The Evolutionary Approach

For Continuous Improvement of What We Do

Delivered by Niels Malotaux

EDUQUA | SE-TRAINING
www.se-training.net

Presenter

Mr. Niels Malotaux

Project and Organizational Coach

Helping projects and organizations to quickly become

- More effective - doing the right things better
- More efficient - doing the right things better in less time
- Predictable - delivering as needed

Result Management

Getting projects back on track

Helping with Architecture/Design/Review of Electronics/Firmware/Software

Project Types: Electronic Products, Firmware, Software, Space, Railway, Telecom, Industrial Control, Parking System

EDUQUA

SE-TRAINING
www.se-training.net

The Evolutionary Approach for Quality on Time

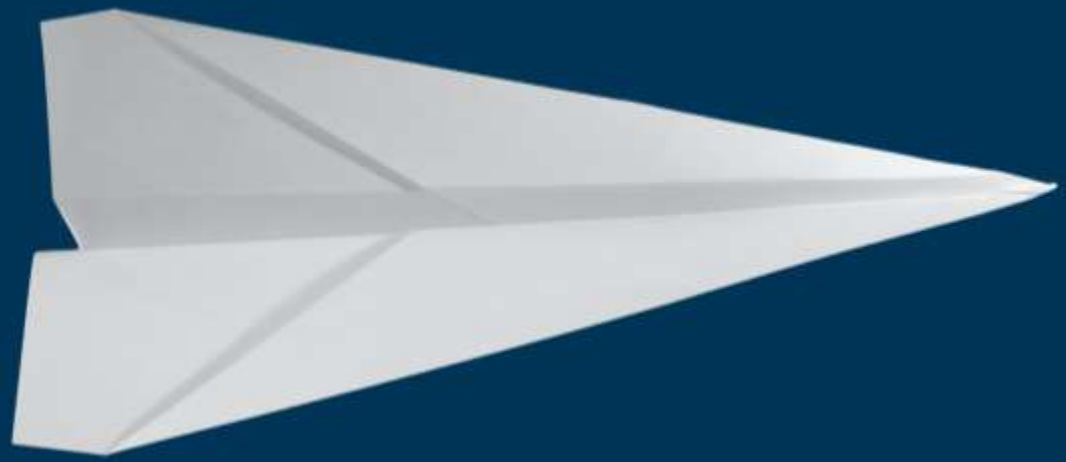
Do your projects deliver Quality on Time?

Quality on Time

The ultimate goal of what we do for our salary

- Delivering the **Right Results 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 they were without it
- Constrained by:
  - What the customer can afford
  - What we mutually beneficially and satisfactorily can deliver
  - In a reasonable period of time

Quality on Time is a ‘Nice Goal’…



…BUT HOW?

Saving Time

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 not needed

Efficiency in how we do it

- Doing things differently
- The Product

  Using the 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 to do things better and overcoming bad tendencies

Efficiency in when we do it

- At the right time
- In the right order

Time Boxing

- Much more efficient than Feature Boxing!

CONTINUOUS ELIMINATION OF WASTE

How to feed Evolution

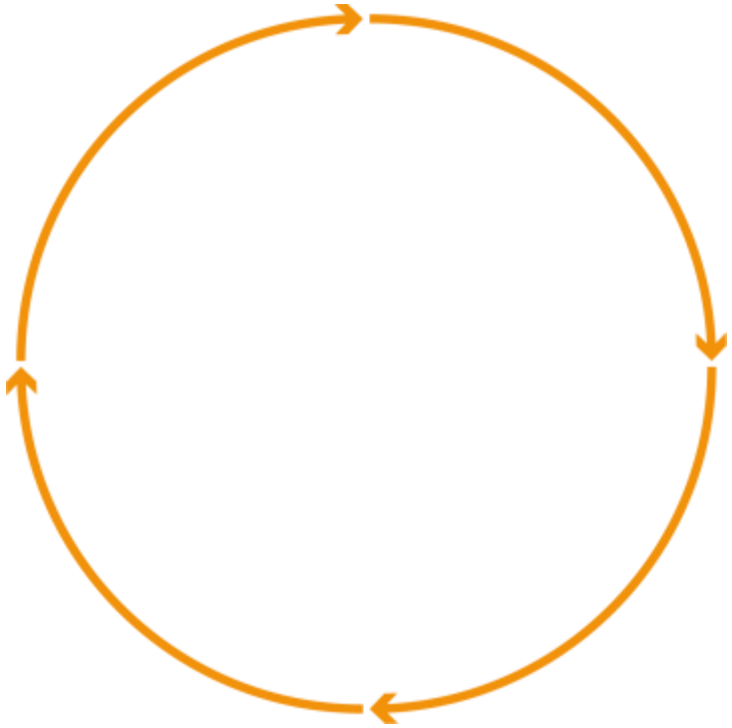
Plan – Do – Check – Act: The Powerful Ingredient for Success

ACT

- What are we going to do differently?

PLAN

- What to achieve
- How to achieve it



CHECK

- Is the result according to plan?
- Is it achieved according to plan?

DO

Carry out the plan!

