



HIE-ISOLDE Phase 2 Outstanding Issues

Y. Kadi for the HIE-ISOLDE Project Team

83rd ISOLDE Collaboration Committee Meeting

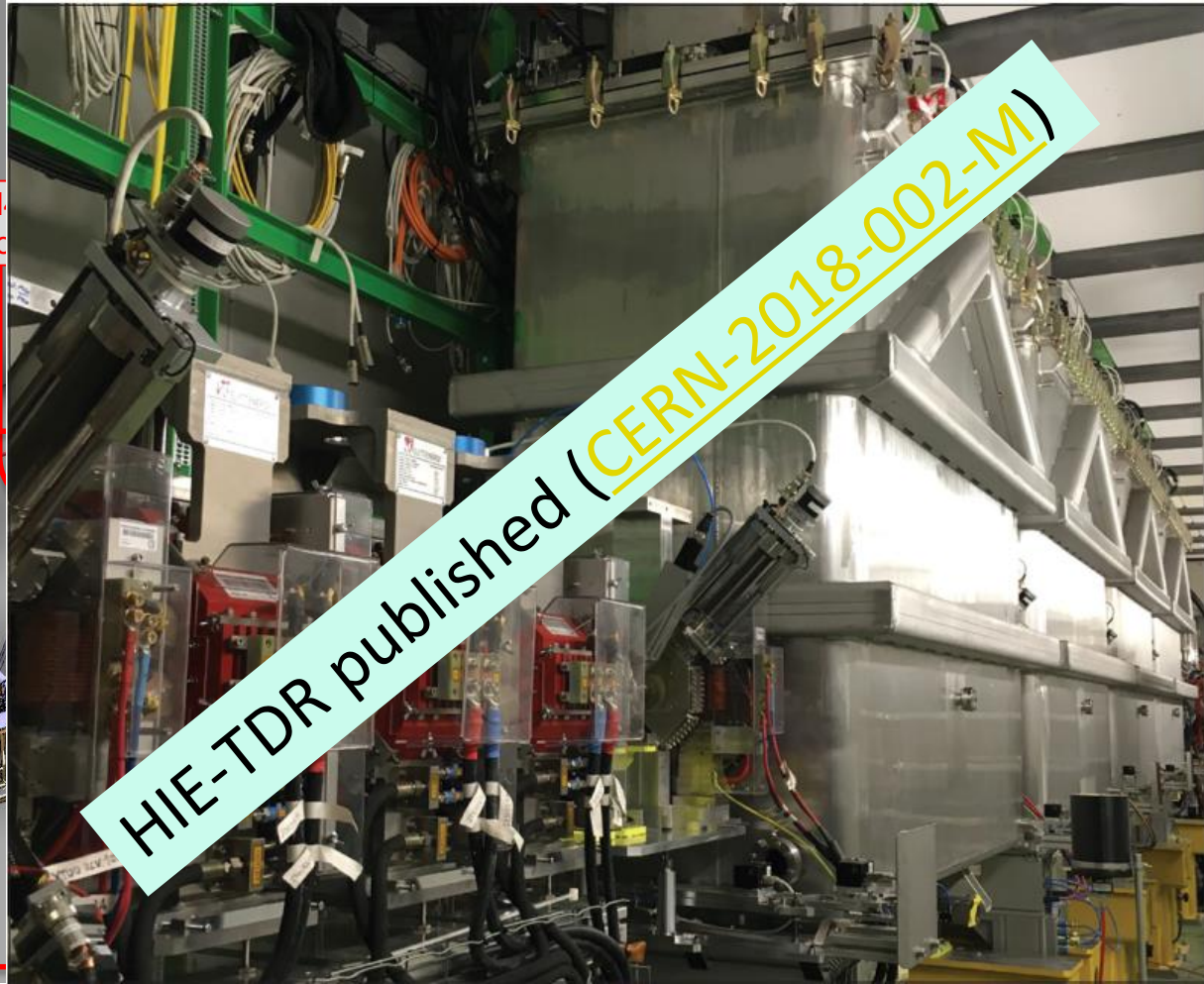
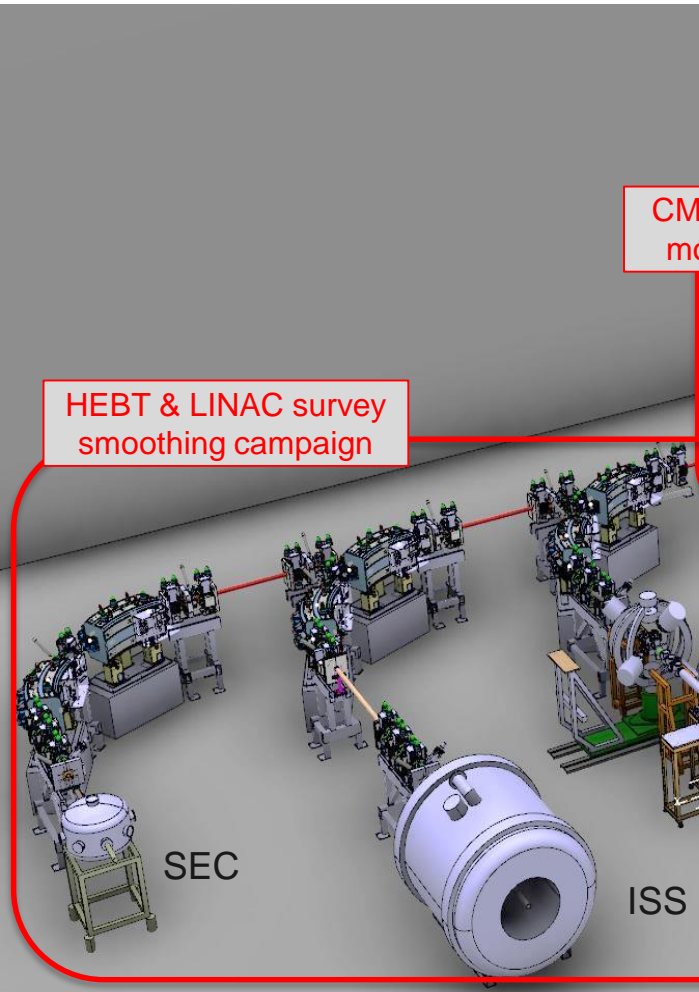
CERN, 6 November 2018



