



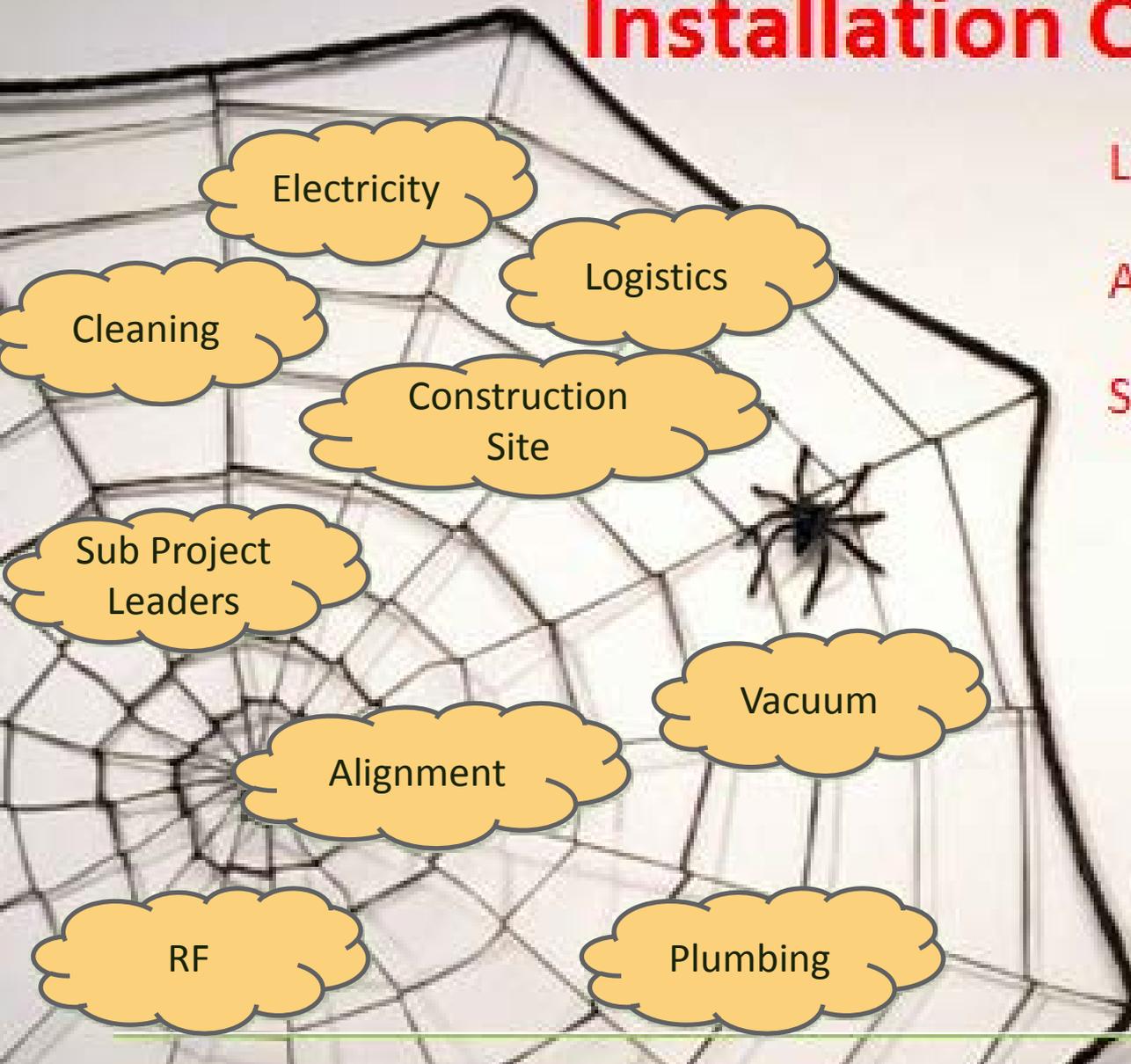
MAX IV Installation

Pedro F. Tavares
MAX IV Laboratory

Summary

- MAX IV Installation
 - Organization
 - Planning
 - Information Flow & Logistics
- LINAC Installation – Lessons learned
- 3 GeV Ring Installation – Strategy, Sequence and Status

