



**EMEA Systems Engineering Conference 2014  
28 October 2014, Cape Town**

**Niels Malotaux**

**If space systems engineers  
could learn how to meet any  
deadline, couldn't you too?**

**N R Malotaux - Consultancy  
tel +49-5632 922 5132  
mob +31-655 753 604  
fax +49-5632 923 9054  
niels@malotaux.nl  
www.malotaux.nl**

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**Niels Malotaux**

Niels Malotaux is an independent Project Coach and expert in optimizing project performance. He has over 40 year experience in designing electronic and software systems, at Delft University, in the Dutch Army, at Philips Electronics and 20 years leading his own systems design company. Since 1998 he devotes his expertise to helping projects to deliver Quality On Time: delivering what the customer needs, when he needs it, to enable customer success. To this effect, Niels developed an approach for effectively teaching Evolutionary Project Management (Evo) Methods, Requirements Engineering, and Review and Inspection techniques. Since 2001, he taught and coached well over 150 projects in 30+ organizations in the Netherlands, Belgium, China, Germany, India, Ireland, Israel, Japan, Romania, South Africa, the UK and the US, which led to a wealth of experience in which approaches work better and which work less in real practice.

Niels puts development teams on the Quality On Time track and coaches them to stay there and deliver their quality systems on time, without overtime, without the need for excuses. Practical methods are developed, used, taught and continually optimized for:


- Evolutionary Project Management (Evo)
- Requirements Engineering and Management
- Reviews and Inspections
- Zero Defects delivery

Within a few weeks of turning a development project into an Evo project, the team has control and can tell the customer when the required features will all be done, or which features will be done at a certain date. Niels enjoys greatly the moments of enlightenment experienced by his clients when they find out that they can do it, that they are really in control, for the first time in their lives.

<p><b>N R Malotaux</b> Consultancy</p>	
<p>Niels Malotaux project coach</p>	<p>Zum Anspel 5 59964 Dudinghausen Deutschland tel +49-5632-922 5132 mob +31-655 753 604 niels@malotaux.nl www.malotaux.nl</p>
<p><i>Result Management</i></p>	

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# If space systems engineers could learn how to meet any deadline, couldn't you too?

Niels Malotaux, Project and Organizational Coach

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**EMEA Systems Engineering Conference**  
**2014**  
"SYSTEMS ENGINEERING: EXPLORING NEW HORIZONS"  
27 - 30 OCTOBER 2014 - CAPE TOWN, SOUTH AFRICA

**Niels Malotaux**



- Independent Project and Organizational Coach
- Expert in helping optimizing performance
- Helping projects and organizations very quickly to become
  - More effective – doing the right things better
  - More efficient – doing the right things better in less time
  - Predictable – delivering as predicted
- Getting projects on track

*Result Management*

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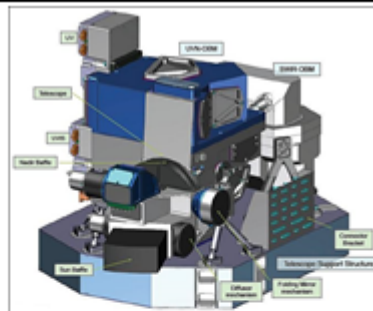
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## Today

- Is there a problem
- Universal goal of any project
- Human behaviour in projects
- Estimation
- Evolutionary Project Planning - prevention is better than cure
  - Optimizing the efficiency of what we do
  - Optimizing the effectiveness of what we do
- How to make sure that we get the right result at the right time
- Business case - stakeholders - requirements
- How to specify results - How to select the right solution
- How to check that we wrote the right things – Reviews and Inspections
- How to work towards Zero Defects
- Planning your own work using these principles



## Earth Observation Satellite



- Their only problem: They missed all deadlines
- Now: They haven't missed any deadline for at least a year



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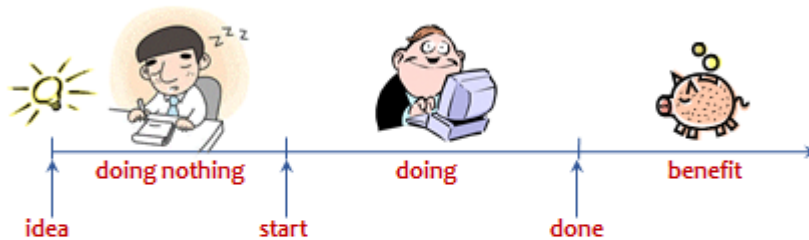
### Is delivery time important ?

- Will we be on time ?
- If yes: How do we know ?
- If no: Why ?
- Failure is not an option:
  - What can we do about it ?
- What is 'on time' ?

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### Why is time important



#### Return on Investment (ROI)

- + Benefit of doing - huge (otherwise other projects would be more rewarding)
- Cost of doing - project cost, usually minor compared with other costs
- Cost of doing nothing - every day we start later, we finish later
- Cost of being late - lost benefit

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## Ultimate Goal of our work

Quality on Time

- Delivering the Right Result at the Right Time, wasting as little time as possible (= efficiently)

- Providing the customer with
  - what he **needs**
  - at the **time** he needs it
  - to be **satisfied**
  - to be **more** successful than he was without it
- Constrained by (win - win)
  - what the customer can **afford**
  - what we mutually beneficially and satisfactorily can deliver
  - in a reasonable period of time



## Delivery time is a Requirement

- Delivery Time is a Requirement, like all other Requirements
- How come most projects are late ???
- Apparently all other Requirements are more important than Delivery Time
- Are they really ?



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### What is the cost of one day of (unnecessary) delay ?

- What is the cost of the project per day ?
- Do you know how much you cost per day ?  
Note: that's not what you get !
- If you don't know the benefit, assume 10 times the cost
- How can you make decisions, if you don't know ?
- No need for exact numbers - it'll be a lot anyway
- Do you know the benefit of your projects ?
- Do you know the penalty for delay ?
- Who is paying for the extra time ?



### Isn't that the Responsibility of the Project Manager ?



- The Project Manager is responsible for **delivering** the right result at the right time
- The Project Workers work and decisions **determine the result** and the **time it is delivered**
- This makes **everybody** in the project **as responsible as** Project Management



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### I want V-O-L-U-M-E!



- Produce faster ! → bad quality → produce slower
- Produce quality ! → produce faster

**Quick delivery of a solution that doesn't work means no delivery**



### Causes of Delay



- Some typical causes of delay are:
  - Developing the wrong things
  - Unclear requirements
  - Misunderstandings
  - No feedback from stakeholders
  - No adequate planning
  - No adequate communication
  - Doing unnecessary things
  - Doing things less cleverly
  - Waiting (before and during the project)
  - Changing requirements
  - Doing things over
  - Indecisiveness
  - Suppliers
  - Quality of suppliers results
  - No Sense of Urgency
  - Hobbying
  - Political ploys
  - Boss is always right (culture)
- What are causes of these causes ? (use 5 times 'Why?')





