



SAP Leonardo Live

Not just another business conference

Fraport: Digital Operations

Scheduling and planning maintenance activities @ Frankfurt Airport

Horst Zieher, Fraport
Miguel von Rotz, SAP

PUBLIC

Operating digital in order to maintain the Frankfurt Airport

Horst Zieher, Fraport AG

July 2017

SAP Leonardo Live Event, Frankfurt



Agenda

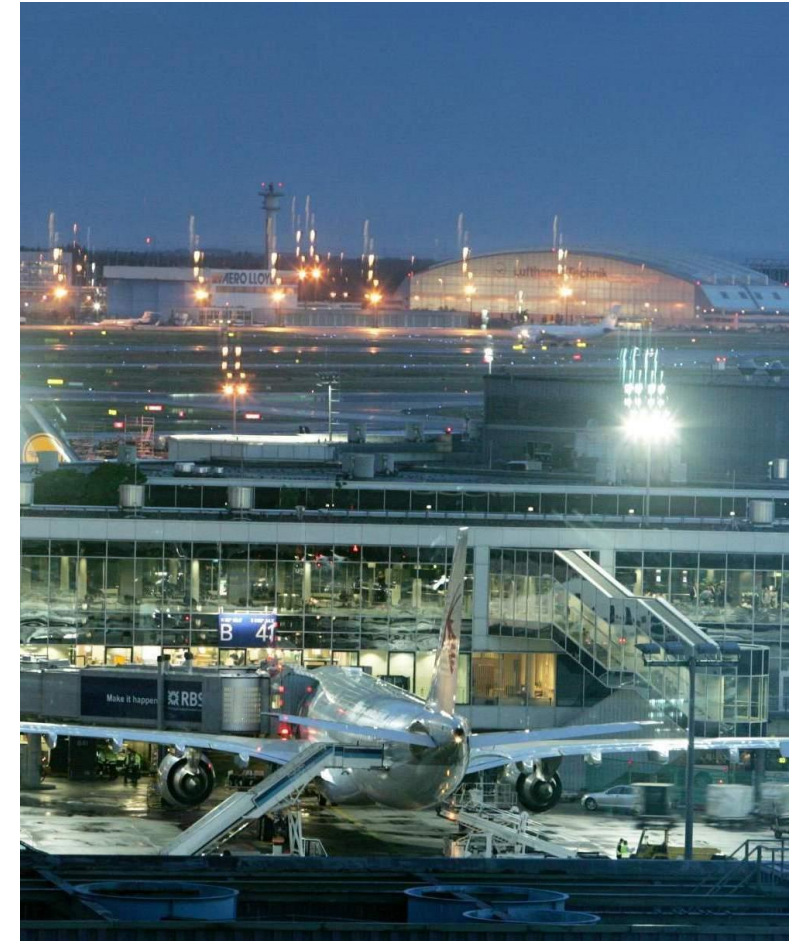
- **Company profile Fraport**
- Asset maintenance processes and gate operations
- Key benefits and outlook

Frankfurt Airport – our Home Base

- about 21 sq km area
- 100 aircraft movements per hour
- 2 full-service runways + 1 runway for take off + 1 runway for landing
- 2 passenger terminals
- 1 AIRail Terminal
- 152 flight gates
- 203 aircraft positions (64 terminal position)
- Air Cargo rail connection
- 80 km baggage transportation sys., max. speed 18 km/h

On a single day*:

- 167.000 passengers
- 75.000 pieces of baggage
- 5.900 metric tons of freight
- 570 trains serving the airport station



**average figures of 2016*

Airport Facility Management

FM values:

- 1,367 sq km in terminal 1 + 2 (191 Football fields)
- 46.950 rooms
- 35.660 Lighting equipments on runway and positioning area
- 6,7 sq km runway and positions area (940 Football fields)
- 150 km drive ways
- 9,4 sq km green areas
- 20.000 Vehicles and special equipment
- 7.000 building services
- 450.000 lamps (Terminal 1)
- ca. 1.400 km cable network



Tasks:

