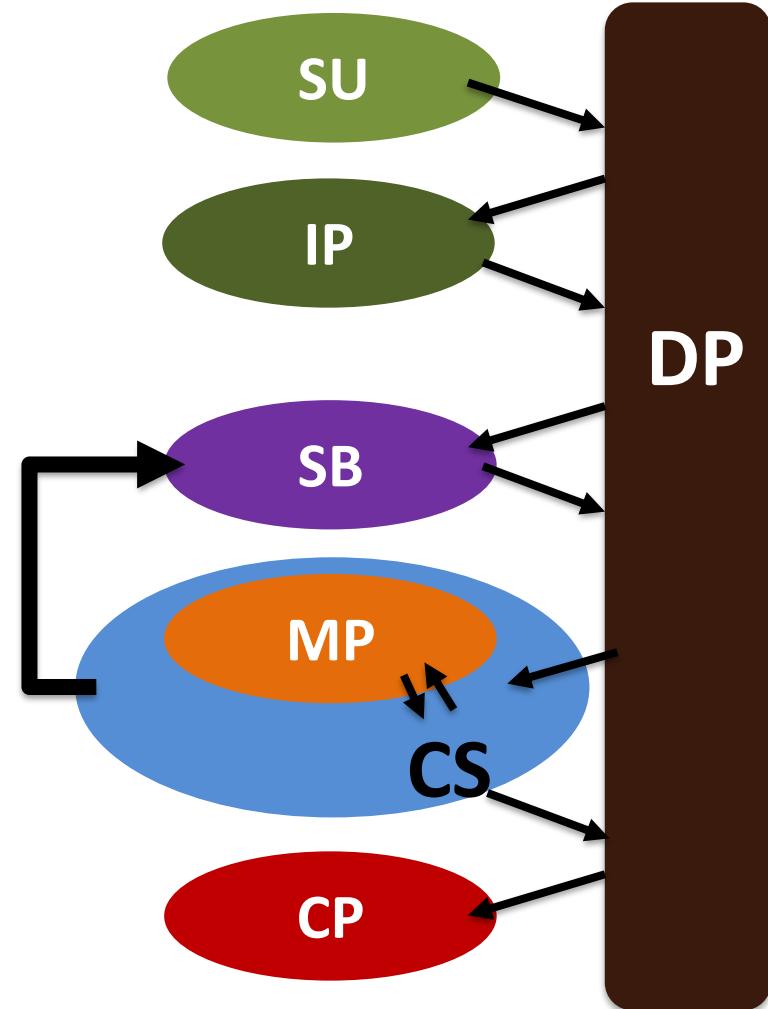
PMBOK® Process Groups



PMBOK® Process Groups



PRINCE2® Processes





PMBOK® vs PRINCE2®



	PMI PMBOK® Guide	PRINCE2®
What is it	Framework / Industry standard	Methodology
Focus	Activities	Deliverables ("Products")
Driver	Customer requirements	Business Case
Structure	Process 'groups'	5 Process Groups
	Knowledge areas	10 Knowledge Areas
	Process 'steps'	49 Processes
Key Differences	Mandate	Project
	Risk	Risk KA, Risk to project
	Roles	PM in charge
	Strictness	Descriptive
	Detail	Extensive (hard + soft skills)
	Difficulty	Complex processes
	Documentation	Optional
		Excessive (formalised)



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CS352 Project Management for Computer Scientists

7. Lean and Agile

Part 2

Scaling Agile

The Agile Manifesto (2001)

- ✓ **Individuals and interactions** over processes and tools
- ✓ **Working software** over comprehensive documentation
- ✓ **Customer collaboration** over contract negotiation
- ✓ **Responding to change** over following a plan

Some Other Agile Techniques

Rapid Application Development (RAD)

Particularly suited to UI building. Relies on **prototypes** instead of specifications. Importance of the *user design* phase to build a working model.

Test-Driven Development (TDD)

Requirements are turned into very specific test cases, based on use-cases, before writing the code. Once code passes test harness, then refactor. Particularly suited to improving and debugging legacy code.

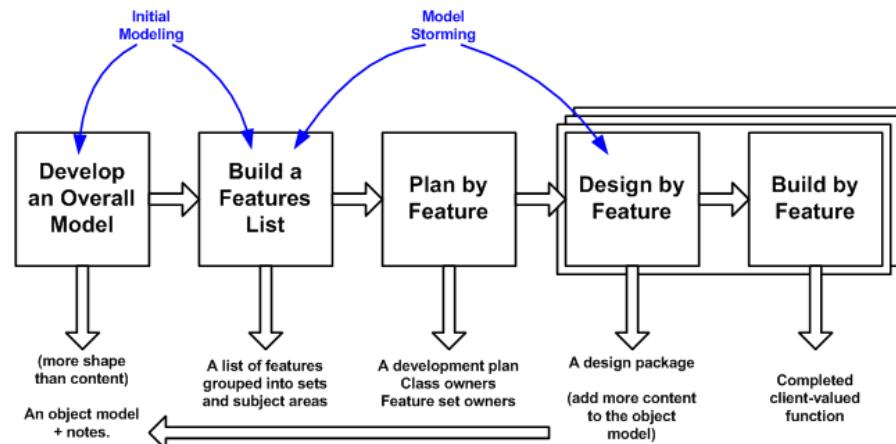
Feature-Driven Development (FDD)

Based on client-value functionality.

✓ **Responding to change** over following a plan

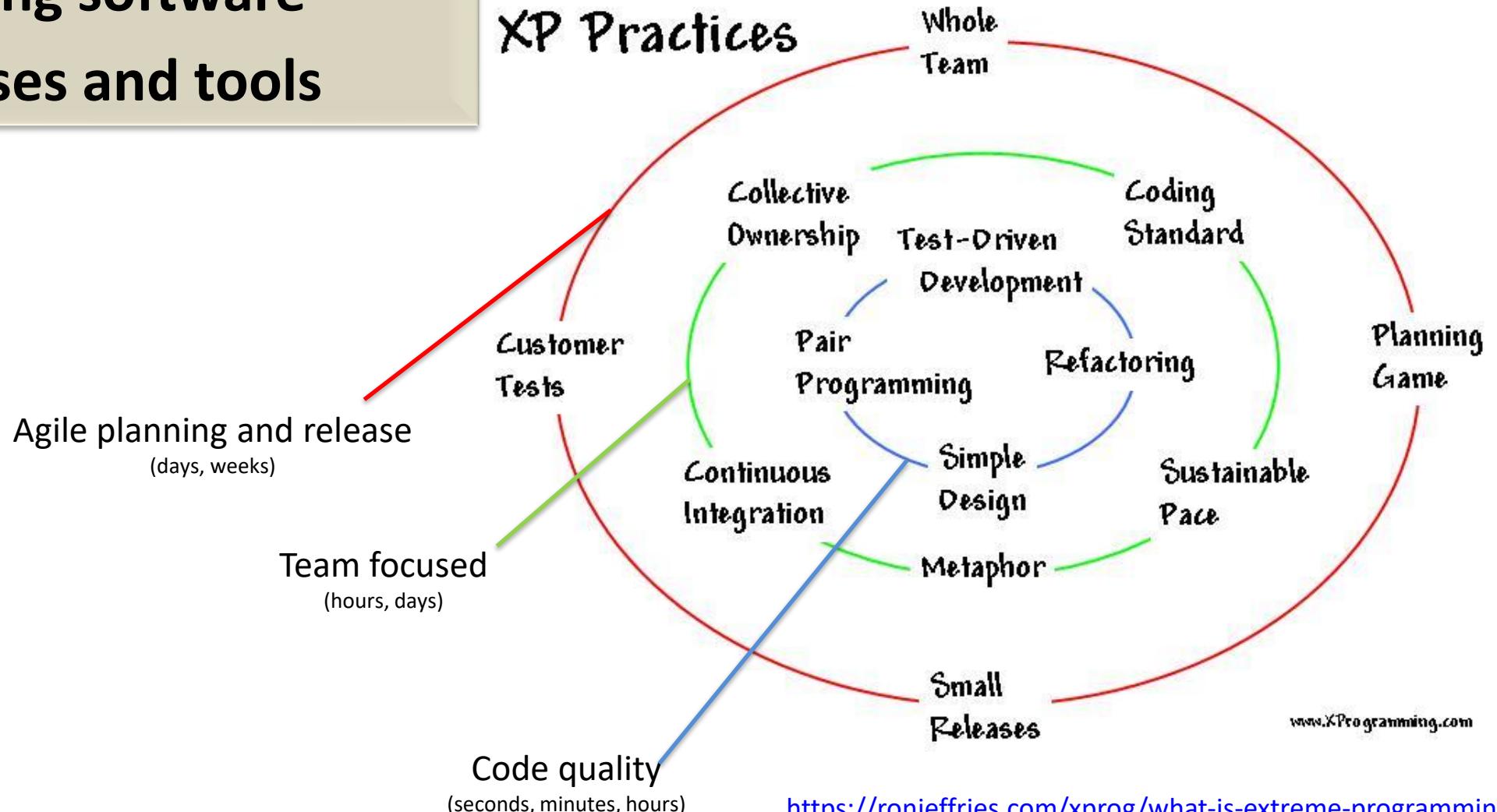
✓ **Working software** over comprehensive documentation

✓ **Customer collaboration** over contract negotiation



Extreme Programming

- ✓ Individuals and interactions
- ✓ Working software
- ✗ processes and tools

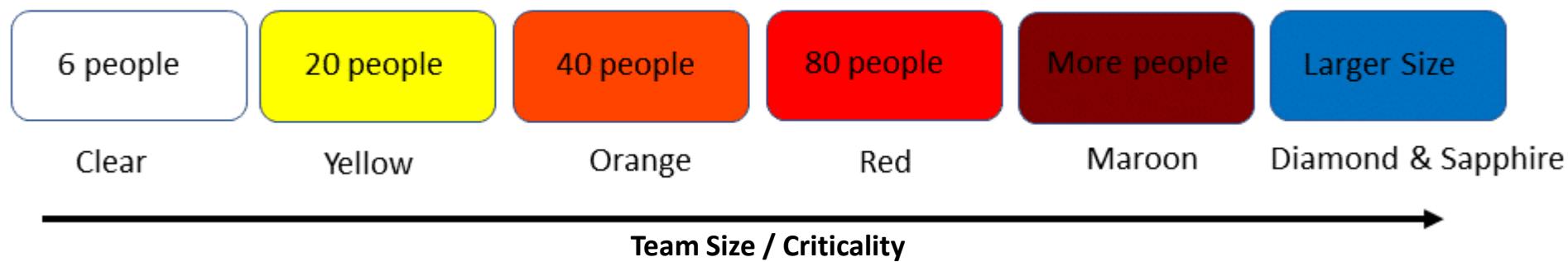


Crystal Method

“XP without discipline” -- creator Alistair Cockburn

✓ **Individuals and interactions** over processes and tools

- A family of methods that focus on **Teamwork, Communication, Simplicity**
- **Lightweight** (more talking less documentation)
- **Adaptable** (Processes and tools adapted to fit **team size** and **criticality**)

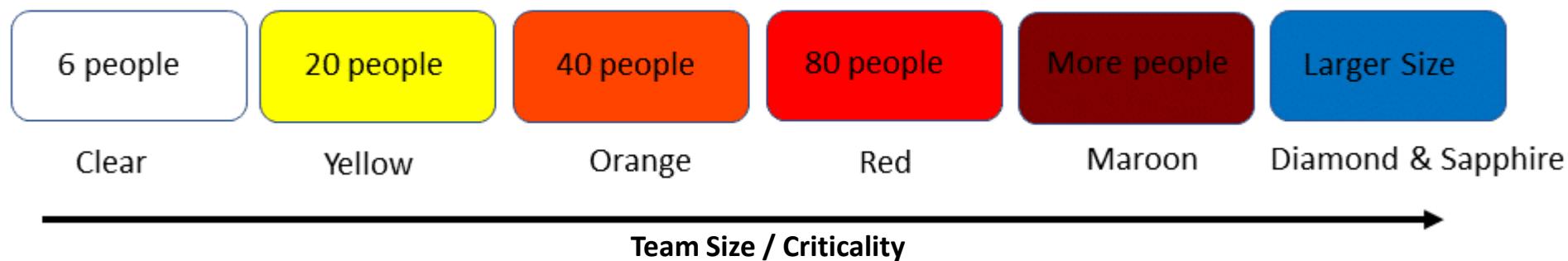


Crystal Method

“XP without discipline” -- creator Alistair Cockburn

✓ **Individuals and interactions** over processes and tools

- A family of methods that focus on **Teamwork, Communication, Simplicity**
- **Lightweight** (more talking less documentation)
- **Adaptable** (Processes and tools adapted to fit **team size** and **criticality**)