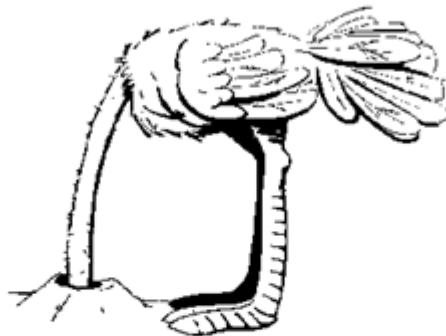
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### Causes of causes



- Management
- No Sense of Urgency
- Uncertainty
- Perceived weakness
- Fear of Failure
- Ignorance
- Incompetence
- Politics
- Indifference
- Perception
- Lack of time
- Not a Zero Defects attitude
- No techniques offered
- No empowerment
- Discipline
- Intuition

**Intuition often guides us in the wrong direction**



**The problems in projects are not the real problem,  
the real problem is that we don't do something about it**



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The challenge

Failure is not an option

- Getting and keeping the project under control
- Never to be late
- If we are late, we *failed*
- No excuses needed
- Not stealing from our customer's (boss) purse
- The only justifiable cost is the cost of doing the right things at the right time
- The rest is waste
- Who would enjoy producing waste ?



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# Human Behavior



## Human Behavior

- Systems are conceived, designed, implemented, maintained, used, and tolerated (*or not*) by people
- People react quite predictably
- However, often differently from what we intuitively think
- Most project process approaches (PMI, INCOSE, Prince-2, as well as people in projects)
  - ignore human behavior,
  - incorrectly **assume** behavior,
  - or decide how people **should behave** (*ha ha*)
- To succeed in projects, we must study and adapt to **real** behavior rather than **assumed** behavior
- *Even if we don't agree with that behavior*



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### Discipline

- Control of wrong inclinations
- Even if we know how it should be done ...  
(if nobody is watching ...)
- Discipline is difficult
- Romans 7:19
  - The good that I want to do, I do not ...



- Helping each other (watching over the shoulder)
- Rapid success (do it 3 weeks for me...)
- Making mistakes (provides short window of opportunity)
- Openness (management must learn how to cope)



### Intuition

- Makes us react on every situation
- Intuition is fed by experience
- It is free, we always carry it with us
- We cannot even turn it off
- Sometimes intuition shows us the wrong direction
- In many cases the head knows, the heart not (yet)
- Coaching is about redirecting intuition



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### Communication



- Traffic accident: witnesses tell their truth
- Same words, different concepts
- Human brains contain rather fuzzy concepts
- Try to explain to a colleague
- Writing it down is explaining it to paper
- If it's written it can be discussed and changed
- Vocal communication evaporates immediately
- E-mail communication evaporates in a few days



### Communication

- Talking as near as possible past each other



To each other



Past each other

- Don't assume we understand: check!



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### Perception



- Quick, acute, and intuitive cognition ([www.M-W.com](http://www.M-W.com))
- What people say and what they do is not always the same
- The head knows, but the heart decides
- Hidden emotions are often the drivers of behavior
- Customers who said they wanted lots of different ice cream flavors from which to choose, still tended to buy those that were fundamentally vanilla
  
- So, trying to find out what the real value to the customer is, can show many paradoxes
- Better not simply believe what they say: check!



### Excuses, excuses, excuses ...



- We have been thoroughly trained to make excuses
- We always downplay our failures
- It's always 'them' – How about 'us' ?
  
- At a Fatal Day, any excuse is in vain: we failed
- Even if “we really couldn't do anything about it”
- Failure is a very hard word. That's why we are using it !
- No pain, no gain
- We never say: “You failed”, try: “We failed”
  - After all, we didn't help the person not to fail



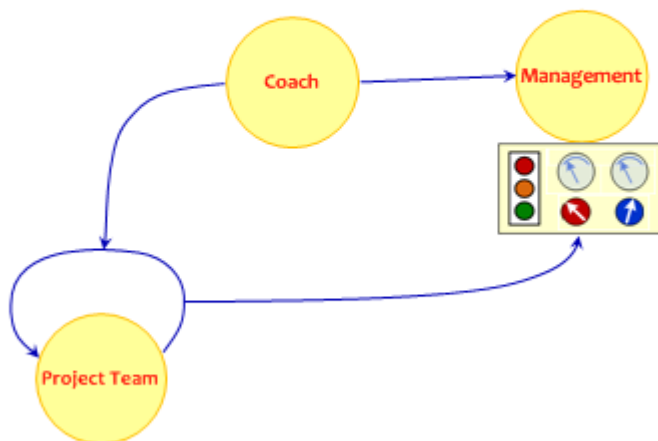
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Short-Circuiting

Saves a lot of time



Local Loop Principle



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# Estimation

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Lead time

**Motivation drives productivity**

**Able estimation is vital**



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## Estimation Exercise



Are you an **optimistic** or a **realistic** estimator?

Let's find out !

Project:

**Multiplying two numbers of 4 figures**

How many seconds would you need to complete this Project?



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Is this what you did?



Defect rate

- Before test ?
- After test ?



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**Alternative Design** (*how to solve the requirement*)



**Another alternative design**

There are usually more,  
and **possibly better** solutions  
than the obvious one



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## What was the real requirement ?

### Assumptions, assumptions ...

Better assume that many assumptions are wrong.

Check !



## Elements in the exercise

- Estimation, optimistic / realistic
- Interrupts
- Test, test strategy
- Defect-rate
- Design
- Requirements
- Real Requirements
- Assumptions
  
- In 3 weeks you can learn to be *sufficiently* accurate



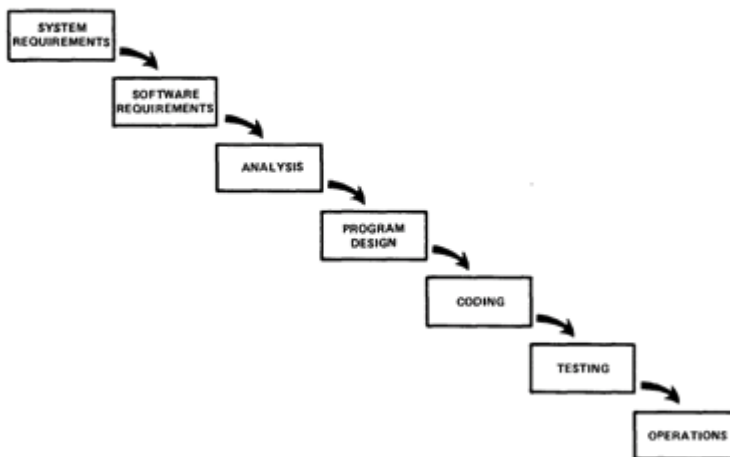
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# Project Life Cycles



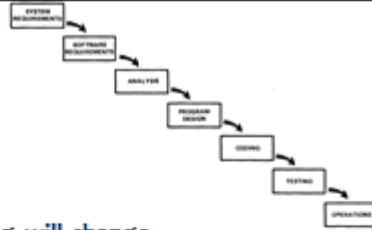
## Waterfall ?

Winston Royce 1970



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#### When can we use waterfall?

