

# Integrated Planning in the Age of the Operations Control Center

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Rail Conference

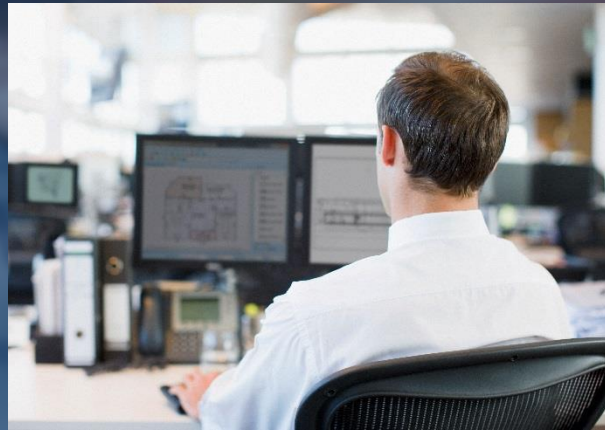


# Data driven decisions

**Consumer**

**Job**

**Technology  
Provider**

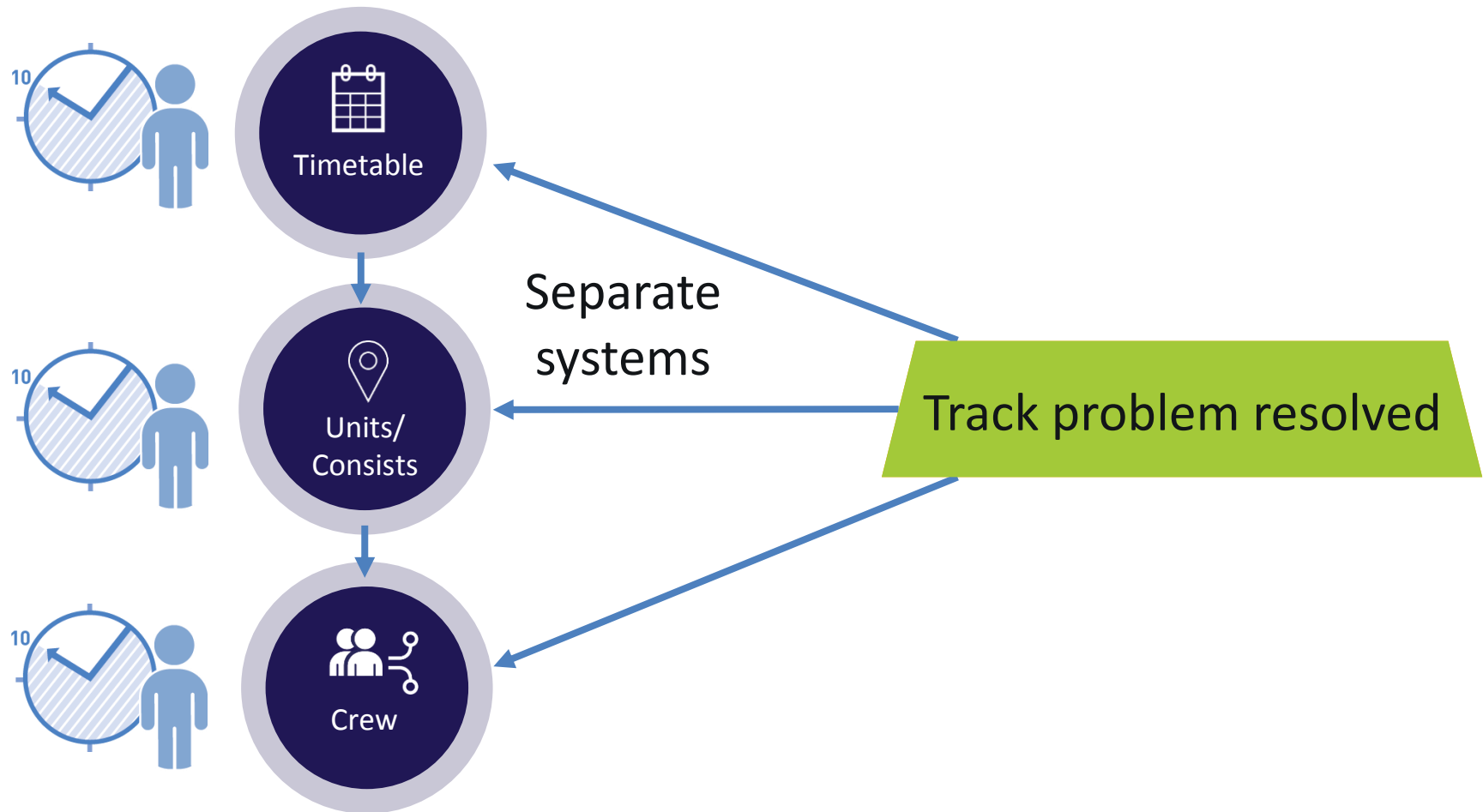




# The changing landscape of rail operations

Trend		Effect on Operations
Digitalizing and modernizing customer experience	➔	Increased data availability
New/changing regulations on crew hours of service, fleet	➔	Ripple effects on future schedules
Increasing customer expectations	➔	Operations are under a magnifying glass

# Most planning processes still look like this...



# What's difficult about the day of operations?



## Beat the clock

Time is of the essence



## Rubber meets the road

This is where all planning issues come to light



## Communication

Changing many schedules quickly would be asking for chaos

# Shifting to centralized operations

## Benefits

- Faster response time to disruptions

## Challenges

- Need for improved communication, coordination
- Technology has not kept pace with organizational decisions



