# A new approach for refurbishment projects
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NedTrain

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# Overview

- **About NedTrain**
- **A projects as it should be**
- **Questions**
- **The reality that isn't any help either**
- **The alternative approach**
- **Goals and stake holders**
- **Baselines and control loops**
- **The benefits**

# NedTrain: Who are we?

- **Part of Dutch Railways**
- **Maintenance of rolling stock**
- **€400 million turnover**
- **3.000 employees**
- **3.000 units (coaches and locomotives)**
- **Established all over the Netherlands:**
  - **35 Service locations**
  - **5  Maintenance locations**
  - **2  Overhaul locations (1 also refurbishment)**
- **7x24 at your service!**
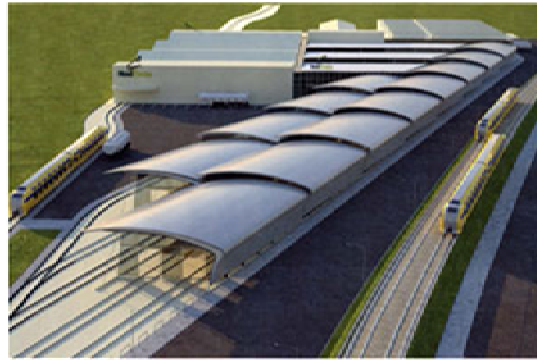
# NedTrain goals

- **For service and maintenance:**
- **Development towards 'Maintenance Integrator'**

- **For refurbishment & overhaul:**
- **Development towards**
- **'System Integrator'**

- **Key aspects:**
  - **Connect disciplines**
  - **Connect information**
  - **Connect supply chain**
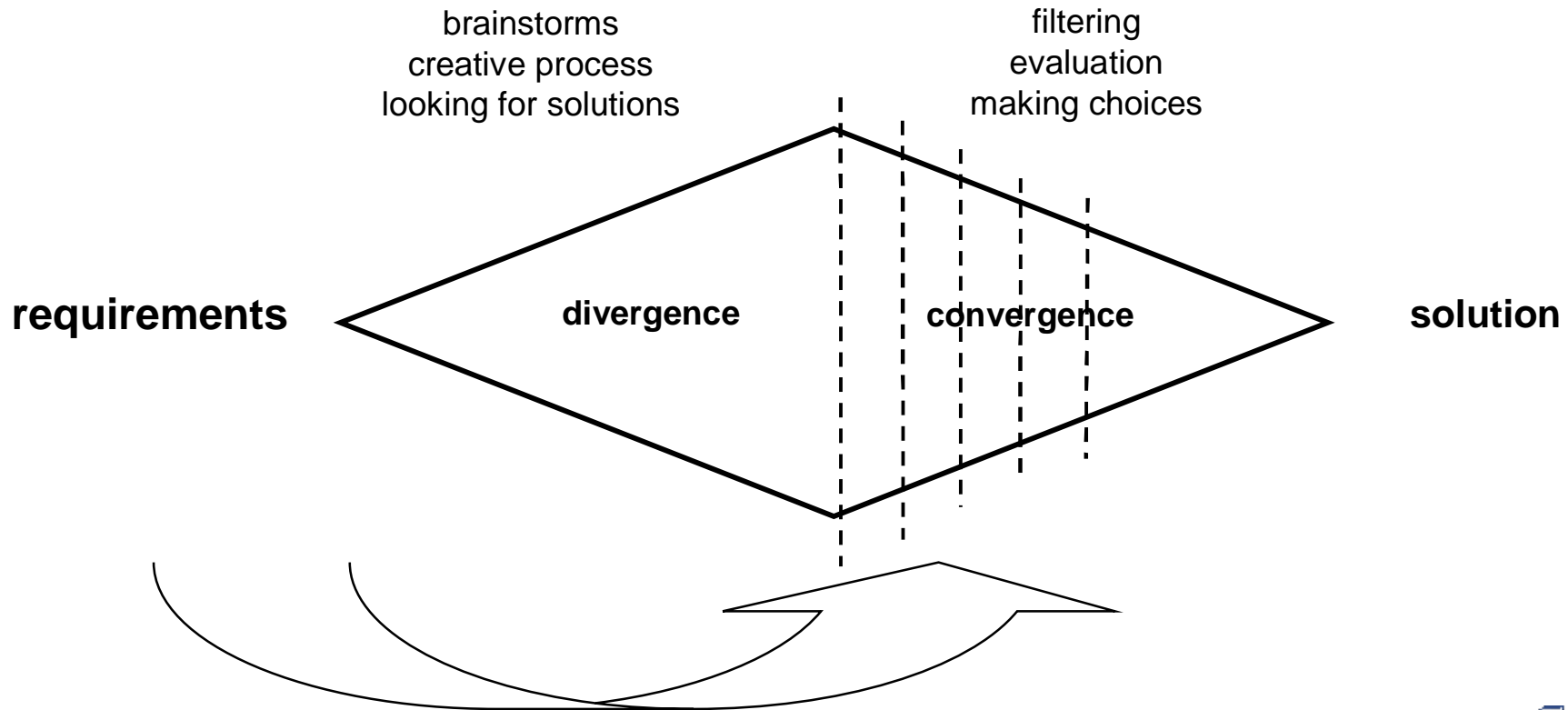
- **Ambition to become "Best in class"**