How to feed Evolution

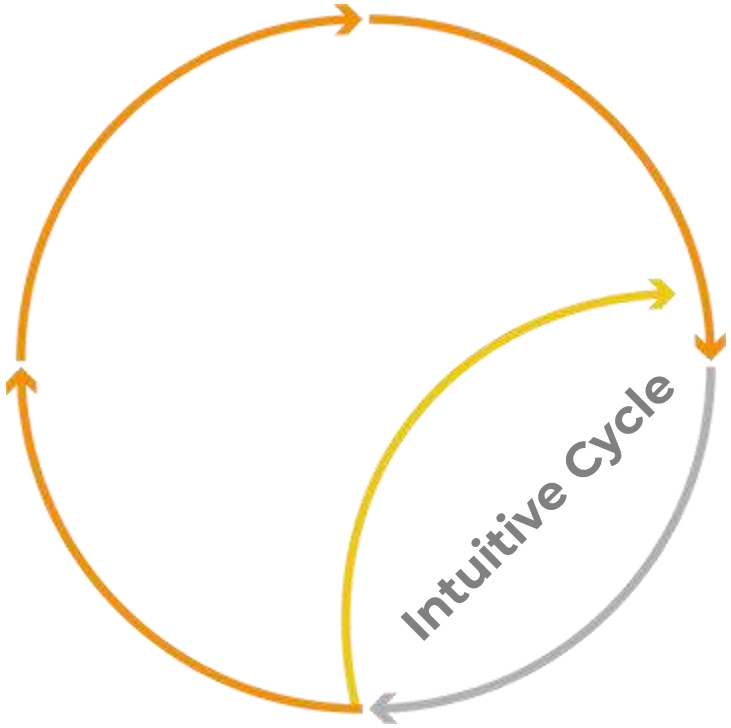
Plan – Do – Check – Act: The Powerful Ingredient for Success

ACT

- What are we going to do differently?

PLAN

- What to achieve
- How to achieve it



PL

CHECK

- Is the result according to plan?
- Is it achieved according to plan?

DO

Doing something

How to feed Evolution

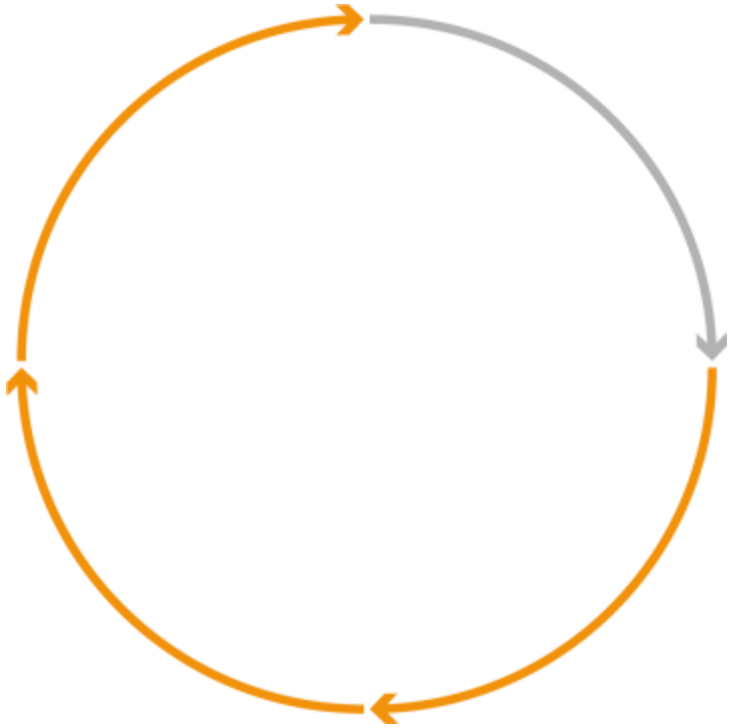
Plan – Do – Check – Act: The Powerful Ingredient for Success

ACT

- What are we going to do differently?

PLAN

- What to achieve
- How to achieve it



CHECK

- Is the result according to plan?
- Is it achieved according to plan?

DO

Carry out the plan!

How to feed Evolution

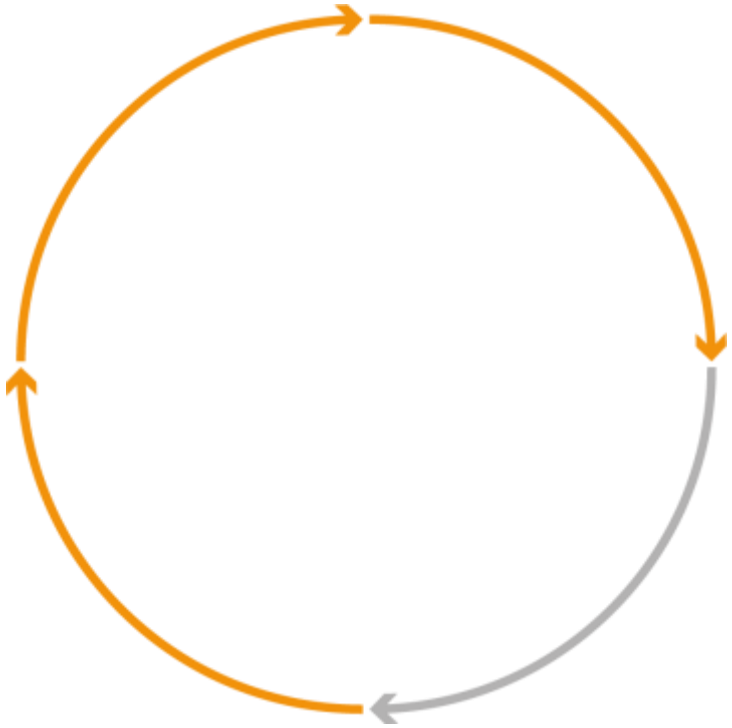
Plan – Do – Check – Act: The Powerful Ingredient for Success

ACT

- What are we going to do differently?