OUTLINE

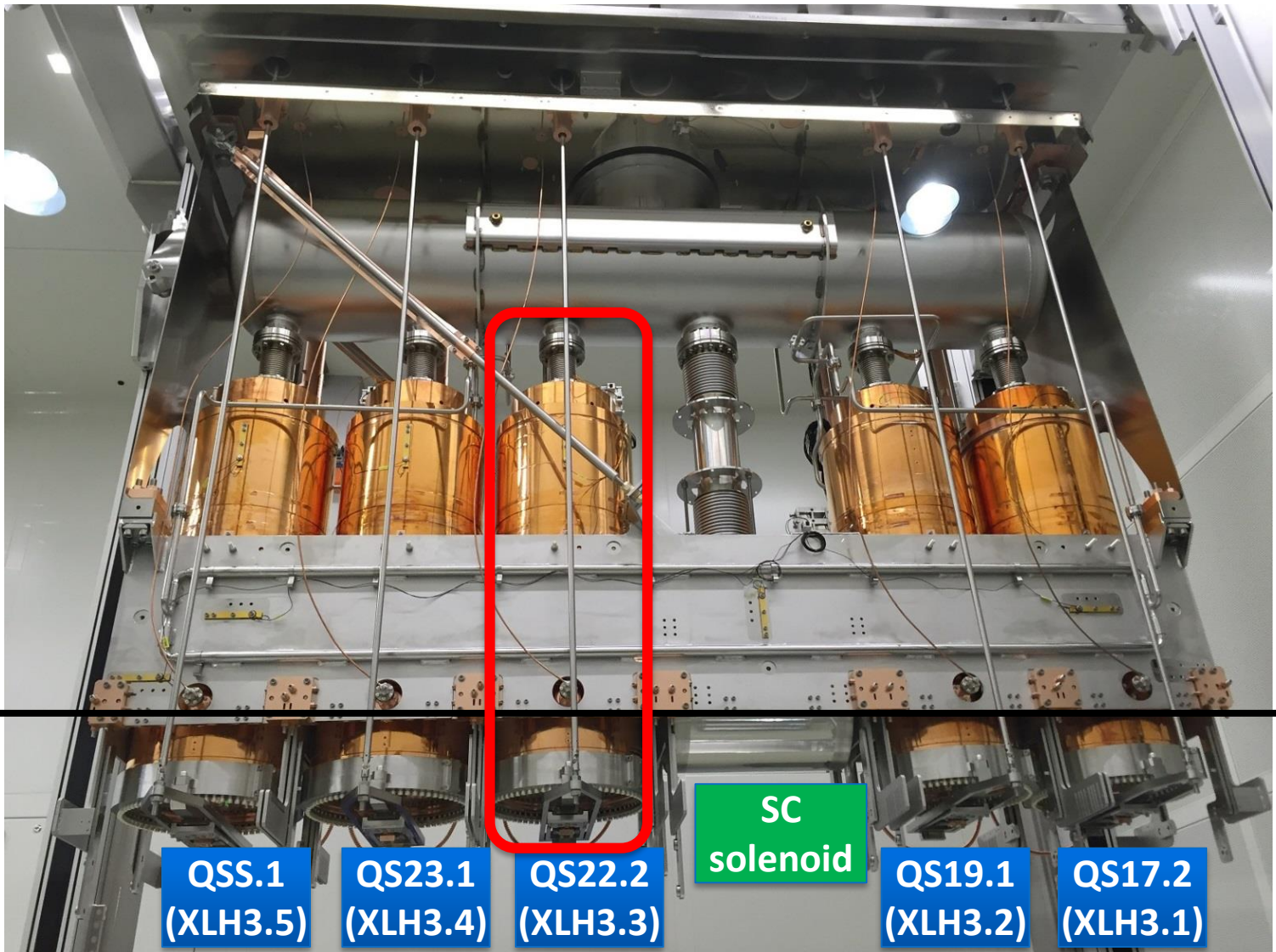
- Phase 2b Installation
- 2018 HW Commissioning & Outstanding Issues
- Budget & Resource Monitoring
- Summary

Completion of Phase 2



Courtesy E. Siesling

2018 HW Commissioning Highlight



Beam

QSS.1
(XLH3.5)

QS23.1
(XLH3.4)