- Lightweight
- Self-organising

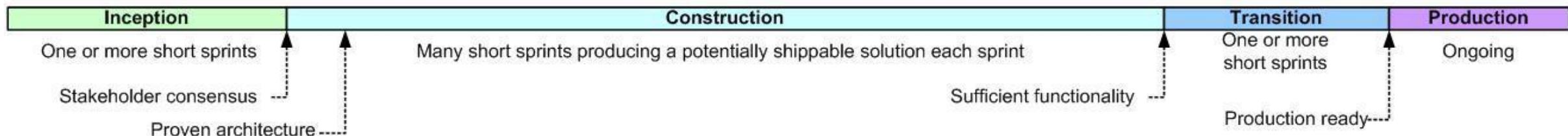
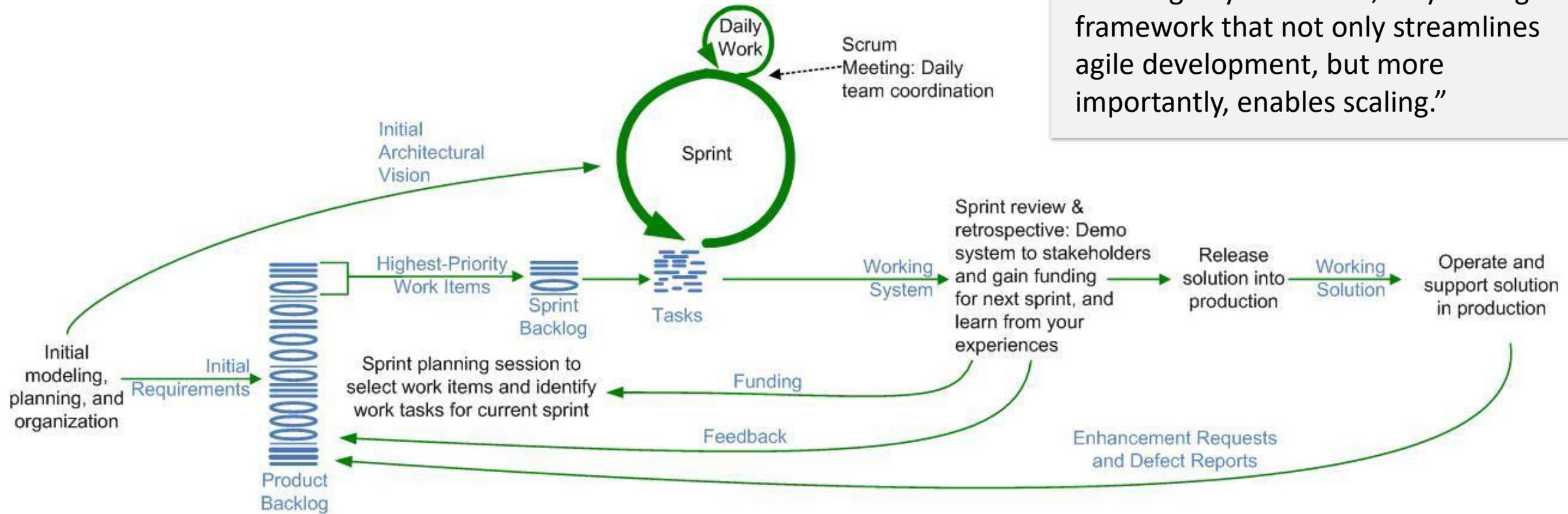
- Code areas
- Automated testing

- Skill-based teams
- Quarterly releases

- Adaptive teams
- Methods chosen to fit project

- Mission critical
- Risk to life

Disciplined Agile Delivery



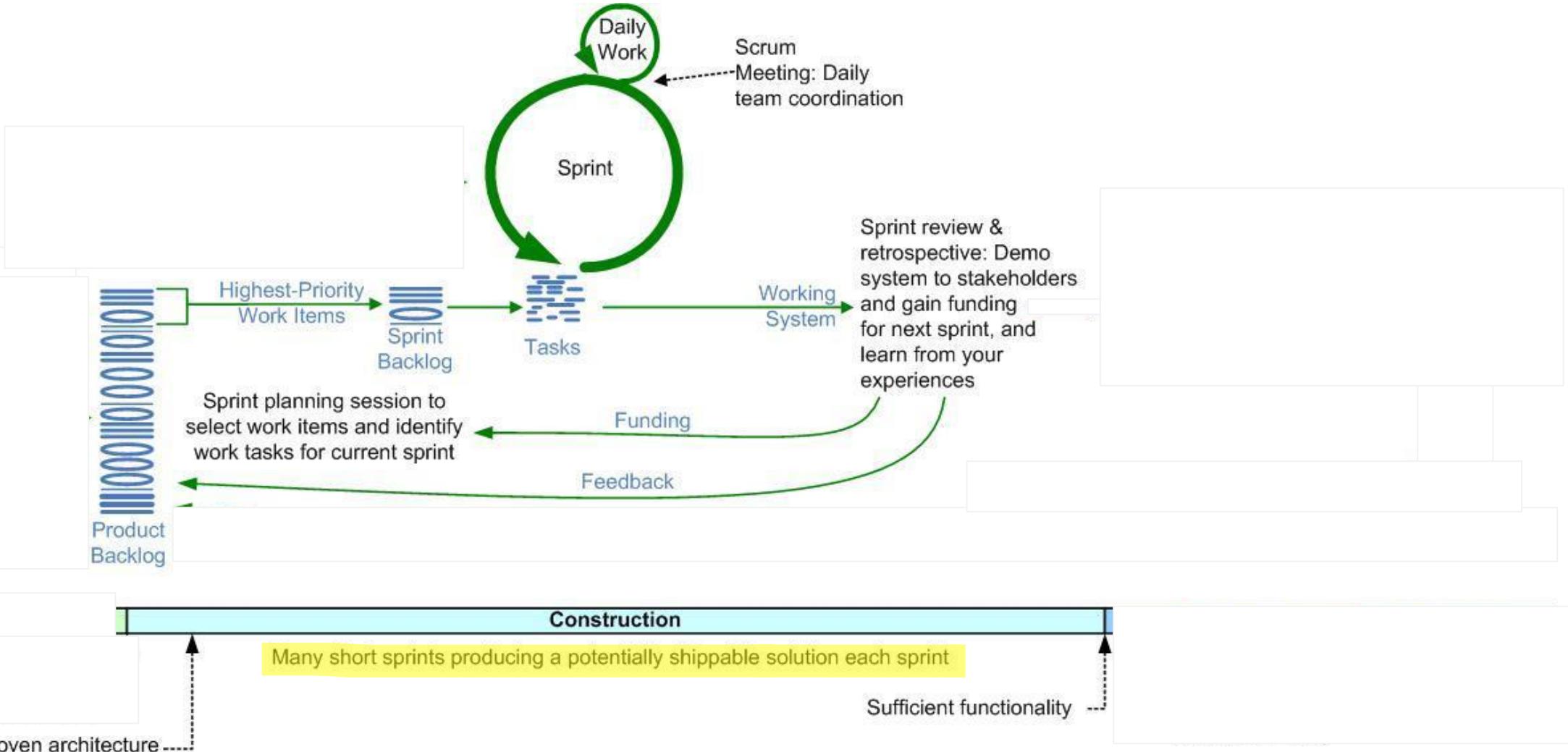
Copyright © 2010 IBM Corporation

"Moving beyond scrum, a hybrid-agile framework that not only streamlines agile development, but more importantly, enables scaling."

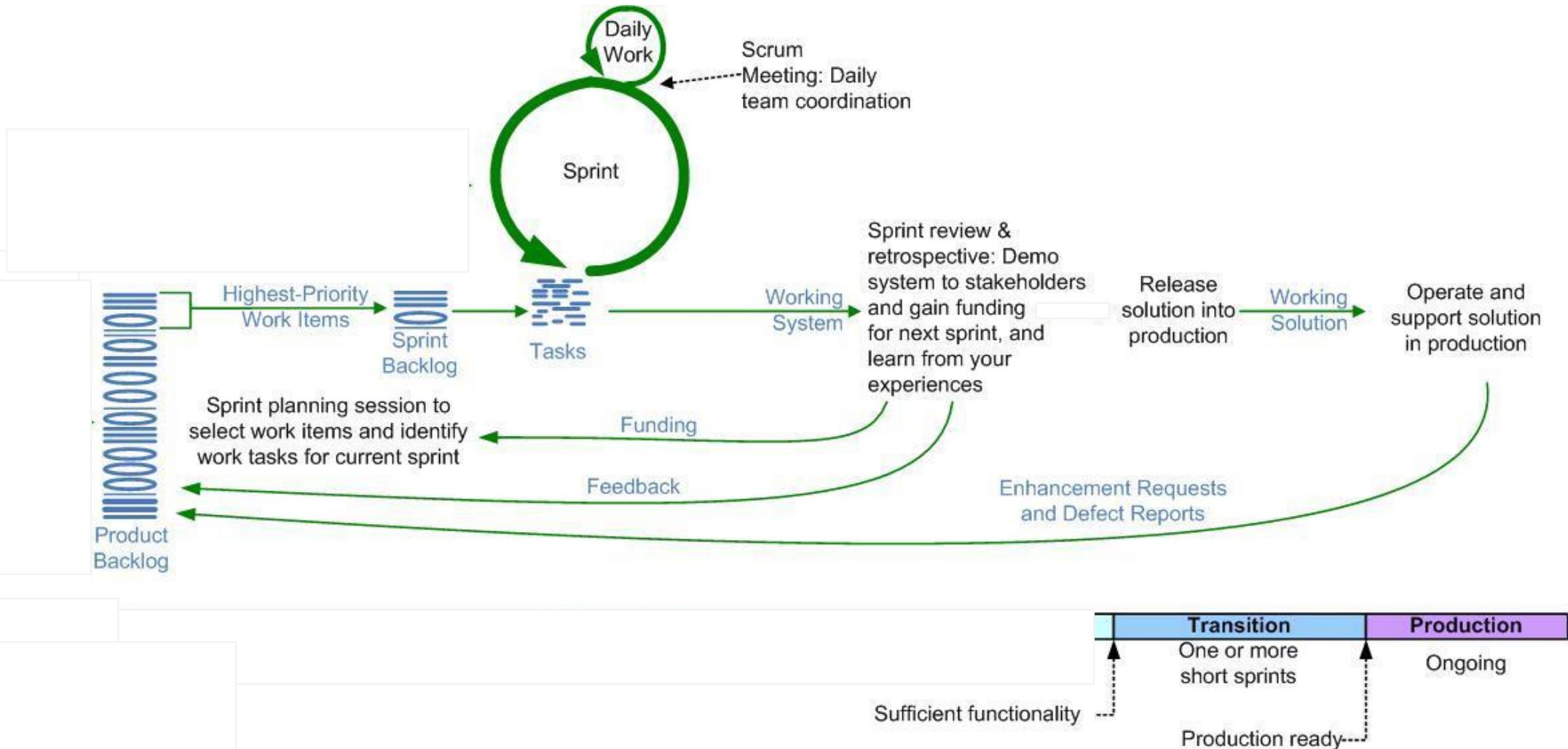
Disciplined Agile Delivery



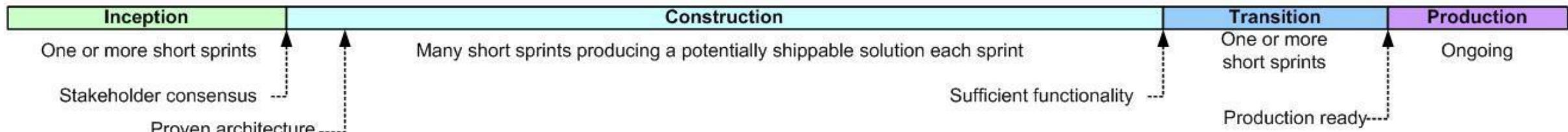
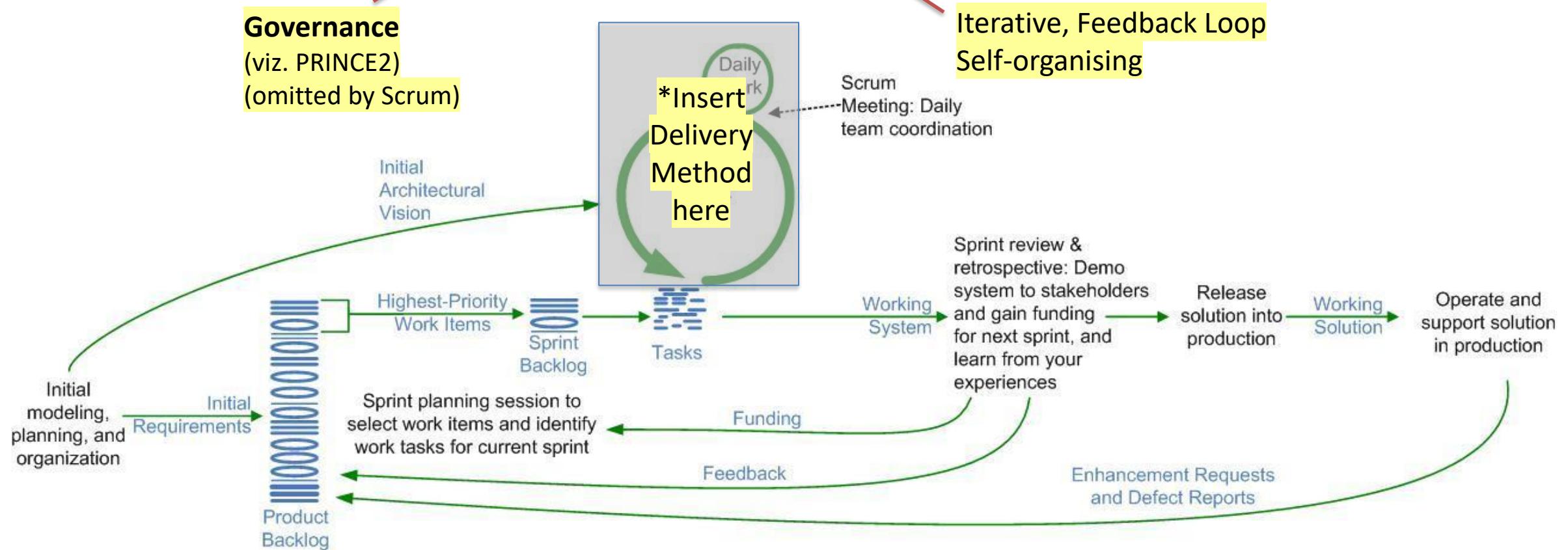
Disciplined Agile Delivery