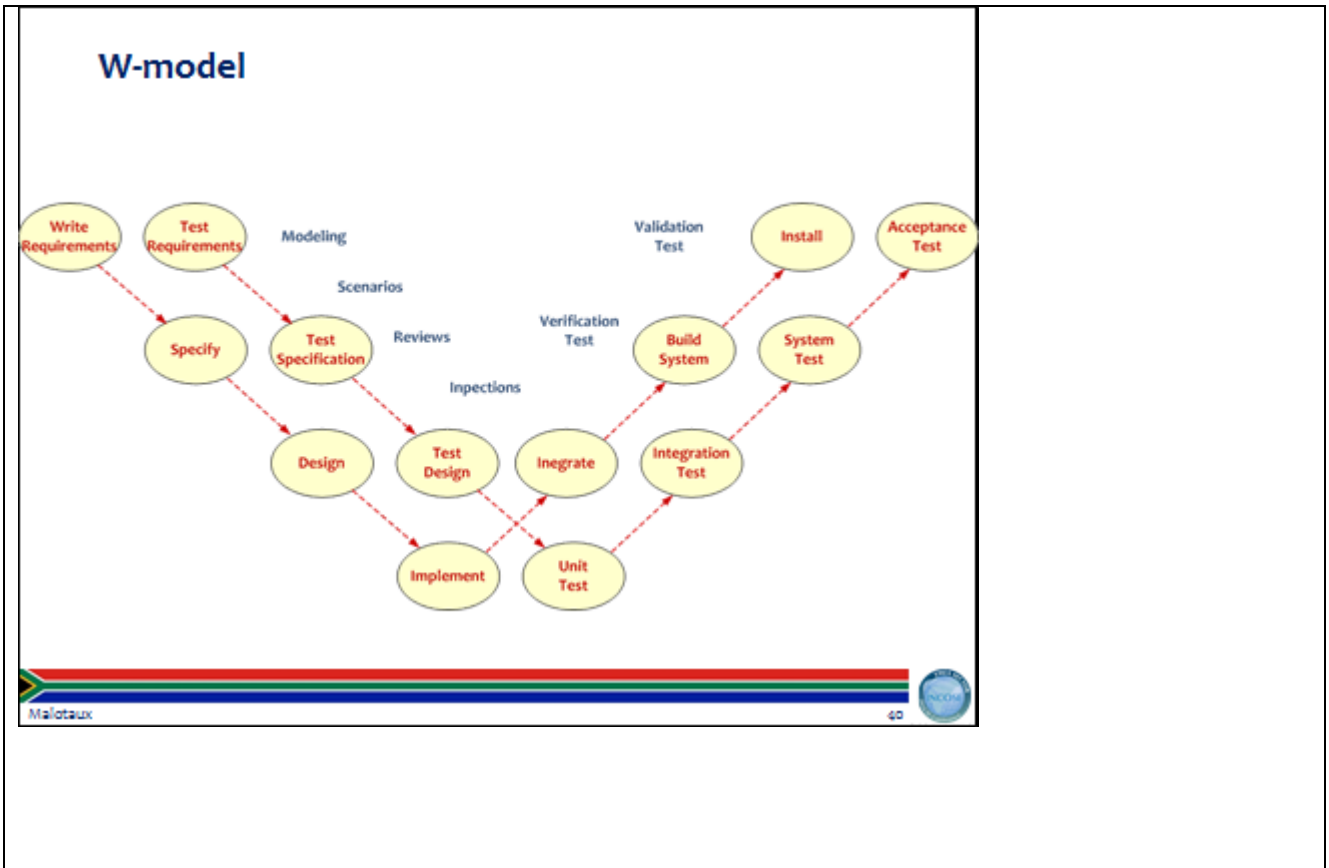


- Requirements are completely clear, nothing will change
- We've done it many times before
- Everybody knows exactly what to do
- We call this *production*  
Even most production doesn't run smoothly the first time, it has to be tuned
- In your projects:
  - Is everything completely clear?
  - Will nothing change?
  - Does everybody know exactly what to do?
  - Are you sure?

#### V-Model



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### All Models are wrong

Some are useful

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# Evolutionary Principles

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## Murphy's Law

Whatever can go wrong,  
will go wrong

Should we accept fate ??

Murphy's Law for Professionals:

Whatever can go wrong, will go wrong ...

Therefore:

We should actively check all possibilities that can go wrong  
and make sure they cannot happen

- 20% of the software is there to make the computer do what it should do
- 80 % is there to make the computer not do what it should not do

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### First Think, Then Do

**Insanity** is doing the same things over and over again and hoping the outcome to be different *(let alone better)*

Albert Einstein 1879-1955, Benjamin Franklin 1706-1790, it seems Franklin was first

- Only if we **change** our way of working, the result may be different
  - Hindsight is **easy**, but reactive
  - Foresight is **less easy**, but proactive
  - Reflection is for hindsight and learning
  - Preflection is for foresight and prevention
- Only with **prevention** we can save precious time
- This is used in the Deming/**Plan-Do-Check-Act** cycle

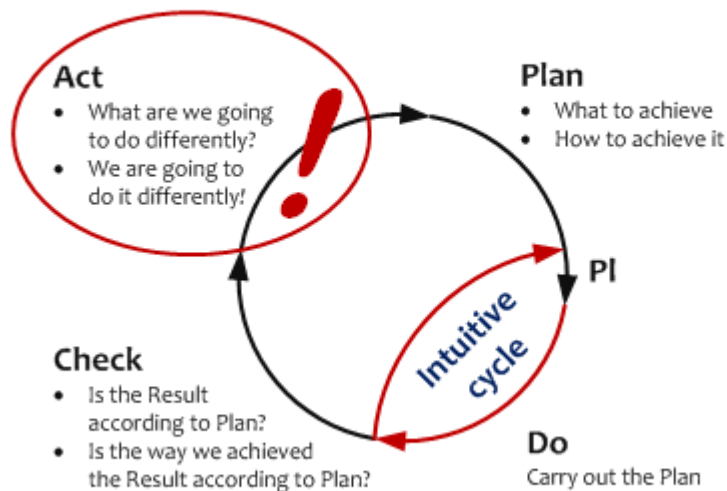
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### The essential ingredient: the PDCA Cycle

(Shewhart Cycle - Deming Cycle - Plan-Do-Check-Act Cycle - Kaizen)



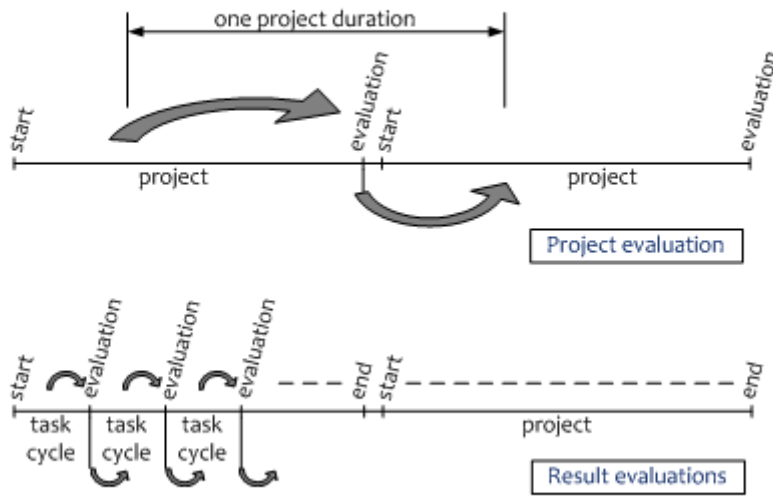
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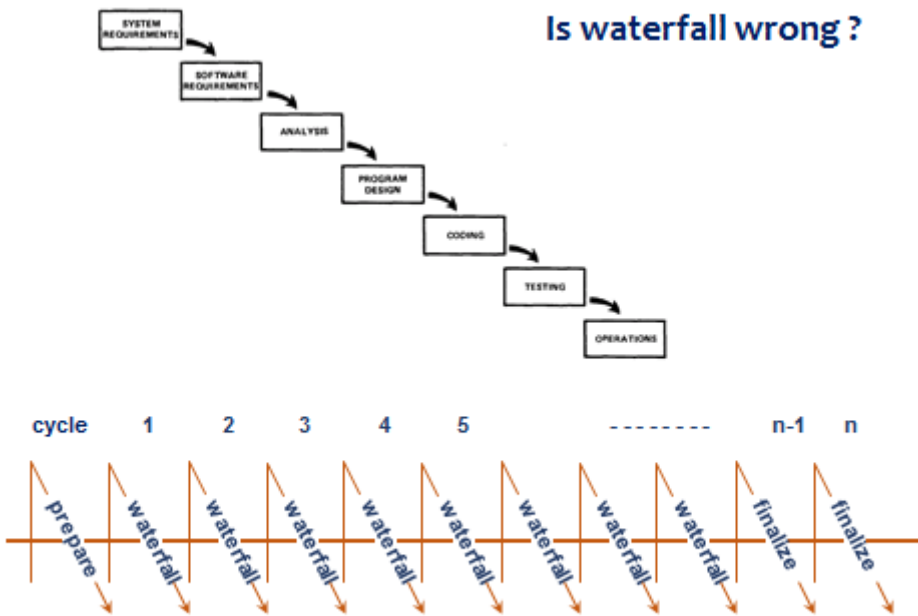


