



# (Selected) Project Management Processes at the XFEL

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XFEL Project Office



# XFEL User Facility under Construction

## 2008-2017

6 experimental  
station

- Length 3,4 km
- total tunnel length ca. 6 km
- Depth 6 – 38 m
- Start user operation Q2/2017

European  
XFELBetriebsgelände  
SchenefeldBetriebsgelände  
Osdorfer BornBetriebsgelände  
DESY-Bahrenfeld

DESY-Gelände

200 m Undulatoren

2 km LINAC in SC RF Technologie

3,4 km

$E_{\text{beam}} = 17,5 \text{ GeV}$

- pulse duration:  $\sim 10 - 100 \text{ fs}$
- up to 27000 pulses/s
- Wave length  $5 \rightarrow 0.04 \text{ nm}$

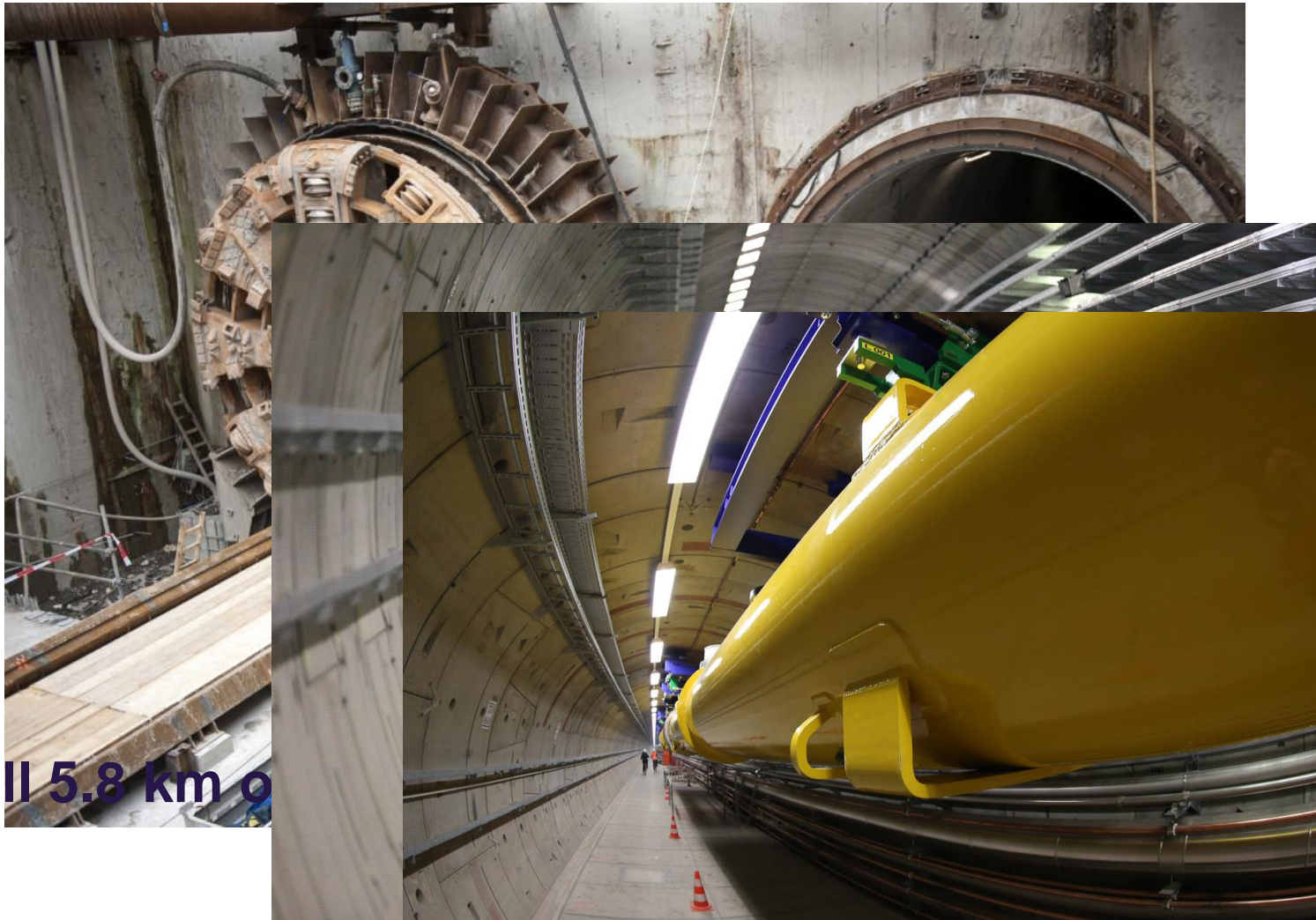
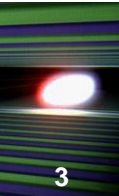
### Status:

Status August 2007, © DESY, Hamburg  
Luftaufnahmen:  
a) DLR/FHM, Landesbetrieb Geo- und Vermessung (UGV)  
b) DLR © JVerma S-H 2007: S 989/07

- tunnels are completed, above ground under construction
- series fabrication of all components in full swing
- general infrastructure installation in full swing (staged)
- machine installation began 2013 with injector



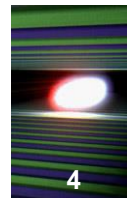
# Underground Civil Construction finished



all 5.8 km of



# Series Production of Components in Full Swing

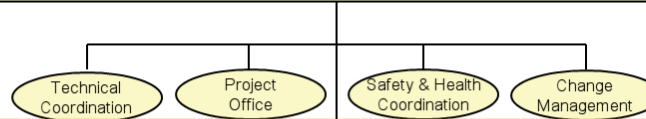
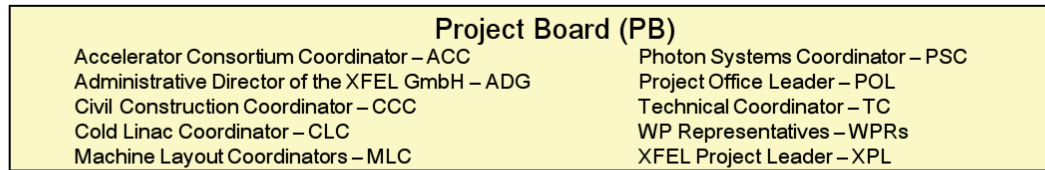


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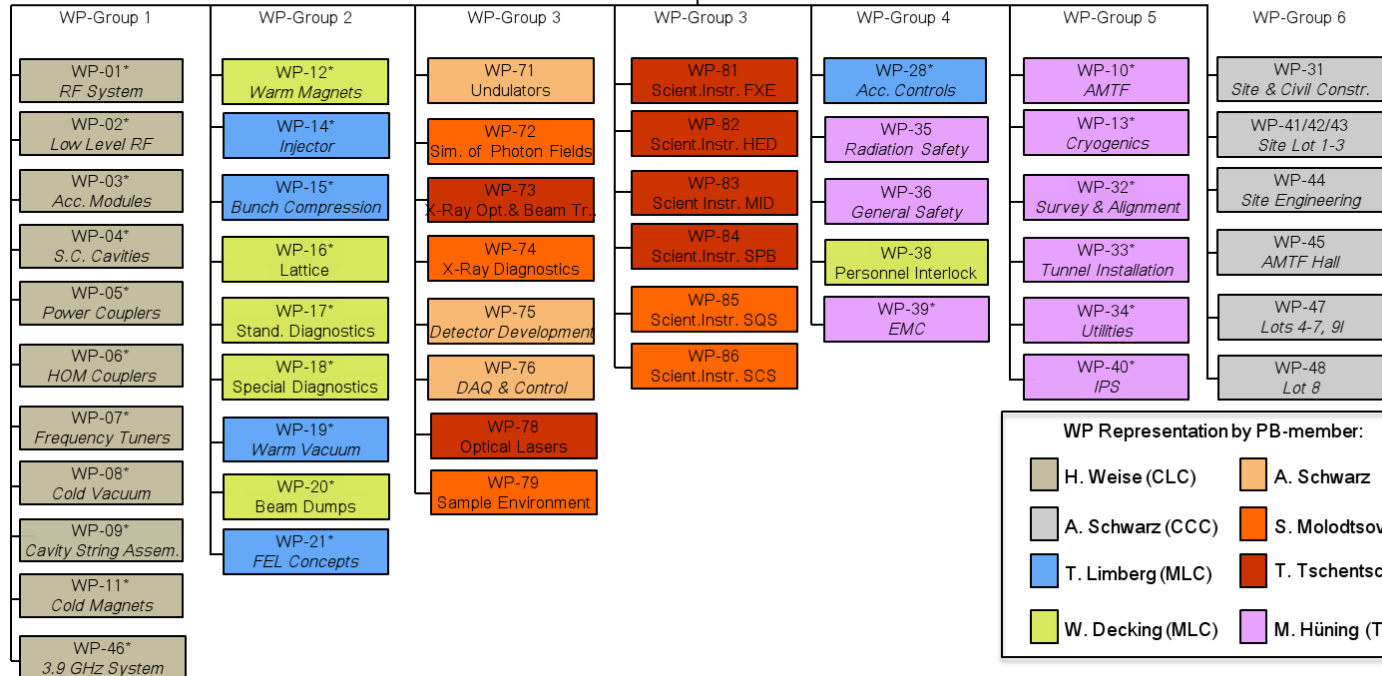