Installation Coordination



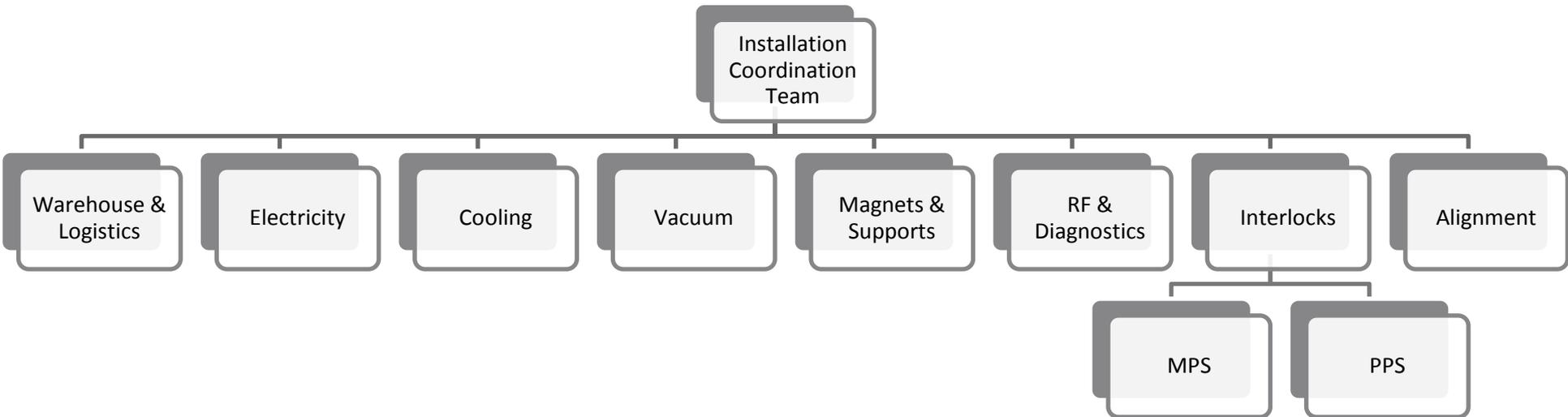
Logistics

Assembling/Installation

System test

Organization

“If everything is under control, you are going too slow...” Mario Andretti



Installation Organisation

MAX IV Installation management

Patrik, Inst. Leader

Göran L, Dept. Inst. Leader

Jakob, BL Inst. Leader

Pedro F Tavares, PL

Magnus Sjöström, Dept. PL

Anders, Logistics & Cleaning

Johan Rosdahl, Mtrl Leader

Robert H/Mattias S, Pipes

Mathias G, Cables

MAX IV Project managers

Jerry Schmidt

Claes Lenngren

Johan Thånell

Robert Nilsson

Julio L Simon

Jerzy Jamroz

Aleksandar Mitrovic

Anders Rosborg

Lars Malmgren

Åke Andersson

Chiara Pasquino

Leif Thånell

Martin Johansson

Linus Arvidsson

Pawel Garsztko

Tobias Lundquist

Sub-contractors

Caverion Electricity

Caverion Piping

Tunga Lyft Supports

Budker Institute

Slide by Patrik Almqvist

Installation Organisation - responsibilities

MAX IV Installation management

- Safety
- Building access meetings
- Update blueprints
- Ownership Tickets
- Overall time plan
- Internal logistics of material
- Secure cleaning

MAX IV Project managers

- Coordination with other project managers
- Support contractors
- Input to Ticketlist
- Ordering material
- Provide basis for blueprint update
- Reporting on detailed project progress

