# Failure is not an option

Some causes and cures explained, more on my website

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# Be clear what we should do (for our salary)

www.malotaux.eu/?id=goalofaproject

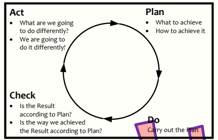
Quality on Time

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

- Providing the customer with
  - what they need
  - at the time they need it
  - to be satisfied
  - to be more successful than 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

# Evolutionary Project Management elements (Evo)

www.malotaux.eu/?id=processes – Tom Gilb




- 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

Why

What
How much
Are we done

How

Check as early as possible

Zero Defects Attitude

Right Result

Quality On Time

## Evo Project Planning - Niels

- 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

Efficiency of what we do

Right Time

Effectiveness of what we do

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

# What to achieve: qualities are the essence!

ref Tom Gilb [www.malotaux.eu/?id=planguage](http://www.malotaux.eu/?id=planguage)

SMART

## Definition:

Specific
Measurable

| | |
|---|---|
| RQ27: | Speed of Luggage Handling at Airport |
| Scale: | Time between <arrival of airplane> and first luggage on belt |
| Meter: | <measure arrival of airplane>, <measure arrival of first luggage on belt>, calculate difference |

## Benchmarks (Playing Field):

Attainable

| | |
|---|---|
| Past: | 2 min [minimum, 2016], 8 min [average, 2016], 83 min [max, 2014] |
| Current: | < 4 min [competitor y, Jan 2018] ← <who said this?>, <Survey April 2018> |
| Record: | 57 sec [competitor x, Jan 2016] |
| Wish: | < 2 min [2020Q3, new system available] ← CEO, 19 Jan 2018, <document ...> |

## Requirements:

Time
Traceable
Realizable

| | |
|---|---|
| Tolerable: | < 10 min [99%, Q4] ← SLA |
| Tolerable: | < 15 min [100%, Q4, Heathrow T4] ← SLA |
| Goal: | < 15 min [99%, Q2], < 10 min [99%, Q3], < 5 min [99%, Q4] ← marketing |

# Was Tom here ?

www.tropomi.eu

The requirements for CO can be summarised as:

**Requirements for CO:**

| | | |
|---|---|---|
| Ground-pixel size | : | $10 \times 10$ km$^2$ ; |
| Uncertainty in column | : | $3 \cdot 10^{17}$ molec·cm$^{-2}$ (target); $4 \cdot 10^{17}$ molec·cm$^{-2}$ (threshold) |
| of which instrument-related | : | $2.5 \cdot 10^{17}$ molec·cm$^{-2}$ |
| Coverage | : | global |
| Frequency of observation | : | every two days (threshold); daily (breakthrough); multiple observations per day (target) |

- From a 53 page datasheet
- Do we have to read all those pages ?

TEXAS INSTRUMENTS

**TLC080 , TLC081, TLC082**
**TLC083, TLC084, TLC085, TLC08xA**

www.ti.com SLOS254F – JUNE 1999 – REVISED DECEMBER 2011

## ELECTRICAL CHARACTERISTICS

at specified free-air temperature, $V_{DD}$ = 12 V (unless otherwise noted)

