

Software Process and Project Management

Sommerville, Chapters 4, 17
Pressman

Instructor: Peter Baumann

email: p.baumann@jacobs-university.de

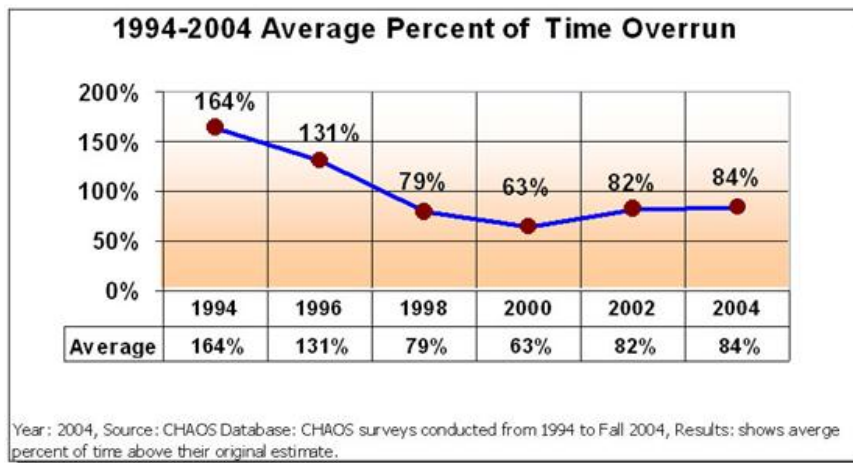
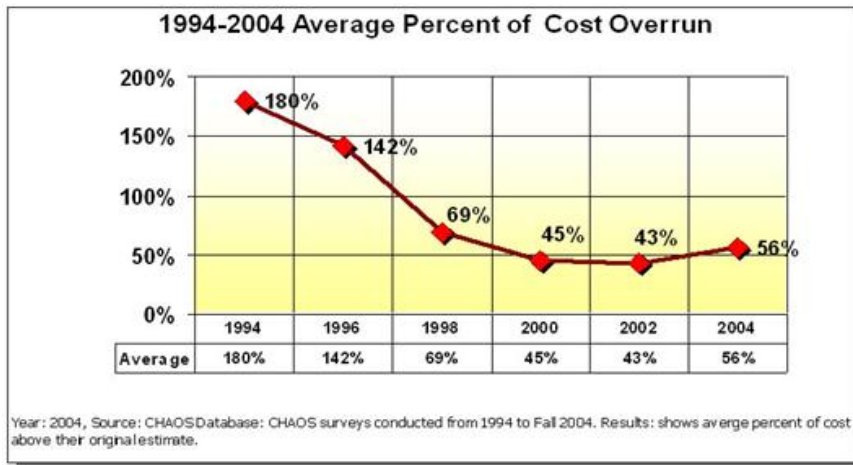
tel: -3178

office: room 88, Research 1

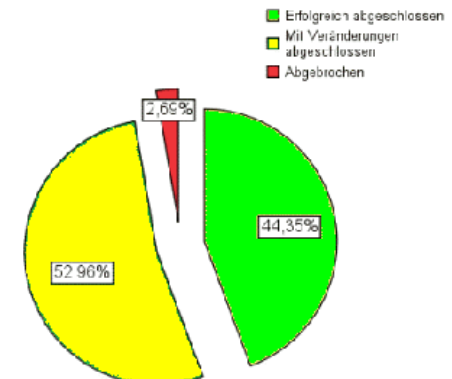
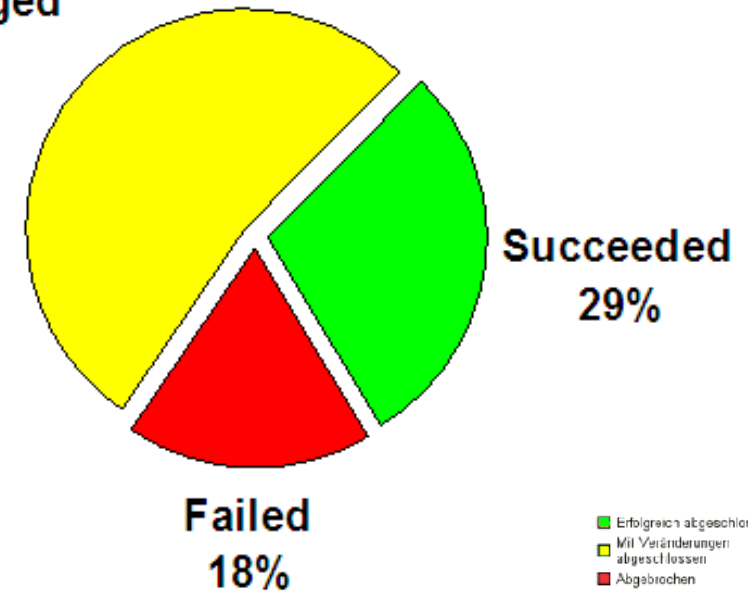