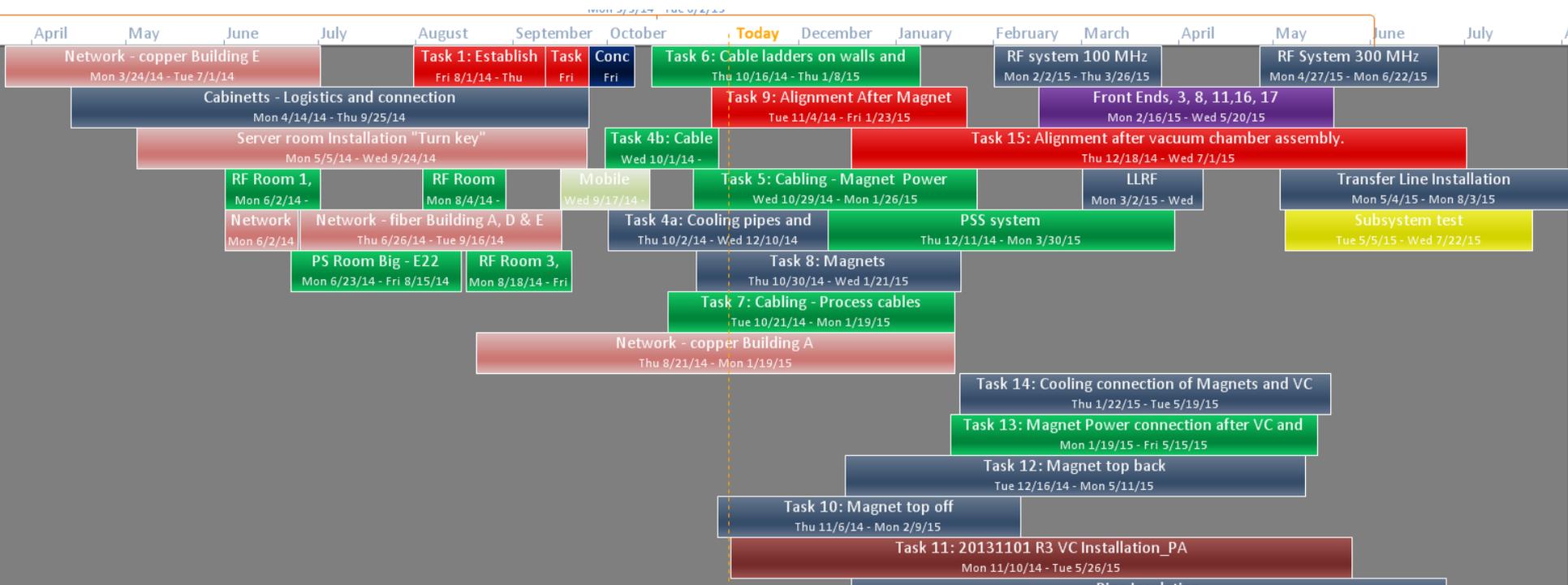
Sub-contractors

- Ordering material
- Reporting on deviations in installation and planning

Slide by Patrik Almqvist

Installation Planning

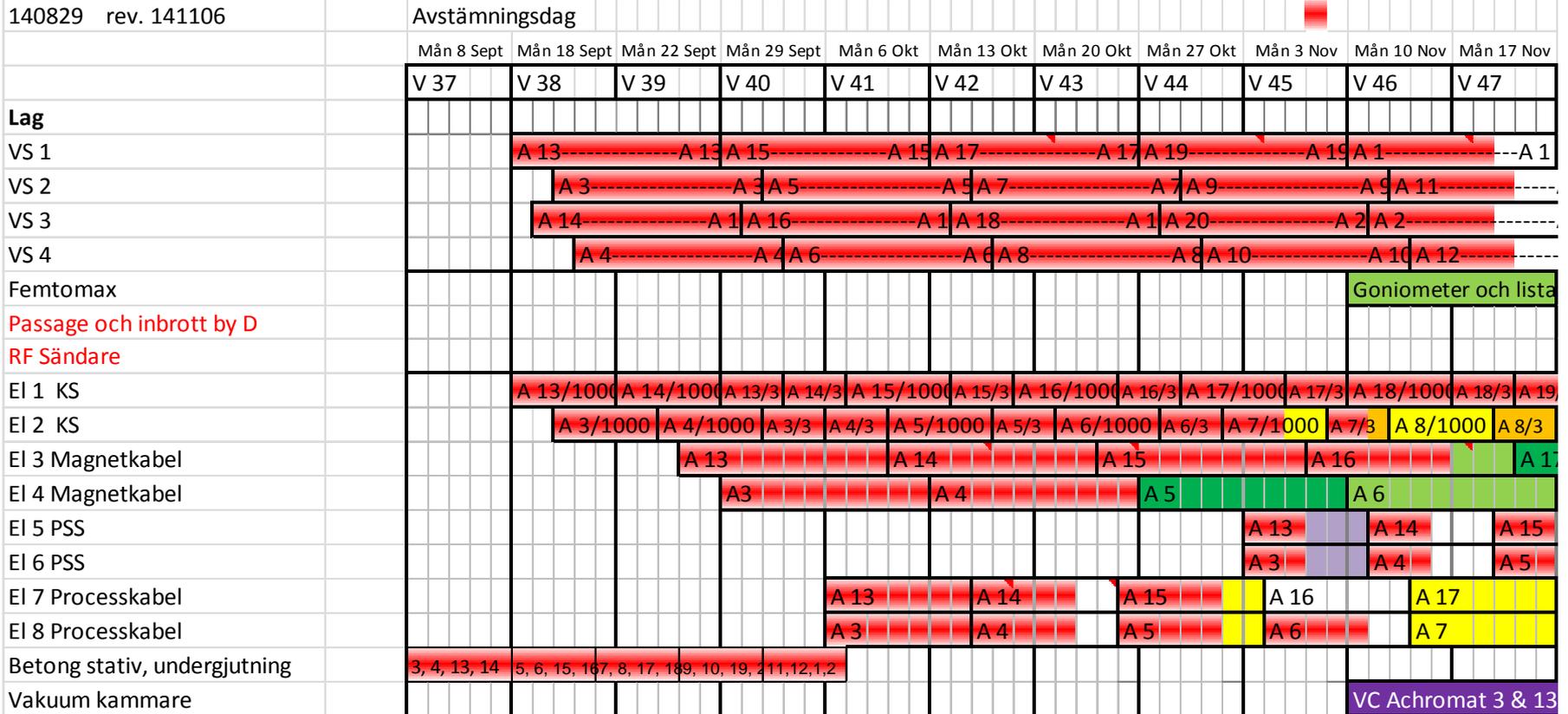
- Global time planning done in MS Project
- Identify risks at an early stage
- Need to adapt to changing circumstances



Checklistan I tid och Rum för stegar, MAG, Process, VS

Markera i figuren på hur mycket som är klart varje fredag kl 12

140829 rev. 141106



MS Project plan is complemented by detailed check lists

Information Flow – regular meetings



ors

Lessons Learned from Linac Installation

- Things to keep and build on
 - Team spirit
 - Presence of system expert
 - The agility of in-house manufacturing

- Room for improvements
 - Change requests from MAX IV Lab to contractors
 - Drawing availability
 - Material logistics
 - Marking of components

Slide by Patrik Almqvist

Installation Strategy – 3 GeV Ring

- Dedicated Logistics personnel.
- Quick stand-up meetings with contractors to solve collaboration issues.
- Compressed Installation time for low risk tasks to create air for high risk tasks.
- Installation procedures were tested at a full scale mock-up to
 - Validate time plan
 - Identify bottlenecks

Risk Assessment

Low impact (On time plan)

- Concrete Stands
- Cables (Magnet power and process)
- Pipes (VC and Magnet cooling)

Standard parts we can have within hours and days. Worst case is long lead time cables(BPMs etc) and valves.

Installation can proceed.

Higher Impact

- Magnets
- Vacuum chambers

Long lead time items. For VC's we have 1 set of spares. Magnets, no spares.