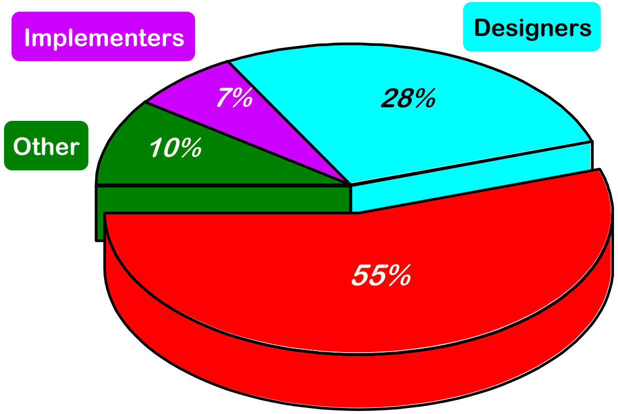
| PARAMETER | | TEST CONDITIONS | | TA (1) | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|---|
| $V_{IO}$ | Input offset voltage | $V_{DD}$ = 12 V, $V_{IC}$ = 6 V, $V_O$ = 6 V, $R_S$ = 50 Ω | TLC080/1/2/3, TLC084/5 | 25°C | | 390 | 1900 | μV |
| | | | | Full range | | | 3000 | |
| | | | TLC080/1/2/3A, TLC084/5A | 25°C | | 390 | 1400 | |
| | | | | Full range | | | 2000 | |
| $\alpha V_{IO}$ | Temperature coefficient of input offset voltage | | | | | 1.2 | | μV/°C |
| $I_{IO}$ | Input offset current | $V_{DD}$ = 12 V, $V_{IC}$ = 6 V, $V_O$ = 6 V, $R_S$ = 50 Ω | | 25°C | | 1.5 | 50 | pA |
| | | | TLC08xC | Full range | | | 100 | |
| | | | TLC08xI | | | | 700 | |
| $I_{IB}$ | Input bias current | | | 25°C | | 3 | 50 | pA |
| | | | TLC08xC | Full range | | | 100 | |
| | | | TLC08xI | | | | 700 | |
| $V_{ICR}$ | Common-mode input voltage | $R_S$ = 50 Ω | | 25°C | 0 to 10.0 | 0 to 10.5 | | V |
| | | | | Full range | 0 to 10.0 | 0 to 10.5 | | |
| $V_{OH}$ | High-level output voltage | $V_{IC}$ = 6 V | $I_{OH}$ = –1 mA | 25°C | 11.1 | 11.2 | | V |
| | | | | Full range | 11 | | | |
| | | | $I_{OH}$ = –20 mA | 25°C | 10.8 | 11 | | |
| | | | | Full range | 10.7 | | | |
| | | | $I_{OH}$ = –35 mA | 25°C | 10.6 | 10.7 | | |
| | | | | Full range | 10.3 | | | |
| | | | $I_{OH}$ = –50 mA | 25°C | 10.3 | 10.5 | | |
| | | | | –40°C to 85°C | 10.2 | | | |
| | | | $I_{OL}$ = 1 mA | 25°C | | 0.17 | 0.25 | |

| | | | | | from VCC | | from VCC | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Type | Vcc min | Vcc max | Voff (mV) | Iin(nA) | Vin+ (V) | Vin- (V) | Out+ (V) | Out- (V) | | |
| Req | 3 | 5 | 3 | 1 | 0 | 0,5 | 0,05 | 0,05 | | |
| LMV321 | 2,7 | 5,5 | 9 | 500 | 1 | 0 | 0,4 | 0,4 | | |
| LMC6464B | 3 | 15,5 | 3,7 | 0,01 | 0 | 0 | 0,2 | 0,2 | | |
| LMC6464A | 3 | 15,5 | 1,2 | 0,01 | 0 | 0 | 0,15 | 0,15 | | |
| TLV4313 | 1,8 | 7 | 3 | 0,001 | 0 | 0 | 0,1 | 0,1 | € 0,46 | |
| TS321 | 3 | 30 | 5 | 200 | 0 | 1,5 | 0,02 | 0,02 | | |
| FAN4174 | 2,3 | 5,25 | 8 | 1 | 0 | 0 | 0,1 | 0,1 | € 0,15 | |
| MIC7300 | 2,2 | 10 | 9 | 0,001 | 0 | 0 | 0,05 | 0,05 | | |
| TLC084 | 4,5 | 16 | 3 | 0,1 | 0 | 0 | 0,05 | 0,05 | € 1,13 | |
| TLV4376 | 2,2 | 7 | 2 | 0,01 | 0 | 0 | 0,02 | 0,02 | € 0,74 | for dual version (TLV23 |
| OPA4377 | 2,2 | 7 | 2 | 0,01 | 0 | 0 | 0,02 | 0,02 | € 0,95 | |
| TLV313 | 1,8 | 7 | 3 | 0,001 | 0 | 0 | 0,1 | 0,1 | € 0,21 | |
| TLV2313 | 1,8 | 7 | 3 | 0,001 | 0 | 0 | 0,1 | 0,1 | € 0,31 | |
| NCS2003 | 1,8 | 5,5 | 5 | 0,1 | 0 | 0,6 | 0,1 | 0,1 | € 0,42 | @2500 |
| OPA2377 | 2,2 | 7 | 2 | 0,01 | 0 | 0 | 0,02 | 0,02 | € 0,67 | @2500 |
| TLV2462 | | | | | | | | | € 1,09 | @2500 |