# Scheduling Process: XFEL Project Structure: Work Packages

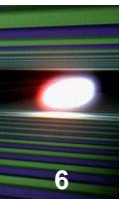
## Organigram for the “XFEL Facility Construction Project” Representation of Work Packages in the Project Board



plan, execute & report



\* Work Packages, which are covered by the Accelerator Construction Consortium



## ■ Project Board

- joint project management of XFEL GmbH and DESY
- technical and organizational decisions with the scope of the project

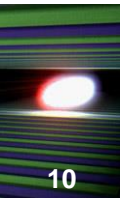
### Project Board (PB)

Accelerator Consortium Coordinator – ACC	Photon Systems Coordinator – PSC
Administrative Director of the XFEL GmbH – ADG	Project Office Leader – POL
Civil Construction Coordinator – CCC	Technical Coordinator – TC
Cold Linac Coordinator – CLC	WP Representatives – WPRs
Machine Layout Coordinators – MLC	XFEL Project Leader – XPL

roles and responsibilities described in XFEL project handbook  
and sublementing documents

[ ... ]

# Planning Process: The Challenges



- distributed planning approach with in-kind contributions
  - bottom-up project planning by work package leaders
  - ~50 work package plans with often strong dependencies
  - XFEL Project Office (XPO) to maintain overall schedule

## ➔ Challenges:

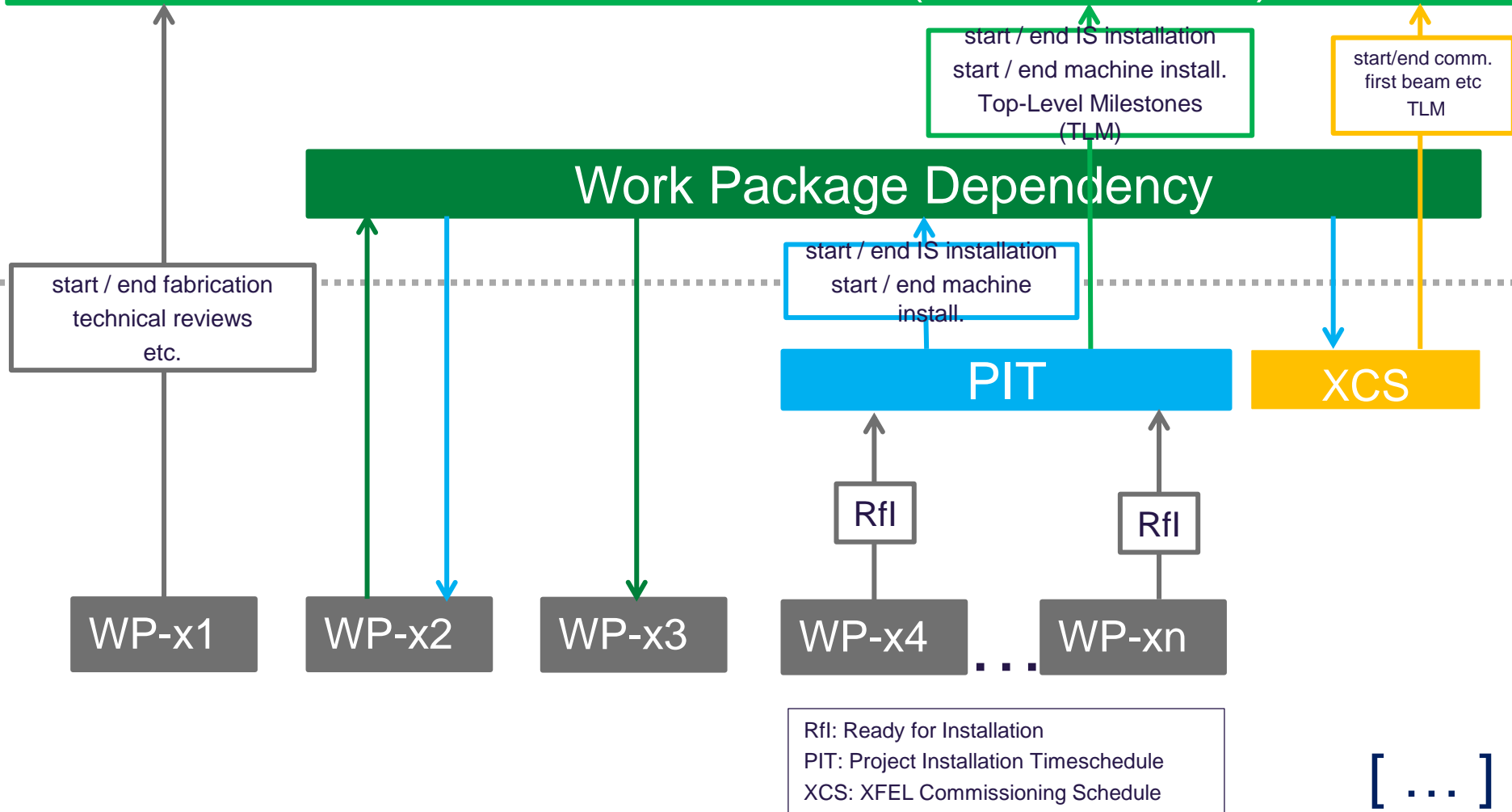
- maintain overall consistent project plan over ~8 years
- maintain dependencies between WPs (transparent & traceable)
- track schedule development
- provide reporting platform