Project Success/Failure Rate

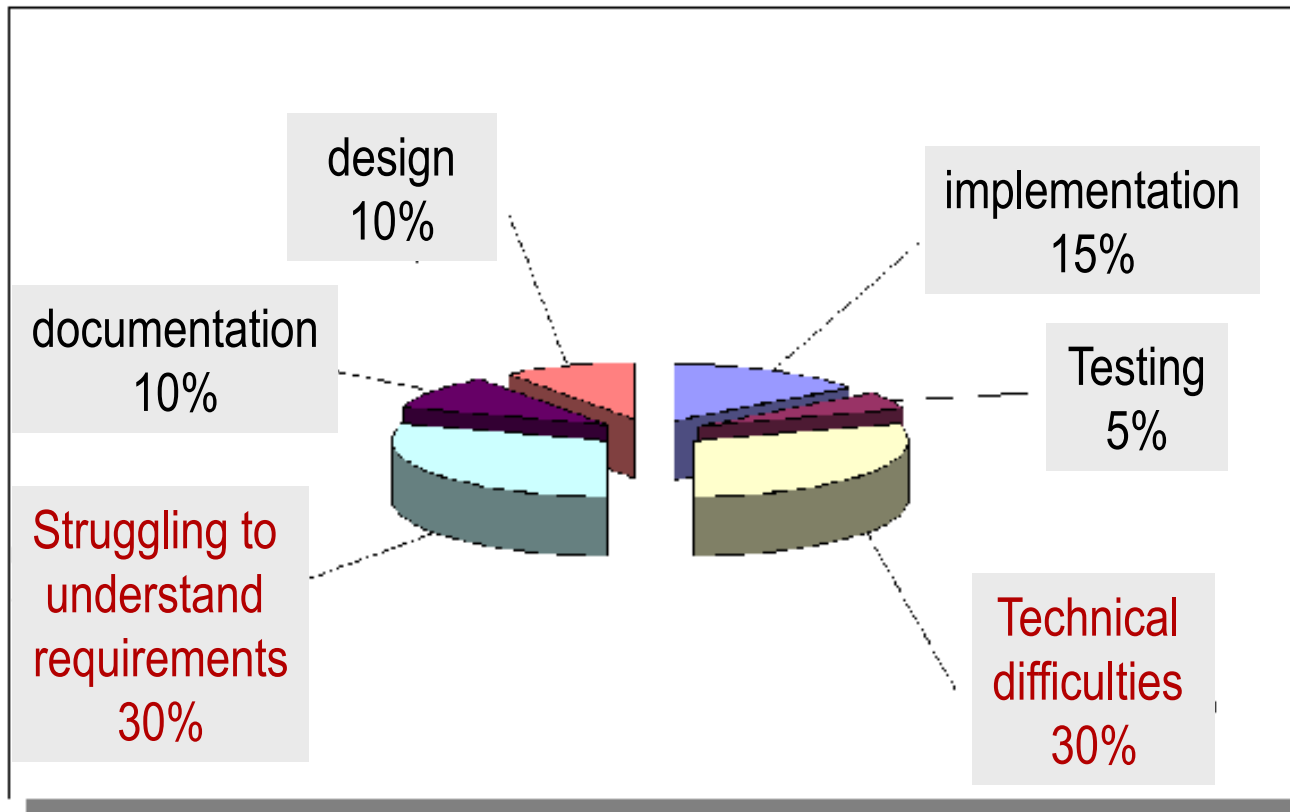
[CHAOS Report, Standish Group]



