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Do You Get What You Measure?

Facilitators:

Jason Gorman & Duncan Pierce

www.agilespi.com

Agenda

- 11:00  Agile Process Improvement
- 11:10  Workshop – John Q-Soft Ltd
- 11:15 Iteration #1
- 11:50 Break
- 12:00 Iteration #2
- 12:20 Iteration #3
- 12:45 Review & Wrap-up
- 13:00 Finish

Before We Begin…

- Switch off 
- Grab a 
-  if you need to

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Better, Faster, Cheaper?

Agile Process Improvement using Metrics

The Four Pillars

Cost

Time

Scope

Quality

So what?

This application cost £1.5 million to deliver

So what?

Cost

This application took 9 months to deliver

So what?

Time

This application has over 1,000,000 lines of code

So what?

Scope

This application has 300 bugs

So what?

Quality

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That's what!

Cost Scope

This application cost £1.5 million to deliver, and has over 200,000 lines of code

Bargain! That's just £7.50 for a line of code

Scope Time

This application took 9 months to deliver, but has only 2,000 lines of code

Bummer! That's only 222 lines of code a month

Quality Scope

This application has over 1,000,000 lines of code, but only 300 bugs

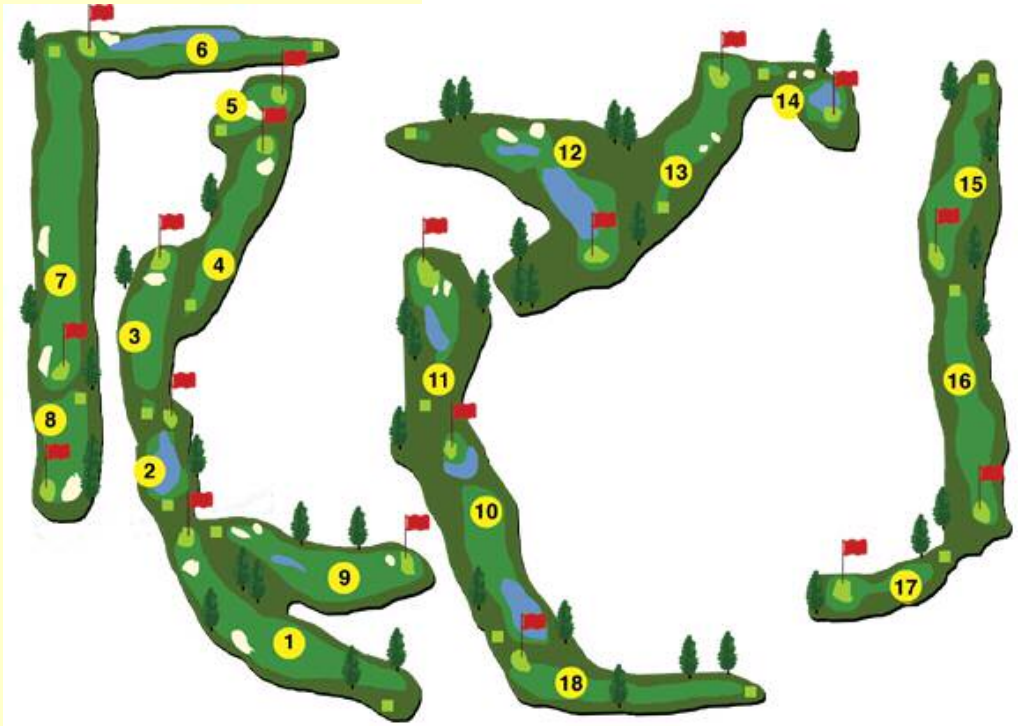
Excellent! That's just 0.3 bugs per thousand lines of code

Cost Scope Quality

This application has 18 bugs per thousand lines of code, and a line of code costs £140

How could such rubbish code cost so much?!

Analogy – Golf Metrics



Time

Time taken to get the ball in the hole

Scope

The size & complexity of a hole (e.g., par 4)

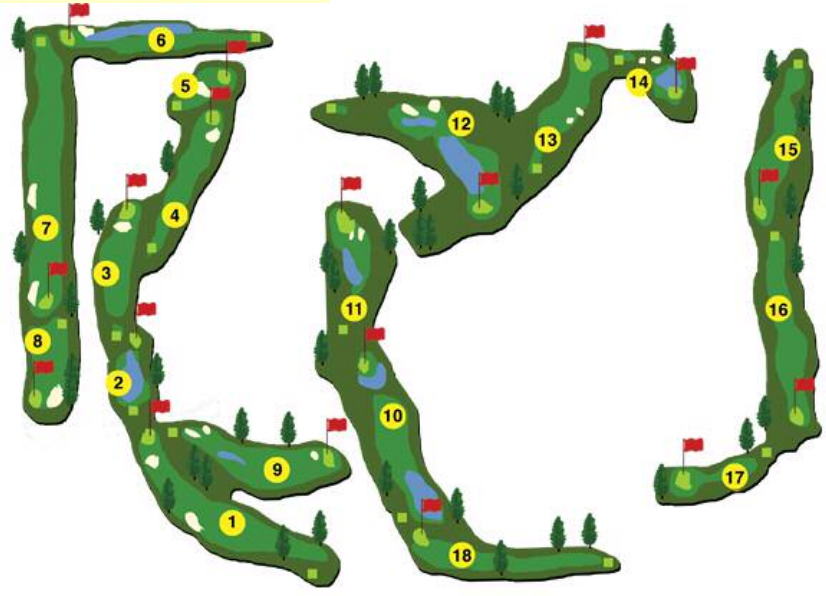
Cost

The number of shots taken to get the ball in the hole

Quality

Getting the ball to where you want it to be (on the fairway, on the green, in the hole)

