Hie-Isolde

Plans and schedule for the Long Shutdown LS1

SGUI

CERN, 2 February 2012

Erwin Siesling

Abstract

- **Hie-Isolde – Impact on the facility**
  <u>Work during and around LS1</u>

  – **Until LS1:**

    Civil Engineering, Main Services

  – **During LS1:**

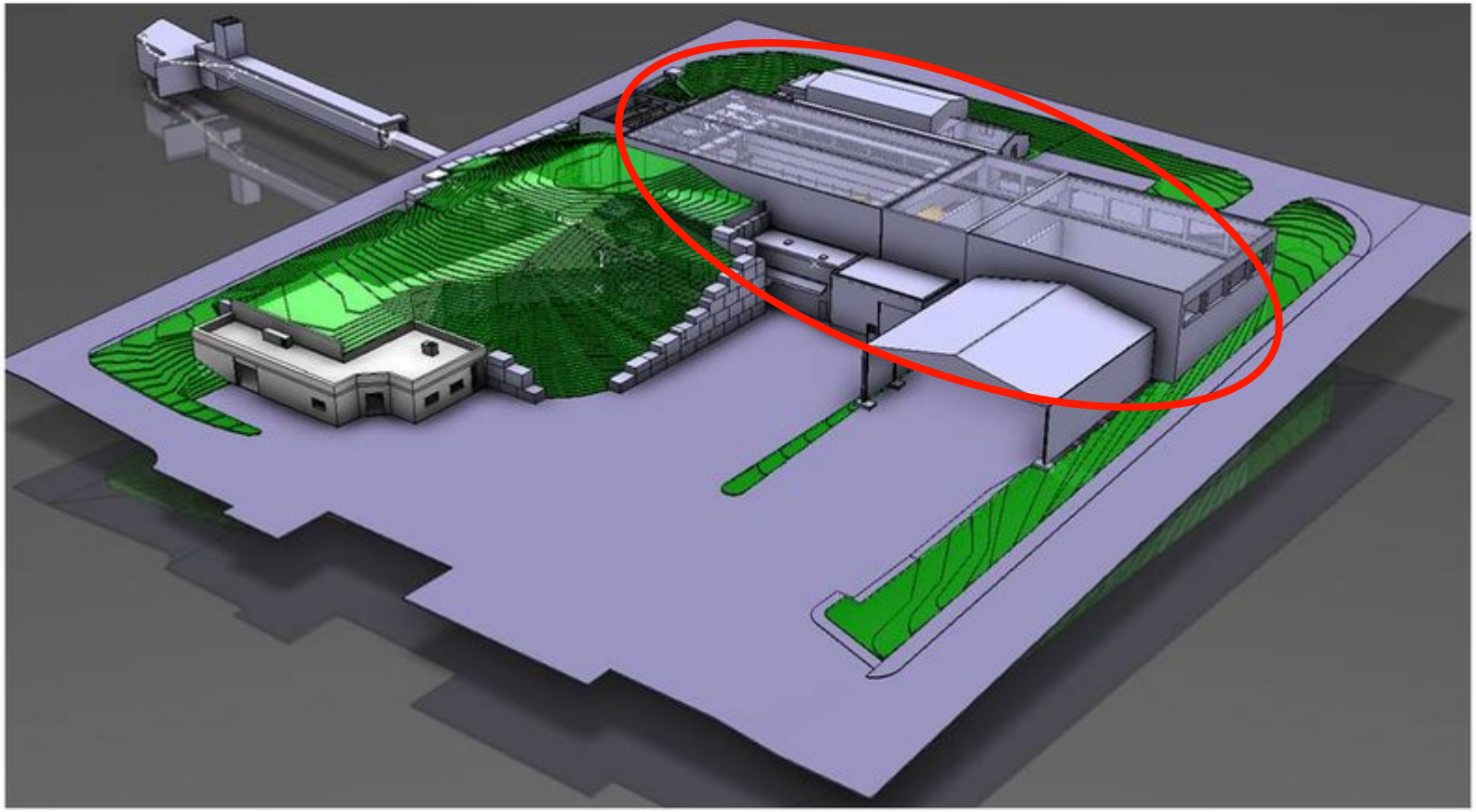
    Civil Engineering (tunnel in hall), Main Services, Cryogenics, Beam transfer Line

  – **End of LS1 and into the 2014 run:**

    Cryogenics, Beam transfer Line, Cryo Modules, commissioning

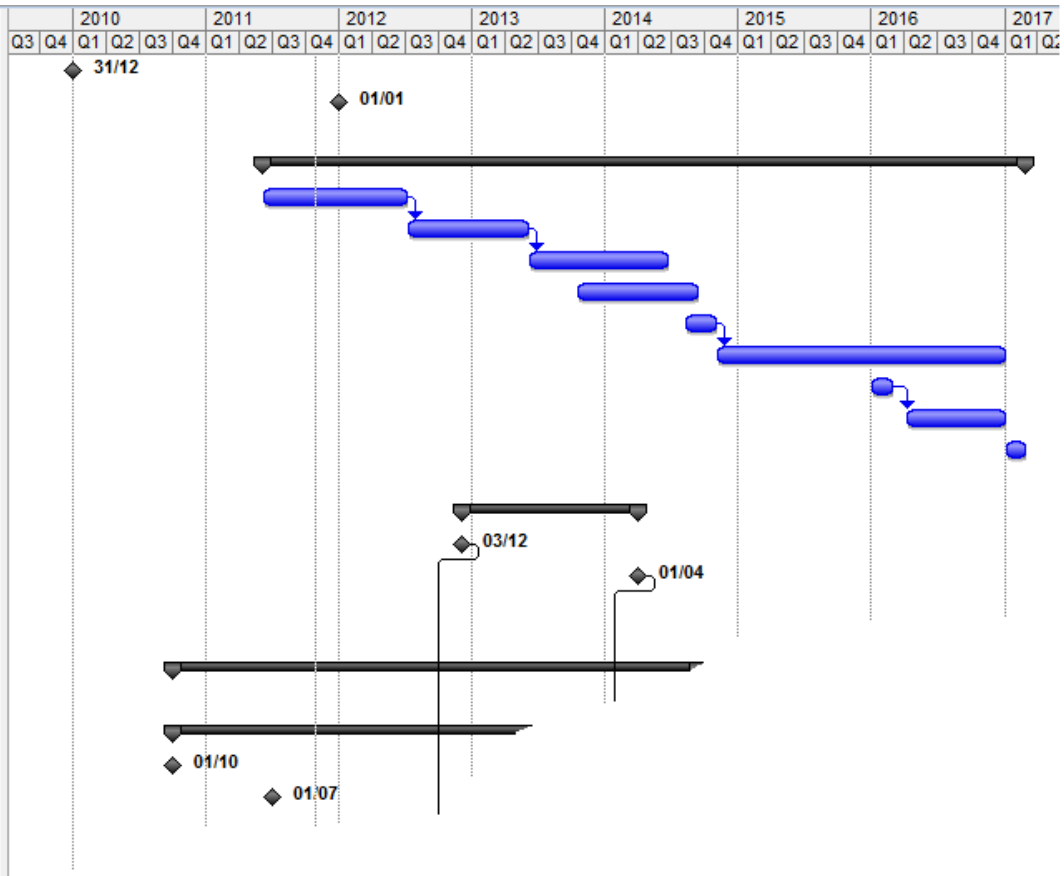
  – **Possible other LS1 activities..**

Isolde changes



Hie-Isolde Planning

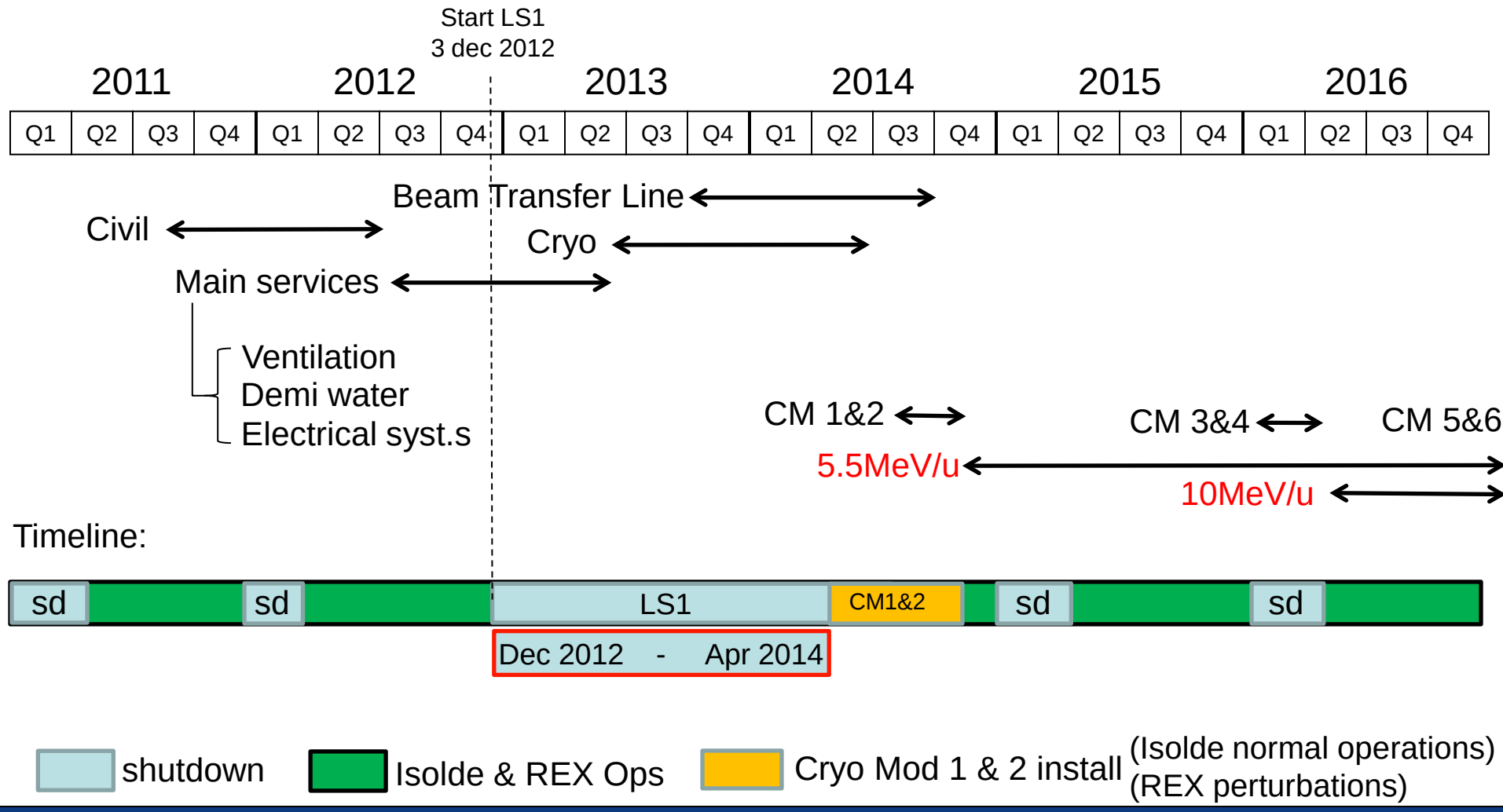
Task Name	Duration	Start	Finish	Pr
Official Approval Project	0 hrs	Thu 31/12/09	Thu 31/12/09	
Technical Design Report	0 hrs	Sun 01/01/12	Sun 01/01/12	
Hie Isolde key-dates:	**1495 days**	**Mon 06/06/11**	**Fri 24/02/17**	
Civil Engineering Q3 2011 - Q3 2012	281 days	Mon 06/06/11	Mon 02/07/12	
Main Services Q3 2012 - Q2 2013 (C	239 days	Tue 03/07/12	Fri 31/05/13	5
Cryo Q2 2013 - Q3 2014	275 days	Mon 03/06/13	Fri 20/06/14	6
Beam Transfer Line Q4 2013 - Q3 20	236 days	Tue 15/10/13	Tue 09/09/14	
Cryo Module 1 & 2 Q3 2014 - Q4 201	60 days	Fri 08/08/14	Thu 30/10/14	
5.5MeV/u physics as of Q4 2014	568 days	Fri 31/10/14	Tue 03/01/17	9
Cryo Module 3 & 4 Q1 2016 - Q2 201	40 days	Fri 01/01/16	Thu 25/02/16	
10MeV/u physics as of Q2 2016	195 days	Tue 05/04/16	Mon 02/01/17	1
Cryo Module 5 & 6 Q1 2017 - Q2 201	40 days	Mon 02/01/17	Fri 24/02/17	
Long Shutdown LS1	**346 days**	**Mon 03/12/12**	**Tue 01/04/14**	
ISOLDE Shutdown start	0 days	Mon 03/12/12	Mon 03/12/12	
ISOLDE Shutdown end	0 days	Tue 01/04/14	Tue 01/04/14	
Infrasctructure & Integration	**028 days?**	**Fri 01/10/10**	**Tue 09/09/14**	
Civil Engineering	**782 days**	**Fri 01/10/10**	**Mon 30/09/13**	
Layout & Specifications	0 hrs	Fri 01/10/10	Fri 01/10/10	
Start Construction	0 hrs	Fri 01/07/11	Fri 01/07/11	
Linac Tunnel installation	21 days	Mon 02/09/13	Mon 30/09/13	
Buildings ready	**22 days**	**Thu 31/05/12**	**Sun 01/07/12**	
Compressor building 198 read	0 hrs	Sun 01/07/12	Sun 01/07/12	
Cold Box buidling 199 ready	0 days	Thu 31/05/12	Thu 31/0	
Cooling & Ventilation	**316 days?**	**Mon 14/0**		
Preparatory work (buildings	**316 days?**	**Ma**		
ISOLDE Shutdown start				
ISOLDE Shutdown end				



Hie-Isolde installation planning in EDMS: Projects – Accelerators - Hie-Isolde – Infrastructure & Integration - Planning
https://edms.cern.ch/nav/P:CERN-0000072786:V0/P:CERN-0000090679:V0/TAB3