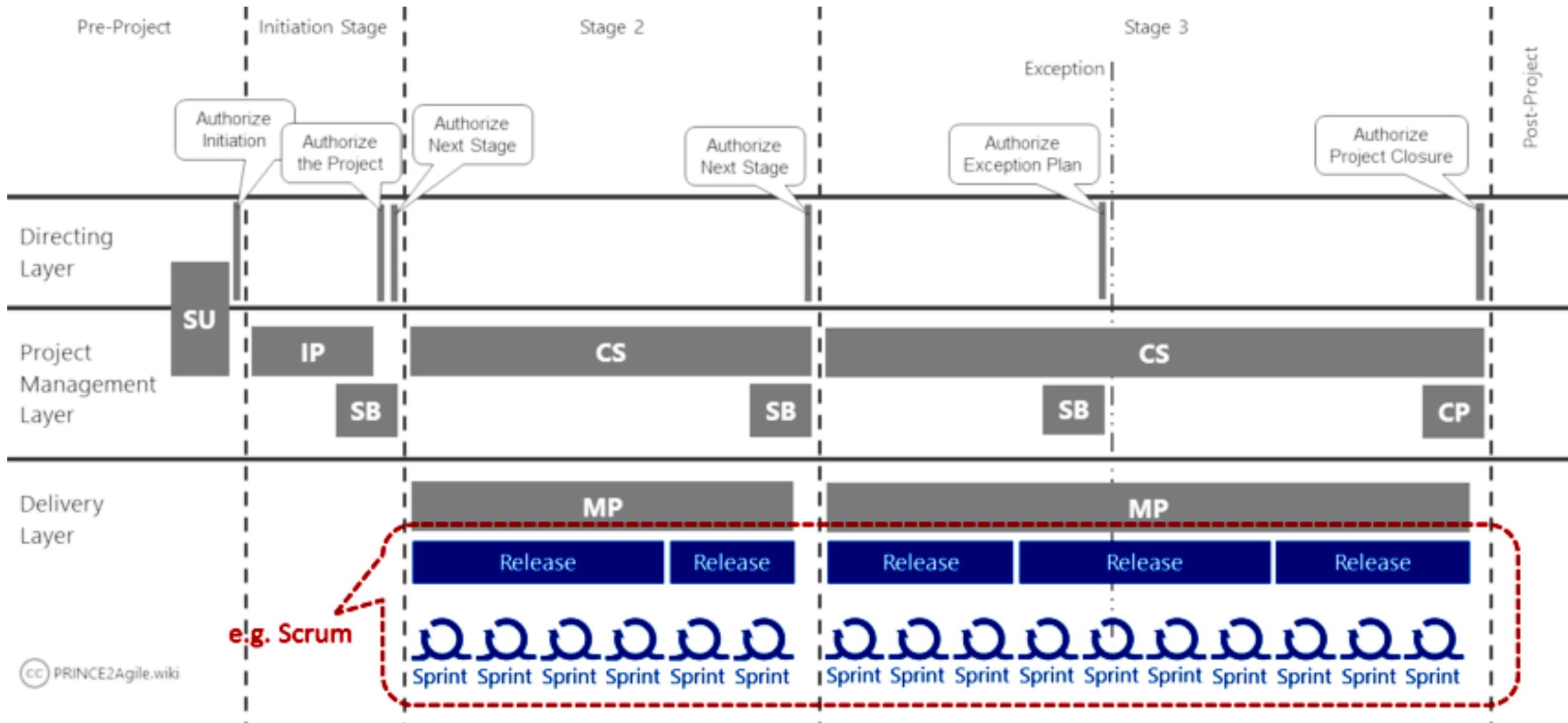
Disciplined Agile Delivery



Disciplined Agile Delivery



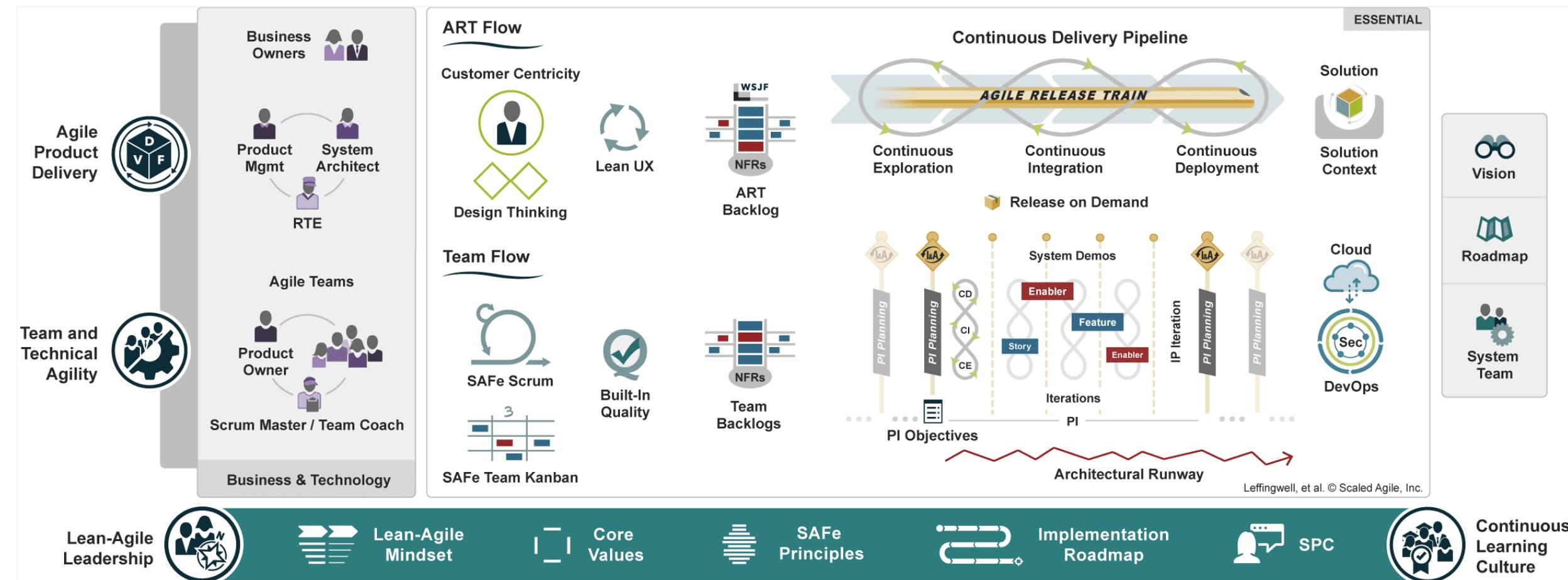
PRINCE2 Agile®



The Scaled Agile Framework

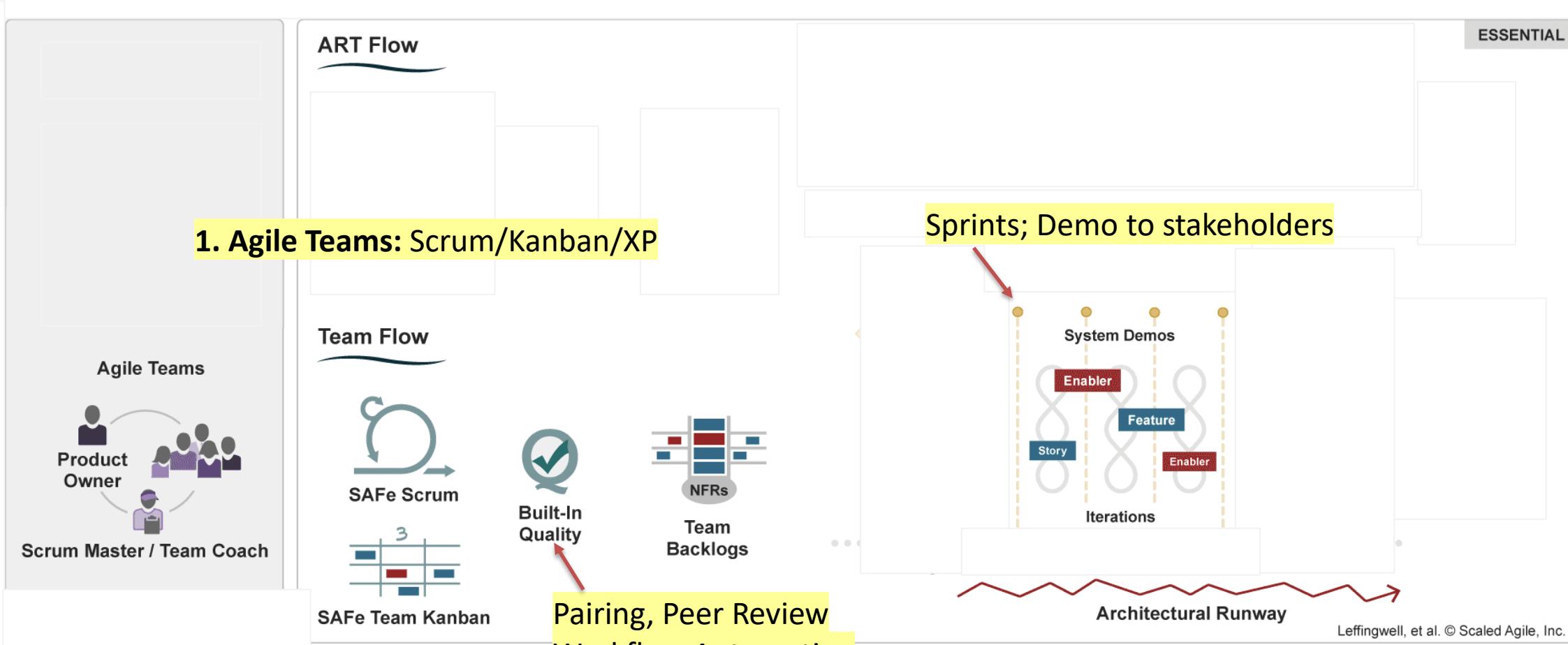
A set of organization and workflow patterns intended to guide enterprises in scaling lean and agile practices