# Quintiq founding vision



Develop a single application capable of solving any type of planning puzzle

Used by  
companies  
in over 80  
countries

> 1,000  
employees

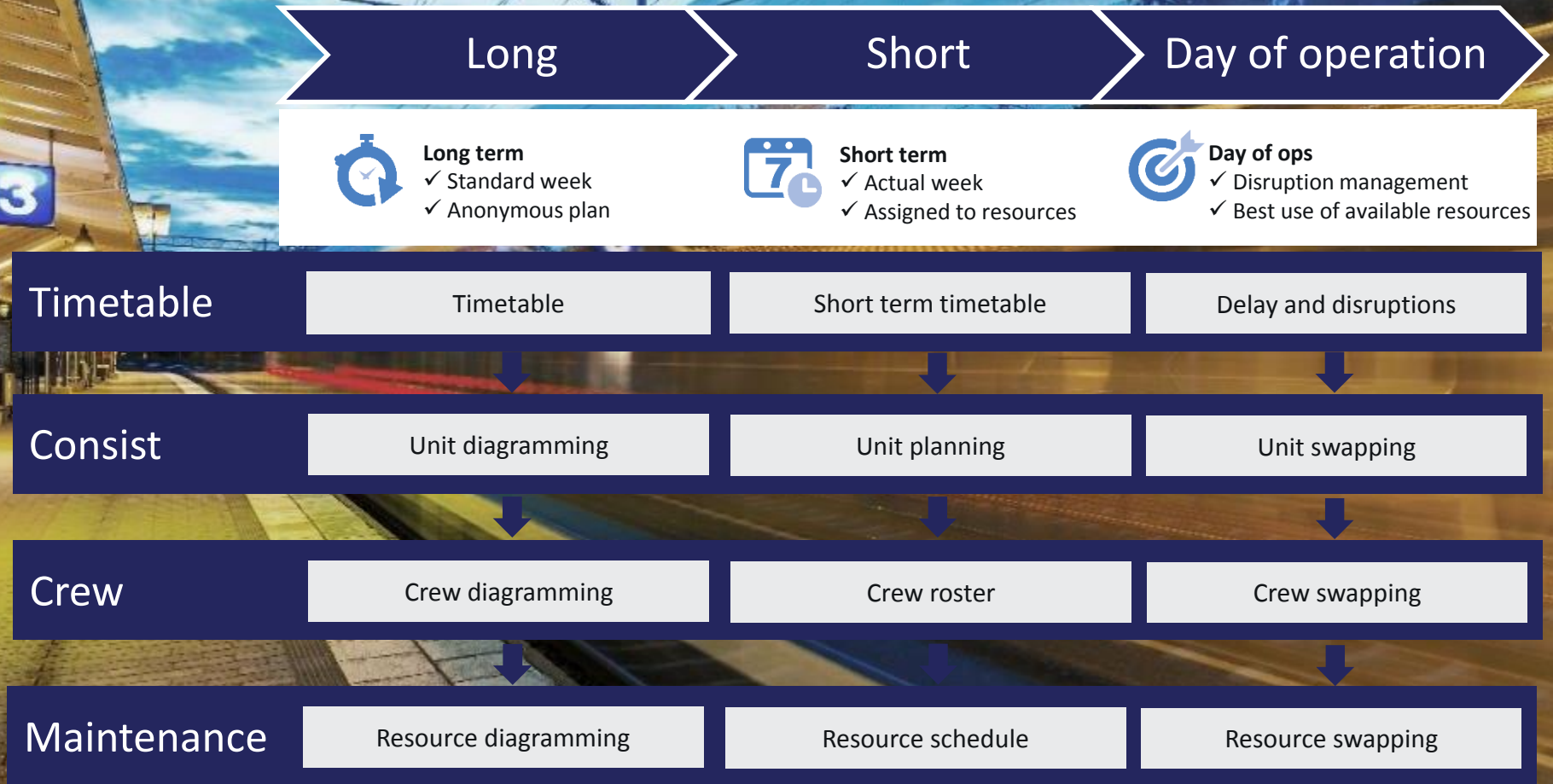
12,000 users

Founded in  
1997

> 300  
customers  
worldwide

A Dassault  
Systèmes  
company  
since 2014

# Quintiq in Rail





# Case study: Queensland Rail

Challenge	<ul style="list-style-type: none"> <li>• <b>Improve visibility and reduce ad hoc communication</b> of decisions between fleet, timetabling planning and execution functions.</li> <li>• <b>Modernize the operations control center</b>, and replace paper graphing and manual tracking of actual train movements.</li> <li>• Make <b>efficient use of existing rolling stock</b>, and provide a scalable solution to accommodate large additions of new third-party units (New Generation Rollingstock (NGR)) to the existing fleet.</li> </ul>
Solution	<ul style="list-style-type: none"> <li>• <b>A fully integrated platform for planning, scheduling and day-of-operations execution</b>, including Quintiq's timetabling and fleet modules.</li> <li>• Electronic train graphs that automatically track planned vs. actuals, eliminating the need for paper graphs and manual mark-ups by network controllers.</li> </ul>
Why Quintiq?	<ul style="list-style-type: none"> <li>• The Quintiq Fleet Planning and Scheduling solution stood out from competitors for its reputation, ease of use and expandability.</li> <li>• Quintiq was able to develop an <b>integrated end-to-end planning system</b> that synchronizes the planning and scheduling of new and existing fleet.</li> </ul>
Benefits	<ul style="list-style-type: none"> <li>• <b>Better decision making</b> and improved quality of plans leading to <b>reduction of avoidable conflicts</b> on the day of operations.</li> <li>• Seamless visibility of decisions across planning horizons and functions leading to higher efficiency and productivity.</li> <li>• Enhanced visibility leads to better incident management and recovery capabilities on the day of operations.</li> <li>• Reduced stress in the operations control center due to reduction of ad hoc communications, and high levels of visibility.</li> </ul>

## Fast facts

### Industry

Government,  
Passenger Rail

### Annual revenue

\$ 1.9 billion

### Number of employees

5,800

### Location

Queensland, Australia

### Solution

Dynamic Timetabling  
& Fleet Allocation for  
the Integrated Train  
Operating Solution  
(ITOPS) Project