**Challenged
53%**

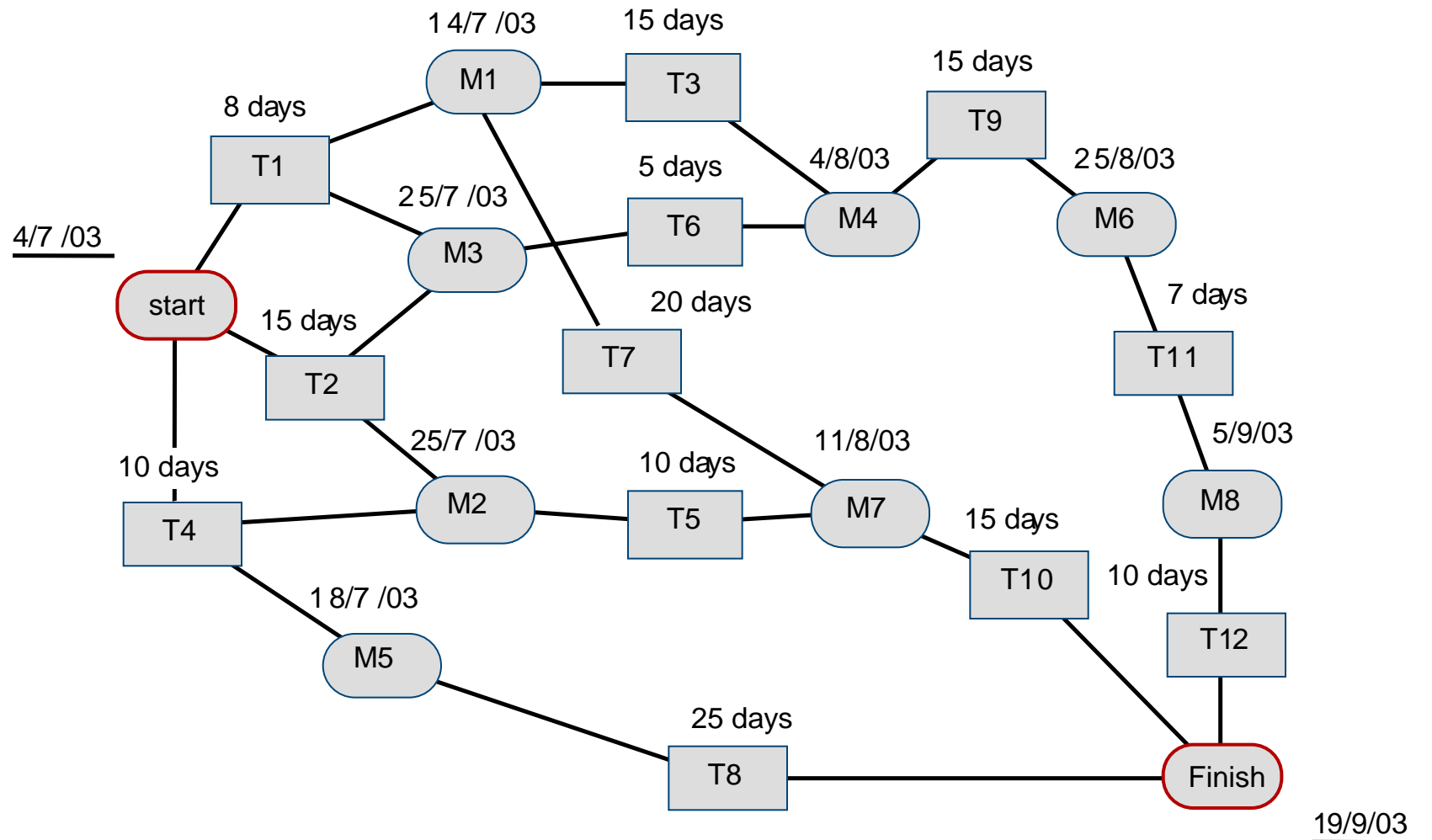


Where Time Really Is Spent In Practice



Source: unknown

Activity Network



Activity Timeline (aka Gantt Chart)