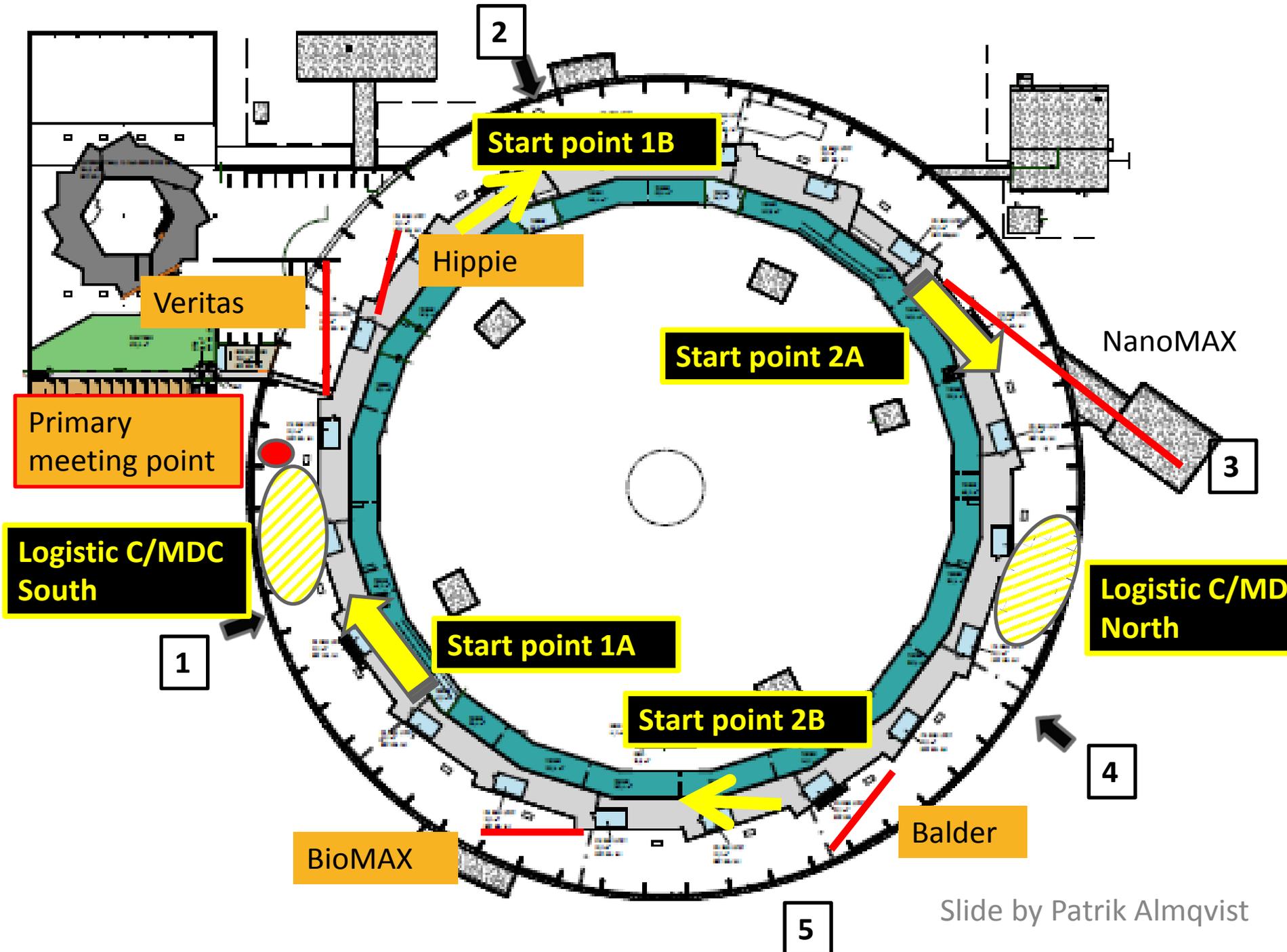
Installation will stop in that achromat.

Slide by Patrik Almqvist

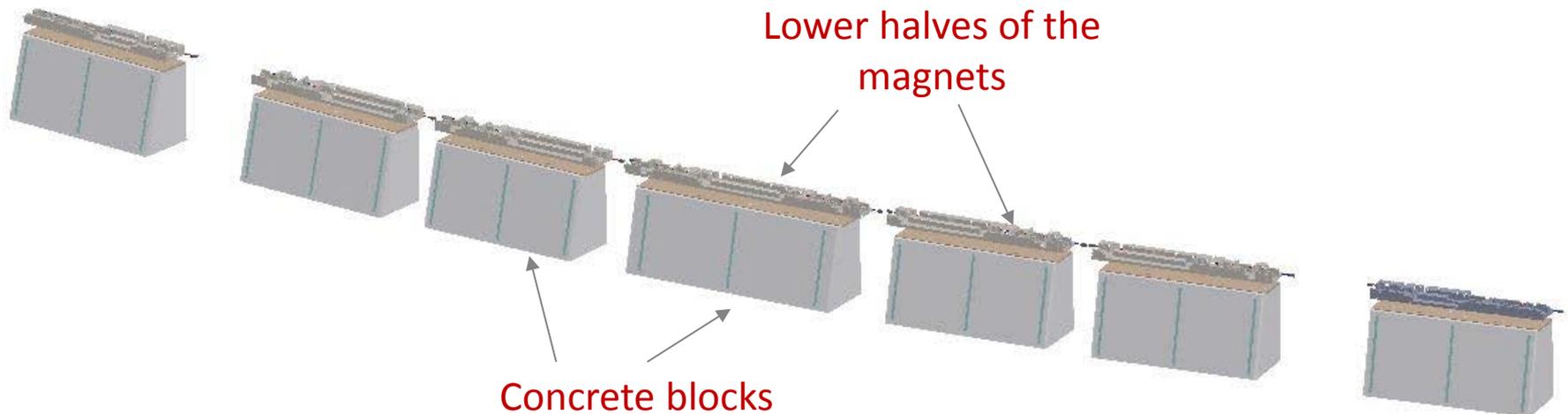
Tasks

Back up

What if...