Golfer Productivity – Scope/Time

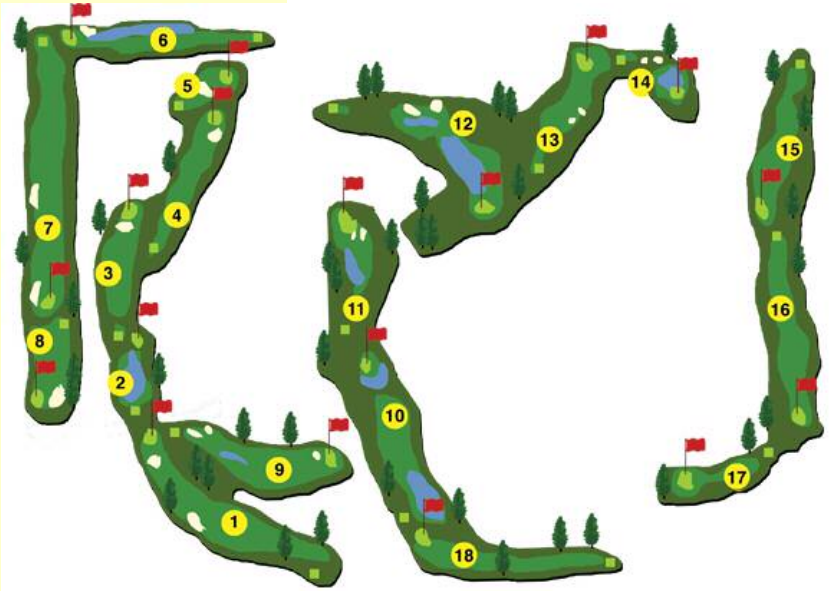


Scope Time

Nick Faldo
24 par / hour

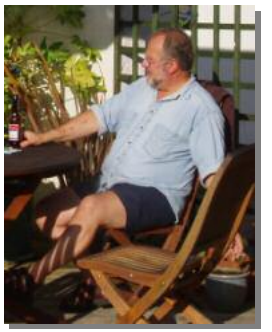
My Dad
16 par / hour

Golfer Productivity – Cost/Scope



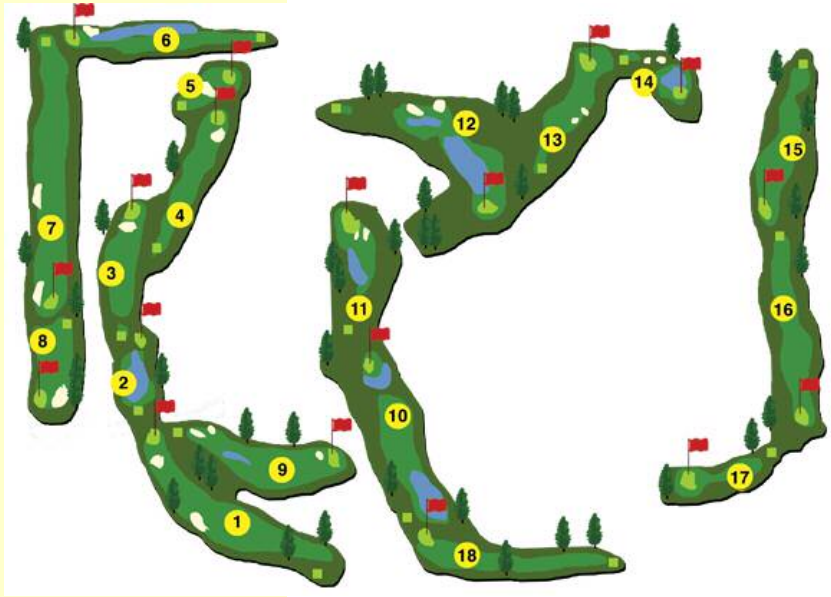
Scope Time

Nick Faldo
0.75 shots per par



My Dad
1.2 shots per par

Golfer Quality – Quality/Scope

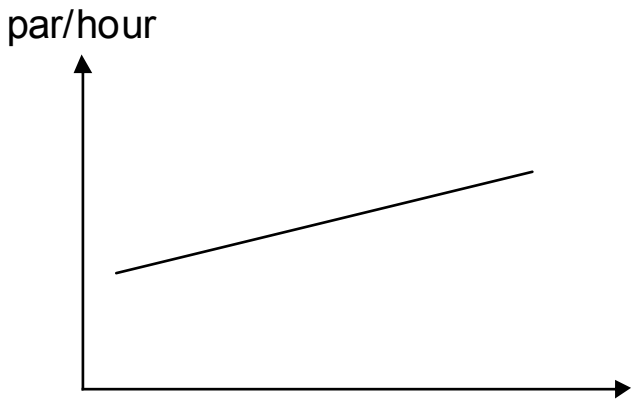


Scope Time

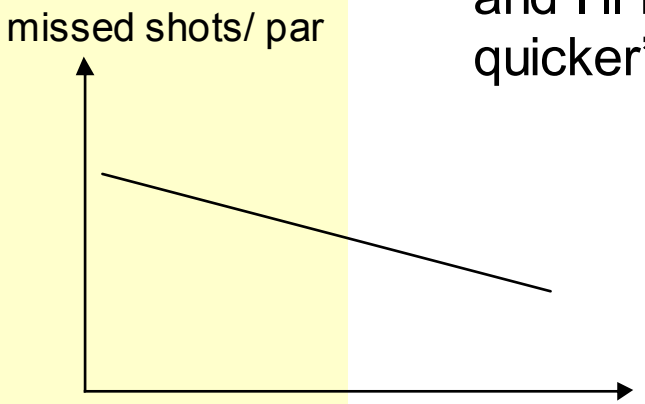
Nick Faldo
0.1 missed shots per par

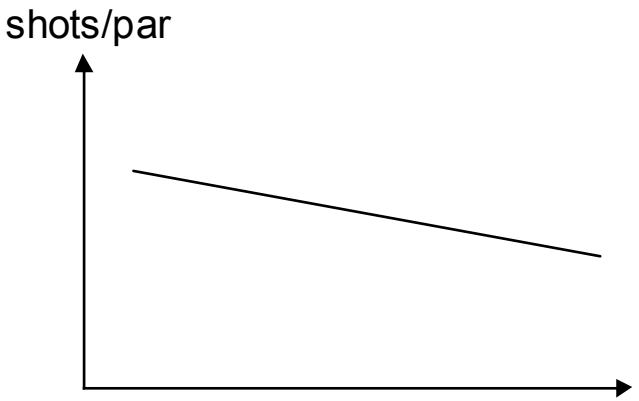
My Dad
0.4 missed shots per par

Golfing Process Improvement

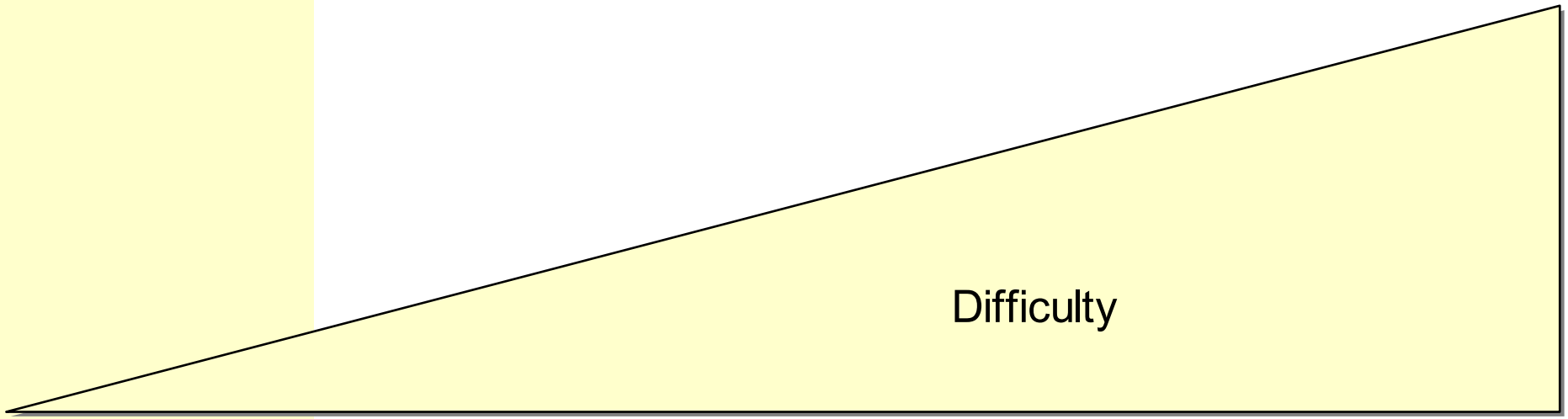