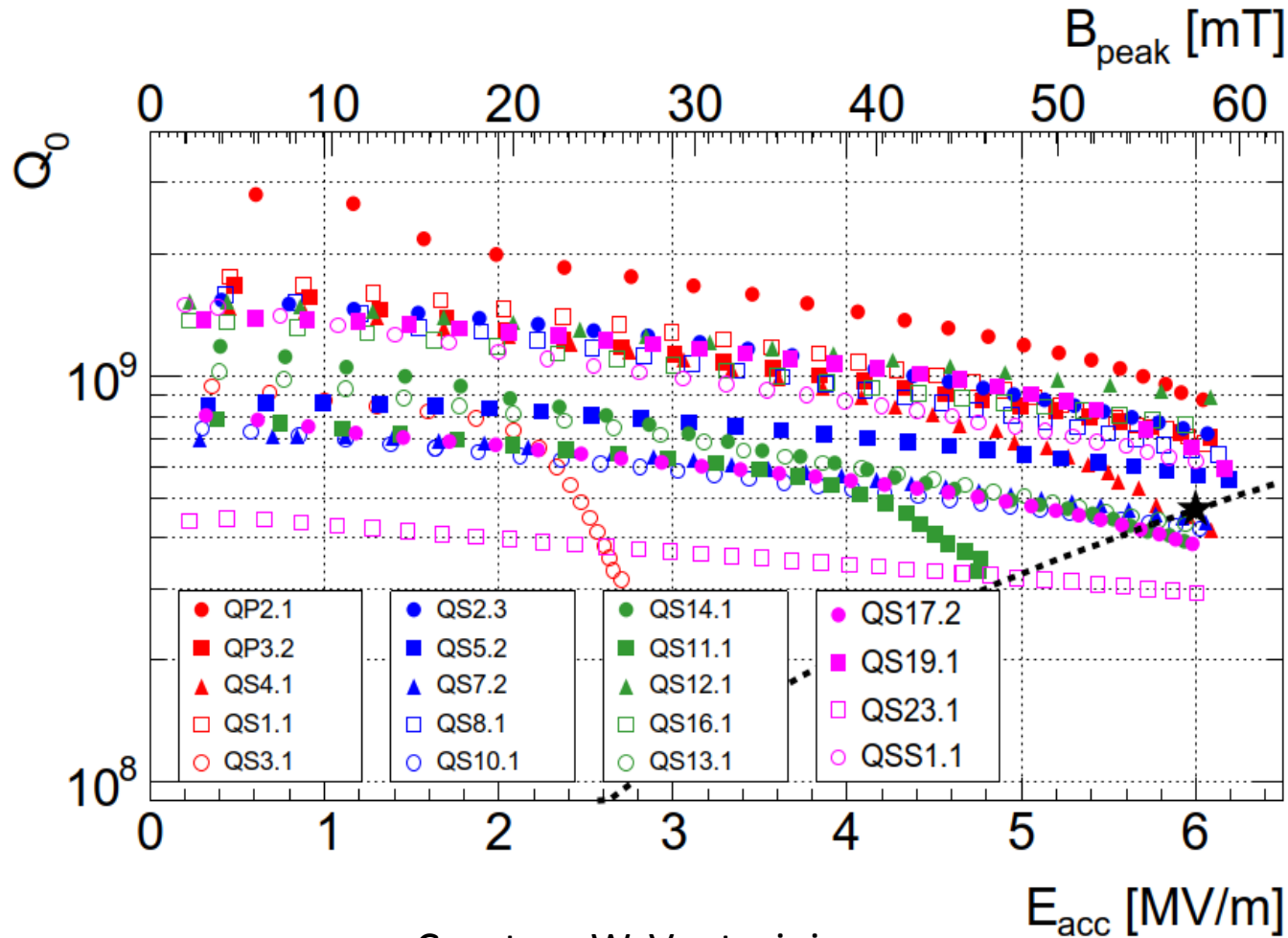
QS22.2
(XLH3.3)

SC
solenoid

QS19.1
(XLH3.2)

QS17.2
(XLH3.1)