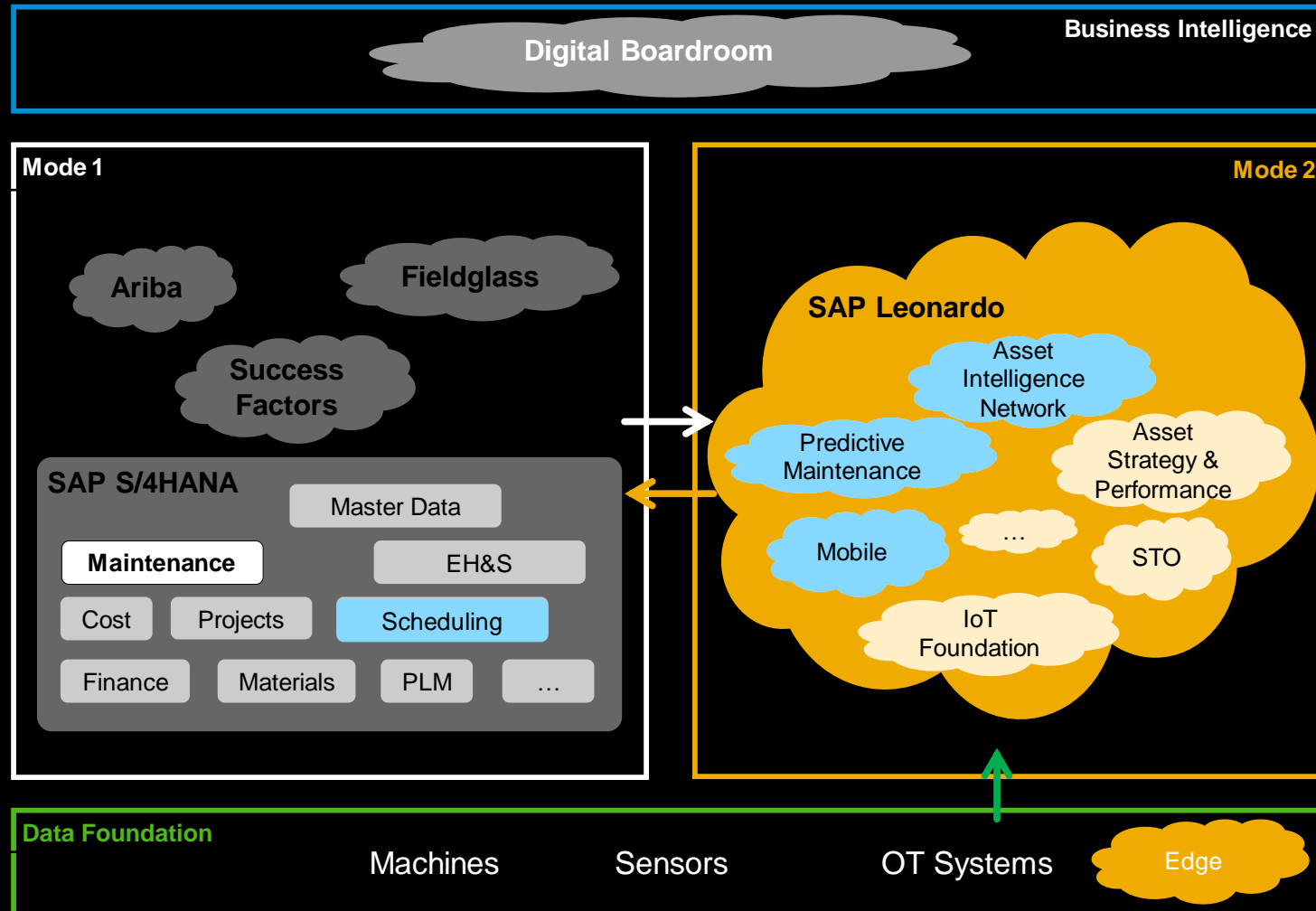
- Provision of all technical and infrastructural services (operators)
- Eliminate disruptions
- Management of technical equipment (Operation and maintenance)
- Ensuring the proper operation and availability of all the technical equipment and the infrastructure
- Overall responsibility for the technical safety (legal requirements)
- Optimization of building operations and infrastructure

Business requirements for scheduling and planning – Example “Maintenance at Gates”

- Coordination between maintenance responsible persons and operation of the terminal for gate availability
- Consideration gate availability for dispatching of maintenance activities
- Trade-spreading planning (for example electrics, mechanics)
- Consideration of employees availabilities

Architecture

Envisioned Logical Architecture for Asset Management Strategic Direction



Run Businesses

Hyper-automate business processes

Embrace Data

Orchestrate data of any volume, velocity, and variety

Steer Businesses

Deliver insights to drive strategic decisions

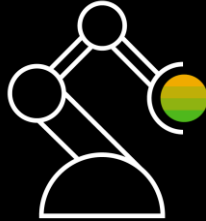
Differentiate Businesses

Intelligently connect people, things, and businesses

SAP Asset Management – Maintenance scheduling and planning

SAP Leonardo

Asset availability



- Employees, Teams (Skills, Availabilities)
- 3rd Parties
- Materials and components
- Tools and vehicles

Plantafel - 01.04.2012 bis 15.05.2012

Class	Status	48180
Class Smith	ACTIVE	+48180
Andreas Lapez	ACTIVE	+48180
Dirk Mayler	ACTIVE	+48180
Monica Jato	ACTIVE	+48180
Daniela Gratz	ACTIVE	+48180