# The power of ***Half*** - Delivery on time is easy

- Brooks (Mythical Man-month - 1975):
  *Programming projects took about twice the expected time*
  *Research showed that half of the time was used*
  *for activities other than the project*
- Boehm (Classics in Software Engineering - 1979):
  *Research indicates that a lot more than half of all errors found*
  *are requirements and design errors. These are errors of which*
  *the fix requires a fix in the requirements or design specifications*
- Ralph R. Young (Effective Requirements Practices – 2001)
  Industry sources indicate that by taking the effort
  to document *why* each requirement is needed,
  as many as half of the "requirements" can be eliminated
- Niels (Mantras - www.malotaux.eu/?id=mantras):
  *About half of what people do in a project later proves to be not needed*
  *If we foresee half of that half, we can save 25% of the time, and deliver 30% more in the same time*
- 86% of all statistics are made up on the spot

Typical Defect Injectors (cost breakdown)




After Bender Associates, *1996*

www.malotaux.eu/?id=citaten

# Preflection saves time

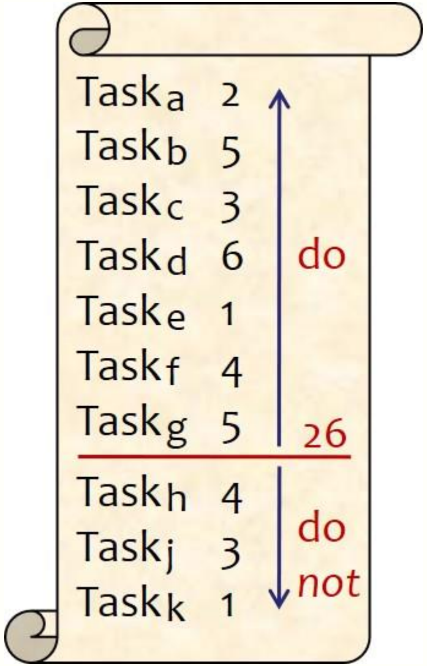
www.malotaux.eu/?id=preflection

- Retrospection, reflection
  If, in retrospect, we see that we did something wrong (what, how)
  that's nice, but the time is already wasted
- Prespection, preflection
  If, in prespect, we see that we are going to do something wrong (what, how)
  we can still decide not to do it, or do it the right
- Weekly TaskCycle:
  - We retrospect the past week's work (because we're not perfect yet)
  - Then we list what we think we should do the coming week
  - Then we prespect to prevent the waste and adjust our week-plan accordingly

# Quantifying not only what, also how

www.malotaux.eu/?id=evoplanning

- 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
- Write it down ! Our fuzzy mind isn't good enough !




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

# The power of question

- Don’t tell people what or how to do or not to do ! (I just did)
- Shouldn’t we use the question form ? (I just did)

- Just telling may create resistance, doesn’t it ?
- A question invites a response, doesn’t it ?
- Would a ‘nice question’ invite a better response ?