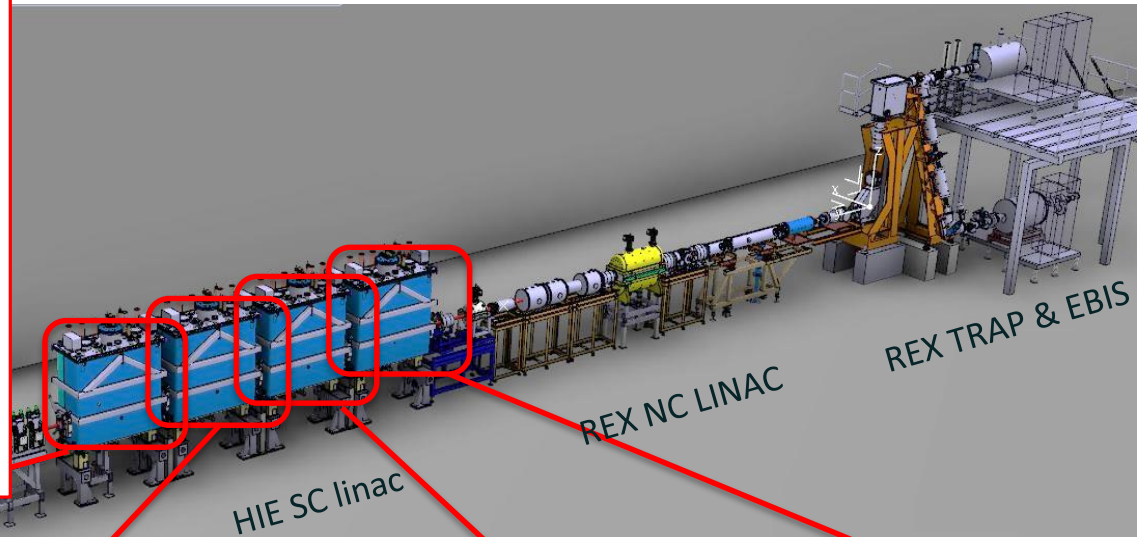
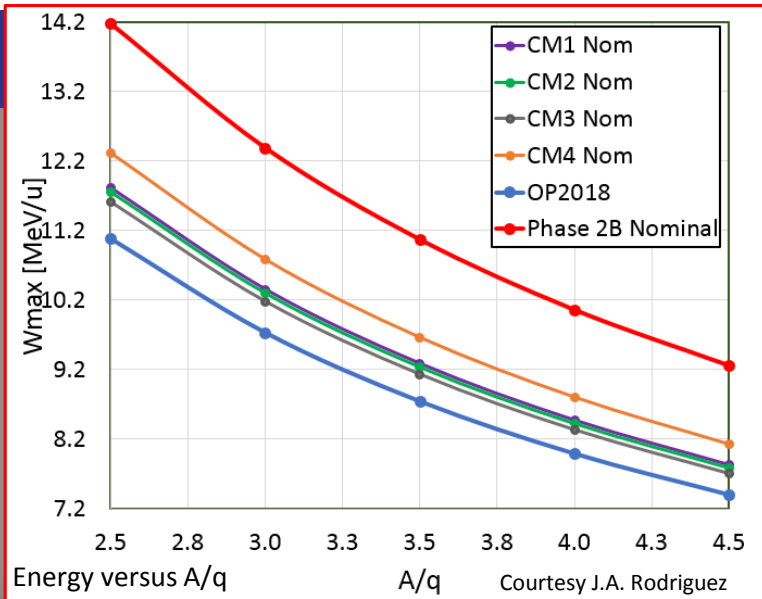
Cavity Performance