# The XFEL Project Plan Landscape

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## XFEL Global Schedule Plan (GSP with TLM)

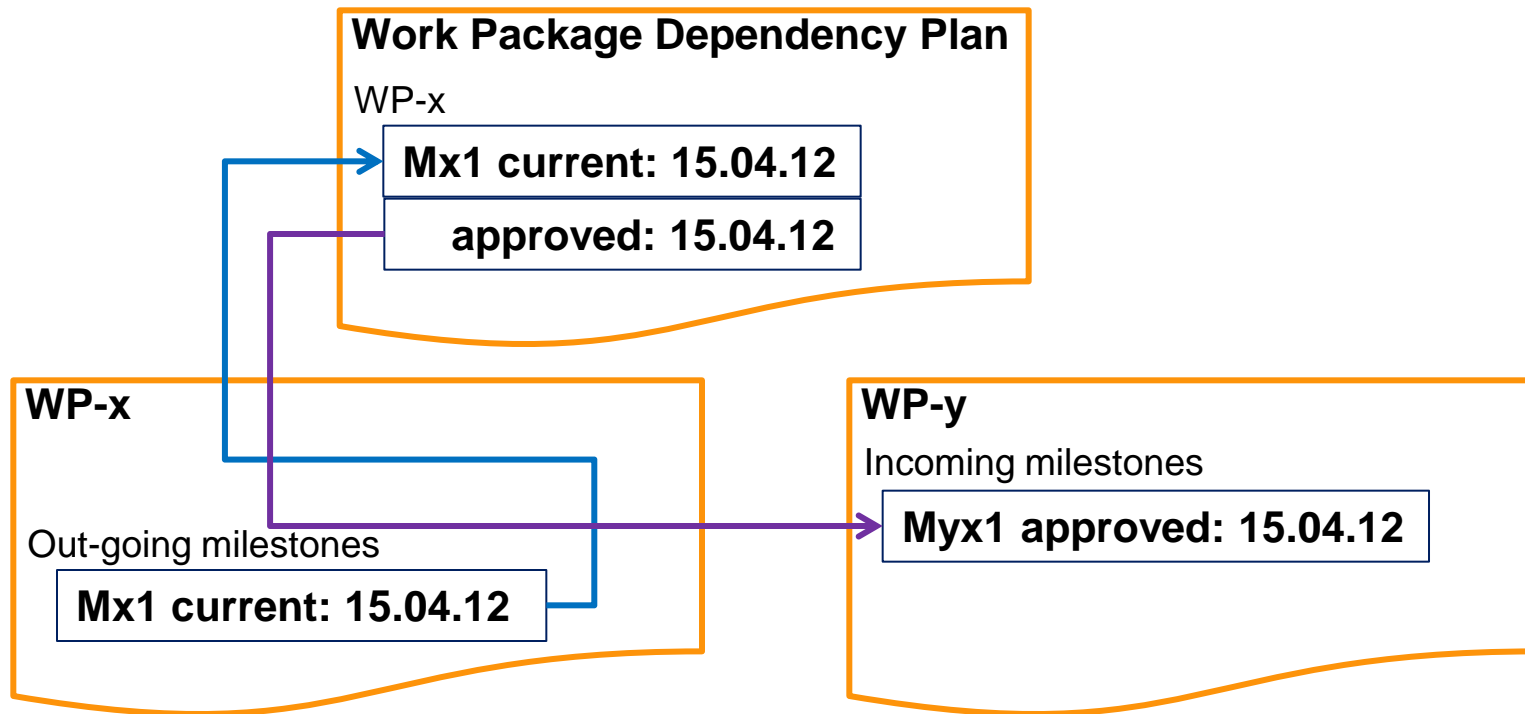




# WP Dependency Schedule (WPD)

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- no direct links between WP plans
  - WPL is responsible for the WP schedule / update
  - avoid automatic WP schedule shift by the system
  - schedule adjustment is a controlled & moderated process