	2nd Quarter			3rd Quarter			4th
	Dec	Jan	Feb	Mar	Apr	May	Jun

124	1.2.2	Level 1 Calorimeter Track Matching	590 d	Thu 8/1/02	Tue 12/14/04	
180	1.2.3	Level 1 Tracking	604 d?	Thu 11/7/02	Wed 4/20/05	
181	1.2.3.1	Prototype L1 Central Track Trigger Algor	0 w	Thu 11/7/02	Thu 11/7/02	220SF,228SF,219SF
182	1.2.3.2	Develop Target CTT Algorithm	154 d	Thu 11/7/02	Wed 6/25/03	191,185,197
185	1.2.3.3	Target L1 Central Track Trigger Algorith	0 w	Wed 6/25/03	Wed 6/25/03	187,188
186	1.2.3.4	Develop Test Procedures	140 d	Thu 6/26/03	Fri 1/23/04	
189	1.2.3.5	DFEA Preproduction I	184 d	Thu 6/26/03	Thu 3/25/04	
201	1.2.3.6	DFEA Preproduction II	80 d	Mon 2/2/04	Fri 5/21/04	
217	1.2.3.7	DFEA Production	225 d	Mon 5/24/04	Wed 4/20/05	
239	1.2.3.8	DFEA Backplane (BP)	183 d?	Fri 1/2/04	Mon 9/20/04	
240	1.2.3.8.1	hardware spec	21 d	Wed 1/14/04	Thu 2/12/04	
		C/BP/DFEA)	14 d	Tue 1/27/04	Fri 2/13/04	242
		(hardware+timing)	1 d?	Mon 2/16/04	Mon 2/16/04	
		ction	4 mons	Fri 1/2/04	Fri 4/23/04	244
			1 d?	Mon 4/26/04	Mon 4/26/04	245
245	1.2.3.8.6	production + vendor checkout	3 mons	Tue 4/27/04	Wed 7/21/04	246
246	1.2.3.8.7	first BP received	1 d?	Thu 7/22/04	Thu 7/22/04	247
247	1.2.3.8.8	FNAL checkout	2 w	Fri 7/23/04	Thu 8/5/04	248
248	1.2.3.8.9	crate assembly + bench test	2 w	Fri 8/6/04	Thu 8/19/04	249
249	1.2.3.8.10	test with CC	2 w	Fri 8/20/04	Thu 9/2/04	250
249	1.2.3.8.11	test with CC + DFEA	2 w	Fri 9/3/04	Fri 9/17/04	251
	1.2.3.8.12	delivered to Boston	1 d?	Mon 9/20/04	Mon 9/20/04	
	1.2.3.9	DFEA Crate Controller (CC)	207 d?	Mon 12/1/03	Wed 2/16/05	
250	1.2.3.9.1	interface specs	1 mon	Mon 12/1/03	Tue 1/6/04	254
254	1.2.3.9.2	schematic + layout; order long leadtime	3 mons	Wed 1/14/04	Wed 4/7/04	255
255	1.2.3.9.3	PCB production + vendor testing	1 mon	Thu 4/8/04	Wed 5/5/04	256
256	1.2.3.9.4	assembly (vendor)	2 mons	Thu 5/6/04	Thu 7/1/04	257
257	1.2.3.9.5	checkout	2 w	Mon 7/1/04	Fri 7/16/04	261
258	1.2.3.9.6	optical Serial Command Link Receiver pr	2 mons	Mon 3/1/04	Fri 4/23/04	261
	9.8	test software/firmware	4 mons	Mon 3/1/04	Mon 5/21/04	260,261
	9.9	finish software/firmware	8 mons	Tue 6/22/04	Wed 2/16/05	
	9.10	bench test	2 w	Mon 7/19/04	Fri 7/30/04	262
	9.11	CC ready	1 d?	Mon 8/2/04	Mon 8/2/04	249
263	1.2.3.10	optical Download and Control Link (DCL)	160 d?	Thu 2/12/04	Mon 9/27/04	
		interface specs	1 mon	Thu 2/12/04	Wed 3/10/04	265,270
		hardware specs	1 mon	Thu 3/11/04	Wed 4/7/04	266,268
		specs done	1 d?	Thu 4/8/04	Thu 4/8/04	267
		hardware procurement	1 mon	Fri 4/9/04	Thu 5/6/04	271
		software: Linux driver	3 mons	Thu 4/8/04	Thu 7/8/04	271,269SS+1.5 mons
269	1.2.3.10.6	software: EPICS driver + integration	3 mons	Thu 5/20/04	Fri 8/13/04	270SS+1.5 mons
270	1.2.3.10.7	software: dfe_ware integration	3 mons	Mon 7/5/04	Mon 9/27/04	
271	1.2.3.10.8	bench test PC - CC	2 w	Mon 7/5/04	Fri 7/16/04	261
272						
273	1.2.9	L1 Trigger Upgrade Production and Testing Co	0 w	Thu 5/12/05	Thu 5/12/05	
274	1.2.4	Level 2 Beta Processor	305 d	Mon 12/1/03	Mon 2/28/05	
315	1.2.5	Silicon Track Trigger Upgrade	504 d	Tue 1/21/03	Mon 1/31/05	
		L2 Trigger Upgrade Production and Testing Co	0 w	Mon 2/28/05	Mon 2/28/05	
		Trigger Simulation	827 d	Thu 11/1/01	Wed 3/9/05	
		Administration	520 d	Mon 2/3/03	Mon 3/7/05	