<https://www.scaledagileframework.com>



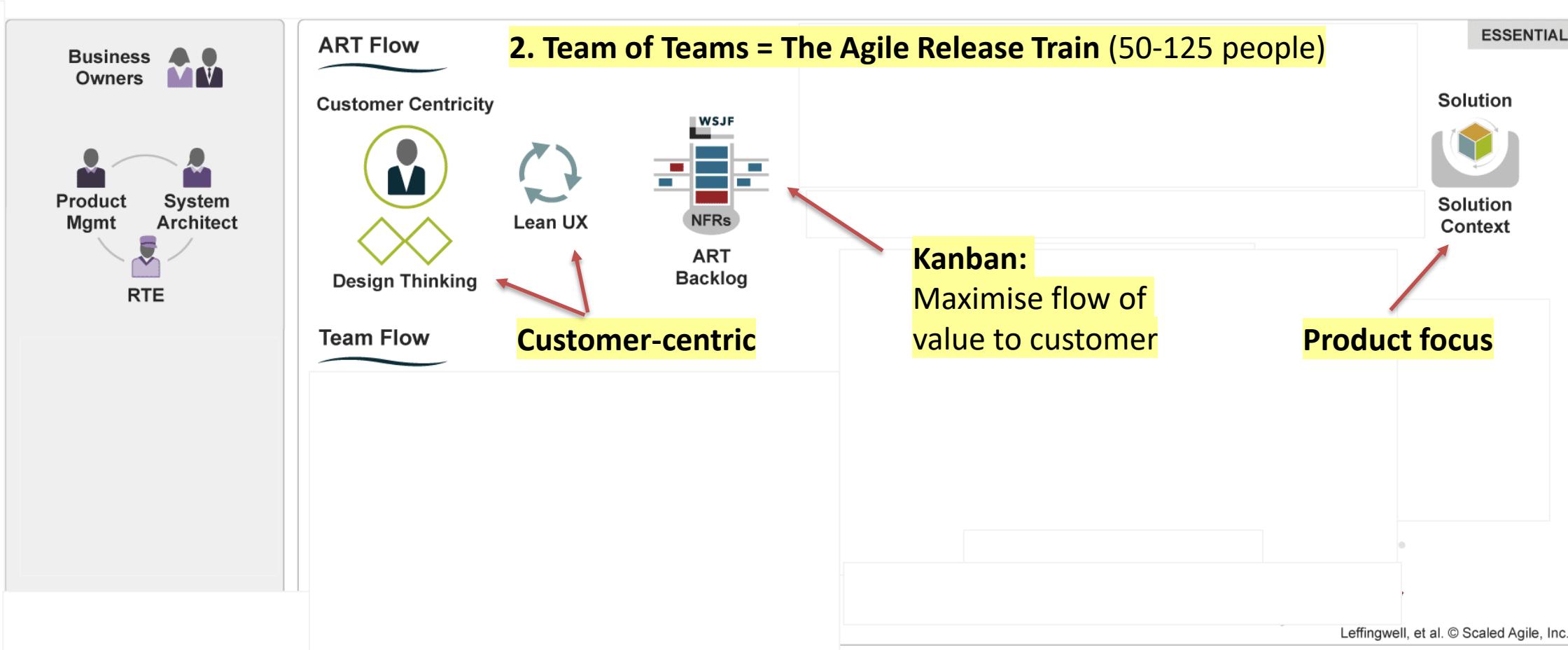
The Scaled Agile Framework

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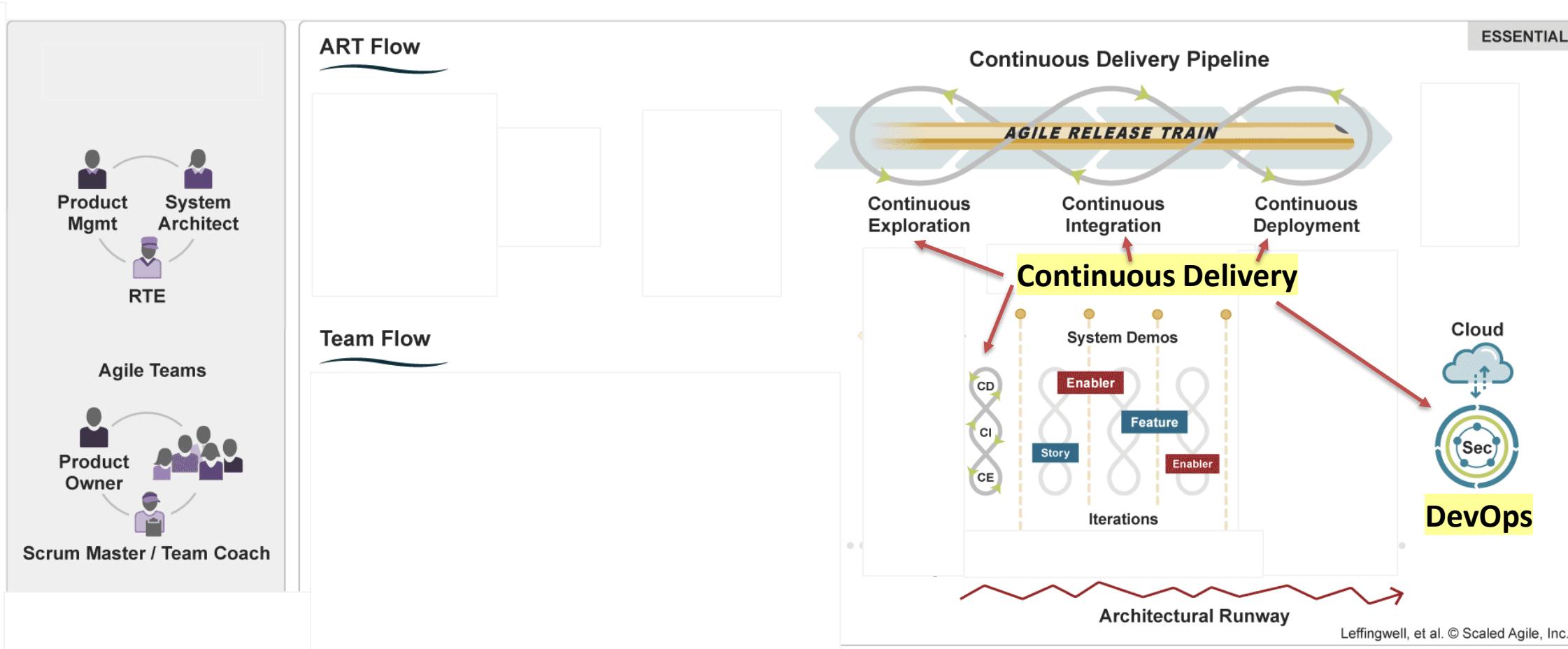
The Scaled Agile Framework

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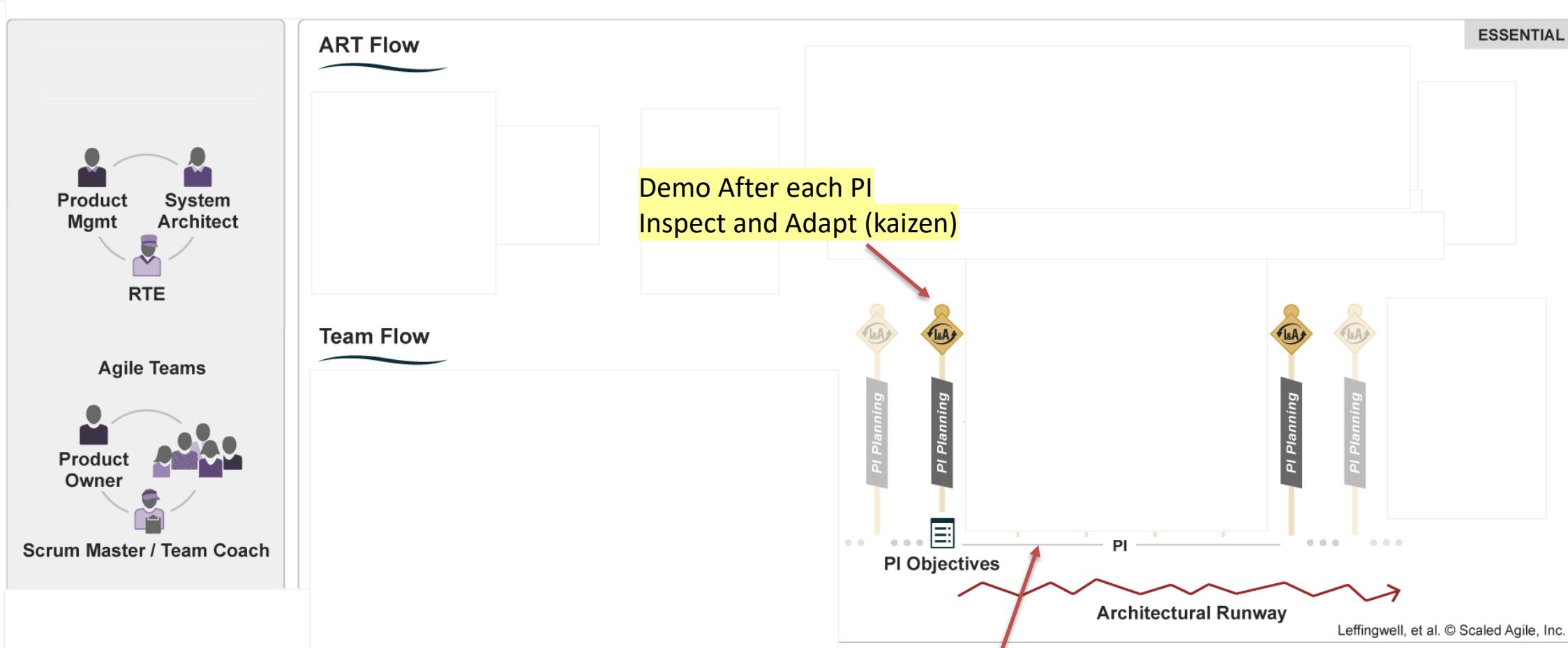
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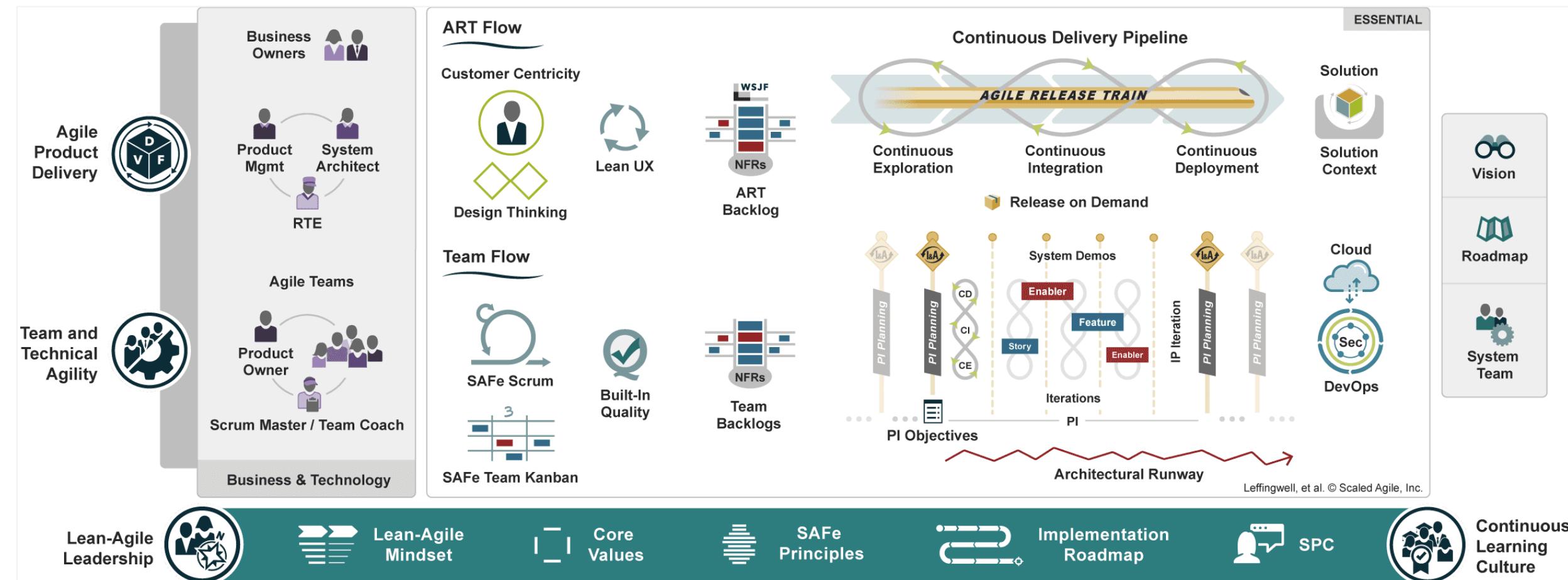


Planning: 8-12 week Planning Intervals (like “stages”)