PLAN

- What to achieve
- How to achieve it



CHECK

- Is the result according to plan?
- Is it achieved according to plan?

DO

Carry out the plan!

How to feed Evolution

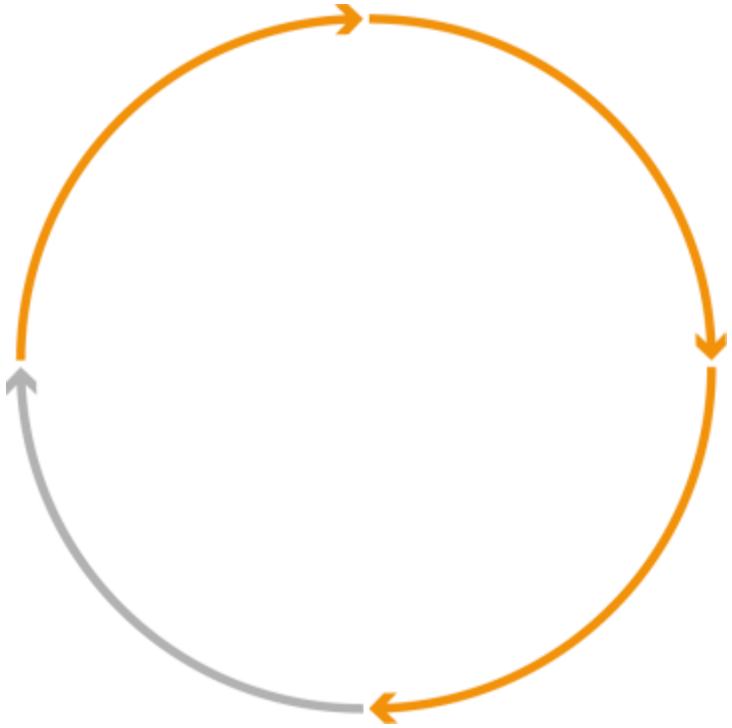
Plan – Do – Check – Act: The Powerful Ingredient for Success

ACT

- What are we going to do differently?

PLAN

- What to achieve
- How to achieve it



CHECK

- Is the result according to plan?
- Is it achieved according to plan?

DO

Carry out the plan!

How to feed Evolution

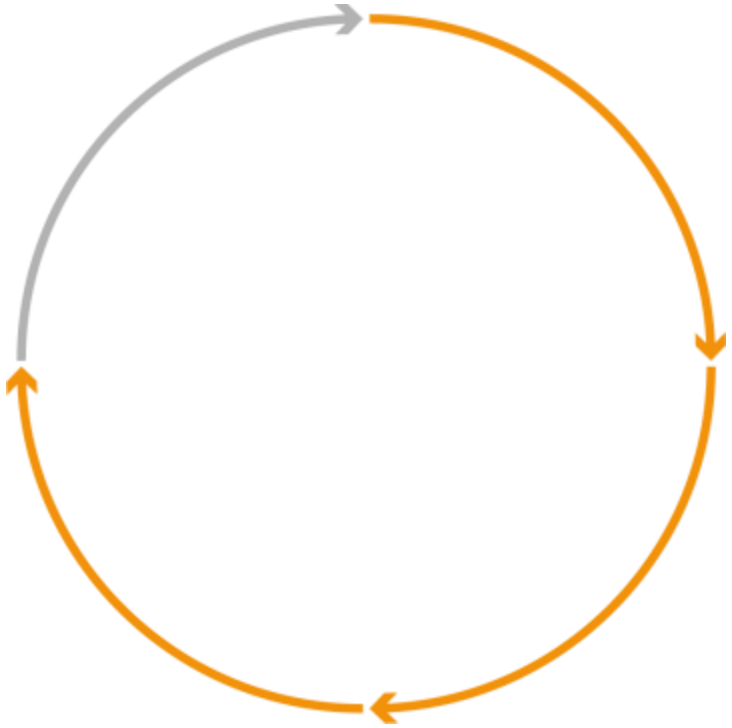
Plan – Do – Check – Act: The Powerful Ingredient for Success

ACT

- What are we going to do differently?

PLAN

- What to achieve
- How to achieve it



CHECK

- Is the result according to plan?
- Is it achieved according to plan?

DO

Carry out the plan!