Henry L. Gantt (1861-1919)



Task (Work package)

Subtask

Progress

Dependency

Milestone

Potential Scheduling Problems

- Estimating **difficulty** of problems (hence, costs)
- **Productivity** \sim **#people** working on a task
- The **unexpected** always happens → contingency
- **Adding** people to a late project makes it **later**

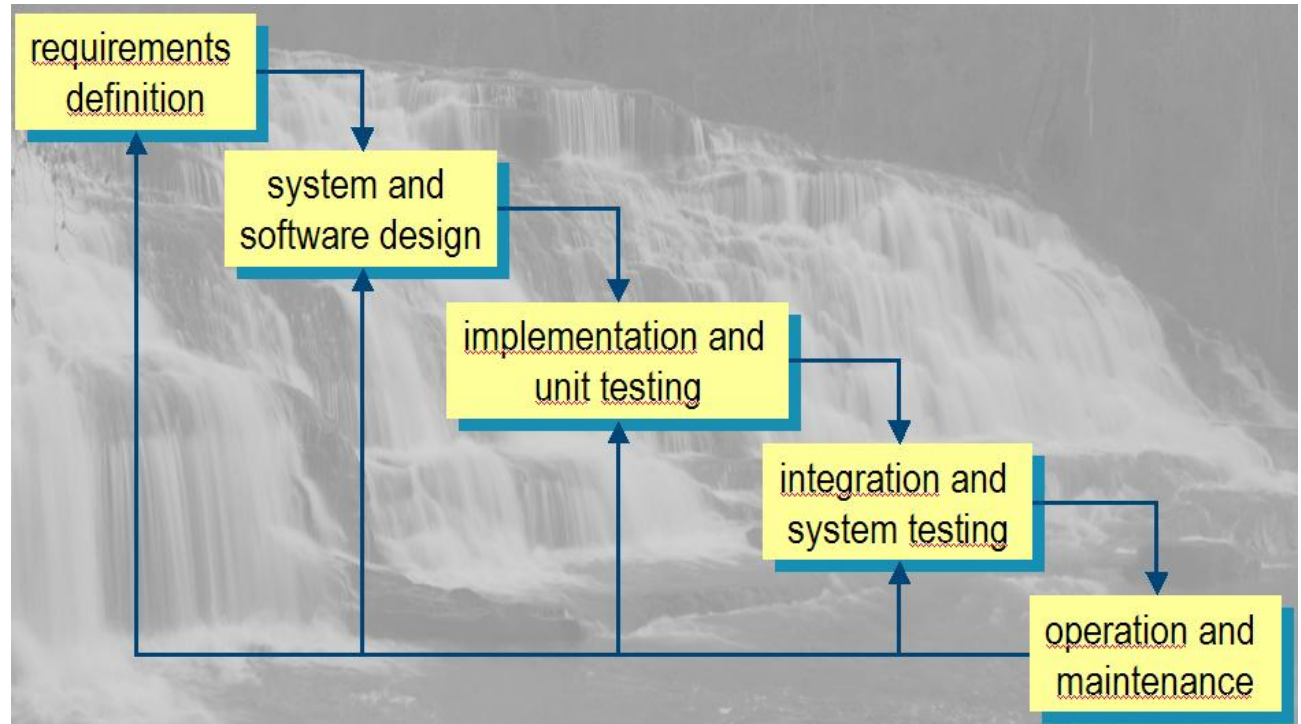


Waterfall Model

