WELCOME TO TODAY'S DELMIA QUINTIQ WEBINAR

Unleash the Full Potential of the DELMIA Quintiq Optimizer

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WEBINAR SERIES 2024

Available on demand soon: Unlock the Full Potential of Your DELMIA Quintiq Solution – Navigating the Post-Implementation Phase

With Vincent Wiers

Available on demand soon : Upgrading your DELMIA Quintiq Solution: The WHY and the HOW

With Bas van der Bijl

Today: Unleash the Full Potential of the DELMIA Quintiq Optimizer
With Vincent Wiers

December 5: Ensuring High Availability - Maximize Your Uptime with DELMIA Quintiq

With Richard van Mersbergen
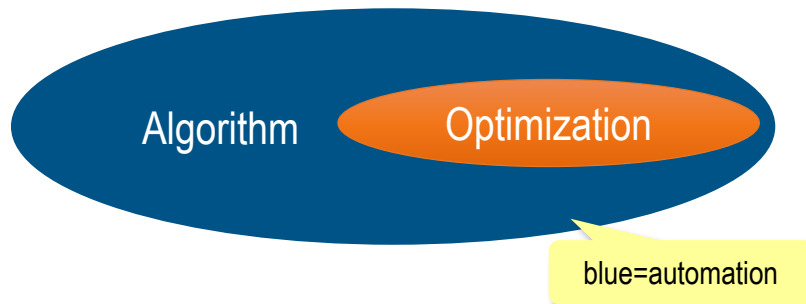
ALL ABOUT OPTIMIZATION

SOME DEFINITIONS

ALGORITHM

"An algorithm is a series of steps that are programmed into a decision support system to automate parts of planning or scheduling decisions."

OPTIMIZATION

"An algorithm or set of algorithms that generates, evaluates and chooses the best solution according to a set of key performance indicators (KPI's)."

Algorithm

Optimization

blue=automation

ABOUT MODELS

Real-world problem

Quintiq model

Optimizer model
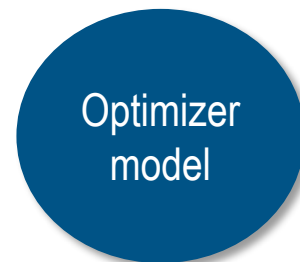
THE OPTIMAL SOLUTION?

- Some optimization techniques will **guarantee** that the optimal solution has been found – <u>within the model</u>

- Other optimization techniques will return the **best solution** found within a certain time limit

- Heuristics will return **one solution** without evaluation of the quality

OPTIMIZATION AND HEURISTICS

"I want this drink"

"I want to have a good taste, with minimal sugar and a large container content for the lowest price"

HEURISTICS

- Predefined steps to create a solution
- Typically an automation of manual process

"Will get you the solution you knew existed"

OPTIMIZATION

- Considers multiple options
- Evaluates with weighted KPIs

"Will get you a solution you did not know about"

In practice, most optimizers are a combination of 'true' optimization and heuristics

WHAT KIND OF OPTIMIZERS DO WE HAVE?

Company Planner

A. Techniques

→ - Linear/mathematical programming

- Path optimization

- Heuristics

B. Iterations

- Single

→ - Multiple

C. Elements

- Direct

→ - Combi/Set

D. Approach

- Construction

→ - Improvement

High level planning

OOTB optimizers

Detailed planning

Customized optimizers

A NOTE ON ARTIFICIAL INTELLIGENCE

- Existing techniques can be classified as AI

- Explain scheduling delays using Machine Learning

- Generate schedules - experimental algorithms

- Explain outcomes of planning decisions with Large Language Models (LLM)

DS DELMIA

WHY OPTIMIZATION?