"If I miss less shots, I'll need to take less shots and I'll finish holes quicker"





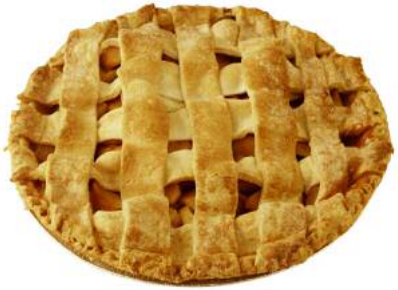
Playing Surfaces & Effort



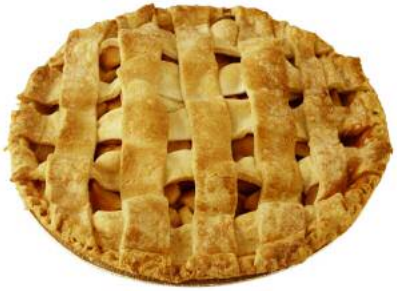
Stay In The Short Grass!

Metrics Design

Keeping It Simple



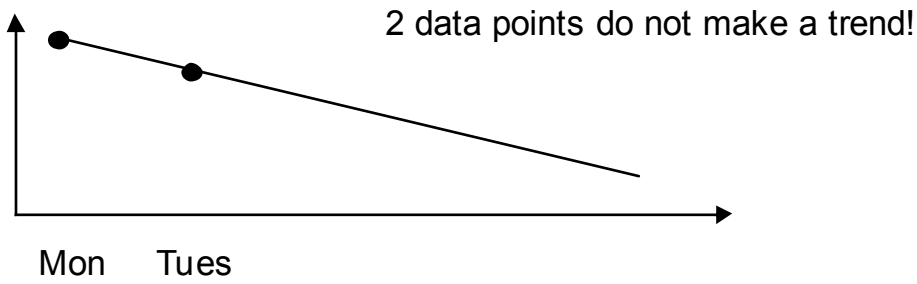
- Counting
  - How many pies did we bake today?
- Adding
  - How many pies did we bake *in total* this week?
- Subtracting
  - How many *more* pies did we bake this week?
- Multiplying
  - How many pies could we bake in 4 weeks?
- Dividing
  - How many pies for each customer?
- Averaging
  - How many pies do we bake on an average day?
- Normalising
  - What percent of the pies are blueberry?