How to feed Evolution

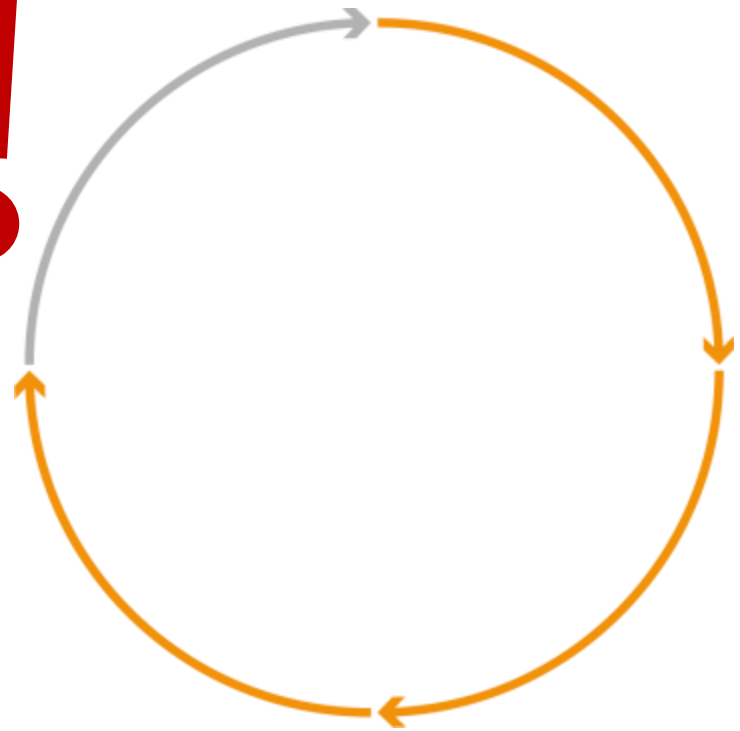
Plan – Do – Check – Act: The Powerful Ingredient for Success

ACT

- What are we going to do differently?

PLAN

- What to achieve
- How to achieve it



CHECK

- Is the result according to plan?
- Is it achieved according to plan?

DO

Carry out the plan!

Evolutionary Project Management (Evo)

Plan-Do-Check-Act on every level

- **Zero Defects**
  - Prevention costs less than repair
- **Business Case**
  - Why are we going to improve what?

Why?

- **Requirements Engineering**
  - What are we going to improve? What not?
  - How much will we improve? - Quantification

What?
How much?
Are we done?

- **Architecture and Design**
  - Selecting the optimum compromise for the conflicting requirements

How?

- **Early Review and Inspection**
  - Measuring quality while doing, learning to prevent doing the wrong things.

Check as early as possible

Quality on Time

- **Weekly Task Cycle**
  - Short-Term Planning
  - Optimising Estimation
  - Promising what we can achieve
  - Living up to our promises

Efficiency of what we do

- **Bi-Weekly Delivery Cycle**
  - Optimising the requirements and checking assumptions
  - Soliciting feedback by delivering real results to eagerly waiting stakeholders