It's not about being right

It's about how to make it accepted as right

We could even be wrong, couldn’t we ?

# Avoiding 'you'

- Why did you do it wrong ?
- What did we do wrong ?

- What are you going to do about it ?
- What are we going to do about it?

- I think we should do xxx, what do you think ?
- What could and should we do about it ?
- In case of a blank face, just 'suggest', to trigger the imagination:
  - Would xxx perhaps work ?
  - How about trying xxx ?

# Commitment

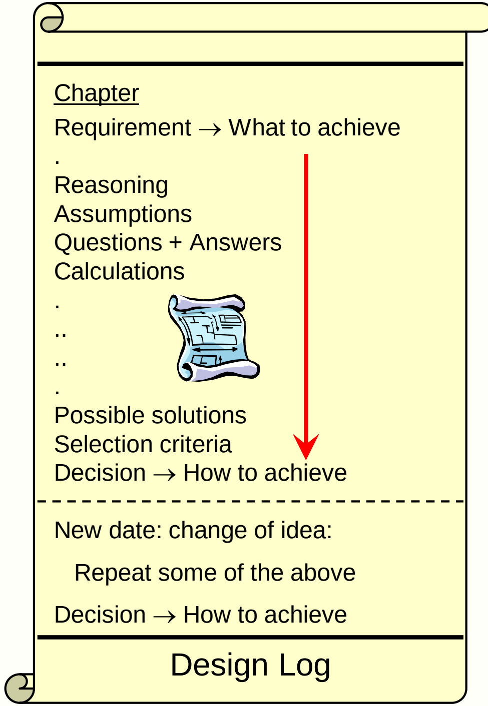
www.malotaux.eu/?id=commitment

- Issue: 90% syndrome
- Not 100% is *not done*
- We help each other getting our commitments right (no impossible commitments)
- Promise to do nothing, as long as that is 100% done (no need to think about it anymore)
- Trying to do more than you can, invites failure
- Typical ‘help’ questions:
  - “I couldn’t do that in the time available, can you really ?”
  - "Do you really think you will have done all of this by the end of the week ?”
  - "Last week you couldn't finish all, what makes you think you can succeed now ?
  - “Really ?”
- The mirror:
  - With commitment, we can learn if we failed
  - Without commitment, there is not much learning