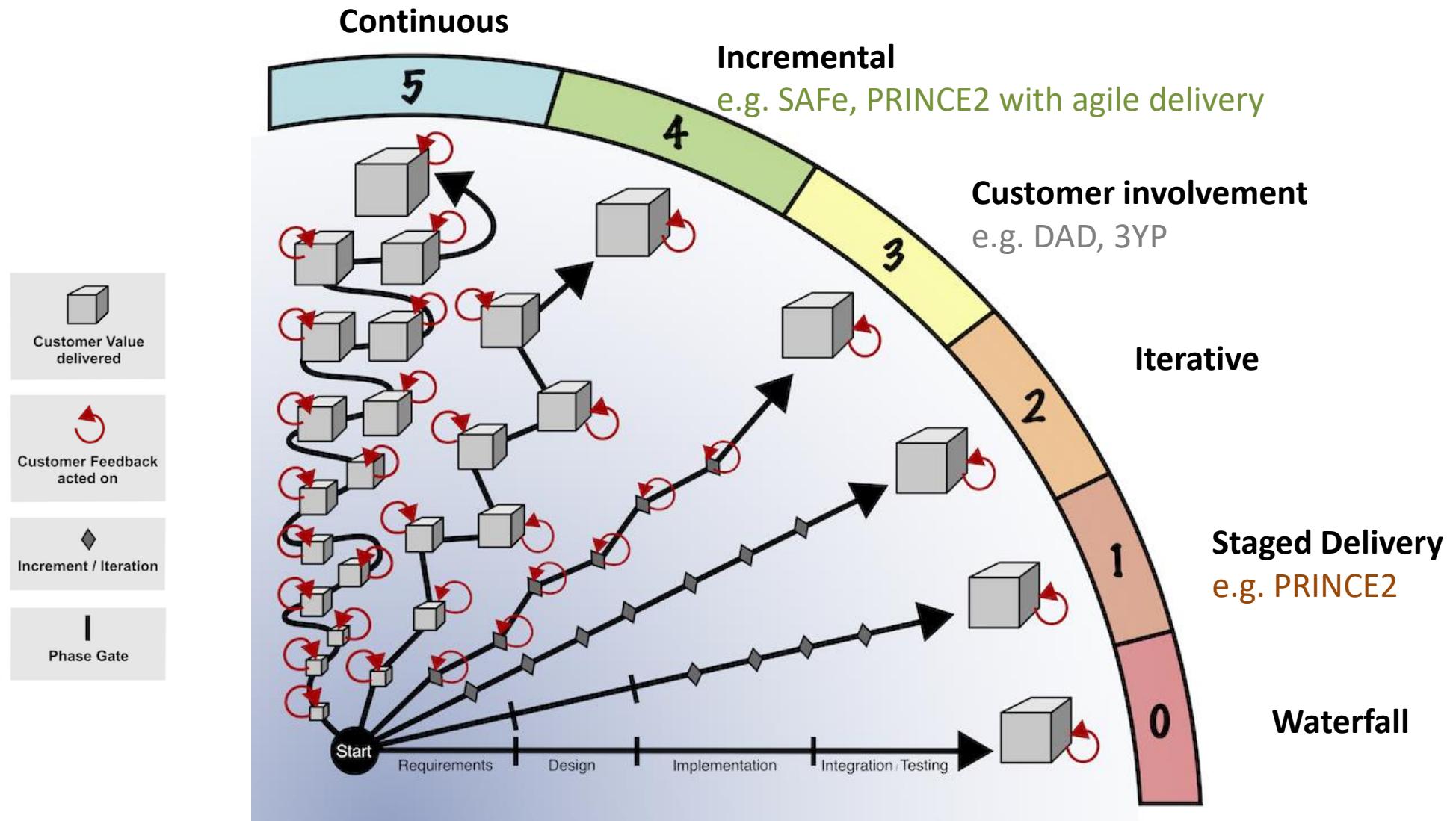
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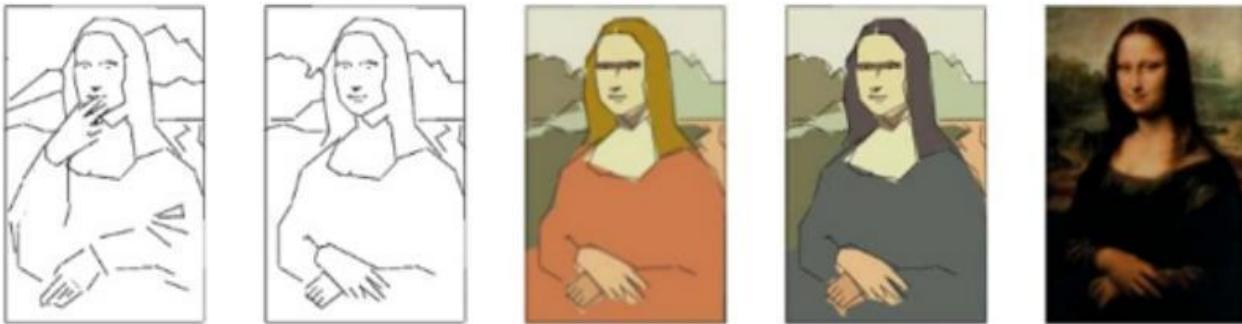
<https://www.scaledagileframework.com>



Levels of agile



ITERATIVE



INCREMENTAL



ON BUDGET AND ON TIME

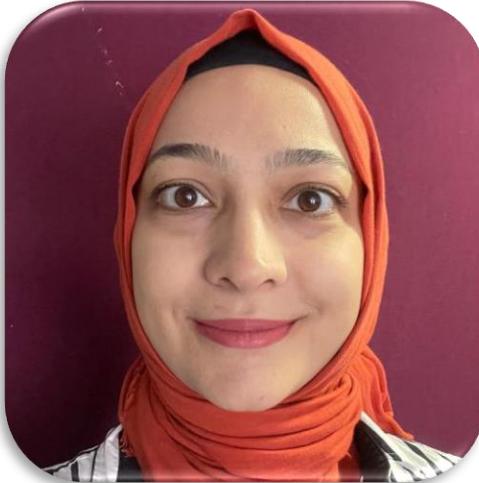




Ian



Anna



Ayse

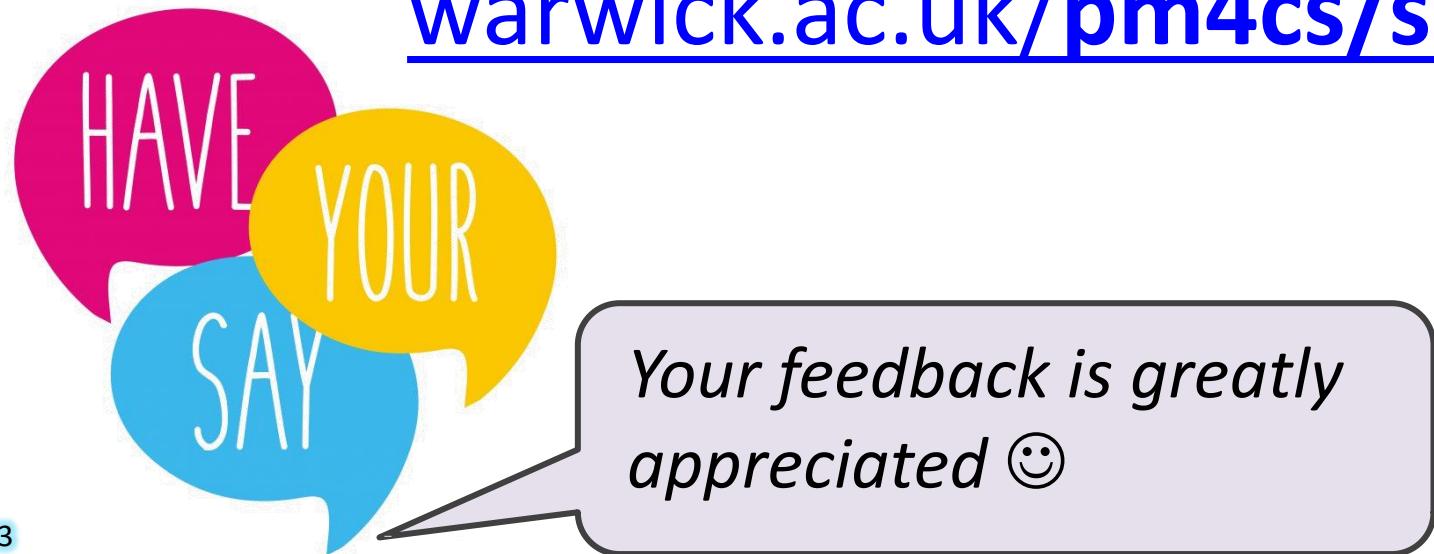


Hok



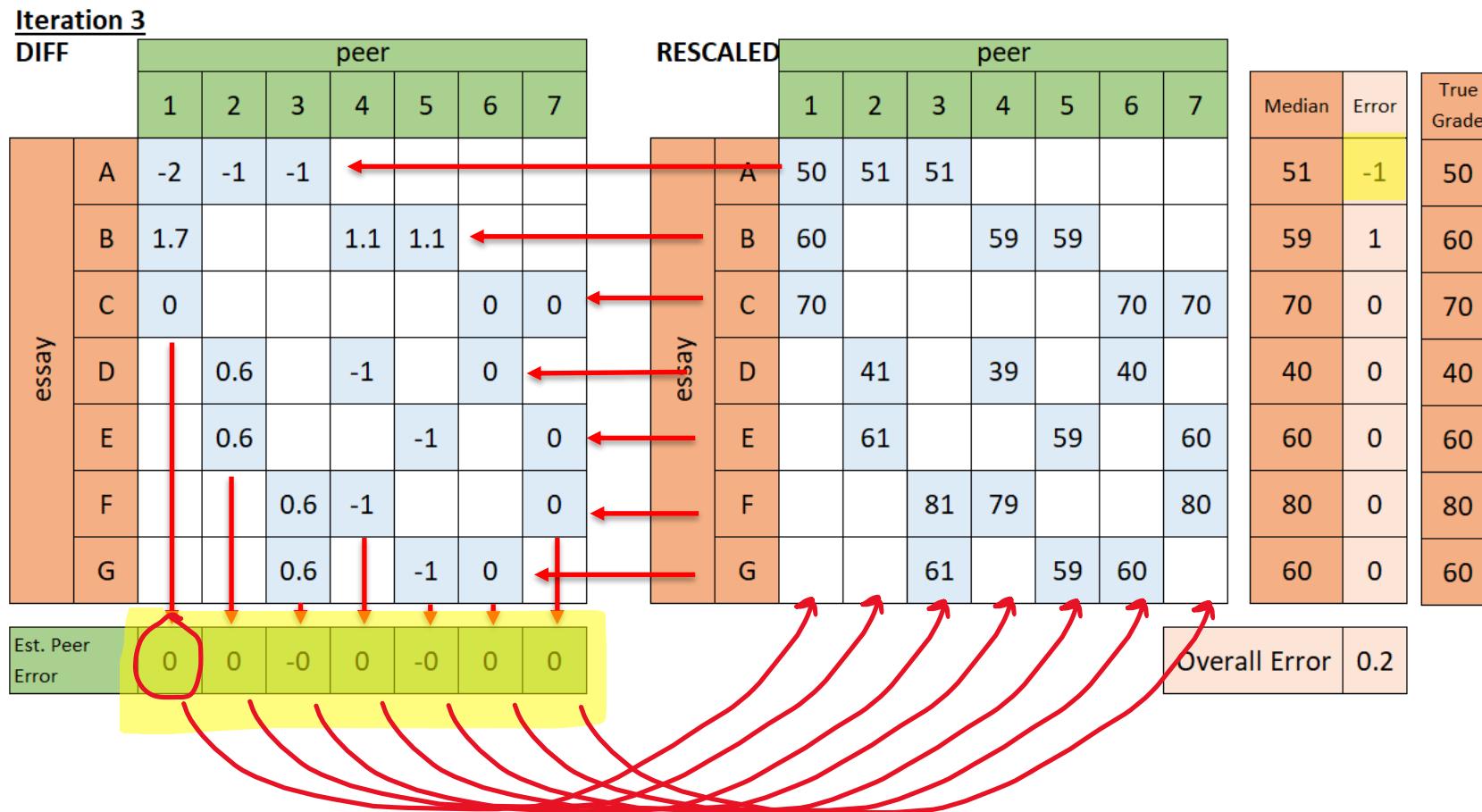
Paritosh

warwick.ac.uk/pm4cs/survey/



Peer Assessment

Mark Rescaling



Peer Assessment: Grade Calculation

1. The Problem

		peer						
		1	2	3	4	5	6	7
essay	A	x	x	x				
	B	x			x	x		
	C	x					x	x
	D		x		x		x	
	E		x			x		x
	F			x	x			x
	G			x		x	x	
True Peer Error		0	5	10	-5	-10	0	0

True Grade
50
60
70
40
60
80
60

Peer Assessment: Grade Calculation

1. The Problem

essay		peer							True Grade
		1	2	3	4	5	6	7	
A		x	x	x					50
B		x			x	x			60
C		x					x	x	70
D			x		x		x		40
E			x			x			60
F				x	x			x	80
G				x		x	x		60
True Peer Error		0	5	10	-5	-10	0	0	

essay		peer						
		1	2	3	4	5	6	7
A		50	55	60				
B		60			55	50		
C		70					70	70
D			45		35		40	
E			65			50		60
F				90	75			80
G				70		50	60	

Peer Assessment: Grade Calculation

1. The Problem

		peer						
		1	2	3	4	5	6	7
essay	A	50	55	60				
	B	60			55	50		
	C	70					70	70
	D		45		35		40	
	E		65			50		60
	F			90	75			80
	G			70		50	60	

Peer Assessment: Grade Calculation

1. The Problem

		peer								
		1	2	3	4	5	6	7	Median	Error
essay	A	50	55	60					55	-5
	B	60			55	50			55	5
	C	70					70	70	70	0
	D		45		35		40		40	0
	E		65			50		60	60	0
	F			90	75			80	80	0
	G			70		50	60		60	0
										Overall Error 1.4