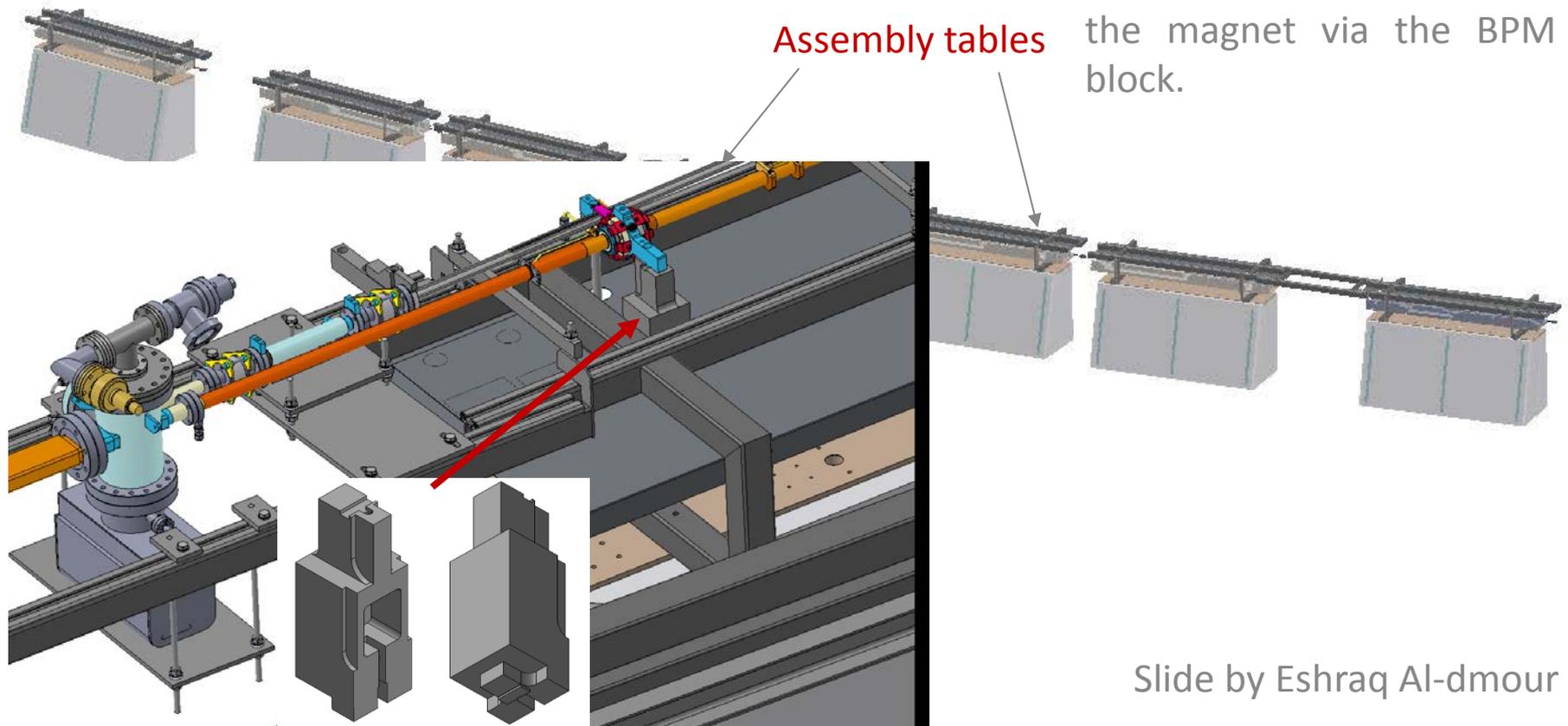
Installation Sequence



The Installation of the VCs starts after the alignment of the magnets on the concrete blocks. The upper halves of the magnets are then removed.