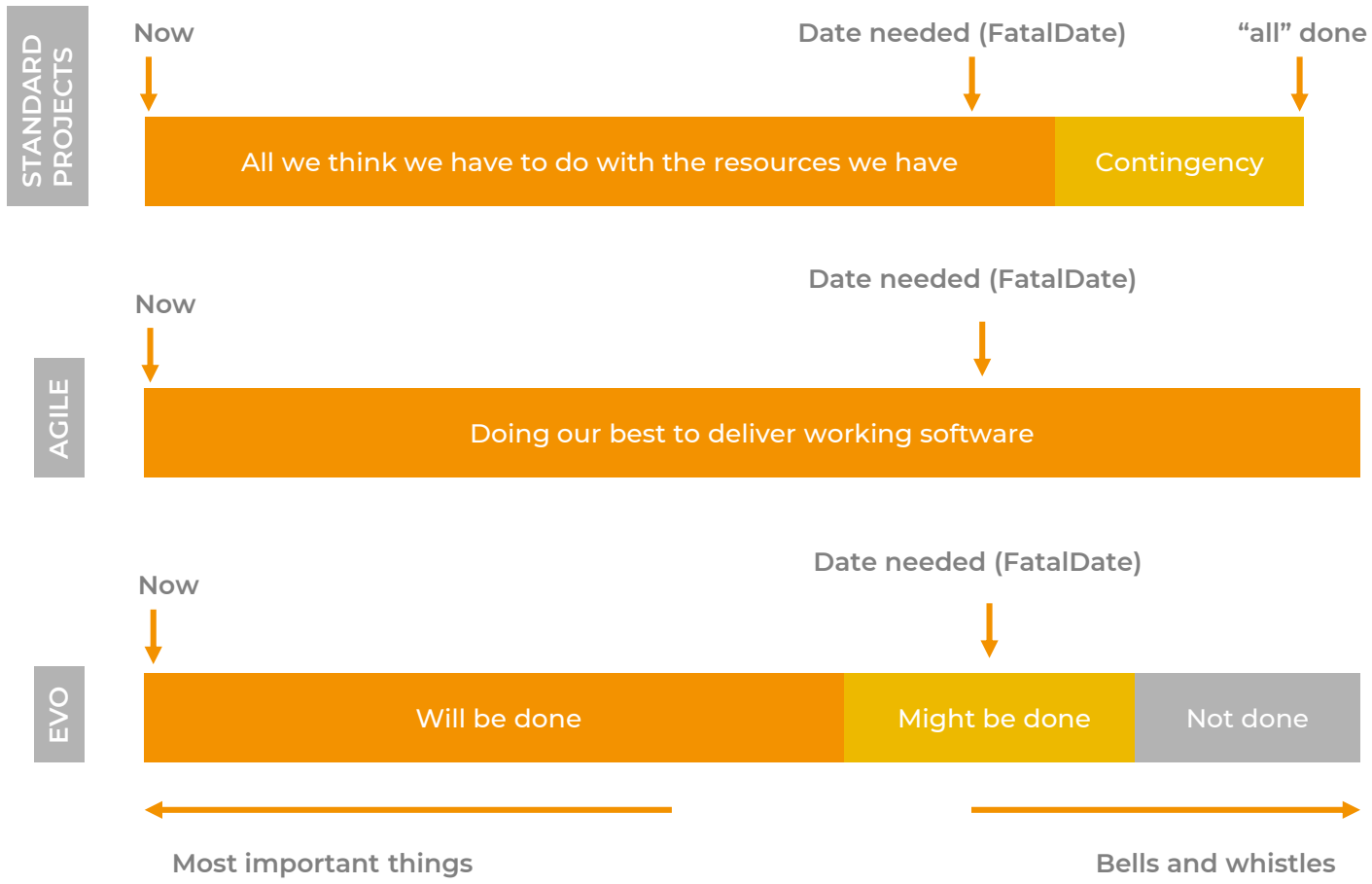
Effectiveness of what we do

- **Timeline**
  - Getting and keeping control of time: predicting the future
  - Feeding program/portfolio/resource management

What will happen and what will we do about it?

Evolutionary Project Planning

Time Line

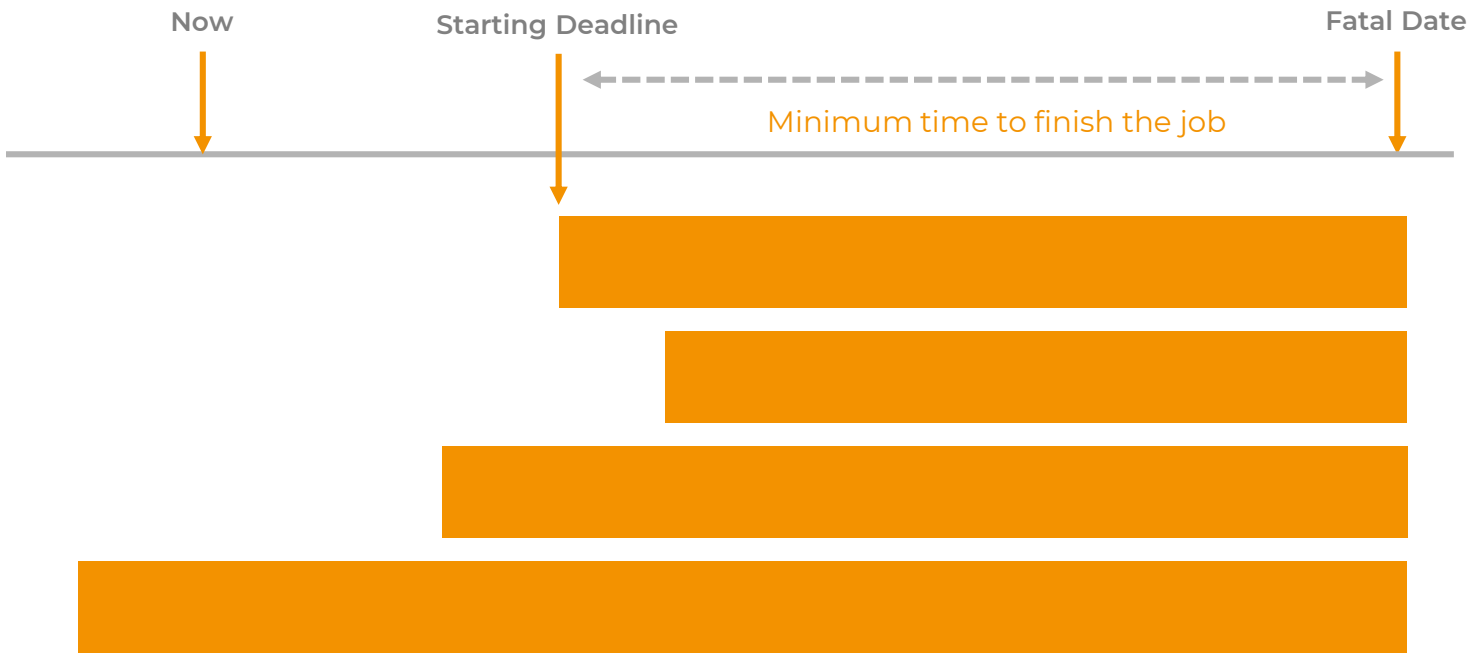


TimeLine

- How do we know that we get what is needed when it's needed?
- Better 80% 100% done, than 100% 80% done.
- Let it be the most important 80%

Starting Deadlines

Even more important...