Hie-Isolde Planning

Activities until LS1: Civil Engineering & Main Services

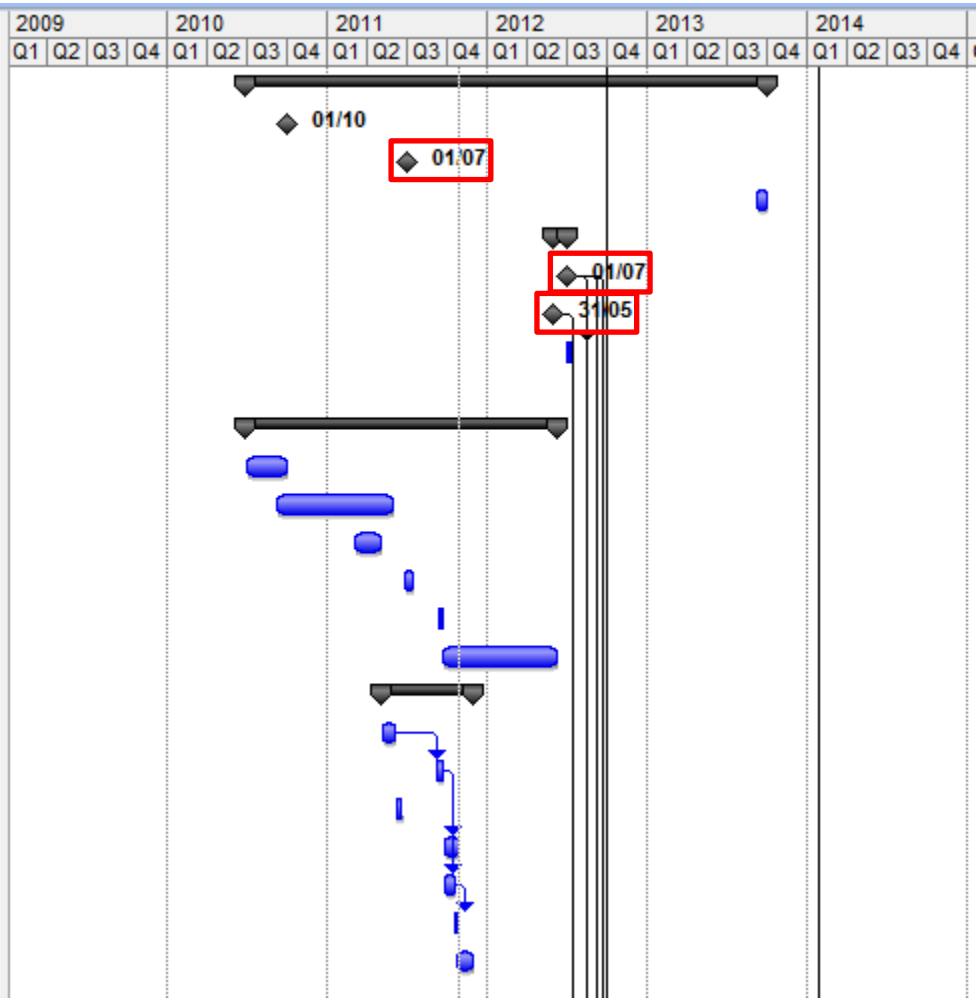


Until LS1

Civil Engineering

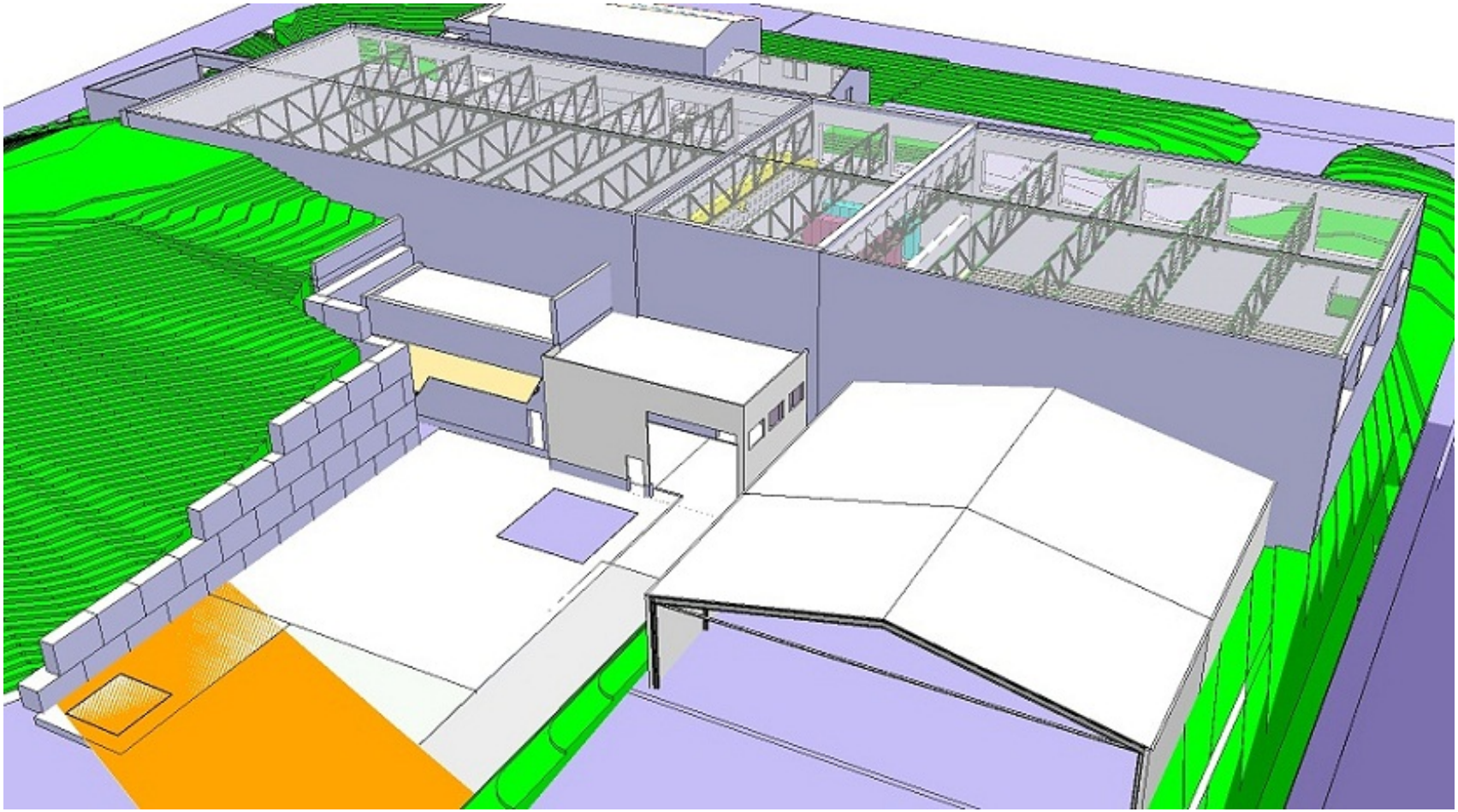
LS1

Task Name	Duration	Start	Finish	Pr
Civil Engineering	**851 days**	**Mon 28/06/10**	**Mon 30/09/13**	
Layout & Specifications	0 hrs	Fri 01/10/10	Fri 01/10/10	
Start Construction	0 hrs	Fri 01/07/11	Fri 01/07/11	
Linac Tunnel installation	21 days	Mon 02/09/13	Mon 30/09/13	
Buildings ready	**22 days**	**Thu 31/05/12**	**Sun 01/07/12**	
Compressor building 198 read	0 hrs	Sun 01/07/12	Sun 01/07/12	
Cold Box buidling 199 ready	0 days	Thu 31/05/12	Thu 31/05/12	
Pont roulant PR-251 bat 198 insta	7 days	Mon 02/07/12	Tue 10/07/12	2
Hie-Isolde CE	**509 days**	**Mon 28/06/10**	**Thu 07/06/12**	
Permis de construire	67 days	Mon 28/06/10	Tue 28/09/10	
Etudes Bureau d'Etudes CE	195 days	Wed 01/09/10	Tue 31/05/11	
Prep IT et Consultation partie C	45 days	Tue 01/03/11	Mon 02/05/11	
Reading Committee Juin-Juillet	15 days	Fri 24/06/11	Thu 14/07/11	
Finance Committee Sept 2011	1 day	Wed 14/09/11	Wed 14/09/11	
Travaux CE	189 days	Mon 19/09/11	Thu 07/06/12	
Phase 1: Hangar + SAS	**151 days**	**Mon 02/05/11**	**Mon 28/11/11**	
DO deplacement hangar trans	25 days	Mon 02/05/11	Fri 03/06/11	
demontage hangar	15 days	Thu 01/09/11	Wed 21/09/11	3
construction fondation Preves	10 days	Mon 06/06/11	Fri 17/06/11	
remontage hangar Prevessin	25 days	Thu 22/09/11	Wed 26/10/11	4
terrassement & coupure mur t	18 days	Thu 22/09/11	Mon 17/10/11	4
mise a la terre SAS bat 170 (E	3 days	Tue 18/10/11	Thu 20/10/11	4
construction SAS bat 170	30 days	Tue 18/10/11	Mon 28/11/11	



GS/SE : DANIEL PARCHET, ELISEO PEREZ-DUENAS

Civil Engineering



Construction starting date: Aug 2011

Civil Engineering

Removal of the transport hangar

September 2011

Civil Engineering

Cutting the Hall 170 wall & Terrain flattening

October 2011

Civil Engineering

New SAS

January 2012

Access 2012 run

Move of the controlled access

Shutdown, February 2012

Civil Engineering

Compressor Building B.198

Start February 2012

Civil Engineering

Cold Box Building B.199

Civil Engineering finished July 2012

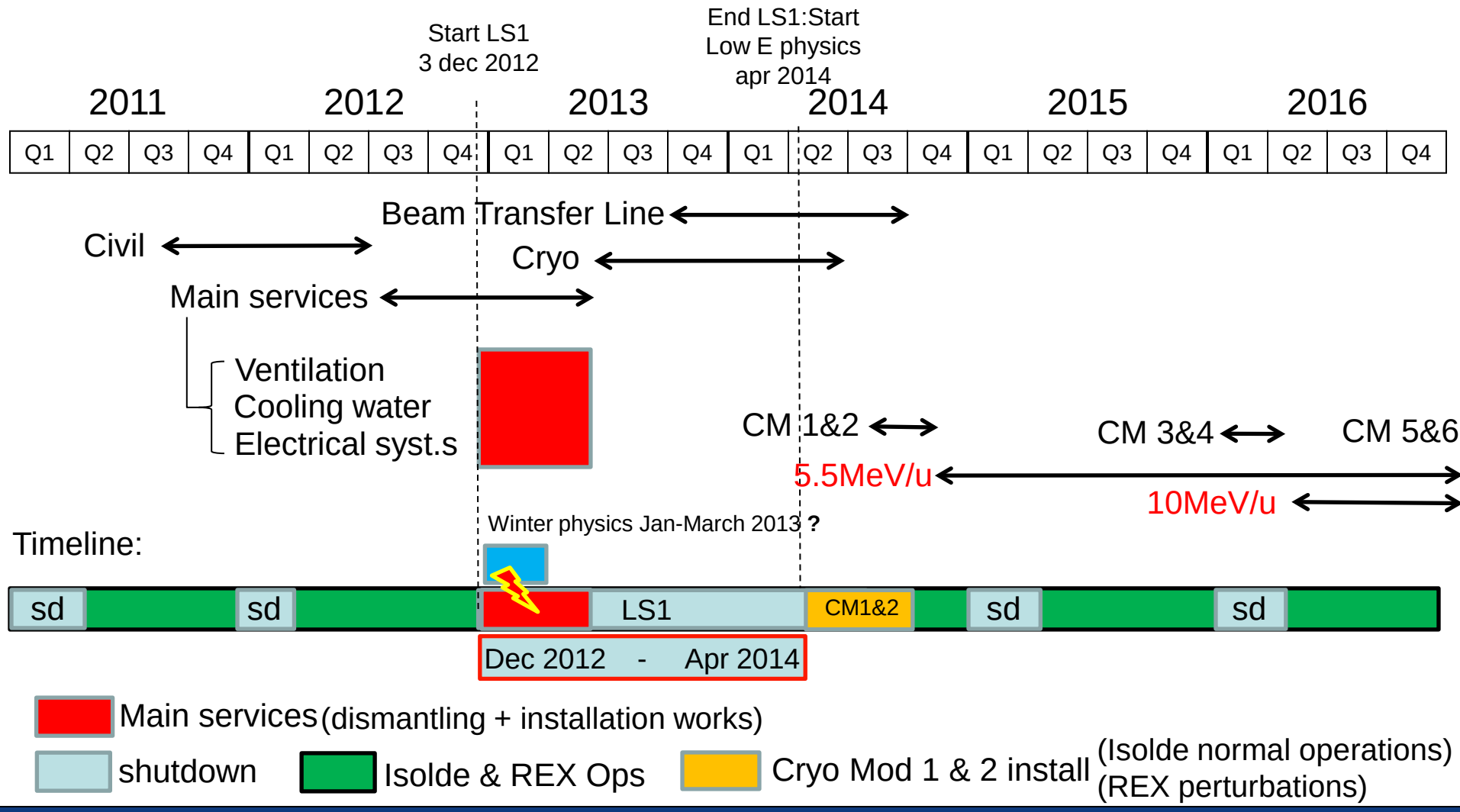
Main Services

Electrical systems, Cooling & Ventilation

Start installation Main Services July 2012

Hie-Isolde versus LS1

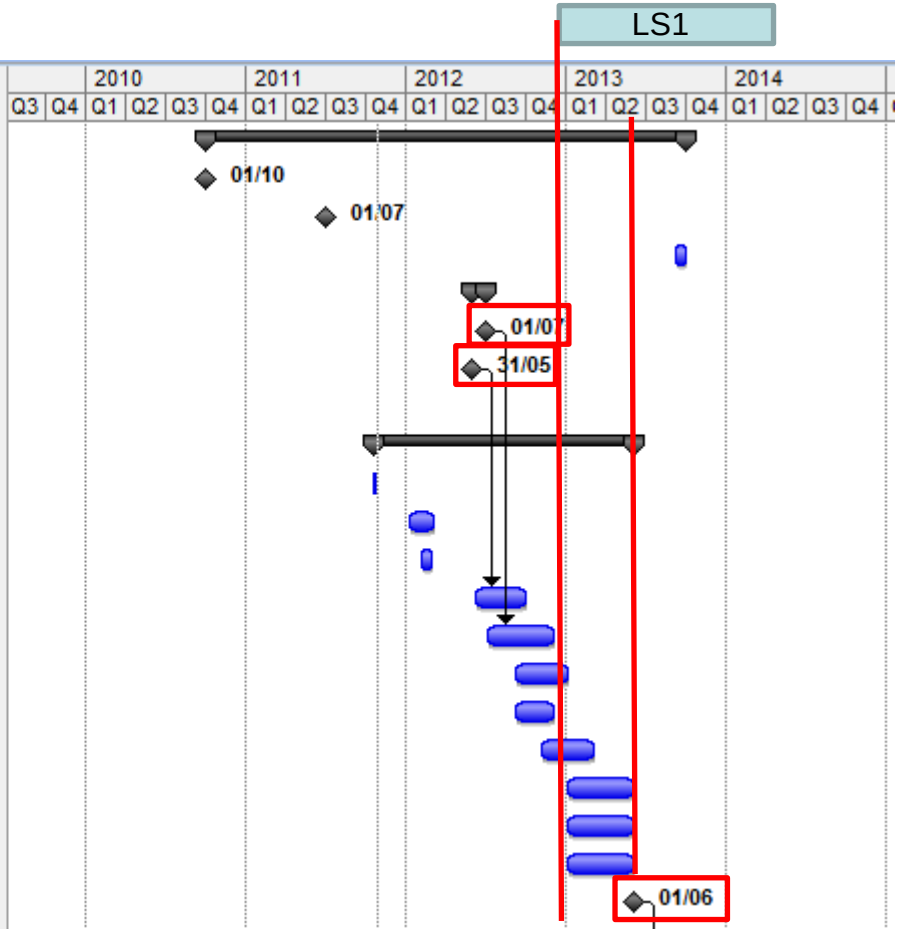
Activities during LS1: Civil Engineering (tunnel in hall), Main Services, Cryogenics, Beam transfer Line