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### Project evaluations - Retrospectives



### Is waterfall wrong ?



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## Time-honoured knowledge how to achieve the goal

**If we**

- Use very short Plan-Do-Check-Act cycles
- Constantly selecting the most important things to do

**then we can**

- Most quickly learn what the real requirements are
- Learn how to most effectively and efficiently realize these requirements

**and we can**

- Spot problems quicker, allowing more time to do something about them

**Act**

- What are we going to do differently?
- We are going to do it differently!

**Check**


- Is the Result according to Plan?
- Is the way we achieved the Result according to Plan?

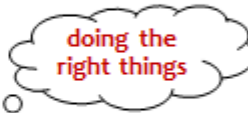

**Plan**



- What to achieve
- How to achieve it

**Do**

Carry out the Plan




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## Evo

- Evo (short for Evolutionary...) uses PDCA consistently
- Applying the PDCA-cycle actively, deliberately, rapidly and frequently, for **Product**, **Project** and **Process**, based on ROI and highest value
- Combining Planning, Requirements- and Risk-Management into **Result Management**
- We know we are not perfect, but the customer shouldn't be affected
- Evo is about **delivering** Real Stuff to Real Stakeholders doing Real Things  
*"Nothing beats the Real Thing"*
- Projects seriously applying Evo, routinely conclude successfully on time, or earlier

**Act**

- What are we going to do differently?
- We are going to do it differently!

**Check**


- Is the Result according to Plan?
- Is the way we achieved the Result according to Plan?



**Plan**

- What to achieve
- How to achieve it

**Do**

Carry out the Plan

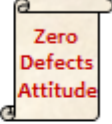



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- **Plan-Do-Check-Act**
  - The powerful ingredient for success
- **Business Case**
  - Why we are going to improve what
- **Requirements Engineering**
  - What we are going to improve and what not
  - How much we will improve: quantification
- **Architecture and Design**
  - Selecting the optimum compromise for the conflicting requirements
- **Early Review & Inspection**
  - Measuring quality while doing, learning to prevent doing the wrong things

### Evolutionary Project Management (Evo)




- **Weekly TaskCycle**
  - Short term planning
  - Optimizing estimation
  - Promising what we can achieve
  - Living up to our promises
- **Bi-weekly DeliveryCycle**
  - Optimizing the requirements and checking the assumptions
  - Soliciting feedback by delivering Real Results to eagerly waiting Stakeholders
- **TimeLine**
  - Getting and keeping control of Time: Predicting the future
  - Feeding program/portfolio/resource management



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*Right product*

*Right time*

*Efficiency of what we do*

*Effectiveness of what we do*

*What will happen and what will we do about it?*

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## Evolutionary Project Planning prevention is better than cure



### To-do lists

- Are you using to-do lists ?
  - List the most important things you have to do the coming week
  - Did you add effort estimates ?
  - Does what you have to do fit in the available time ?
  - Did you check what you can do and what you cannot do ?
  - Did you take the consequence ?
- Evo:
  - Because we are short of time, we better use the limited available time as best as possible
  - We don't try to do better than possible
  - To make sure we do the best possible, we choose what to do in the limited available time. We don't just let it happen randomly



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### Evo Planning: Weekly TaskCycle

- Are we **doing** the right things, in the right order, to the right level of detail for now
- Optimizing estimation, planning and tracking abilities to better predict the future
- Select highest priority tasks, never do any lower priority tasks, never do undefined tasks
- There are only about 26 plannable hours in a week (2/3)
- In the remaining time: do whatever else you have to do
- Tasks are always done, 100% done



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### Effort and Lead Time

- Days estimation → lead time (calendar time)
- Hours estimation → effort
- Effort variations and lead time variations have different causes
- Treat them differently and keep them separate
  - Effort: complexity
  - Lead Time: time-management
    - (effort / lead-time ratio)

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### Every week we plan

- How much time do we have available
- 2/3 of available time is net plannable time
- What is most important to do
- Estimate effort needed to do these things
- Which most important things fit in the net available time (default 26 hr per week)
- What can, and are we going to do
- What are we *not* going to do

Task a	2	
Task b	5	
Task c	3	
Task d	6	do
Task e	1	
Task f	4	
Task g	5	26
Task h	4	do
Task j	3	
Task k	1	not

2/3 is default start value  
this value works well in development projects



### Weekly 3-Step Procedure

- **Individual preparation**
  - Conclude current tasks
  - What to do next
  - Estimations
  - How much time available
- **Modulation with / coaching by Project Management (1-on-1)**
  - Status (all tasks done, completely done, not to think about it any more?)
  - Priority check (are these really the most important things?)
  - Feasibility (will it be done by the end of the week?)
  - Commitment and decision
- **Synchronization with group (team meeting)**
  - Formal confirmation (this is what we plan to do)
  - Concurrency (do we have to synchronize?)
  - Learning
  - Helping
  - Socializing



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cycle	who	task description	estim	real	done	issues
3	John	Net time available: 26				
		aaaaaaa	3	3	yes	
		bbbbbbb (Paul)	1			
		ccccccc	5	13	yes	
		ddddddd	2			
		eeeeeee	3	2		
		fffffff	2	1		
		ggggggg	6	7	yes	
		hhhhhhh	4			
			26	26		
4	John	Net time available: 26				
		ii iiiiiiiii	3			for proj x
		kkkkkkkk	1			for proj x
		mmmmmm	5			for proj x
		nnnnnnn	2			for proj x
		ppppppp	3			for proj y
		qqqqqqq	12			for proj y
		rrrrrrrrr	6			for proj y
		sssssss	4			for proj y
		tttttttt	4			for proj y
			26			

TaskCycle Analysis (retrospective)

learning

TaskCycle Planning (presepective)