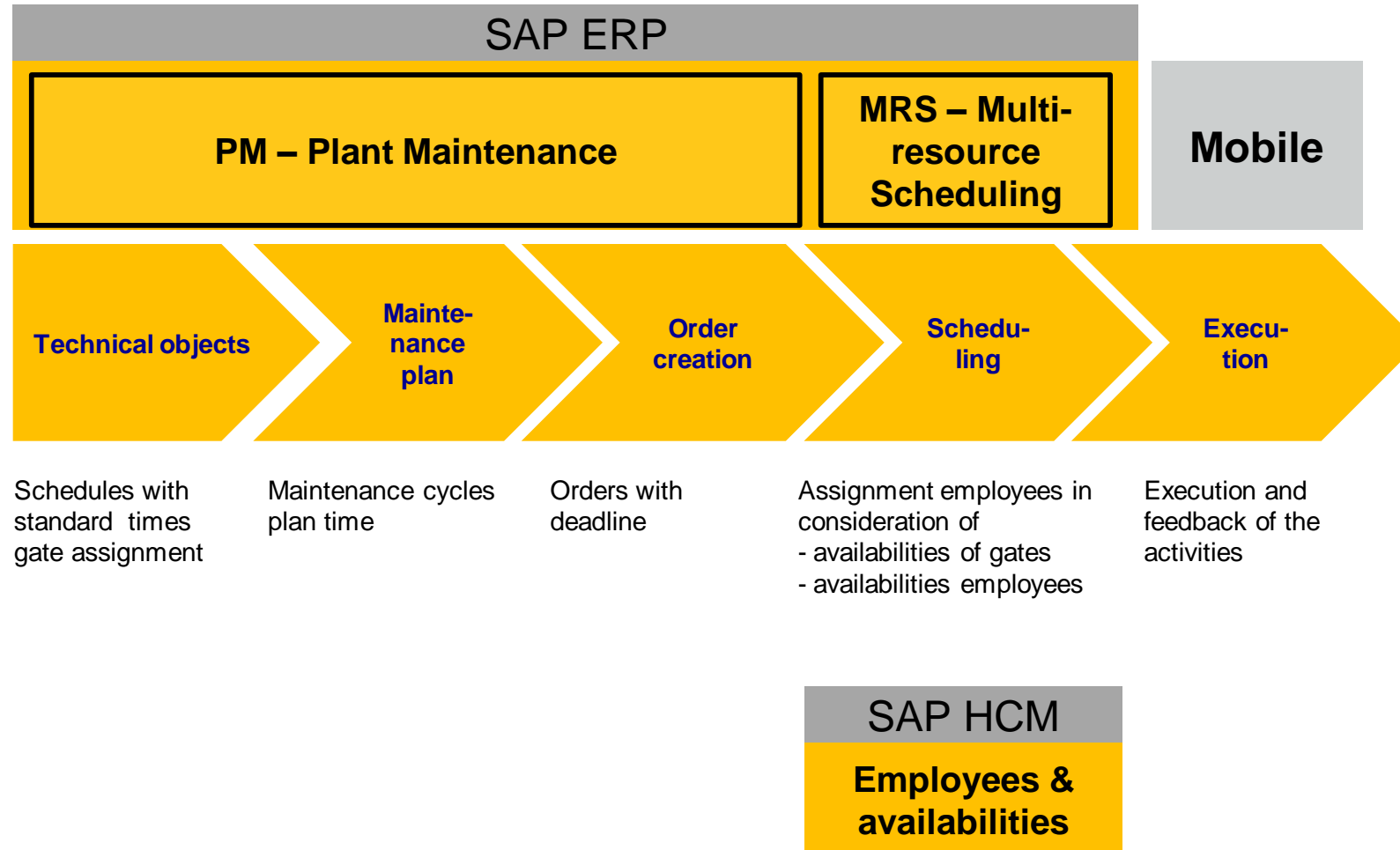
SAP Multiresource Scheduling

View	Assignments	Search for Suitable Resources	Sort	Sort Priority	Display														
DRAFT	Status	Demand	ID	Description	Organizational Unit	Name of Organizational Unit	Milestone (example)	Milestone (example)	Start Date	Start Time	End Date	Res. Req. Found by Contact Person	End Time	Duration	Unit	Total Work	Unit	Disc.	Person
				Installation of Elevator	Supervisor 1 Team	Supervisor 1 Team	01.01.2012	31.12.2012	02.04.2012	08:00:00	13.04.2012		18:00:00	24.000	H	24.000	H	100	1
				Installation of Elevator	Supervisor 1 Team	Supervisor 1 Team	01.01.2012	31.12.2012	05.04.2012	08:00:00	10.04.2012		18:00:00	30.000	H	30.000	H	100	1
				Installation (Qualification required)	Supervisor 1 Team	Supervisor 1 Team	01.01.2012	31.12.2012	08.04.2012	08:00:00	09.04.2012	Dirk SMITH, JOCHEN LÖBKE	08:00:00	40.0	HR	40.0	HR	100	1
				Installation (Organizer)	Supervisor 1 Team	Supervisor 1 Team	01.01.2012	31.12.2012	08.04.2012	08:00:00	10.04.2012	Daniela Gratz, Dirk Mayler	08:00:00	24.0	HR	24.0	HR	100	1
				Installation (Organizer)	Supervisor 1 Team	Supervisor 1 Team	01.01.2012	31.12.2012	12.04.2012	08:00:00	14.04.2012	Jocher Lapez	08:00:00	20.0	HR	20.0	HR	100	1
				Installation	Supervisor 1 Team	Supervisor 1 Team	01.01.2012	31.12.2012	11.04.2012	08:00:00	21.04.2012		08:00:00	0.0	HR	0.0	HR	100	1
				Installation (AZ-Installation)	Supervisor 1 Team	Supervisor 1 Team	01.01.2012	31.12.2012	16.04.2012	08:00:00	01.05.2012		08:00:00	32.0	HR	32.0	HR	100	1
				Installation (VW-Installation)	Supervisor 1 Team	Supervisor 1 Team	01.01.2012	31.12.2012	10.04.2012	08:00:00	21.04.2012		08:00:00	16.0	HR	16.0	HR	100	1
				Installation (Customer PZ-Motor)	Supervisor 1 Team	Supervisor 1 Team	01.01.2012	31.12.2012	10.04.2012	08:00:00	20.04.2012		08:00:00	16.0	HR	16.0	HR	100	1



