Agile i ett större sammanhang

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Development Technologies

Vad driver kostnaden?

1) Felaktig funktionalitet
   - Inkluderande missuppfattningar, buggar och funktionalitet som inte är nyttig
   - En stor del av utvecklad funktionalitet levererar inte värde!!

2) Längd på återkopplingar
   - Hur länge kan vi hålla på utan att upptäcka att vi utvecklar fel saker, eller saker som inte fungerar?
   - Fail early!

3) Batchar & Köer
   - Ihopklumpning av viktiga saker med oviktiga (dokumentdriven?)
   - Stora projekt
   - Push!

4) Teknisk skuld
   - Svår produkt att förstå, använda, ändra, förbättra
   - Underlåtit att vårda produkt och utvecklingsmiljö, -process och -organisation

5) Repetetiva Manuella Handgrepp
   - Uppgifter som kan automatiseras, skall automatiseras
   - Att göra dem oftare driver ofta automatisering
   - Exempel: Testning

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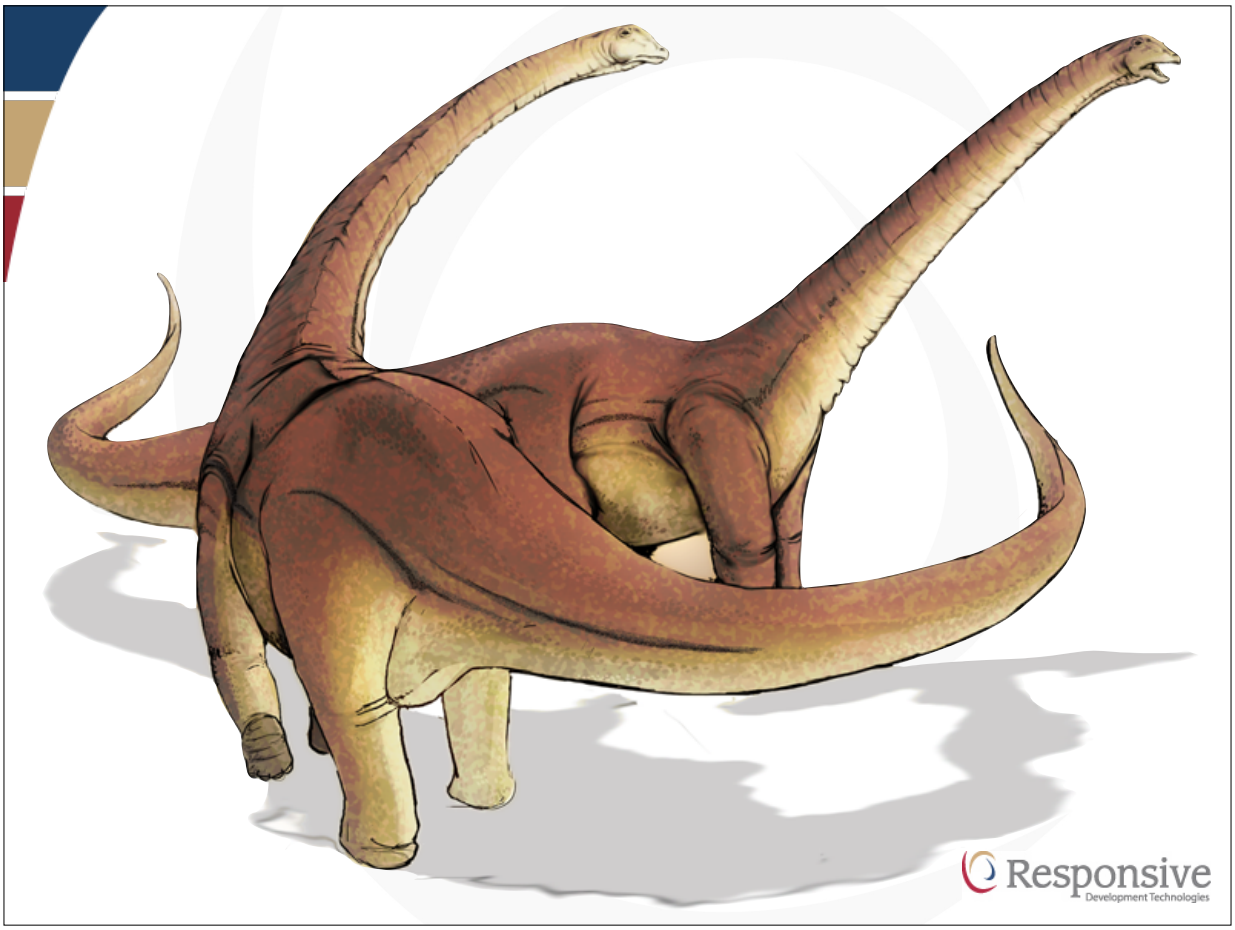

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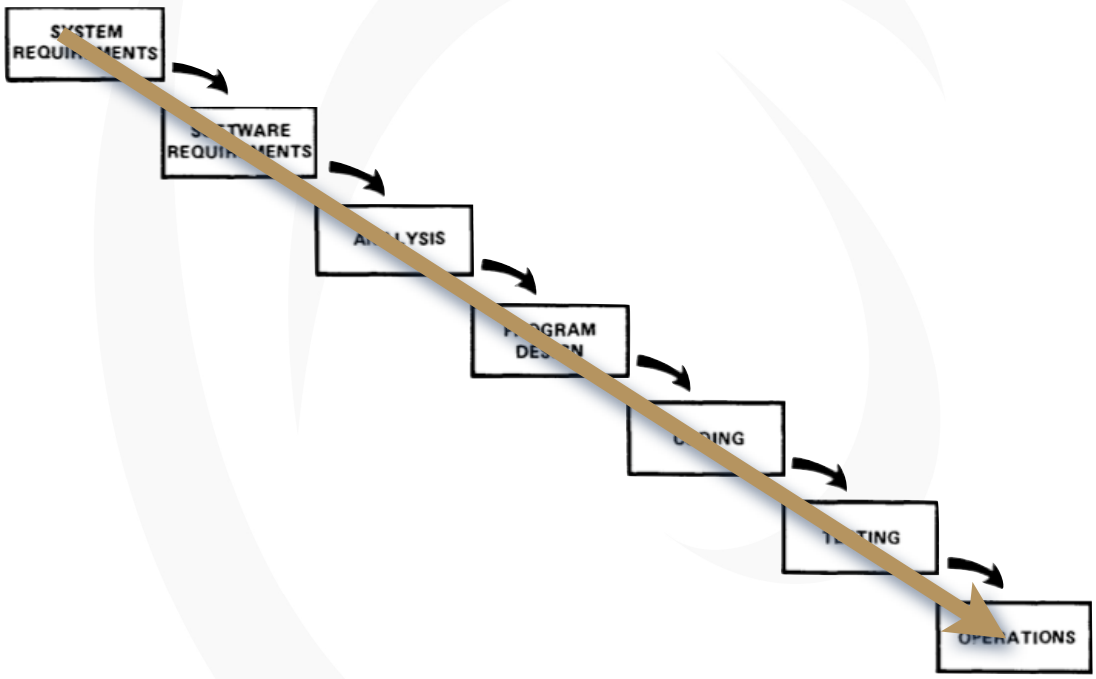

Figure 2. Implementation steps to develop a large computer program for delivery to a customer

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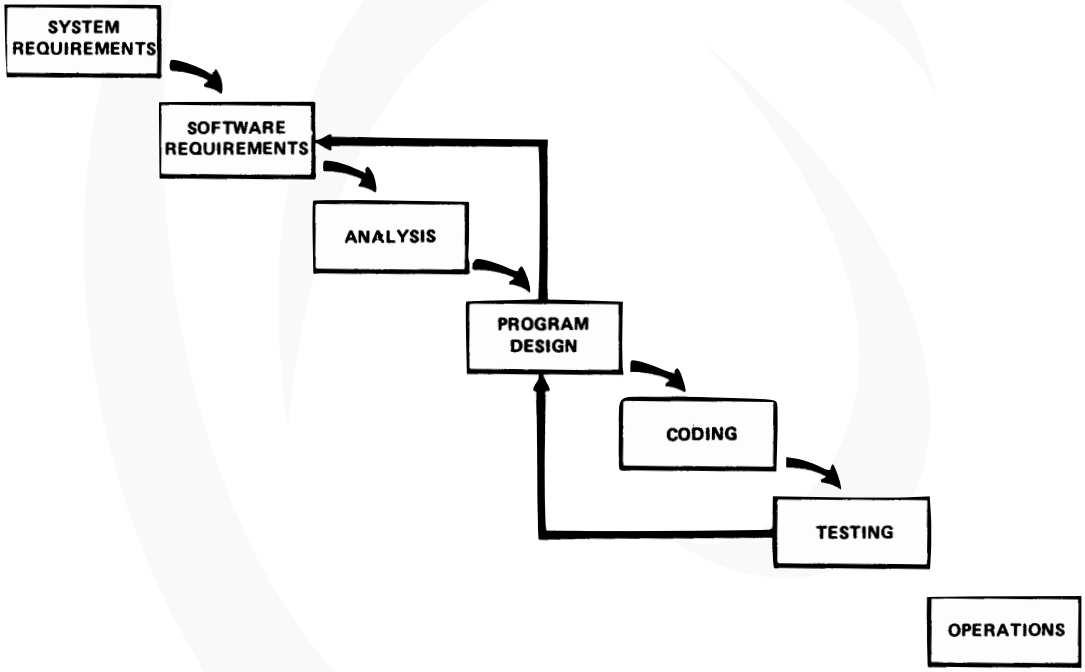

Figure 4. Unfortunately, for the process illustrated, the design iterations are never confined to the successive steps.