# Concept: DesignLog

www.malotaux.eu/?id=designlog

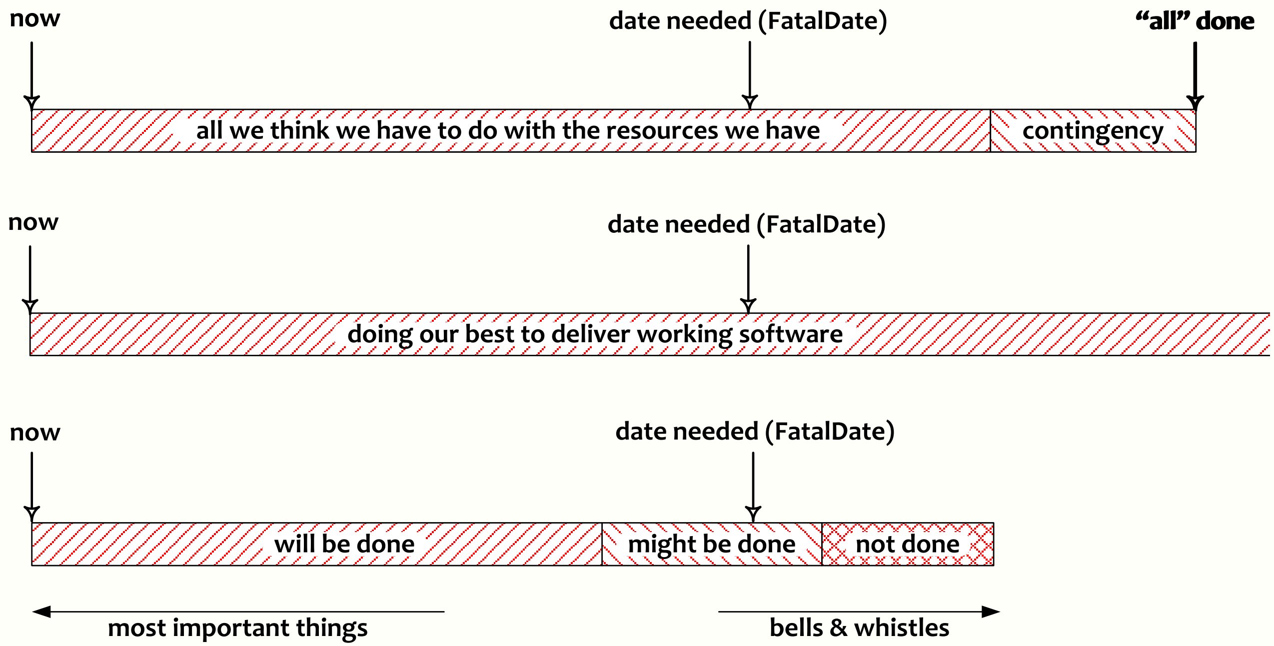
- In computer, not loose notes, not in e-mails, not handwritten
  - Text
  - Drawings!
  - Chapter per subject
  - Initially free-format
  - For all to see
- All concepts contemplated
  - Requirement
  - Reasoning
  - Assumptions
  - Questions
  - Calculations
  - Possible solutions
  - Selection criteria
  - Choices:
    If rejected: why?
    If chosen: why?
- Implementation specification




What you write down can be reviewed / challenged

# TimeLine

How do we know that we get, and do *what* is needed, *when* it's needed ?