Courtesy W. Venturini

Outstanding Issues

Courtesy E. Siesling



- CM4:**
- Non-conformity for CAV 3 (SRF18) – RF coupler issue
 - Two other cavities with low Q
 - All cavities running at lower gradient
 - Worst operational CM

- CM3:**
- Close to specs at 5.5MV/m
 - Very stable
 - Best operational CM

- CM2:**
- Most problematic CM
 - Running at low gradients
 - Mild Field emission in CAV 3 (SRF8)
 - Instabilities CAV 2 & 4 (SRF7 & SRF9)
 - High vacuum at start of run which disappeared
 - Anomalous static heat load and microphonics. Not understood.

- CM1:**
- Field emission mostly in CAV5 (SRF5)
 - non-conformity of solenoid#1 – short to ground (but able to run)

SEC



Spare Cavities

- **QSS2, QS18, QS20** were fully qualified as spares
 - ✓ **QS18 needs to be requalified** after V5 incident
 - ✓ **QS20** has the lowest Q, it could be stripped and re-coated
- **QSS3** was coated → cold test before end 2018
- A fourth seamless substrate will be ordered (raw material is available, pending acceptance)

Courtesy W. Venturini

OUTLINE

- Phase 2b Installation
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- **Budget & Resource Monitoring**
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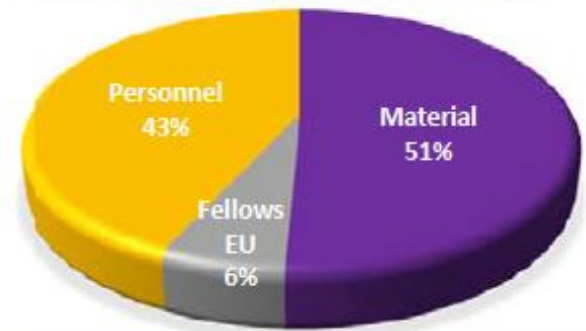
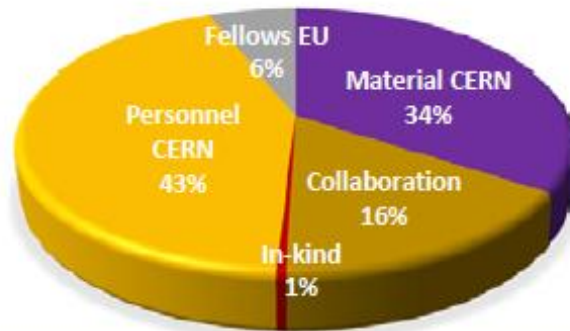
CtC (1st June 2017)