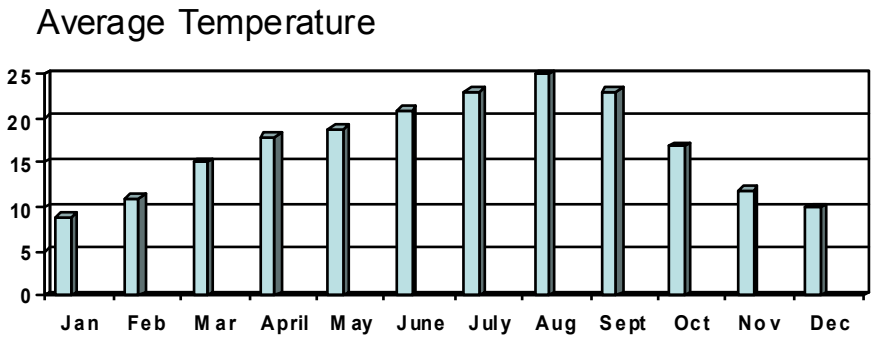


Applying Metrics in Agile Process Improvement

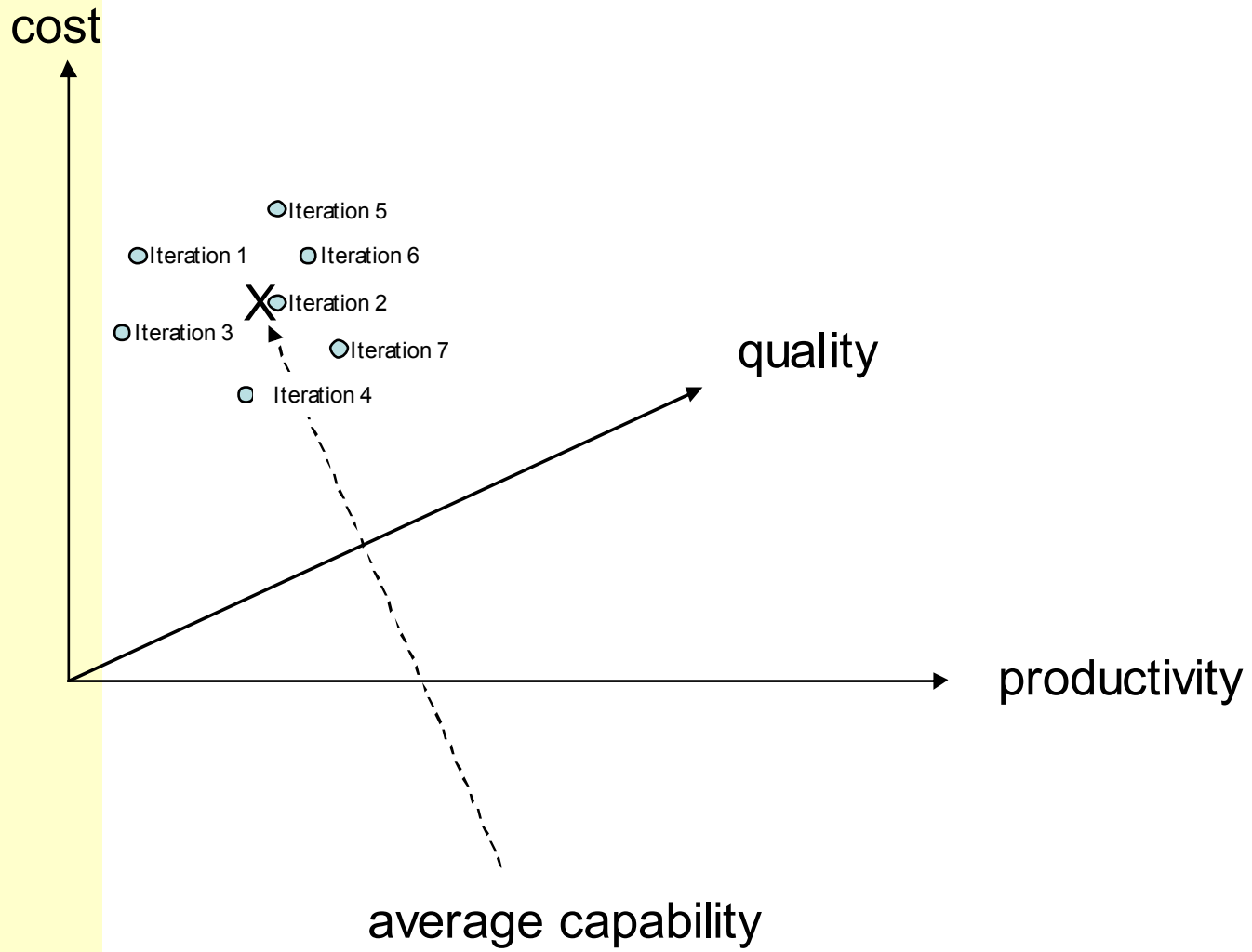
Yesterday's Weather

Monday	Temp	22°C
	Rainfall	0 cm
Tuesday	Temp	18°C
	Rainfall	0 cm
Wednesday	Temp	17°C
	Rainfall	2 cm
Thursday	Temp	19°C
	Rainfall	0 cm
Friday	Temp	16°C
	Rainfall	6 cm