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Scientific Management

- Full Resource Utilisation
- Specialization
- Functional Organisation
- Work Breakdown to Tasks

- Cost Reduction of *Manufacturing*
- Cheap Un-Educated Labor

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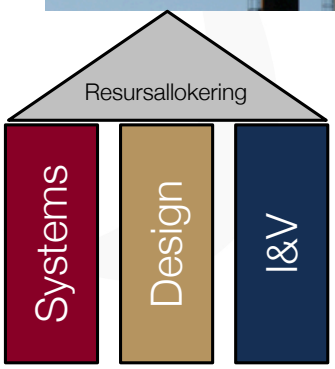
Organisation

- Traditionell
  - Kompetens- eller Processteg-silos
  - Överlämningar & batchning
  - Command and Report/Follow-up
  - Push
  - Mätning på enskilda process steg



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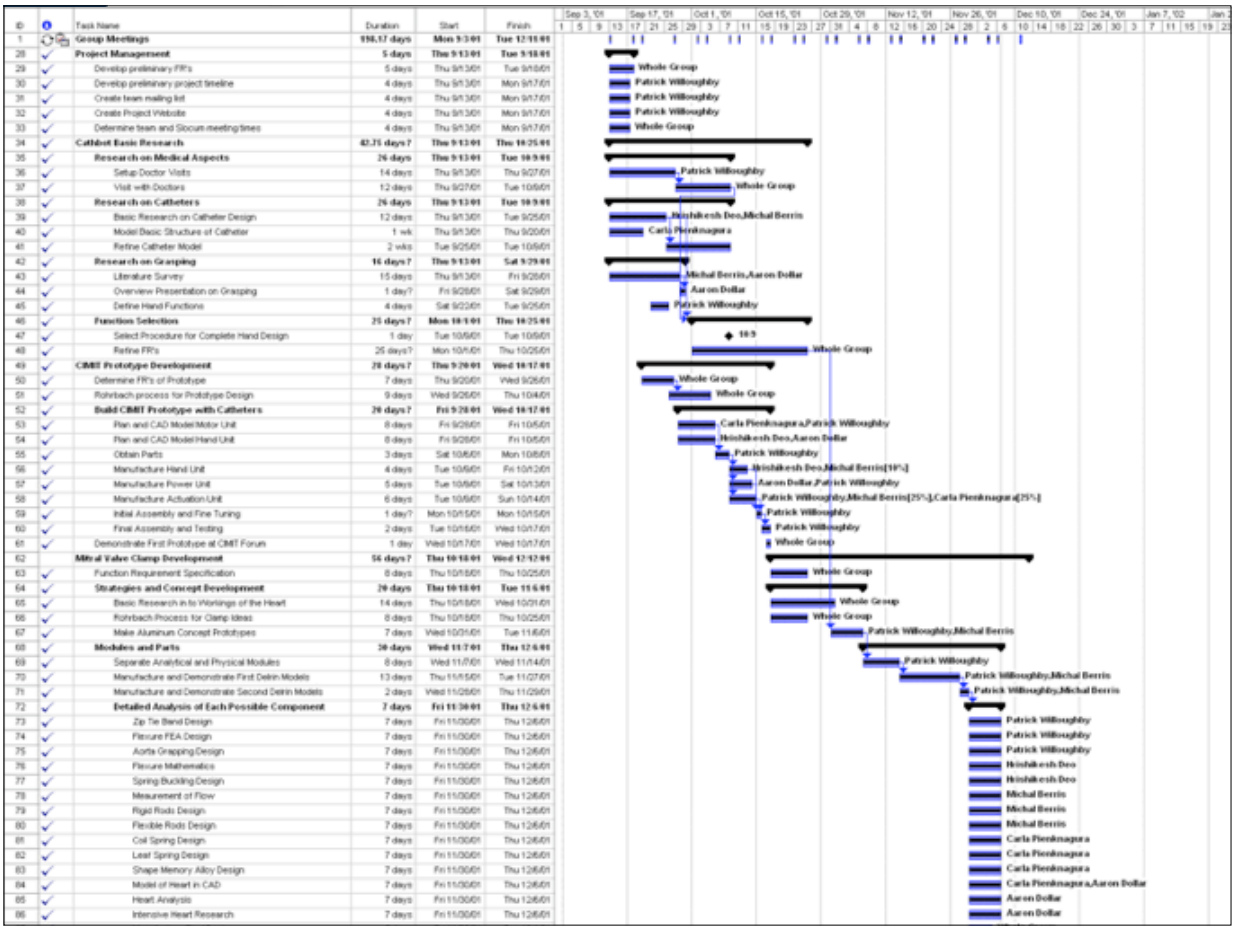

ID	Task Name	Duration	Start	Finish
1	**Group Meetings**	**198.17 days**	**Mon 9/3/01**	**Tue 12/18/01**
28	**Project Management**	**5 days**	**Thu 9/13/01**	**Tue 9/18/01**
29	Develop preliminary FR's	5 days	Thu 9/13/01	Tue 9/18/01
30	Develop preliminary project timeline	4 days	Thu 9/13/01	Mon 9/17/01
31	Create team mailing list	4 days	Thu 9/13/01	Mon 9/17/01
32	Create Project Website	4 days	Thu 9/13/01	Mon 9/17/01
33	Determine team and Slocum meeting times	4 days	Thu 9/13/01	Mon 9/17/01
34	**Catheter Basic Research**	**42.75 days?**	**Thu 9/13/01**	**Thu 10/25/01**
35	**Research on Medical Aspects**	**26 days**	**Thu 9/13/01**	**Tue 10/9/01**
36	Setup Doctor Visits	14 days	Thu 9/13/01	Thu 9/27/01
37	Visit with Doctors	12 days	Thu 9/27/01	Tue 10/9/01
38	**Research on Catheters**	**26 days**	**Thu 9/13/01**	**Tue 10/9/01**
39	Basic Research on Catheter Design	12 days	Thu 9/13/01	Tue 9/25/01
40	Model Basic Structure of Catheter	1 wk	Thu 9/13/01	Thu 9/20/01
41	Refine Catheter Model	2 wks	Tue 9/25/01	Tue 10/9/01
42	**Research on Grasping**	**16 days?**	**Thu 9/13/01**	**Sat 9/29/01**
43	Literature Survey	15 days	Thu 9/13/01	Fri 9/28/01
44	Overview Presentation on Grasping	1 day?	Fri 9/28/01	Sat 9/29/01
45	Define Hand Functions	4 days	Sat 9/22/01	Tue 9/25/01
46	**Function Selection**	**25 days?**	**Mon 10/1/01**	**Thu 10/25/01**
47	Select Procedure for Complete Hand Design	1 day	Tue 10/9/01	Tue 10/9/01
48	Refine FR's	25 days?	Mon 10/1/01	Thu 10/25/01
49	**CIMIT Prototype Development**	**20 days?**	**Thu 9/20/01**	**Wed 10/17/01**
50	Determine FR's of Prototype	7 days	Thu 9/20/01	Wed 9/26/01
51	Rohrbach process for Prototype Design	9 days	Wed 9/26/01	Thu 10/4/01
52	**Build CIMIT Prototype with Catheters**	**20 days?**	**Fri 9/28/01**	**Wed 10/17/01**
53	Plan and CAD Model Motor Unit	8 days	Fri 9/28/01	Fri 10/5/01
54	Plan and CAD Model Hand Unit	8 days	Fri 9/28/01	Fri 10/5/01
55	Obtain Parts	3 days	Sat 10/6/01	Mon 10/8/01
56	Manufacture Hand Unit	4 days	Tue 10/9/01	Fri 10/12/01
57	Manufacture Power Unit	5 days	Tue 10/9/01	Sat 10/13/01
58	Manufacture Actuation Unit	6 days	Tue 10/9/01	Sun 10/14/01
59	Initial Assembly and Fine Tuning	1 day?	Mon 10/15/01	Mon 10/15/01
60	Final Assembly and Testing	2 days	Tue 10/16/01	Wed 10/17/01
61	Demonstrate First Prototype at CIMIT Forum	1 day	Wed 10/17/01	Wed 10/17/01
62	**Mitral Valve Clamp Development**	**56 days?**	**Thu 10/18/01**	**Wed 12/12/01**
63	Function Requirement Specification	8 days	Thu 10/18/01	Thu 10/25/01
64	**Strategies and Concept Development**	**20 days**	**Thu 10/18/01**	**Tue 11/6/01**
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71	Manufacture and Demonstrate Second Delrin Models	2 days	Wed 11/28/01	Thu 11/29/01
72	**Detailed Analysis of Each Possible Component**	**7 days**	**Fri 11/30/01**	**Thu 12/6/01**
73	Zip Tie Band Design	7 days	Fri 11/30/01	Thu 12/6/01
74	Flexure FEA Design	7 days	Fri 11/30/01	Thu 12/6/01
75	Aorta Grapping Design	7 days	Fri 11/30/01	Thu 12/6/01
76	Flexure Mathematics	7 days	Fri 11/30/01	Thu 12/6/01
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80	Flexible Rods Design	7 days	Fri 11/30/01	Thu 12/6/01
81	Coil Spring Design	7 days	Fri 11/30/01	Thu 12/6/01
82	Leaf Spring Design	7 days	Fri 11/30/01	Thu 12/6/01
83	Shape Memory Alloy Design	7 days	Fri 11/30/01	Thu 12/6/01
84	Model of Heart in CAD	7 days	Fri 11/30/01	Thu 12/6/01
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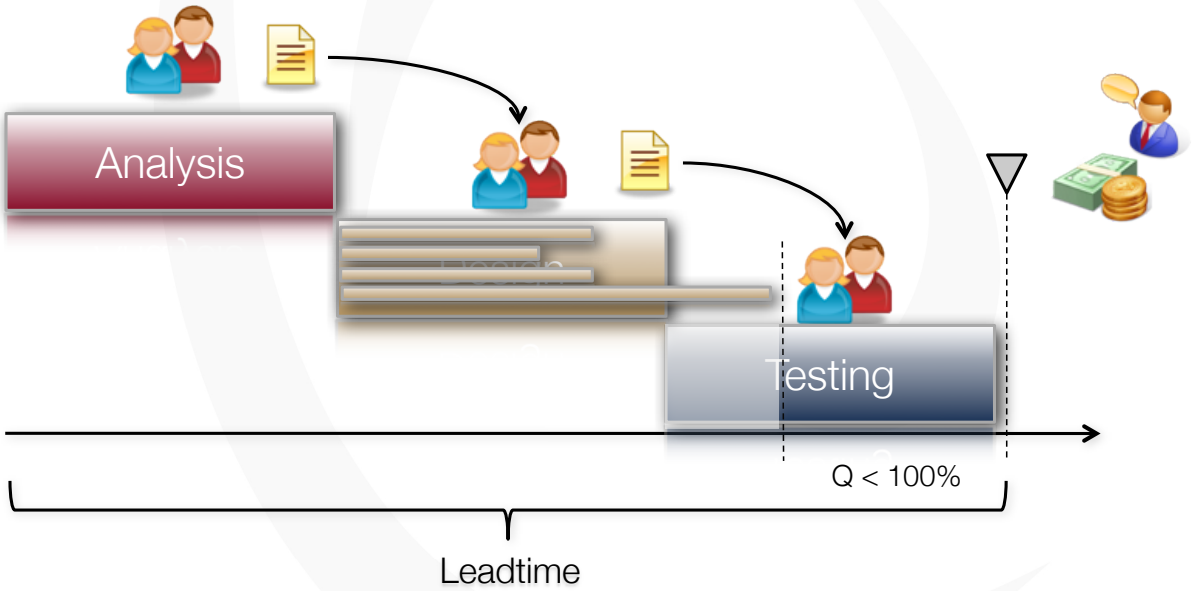