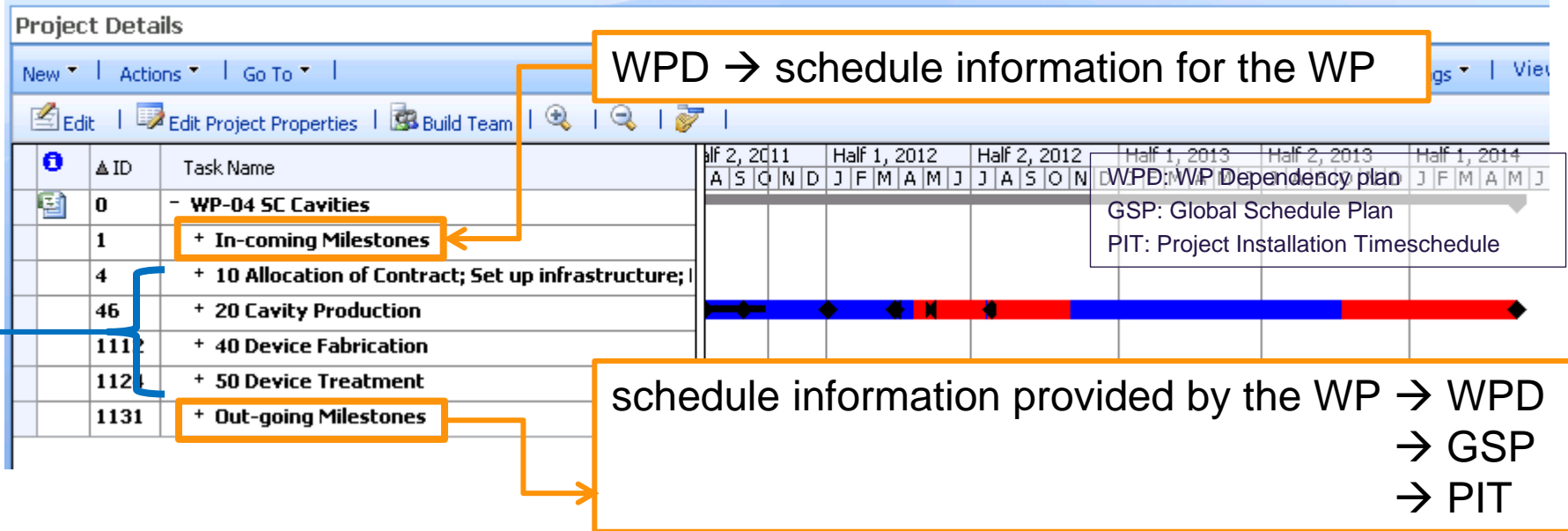


# Work Package Plan

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- planning and reporting processes are supported by the XFEL Project Management System (MS Project Enterprise)