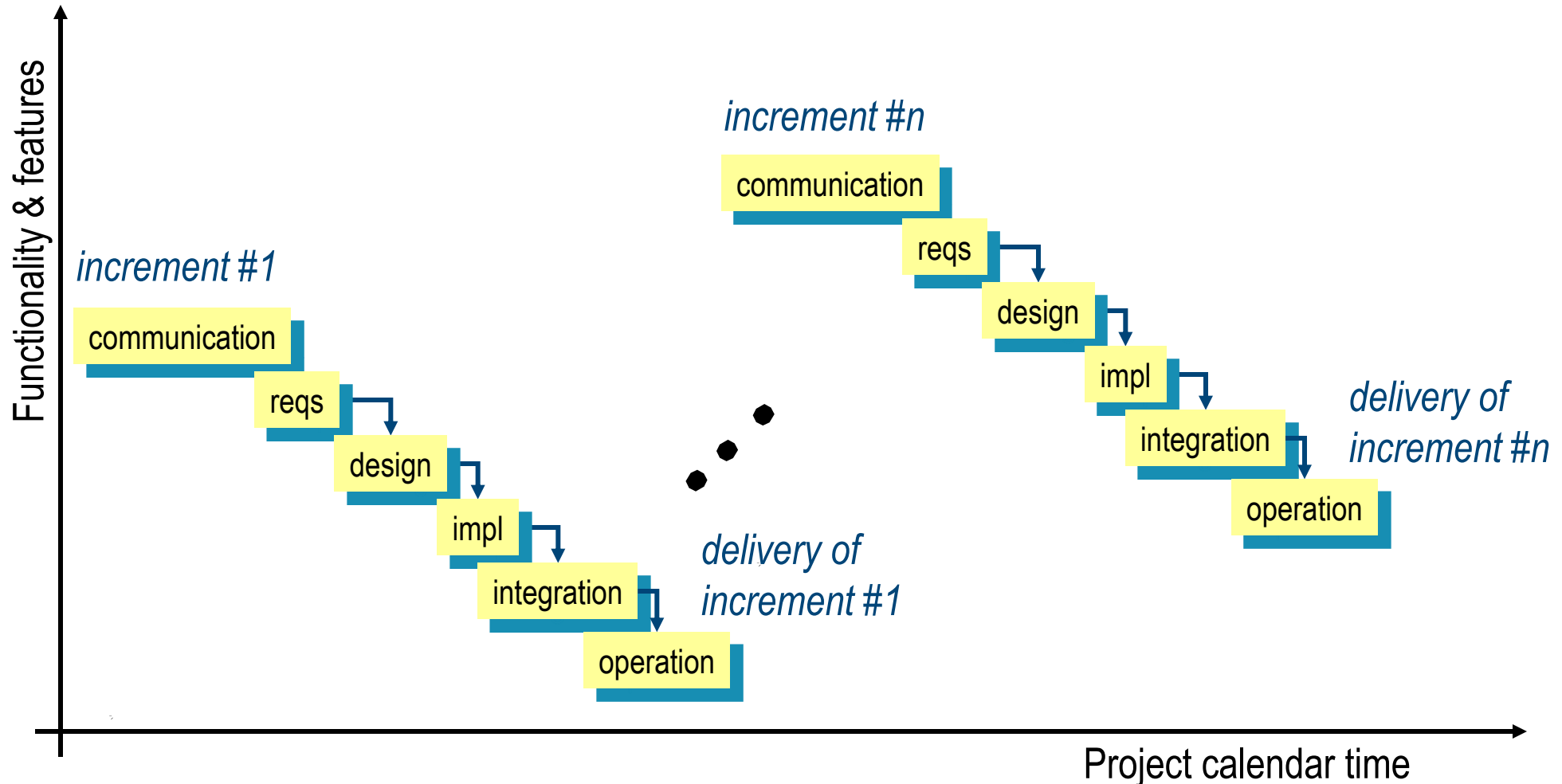
- Process model
= Software life cycle

- Challenge:
Difficult to accommodate change → Inflexible

- Lack of stable requirements
- Changing requirements
- Increased understanding
- Unforeseen difficulties



The Incremental Model



Agile Methods

CIPCS

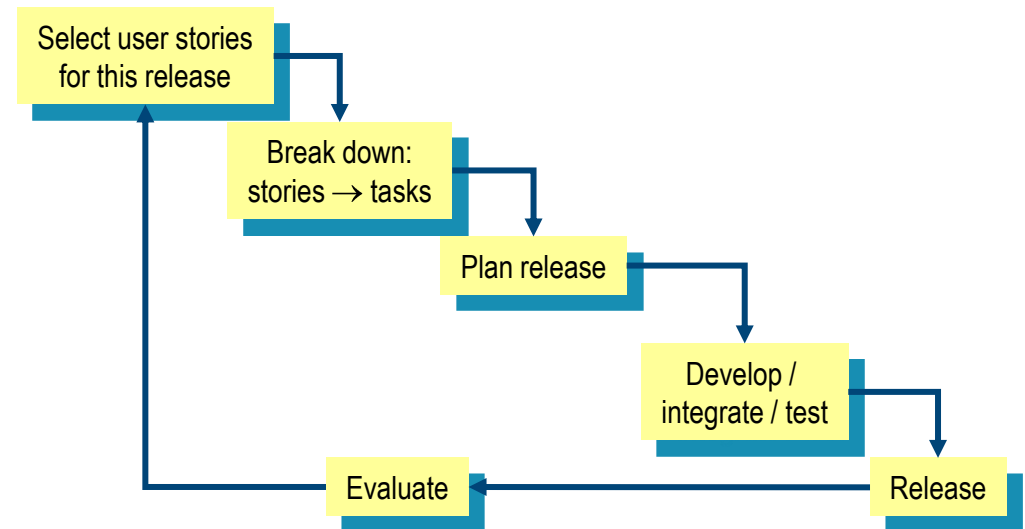
- **Customer** involvement
 - ...to provide & prioritise new system requirements + to evaluate iterations
- **Incremental** delivery
 - Priorities from customer
- **People**, not process
 - team to develop own ways of working
- **Embrace change**
 - Expect requirements to change
 - design to accommodate change
- **Maintain simplicity**
 - software and development process
 - actively eliminate complexity



© Scott Adams, Inc./Dist. by UFS, Inc.