Slide by Eshraq Al-dmour

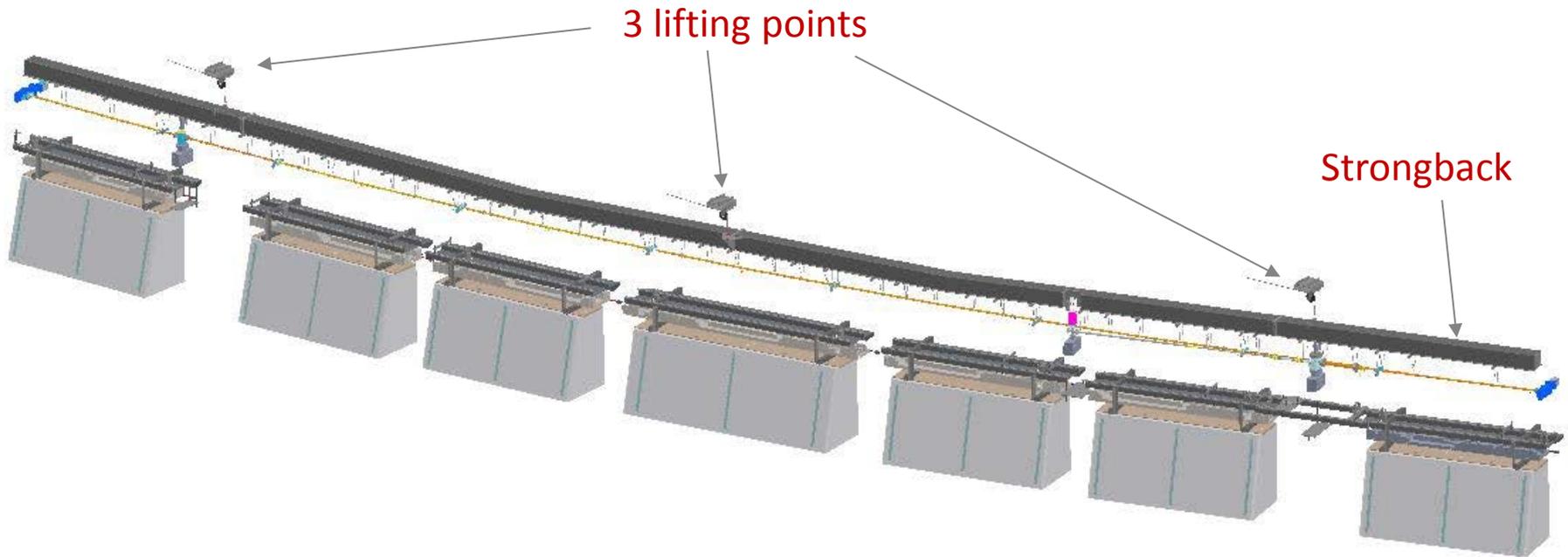
Installation Sequence



In order to install the VCs the BPMs are referenced to the magnet via the BPM block.

Slide by Eshraq Al-dmour

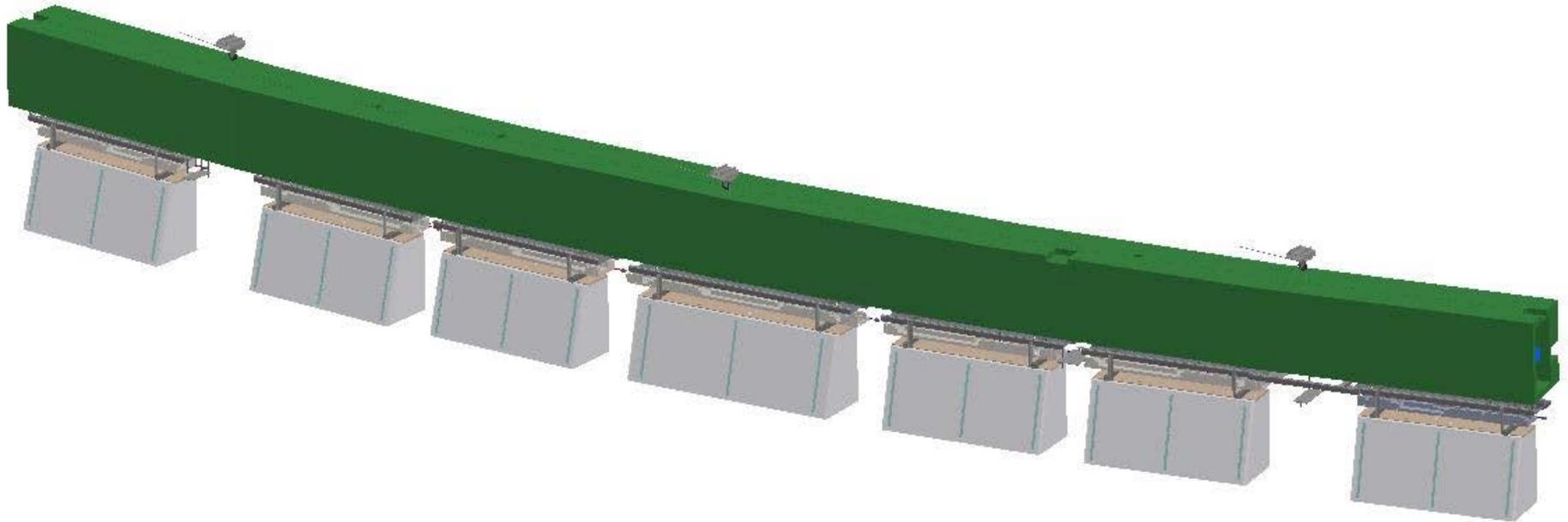
Installation Sequence



Once the whole assembly is done and the chambers are under vacuum, the Achromat is lifted via 3 lifting points connected to 3 winches.