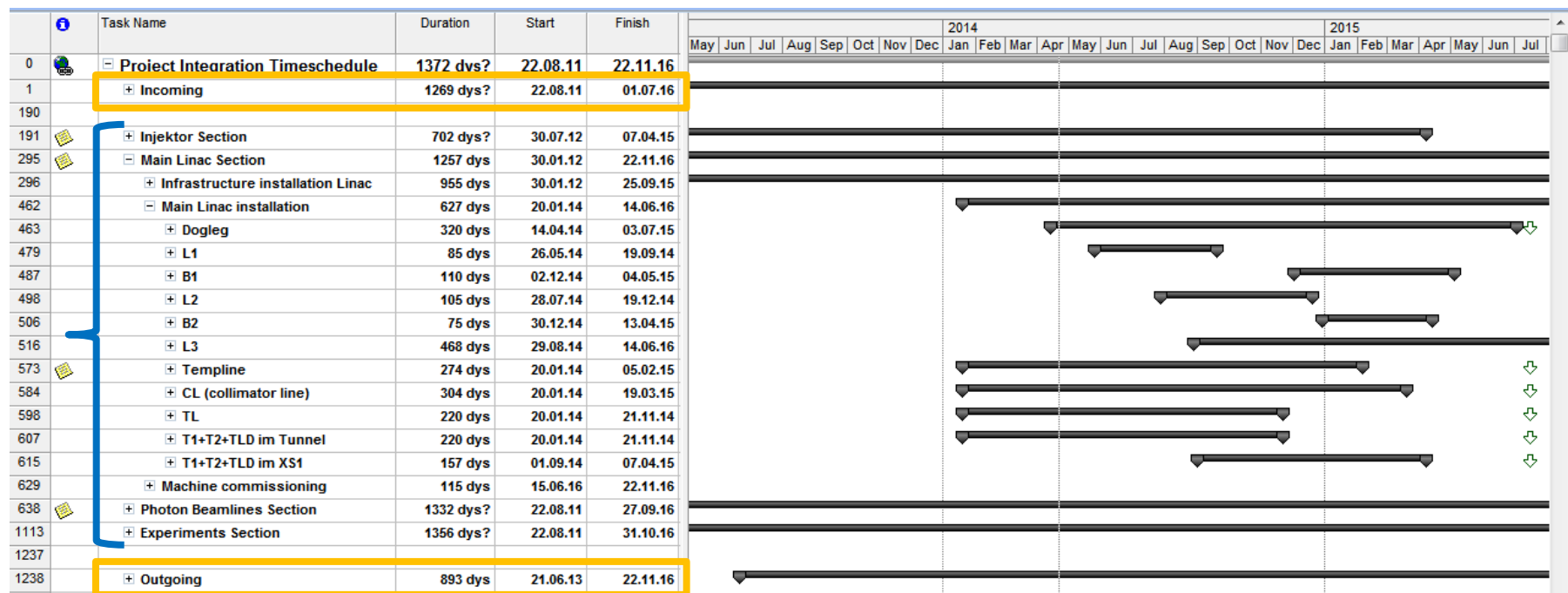
## Project Details: WP-04 SC Cavities



- general structure identical for all XFEL project plans
  - incoming milestones, WP activities, outgoing milestones

# Project Integration Time Schedule (PIT)

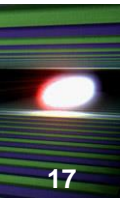
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- general structure identical for all XFEL project plans
  - incoming milestones, PIT activities, outgoing milestones
- PIT: structured in **facility section**
- defines installation windows for the different trades / components