- Projects
- Orders, Notifications
- Short- and mid-term

Scenario “Maintenance activities at the gate” in SAP EAM with SAP MRS



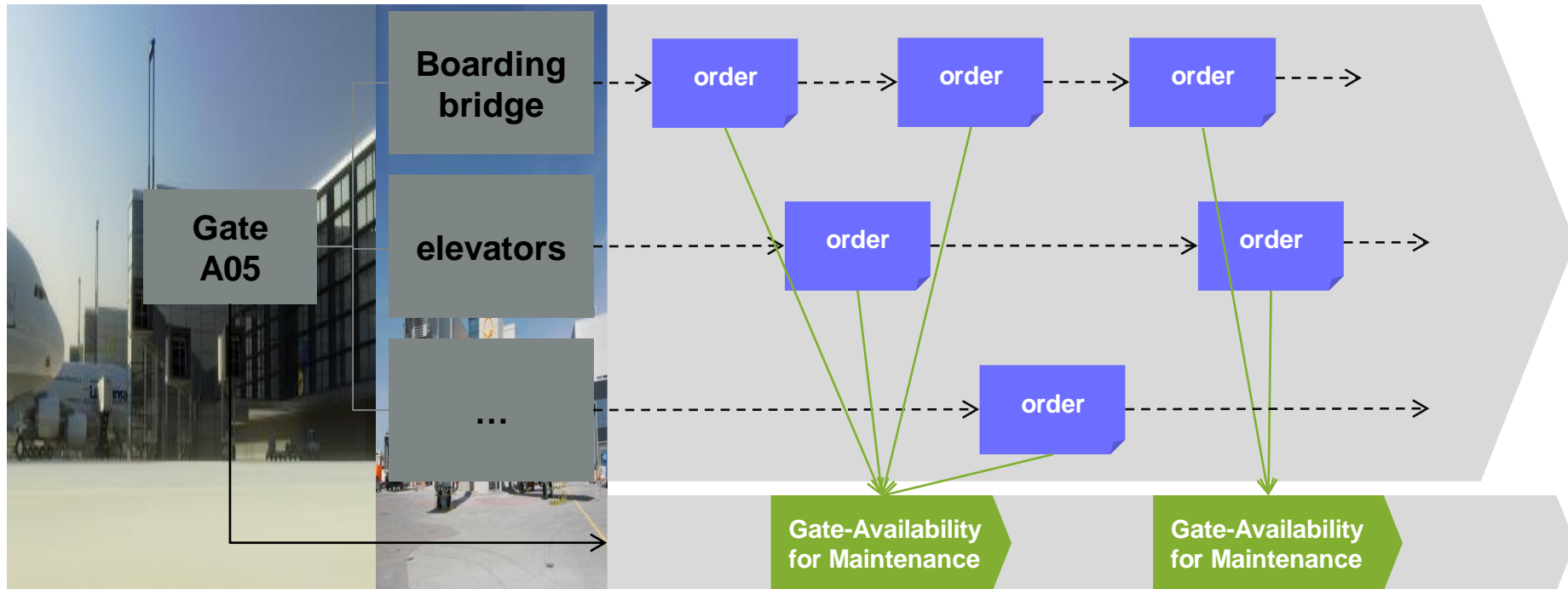
Agenda

- Company profile Fraport
- **Asset maintenance processes and gate operations**
- Key benefits and outlook

Scenario “Maintenance activities at the gate”

structure :

Maintenance requirements:



employees

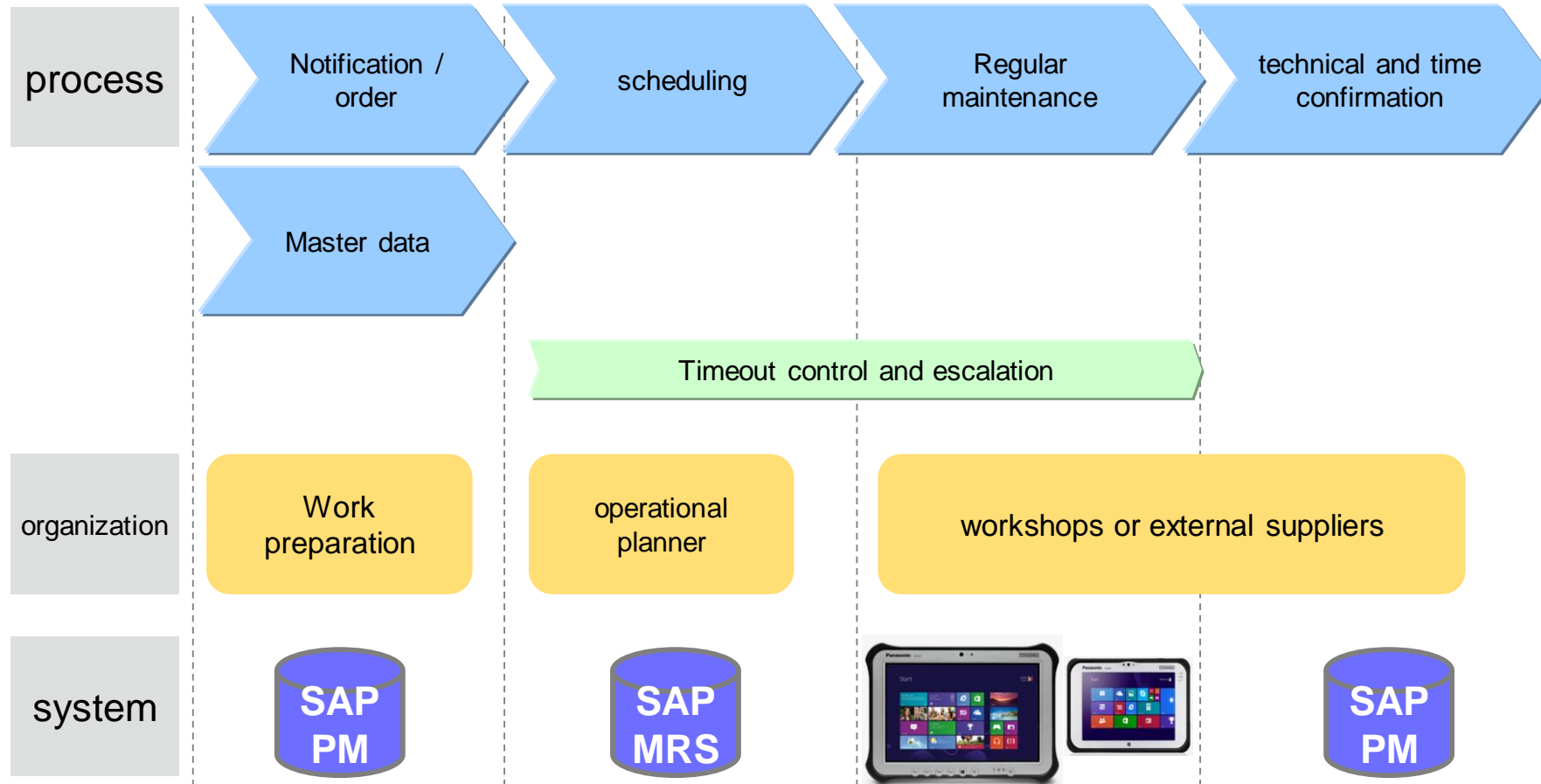


Introduction of SAP Multi-Resource Scheduling for Scheduling and Planning

SAP Multi-Resource Scheduling is the Solution to manage resources in maintenance, service and project business. Main functions of SAP MRS are:

- Capacity management
- Qualification management
- Intuitive graphically planning board
- Functions for manual, automatic and optimized planning
- Strong integration in other SAP components and processes

Regular maintenance after implementation SAP-EAM and -MRS



SAP MRS planning board at Fraport

Favorite Layout of our users

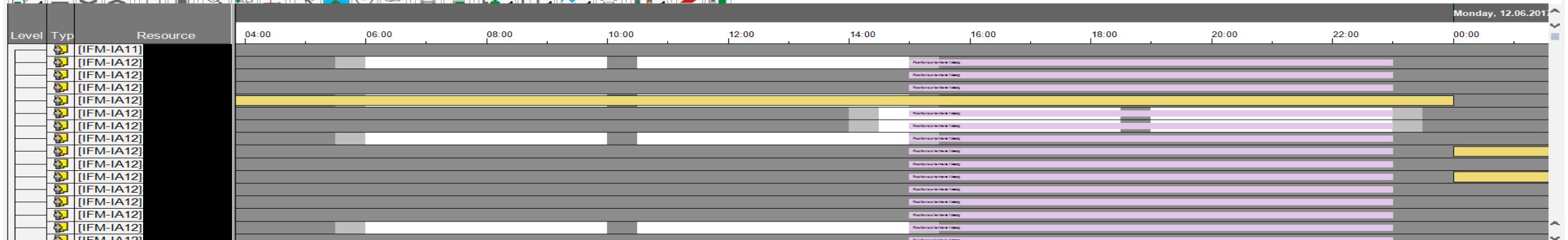
Resource Planning from 10.06.2017 to 20.07.2017

Resource Planning from 10.06.2017 to 20.07.2017

Assignment Time Allocation Alternative Working Time Details Delete Refresh Time Data

Resource Airfield- und Anlagentechnik not yet created in the MRS system

Monday, 12.06.2017



11.06.2017 | 08:32:00 | Reo

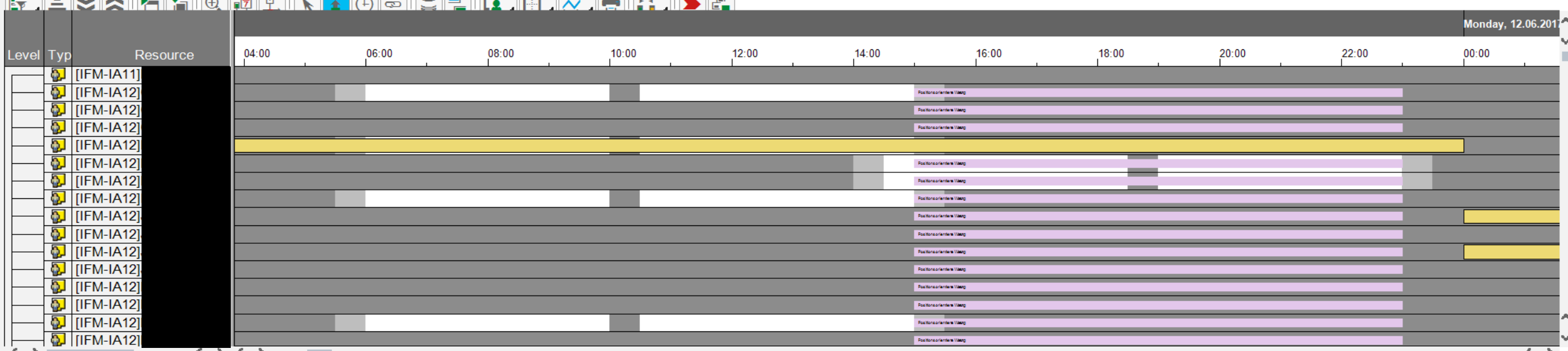
POW	Plnd St.Dt	Node Te	ID of Complex Demand	Planning Stat	Duratio	Roo	Number of Resources	No. of Assignmen	PlndSt.Tm	Class Model	Class Description	Equipme	Funcionr
A16	01.05.2017	2024	14900271		6,300		1	0	07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900272		6,300		1	0	07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900307		4,000		1	0	07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900308		4,000		1	0	07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900363		0,300		1	0	07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900364		0,300		1	0	07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A17	01.05.2017	2024	14900464		0,300		1	0	07:00:00	449 A17_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10224825	F-S
A16	01.05.2017	2024	14900471		0,200		1	0	07:00:00	449 A16_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10058798	F-S
A16	01.05.2017	2024	14900472		0,200		1	0	07:00:00	449 A16_400Hz_Kabel_2	Starkstromanlagen, sonstiges	10058799	F-S
A17	01.05.2017	2024	14900473		0,200		1	0	07:00:00	449 A17_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10224827	F-S
A18	01.05.2017	2024	14900474		0,200		1	0	07:00:00	449 A18_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10058802	F-S
A18	01.05.2017	2024	14900475		0,200		1	0	07:00:00	449 A18_400Hz_Kabel_2	Starkstromanlagen, sonstiges	10058803	F-S

Toolbar with icons for navigation, search, and settings.