Peer Assessment: Grade Calculation

2. Calculate Diff

Iteration 1

DIFF		peer						
essay	A	-5	0	5				
	B	5			0	-5		
	C	0					0	0
	D		5		-5		0	
	E		5			-10		0
	F			10	-5			0
	G			10		-10	0	

		peer						
essay	A	50	55	60				
	B	60			55	50		
	C	70					70	70
	D		45		35		40	
	E		65			50		60
	F			90	75			80
	G			70		50	60	

Median	Error
55	-5
55	5
70	0
40	0
60	0
80	0
60	0

Overall Error | 1.4

Peer Assessment: Grade Calculation

2. Calculate Diff

		Iteration 1						
		peer						
DIFF		1	2	3	4	5	6	7
essay	A	-5	0	5				
	B	5			0	-5		
	C	0					0	0
	D		5		-5		0	
	E		5			-10		0
	F			10	-5			0
	G			10		-10	0	

Peer Assessment: Grade Calculation

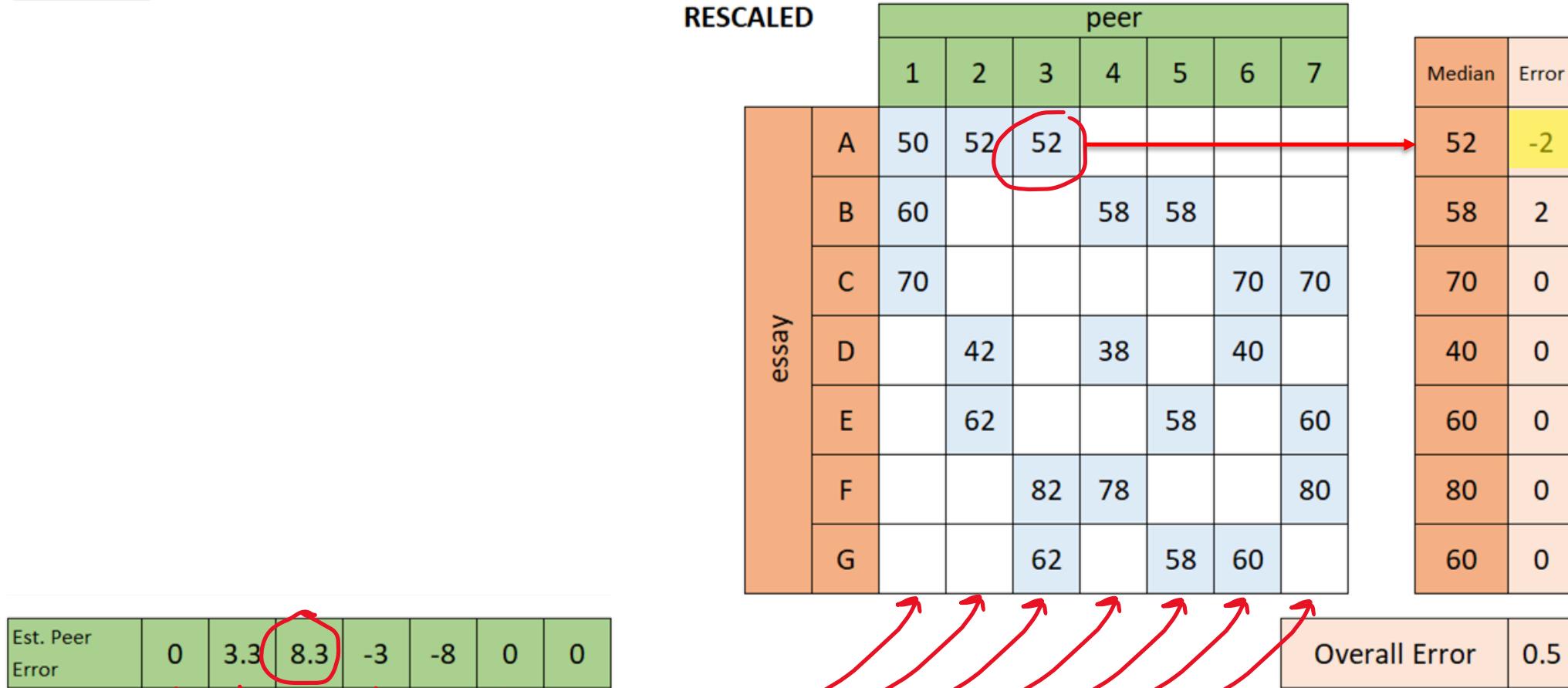
3. Estimate Reviewer Error

		Iteration 1						
		peer						
DIFF		1	2	3	4	5	6	7
essay	A	-5	0	5				
	B	5			0	-5		
	C	0					0	0
	D		5		-5		0	
	E		5			-10		0
	F			10	-5			0
	G			10		-10	0	
Est. Peer Error		0	3.3	8.3	-3	-8	0	0

Peer Assessment: Grade Calculation

4. Recompute Peer Scores

Iteration 1



Peer Assessment: Grade Calculation

5. Repeat Until Convergence

Iteration 2

DIFF		peer						
essay	1	2	3	4	5	6	7	
	A	-2	0	0				
	B	1.7			0	0		
	C	0					0	0
	D		1.7		-2		0	
	E		1.7			-2		0
	F			1.7	-2			0
	G			1.7		-2	0	

Est. Peer Error	0	1.1	1.1	-1	-1	0	0
-----------------	---	-----	-----	----	----	---	---

RESCALED		peer							Median	Error
essay	1	2	3	4	5	6	7			
	A	50	51	51					51	-1
	B	60			59	59			59	1
	C	70					70	70	70	0
	D		41		39		40		40	0
	E		61			59		60	60	0
	F			81	79			80	80	0
	G			61		59	60		60	0

Overall Error	0.2
---------------	-----

Peer Assessment: Grade Calculation

5. Repeat Until Convergence

Iteration 3

DIFF		peer						
		1	2	3	4	5	6	7
essay	A	-2	-1	-1				
	B	1.7			1.1	1.1		
	C	0					0	0
	D		0.6		-1		0	
	E		0.6			-1		0
	F			0.6	-1			0
	G			0.6		-1	0	

Est. Peer Error	0	0	-0	0	-0	0	0
-----------------	---	---	----	---	----	---	---

RESCALED		peer							Median	Error	True Grade
		1	2	3	4	5	6	7			
essay	A	50	51	51					51	-1	50
	B	60			59	59			59	1	60
	C	70					70	70	70	0	70
	D		41		39		40		40	0	40
	E		61			59		60	60	0	60
	F			81	79			80	80	0	80
	G			61		59	60		60	0	60

Overall Error	0.2
---------------	-----



Project Presentation

warwick.ac.uk/pmcs/assignments/presentation/

- 5 minute “business pitch” + questions
- You don’t all need to speak, but you should all contribute (and attend session)

Presentation Tips

- You will need to handle **email from boss**
- Convince us that project is **beneficial, viable, cost-effective** and **achievable**
- Don't all need to speak – but still important to convey **teamwork**
- Know your **audience: impress you peers!**

Mark Scheme

<https://warwick.ac.uk/pmcs/assignments/presentation>

Delivery (the presentation should make a strong impression, and engage the audience)

Organisation (the presentation should be well organised, have a logical structure, be easy to follow and last 5 minutes)

Executive (the presentation should satisfy the business executive by presenting a sound business case, which should deliver measurable benefits to the organisation, and be cost effective / achieve a financial return)

Senior User (the presentation should satisfy the end users by providing them with the necessary features to be beneficial to them)

Senior Supplier (the project must make realistic demands of the developers, and other people involved in implementing the project)

Project Manager (the project must present a convincing plan, such as timeline, budget, and chosen methodology)

Q&A (the team should be able to handle questions convincingly and effectively)



Quiz!

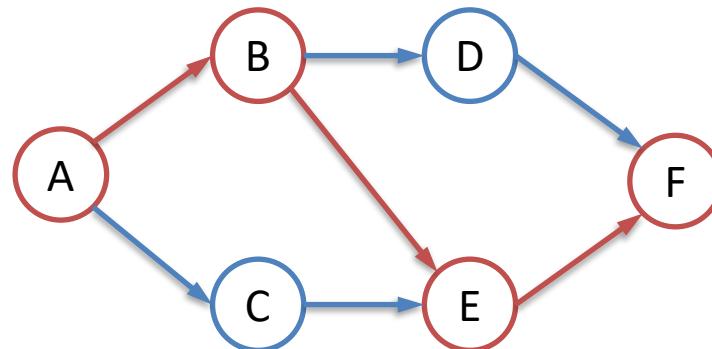


warwick.ac.uk/pm4cs/10



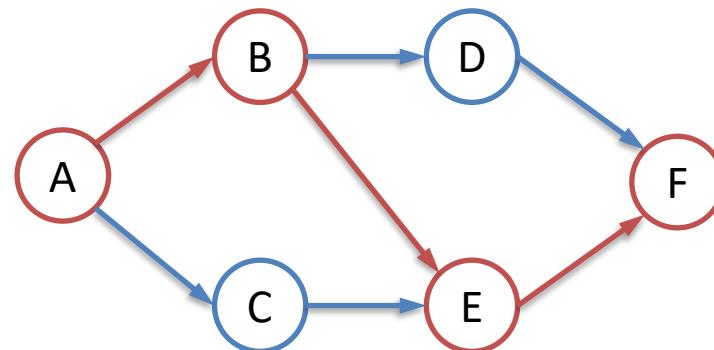
Which of the following is NOT one of the three PMBOK initiating process outputs?

- 1 Business Case
- 2 Stakeholder management strategy
- 3 Stakeholder register
- 4 Project Charter



In critical path method, what do we call the amount of time an activity can be delayed without delaying the early start of any immediate successor?

- 1 Free Float
- 2 Total Float
- 3 Drag Time
- 4 Slack Time



In PERT analysis, the project duration is Normally distributed with expected duration 10 weeks and variance 1 week. What is the probability that the project will take 10 weeks or less?

- 1 0%
- 2 33%
- 3 50%
- 4 100%
- 5 Not enough information



Which PRINCE2 Principle contradicts the criticism "The team are unable to work effectively when they are constantly being told how to do their job"

- 1 Continuous business justification
- 2 Learn from experience
- 3 Defined Roles and responsibilities
- 4 Manage by stages
- 5 Manage by exception
- 6 Focus on products
- 7 Tailor to suit the project environment

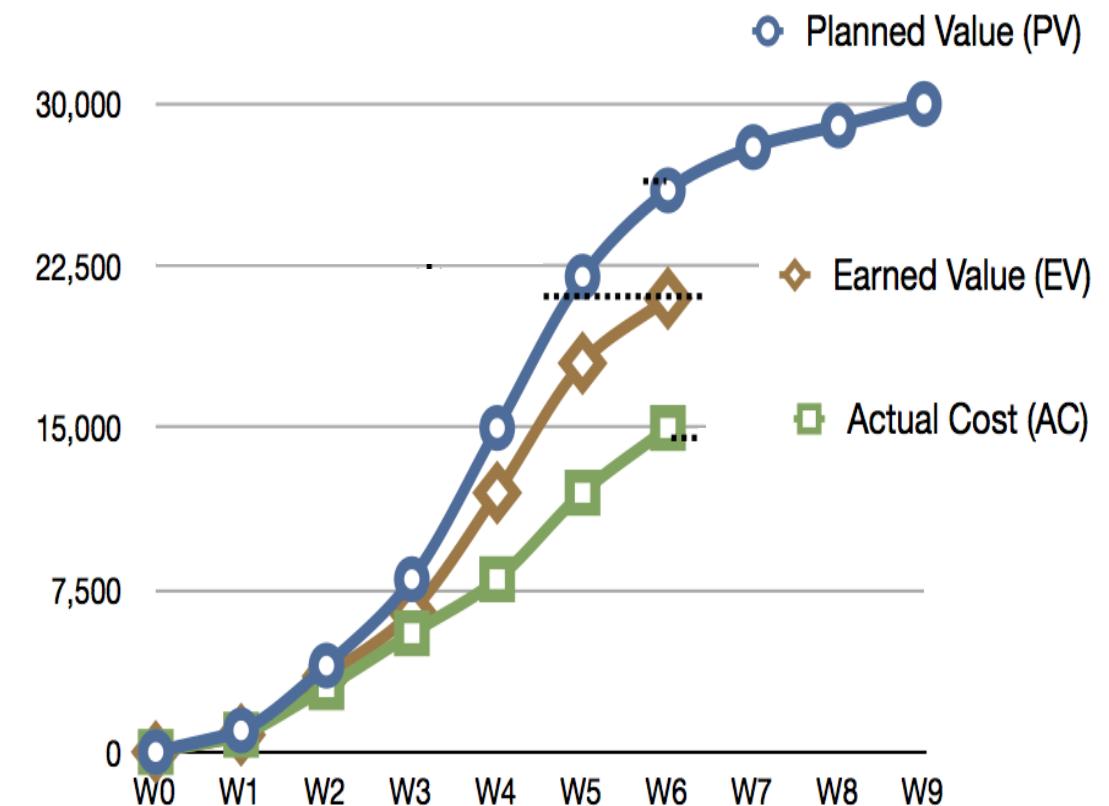


When updating the project plan as part of Managing a Stage Boundary, what else might be updated?