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Utveckling av Programvara

- Utveckling - in i det okända
  - är problemlösning
  - har en inneboende oförutsägbarhet
  - konstruktion, inte tillverkning
  - alltid nytt
- Programvara - det är mjukt
  - möjlighet att göra små ändringar, ofta
  - kräver inte tillverkning för att ”finnas”
  - programvara kan bygga programvara
- Möjligt att använda adaptiva metoder
  - bör användas för allt oförutsägbart
  - Agile kunde ha hetat Adaptive

R&D

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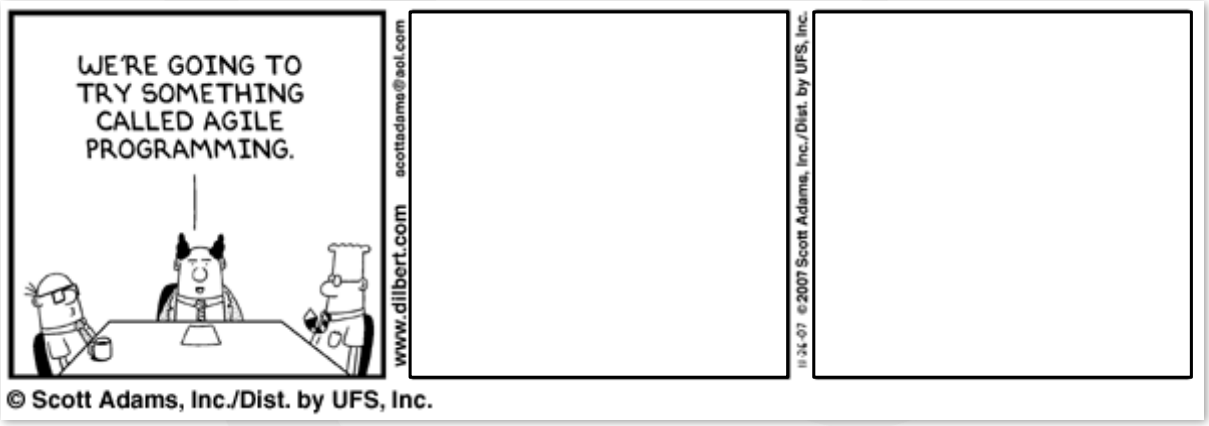

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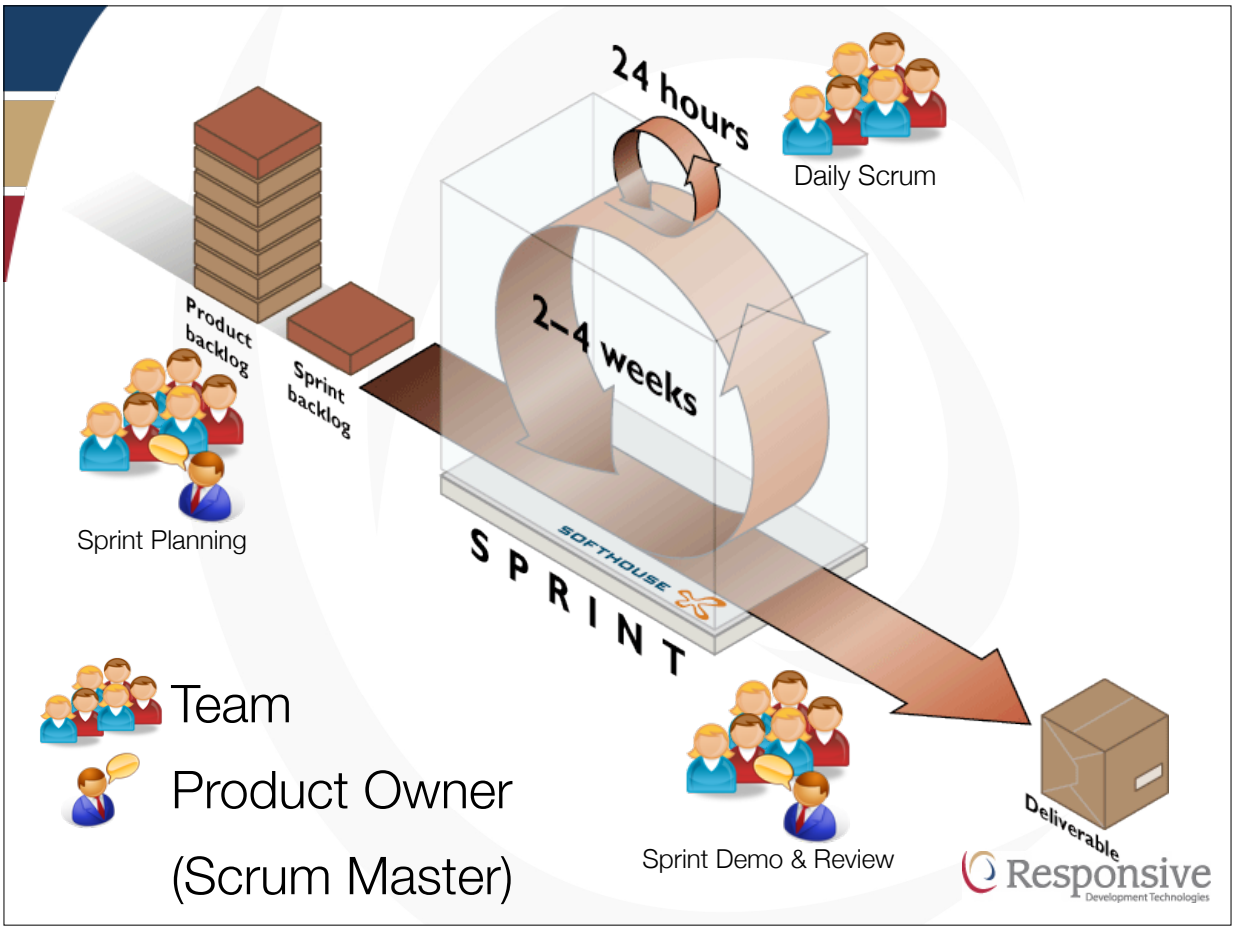
Manifesto for Agile Software Development

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

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

That is, while there is value in the items on the right, we value the items on the left more.