Resource Planning from 10.06.2017 to 20.07.2017

Secondary toolbar with icons for Assignment, Time Allocation, Alternative Working Time, Details, Delete, and Refresh Time Data.

Resource Airfield- und Anlagentechnik not yet created in the MRS system



11.06.2017 | 08:32:00 | Reo

Toolbar for the table view, including icons for sorting, filtering, and navigation.

POW	Plnd St.Dt	Node Te	ID of Complex Demand	Planning Stat	Duratio	Roo	Number of Resources	No. of Assignmen	PlndSt.Tm.	Class Model	Class Description	Equipme	Funcior
A16	01.05.2017	2024	14900271		6,300		1	0	07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900272		6,300		1	0	07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900307		4,000		1	0	07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900308		4,000		1	0	07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900363		0,300		1	0	07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900364		0,300		1	0	07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A17	01.05.2017	2024	14900464		0,300		1	0	07:00:00	449 A17_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10224825	F-S
A16	01.05.2017	2024	14900471		0,200		1	0	07:00:00	449 A16_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10058798	F-S
A16	01.05.2017	2024	14900472		0,200		1	0	07:00:00	449 A16_400Hz_Kabel_2	Starkstromanlagen, sonstiges	10058799	F-S
A17	01.05.2017	2024	14900473		0,200		1	0	07:00:00	449 A17_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10224827	F-S
A18	01.05.2017	2024	14900474		0,200		1	0	07:00:00	449 A18_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10058802	F-S
A18	01.05.2017	2024	14900475		0,200		1	0	07:00:00	449 A18_400Hz_Kabel_2	Starkstromanlagen, sonstiges	10058803	F-S

SAP MRS planning board with example gate

Selection of order operations by gate for planning

Resource Planning from 10.06.2017 to 20.07.2017

Resource Planning from 10.06.2017 to 20.07.2017

Assignment Time Allocation Alternative Working Time Details Delete Refresh Time Data

Resource Airfield- und Anlagentechnik not yet created in the MRS system

Monday, 12.06.2017

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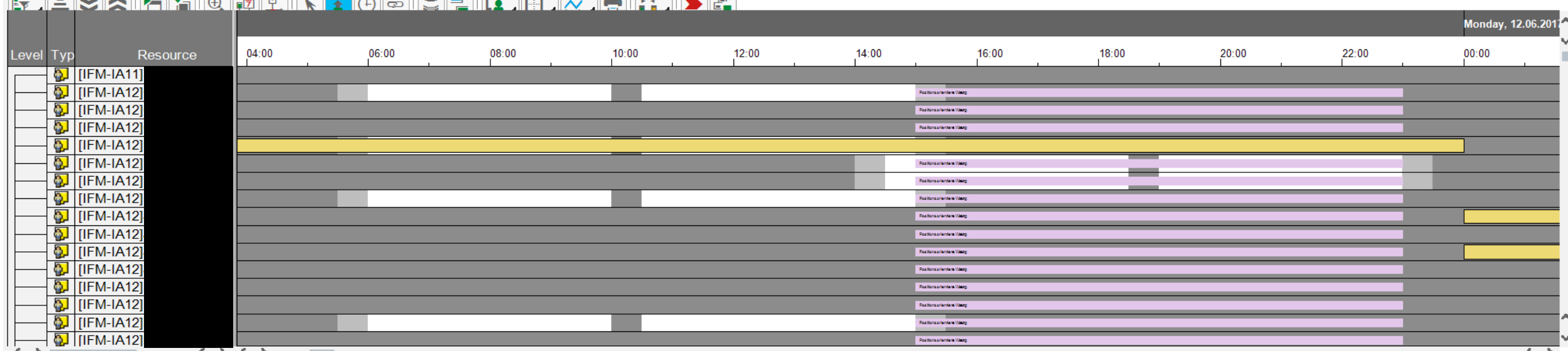
POW	Plnd St.Dt	Node Te.	ID of Complex Demand	Planning Stat.	Duratio	Roo	Number of Resources	No. of Assignmen	PlndSt.Tm.	Class Model	Class Description	Equipme	Funcion
A16	01.05.2017	2024	14900271		6,300		1	1	0 07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900272		6,300		1	1	0 07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
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A18	01.05.2017	2024	14900308		4,000		1	1	0 07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900363		0,300		1	1	0 07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900364		0,300		1	1	0 07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A17	01.05.2017	2024	14900464		0,300		1	1	0 07:00:00	449 A17_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10224825	F-S
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A18	01.05.2017	2024	14900475		0,200		1	1	0 07:00:00	449 A18_400Hz_Kabel_2	Starkstromanlagen, sonstiges	10058803	F-S

Toolbar with icons for navigation and actions: back, forward, search, print, etc.