# a project as it should be

- **Define Scope and requirements**
- **Define constraints (planning, cost, means, etc.)**
- **Design the train conform requirements**
- **Verify whether the requirements are met**
- **Deliver trains**
- **During the project: manage scope changes and make sure the customer is paying for them.**

- designing is a process of generating possible solutions and selecting the best one with respect to all applicable requirements

brainstorms
creative process
looking for solutions

filtering
evaluation
making choices

**requirements**          **divergence**          **convergence**          **solution**

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# Scope change control

- **Define the requirements as detailed as you can**
- **Include requirements about maintainability, weight, energy consumption, environment friendly solutions, etc.**
- **Control deviations of requirements**
- **Make a decision loop with your customer to deal with those deviations and to manage additional cost**

Sinot Design Associates voor NS | 69096 Visualisaties DDARm | Presentatie richtingen 20 februari 2006

# Questions

- **Is an extensive scope and requirement description a warranty for getting what you want?**
- **Is a fixed and massive contract a warranty for getting what you want?**
- **Can you describe in advance exactly what you want?**
- **Is the cheapest supplier always the preferred one?**
- **What is smarter: helping your supplier to solve his problem or pointing out to him which penalty is applicable if he doesn't solve it?**

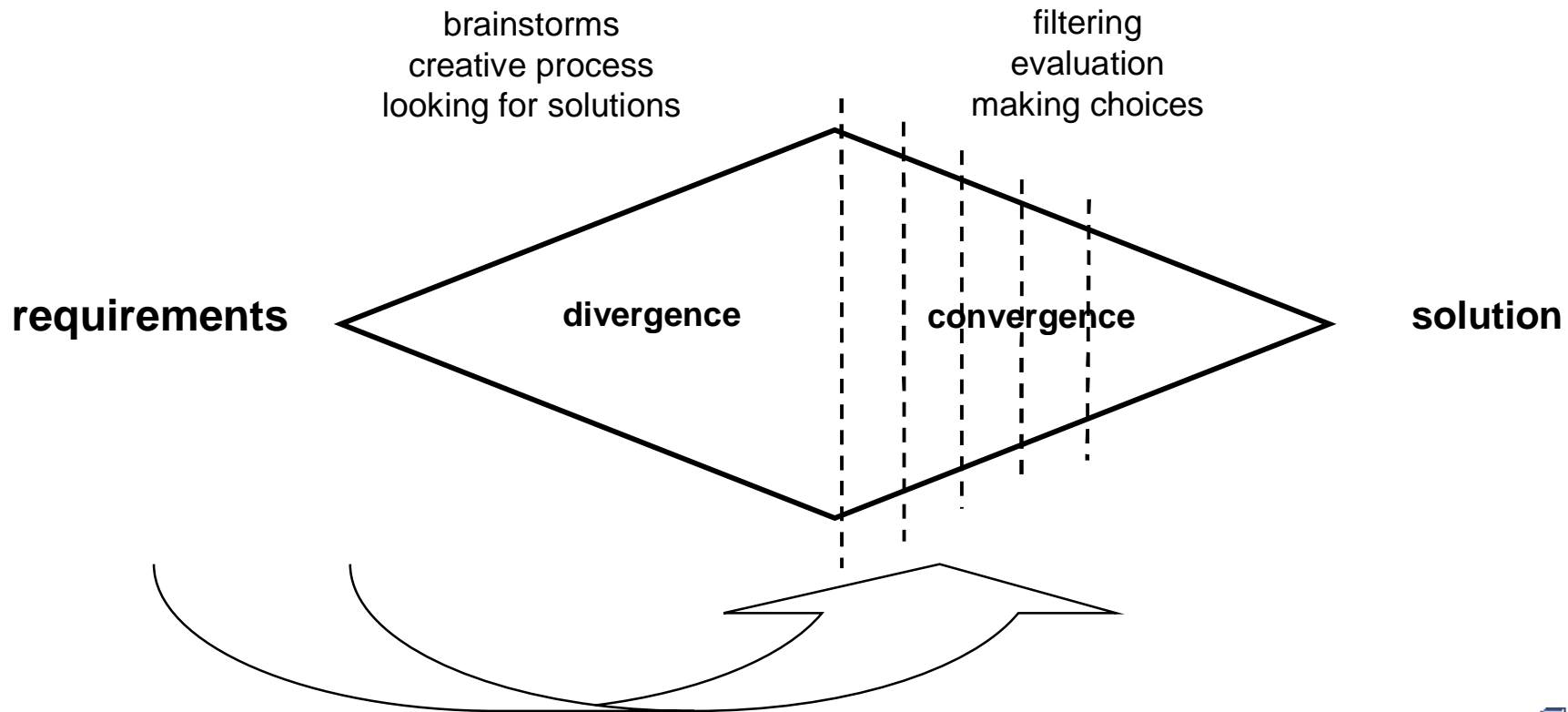- **The questions above are relevant for all supply chain parties.**

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- **During a project the scope is always evolving.**
- **Several requirements will remain contradictory.**
- **The demands of all stake holders can never be met.**
- **Design decisions always come to soon**
- **It's not always clear how to meet requirements**

- designing is an ***iterative*** process of generating possible solutions and selecting the best one with respect to all applicable requirements

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**requirements**    **divergence**    **convergence**    **solution**

# Alternative approach

- **Define the requirements not too detailed and as functional as possible.**
- **Define the goals of the requirements.**
- **Determine which performance shall be optimised.**
- **Allocate targets for the performance to be optimised.**
- **Train your design teams.**
- **Give the design teams decision rules and tools.**
- **Take the whole chain into account.**
- **Make a decision loop with your stake holders to deal with those optimisations (budget change control)**

# Goals and stake holders

- **Design for reliability**
- **Design for maintenance**
- **Design for assembly**
- **Design for logistics**
- **Design for environment**
- **Design for weight**
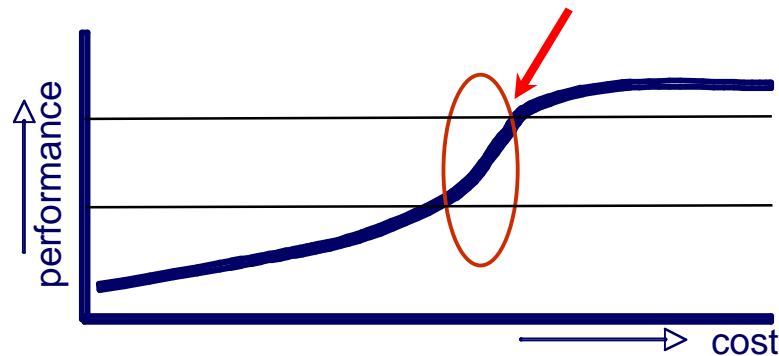- **Design to cost**
- **Design for cleaning**
- **Design for ...**