Kent Beck, Mike Beedle, Arie van Bennekum, Alistair Cockburn, Ward Cunningham, Martin Fowler, James Grenning, Jim Highsmith, Andrew Hunt, Ron Jeffries, Jon Kern, Brian Marick, Robert C. Martin, Steve Mellor, Ken Schwaber, Jeff Sutherland, Dave Thomas



Scrums principer & värderingar

- Utveckling i timeboxade korta steg för att kolla kvalité och återkoppling
- Högst värde först
- Självorganiserande team
  - Commitment & Fokus
  - Öppenhet & Ärlighet
  - Respekt & Mod

Visibility

Inspect

Adapt

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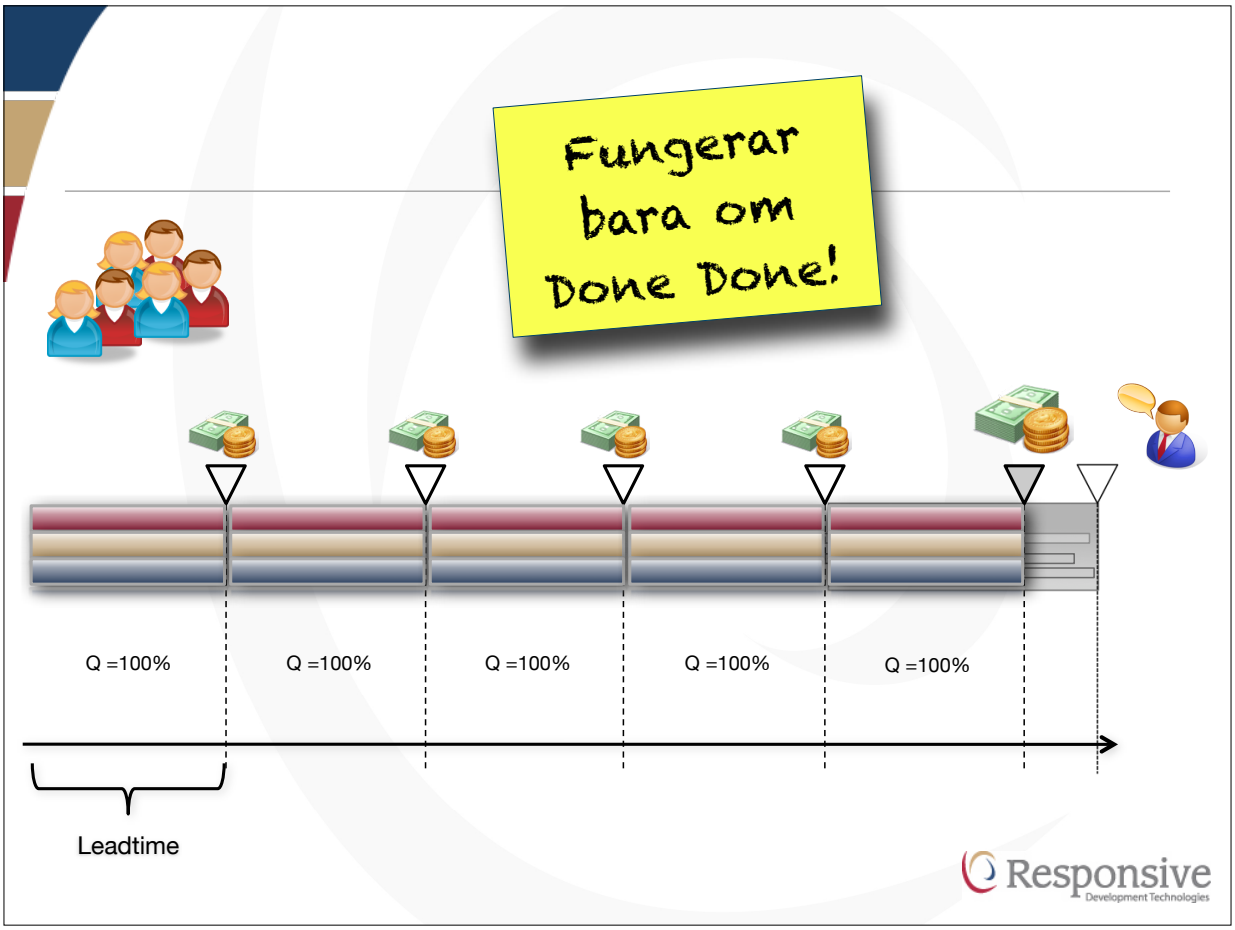
Fungerar bara om Done Done!
Q =100%
Q =100%
Q =100%
Q =100%
Q =100%
Leadtime
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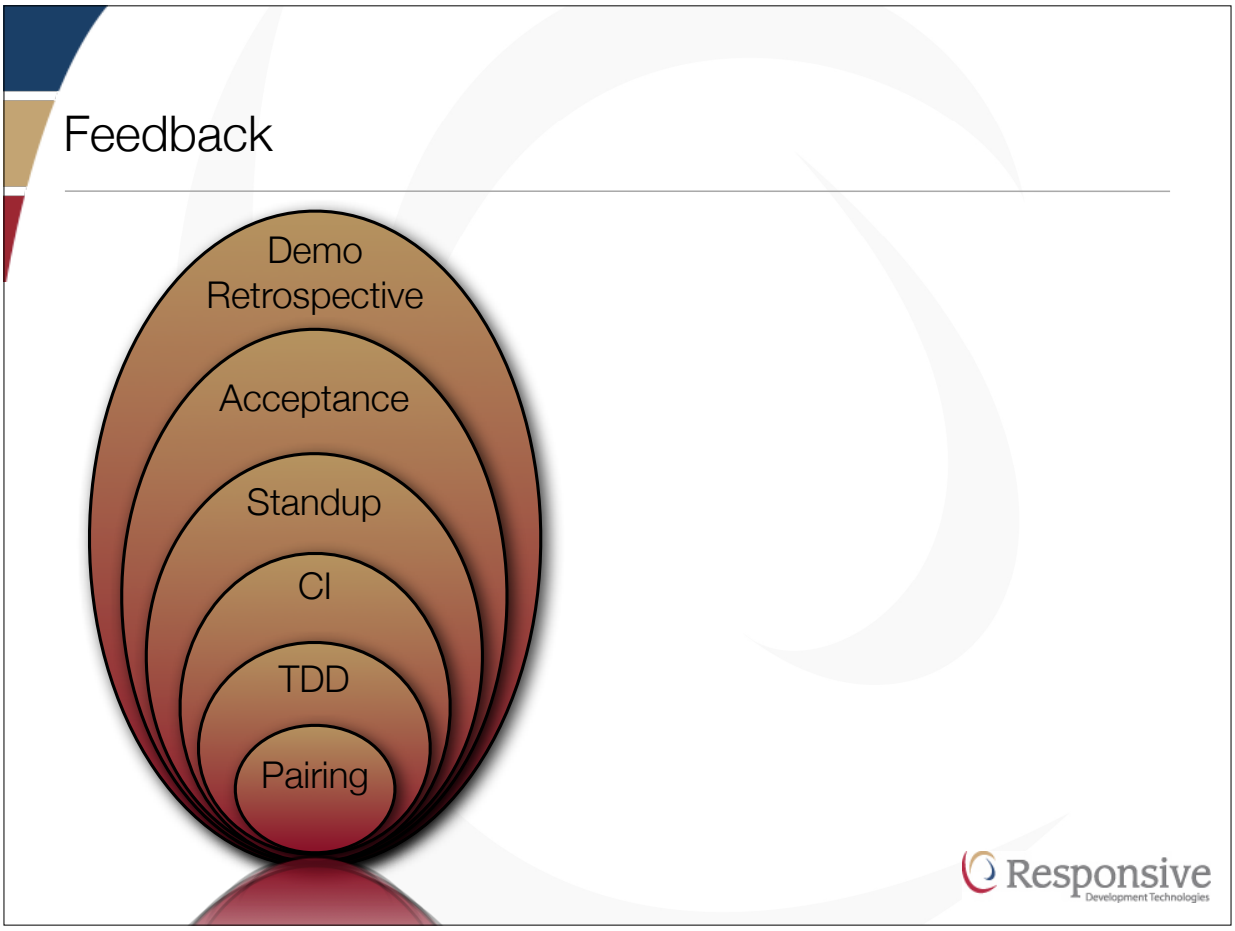
Feedback
Demo
Retrospective
Acceptance
Standup
CI
TDD
Pairing
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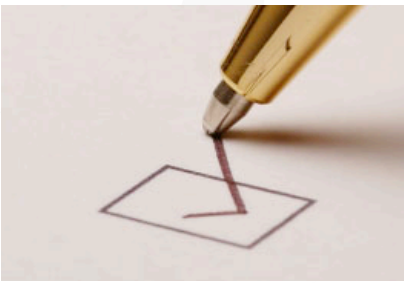
Allt ingår!

- Städning görs aldrig!
- ”Everything is included”
  - Test Driven
  - Automatisering
  - Refactoring
  - Test- & build scripts
  - Manualer & Dokumentation
  - ...
- För varje Story!
- Kultur och Arbetssätt
  - Skillnad mellan *levererat* och *klart*!
- Det finns alltid tid!
  - Om man studerar empiriska data
- Man är alltid Done!