Cost to Completion (P+M)

in kCHF 79,195

Material CERN	27,137
Collaboration	12,801
In-kind	382
Personnel CERN	34,007
Fellows EU	4,868
Total	79,195

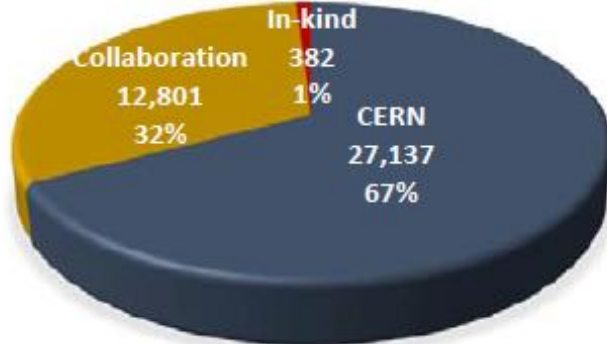
P vs M distribution (without in-kind)



Material Budget

in kCHF 40,320

Funding



Budget usage (CERN funding)



CtC (1st November 2018)

Cost to Completion (P+M)

in kCHF 78,187

Material CERN	26,440
Collaboration	12,551
In-kind	382
Personnel CERN	33,946
Fellows EU	4,868
	<hr/>
	78,187

P vs M distribution (without in-kind)



Material Budget

in kCHF 39,373



CtC reduced by 950 kCHF
700kCHF Infrastructure
250 kCHF Machine

Impact on the External Funding

2018

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Expenses without in-kind on CERN codes	88	401	1'097	1'782	4'885	3'384	1'779	830	191					
Funding collaboration	101	381	1'106	1'238	1'892	1'482	825	407	400	400	400	400	400	393
CERN contribution						4'615								
Yearly balance	12	-21	8	-544	-2'994	2'712	-954	-423	209	400	400	400	400	393
Cumulative cash flow	12	-8	0	-544	-3'538	-825	-1'779	-2'202	-1'993	-1'593	-1'193	-793	-393	-

- 117 kCHF of contingency used for procurement of additional spare cavities since QS6 and QS15 could not be recuperated
 - 2 additional copper billets for QSS3 and QSS4
 - Fabrication cost of QSS4

Summary

- **Quite busy Technical Stop**
 - ✓ Installation of CM4
 - ✓ Cryogenics maintenance & consolidation completed
- **A successful commissioning campaign:**
 - ✓ Hardware and Beam commissioning with 4 CMs
 - ✓ Processing of 3 spare cavities
- **Ready for LS2**
 - CM4 cavity replacement
 - REX consolidation
 - Processing of remaining 2 spare cavities



Big thanks to all CERN groups

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- EN/MME : ANTTI KOLEHMAINEN, MARC TIMMINS
- EN/HE : JEAN-LOUIS GRENARD, FRANCK SCHNEITER, PASCAL BRUNERO

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2017

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Expenses without in-kind on CERN codes	88	401	1'097	1'782	4'885	3'384	1'779	874	30					
Funding collaboration	101	381	1'106	1'238	1'892	1'482	825	407	400	400	400	400	400	276
CERN contribution						4'615								
Yearly balance	12	-21	8	-544	-2'994	2'712	-954	-467	370	400	400	400	400	276
Cumulative cash flow	12	-8	0	-544	-3'538	-825	-1'779	-2'246	-1'876	-1'476	-1'076	-676	-276	-

Project Cost to Completion by Phase (in kCHF)

2018

	Infrastructure	Machine			Total
		Phase 1 ¹	Phase 2	3 rd beam line	
CERN funding	21,067	4,199	415	753	26,434
Collaboration		8,329	4,222		12,551
In kind		341	41		382
Total	21,067	12,869	4,678	753	39,367

2017

	Infrastructure	Machine			Total
		Phase 1 ¹	Phase 2	3 rd beam line	
CERN funding	21,739	4,199	415	784	27,137
Collaboration		8,329	4,472		12,801
In kind		341	41		382
Total	21,739	12,869	4,928	784	40,320