- 1 Project Management Team
- 2 Exception Plan
- 3 Project Initiation Documentation
- 4 Business Case

What's the status of this work package?

- 1 Under budget, Ahead of schedule
- 2 Over budget, Ahead of schedule
- 3 Under budget, Behind schedule
- 4 Over budget, Behind schedule

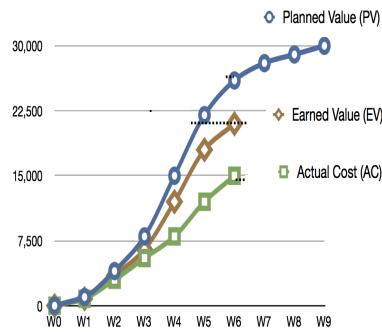




Half Way Leaderboard



Position	Participants	Score
1	John Doe, Jane Smith, Michael Johnson	150
2	Jane Smith, Michael Johnson, John Doe	145
3	Michael Johnson, John Doe, Jane Smith	140
4	John Doe, Jane Smith, Michael Johnson	135
5	Jane Smith, Michael Johnson, John Doe	130
6	Michael Johnson, John Doe, Jane Smith	125
7	John Doe, Jane Smith, Michael Johnson	120
8	Jane Smith, Michael Johnson, John Doe	115
9	Michael Johnson, John Doe, Jane Smith	110
10	John Doe, Jane Smith, Michael Johnson	105
11	Jane Smith, Michael Johnson, John Doe	100
12	Michael Johnson, John Doe, Jane Smith	95
13	John Doe, Jane Smith, Michael Johnson	90
14	Jane Smith, Michael Johnson, John Doe	85
15	Michael Johnson, John Doe, Jane Smith	80
16	John Doe, Jane Smith, Michael Johnson	75
17	Jane Smith, Michael Johnson, John Doe	70
18	Michael Johnson, John Doe, Jane Smith	65
19	John Doe, Jane Smith, Michael Johnson	60
20	Jane Smith, Michael Johnson, John Doe	55
21	Michael Johnson, John Doe, Jane Smith	50
22	John Doe, Jane Smith, Michael Johnson	45
23	Jane Smith, Michael Johnson, John Doe	40
24	Michael Johnson, John Doe, Jane Smith	35
25	John Doe, Jane Smith, Michael Johnson	30
26	Jane Smith, Michael Johnson, John Doe	25
27	Michael Johnson, John Doe, Jane Smith	20
28	John Doe, Jane Smith, Michael Johnson	15
29	Jane Smith, Michael Johnson, John Doe	10
30	Michael Johnson, John Doe, Jane Smith	5
31	John Doe, Jane Smith, Michael Johnson	0



Midway through project, SPI=0.5, due to a temporary staffing issue. Which EAC formula should you use?

- 1 $BAC \div CPI$

- 2 $AC + (BAC - EV)$

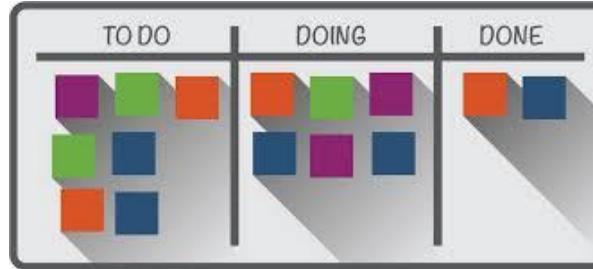
- 3 $AC + (BAC - EV) \div CSI$

- 4 $AC + BAC - (EV \div CSI)$



In Scrum, who is responsible for measuring the project's performance?

- 1 The Scrum Master
- 2 The Project Manager
- 3 The Product Owner
- 4 Anyone on the team
- 5 Performance is NOT measured



What is one possible way to spot problems in a Kanban flow?

- 1 Change team structure
- 2 Add swimlanes
- 3 Reduce WIP limits
- 4 Increase WIP limits
- 5 Monitor each individual's flow rate
- 6 Monitor quality of the finished product



	Impact				
	Negligible	Minor	Moderate	Significant	Severe
Very Likely	Low Med	Medium	Med Hi	High	High
Likely	Low	Low Med	Medium	Med Hi	High
Possible	Low	Low Med	Medium	Med Hi	Med Hi
Unlikely	Low	Low Med	Low Med	Medium	Med Hi
Very Unlikely	Low	Low	Low Med	Medium	Medium

As a part of your project, you have organised a conference. You learn that there's a 40% chance of a tropical storm on the date in question. How should you handle such risk?

- 1 Change the location of the conference
- 2 Change the date of the conference
- 3 Have another location on standby
- 4 Buy insurance
- 5 Inform all participants of the possible storm



	Impact					
	Negligible	Minor	Moderate	Significant	Severe	
Likelihood	Very Likely	Low Med	Medium	Med Hi	High	High
Likely	Low	Low Med	Medium	Med Hi	High	
Possible	Low	Low Med	Medium	Med Hi	Med Hi	
Unlikely	Low	Low Med	Low Med	Medium	Med Hi	
Very Unlikely	Low	Low	Low Med	Medium	Medium	

You are doing FMEA at the start of a waterfall project.
One risk identified is “The customer doesn’t want it”.
What are the S and D scores?

1 High S, High D

2 Low S, Low D

3 High S, Low D

4 Low S, High D



Which of the following would be the best way to improve a team's effectiveness?

- 1 Reduce conflict and disagreement
- 2 Team comprising similar-minded people for effective communication
- 3 Hire people who won't challenge your authority
- 4 Don't mix loud extroverts with quiet introverts
- 5 None of the above



Leaderboard



Position	Participants	Score
1	John Doe, Jane Smith, Michael Johnson	120
2	Jane Smith, Michael Johnson, John Doe	115
3	Michael Johnson, John Doe, Jane Smith	110
4	John Doe, Jane Smith, Michael Johnson	105
5	Jane Smith, Michael Johnson, John Doe	100
6	Michael Johnson, John Doe, Jane Smith	95
7	John Doe, Jane Smith, Michael Johnson	90
8	Jane Smith, Michael Johnson, John Doe	85
9	Michael Johnson, John Doe, Jane Smith	80
10	John Doe, Jane Smith, Michael Johnson	75
11	Jane Smith, Michael Johnson, John Doe	70
12	Michael Johnson, John Doe, Jane Smith	65
13	John Doe, Jane Smith, Michael Johnson	60
14	Jane Smith, Michael Johnson, John Doe	55
15	Michael Johnson, John Doe, Jane Smith	50
16	John Doe, Jane Smith, Michael Johnson	45
17	Jane Smith, Michael Johnson, John Doe	40
18	Michael Johnson, John Doe, Jane Smith	35
19	John Doe, Jane Smith, Michael Johnson	30
20	Jane Smith, Michael Johnson, John Doe	25
21	Michael Johnson, John Doe, Jane Smith	20
22	John Doe, Jane Smith, Michael Johnson	15
23	Jane Smith, Michael Johnson, John Doe	10
24	Michael Johnson, John Doe, Jane Smith	5
25	John Doe, Jane Smith, Michael Johnson	0





- Past paper question (2022 Q3b) says to use values in the range 1-3 where 1=Low, 2=Medium, 3=High. For Severity and Occurrence Probability it aligns with our lecture notes but for Detection Rate and Feasibility it gives the exact opposite scaling.

FMEA

Failure Mode	S	O	D	C	RPN
	SO	SOD			
Occurrence (Probability of it happening)					
Severity (How bad it would be if it happened)					
Detectability (How hard to detect when it happens)					

E-FMEA

Corrective Action	S'	O'	D'	F	ΔRPN	$\Delta RPN/F$
				SOD - S'O'D'		
Feasibility (How hard to implement action)						
(How hard to implement action)						



- Exam Advice and Questions walk through

Revision Resources

The Revision session is on XXXXX TBC XXXXXX

In addition to the resources here on Moodle, you should also visit the module webpage for many more learning resources (warwick.ac.uk/pmcresources/)



Revision Topics and Tips 



Critical Path Method (Worked Example)



EVA Forecasting Methods (Computing EAC)



2018/19 Exam Paper (Quiz)

CS352 – Revision Checklist

Preamble

It should be noted that all material covered in the lectures, guest lectures and seminars is technically examinable. However, you should know that I am less interested in bookwork and jargon and more interested that you can demonstrate your **understanding** and **application** of the taught **concepts**.

The list below should help you to prioritise which materials are most important to revise, which I have split into things that would be very “typical” for an exam, and those which you don’t need to learn about in any great detail. Be warned, the list is not exhaustive.

Finally, I advise you to continue think **critically**. Simply memorising facts won’t get you very far, you need to understand **why** the different methods are used, consider their *pros* and *cons*, how they compare to one another, and the implications for project management. Also, I like exam questions that force you apply your knowledge in unfamiliar territory, or combine concepts together.

The past exam papers should be a useful guide to ‘typical’ exam questions.

Project Initiation

A typical exam question might describe a project and:

- ask you to identify the objectives / write them in a SMART way
- ask you to apply the power/interest grid
- ask you to draw up a project charter

You should know about	But don't worry about
The iron triangle	The tetrahedron/hexagram/dodecahedron
The 5 PGs and 10 KAs, and <i>understand</i> the 49+ different PMBOK processes	Memorising the 49+ processes is not needed
Project mandate and charter	Memorising every input/output
Applying the power/interest grid	
Identifying / writing SMART objectives	
Difference between outcome, output (deliverable), benefit and objective	

A note on Critical Thinking: Understanding requires you to think beyond just learning the basic facts.

Exam

- Revision sessions in April/May
- <https://warwick.ac.uk/pmcs/examination/>
 - 2 hours
 - Pick 4 of 5 questions
 - Per question:
 - 25 marks in total
 - 1 mark per minute + 5 mins reading time
 - Aim: to test your understanding, comprehension, application and critical thinking.
 - NOT your ability to memorise / regurgitate the lecture notes.
 - Critical thinking == balanced argument!

1. (a) In Earned Value Analysis (EVA)

(i) What is the meaning of *planned value (PV)*? (2)

[bookwork]

how much of the overall budget
has been assigned/allocated to the work
to date / at a given point in time

(ii) What is the meaning of *earned value (EV)*? (2)

[bookwork]

how much of the planned value
has been achieved by doing the work
to date / at a given point in time

(b) You are managing a work package containing 2 parallel activities, both due to take one week. The progress at the end of the week is summarised in the table below:

Activity	Budget	Expenditure	Progress
A	£200	£400	100%
B	£400	£100	50%

(i) For each activity, compute EV and PV (4)

[application]

PV = BAC × %Scheduled
EV = BAC × %Done

(iii) When using the Kanban software development methodology, a colleague is blocked waiting on another team member. Should you raise the team's work-in-progress (WIP) limit? (4)

[application]

(due to various possible approaches, marks shown are accumulated and are capped at the limit)

Why WIP limit? (at most 2 marks for this part)

- Limited to reduce overcommit
- Reduce multi-tasking/switching overhead
- Forces teamwork and collaboration

Advantages of raising limit (at most 1 mark)

- Improves individual efficiency
- Avoids waste that comes from being idle!

Disadvantages of raising limit (at most 2 marks)

- It won't maximise value through the system
- It's leaner to finish all of one thing than get two things to 50%!
- It prevents the person from collaborating
- It doesn't improve the team's efficiency

What should we do instead? (at most 2 marks)

- Being "blocked" or "idle" informs us of bottlenecks
- forces team to collaborate to get the flow going again
- Must focus on whole system's flow, not just one individual
- Achieve more steady flow through the system (heijunka)
- Make continuous improvements (kaizen) to improve flow

Exam

- <https://warwick.ac.uk/pmcs/examination/>

18/19

 [18/19 Exam](#)

 [18/19 Feedback](#)

19/20

 [19/20 Exam \(online\)](#)

 [19/20 Feedback](#)

20/21

 [20/21 Exam \(online\)](#)

 [20/21 Feedback](#)

21/22

 [21/22 Exam](#)

 [21/22 Feedback](#)

22/23

 [22/23 Exam](#)

 [22/23 Feedback](#)

I've just talked at you for the last 9 weeks
More of the same won't make this stuff go into your head any easier!
Try the past papers!





A living building

[View teaching](#)

Mixed u



Lectures



Word cloud: What is management?





“PRINCE2 is an versatile, scalable methodology that allows teams to work effectively, whilst ensuring the project is kept under control, increasing the overall probability of project success.”