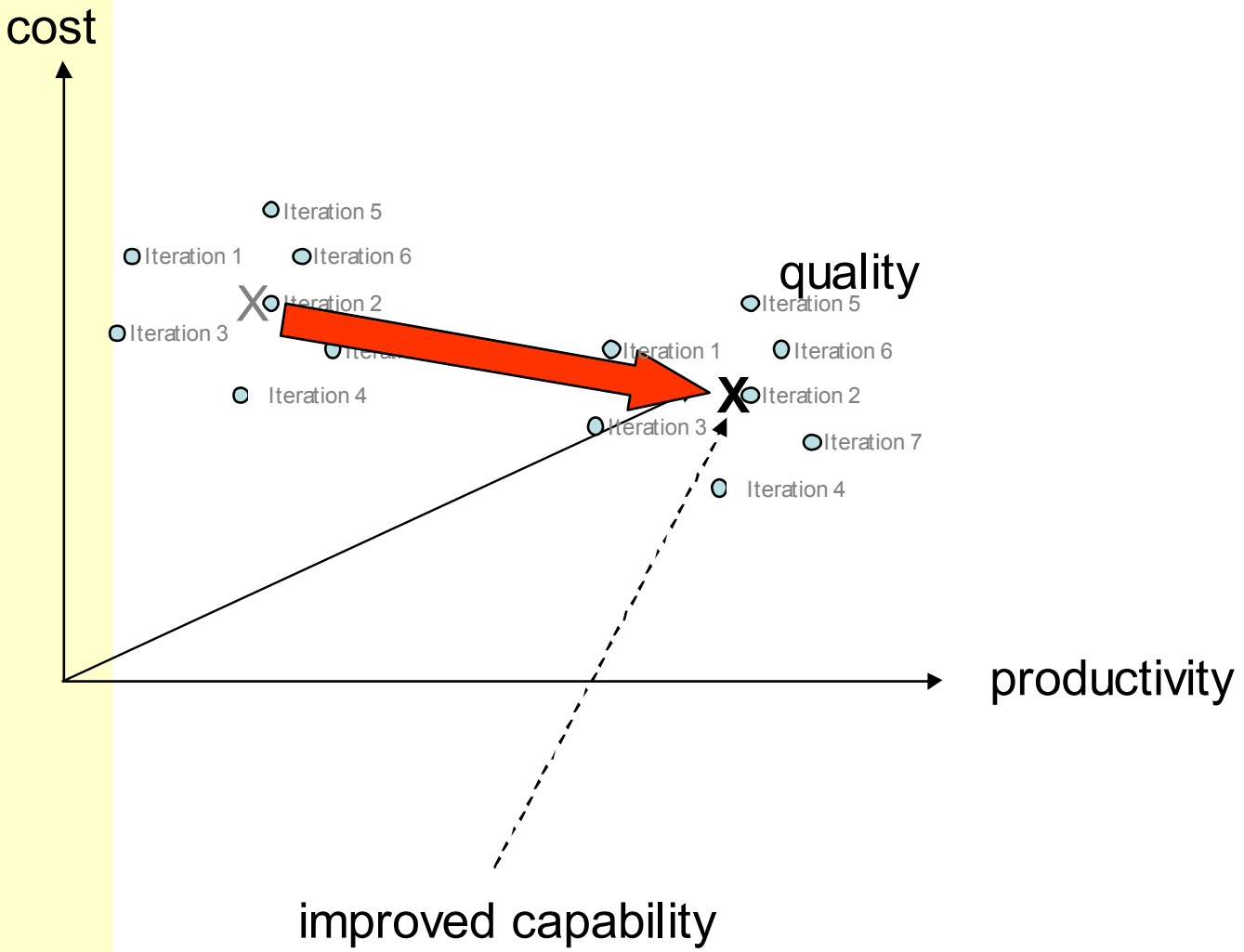




Capability Attractors



Agile Process Improvement



Agile Process Improvement…

- Is **Organisational Learning**
  - Requires short, frequent iterations & objective feedback
- Does not try to impose order
  - New order will *emerge*, influenced by **adaptive tension**
- **Looks at long-term trends, not short-term data points**