Into LS1

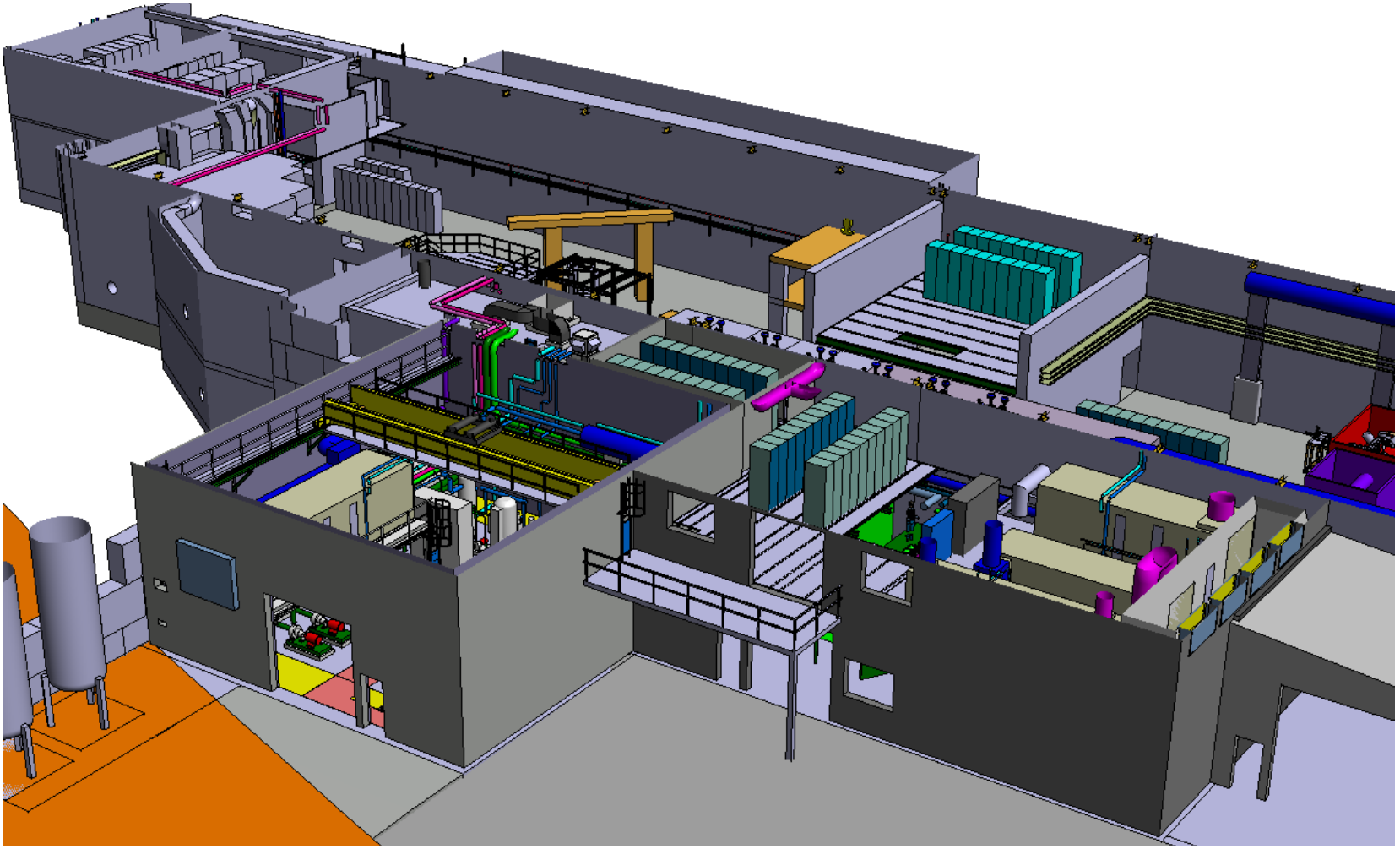
Electrical systems

Task Name	Duration	Start	Finish	Pr
Civil Engineering	**782 days**	**Fri 01/10/10**	**Mon 30/09/13**	
Layout & Specifications	0 hrs	Fri 01/10/10	Fri 01/10/10	
Start Construction	0 hrs	Fri 01/07/11	Fri 01/07/11	
Linac Tunnel installation	21 days	Mon 02/09/13	Mon 30/09/13	
Buildings ready	**22 days**	**Thu 31/05/12**	**Sun 01/07/12**	
Compressor building 198 read	0 hrs	Sun 01/07/12	Sun 01/07/12	
Cold Box buidling 199 ready	0 days	Thu 31/05/12	Thu 31/05/12	
Electrical Systems	**424 days**	**Tue 18/10/11**	**Sat 01/06/13**	
mise a la terre SAS bat 170	3 days	Tue 18/10/11	Thu 20/10/11	
Travaux réseau 18kV - transfos I	41 days	Thu 05/01/12	Thu 01/03/12	
Mise à la terre des bâtiments	21 days	Wed 01/02/12	Wed 29/02/12	
Travaux serv gén bât 198	86 days	Fri 01/06/12	Fri 28/09/12	2
Travaux serv gén bât 199	110 days	Mon 02/07/12	Fri 30/11/12	2
Câblage transfos + tableaux élect	87 days	Mon 03/09/12	Tue 01/01/13	
Câblage des alimentations CV	65 days	Mon 03/09/12	Fri 30/11/12	
Câblage des alimentations Cryo	87 days	Thu 01/11/12	Fri 01/03/13	
Câblage des alimentations RF	109 days	Tue 01/01/13	Fri 31/05/13	
Câblage des alimentations TE/EPC	109 days	Tue 01/01/13	Fri 31/05/13	
Câblage des alimentations Vide	109 days	Tue 01/01/13	Fri 31/05/13	
EL systems ready	0 days	Sat 01/06/13	Sat 01/06/13	



EN/EL : RENE NECCA

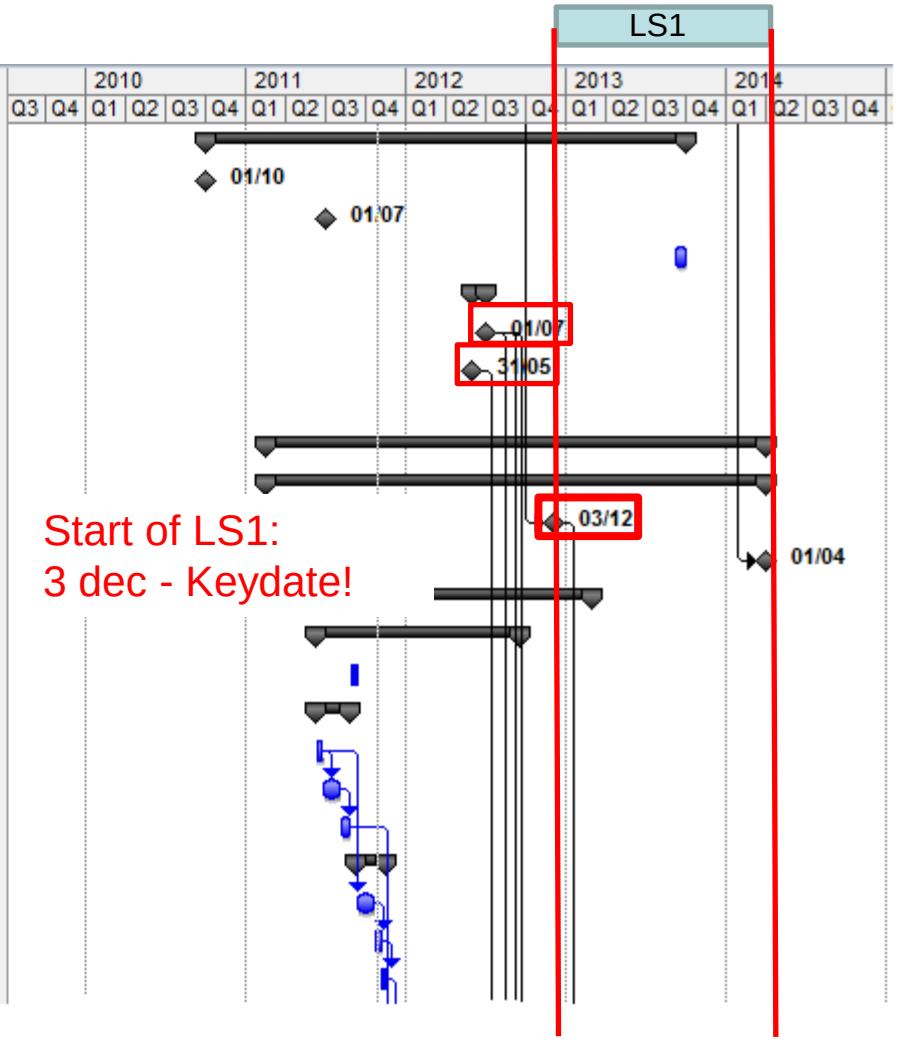
Electrical systems



Electrical systems: July 2012 – June 2013

Cooling & Ventilation

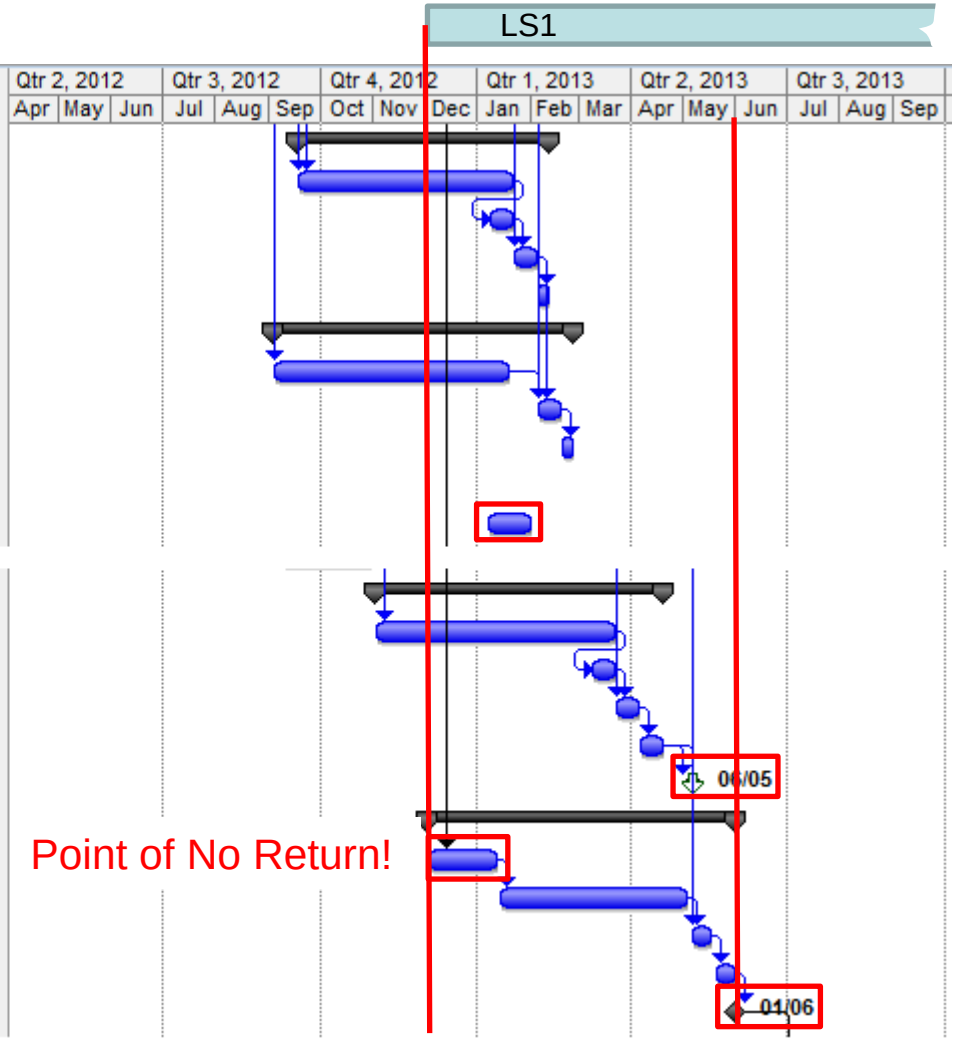
Task Name	Duration	Start	Finish	Pr
Civil Engineering	**782 days**	**Fri 01/10/10**	**Mon 30/09/13**	
Layout & Specifications	0 hrs	Fri 01/10/10	Fri 01/10/10	
Start Construction	0 hrs	Fri 01/07/11	Fri 01/07/11	
Linac Tunnel installation	21 days	Mon 02/09/13	Mon 30/09/13	
Buildings ready	**22 days**	**Thu 31/05/12**	**Sun 01/07/12**	
Compressor building 198 read	0 hrs	Sun 01/07/12	Sun 01/07/12	
Cold Box buidling 199 ready	0 days	Thu 31/05/12	Thu 31/05/12	
Cooling & Ventilation	**316 days?**	**Mon 14/02/11**	**Tue 01/04/14**	
Preparatory work (buildings r	**316 days?**	**Mon 14/02/11**	**Tue 01/04/14**	
ISOLDE Shutdown start	0 days	Mon 03/12/12	Mon 03/12/12	1(
ISOLDE Shutdown end	0 days	Tue 01/04/14	Tue 01/04/14	1
CV CHILLED WATER & VENT	**450 days?**	**Tue 07/06/11**	**Mon 25/02/13**	
CV CHILLED WATER & VI	**335 days?**	**Tue 07/06/11**	**Mon 17/09/12**	
Work package	10 days?	Mon 29/08/11	Fri 09/09/11	
MS3785	**55 days?**	**Tue 07/06/11**	**Mon 22/08/11**	
Préparation MS	10 days?	Tue 07/06/11	Mon 20/06/11	
Market survey	30 days?	Tue 21/06/11	Mon 01/08/11	3
Analyse MS	15 days?	Tue 02/08/11	Mon 22/08/11	3
TS	**50 days?**	**Tue 06/09/11**	**Mon 14/11/11**	
Spec technique	30 days?	Tue 06/09/11	Mon 17/10/11	3
Comité lecture	15 days	Tue 18/10/11	Mon 07/11/11	4
Finalisation spec	1 wk	Tue 08/11/11	Mon 14/11/11	4



EN/CV : PAUL PEPINSTER, BENOIT LACARELLE

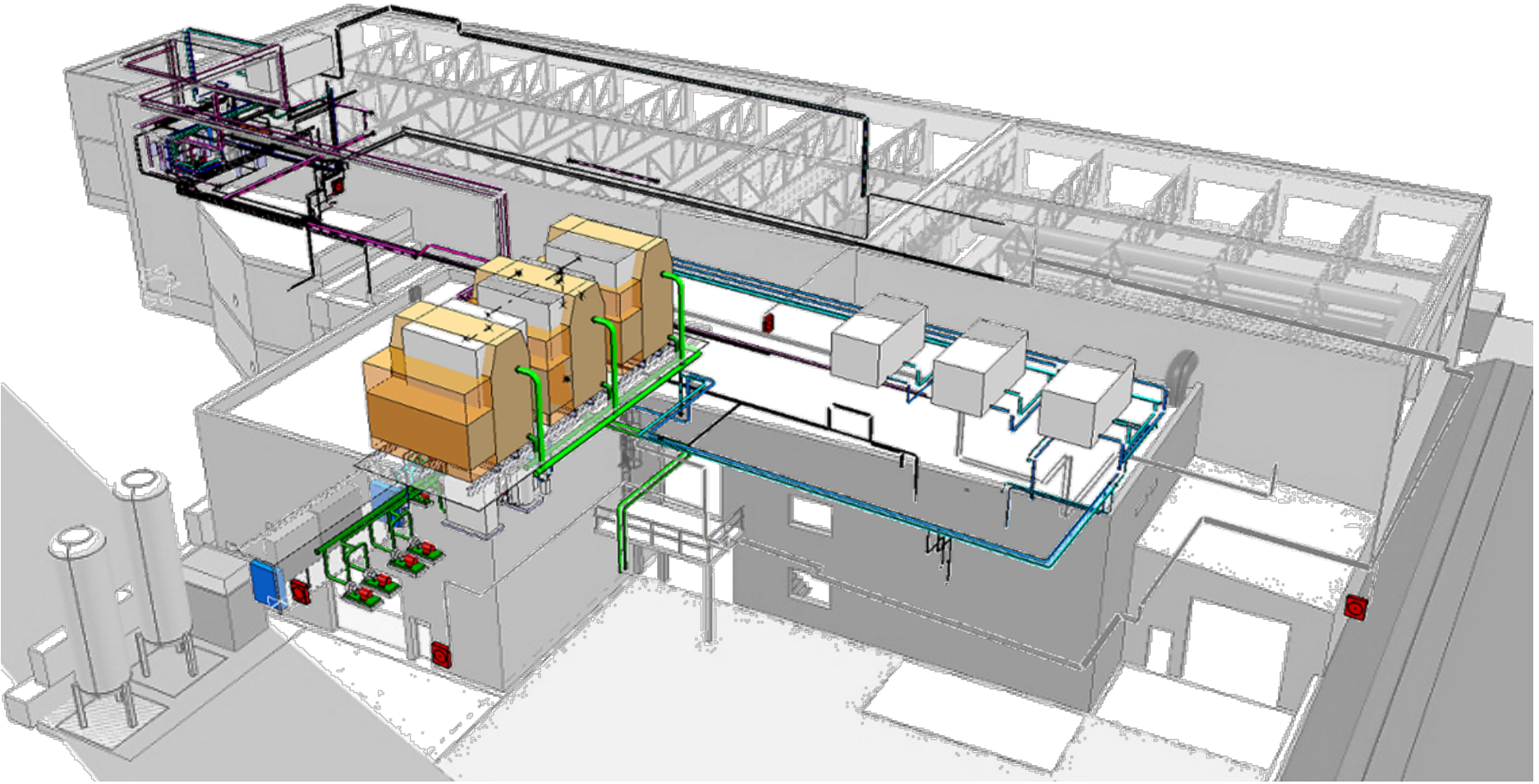
Cooling & Ventilation

Task Name	Duration	Start	Finish	Pr
CV CHILLED WATER INST	**105 days?**	**Tue 18/09/12**	**Mon 11/02/13**	
Travaux	90 days	Tue 18/09/12	Mon 21/01/13	5
ICE programmation	2 wks	Tue 08/01/13	Mon 21/01/13	6
Tests	10 days?	Tue 22/01/13	Mon 04/02/13	5
Réception	5 days?	Tue 05/02/13	Mon 11/02/13	6
CV VENTILATION INSTAL	**126 days?**	**Mon 03/09/12**	**Mon 25/02/13**	
Travaux	100 days	Mon 03/09/12	Fri 18/01/13	5
Tests	10 days?	Tue 05/02/13	Mon 18/02/13	5
Réception	5 days?	Tue 19/02/13	Mon 25/02/13	6
Hall extraction installatic	19 days	Mon 07/01/13	Thu 31/01/13	
CV RAW WATER INSTALLA	**120 days?**	**Fri 02/11/12**	**Thu 18/04/13**	
Installation works	100 days?	Fri 02/11/12	Thu 21/03/13	9
ICE programmation	2 wks	Fri 08/03/13	Thu 21/03/13	9
Tests	10 days?	Fri 22/03/13	Thu 04/04/13	9
Commissioning	10 days	Fri 05/04/13	Thu 18/04/13	9
Raw water available for cryo	0 days	Mon 06/05/13	Mon 06/05/13	1
CV DEMI WATER WORKS	**130 days?**	**Mon 03/12/12**	**Fri 31/05/13**	
Dismantling works	30 days?	Mon 03/12/12	Fri 11/01/13	3
Installation works	80 days	Mon 14/01/13	Fri 03/05/13	1
Tests	10 days?	Mon 06/05/13	Fri 17/05/13	9
Commissioning	10 days	Mon 20/05/13	Fri 31/05/13	1
CV water & ventilation ready	0 days	Sat 01/06/13	Sat 01/06/13	1