1 Strongly Agree



2 Agree

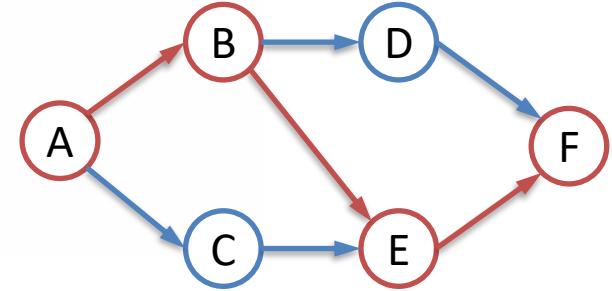
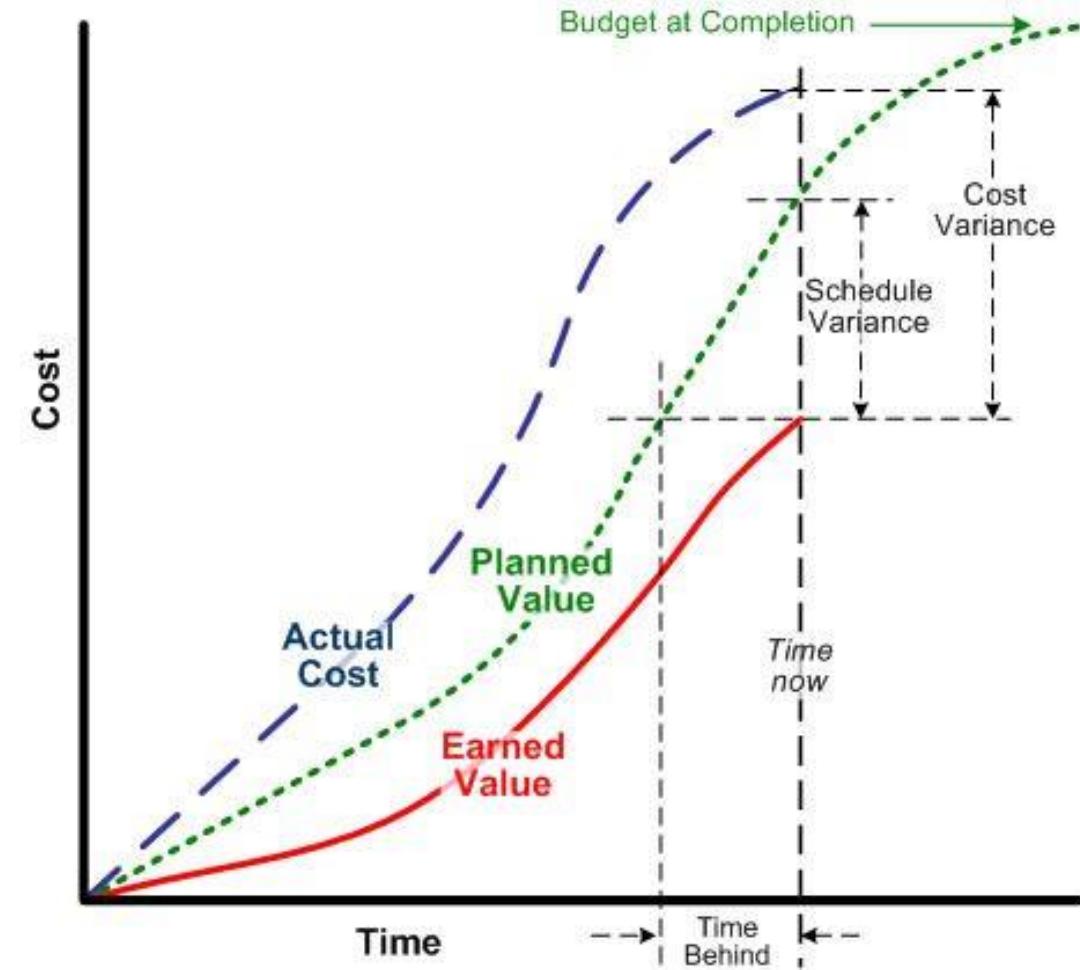
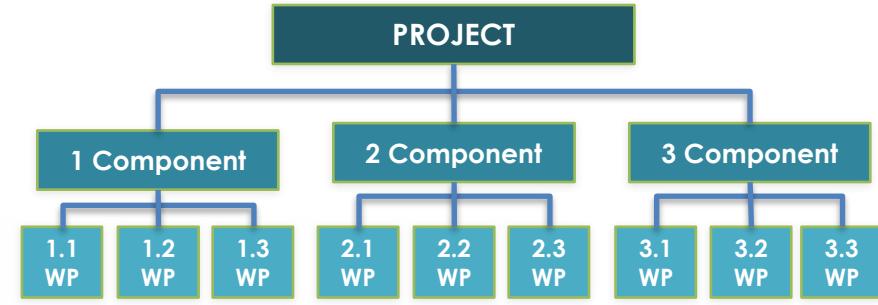


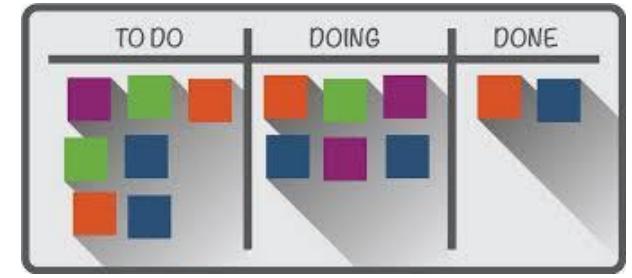
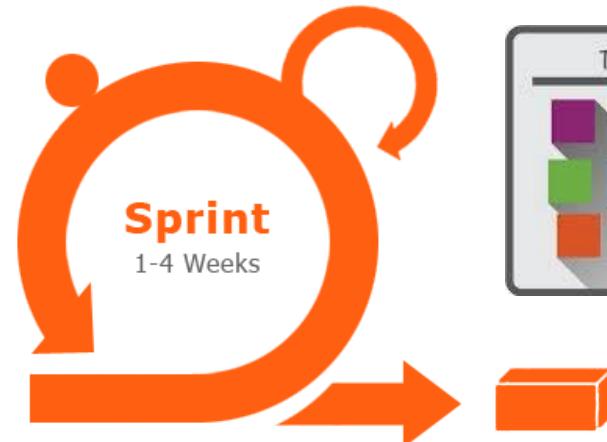
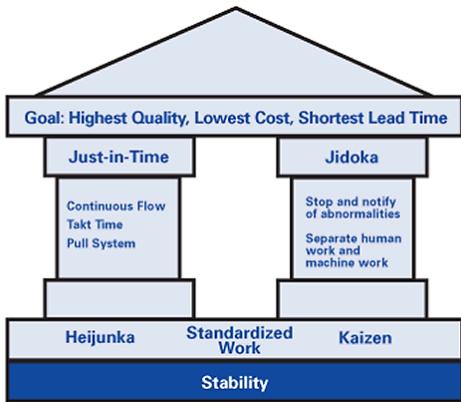
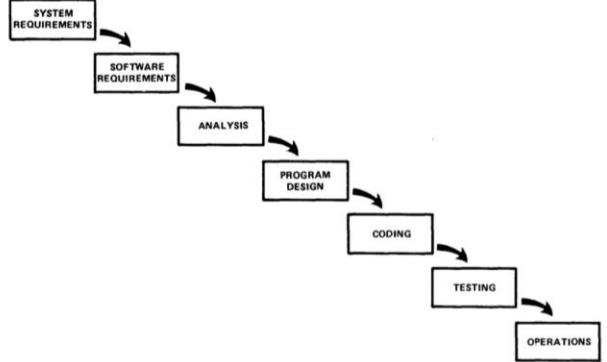
3 Disagree



4 Strongly Disagree

0 (0%)





Choose One:	Payout if Heads	Payout if Tails	
Gamble 5	£0	£2000	<div style="width: 70%;">7 (33.33%)</div>
Gamble 4	£100	£1900	<div style="width: 20%;">2 (9.52%)</div>
Gamble 3	£300	£1500	<div style="width: 50%;">5 (23.81%)</div>
Gamble 2	£400	£1200	<div style="width: 30%;">3 (14.29%)</div>
Gamble 1	£450	£950	<div style="width: 30%;">3 (14.29%)</div>
Gamble 0	£500	£500	<div style="width: 10%;">1 (4.76%)</div>



Belbin's Team Roles

	Strengths	Allowable Weaknesses		
	Resource Investigator	Outgoing, enthusiastic. Explores opportunities and develops contacts	Might be over-optimistic, and can lose interest once the initial enthusiasm has passed	1 (6.67%) Team-worker
	Team-worker	Co-operative, perceptive and diplomatic. Listens and averts friction	Can be indecisive in crunch situations and tends to avoid confrontation	6 (40%) Contributor
	Co-ordinator	Mature, confident, identifies talent. Clarifies goals	Can be seen as manipulative and might offload their own share of the work	5 (33.33%) Plant
	Plant	Creative, imaginative, free-thinking, generates ideas, solves difficult problems	Might ignore incidentals, and may be too preoccupied to communicate effectively	3 (20%) Innovator
	Monitor Evaluator	Sober, strategic and discerning. Sees all options and judges accurately	Sometimes lacks the drive and ability to inspire others and can be overly critical	4 (26.67%) Specialist
	Specialist	Single-minded, self-starting and dedicated. They provide specialist knowledge and skills	Tends to contribute on a narrow front and can dwell on the technicalities	2 (13.33%) Completer
	Shaper	Challenging, dynamic, thrives on pressure. Drive and courage to overcome obstacles	Can be prone to provocation, and may sometimes offend people's feelings	3 (20%) Implementer
	Implementer	Practical, reliable, efficient. Turns ideas into actions, organises what needs to be done	Can be a bit inflexible and slow to respond to new possibilities	3 (20%)
	Completer Finisher	Painstaking, conscientious, anxious. Searches out errors. Polishes and perfects	Can be inclined to worry unduly, and reluctant to delegate	3 (20%) Completer-Finisher

A photograph of a speaker on a stage at a TEDx event. The stage is red, and the speaker is standing near the center. The audience is seated in rows, facing the stage. The background shows a large screen with a landscape image and the word "TED".

Guest Lectures



Prince 2 – Why do projects fail?

TMW Management Ltd

Delivering change in the Higher Education Sector

Mostly: A failure in the use of
common sense

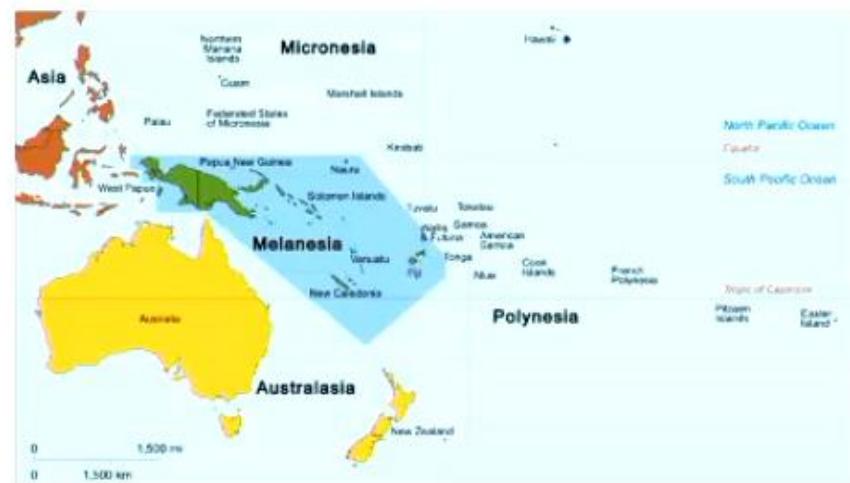
Mostly: A failure to communicate

Mostly: Someone's ego has got in
the way



An Aside:

Cargo Cults of World War II





warwick.ac.uk/pm

What do you think is the best recent tech invention?

large language model
electric cars
lecture capture
generativeai ftx
reusable rockets vevox
amogus
chatgpt llms
chat gpt
generative ai llm
stable diffusion

KANTAR



Which of the following are risks, issues, dependencies & assumptions?

- 1 Joe Bloggs time is required for the data sourcing work required to roll out the system
- 2 New regulations are emerging which may require reprioritisation of project resources
- 3 The lead developer for the project has resigned from the Bank
- 4 The requirements deliver compliance with the industry regulation
- 5 The project may receive additional funding and resourcing next year
- 6 The regulator may delay the finalisation of the industry rules
- 7 This lecture will be useful for students

Results: Of these project characteristics, which are Agile, Waterfall, or Both?

1 Rich Communication



2 Manage by exception



3 Daily stand ups



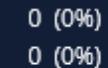
4 Structured project governance



5 Existence of the definition of 'Done'



6 Ensuring quality of project product



Agile Waterfall



Seminars





Conclusions

- We've covered a lot!
 - Lectures: theories, methodologies, practical skills
 - Guest lectures: real life, real world experiences
 - Seminars: creativity, teamwork, compromise, problem solving
- Take home messages:
 - It's the 'soft skills' that will matter most in your future career.
 - Think critically and ask *why?*
 - After all, this is a CS module

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