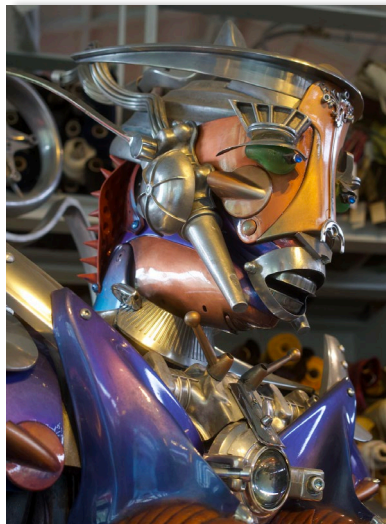**3DS** DELMIA

3DS DASSAULT SYSTEMES
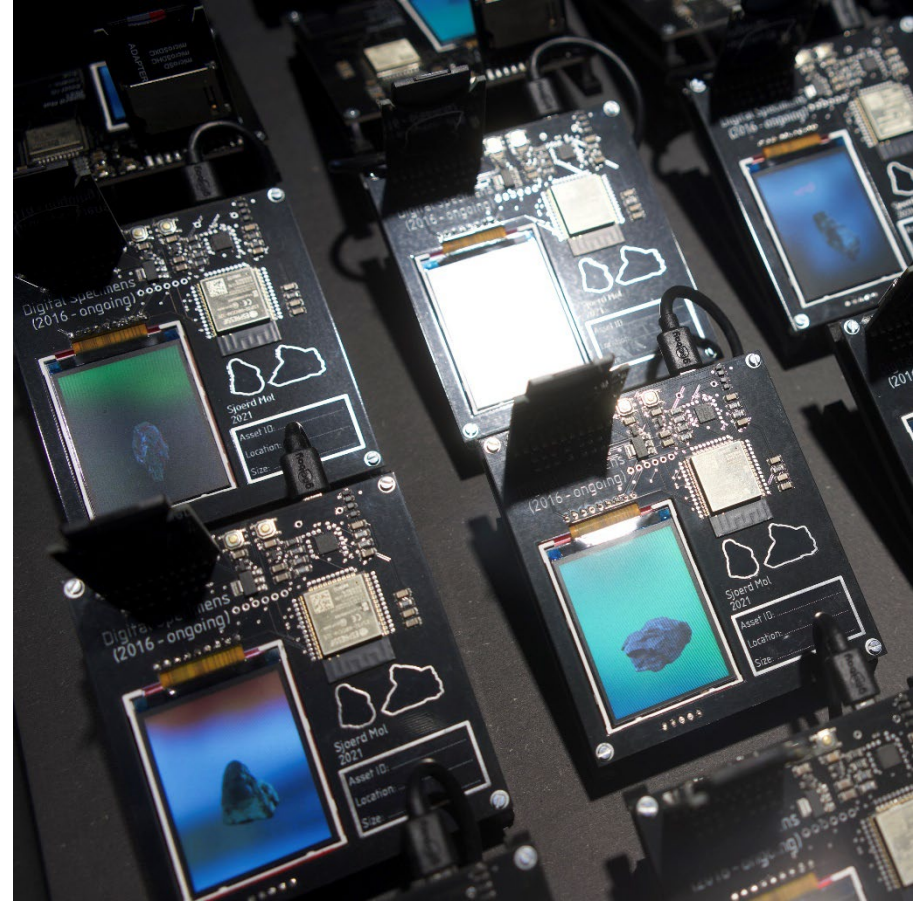
THE PROMISE OF OPTIMIZATION

Much better performance


Solve planning issues

Enter the future

No-touch planning

MOTIVATIONS FOR OPTIMIZATION

- "Mr Wiers, do we have to create a schedule by ourselves?"

- "Why are we implementing this planning system when we still have to do all of the work?"

- "Our plan changes all the time, we need an algorithm to create an optimal plan after every update."

- "We want to go for no-touch planning, should be fully automatic."

- "Just propose something, we will tell you whether it is ok."

- "Tests show that we could get 10% more efficiency if we would have the time to optimize the plan every day."

- "We are getting more and more orders, and the manual work is becoming too much."