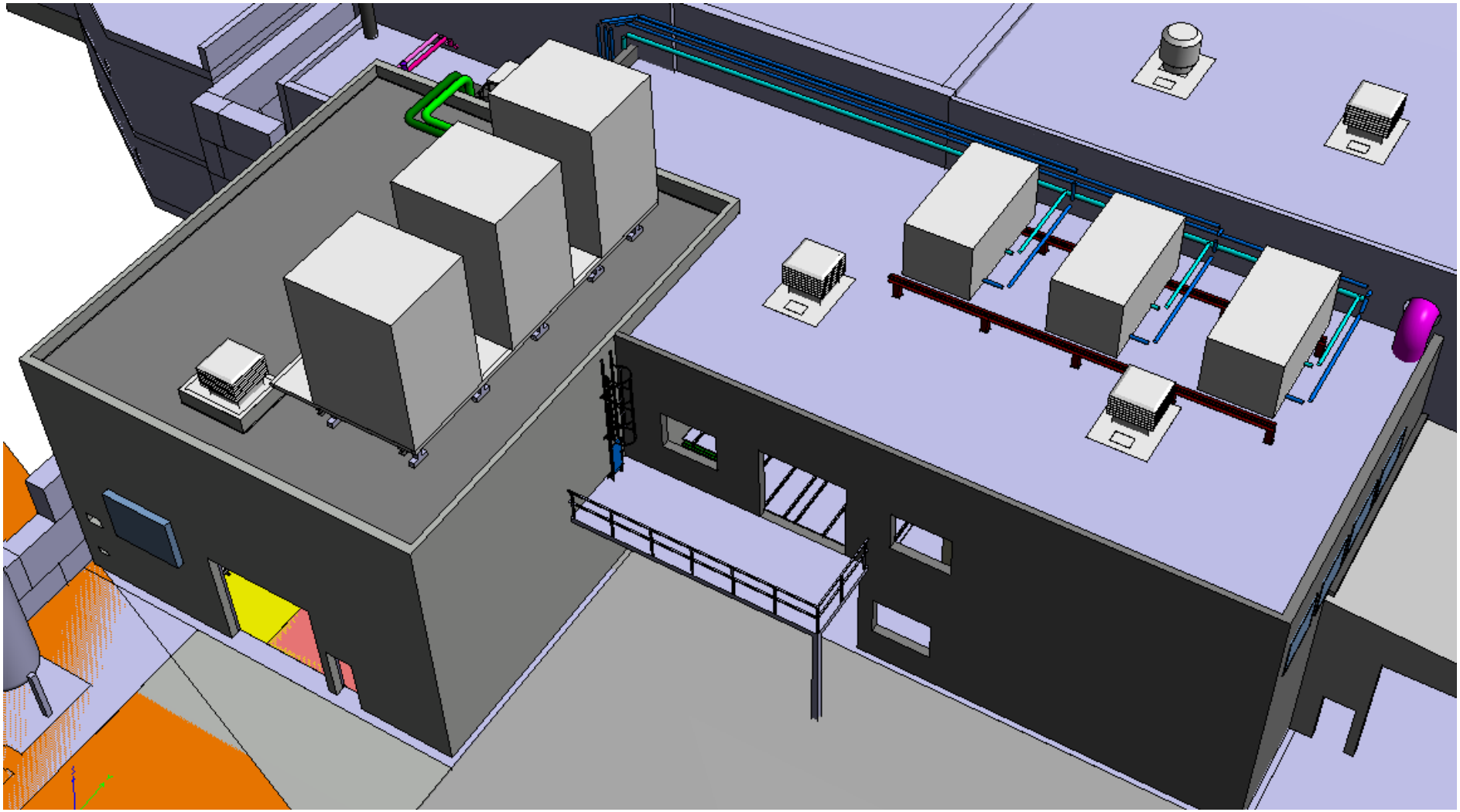
EN/CV : PAUL PEPINSTER, BENOIT LACARELLE

Cooling & Ventilation



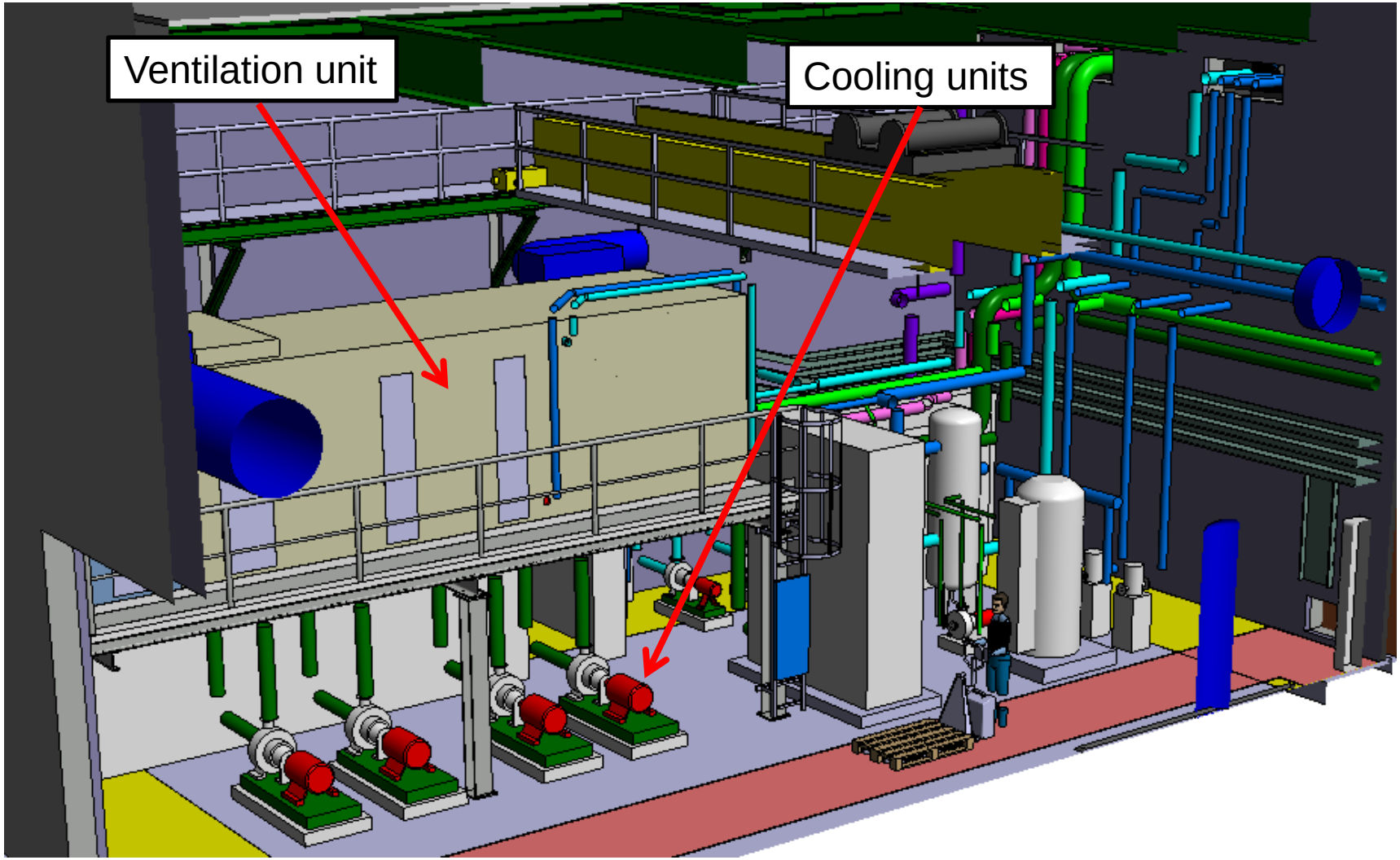
Cooling & Ventilation: July 2012 – June 2013

Cooling & Ventilation



Cooling & Ventilation: July 2012 – June 2013

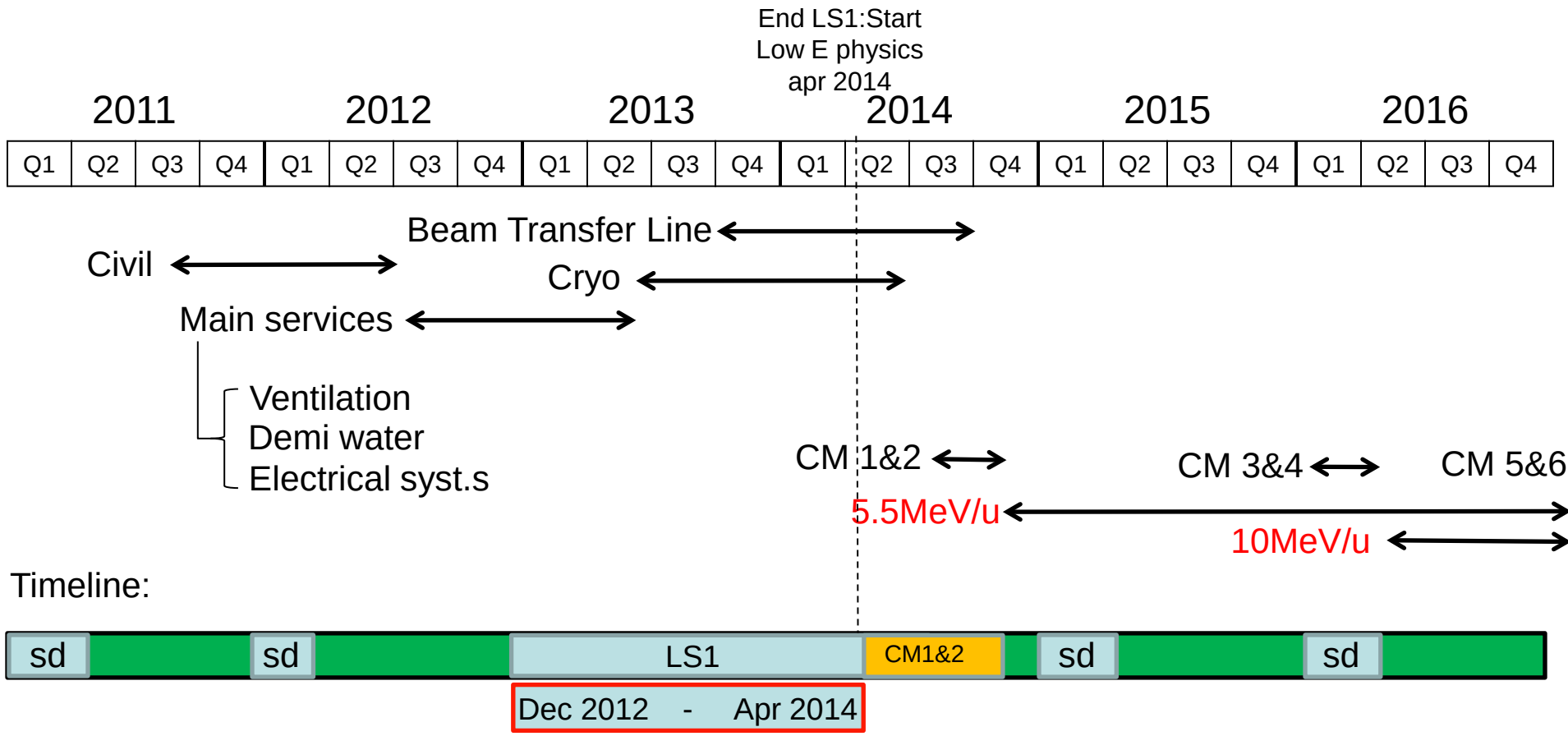
Cooling & Ventilation



Cooling & Ventilation: July 2012 – June 2013

LS1 and 2014 run

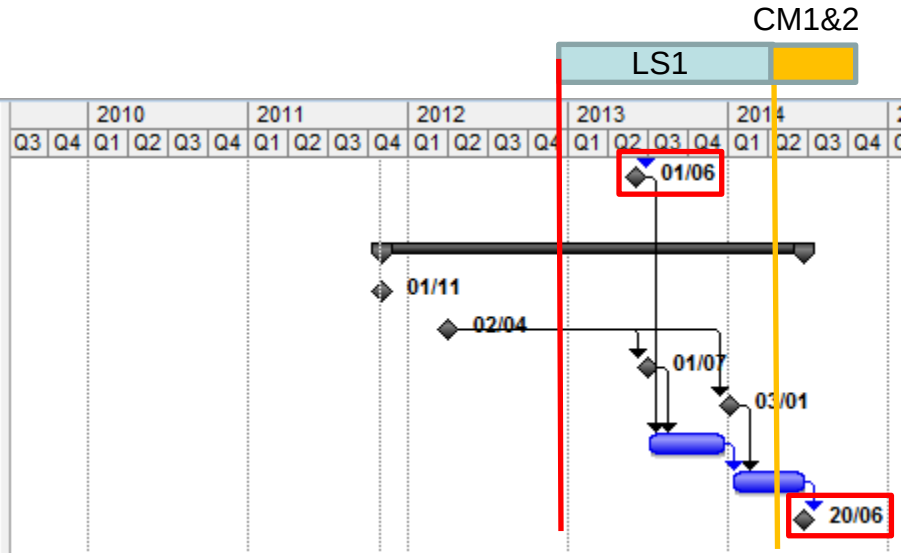
Activities LS1 into 2014 run: Cryogenics, Beam transfer Line, Cryo Modules, commissioning