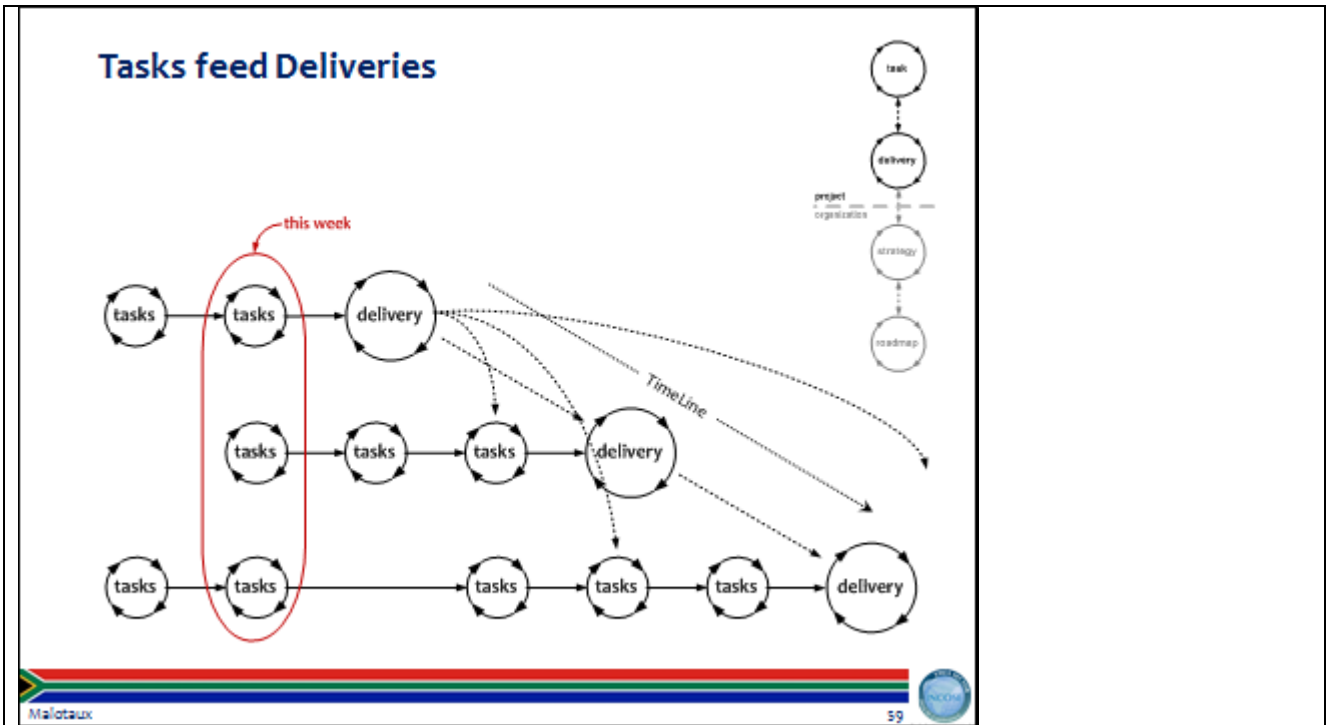
DeliveryCycle

- Are we *delivering* the right things, in the right order to the right level of detail for now
- Optimizing requirements and checking assumptions
  1. What will generate the optimum feedback
  2. We deliver only to eagerly waiting stakeholders
  3. Delivering the juiciest, most important stakeholder values that can be made in the least time
    - What will make Stakeholders more productive now
- Not more than 2 weeks





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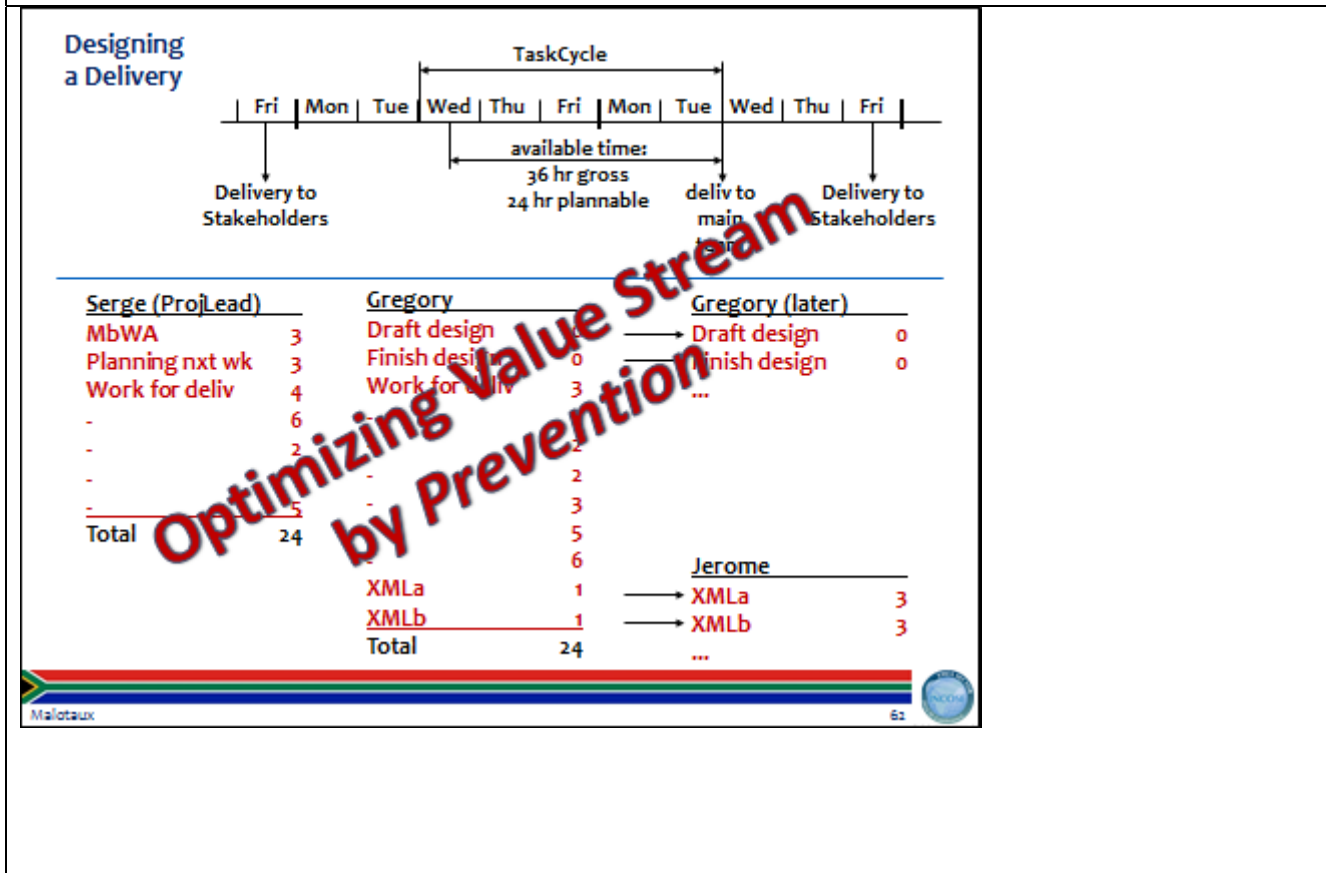
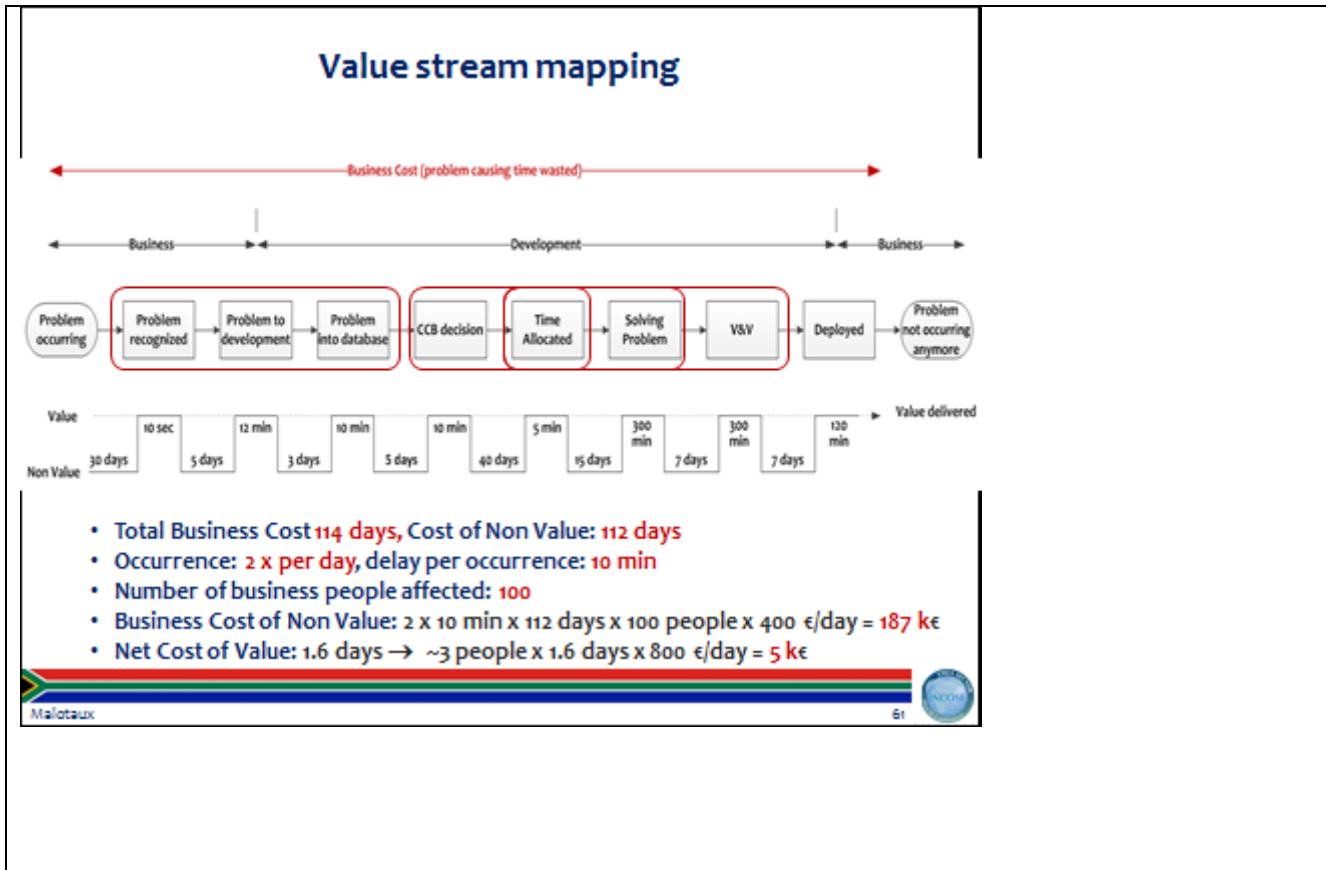