- "We want to create the right tradeoff between utilization and leadtimes."

- "The planner needs better decision support for the well-defined part of the planning task."
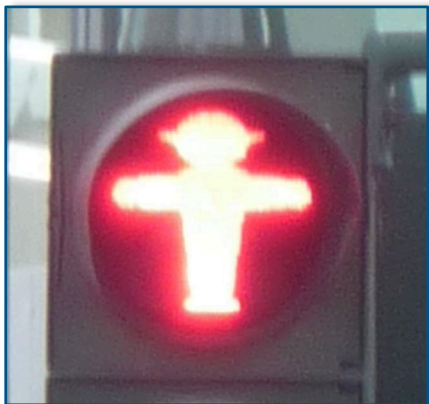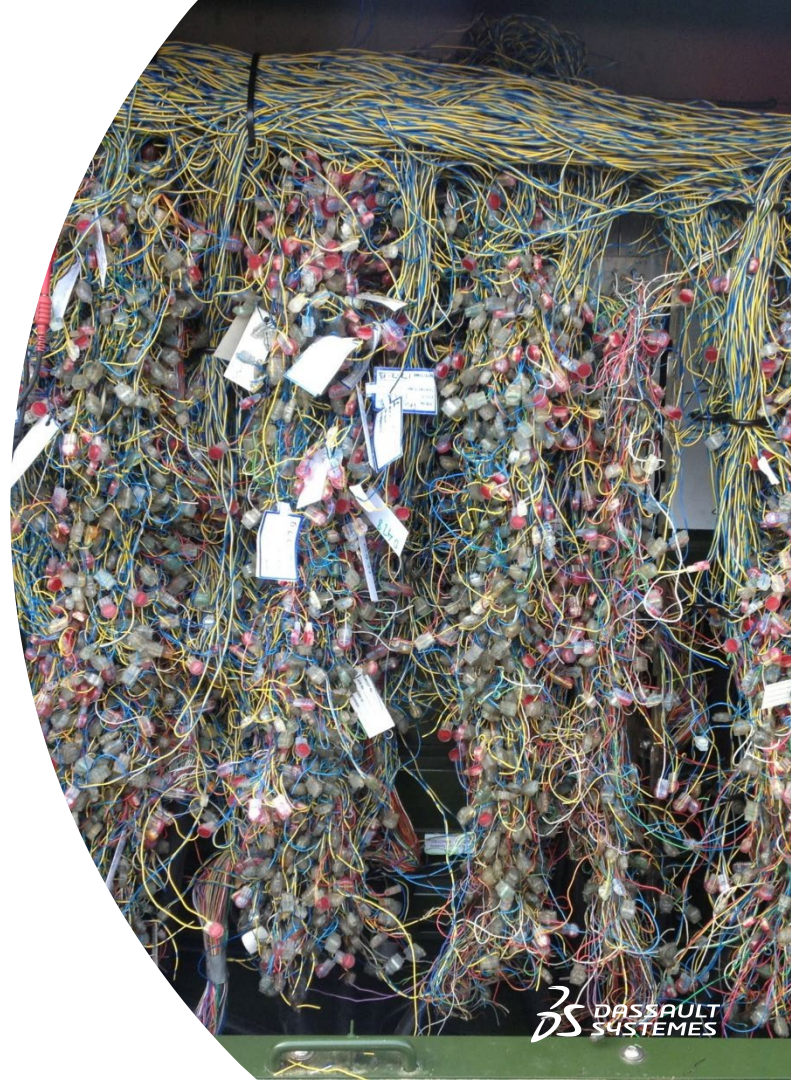
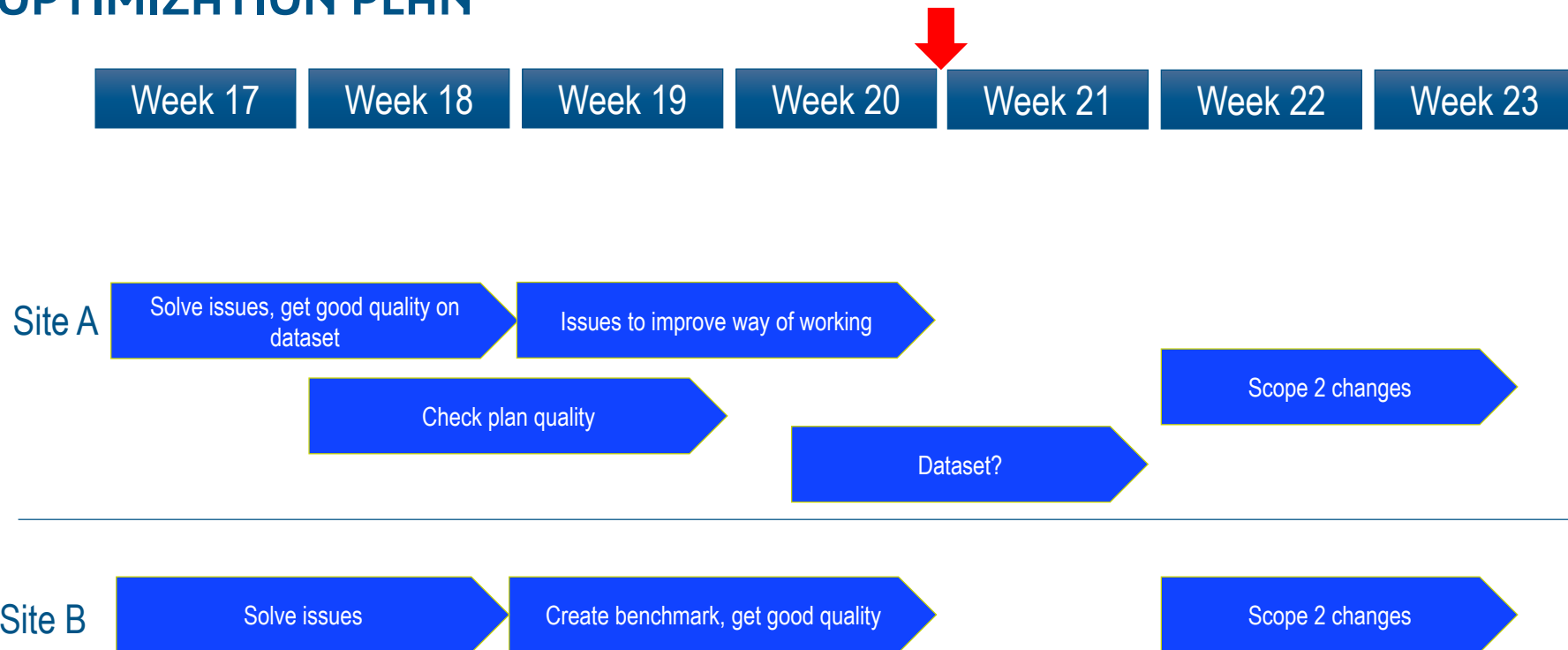# CONDITIONS FOR OPTIMIZATION