LS1 and 2014 run

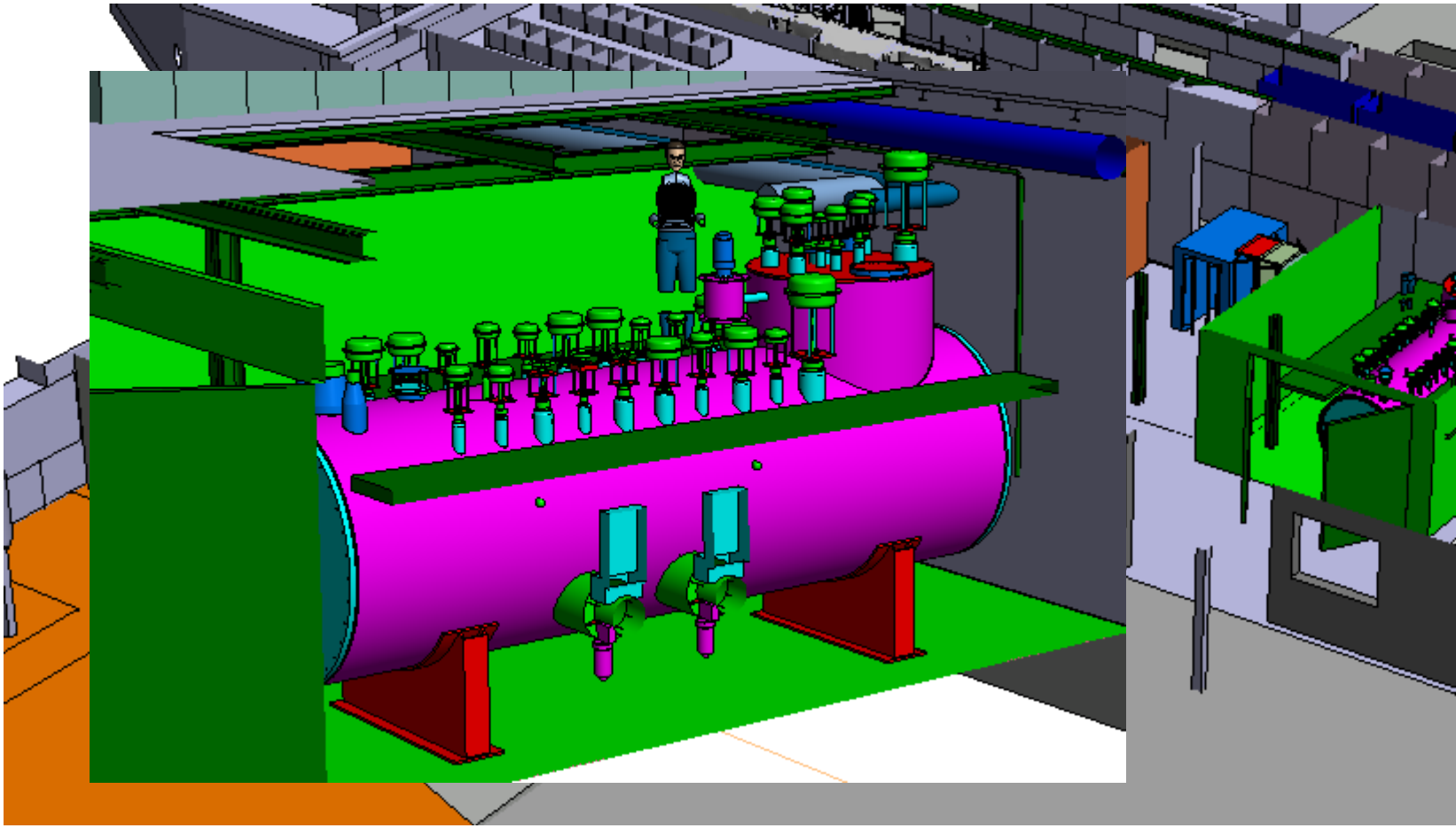
Cryogenics

Task Name	Duration	Start	Finish	Pr
CV water & ventilation ready	0 days	Sat 01/06/13	Sat 01/06/13	1(
Cryogenic System	689 days	Tue 01/11/11	Fri 20/06/14	
bid for cryogenics	0 hrs	Tue 01/11/11	Tue 01/11/11	
contract signature	0 hrs	Mon 02/04/12	Mon 02/04/12	
compressor station delivery	0 hrs	Mon 01/07/13	Mon 01/07/13	1'
cold box + transfer line delivery	0 hrs	Fri 03/01/14	Fri 03/01/14	1'
compressor installation and comm	6.25 mons	Mon 01/07/13	Fri 20/12/13	1'
cold box and transferline installati	6 mons	Mon 06/01/14	Fri 20/06/14	1'
Cryo commissioned	0 hrs	Fri 20/06/14	Fri 20/06/14	1'



TE/CRG : NICOLAS DELRUELLE, JOS METSELAAR

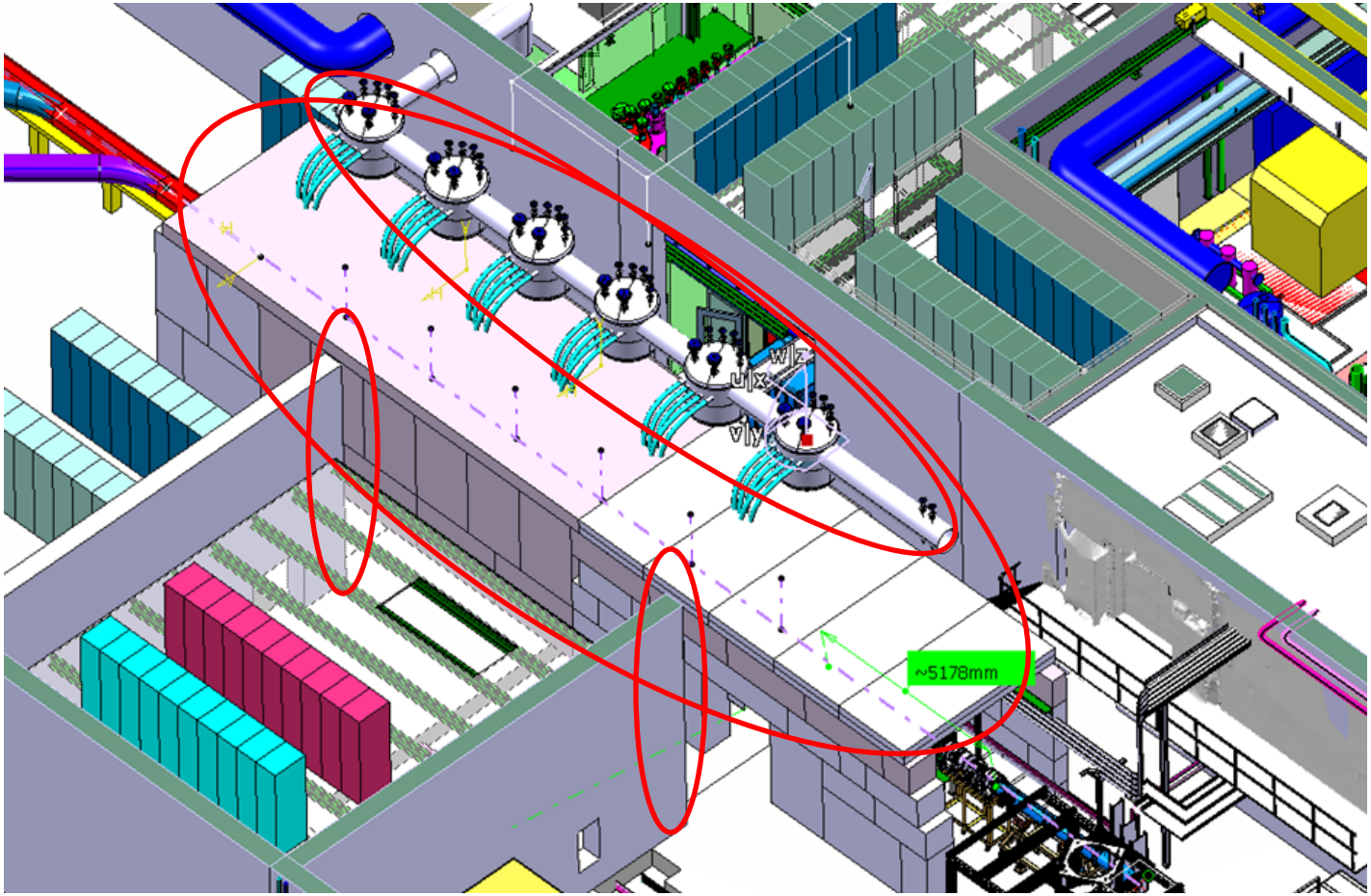
Cryogenics



Compressors: July 2013 – December 2013

Cold Box: Jan 2014 – June 2014

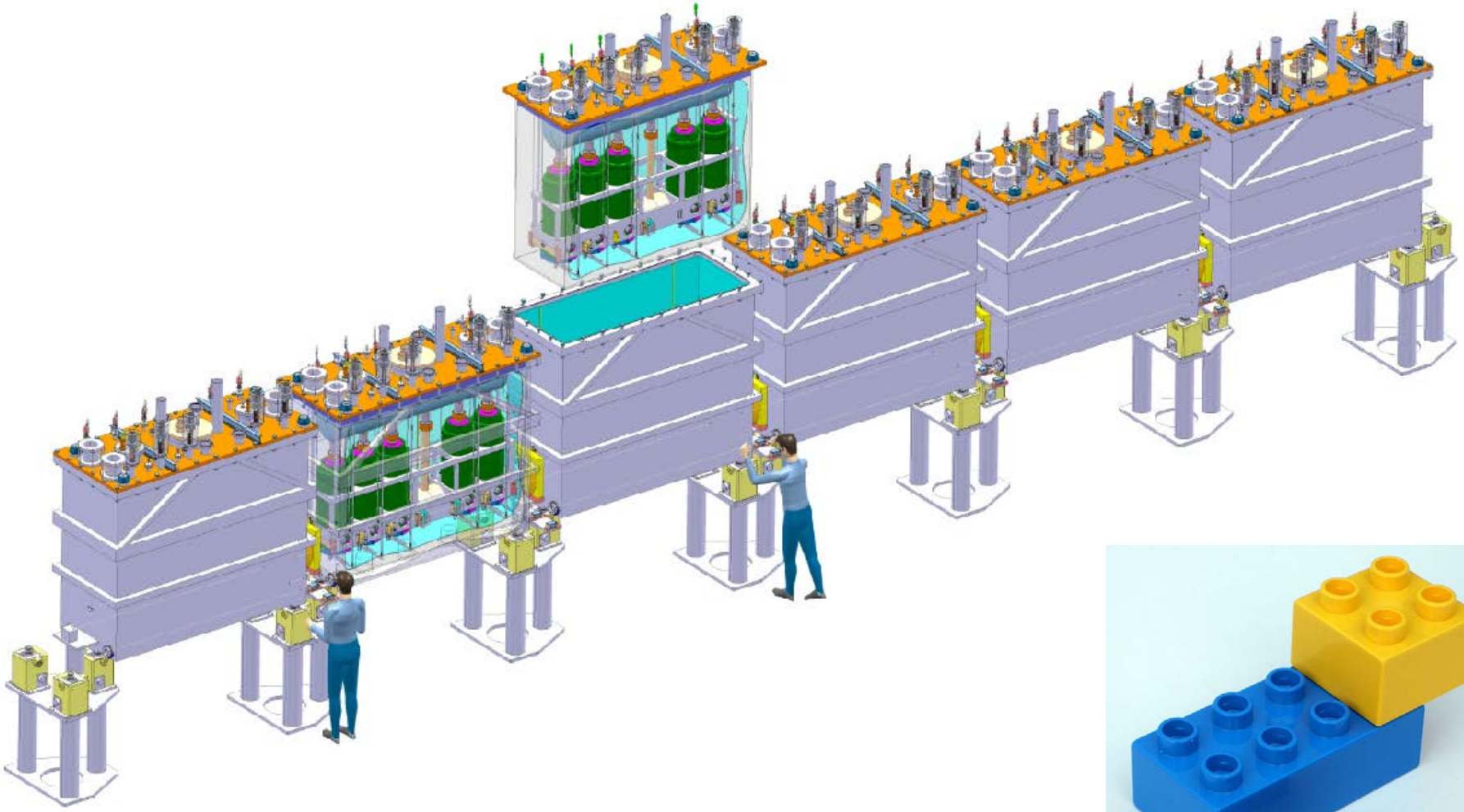
Tunnel and Cryo Line



Cutting walls & install tunnel: Sep 2013 LS1

Cryo Cold Line: January 2014 – June 2014

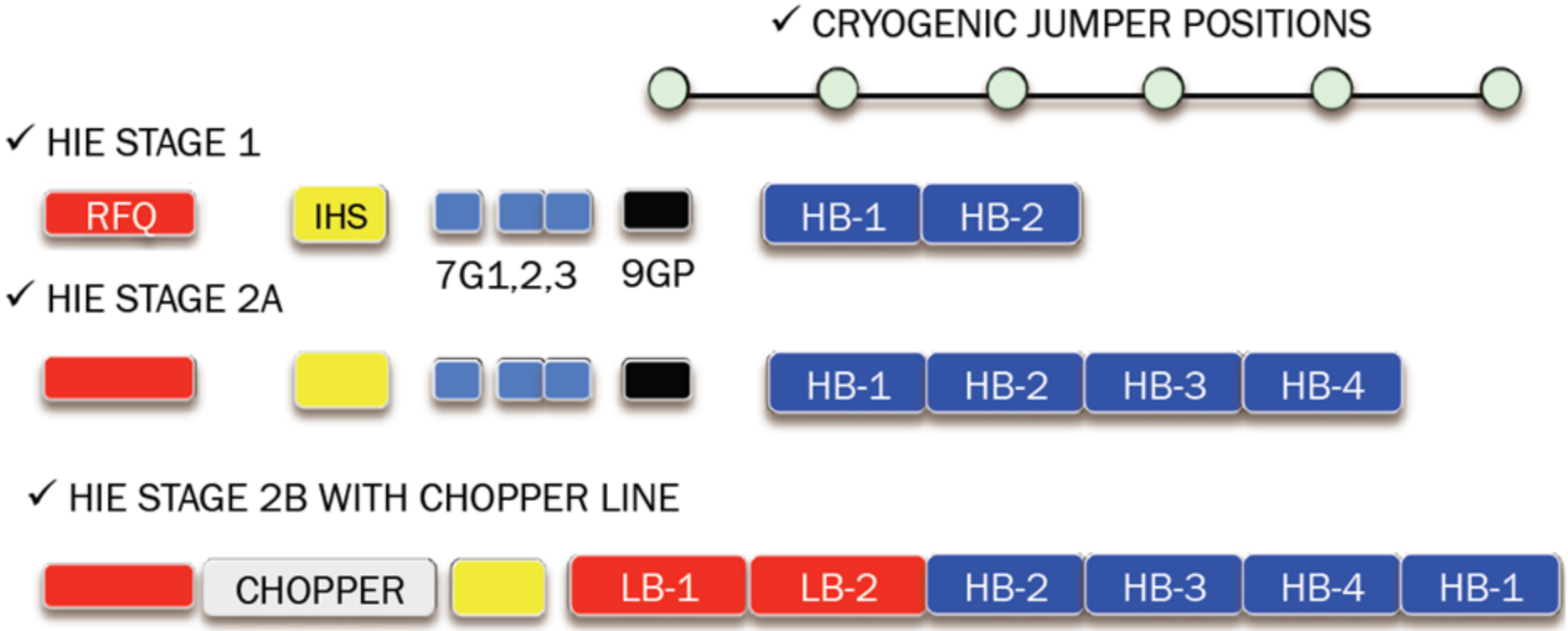
Superconducting Linac



Modular installation

Modular installation

Schematic:

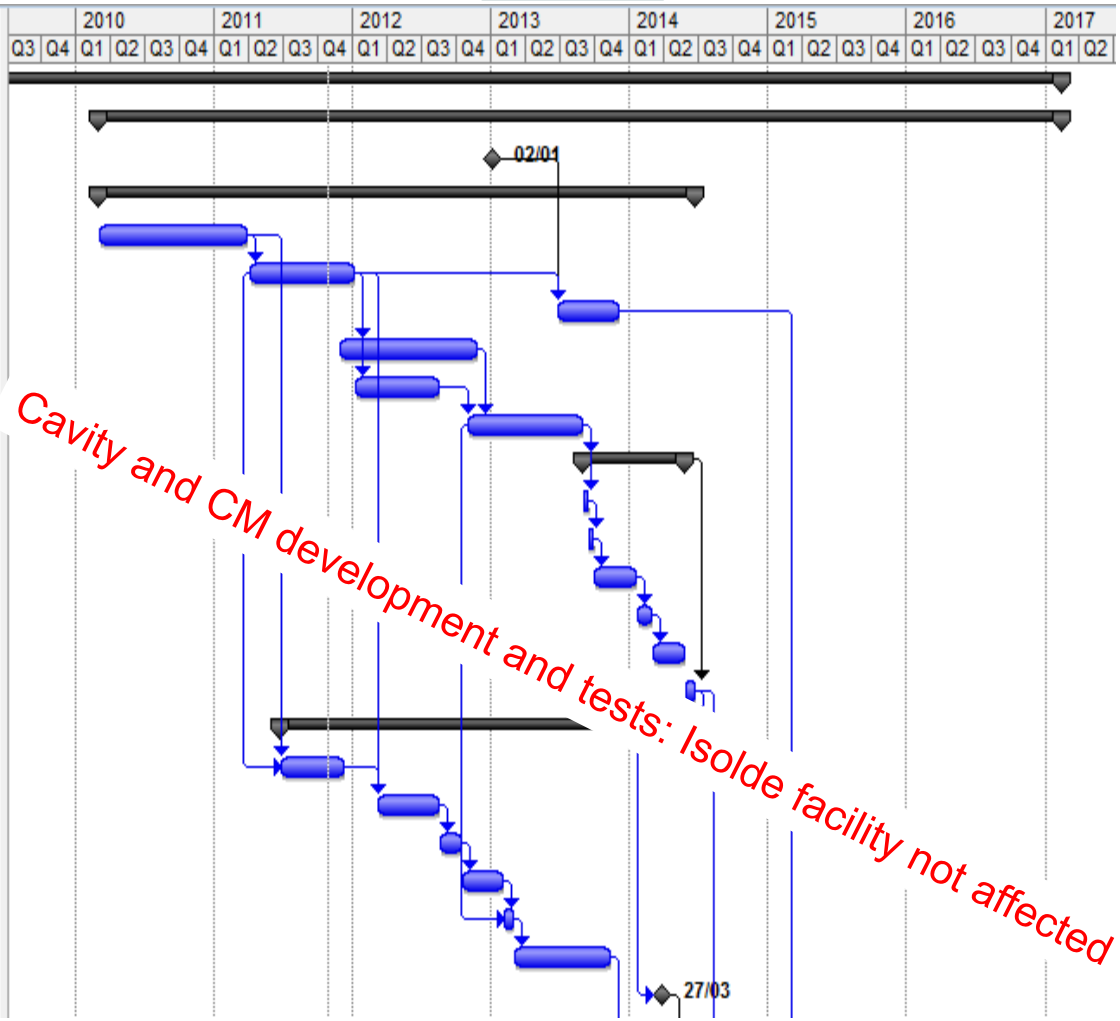


Courtesy: Matteo Pasini, Matthew Fraser

Superconducting Linac

LS1

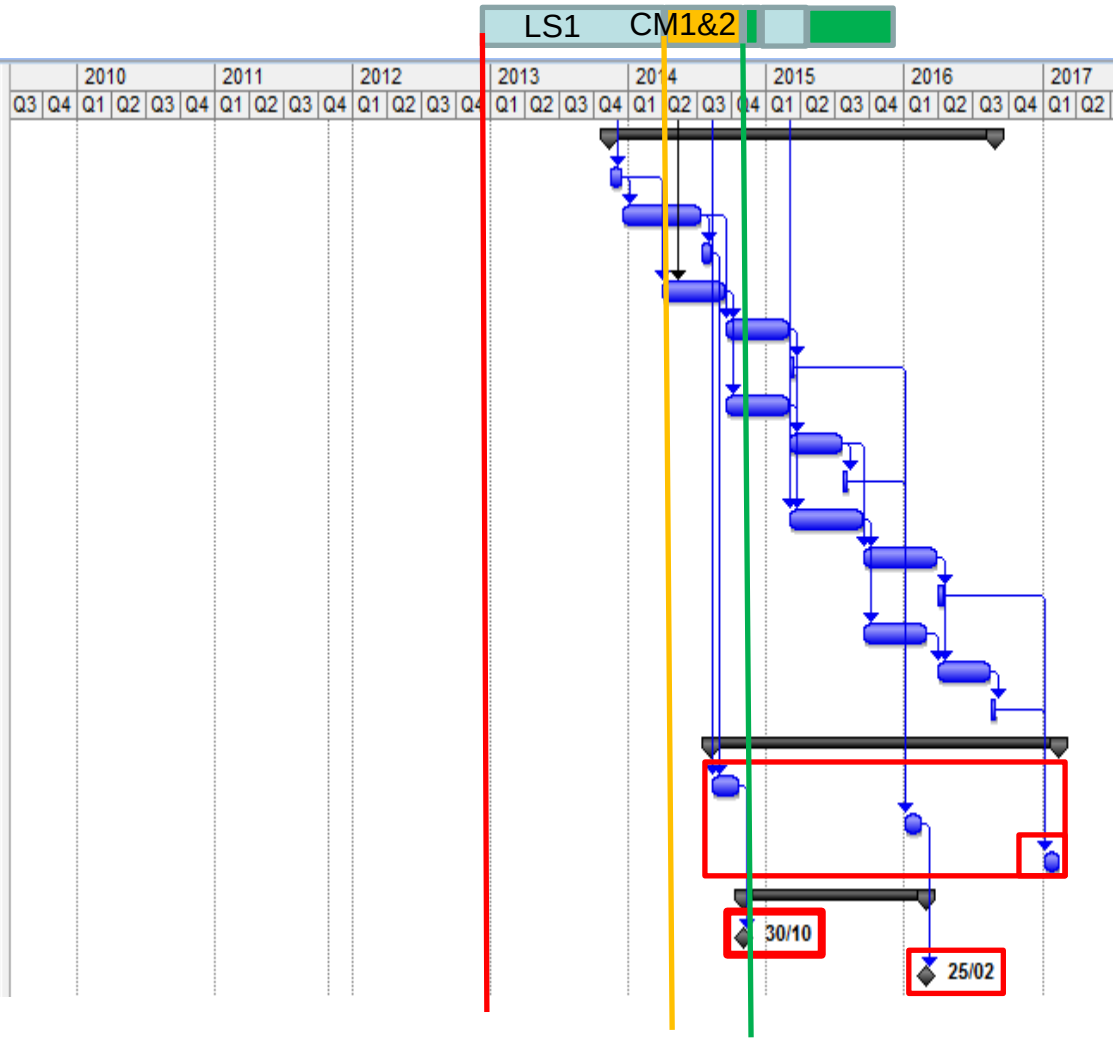
Task Name	Duration	Start	Finish	Pr
SuperConducting Linac	**2379 days**	**Tue 01/01/08**	**Fri 10/02/17**	
Cryomodule	**1815 days**	**Mon 01/03/10**	**Fri 10/02/17**	
OK for lowB	0 hrs	Wed 02/01/13	Wed 02/01/13	
First unit (Proto)	**1124 days**	**Mon 01/03/10**	**Thu 19/06/14**	
Finalise concept	14 mons	Mon 01/03/10	Fri 25/03/11	
Cryomodule detailed design	10 mons	Fri 01/04/11	Thu 05/01/12	1:
LowB design update	6 mons	Wed 19/06/13	Tue 03/12/13	1:
Procurement for 1st unit	260 days	Fri 25/11/11	Thu 22/11/12	1:
Tooling development	8 mons	Fri 06/01/12	Thu 16/08/12	1:
Assembly of 1st unit (proto)	11 mons	Thu 25/10/12	Thu 29/08/13	1
Test of 1st unit	**190 days**	**Thu 29/08/13**	**Thu 22/05/14**	**1**
Dimensionnal check	2 wks	Thu 29/08/13	Thu 12/09/13	1
LeakTest	2 wks	Thu 12/09/13	Thu 26/09/13	1
Thermal test	4 mons	Thu 26/09/13	Thu 16/01/14	1
RF test	6 wks	Thu 16/01/14	Thu 27/02/14	1
Correction	3 mons	Thu 27/02/14	Thu 22/05/14	1
Proto Accepted	1 mon	Thu 22/05/14	Thu 19/06/14	1
Contracting for series produc	**720 days**	**Fri 24/06/11**	**Thu 27/03/14**	
Market Survey for unit 2 to X	6 mons	Fri 24/06/11	Thu 08/12/11	1:
Call for Tender for unit 2 to X	6 mons	Fri 02/03/12	Thu 16/08/12	1
Offer analysis	2 mons	Fri 17/08/12	Thu 11/10/12	1
Contract negotiation	4 mons	Fri 12/10/12	Thu 31/01/13	1
Contract Signed+K-off	1 mon	Fri 01/02/13	Thu 28/02/13	1
Assembly of modules 2	9 mons	Fri 01/03/13	Thu 07/11/13	1
Start series assembly	0 hrs	Thu 27/03/14	Thu 27/03/14	1



TE/MSC: JEAN-PHILIPE TOCK, YANN LECLERCQ, ARNAUD BOUZOUD

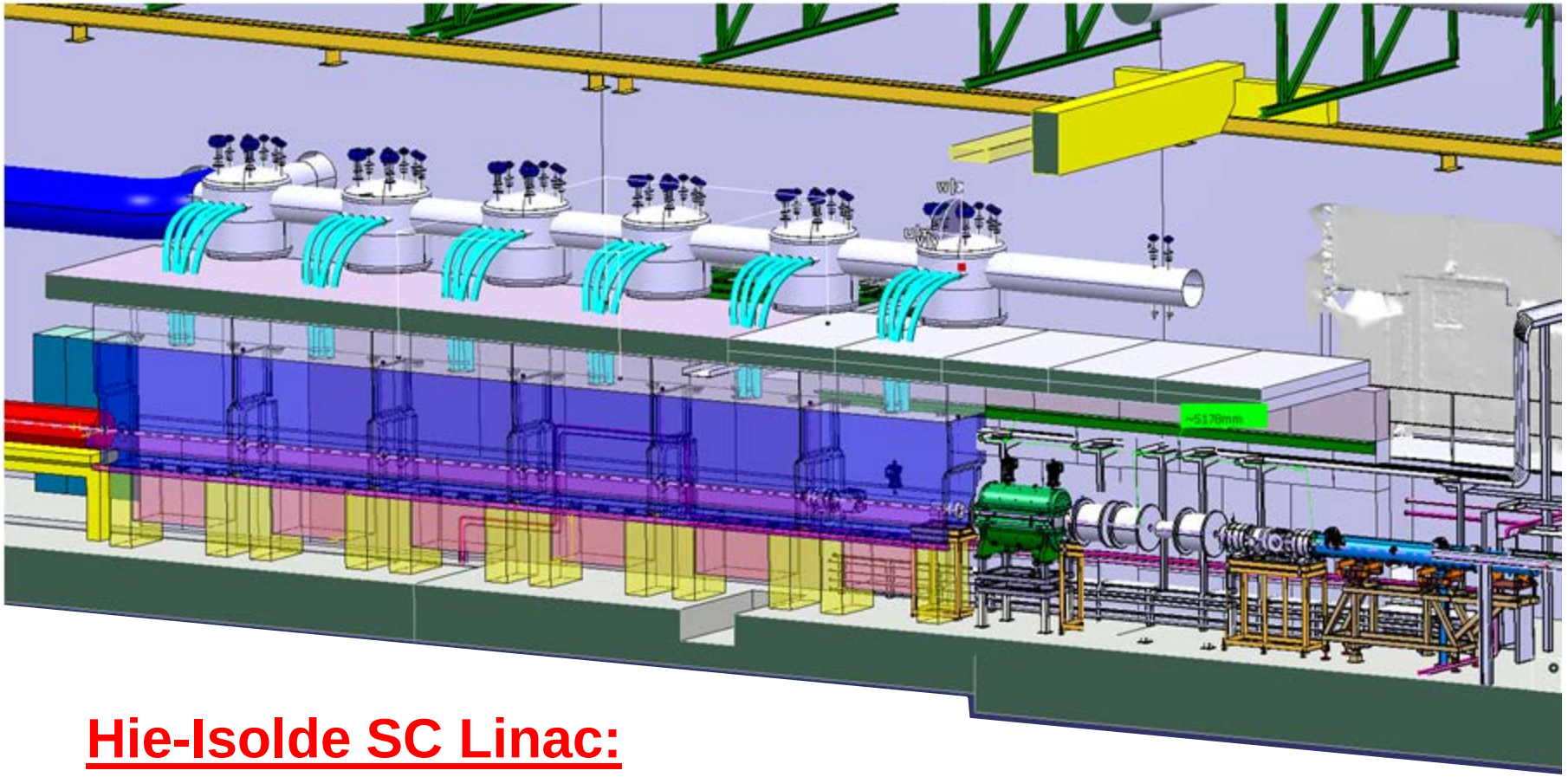
Superconducting Linac

Task Name	Duration	Start	Finish	Pr
Series delivery	**730 days**	**Fri 08/11/13**	**Thu 25/08/16**	
Module 2 delivered	5 wks	Fri 08/11/13	Thu 12/12/13	15
Module 2 acceptance tests	7.5 mons	Fri 13/12/13	Thu 10/07/14	15
Module 2 Accepted	1 mon	Fri 11/07/14	Thu 07/08/14	16
Assembly of module 3	6 mons	Thu 27/03/14	Thu 11/09/14	15
Module 3 acceptance tests	6 mons	Thu 11/09/14	Thu 26/02/15	16
Module 3 accepted	2 wks	Thu 26/02/15	Thu 12/03/15	16
Assembly of module 4	6 mons	Thu 11/09/14	Thu 26/02/15	16
Module 4 acceptance tests	5 mons	Thu 26/02/15	Thu 16/07/15	16
Module 4 accepted	2 wks	Thu 16/07/15	Thu 30/07/15	16
Assembly of module 5	7 mons	Thu 26/02/15	Thu 10/09/15	16
Module 5 acceptance tests	7 mons	Thu 10/09/15	Thu 24/03/16	16
Module 5 accepted	3 wks	Thu 24/03/16	Thu 14/04/16	16
Assembly of module 6	6 mons	Thu 10/09/15	Thu 25/02/16	16
Module 6 acceptance tests	5 mons	Thu 24/03/16	Thu 11/08/16	17
Module 6 accepted	2 wks	Thu 11/08/16	Thu 25/08/16	17
Installation	**656 days**	**Fri 08/08/14**	**Fri 10/02/17**	
CM 1&2	10 wks	Fri 08/08/14	Thu 16/10/14	16
CM 3&4	6 wks	Fri 01/01/16	Thu 11/02/16	16
CM 5&6	6 wks	Mon 02/01/17	Fri 10/02/17	17
LINAC Milestones	**344 days**	**Thu 30/10/14**	**Thu 25/02/16**	
5.5 MeV/u	0 hrs	Thu 30/10/14	Thu 30/10/14	17
10 MeV/u	0 hrs	Thu 25/02/16	Thu 25/02/16	17