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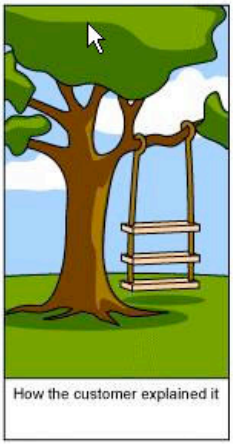
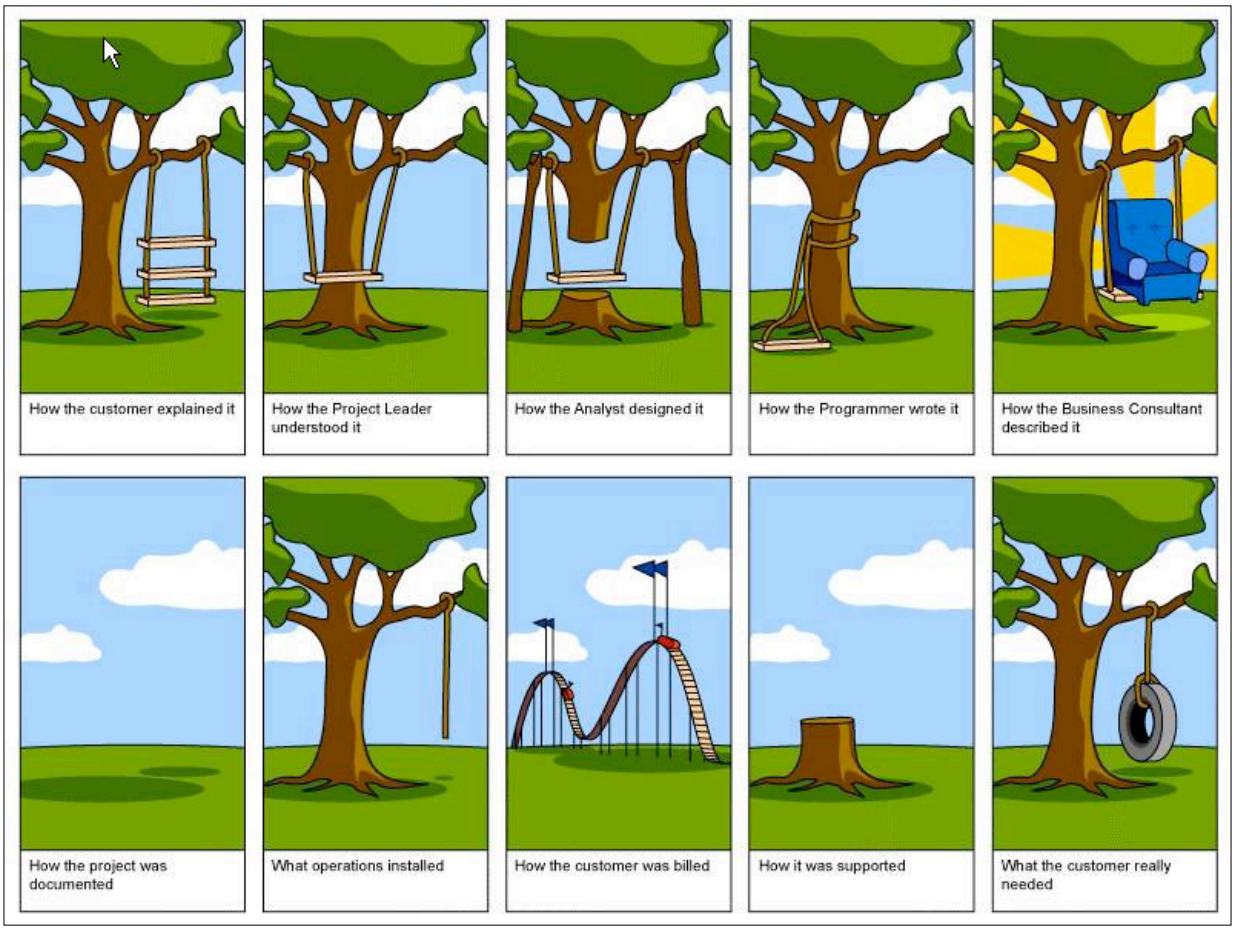
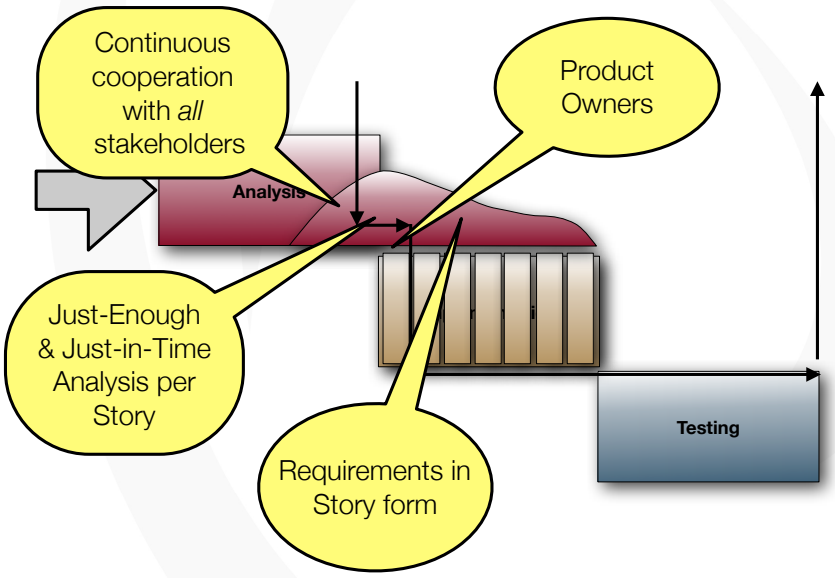




Agile Implementation & Analysis



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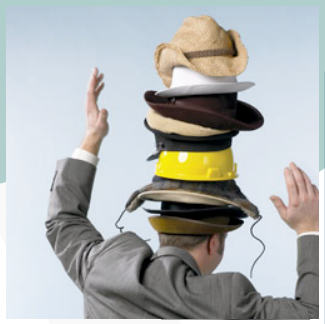
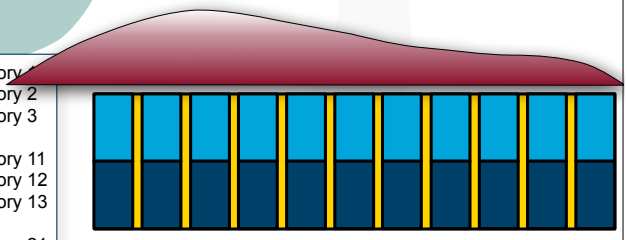
The Product Owner Responsibility

Customer
CEO
Project Management
Business Analysts
SPM
Test Coordinator
Systems
TSPOC
OPM
Sub-PM
Architect
IP-writer
IP-writer



Story 1
Story 2
Story 3
....
Story 11
Story 12
Story 13
....
Story 21
Story 22
Story 23
....



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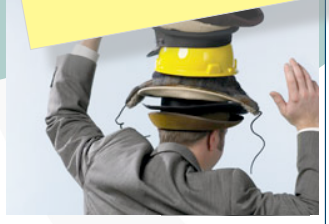
The Product Owner Responsibility

User
Customer
CEO
Business Analysts
SPM
Systems
Architect
IP-writer

Focus on
What & Why,
not How!



Story 2
Story 3
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Story 11
Story 12
Story 13
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Story 21
Story 22
Story 23
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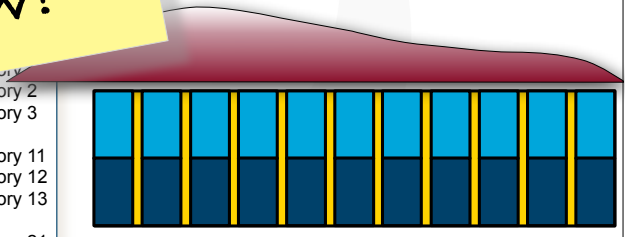

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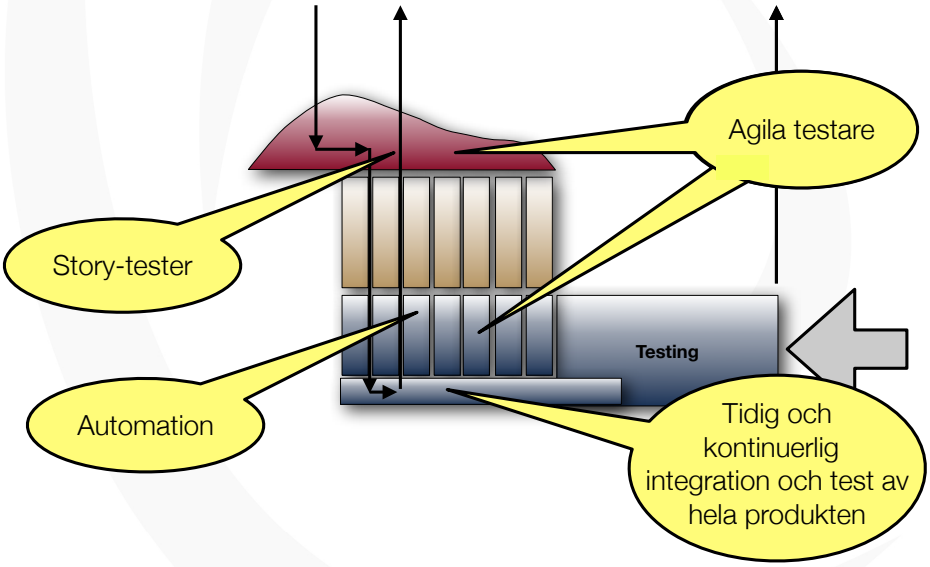
Agile Implementation, Analys & Testning