- The model of your planning system is correct and complete

- Your processes are predictable

- There is good adherence to plan/schedule

- Knowledgeable users and experts

- Potential value

DEVELOPING OPTIMIZERS

OPTIMIZATION PLAN

Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23

Site A

Solve issues, get good quality on dataset

Issues to improve way of working

Check plan quality

Dataset?

Scope 2 changes

Site B

Solve issues

Create benchmark, get good quality

Scope 2 changes

"THE PLAN IS BAD"

"No, it's not"

WE NEED A REFEREE

And its name is Benchmark - powered by the Total KPI

- A benchmark represents an objective criterion to measure whether a plan is 'good enough' or not
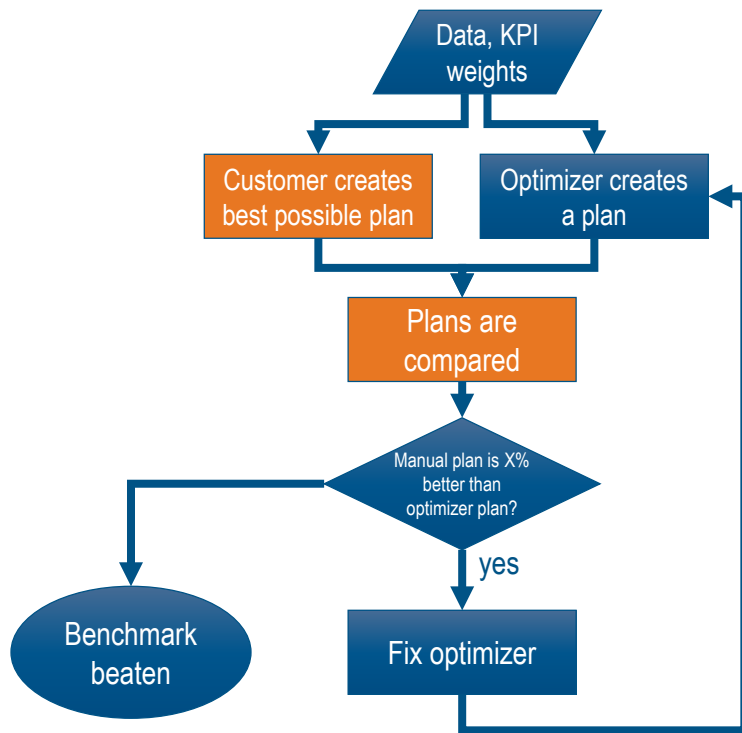- The summed value of the weighted KPI's – the Total KPI – is what needs to be beaten

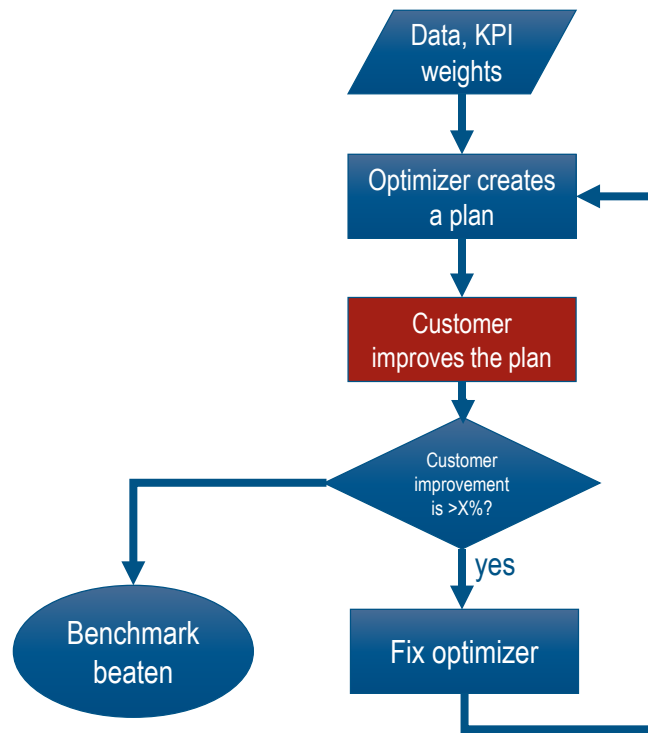 Beaten? Plan is good.

  Not beaten? Plan is bad.

  No discussion.