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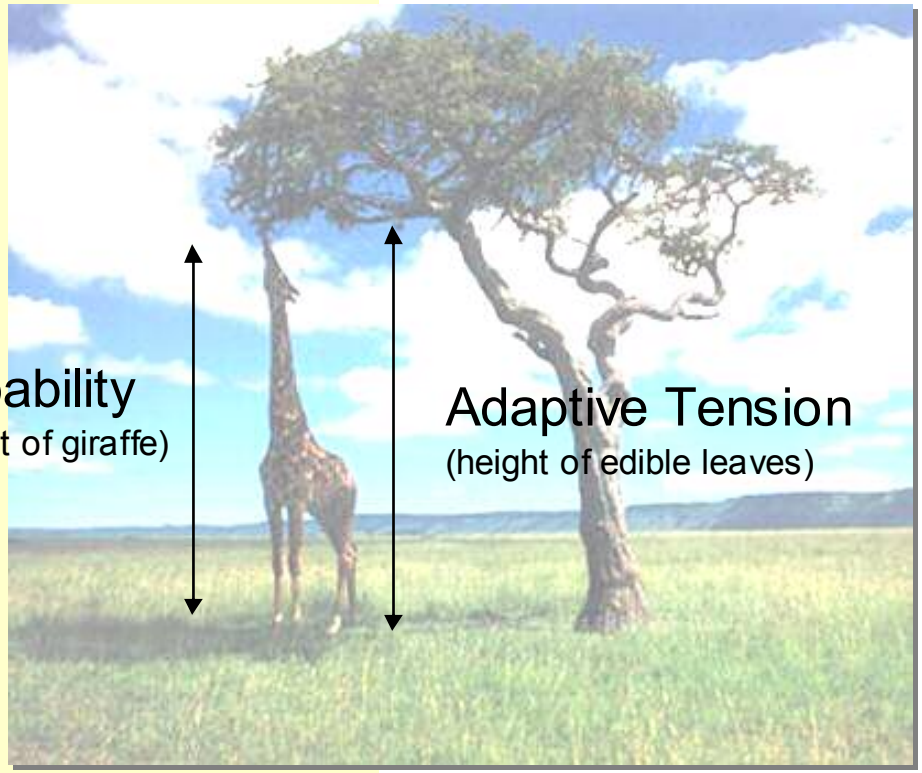
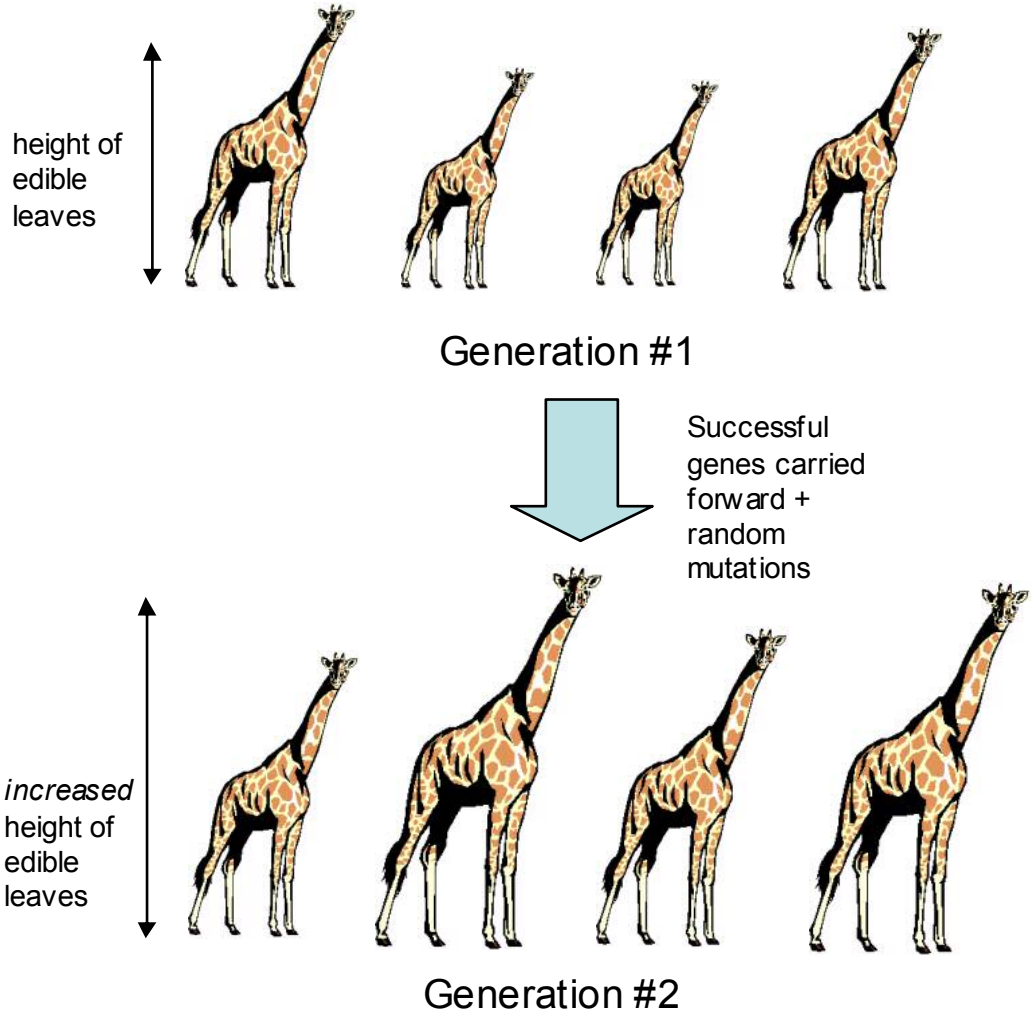
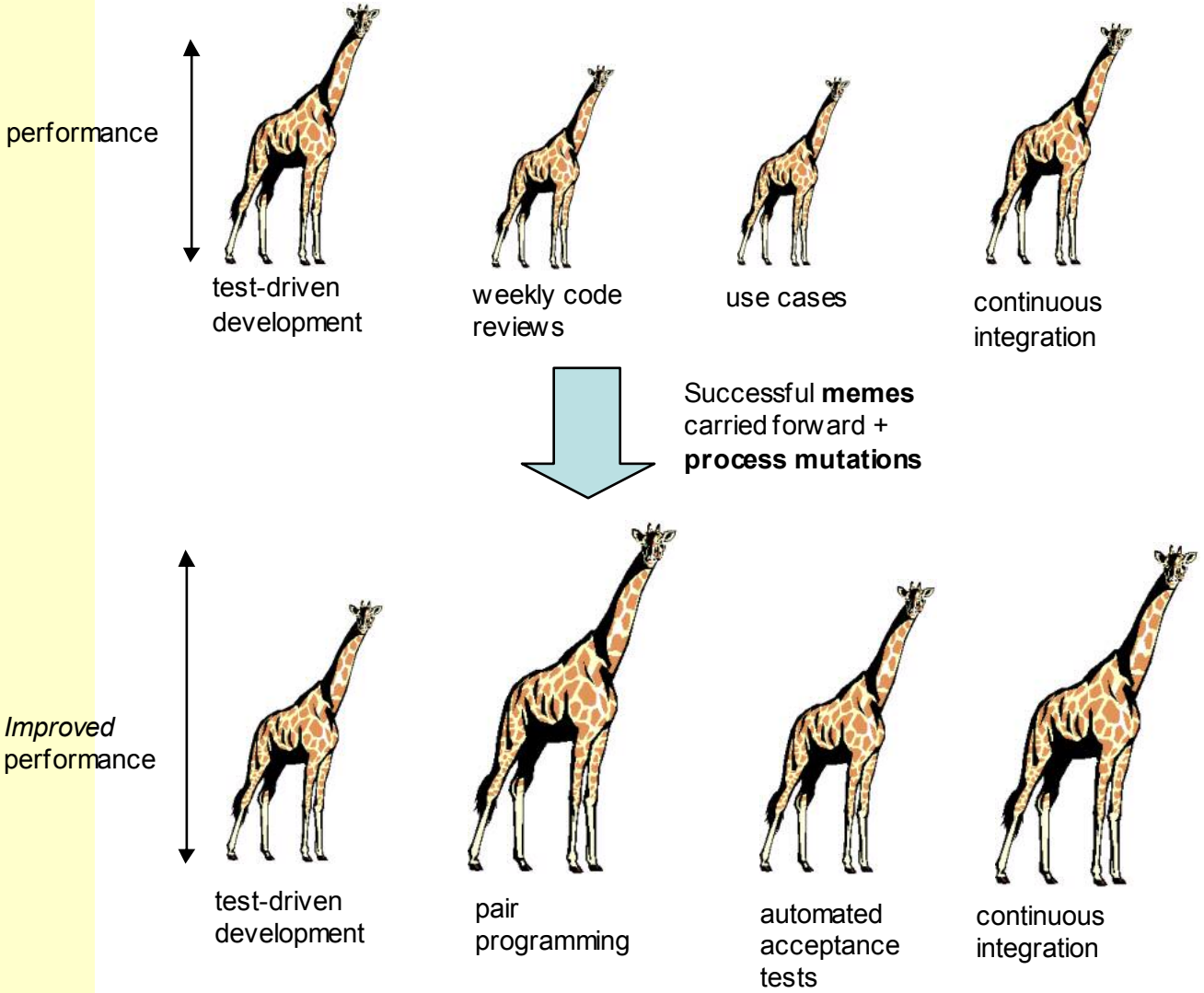
Evolution & Adaptive Tension