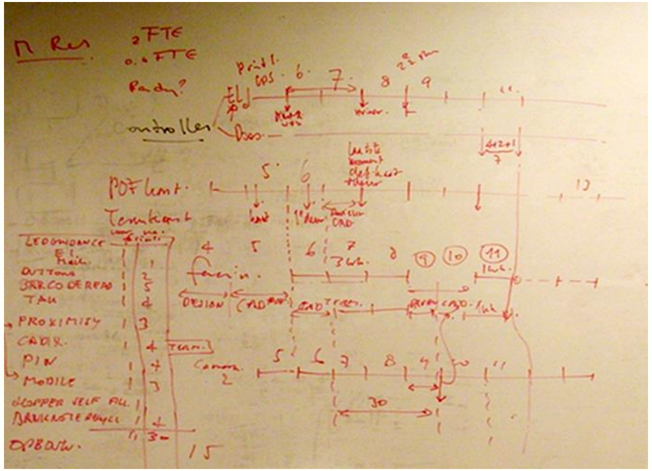

Standard Projects

Agile

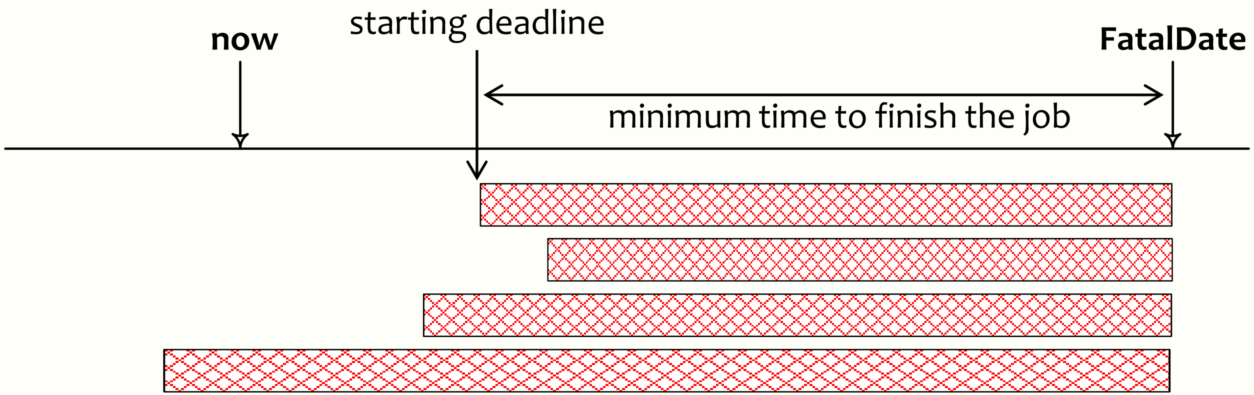
Evo

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

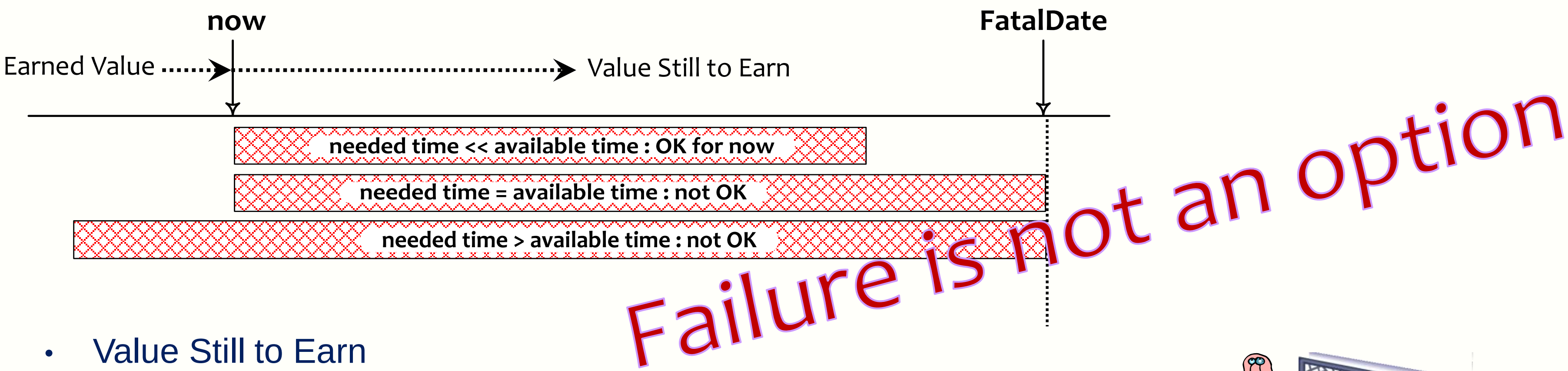
# Even more important: *Starting* Deadlines



- Starting deadline
  - Last day to start to make the finish deadline
  - Every day we start later, we will end later