### Designing a Delivery

The diagram shows a weekly task cycle. The cycle starts on Friday with a 'Delivery to Stakeholders'. The 'TaskCycle' runs from Wednesday to Tuesday. 'available time: 36 hr gross, 24 hr plannable' is indicated. A 'deliv to main team' occurs on Tuesday. The cycle ends on Friday with another 'Delivery to Stakeholders'.

Serge (ProjLead)		Gregory		Gregory (later)	
MbWA	3	Draft design	6	Draft design	0
Planning nxt wk	3	Finish design	6	Finish design	0
Work for deliv	4	Work for deliv	3	...	
-	6	-	1		
-	2	-	2		
-	1	-	2		
-	5	-	3		
<b>Total</b>	<b>24</b>	-	<b>5</b>		
		-	<b>6</b>		
		XMLa	4	XMLa	3
		XMLb	4	XMLb	3
		<b>Total</b>	<b>42</b>	...	
				<b>Jerome</b>	

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## If space systems engineers could learn how to meet any deadline, couldn't you too?

### TaskCycle Exercise

- How much time do you have available
- 2/3 of **available** time is **net plannable** time
- What is most important to do (update your list)
- Estimate effort needed to do these things
- Which most important things fit in the net available time (default 26 hr)
- What can you do, and what are you going to do
- What are you *not* going to do
- Why ?

Task a	2	
Task b	5	
Task c	3	
Task d	6	do
Task e	1	
Task f	4	
Task g	5	26
Task h	4	do
Task j	3	
Task k	1	not



### Now we are already much more efficient

- Organizing the work in very short cycles
- Making sure we are doing the right things
- Doing the right things right
- Continuously optimizing (what not to do)
- So, we already work more efficiently

but ...

- How do we make sure the whole project is done on time ?



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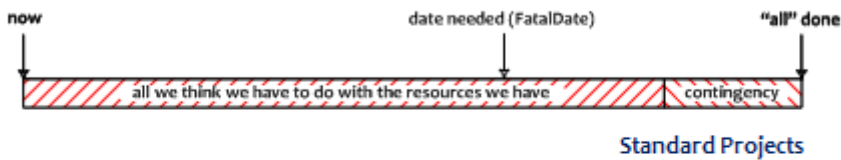
# TimeLine

How to make sure we get  
the Right Results at the Right Time



## TimeLine

What the customer wants, he cannot afford



Better 80% 100% done, than 100% 80% done  
Let it be the most important 80%

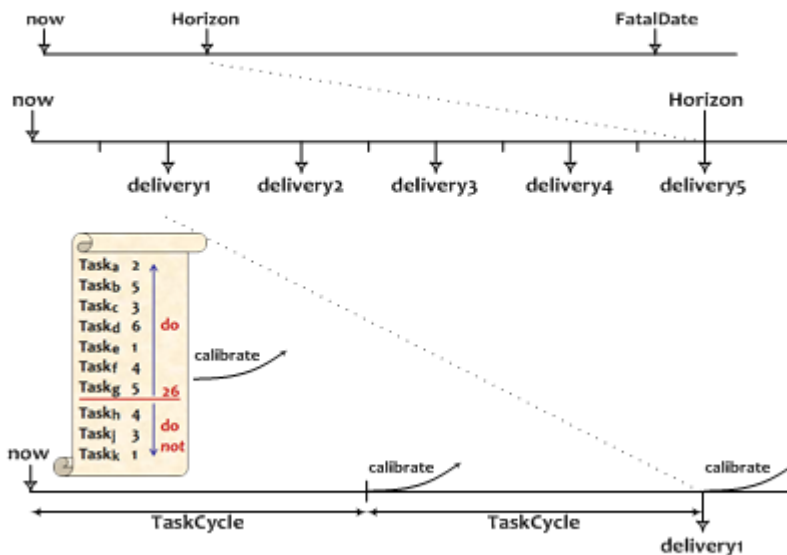


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If it easily fits ...