Slide by Eshraq Al-dmour

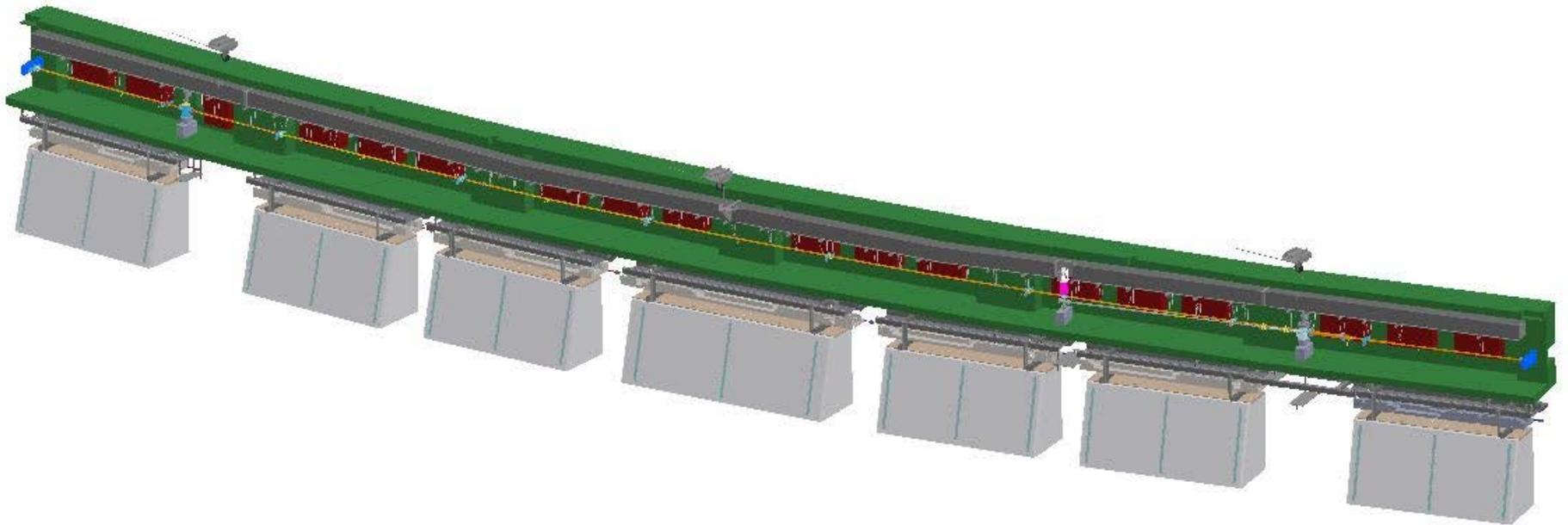
Installation Sequence



Then the oven is mounted on the assembly tables around the vacuum chambers.

Slide by Eshraq Al-dmour

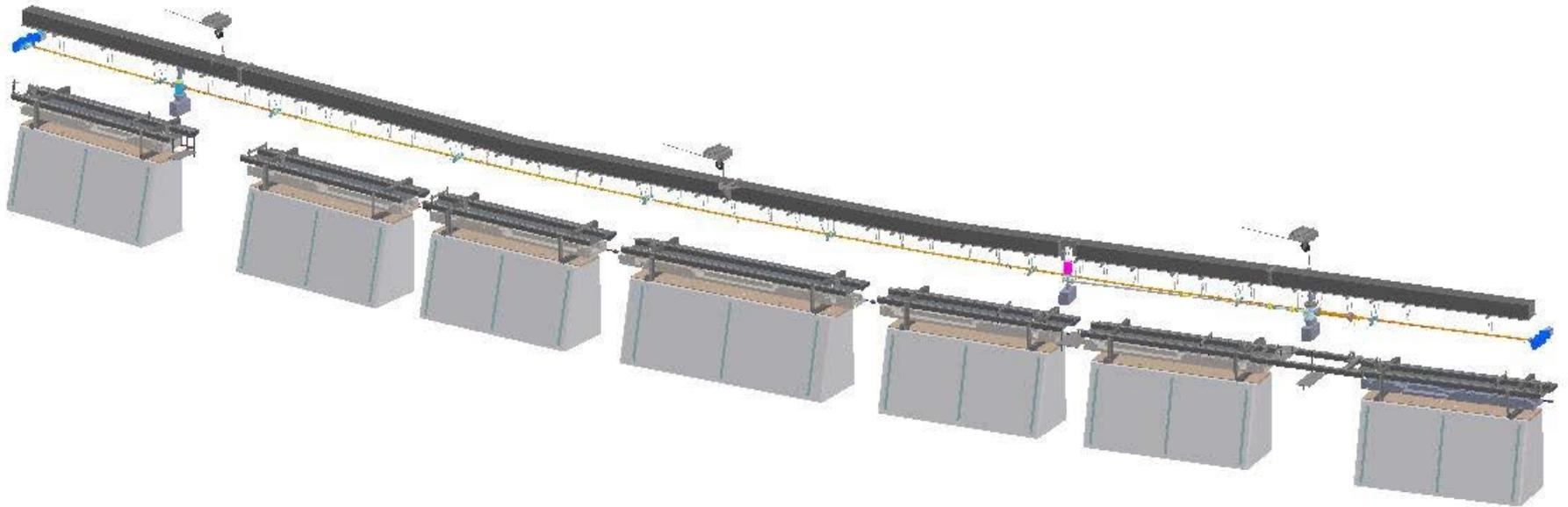
Installation Sequence



The oven is taken apart after
bake-out and activation.