TE/MSC: JEAN-PHILIPE TOCK, YANN LECLERCQ, ARNAUD BOUZOUD

Hie-Isolde SC Linac



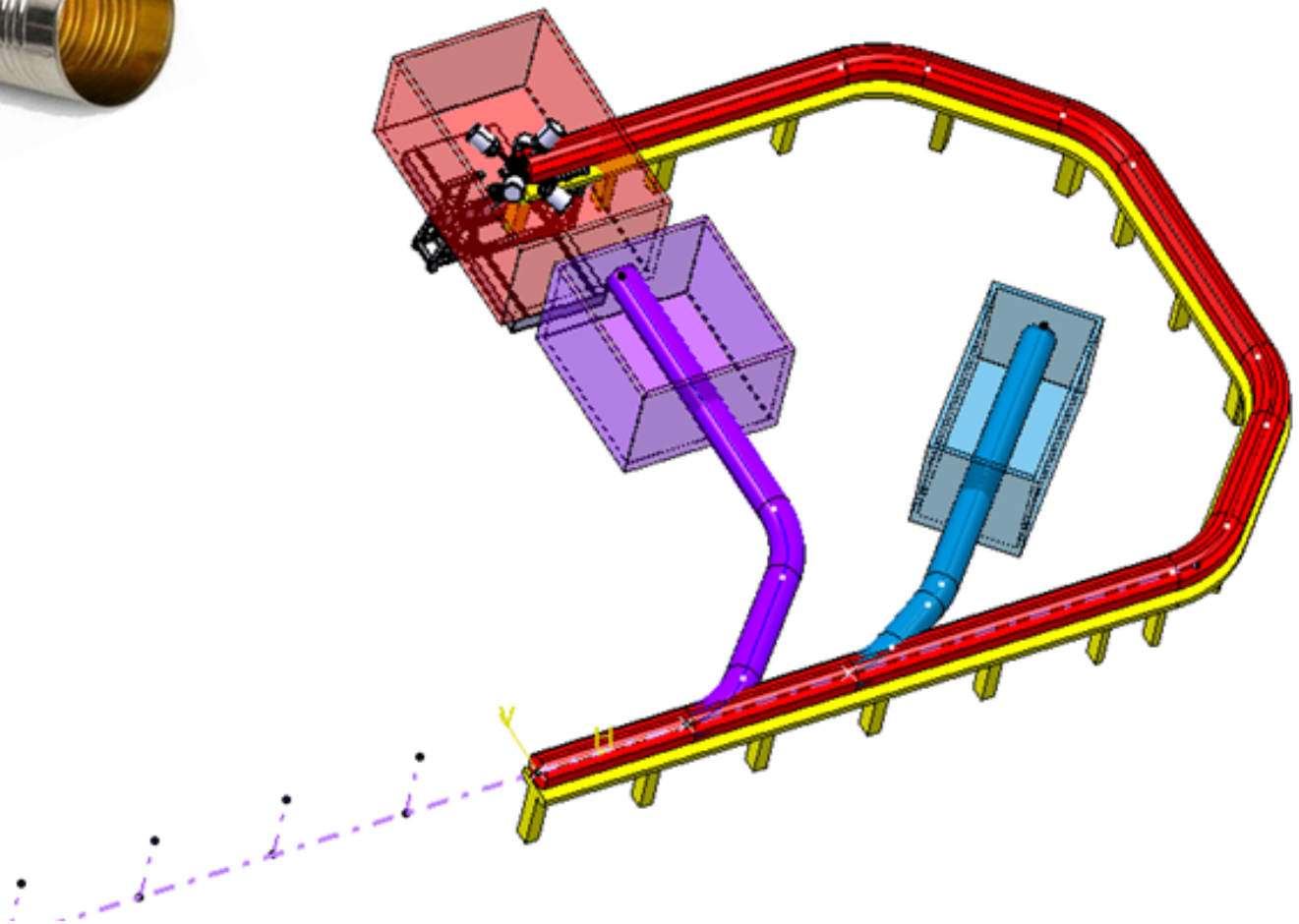
Hie-Isolde SC Linac:

5.5MeV/u by the autumn of 2014

First 10MeV/u by March 2016

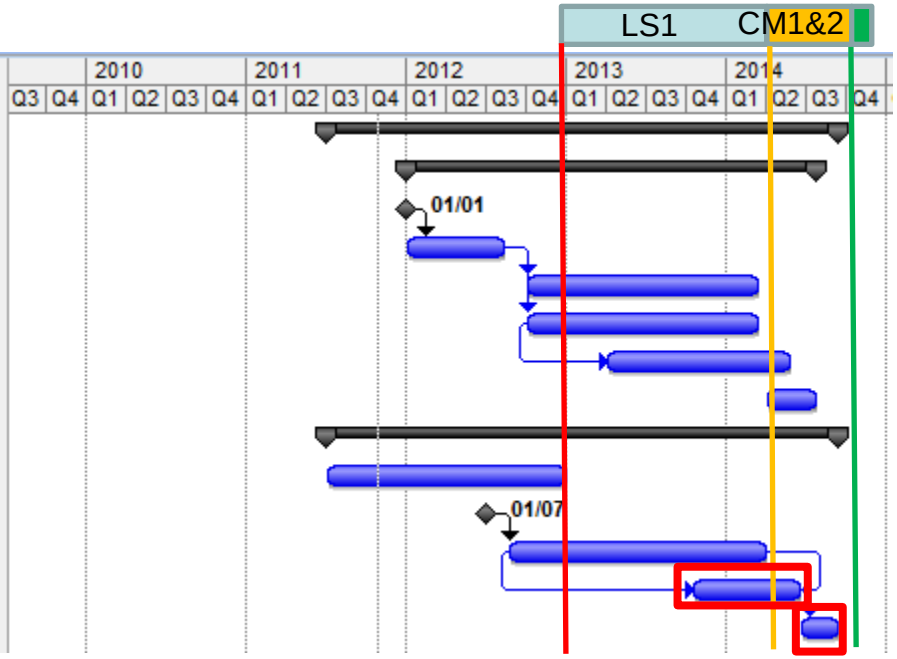
Bunched beam by 2017 ?

Beam Transfer Line



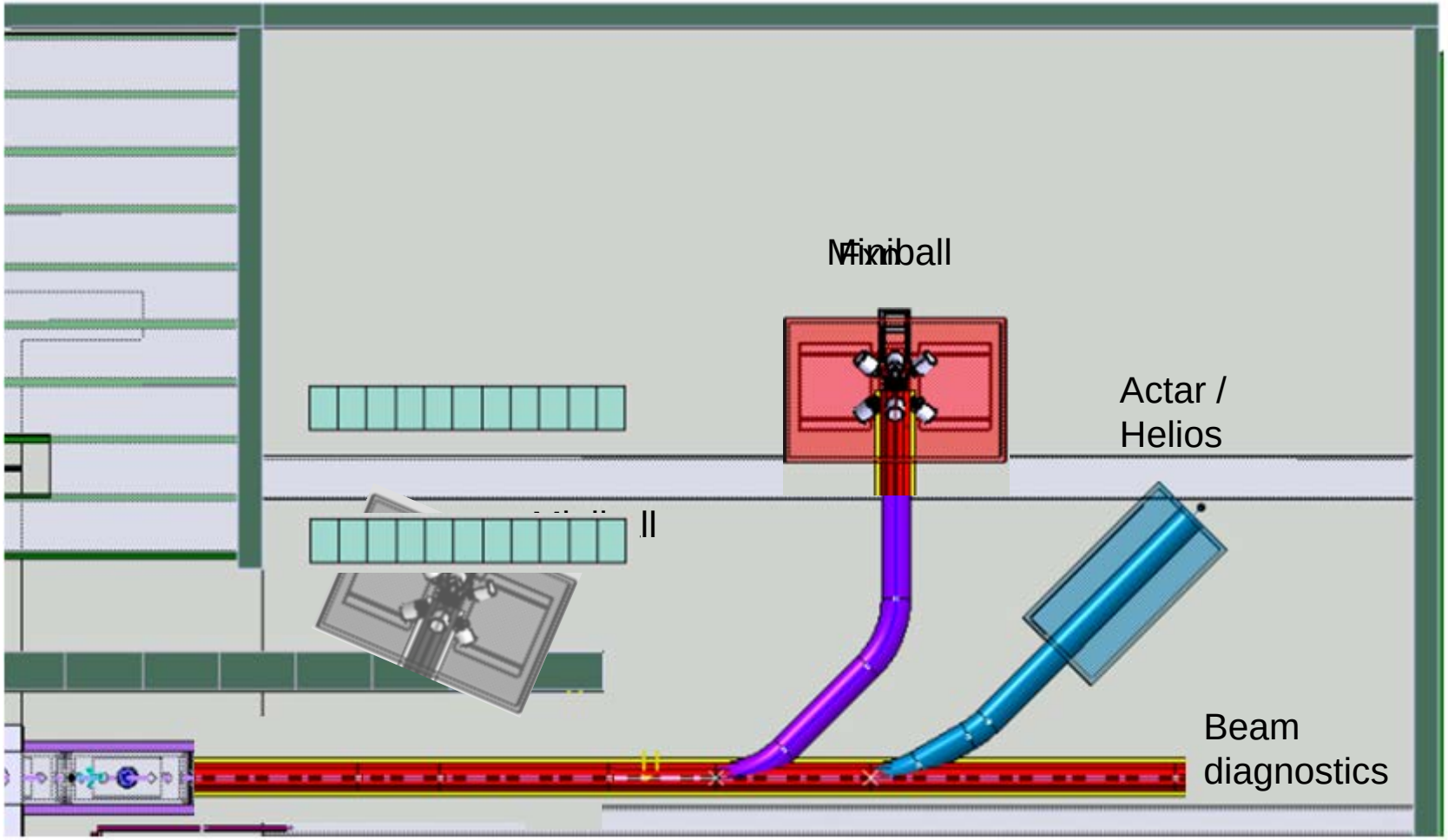
Beam Transfer Line

Task Name	Duration	Start	Finish	Pr
New Beam Transfer line	**333 days?**	**Fri 01/07/11**	**Tue 09/09/14**	
Power Converters	**666 days?**	**Sun 01/01/12**	**Mon 21/07/14**	
Technical Design Report	0 hrs	Sun 01/01/12	Sun 01/01/12	
Prototype construction & valid	8 mons	Mon 02/01/12	Fri 10/08/12	1
Procurement of 110 power co	380 days?	Mon 01/10/12	Fri 14/03/14	1
Controls for 110 power conve	380 days?	Mon 01/10/12	Fri 14/03/14	1
Reception and Testing	300 days?	Mon 01/04/13	Fri 23/05/14	1
Installation & Commissioning	4 mons	Tue 01/04/14	Mon 21/07/14	
Stage#1 Transfer line magnet	**833 days**	**Fri 01/07/11**	**Tue 09/09/14**	
Design specification and tende	391 days	Fri 01/07/11	Fri 28/12/12	
Contract signature	0 hrs	Sun 01/07/12	Sun 01/07/12	
magnet production and testing	21 mons	Tue 21/08/12	Mon 31/03/14	1
Preparation and installation	8.8 mons	Tue 15/10/13	Tue 17/06/14	
commissioning	3 mons	Wed 18/06/14	Tue 09/09/14	1



EN/HDO: YACINE KADI, TE/EPC: DAVID NISBET, TE/MSC: JEREMY BAUCHE, TE/ABT: BRENNAN GODDARD, BE/OP: DIDIER VOULOT

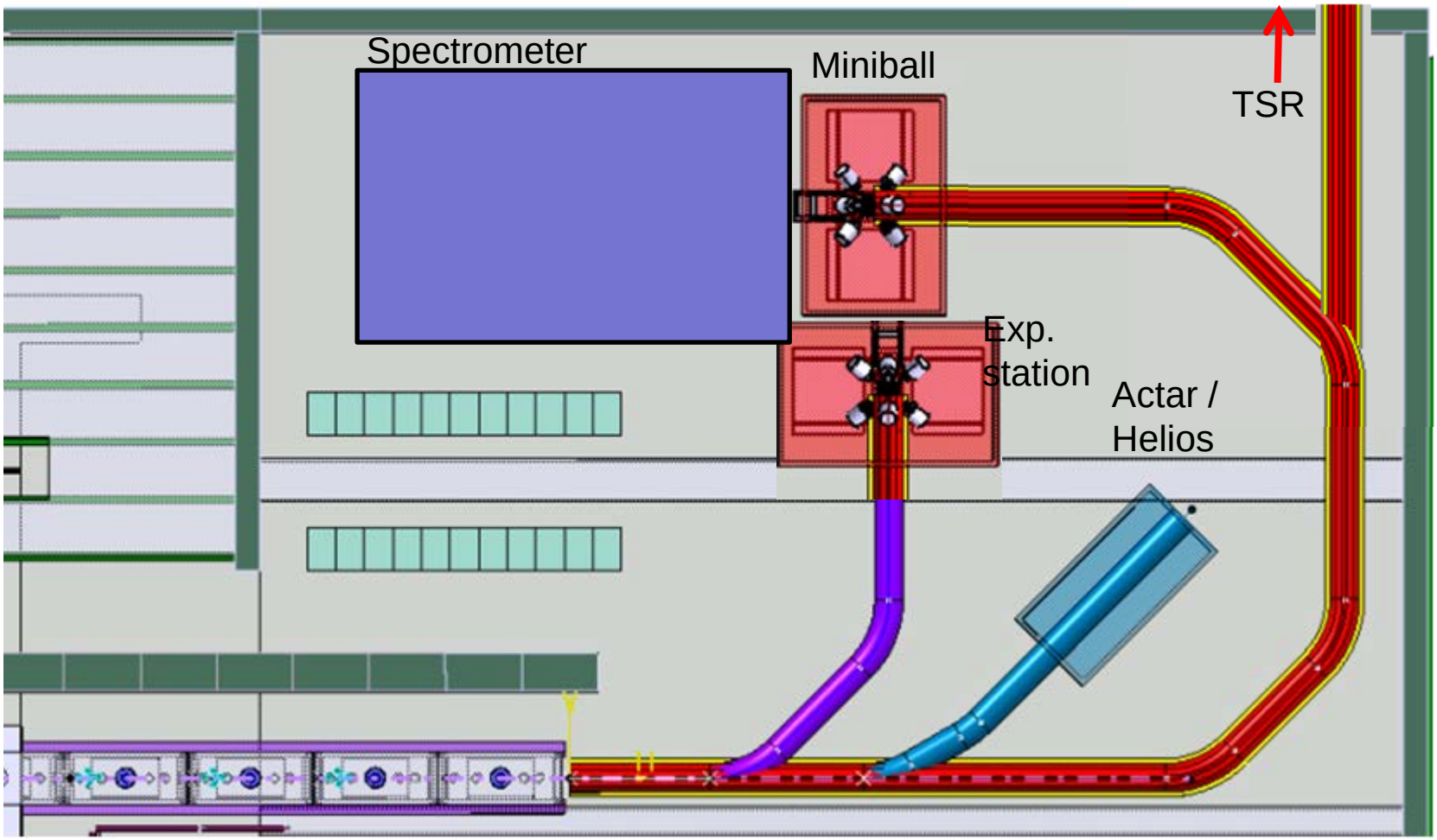
Beam Transfer Line Stage 1



Straight line with 2 branches – Oct 2013 - Sept 2014

Miniball move: Oct 2013 – April 2014

Beam Transfer Line Stage 3



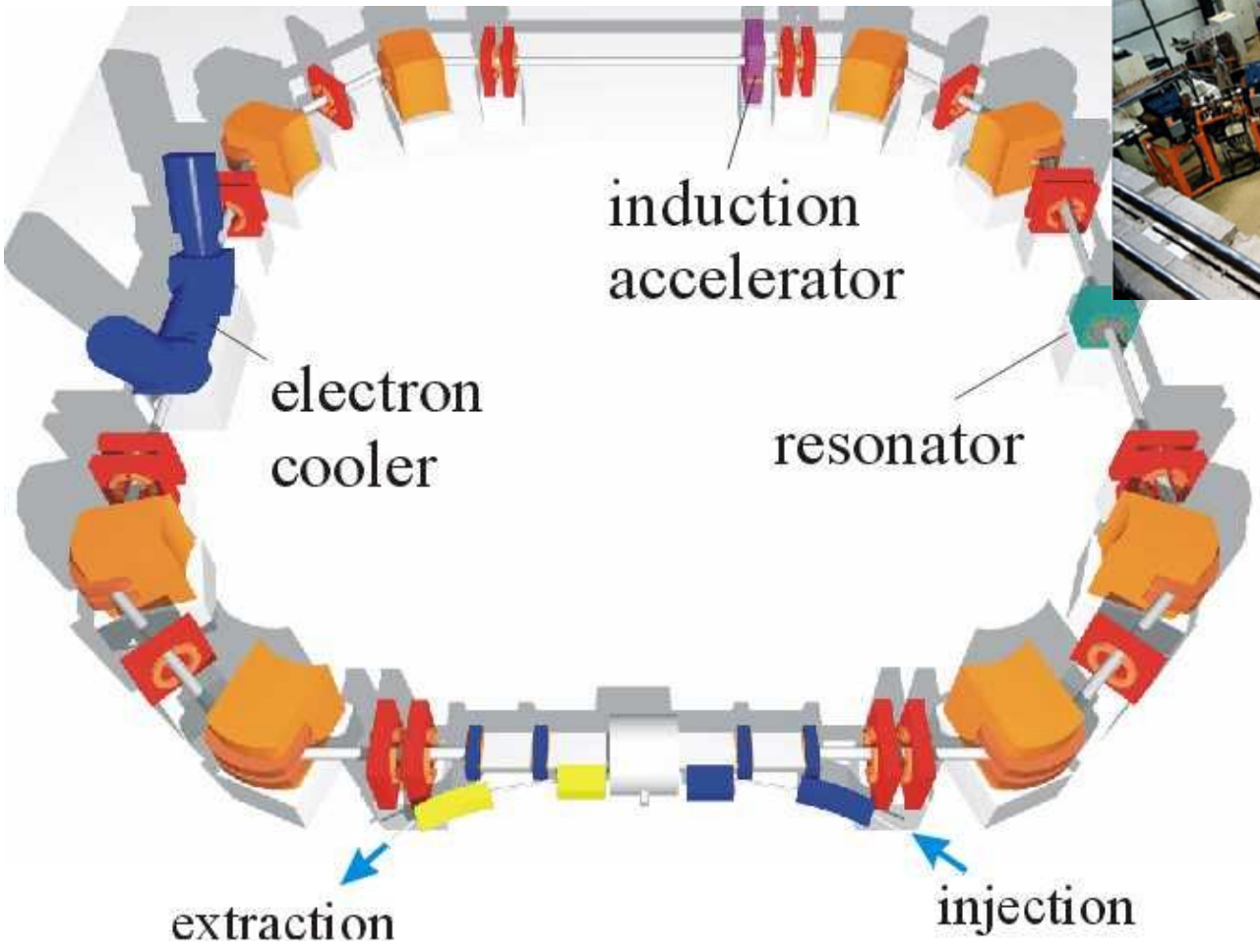
Stage 3:

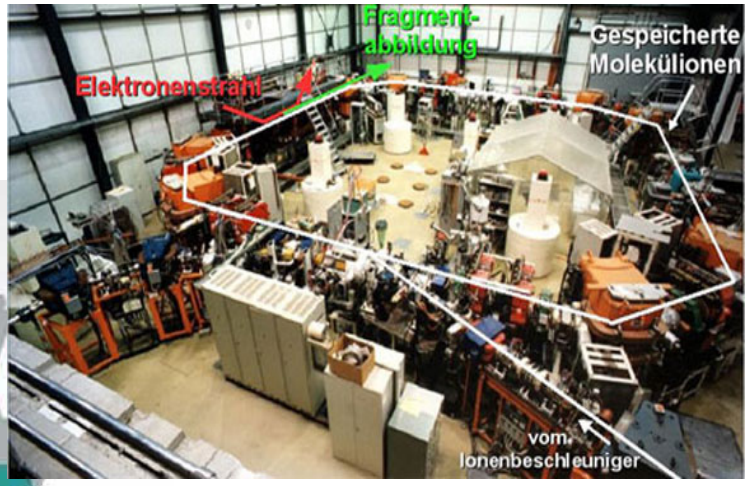
TSR and beyond..

I Spectrometer installation

Possible LS1 activities

TSR @ Hie-Isolde



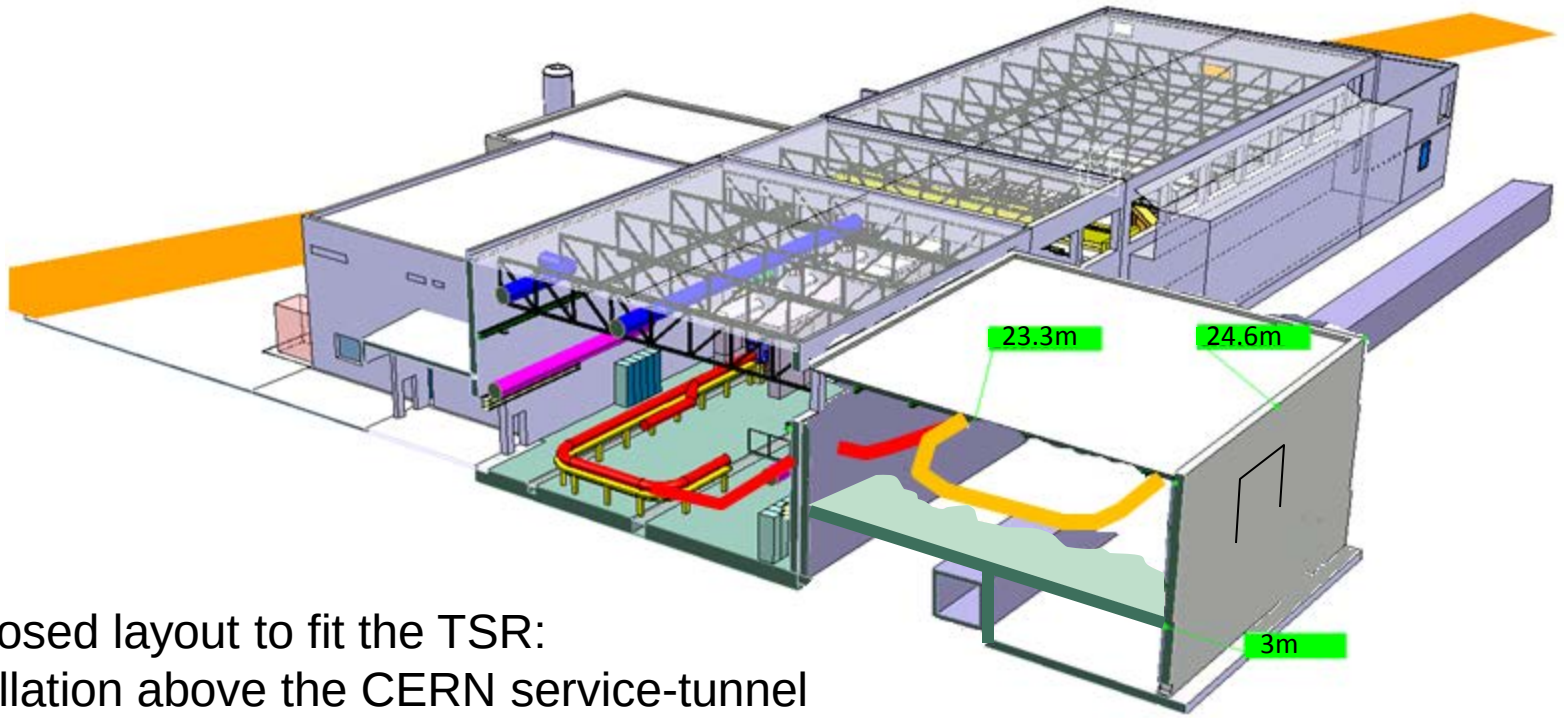


TSR Max
Planck Institute
Heidelberg

TSR@Hie-ISOLDE
LOI endored Jan 2011
TDR submitted Jan 2012
(K. Blaum, Y. Litvinov)

TSR @ Hie-Isolde

Jura (west) side



Proposed layout to fit the TSR:
Installation above the CERN service-tunnel
Tilted beamline coming up from the machine.

Cost study:
Eliseo Perez-Duenas GS/SE

User Facilities

1. Increasing the surface of the Solid State Lab in building B.115:

For RP safety reasons all solid state activities will be moved from B.275 to B.115
This will suppress the existing workshop in B.115 and courtyard between B.115 and B.601

under discussion

2. Replace the existing building 507 by a new building / modular cabins:

Ground floor (only accessible from within the surveyed area):

- Labs and workshop

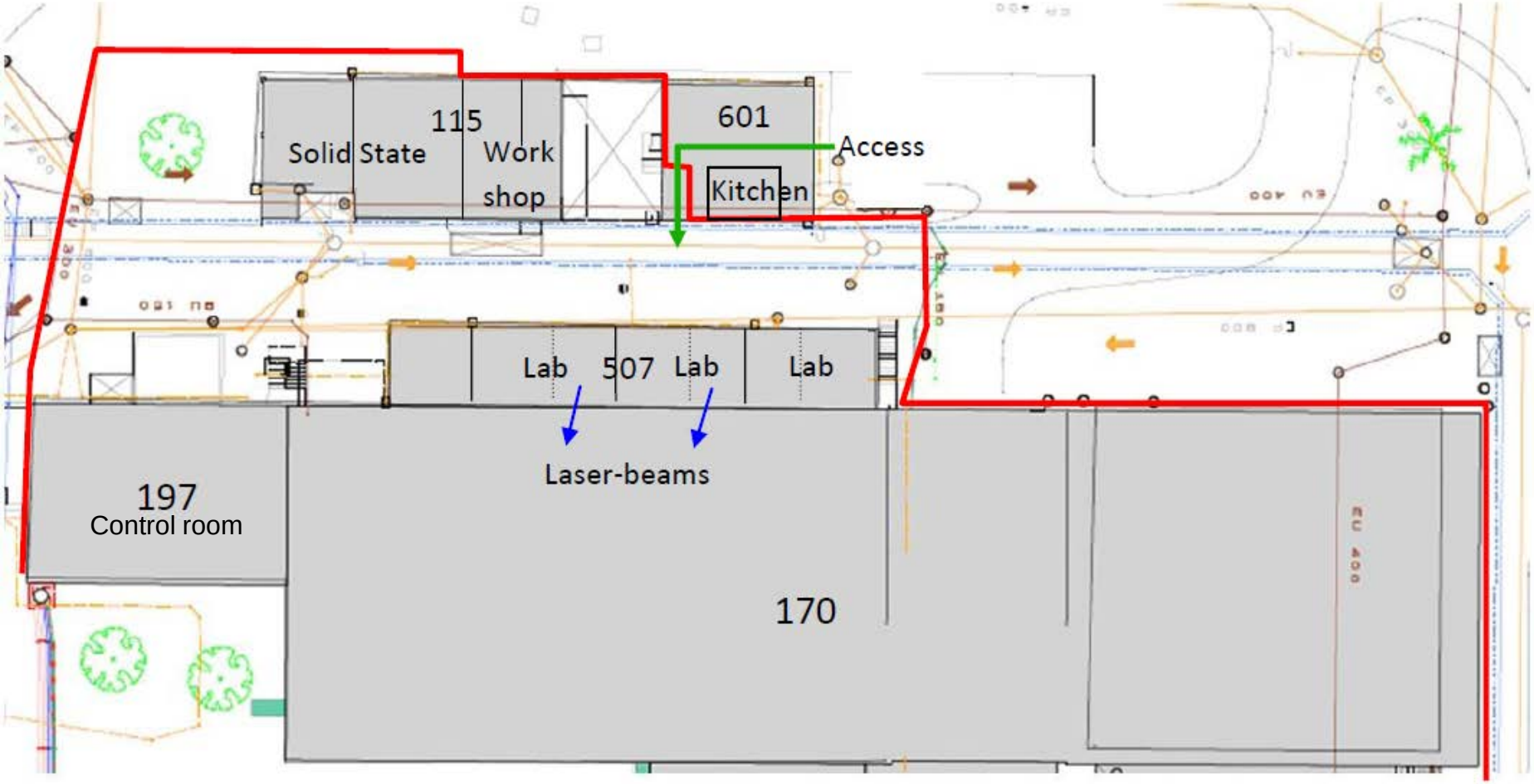
First floor (accessible from outside the surveyed area):

- Data Acquisition rooms
- Meeting room/Visitors Center

Cost study:
Eliseo Perez-Duenas GS/SE

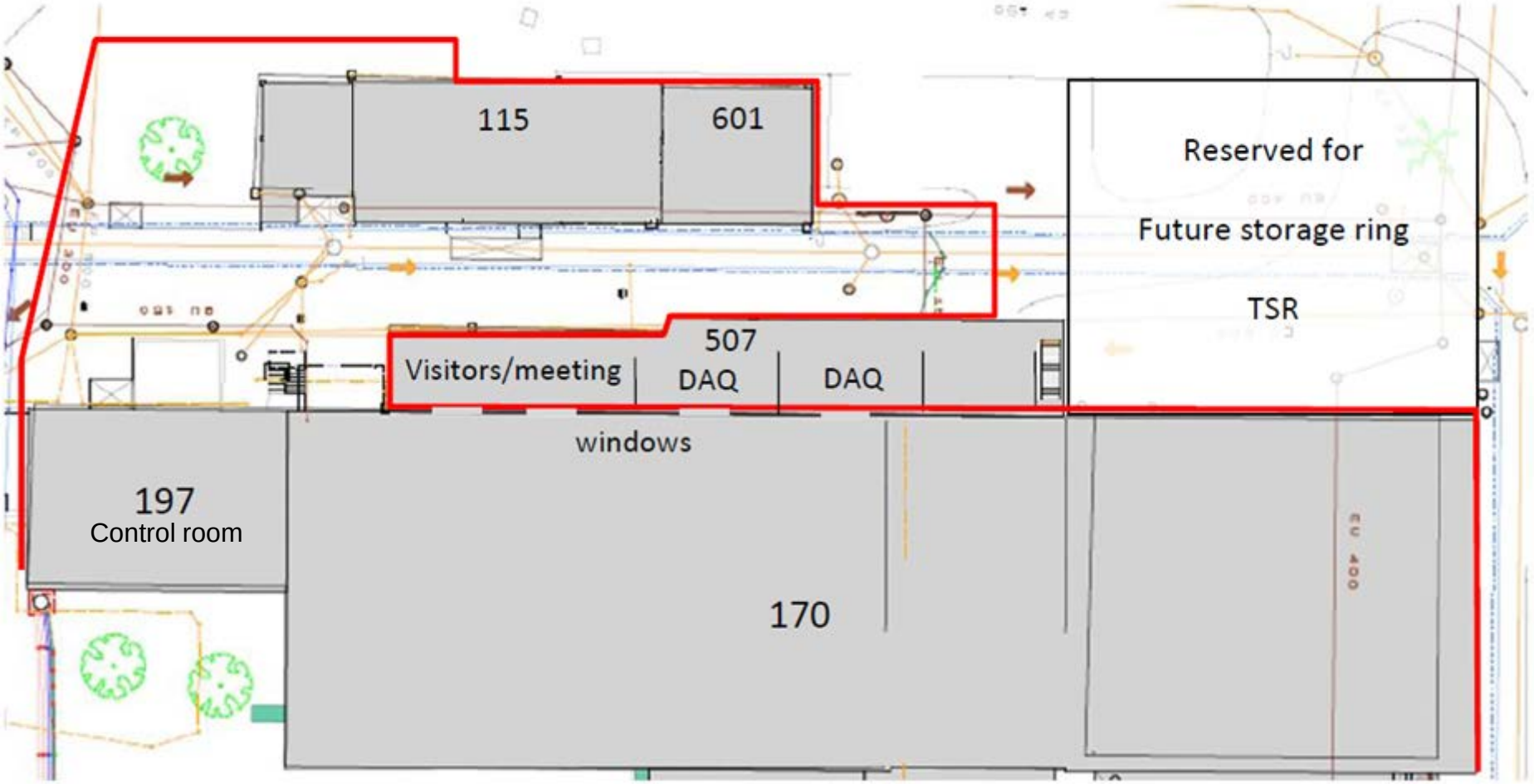
User Facilities

Present situation: - ground floor



Replace building 507

Possible future situation: - first floor 507 accessible from outside the surveyed area):



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- BE/OP : DIDIER VOULOT
- PH/SME : YORICK BLUMENFELD
- EN/HDO : YACINE KADI
- BE/RF : MATTEO PASINI, MATTHEW FRASER
- EN/CV : PAUL PEPINSTER, BENOIT LACARELLE
- EN/EL : RENE NECCA
- TE/CRG : NICOLAS DELRUELLE, JOS METSELAAR
- EN/STI : RICHARD CATHERALL, ANA-PAULA BERNARDES
- GS/DI : CYRILLE BEDEL
- TE/MSC : JEAN-PHILIPE TOCK, YANN LECLERCQ, ARNAUD BOUZOUD