Starting Deadline

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

Starting Deadline

- Buying trains from the catalogue, but some changes
- Cannot change everything: limited set of focus areas
- Example:

  Lifting train for maintenance

  - Supplier - lift
  - Maintenance - cable

- How much time left ?

  Supplier people already working on the final design

- What still to do? Does that fit the available time ?

  Talk to our maintenance, talk to supplier, decision, agreement

- Why waste your time ?
- What is Plan B ?

Evolutionary Project Management (Evo)

Plan-Do-Check-Act on every level

- **Zero Defects**
  - Prevention costs less than repair
- **Business Case**
  - Why are we going to improve what?
- **Requirements Engineering**
  - What are we going to improve? What not?
  - How much will we improve? - Quantification
- **Architecture Design**
  - Selecting the optimum compromise for the conflicting requirements
- **Early Review and 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

Quality on Time

- **Weekly Task Cycle**
  - Short-Term Planning
  - Optimising Estimation
  - Promising what we can achieve
  - Living up to our promises

Efficiency of what we do

- **Bi-Weekly Delivery Cycle**
  - Optimising the requirements and checking assumptions
  - Soliciting feedback by delivering real results to eagerly waiting stakeholders

Effectiveness of what we do

- **Timeline**

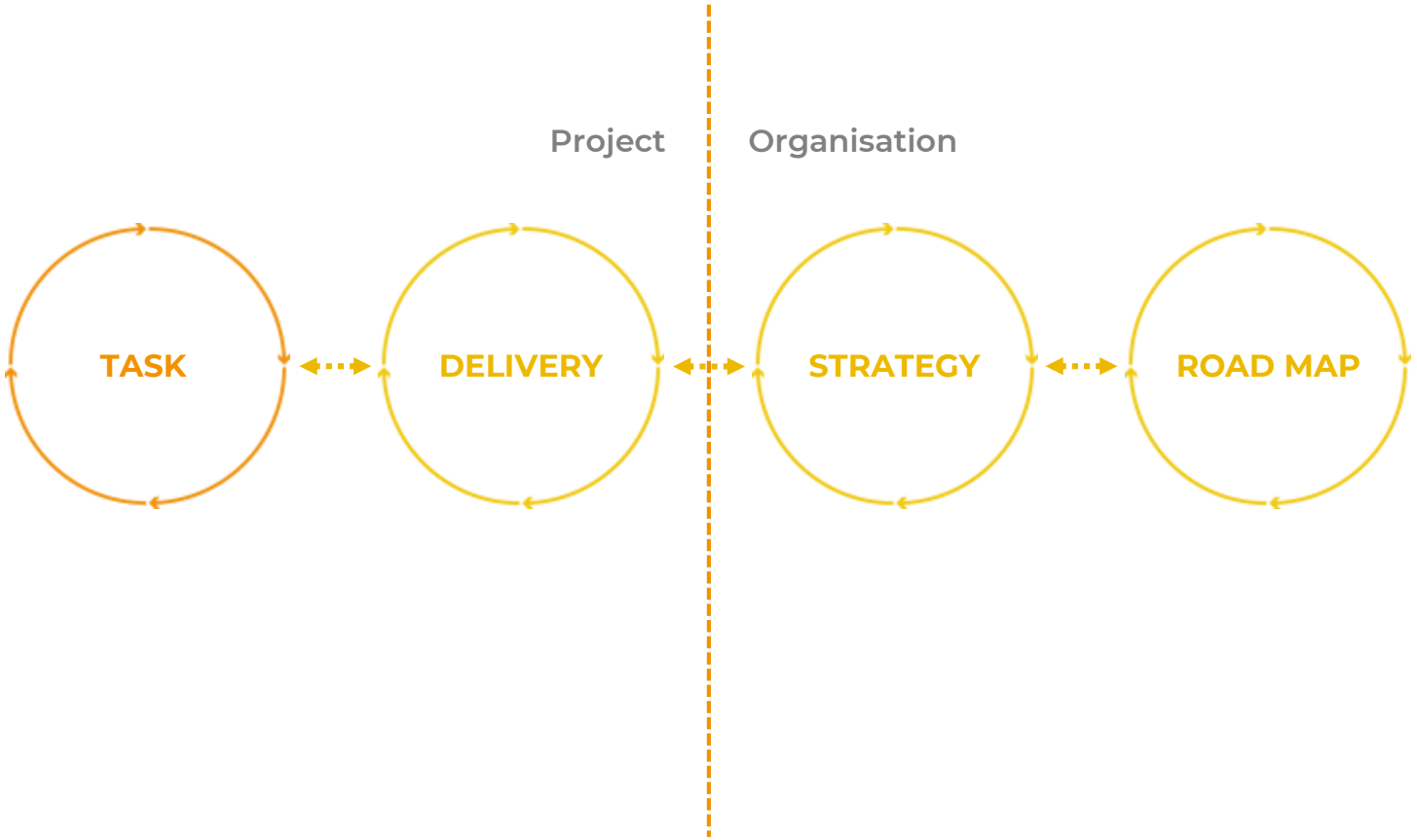
What will happen and what will we do about it?