# 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, we cannot score a goal

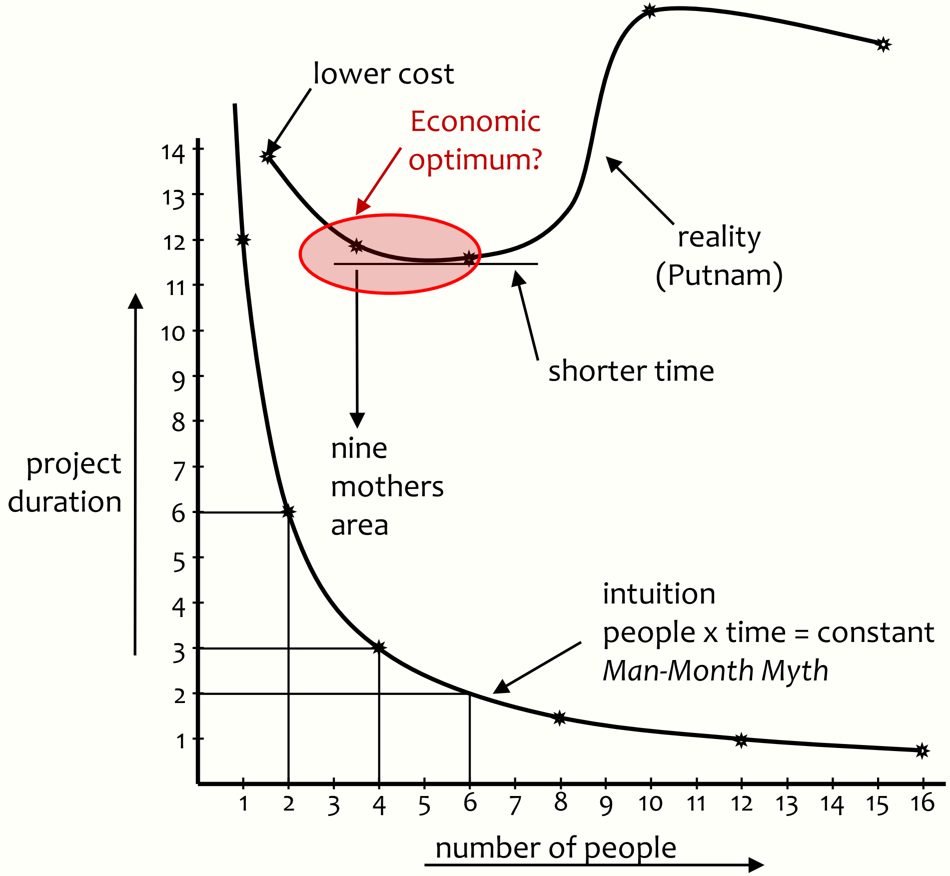
# Deceptive options

www.malotaux.eu/?id=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 deadline is really felt

Intuition often guides us in the wrong direction

# Adding people




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

# Saving time

Continuous elimination of waste
(www.malotaux.eu/?id=essenceoflean)

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 (www.malotaux.eu/?id=evo)
  - *Not* doing what later proves to be superfluous
- Efficiency in *how* we do it - doing things differently
  - The product (www.malotaux.eu/?id=designlog)
    - Using proper and most efficient solution, instead of the solution we always used
  - The project (www.malotaux.eu/?id=projectmanagement)
    - Doing the same in less time, instead of immediately doing it the way we always did
  - Continuous improvement and prevention processes (www.malotaux.eu/?id=PDCA)
    - 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 (www.malotaux.eu/?id=timeboxing)

# Failure is not an option

Some causes and cures explained, more on my website

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# Risks

www.malotaux.eu/?id=evorisk

- Issue: 90% syndrome
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  - "Really ?"
- The mirror:
  - With commitment, we can learn if we failed
  - Without commitment, there is not much learning

# Mantras: educating questions

- Why are we doing this ?
- Is it really necessary ?
- Is it really necessary now ?
- Who's waiting for it ?
- What does he need ?
- How much does he need ?
- When does he need it ?
- Why ?

- Will we be on time ?
- What makes us think we will this time?
  - Previously we were not on time, so ?

Don’t believe anything I say !