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Determine team and Slocum meeting times	4 days	Thu 9/13/01	Mon 9/17/01
hbot Basic Research	**42.75 days?**	**Thu 9/13/01**	**Thu 10/25/01**
Research on Medical Aspects	**26 days**	**Thu 9/13/01**	**Tue 10/9/01**
Setup Doctor Visits	14 days	Thu 9/13/01	Thu 9/27/01
Visit with Doctors	12 days	Thu 9/27/01	Tue 10/9/01
Research on Catheters	**26 days**	**Thu 9/13/01**	**Tue 10/9/01**
Basic Research on Catheter Design	12 days	Thu 9/13/01	Tue 9/25/01
Model Basic Structure of Catheter	1 wk	Thu 9/13/01	Thu 9/20/01
Refine Catheter Model	2 wks	Tue 9/25/01	Tue 10/9/01
Research on Grasping	**16 days?**	**Thu 9/13/01**	**Sat 9/29/01**
Literature Survey	15 days	Thu 9/13/01	Fri 9/28/01
Overview Presentation on Grasping	1 day?	Fri 9/28/01	Sat 9/29/01
Define Hand Functions	4 days	Sat 9/22/01	Tue 9/25/01
Function Selection	**25 days?**	**Mon 10/1/01**	**Thu 10/25/01**
Select Procedure for Complete Hand Design	1 day	Tue 10/9/01	Tue 10/9/01
Refine FR's	25 days?	Mon 10/1/01	Thu 10/25/01
MIT Prototype Development	**28 days?**	**Thu 9/20/01**	**Wed 10/17/01**
Determine FR's of Prototype	7 days	Thu 9/20/01	Wed 9/26/01
Rohrbach process for Prototype Design	9 days	Wed 9/26/01	Thu 10/4/01
Build CIMIT Prototype with Catheters	**20 days?**	**Fri 9/28/01**	**Wed 10/17/01**
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Manufacture Hand Unit	4 days	Tue 10/9/01	Fri 10/12/01
Manufacture Power Unit	5 days	Tue 10/9/01	Sat 10/13/01
Manufacture Actuation Unit	6 days	Tue 10/9/01	Sun 10/14/01
Initial Assembly and Fine Tuning	1 day?	Mon 10/15/01	Mon 10/15/01
Final Assembly and Testing	2 days	Tue 10/16/01	Wed 10/17/01
Demonstrate First Prototype at CIMIT Forum	1 day	Wed 10/17/01	Wed 10/17/01
tral Valve Clamp Development	**56 days?**	**Thu 10/18/01**	**Wed 12/12/01**
Function Requirement Specification	8 days	Thu 10/18/01	Thu 10/25/01
Strategies and Concept Development	**20 days**	**Thu 10/18/01**	**Tue 11/6/01**
Basic Research in to Workings of the Heart	14 days	Thu 10/18/01	Wed 10/31/01
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Make Aluminum Concept Prototypes	7 days	Wed 10/31/01	Tue 11/6/01
Modules and Parts	**30 days**	**Wed 11/7/01**	**Thu 12/6/01**
Separate Analytical and Physical Modules	8 days	Wed 11/7/01	Wed 11/14/01
Manufacture and Demonstrate First Delrin Models	13 days	Thu 11/15/01	Tue 11/27/01
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Detailed Analysis of Each Possible Component	**7 days**	**Fri 11/30/01**	**Thu 12/6/01**
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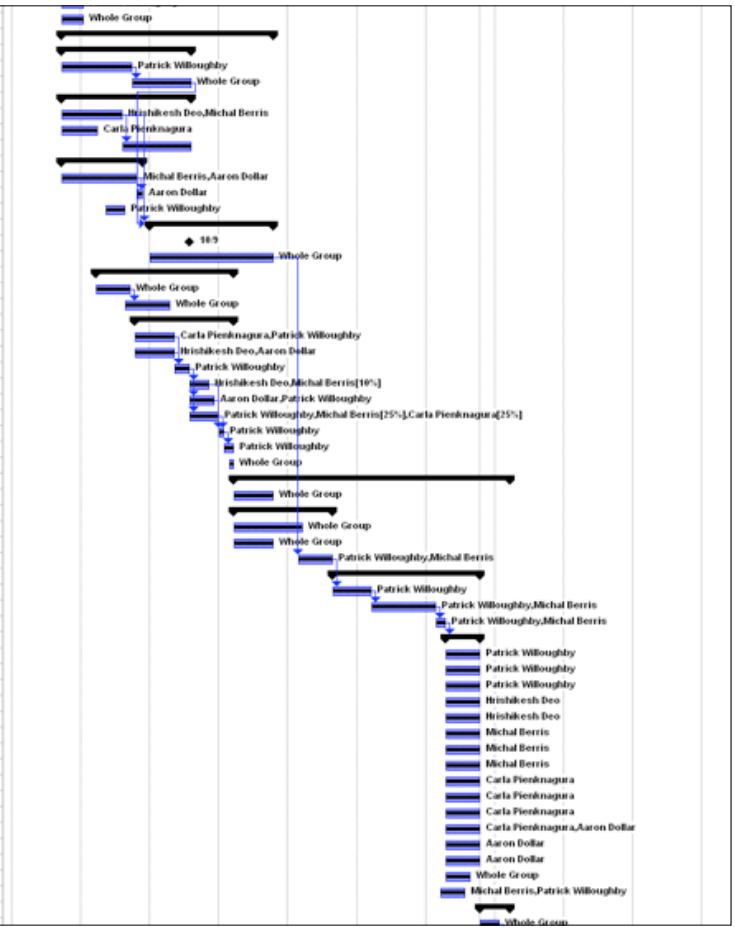
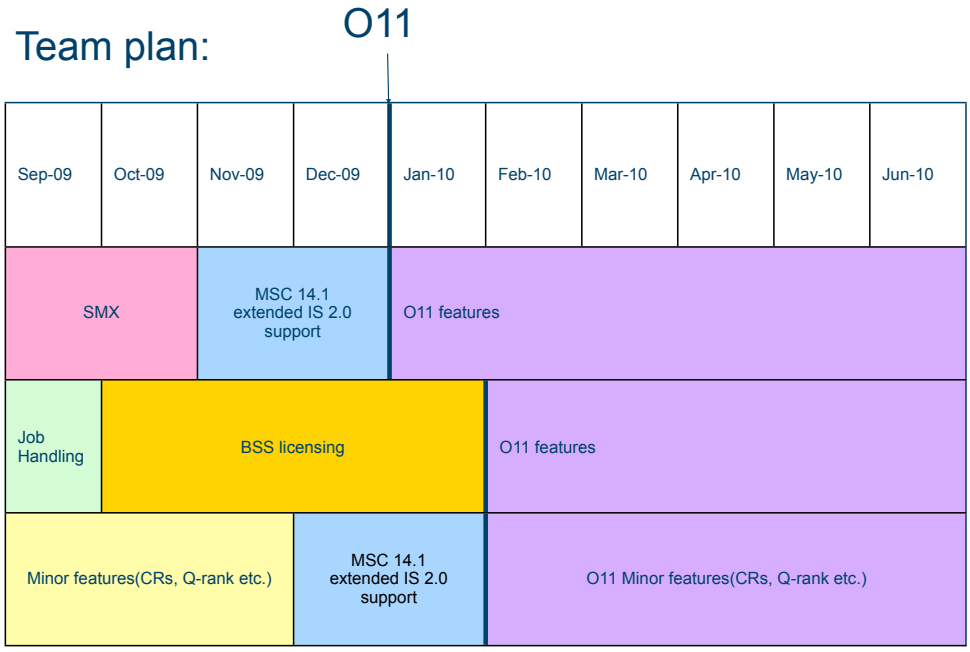
Model of Heart in CAD	7 days	Fri 11/30/01	Thu 12/6/01
Heart Analysis	7 days	Fri 11/30/01	Thu 12/6/01
Intensive Heart Research	7 days	Fri 11/30/01	Thu 12/6/01
Manufacture Final Design	5 days	Fri 11/30/01	Tue 12/4/01
Finalize Design	5 days	Thu 11/29/01	Mon 12/3/01
Build and Test	**6 days?**	**Fri 12/7/01**	**Wed 12/12/01**

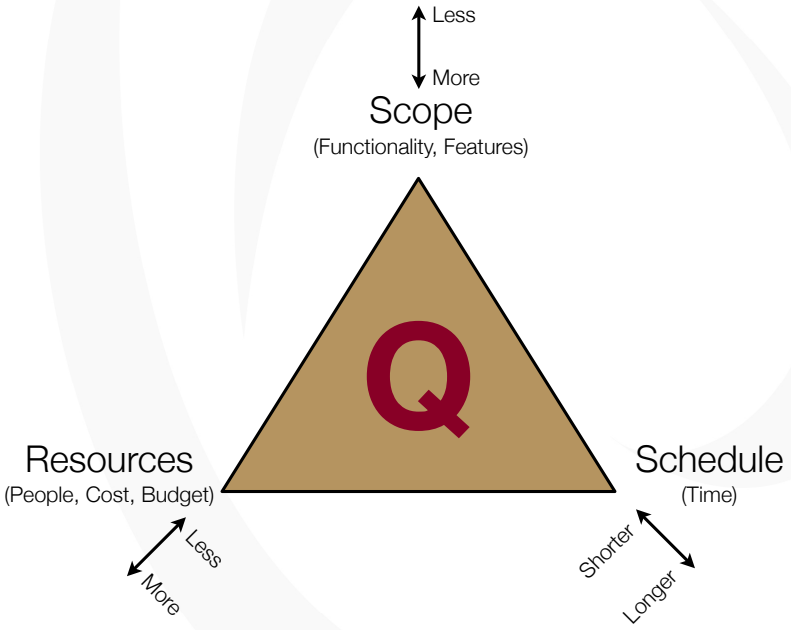


Preliminary time plan for the SHM features according to Scenario 1

Team plan:



Järntriangeln - valet mellan tid, funktion och kostnad



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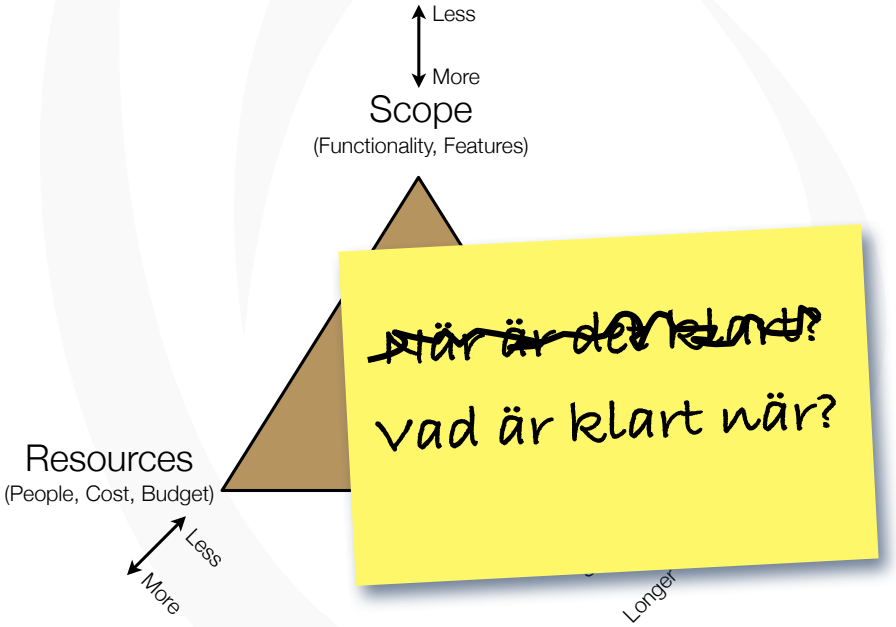

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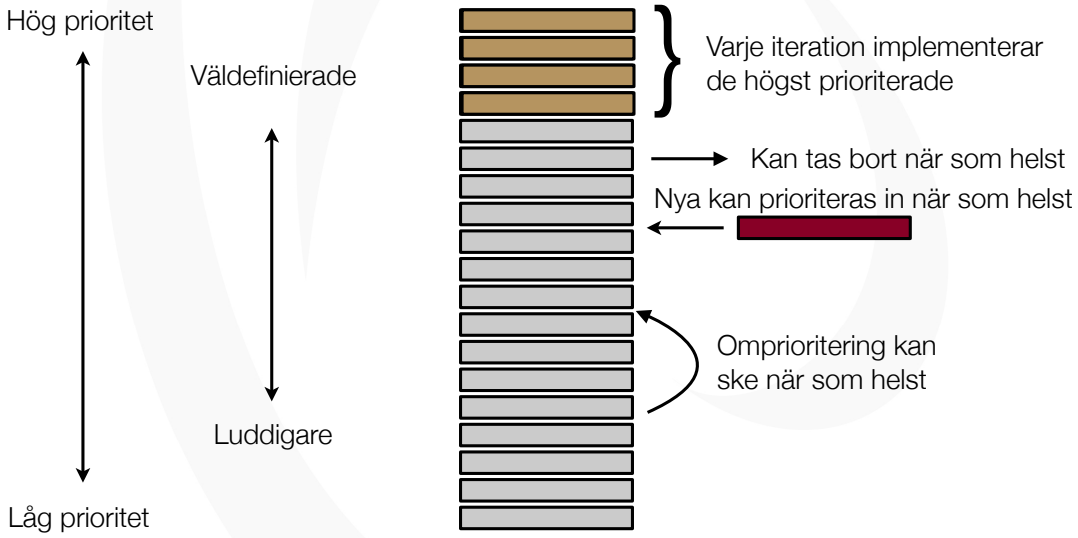
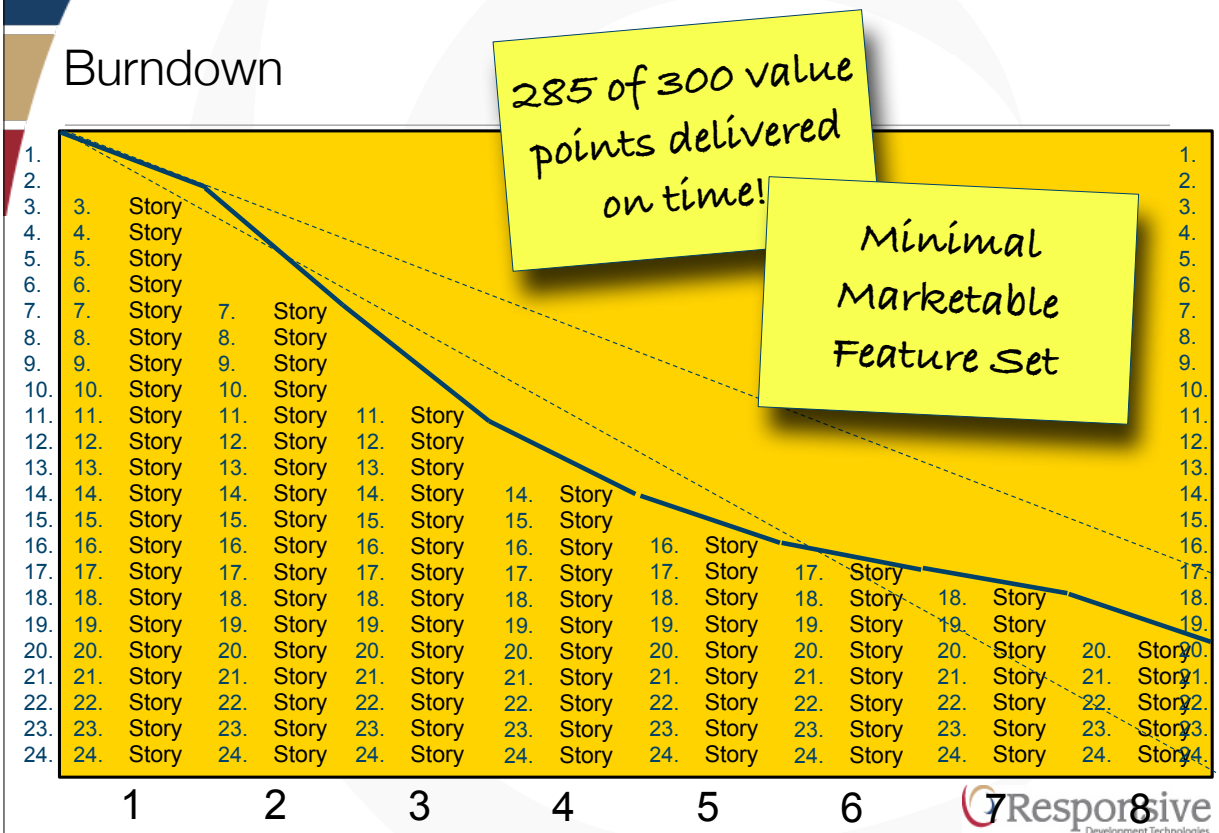
Development Technologies

Prioritera funktionalitet - inte aktiviteter eller projekt!