BENCHMARK APPROACH

The 'pure' approach

The 'lazy' approach

X is typically 1.5-3%

SOME CONSIDERATIONS WHEN BENCHMARKING

- No customer on earth can provide the correct KPI weights upfront – iterative process

- A benchmark is one plan, but optimizers might struggle over similar but different plans

- Choose the number of benchmarks wisely – balance between risk avoidance and project work

HOW TO USE OPTIMIZERS

Train, ask questions, experiment, challenge

- Do not fall into the trap of the 'black box syndrome' – make sure you understand how the optimizer works

- Accept that finetuning will be needed and train yourself to work together with the optimizer

- Try out different optimizer strategies

- Analyze individual cases where you do not understand why it was planned like that

LEARNINGS FROM CUSTOMERS USING OPTIMIZERS

- "In the past, we needed a couple of days to change the mix of materials. Now we only need a few hours."

- "Benefits? We would not be able to do without the optimizer anymore. We recently had a raw material crisis and the optimizer enabled us to create new scenarios quickly. Our old way of working would not have allowed us to do that."

- "Are you worried about changes in your plan?" Planner: "I just look at my KPI."

- "Without Quintiq and the optimizer we would only have a 6 weeks horizon and after that not more than assumptions."
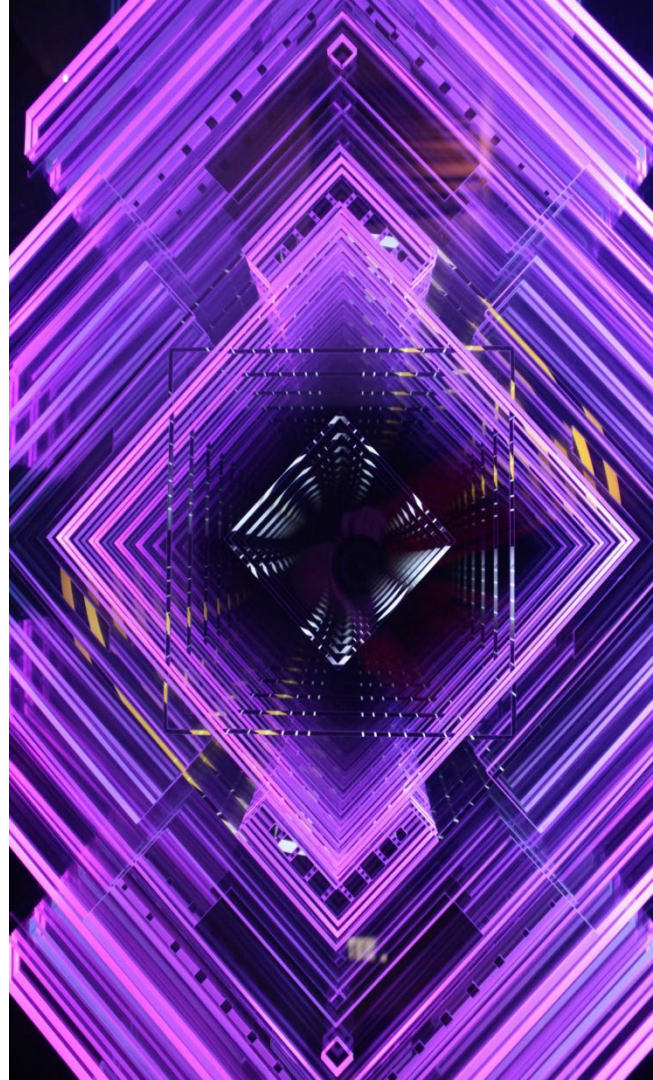
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Q&A

You may always contact us via:

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bas.vanderbijl@3ds.com

UPCOMING WEBINAR

Ensuring High Availability - Maximize Your Uptime with DELMIA Quintiq!

Our Expert

Richard van Mersbergen

DELMIA Supply Chain Operations
Senior Solution Architect

Register now!

Target Audience

DELMIA Quintiq Current and New Users

DELMIA Quintiq Partners

Reasons to Join

- Explore high availability options for DELMIA Quintiq
- Learn best practices for solution health assessment
- Discover methods to detect and prevent potential issues
- Enhance the reliability and efficiency of your solution

When

December 5th | 3:00PM CET | LIVE

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THANK YOU FOR ATTENDING !