  - Getting and keeping control of time: predicting the future
  - Feeding program/portfolio/resource management

Evolutionary Project Planning

Weekly TaskCycle

What are we going to do, what not, and why



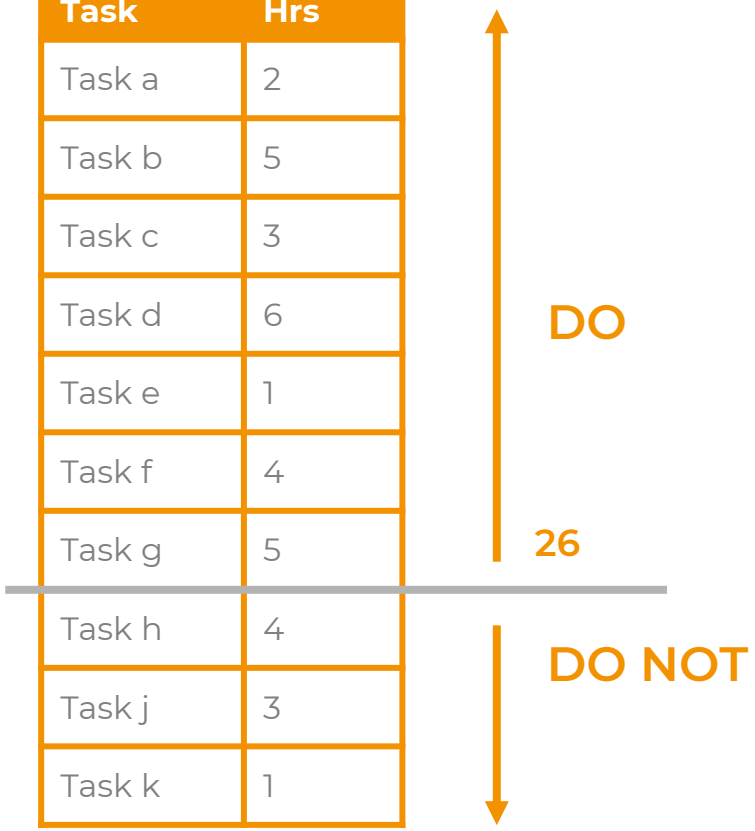
Removing Waste Before Time Spent

- Are we doing the right things?
  - In the right order
  - To the right level of detail for now
- Optimising 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 (default 2/3)
  - In the remaining time, do whatever else you have to do
- Tasks are always done, 100% done

Weekly TaskCycle

What are we going to do, what not, and why

Task	Hrs
Task a	2
Task b	5
Task c	3
Task d	6
Task e	1
Task f	4
Task g	5
Task h	4
Task j	3
Task k	1



Weekly Plan

- How much time do we have available
- 2/3 of available time is net plannable time
  - 2/3 is default start value.
    This value works well in development projects
- What is most important to do
- Estimate effort needed to do these things
- Which most important things fit the available time
  - Default 26 hours per week
- What can, and are we going to do
- What are we **not** going to do

Weekly Planning

Minimising Time Spent on Planning

Individual Preparation

- Conclude current tasks
- What to do next
- Estimates
- How much time is available

Modulation / coaching 1-on-1

- Status
  - Previous tasks done, completely done, no need to think about it anymore?
- Priority Check
  - Are the new tasks really the most important things?
- Feasibility
  - Will it be done by the end of the week?
- Commitment and Decision

Synchronisation with group (team meeting)

- Synchronisation
- Formal Confirmation
  - This is what we plan to do
- Concurrency
  - Do we have to synchronize?
- Learning
- Helping
- Socialising

New Oscilloscope Platform

- 4 teams of 10 people, 8 more people in Bangalore
- Introduced first in one team
- Other teams followed once convinced
- One team lagged because fear of ‘micro-management’

Heard at 1-on-1:

- Wow! Even if we would drop all you suggested, the 1-on-1’s will be kept, because so powerful:
  - We used to do something, and afterwards found out it wasn’t what it should be
  - Now we find out before, allowing us to do it more right-the-first-time

Results

Product manager:

- Schedule accuracy for this platform development was **50% better than the program average** over the last 5 years (as measured by program schedule overrun)
- This product was the **fastest time-to-market** with the **highest quality** at introduction of any platform in our group in more than 10 years
- The team also won a prestigious **Team Award** as part of the company's Technical Excellence recognition program