Resource Planning from 10.06.2017 to 20.07.2017

Secondary toolbar with icons for Assignment, Time Allocation, Alternative Working Time, Details, Delete, Refresh Time Data.

0 Resource Airfield- und Anlagentechnik not yet created in the MRS system



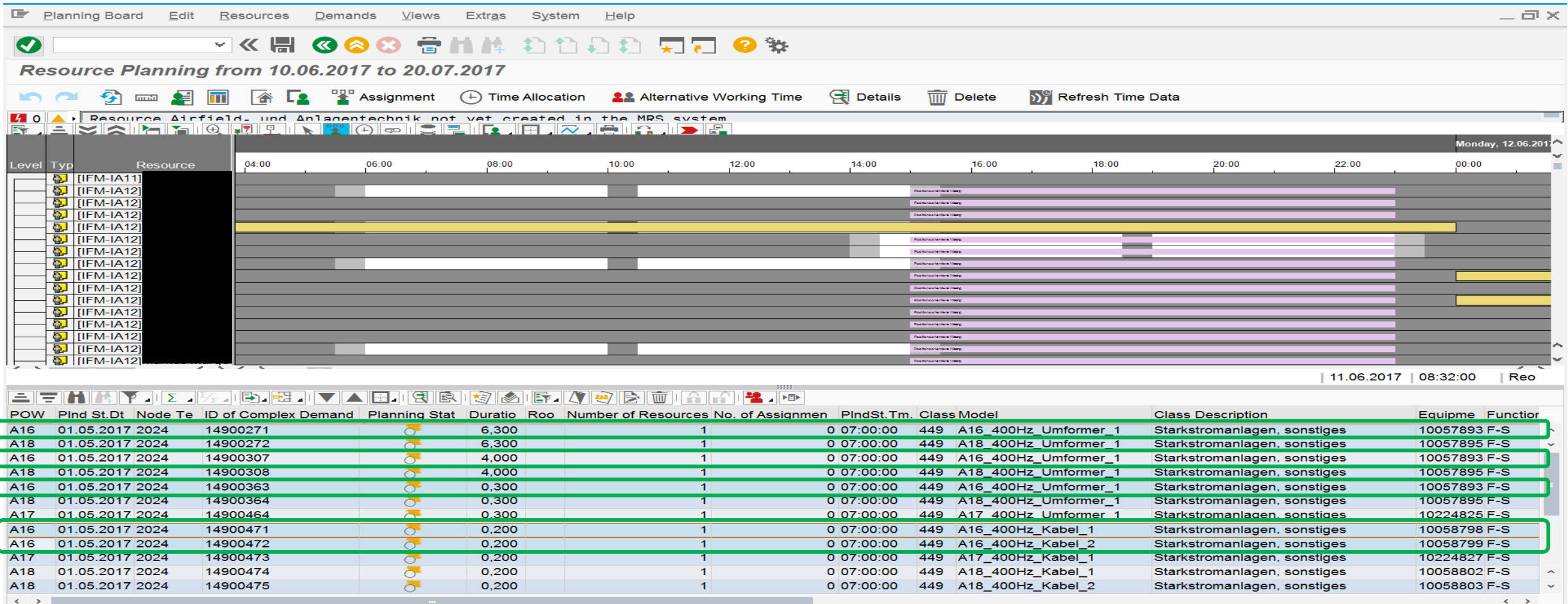
11.06.2017 | 08:32:00 | Reo

Table toolbar with icons for sorting, filtering, and other table operations.

POW	Plnd St.Dt	Node Te...	ID of Complex Demand	Planning Stat...	Duratio...	Roo...	Number of Resources	No. of Assignmen...	PlndSt. Tm.	Class Model	Class Description	Equipme...	Funcior
A16	01.05.2017	2024	14900271		6,300		1	0	07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900272		6,300		1	0	07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900307		4,000		1	0	07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900308		4,000		1	0	07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900363		0,300		1	0	07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900364		0,300		1	0	07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A17	01.05.2017	2024	14900464		0,300		1	0	07:00:00	449 A17_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10224825	F-S
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A18	01.05.2017	2024	14900474		0,200		1	0	07:00:00	449 A18_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10058802	F-S
A18	01.05.2017	2024	14900475		0,200		1	0	07:00:00	449 A18_400Hz_Kabel_2	Starkstromanlagen, sonstiges	10058803	F-S

SAP MRS planning board with example gate

Assignment of selected order operations by Drag & Drop or automatically to time window (time allocation for position-oriented maintenance)



The screenshot displays the SAP MRS planning board interface. The top menu includes 'Planning Board', 'Edit', 'Resources', 'Demands', 'Views', 'Extras', 'System', and 'Help'. The main title is 'Resource Planning from 10.06.2017 to 20.07.2017'. Below this, there are navigation icons and buttons for 'Assignment', 'Time Allocation', 'Alternative Working Time', 'Details', 'Delete', and 'Refresh Time Data'. A warning message states: 'Resource Airfield- und Anlagentechnik not yet created in the MRS system'. The main area is a Gantt chart showing resource assignments for various tasks over time, with a time scale from 04:00 to 00:00. The resource list on the left includes 'Level', 'Type', and 'Resource' columns, with entries like 'IFM-IA11' and 'IFM-IA12'. The bottom section shows a table of demand data with columns for 'POW', 'Plnd St.Dt', 'Node Te', 'ID of Complex Demand', 'Planning Stat', 'Duratio', 'Roo', 'Number of Resources', 'No. of Assignmen', 'PlndSt.Tm.', 'Class Model', 'Class Description', 'Equipme', and 'Funcionr'. Several rows in this table are highlighted with green boxes.