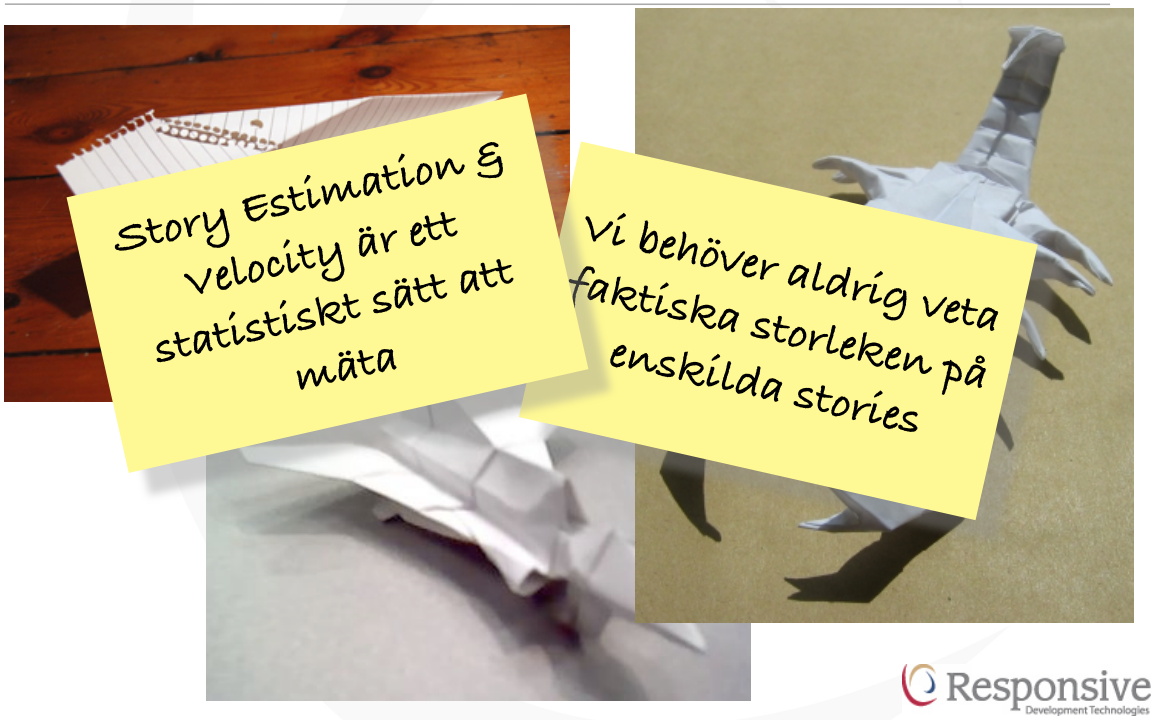
Responsive Development Technologies

Burndown



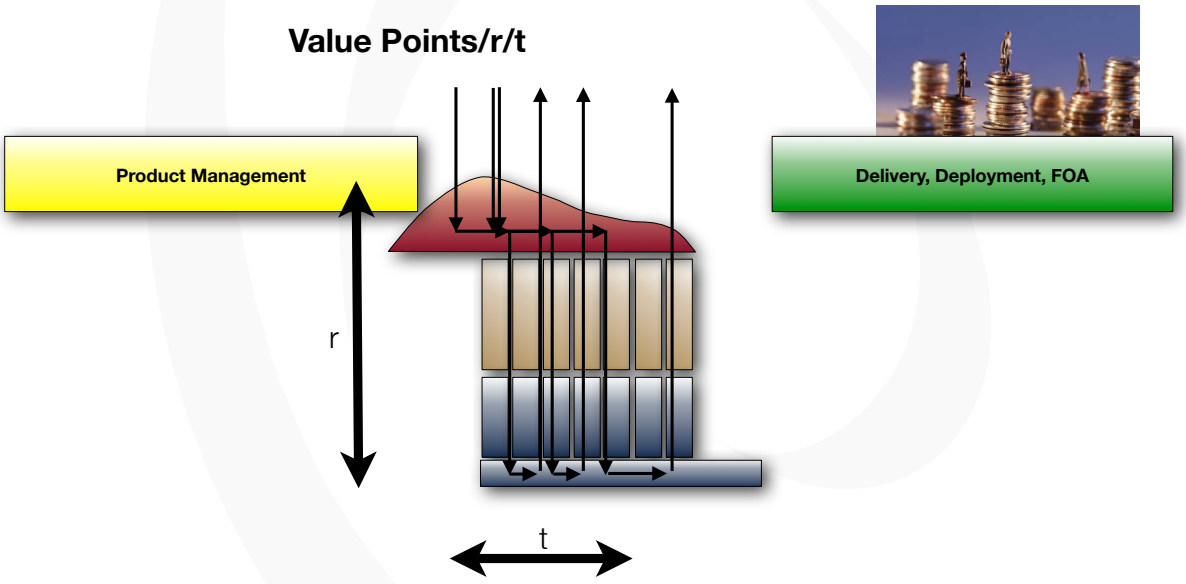
Responsive Development Technologies

Estimering & Velocity



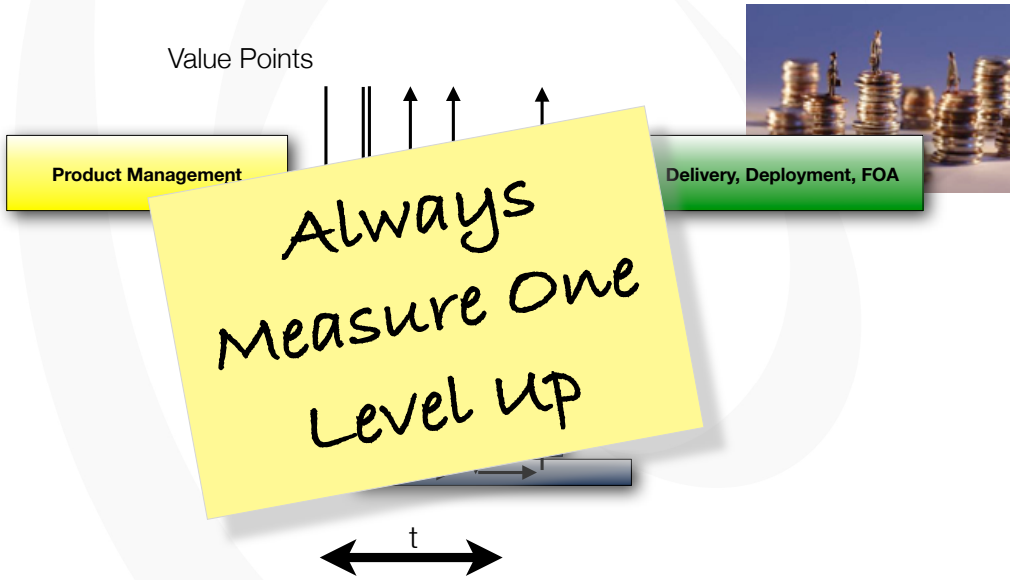
Responsive Development Technologies

Efficiency: Measure Flow and Lead Time of Value



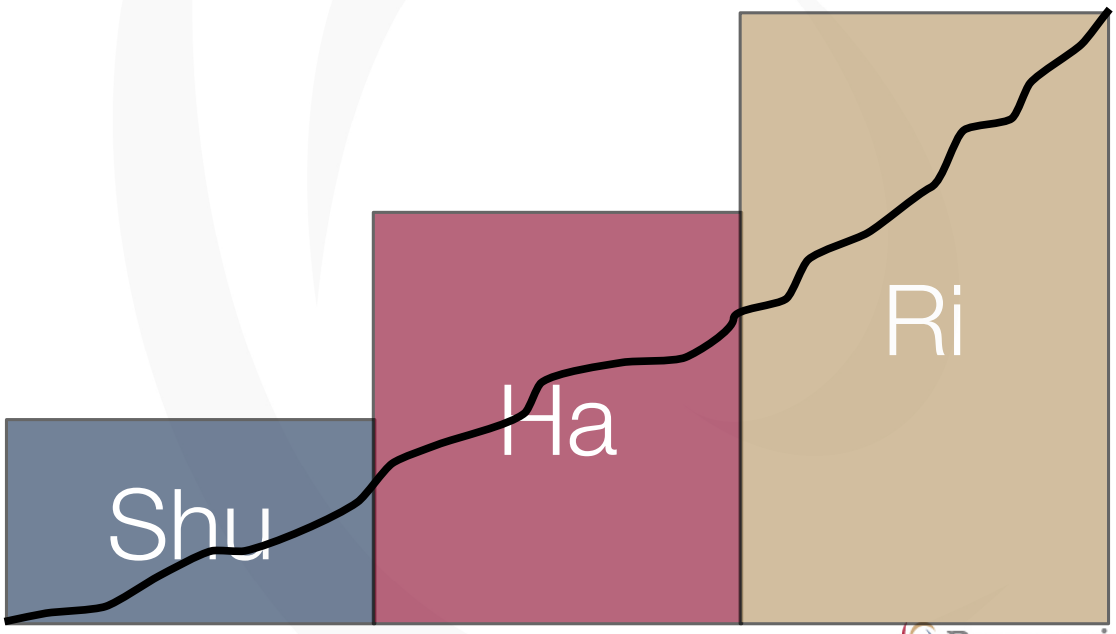
Responsive Development Technologies

Efficiency: Measure Flow and Lead Time of Value



Responsive Development Technologies

Förändring = Lärande



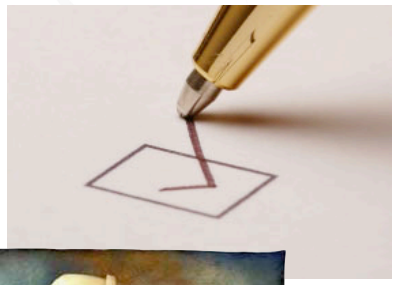
Responsive Development Technologies

Teamet har kontroll på sin egen förbättring

Responsive Development Technologies

Förändringsstrukturen

- ”Practices” som mål för
  - beslut, planering av aktiviteter, uppföljning
- Men förändring beror på
  - personer, lite i taget, med kunskaper och insikter, på plats
- Coaching
  - Scrum Mastrar / XP Coaches, i teamet
  - Agile Champions, intresserat nätverk
  - Agile Coach, erfarenheter, prioritering, planering, värderingar, resonemang
- Extern hjälp
  - Coach
  - Erfarna utvecklare



Responsive Development Technologies

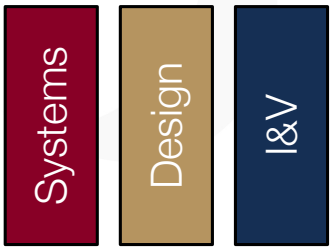
Fundamenta i Agile (och Lean)

- Cykeltider viktigare än resursutnyttjande
  - Responsivitet
  - Ledtider
  - TTM
  - Feedback
- Flöde viktigare än lokalt optimum
- Pull är bättre än push
- Beslut om lokalt arbetssätt fattas bäst av de som gör jobbet
- ”Travel light”

Responsive Development Technologies

Organisation

- Traditionell
  - Kompetens- eller Processteg-silos
  - Överlämningar & batchning
  - Command and Report/Follow-up
  - Push
  - Mätning på enskilda process steg



Responsive Development Technologies

Organisation

- Traditionell
  - Kompetens- eller Processteg-silos
  - Överlämningar & batchning
  - Command and Report/Follow-up
  - Push
  - Mätning på enskilda process steg
- Modern
  - Produktfokus
  - Team-centrerad
  - Ökad kommunication
  - Samarbete mellan intressenter
  - Resursbalansering
  - Pull
  - Mätningar på flöde

Responsive Development Technologies

Nya frågor! ... och svar!!

- Ledningens ny frågor:
  - Hur ofta bygger vi hela systemet och kör tester på det?
  - Vad är prioriteten mellan våra features?
  - Vad är prognosen på vad som kommer att vara klart till release?
  - Hur mycket okänt arbete är det kvar efter att en funktion är implementerad?
  - Hur länge kan vi hålla på utan att upptäcka att saker inte leverar värde?
  - ...
- Utvecklingens nya svar:
  - Givet nuvarande prioritering och den hastighet vi håller ...
  - Ja, vi förstår att allt är viktigt, kan du hjälpa oss att bestämma ordningen...
  - Vi har mätt och sett att ...
  - Det ligger längre ner i listan, vill du flytta upp det?
  - ...

Responsive Development Technologies

Agile i ett större sammanhang

Man kan alltid bli lite agilare!

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