### Customer since

February 2016

# Benefits of integrated planning

Allows for scalability  
of all processes



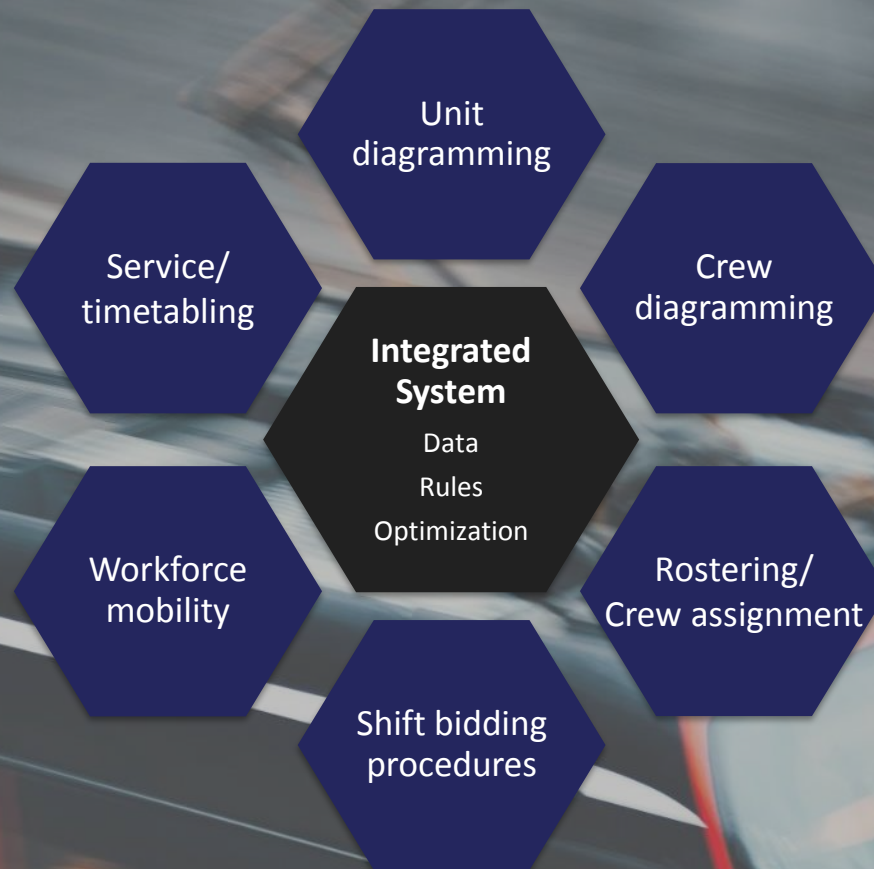
Flexibility for changing  
nature of transit  
operations