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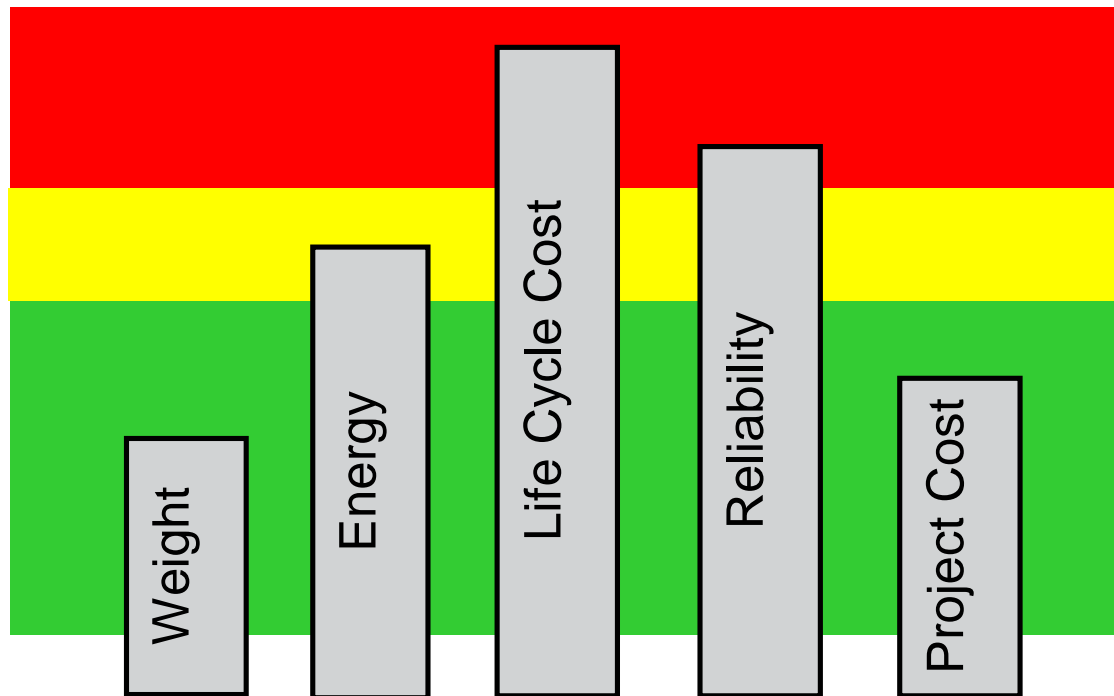
- **Balancing by levelling project goals**
- **E.G.: adding cost and weight might reduce LCC and Reliability**
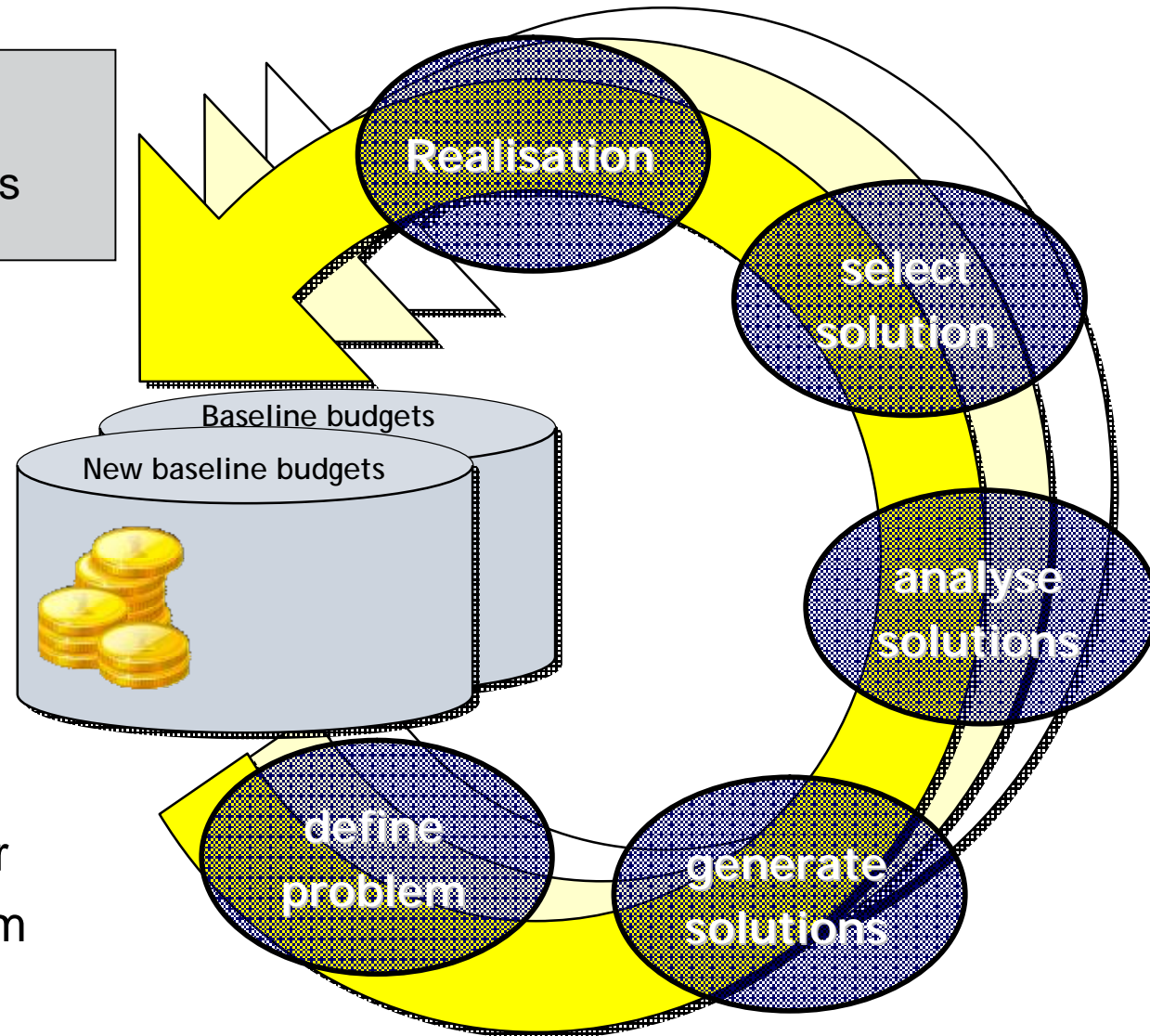
- **Start with top down targets in the first baseline**
- **Let the design teams create a bottom up baseline based on their conceptual designs**
- **Update your baselines regularly, at least with each design review**
- **Formulate business cases for difficult or important design decisions.**

"Closed loop"
Iteration process

Realisation

select solution

analyse solutions

generate solutions

define problem

Baseline budgets

New baseline budgets

Keep in control
And give room for
control to the team

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# Customer intimacy

- For all involved parties:
- Open communication is essential
- Close co-operation is essential
- Looking for the benefit of all parties is essential
- Sharing available information is essential

# The benefit of it all

- **Better designs: not just performing well, but optimised for all relevant aspects!**
- **An involved and satisfied customer**
- **Involved and satisfied stake holders in general**
- **And therefore: less surprises when the train is delivered.**

**Thank you for your attention**