Result to Tasks and back



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Activity	Estimate	Real
Act1	Ae1	Ar1
Act2	Ae2	Ar2
Act3	Ae3	Ar3
Act4	Ae4	Ar4
Act5	Ae5	Ar5
Act6	Ae6	Ar6
Act7	Ae7	Ar7
Act8	Ae8	Ar8
Act9	Ae9	Ar9
Act10	Ae10	Ar10
Act11	Ae11	
Act12	Ae12	
Act13	Ae13	
Act14	Ae14	
Act15	Ae15	
Act16	Ae16	
Act17	Ae17	
Act18	Ae18	
Act19	Ae19	
Act20	Ae20	
Act21	Ae21	
Act...	Ae...	

### Calibration

Calibration Factor

$$\frac{\sum_{now-n}^{now-1} Ar}{\sum_{now-n}^{now-1} Ae}$$

Value Still To Earn

Calibration Factor \*  $\sum_{now}^{then} Ae$

ratio  $\Sigma Ar / \Sigma Ae$  in the past

← now

predicted Value Still To Earn in the future

← then

← then2

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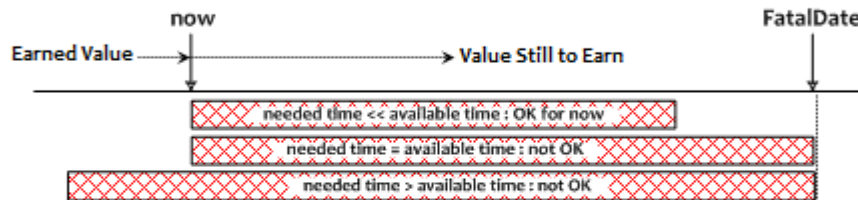
### Predicting what will be done when

Line	Activity	Estim	Spent	Still to spend	Ratio real/es	Calibr factor	Calibr still to	Date done
1	Activity 1	2	2	0	1.0			
2	Activity 2	5	5	1	1.2	1.0	1	30 Mar 2009
3	Activity 3	1	3	0	3.0			
4	Activity 4	2	3	2	2.5	1.0	2	1 Apr 2009
5	Activity 5	5	4	1	1.0	1.0	1	2 Apr 2009
6	Activity 6	3				1.4	4.2	9 Apr 2009
7	Activity 7	1				1.4	1.4	10 Apr 2009
8	Activity 8	3				1.4	4.2	16 Apr 2009
↓	↓							
16	Activity 16	4				1.4	5.6	2 Jun 2009
17	Activity 17	5				1.4	7.0	11 Jun 2009
18	Activity 18	7				1.4	9.8	25 Jun 2009

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### What do we do if we see we won't make it on time ?



- Value Still to Earn
- versus
- Time Still Available



If the match is over, you cannot score a goal

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### Deceptive options

- Hoping for the best (*fatalistic*)
- Going for it (*macho*)
- Working overtime (*fooling ourselves*)
- Moving the deadline
  - Parkinson's Law
    - Work expands to fill the time for its completion
  - Student Syndrome
    - Starting as late as possible, only when the pressure of the FatalDate is really felt

Intuition often guides us in the wrong direction

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### Adding people

**Brooks' Law (1975)**  
Adding people to a late project makes it later

project duration

number of people

lower cost

Economic optimum?

reality (Putnam)

shorter time

nine mothers area

intuition people x time = constant Man-Month Myth

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### Saving time

Continuous elimination of waste

We don't have enough time, but we can save time *without negatively affecting the Result !*

- Efficiency in *what (why, for whom) we do* - doing the right things
  - Not doing what later proves to be superfluous
- Efficiency in *how we do it* - doing things differently
  - **The product**
    - Using proper and most efficient solution, instead of the solution we always used
  - **The project**
    - Doing the same in less time, instead of immediately doing it the way we always did
  - **Continuous improvement and prevention processes**
    - Constantly learning doing things better and overcoming bad tendencies
- Efficiency in *when we do it* - right time, in the right order
- TimeBoxing - much more efficient than FeatureBoxing

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[www.malotaux.nl/Booklets](http://www.malotaux.nl/Booklets)

[More](#)

- 1 Evolutionary Project Management Methods (2001)  
Issues to solve, and first experience with the Evo Planning approach
- 2 How Quality is Assured by Evolutionary Methods (2004)  
After a lot more experience: rather mature Evo Planning process
- 3 Optimizing the Contribution of Testing to Project Success (2005)  
How Testing fits in
- 3a Optimizing Quality Assurance for Better Results (2005)  
Same as Booklet 3, but for non-software projects
- 4 Controlling Project Risk by Design (2006)  
How the Evo approach solves Risk by Design (by process)
- 5 TimeLine: How to Get and Keep Control over Longer Periods of Time (2007)  
Replaced by Booklet 7, except for the step-by-step TimeLine procedure
- 6 Human Behavior in Projects (APCOSE 2008)  
Human Behavioral aspects of Projects
- 7 How to Achieve the Most Important Requirement (2008)  
Planning of longer periods of time, what to do if you don't have enough time
- 8 Help! We have a QA Problem! (2009)  
Use of TimeLine technique: How we solved a 6 month backlog in 9 weeks
- RS Measurable Value with Agile (Ryan Shriver - 2009)  
Use of Evo Requirements and Prioritizing principles

[www.malotaux.nl/Inspections](http://www.malotaux.nl/Inspections)  
Inspection pages

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### If we add something ...

If we add something, something else will not be done



Rather than letting it happen **randomly**  
We better **decide** what will happen



### Active Synchronization

Somewhere around you, there is the bad world.

If you are waiting for a result outside your control, there are three possible cases:

1. You are sure they'll deliver Quality On Time
2. You are not sure
3. You are sure they'll not deliver Quality On Time
  - If you are not sure (case 2), better assume case 3
  - From other Evo projects you should expect case 1
  - Evo suppliers behave like case 1

In cases 2 and 3: **Actively Synchronize: Go there !**

1. Showing up increases your priority
2. You can resolve issues which otherwise would delay delivery
3. If they are really late, you'll know much earlier



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### Interrupts

- Boss comes in: "Can you paint the fence?"
  - What do you do?
- 
- In case of interrupt, use the interrupt procedure



### Interrupt Procedure "We shall work only on planned Tasks"


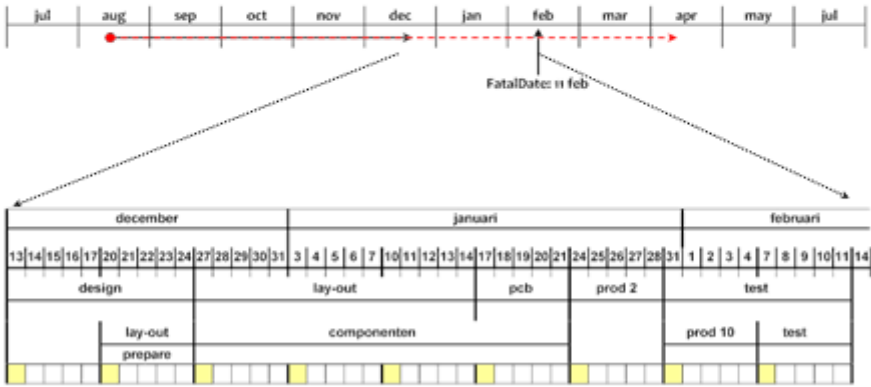
If a new task suddenly appears in the middle of a Task Cycle (we call this an Interrupt) we follow this procedure:

1. Define the expected Results of the new Task properly
2. Estimate the time needed to perform the new Task, to the level of detail really needed
3. Go to your task planning tool (many projects use the ETA tool)
4. Decide which of the planned Tasks is/are going to be sacrificed (up to the number of hours needed for the new Task)
5. Weigh the priorities of the new Task against the Task(s) to be sacrificed
6. Decide which is more important
7. If the new Task is more important: replan accordingly
8. If the new Task is not more important, then do not replan and do not work on the new Task. Of course the new Task may be added to the Candidate Task List
9. Now we are still working on planned Tasks



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### TimeLine planning

Timeline diagram showing a project schedule from July to July. A red arrow indicates a period from August to February. A 'FatalDate: 11 feb' is marked with an arrow pointing to the 11th of February. Below this, a detailed Gantt chart shows tasks like 'design', 'lay-out', 'pcb', 'prod 2', 'test', 'componenten', and 'prod 10' across the months of December, January, and February.

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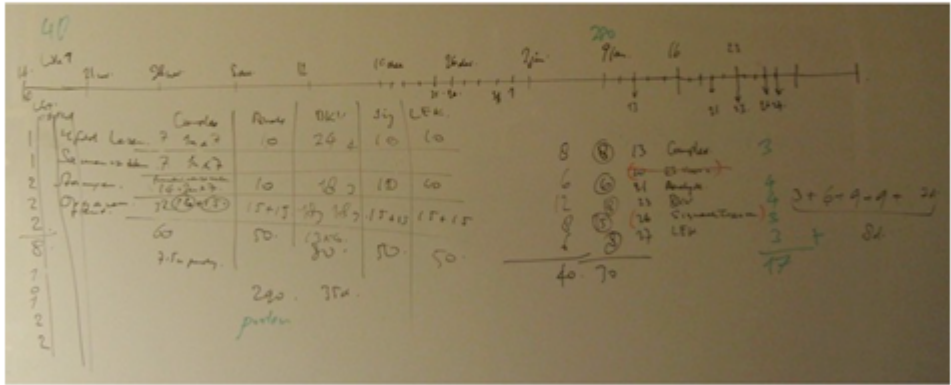
### TimeLine exercise example

- Preparing for student exams

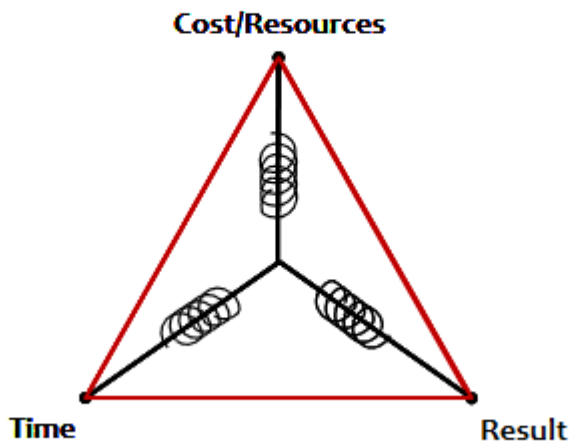
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What we did

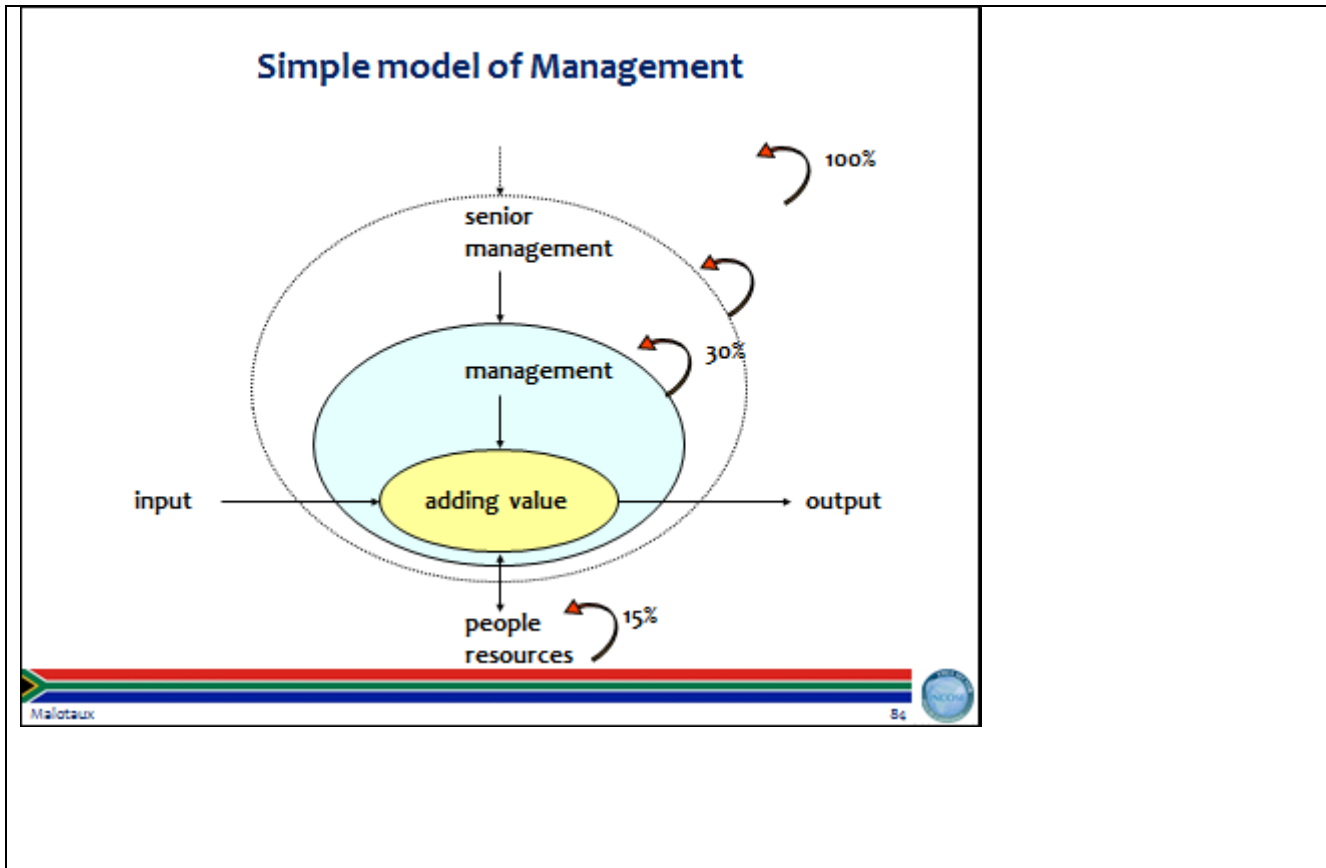


Iron triangle ?



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Niels Malotaux

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to meet any deadline, couldn't you too?**

N R Malotaux - Consultancy

tel +49-5632 922 5132

mob +31-655 753 604

fax +49-5632 923 9054

niels@malotaux.nl

www.malotaux.nl