Improved efficiency and  
responsiveness across all  
planning horizons

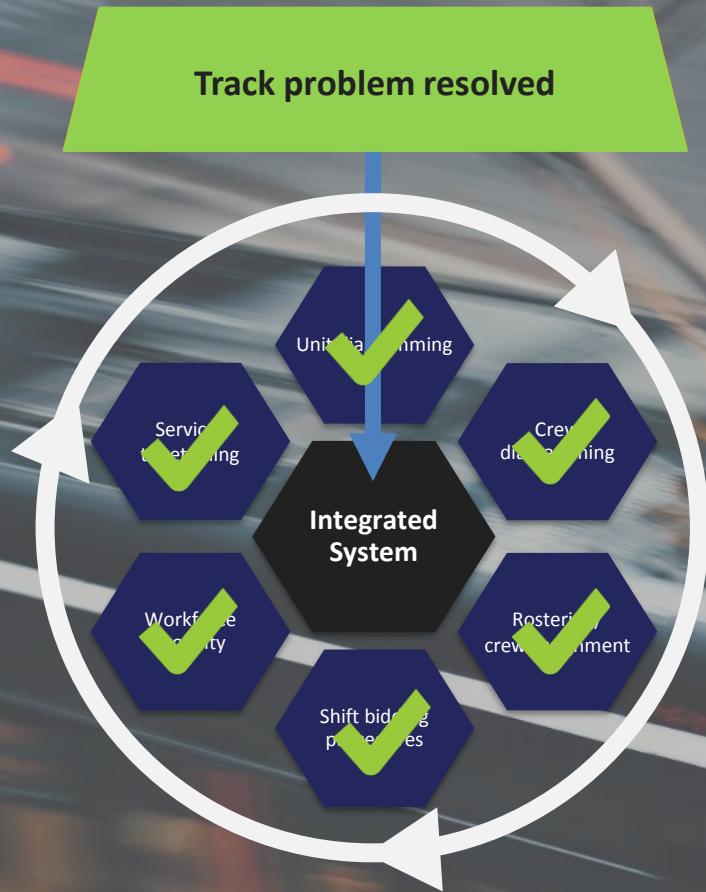


# Integrated planning – what does it look like?





# Integrated planning in action

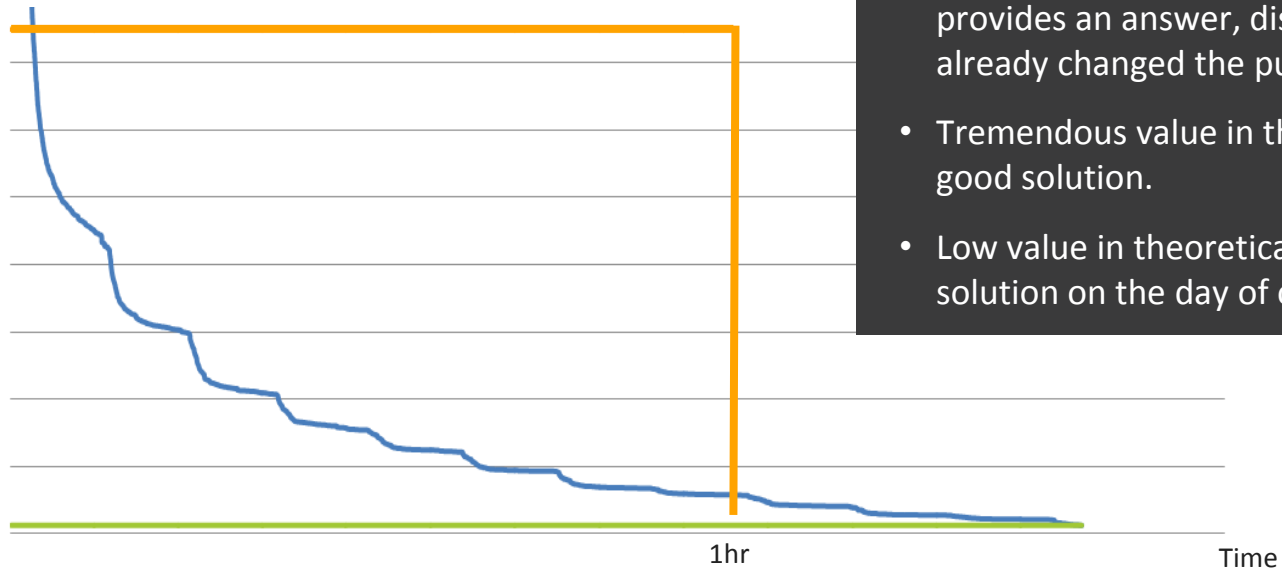


## Key Benefits

- Quicker decision making
- Work from the same data
- Better feedback loop

# The benefits of continuous optimization

Solution KPI  
(lower is better)



- By the time batch optimization provides an answer, disruptions have already changed the puzzle.
- Tremendous value in the intermediate, good solution.
- Low value in theoretically optimal solution on the day of operation.



Optimal solution



Batch optimization



Continuous optimization



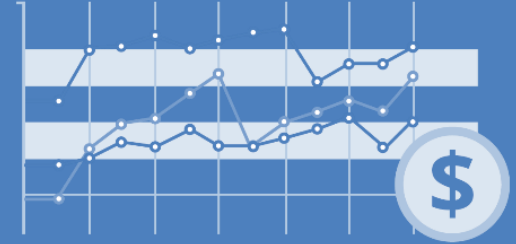
# Effects on costs, service levels, dispatching



**Visibility into  
real-time data,  
resource  
availability**



**Understand  
trickle-down  
effects on future  
plans**



**Aligned to  
strategic goals  
like cost  
reduction**



# Keys to implementing an integrated planning solution



Assess speed and  
quality of decision  
making and  
optimization



Model the solution  
to be 100% fit



Continue to break  
down siloes

## Another way of looking at it...

### Past



#### ERP / EAM

- System of Record
- What, When, Who, Where?

### Present



#### On-Corridor Control Systems

- Real-time execution of events
- Real-time feedback

### Future



#### Advanced Operations Systems

- System of Differentiation
- Plan, predict, respond

# Integrated Planning in the Age of the Operations Control Center

**Join us tonight at the  
Quintiq Reception**  
*Latrobe Room, 6-8PM*

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