Extreme Programming

- XP = 'extreme' variation of iterative development, **very small increments**
 - New versions may be built several times per day
 - Increments ~every 2 weeks
 - All tests for every build; only accepted if all successful
- Rationale:
 - Conventional: **design for change**
 - *anticipating changes reduces costs later*
 - XP: **not worthwhile**, cannot anticipate
 - *constant code improvement*
 - *user involvement in dev team*



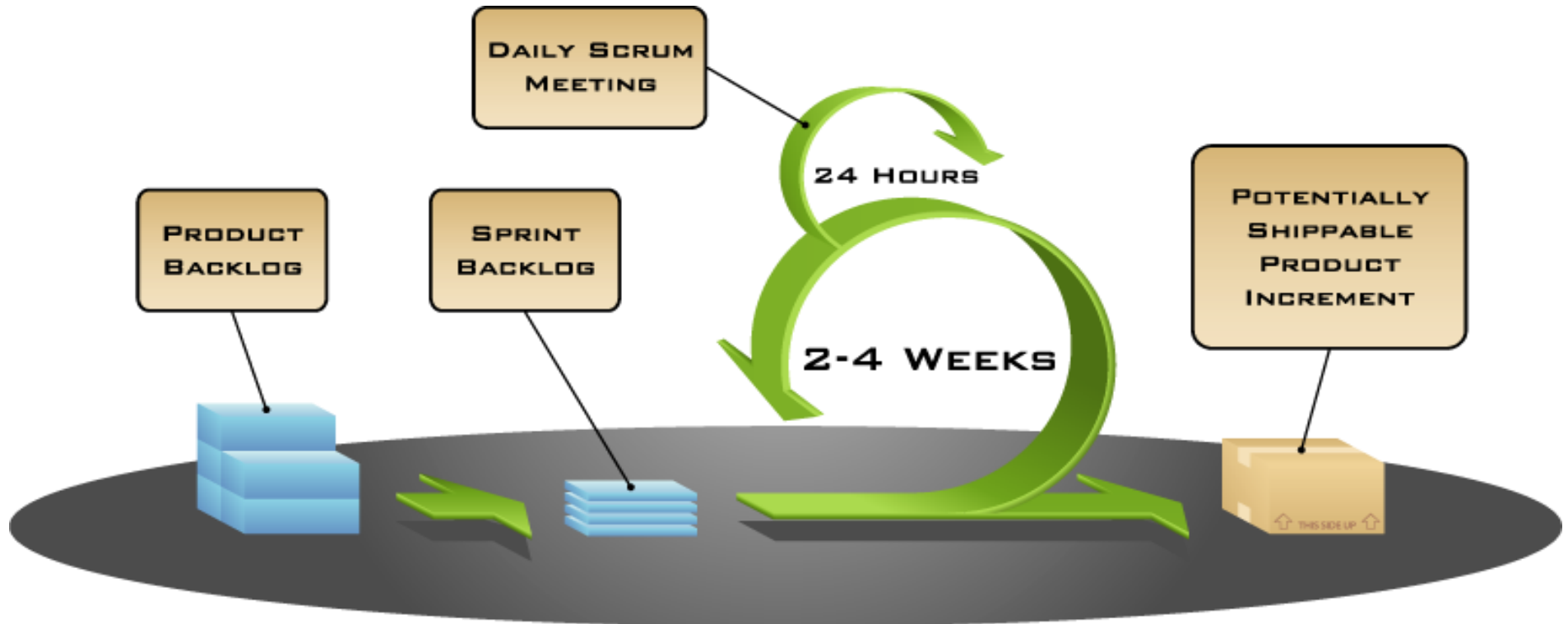
Agile methods: Appraisal

- Team members may be unsuited to the **intense involvement** of agile methods
- Developers need to be **experienced**, not too different in expertise
- can be difficult to **keep interest of customers** involved in process



Copyright © 2003 United Feature Syndicate, Inc.

Scrum



COPYRIGHT © 2005, MOUNTAIN GOAT SOFTWARE

Wrap-Up: Project Management

- **Planning + coordination + monitoring** is a must, even though change happens
 - common activities: specification, design, implementation, testing/validation, evolution
 - **Gantt chart**: Work packages, tasks, deliverables, milestones
- Different Management approaches
 - **Classical** „plan ahead“ vs **Agile** „embrace change“
- Project Manager = first management level
 - Deep technical knowledge + leadership qualifications
 - Core personal assets: Multitasking, nonlinear, self-motivated