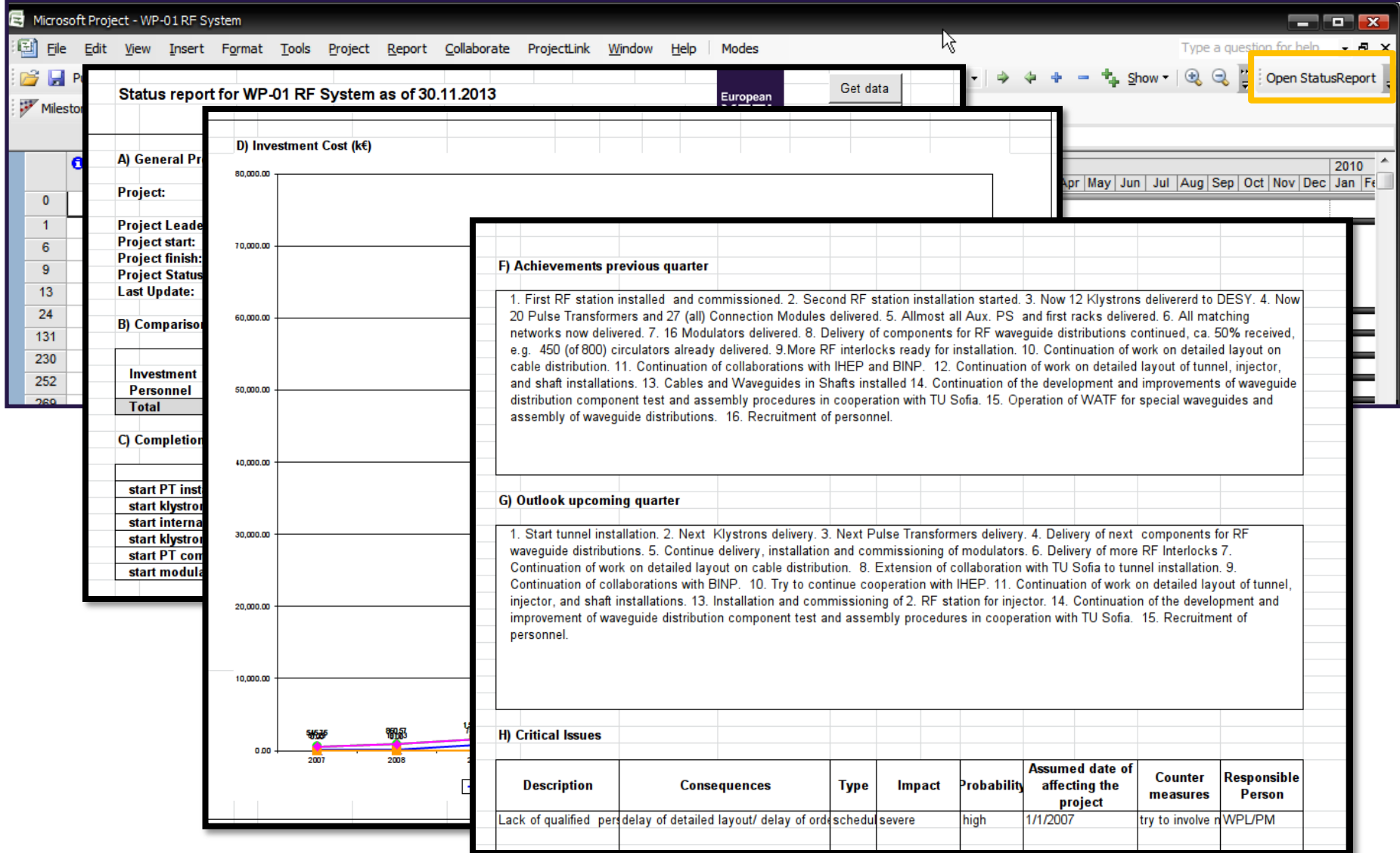


# Project Internal Reporting Process

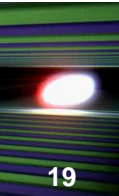


- 3x3 aproach: **3-tier process running 3x a year**
- Tier 1: Update of project plans in the XFEL PMS
  - % complete on tasks and miletstones
  - shift un-finished tasks into the future (ref. status date)
  - “general” update / refinement of tasks and schedule
- Tier 2: generate a written status report from plan
  - 3 weeks before reporting meeting (tier 3)
  - start consolidation of the over schedule
  - WP representative can “digest” status info before reporting meeting

# Reporting Process: Status Report



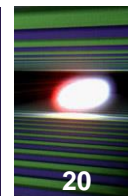
# Project Internal Reporting Process



- 3x3 approach: **3-tier process running 3x a year**
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  - start consolidation of the over schedule
  - WP representative can “digest” status info before reporting meeting
- Tier 3: status presentation in reporting meeting
  - 2 day meeting: 10 minutes presentation
  - presentation template follows status report
  - reports by WP leader **and** the PM team



# Reporting Process: Reporting Meeting

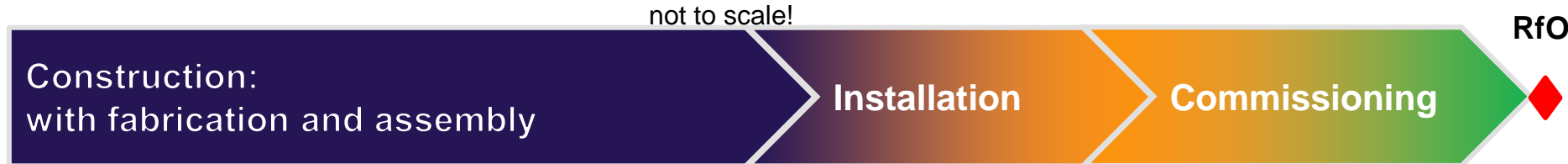


Wednesday 23 November 2011

10:00	 	<b>Project Leader (10)</b>	Massimo Altarelli
10:10	 	<b>Accelerator Consortium Coordinator (10)</b>	Hans Weise
10:20	 	<b>Cold Linac Coordination (CLC) (10)</b>	Hans Weise
10:30	 	<b>Technical Coordination (TC) (10)</b>	Markus Huening (DESY)
10:40	 	<b>Machine Layout Coordination (MLC) (10)</b>	Torsten Limberg
10:50	 	<b>Photon Systems (WPG-3) Coordination (10)</b>	Tobias Haas
11:00	 	<b>XFEL Project Office (XPO) (10)</b>	Riko Wichmann
11:10	Coffee (20)		
11:30	 	<b>WP-03: Accelerator Modules (10)</b>	Olivier Napoly
11:40	 	<b>WP-04: S.C. Cavities (10)</b>	Waldemar Singer
11:50	 	<b>WP-05: Power Coupler (10)</b>	Walid Kaabi
12:00	 	<b>WP-06: HOM Coupler / Pick-Up (10)</b>	Jacek Sekutowicz
12:10	 	<b>WP-07: Frequency Tuner (10)</b>	Lutz Lilje
12:20	 	<b>WP-08: Cold Vacuum (10)</b>	Lutz Lilje

# Schedule Monitoring Process

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## Monitored by the XFEL Project Board

XFEL Global Schedule Plan (GSP with TLM)

Work Package Dependency Schedule (WPD)