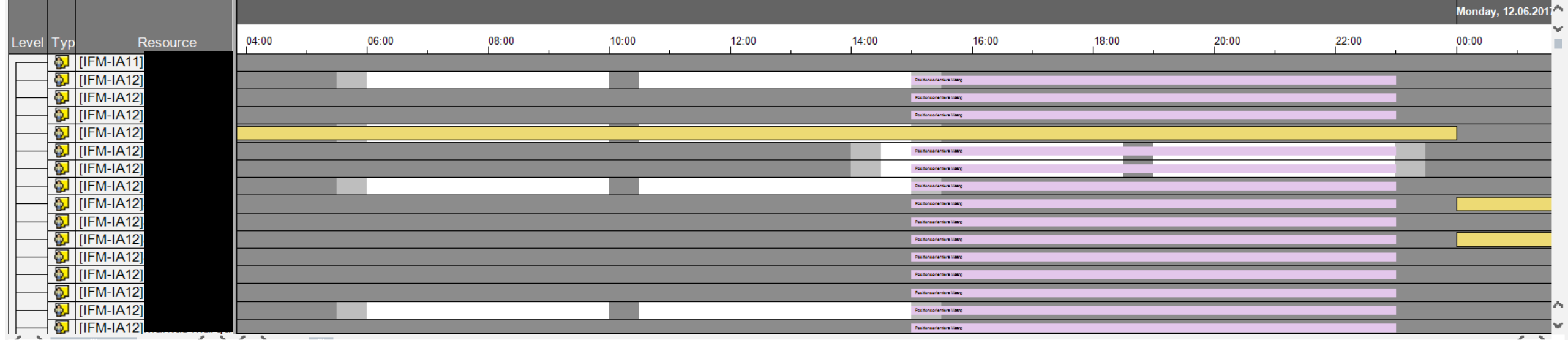
POW	Plnd St.Dt	Node Te	ID of Complex Demand	Planning Stat	Duratio	Roo	Number of Resources	No. of Assignmen	PlndSt.Tm.	Class Model	Class Description	Equipme	Funcionr
A16	01.05.2017	2024	14900271		6,300		1	1	0 07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900272		6,300		1	1	0 07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900307		4,000		1	1	0 07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900308		4,000		1	1	0 07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900363		0,300		1	1	0 07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900364		0,300		1	1	0 07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A17	01.05.2017	2024	14900464		0,300		1	1	0 07:00:00	449 A17_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10224825	F-S
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A17	01.05.2017	2024	14900473		0,200		1	1	0 07:00:00	449 A17_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10224827	F-S
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A18	01.05.2017	2024	14900475		0,200		1	1	0 07:00:00	449 A18_400Hz_Kabel_2	Starkstromanlagen, sonstiges	10058803	F-S

Navigation icons: back, forward, search, print, refresh, etc.

Resource Planning from 10.06.2017 to 20.07.2017

Assignment Time Allocation Alternative Working Time Details Delete Refresh Time Data

Resource Airfield- und Anlagentechnik not yet created in the MRS system



11.06.2017 08:32:00 | Reo

Table navigation icons: filter, sort, zoom, etc.

POW	Plnd St.Dt	Node Te	ID of Complex Demand	Planning Stat	Duratio	Roo	Number of Resources	No. of Assignmen	PlndSt.Tm.	Class Model	Class Description	Equipme	Funcior
A16	01.05.2017	2024	14900271		6,300		1	1	0 07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
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A16	01.05.2017	2024	14900307		4,000		1	1	0 07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900308		4,000		1	1	0 07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A16	01.05.2017	2024	14900363		0,300		1	1	0 07:00:00	449 A16_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057893	F-S
A18	01.05.2017	2024	14900364		0,300		1	1	0 07:00:00	449 A18_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10057895	F-S
A17	01.05.2017	2024	14900464		0,300		1	1	0 07:00:00	449 A17_400Hz_Umformer_1	Starkstromanlagen, sonstiges	10224825	F-S
A16	01.05.2017	2024	14900471		0,200		1	1	0 07:00:00	449 A16_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10058798	F-S
A16	01.05.2017	2024	14900472		0,200		1	1	0 07:00:00	449 A16_400Hz_Kabel_2	Starkstromanlagen, sonstiges	10058799	F-S
A17	01.05.2017	2024	14900473		0,200		1	1	0 07:00:00	449 A17_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10224827	F-S
A18	01.05.2017	2024	14900474		0,200		1	1	0 07:00:00	449 A18_400Hz_Kabel_1	Starkstromanlagen, sonstiges	10058802	F-S
A18	01.05.2017	2024	14900475		0,200		1	1	0 07:00:00	449 A18_400Hz_Kabel_2	Starkstromanlagen, sonstiges	10058803	F-S

Agenda

- Company profile Fraport
- Asset maintenance processes and gate operations
- **Key benefits and outlook**

Goals achieved with SAP MRS in combination with SAP EAM

- Positive User Acceptance
- One central solution to manage Availabilities of technical objects, Maintenance Activities with time and Employee availabilities
- Easier collaboration across different areas
- Schedule compliance
- Reduction of „paper-based“ work
- Flawless process integration supported through integrated SAP Solutions

Outlook

- Regular feedback sessions with business
 - Continuous knowledge transfer and experience exchange with Key Users
 - Business Requirement (on behalf of Key Users)
- Qualification management
- Using new functionalities of MRS10.0
 - Availability of technical objects
 - NN-resources
 - WEBUI

Thank you for your attention!

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Thank you.

Digital Operation @ Fraport