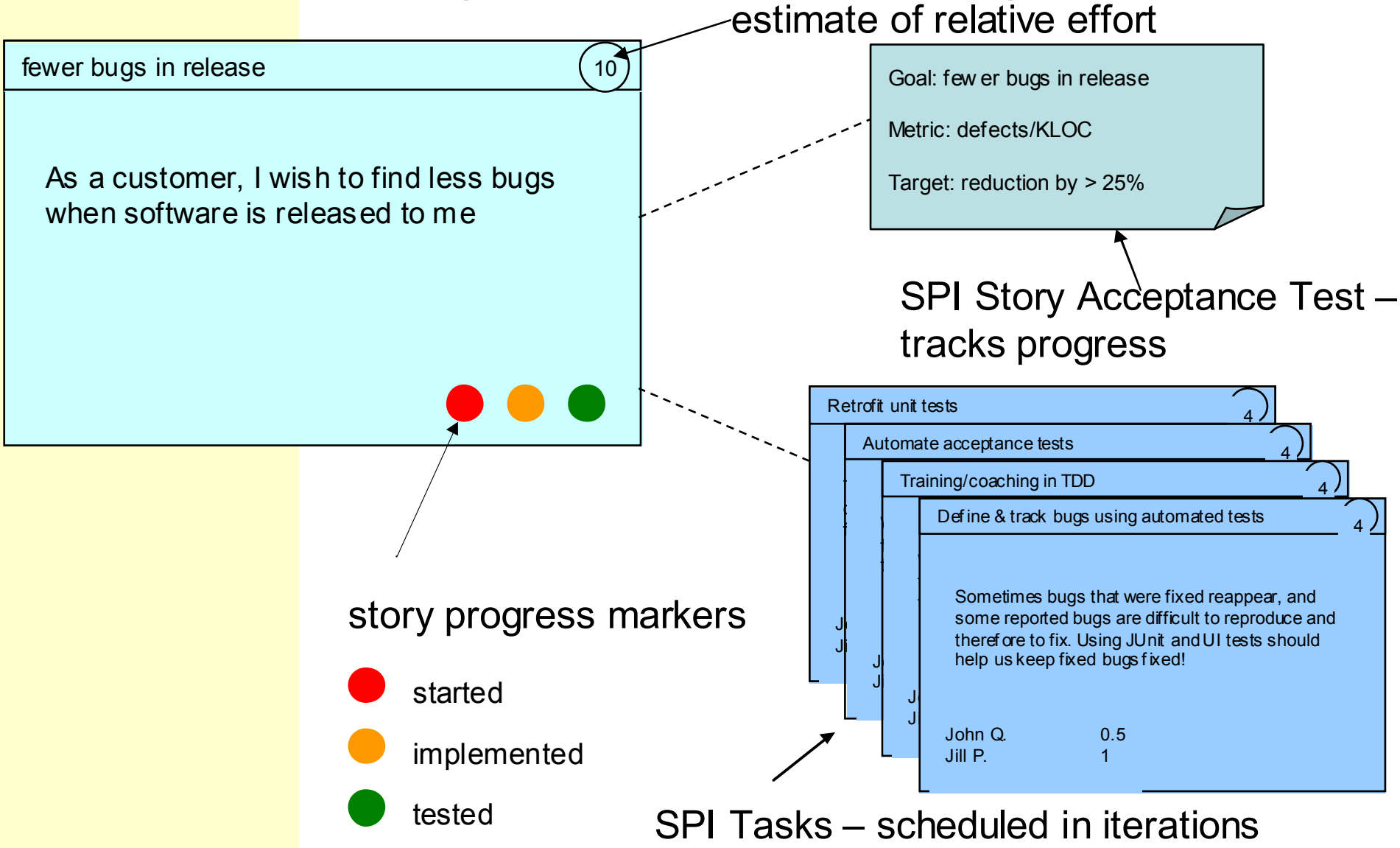




SPI & Adaptive Tension



Agile SPI Planning



Agile SPI Tracking

SPI Story	Estimate	Metric	Initial	Target	Current	Iterations Elapsed	Iterations Remaining
fewer bugs in release	10	defects/KLOC	6.1	4.6	5.5	6	4
higher productivity	15	average FP/iteration	12	15	14	8	3
lower support costs	10	£/FP	5,655	4,000	4,900	8	5
better usability	15	?					
more frequent releases	5	releases cycle length (weeks)	24	12	12	1	0
lower development costs	10	£/FP	2,212	1,800	1,950	8	3
more frequent integration	5	Average check-ins/iteration per developer	2	5	3	8	6
higher test coverage	5	% code coverage	26%	80%	64%	8	3
better development skills	10	?					

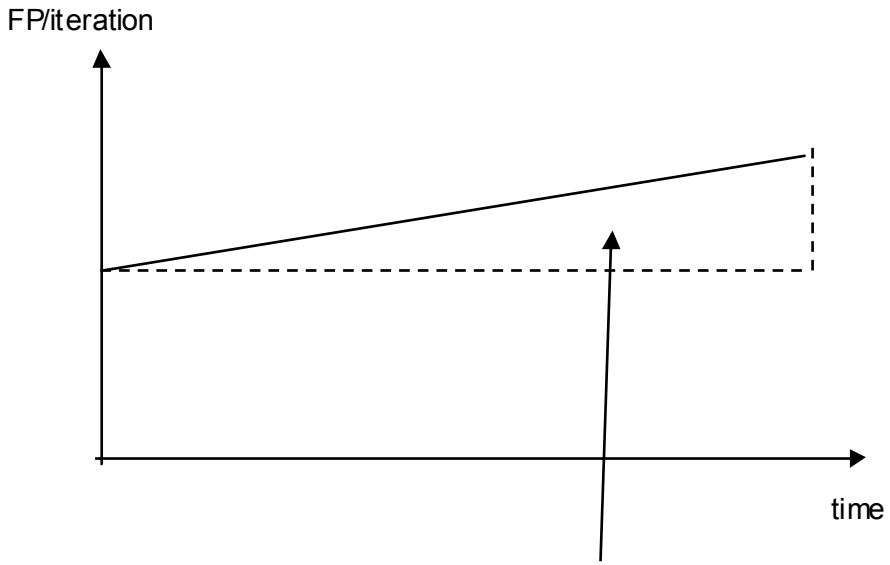
Agile SPI ROI

fewer bugs in release 10

As a customer, I wish to find less bugs when software is released to me

Cost:
Effort = £11,000
Expenses = £3,500
Total = £14,500

SPI cost (person-days + training + tools etc)