Slide by Eshraq Al-dmour

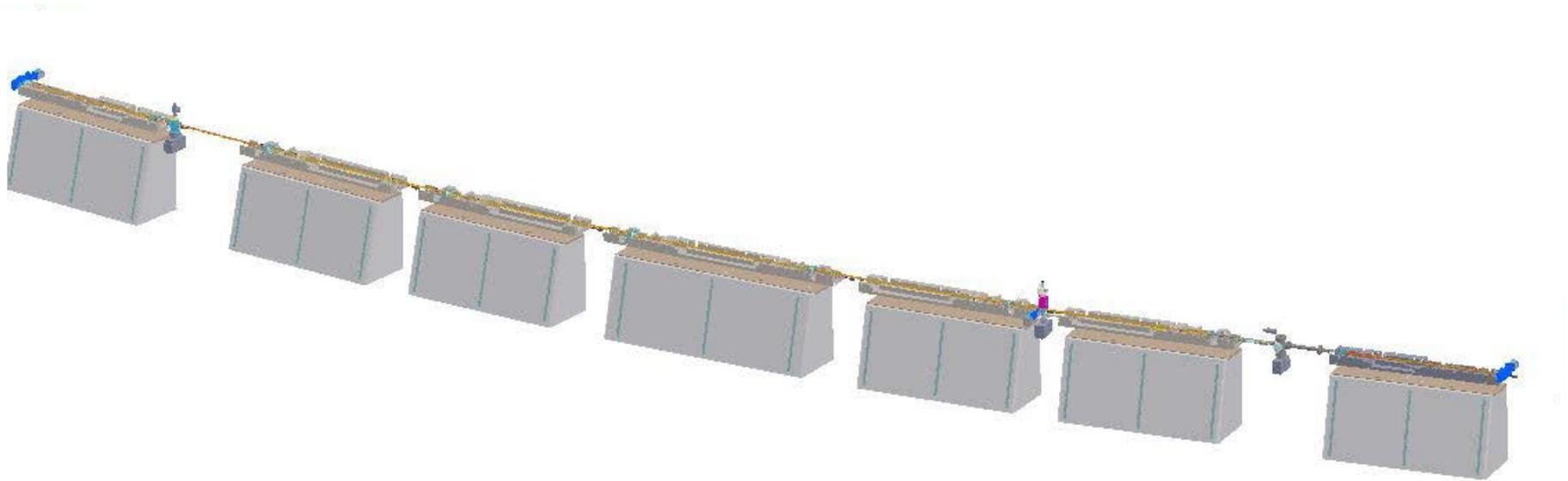
Installation Sequence



The vacuum chambers are back on the assembly tables for clamps replacing, BPMs cables and TC placing.

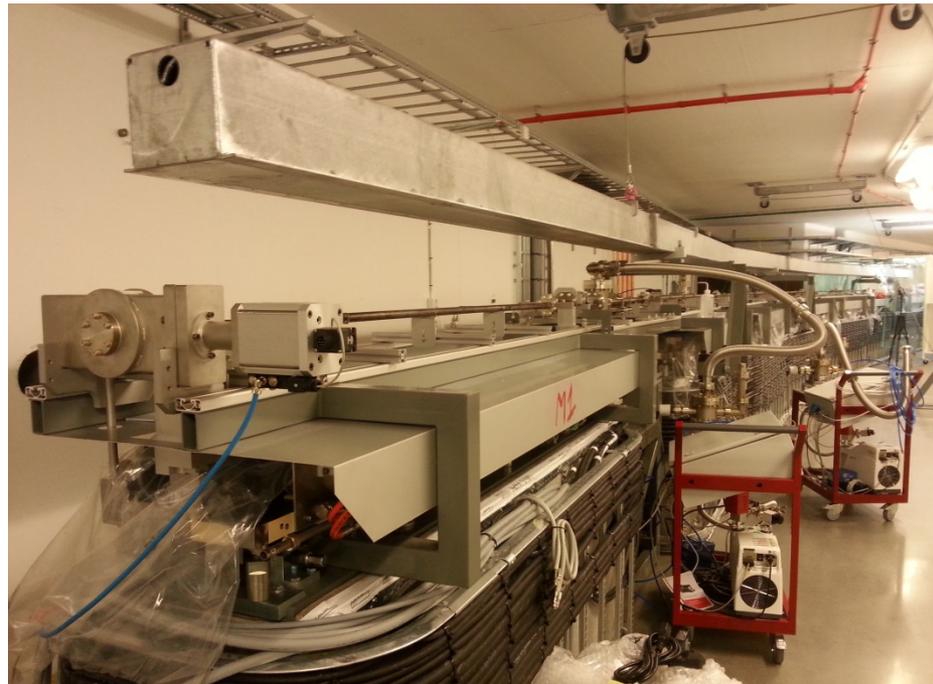
Slide by Eshraq Al-dmour

Installation Sequence



VC are finally lowered to the magnets, the upper half of the magnet can be placed.

Slide by Eshraq Al-dmour



November 2014

4th DLSR Workshop - MAX IV Project Status



Installation Status, w47.1 (after 10 weeks)

- All concrete stands in place.
- Cooling pipes are welded in 20 Achromats.
- Final review of cooling pipes in 8 achromats (after leak check and pressure test, 8 more week 47.2)
- Cable Ladders in 18 achromats
- Magnet cables in 6 achromats (8 achromats by 47.4)
- Process cables in 6 achromats.
- Magnets on stands in 4 achromats(alignment done in 2, 4 by 47.3).

Slide by Patrik Almqvist

Thank you for your attention !