PIT

XCS

## Monitored via the WP Status Reports

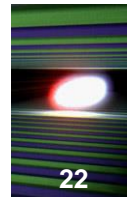
Work Package Plans

RfO: Ready for Operation

PIT: Project Installation TimeSchedule

XCS: XFEL Commissioning Schedule

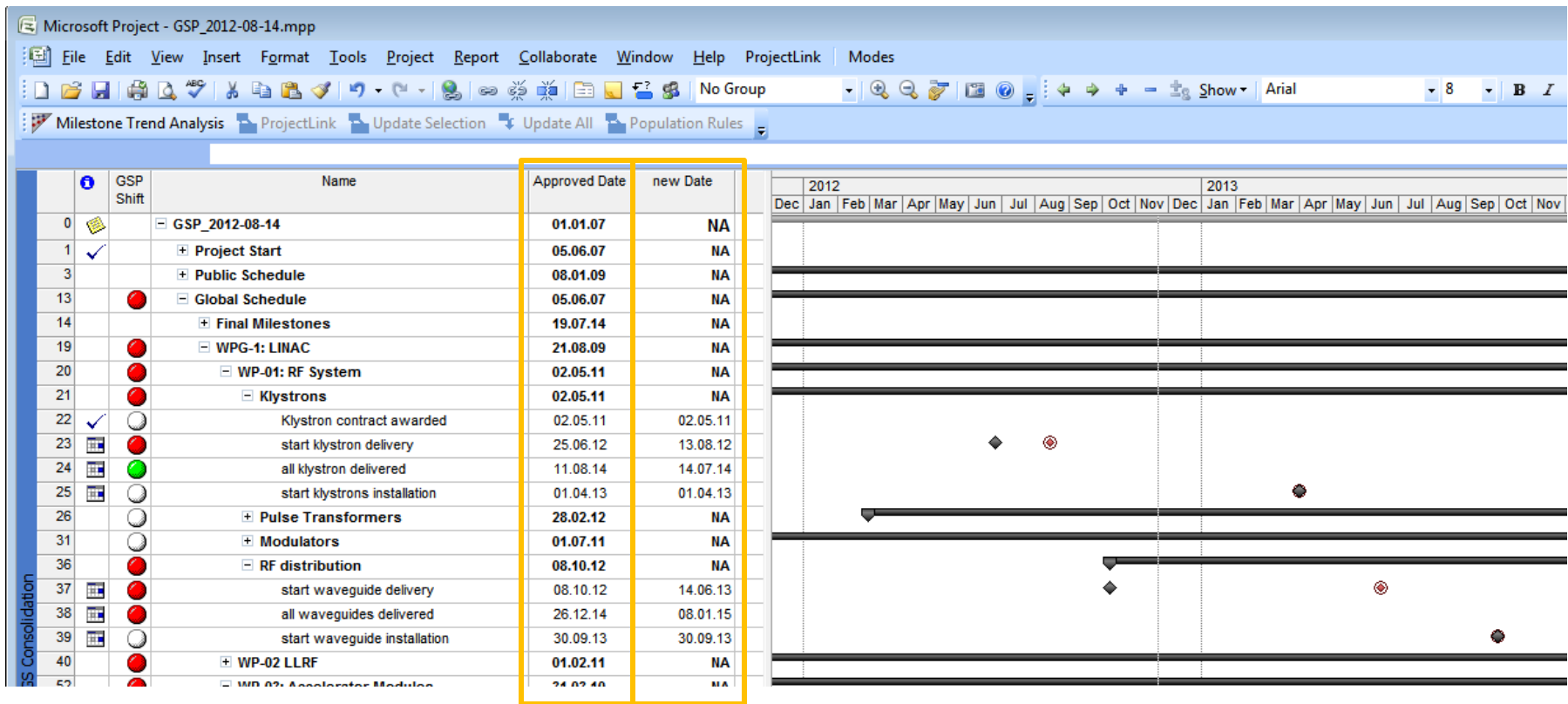
# Schedule Monitoring Process: Consolidation of Schedules



- after every status update (3x per year)
- before the project progress reporting meeting
- based on auf WP Dependency Plan and Global Schedule
  - milestones beyond the internal WP scope
- in case of delays:
  - reason
  - proposal of possible counter measures,
  - effects on overall schedule and other WPs
- eventually acceptance of new schedule by members of the Project Board



# Schedule Monitoring Process: Consolidation Global Schedule



last date accepted by  
Project Board

current date from WP schedule

- main PM processes for XFEL defined and documented in a project handbook
- main emphasis:
  - roles and responsibilities
  - planning process
  - reporting process
  - review based engineering process
- planning and reporting process:
  - supported by the XFEL Project Management System