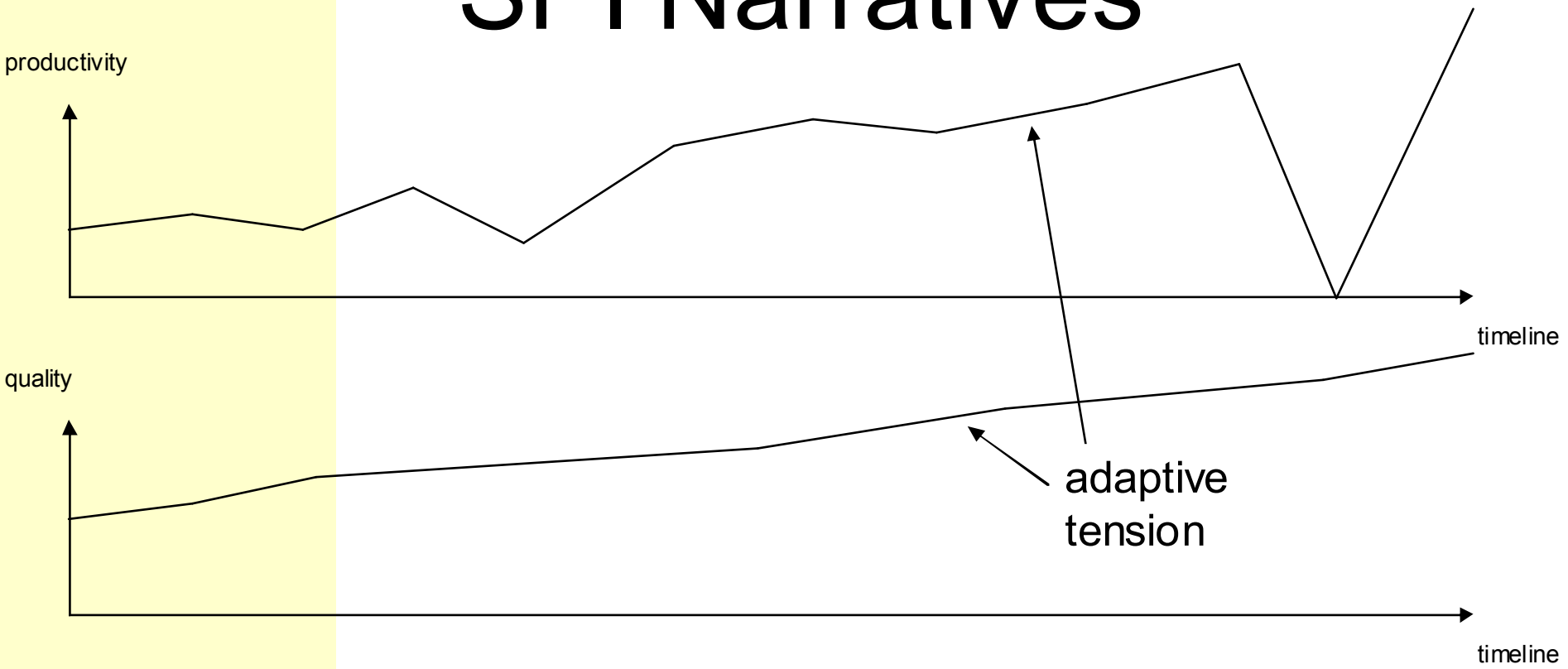


volume = extra function points delivered

Added value = cost of delivering extra FP at original rate of productivity

ROI = (added value / SPI cost) * 100%

SPI Narratives



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Workshop : Introduction

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Do You Get What You Measure?

Workshop & Sample Data

John Q-Soft Ltd

- We create and sell software for sharing reviews of films with your peers
- Our goals:
  - More new features in each release
  - More frequent releases
  - Less bugs in each release (especially high severity bugs)
  - Lower maintenance costs
  - Competitive advantage through more valuable features
  - Leverage of investment within wider development community
    - Reuse of code in new applications

Our Project Data

Stories completed in iteration #4

Borrow video — 2

As a library member, I want to be able to check out a copy of a video title for a limited period of time

John Q.	1
Jill P.	2
Dave C.	1

Add JDepend report to build — 0.25

We need to get package coupling metrics as part of the Ant build. They should be written to a shared folder on the same server as the Wiki.

John Q.	0.5
Dave C.	0.5

Return video — 1

As a library member, I want to be able to return a video I've borrowed and pay if it's overdue

John Q.	1.5
Bill D.	1.5

BUG REF : 0034 – search results not right — 1

When I search for videos with 'space' in the title, 2001 : A Space Odyssey isn't included in the results, even though I know it's in the database

John Q.	2
Bill D.	2

Review a title — 2

As a library member, I want to be able to share my opinions on video titles I have rented with other members

Dave C.	3
Jill P.	3

Iteration Summary:

Started:	26/9/05
Last Build:	423
Velocity:	6.25

Acceptance Test Scripts

Borrow video (2)

As a library member, I want to be able to check out a copy of a video title for a limited period of time

John Q.	1
Jill P.	2
Dave C.	1

Pre: a video title has been selected and there is at least one copy available

1. Request to "borrow" copy
2. -- system prompts for number of days for loan. The default is 2 days.
3. Accept default loan period
4. -- system records that copy is on loan and calculates the date it will be due for return

Return video (1)

As a library member, I want to be able to return a video I've borrowed and pay if it's overdue

John Q.	1.5
Bill D.	1.5

Pre: the list of videos the member has on loan is displayed (not overdue)

1. Select title for video you wish to return
2. Click "return"
3. -- system prompts for condition of returned video. Default is condition when loaned.
4. Accept default return condition
5. -- system records that copy is no longer on loan, and increments the number of times that copy has been loaned to date

Defect Database

ID	Summary	Status	Build	Opened	Closed	Severity
0034	search results not right	CLOSED	342	21/9/05	29/9/05	HIGH
0035	video cover image not displayed	OPEN	342	22/9/05		MEDIUM
0036	overdue not calculated correctly	OPEN	342	22/9/05		HIGH

Defect Summary

Build: 1342

Total Open Bugs: 63
New Bugs: 14
Bugs Closed: 13

Severity:

HIGH 7
MEDIUM 14
LOW 42

Project Costs

- Total Cost to Date £82,600
- Developer Cost per Day
  - John Q. £500
  - Jill P. £500
  - Dave C. £450
  - Bill D. £350
- Cost of Iteration #4 £11,340

Code Metrics

• Lines of Code	6,344
• Total Classes	82
• Average Method Cyclomatic Complexity	7.2
• Average Class Halstead Volume	591.3
• Average Class SEI Maintainability Index	45.4
• Average Class Lack of Cohesion of Methods	0.45
• Average Package Distance from Main Sequence	0.34

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Workshop : Iteration #1

Workshop : Iteration #2

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Workshop : Iteration #3

Review & Wrap-up

Training

www.agilespi.com

http://groups.yahoo.com/group/agilespi