www.malotaux.eu/doc.php?id=19 chapter 4.7.1, page 70

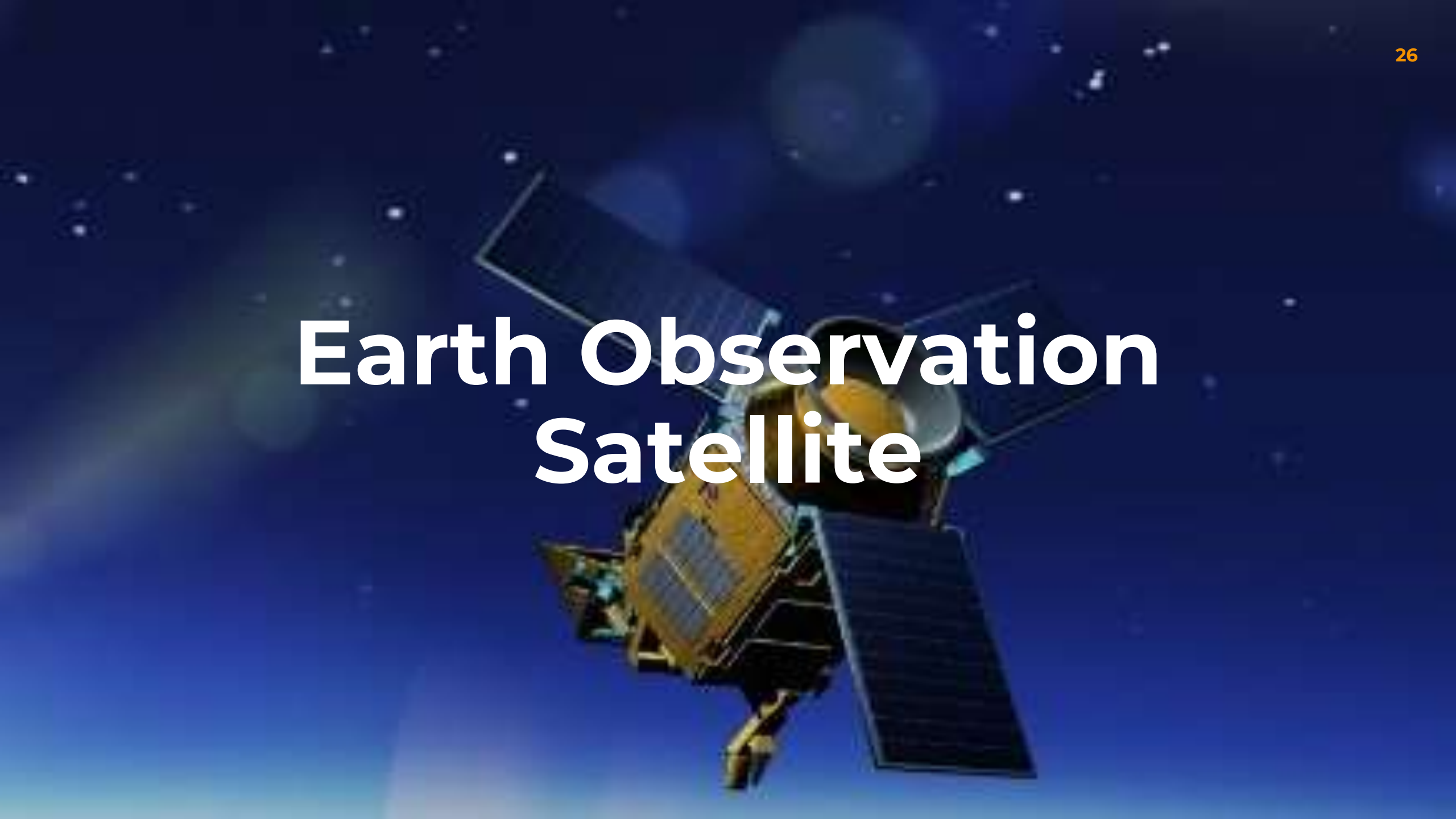
Quantified Requirements

- **Scale:** Time in minutes to do a <specific task>
- **Meter:** Measure <defined users> doing these tasks
- **Past:** 65 minutes [<specific user>]
- **Tolerable:** 35 minutes
- **Goal:** 25 minutes

Nice Requirements

- Handle up to 400 cars per hour
  9 sec per car
- Approval to enter: < 3 sec
- Uptime 99,95%
  downtime: 4.4 hr / yr
  @400 cars per hour → 1750 missed per year → deemed acceptable
- Response time < 150msec
- Max screen build up time < 500ms
- Life span 15 years

- Can you put a system at our office entrance ?
  - Took several months
  - Approval to enter: 7 sec
  - Can the architecture handle improving from 7 to <3 sec?



Earth Observation Satellite

On Time

Earth Observation Satellite

- Very experienced Systems Engineers
- One problem: They missed all deadlines
- Can you help us?
- **Taught them ‘Quality on Time’ Evo Planning**
- 9 weeks later: haven’t missed a deadline since
- 2.5 years later: delivered 1 day early
  (instead of expected 1 year late)
- Savings: at least 40 man-years (about €6million?)

Awful Schedule Pressure !

	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7
John	x		x	x	x	x	
Samuel	x	x		x		x	x
Paul	x	x	x	x	x	x	x
Michael	x			x	x		
Marc			x	x		x	x

Per Doc		Hour
4 Heavy	15	60
3 Easy	2	6
Other Work	Total	66 33
	Total	99

Available	2x26	52

Problem - Solution

- Meeting with sub-contractors in three weeks
- 2 weeks to review documents
- “Impossible deadline”
- How many documents to review ?
- How much time per document ?
- How much time available ?
- Some suggestions…
- Result: well reviewed, great meeting, everyone satisfied

The Evolutionary Approach for Quality on Time

Will your projects deliver Quality on Time from now on?