# Requirements paradoxes

www.malotaux.eu/?id=requirementsparadox

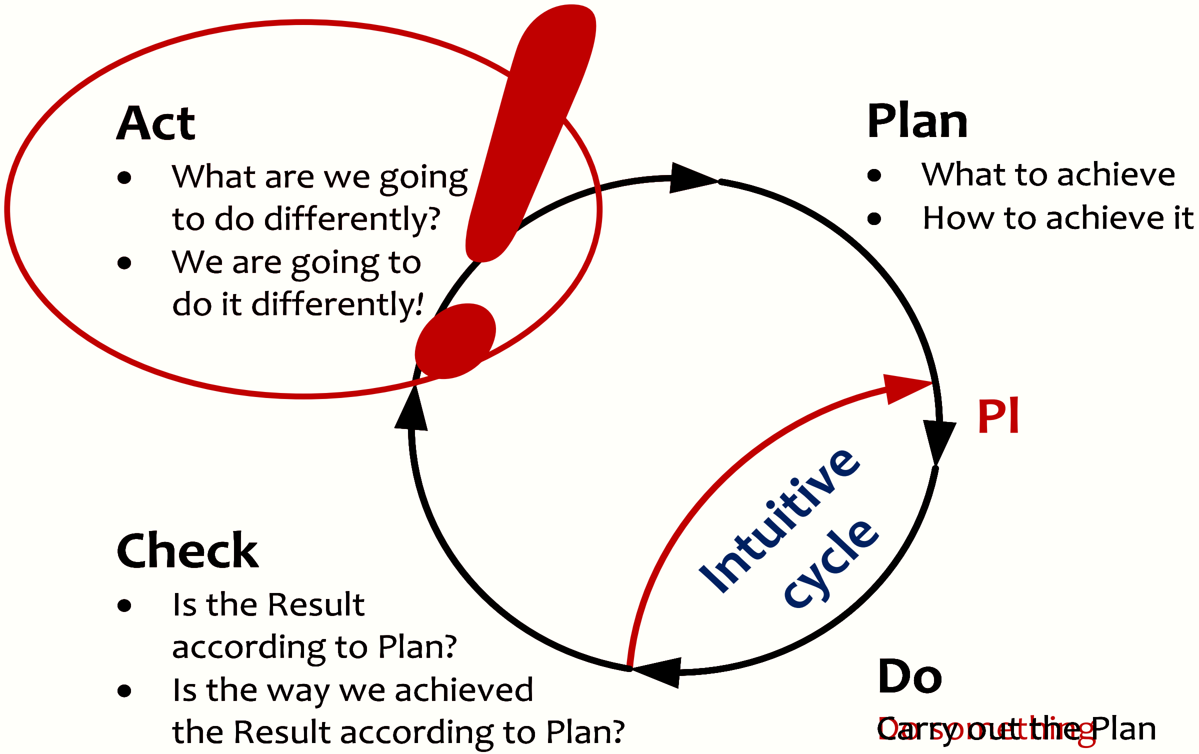
1. Requirements must be stable for reliable results, however, the requirements always change

Requirements change is a known risk, as it will happen anyway

2. We don't want requirements to change, however, as requirements change is a known risk, we *provoke* requirements change as early as possible

- The earlier the requirements change,
  the less we deliver great results for the wrong problems

# The essential ingredient: the PDCA Cycle
(Shewhart Cycle - Deming Cycle - Plan-Do-Study-Act Cycle - Kaizen)



# Why quantification ?

- W. Edwards Deming:
  - 'Without data, you're just another person with an opinion.'
- Is Tom's quantification 'just an opinion' ?
- Tom Gilb:
  - The fact that we can set numeric objectives, and track them, is powerful - but in fact it is not the main point
  - The main purpose of quantification is
    to force us to think deeply, and debate exactly what we mean
  - So that others, later, cannot fail to understand us

# Timeboxing

www.malotaux.eu/?id=timeboxing

- Feature Boxing Waiting until the work is done
- Time Boxing Just enough time for the work as required. There is no more time
- Check halfway whether you're going to succeed on time
  - If not: what can you do less, without doing too little
  - Define the requirements of the Task well
  - If the TimeBox is unrealistic: take the consequences (pdcAct) immediately
    (if a Task suddenly proves to need much more time, is it still worth the investment?)
- If you really cannot succeed within the TimeBox:
  - Check what you did - Check what you didn't do - Check what still has to be done
  - Define new Tasks with estimates (TimeBoxes !)
  - Stop the current Task to allow for finishing the other committed Tasks
    (don't let other Tasks randomly be left undone!)
  - If time left after having finished all Tasks, you can try to finish the uncompleted Task