

# Report of the Scrutiny Group to the LHC RRBs

Christos Touramanis



23-25 October 2017

# Scrutiny Group 2017 membership

G. Barker (Warwick) \*

J.-C. Brient (LLR) \*\*

W. Christie (BNL)

M. Convery (FNAL) \*

H. Danielsson (CERN) \*

F. Hahn (CERN; Secretary)

P. Lubrano (INFN Perugia) \*

M. Moll (CERN)

L. Moneta (CERN) \*

S. Prodon (CERN; Service Contracts)

F. Simon (MPI Munich) \*

S. Stapnes (CERN) \*

C. Touramanis (Liverpool; Chair) \*

G. Vasseur (CEA)

\* New members in 2017

\* Stepping down at the end of 2017

# 2017 Scrutiny cycle context: a production year for LHC and the experiments

- Extended Year End Technical Stop (EYETS) 2016-17
  - Consolidation, repairs, upgrades
  - First stable beams 23 May 2017
- 2017 is a production year
- Detectors collecting high quality data efficiently
- Strong science harvest, as always from this flagship programme
  
- “Production year” budget evolution (M&O A & B w/o power):
  - 2012: 51.2 MCHF
  - 2015: 47.5 MCHF
  - 2018: 47.0 MCHF

# 2017 Scrutiny round main focus items

- **Cash balance reconciliation** between Finance and the collaborations' reports
  - Completed for all collaborations
- **SLAs status**
  - Updated for 2017
- **M&O A post-LS2 levels (ALICE and LHCb)**
  - Estimates reviewed; ramping up of annual budgets started
- **M&O B cash reserves**
  - ATLAS already implementing spending down where appropriate
  - CMS agreed a collaboration-wide policy and is starting spending down
  - ALICE and LHCb will look into more rigorous reporting in this area

# ALICE M&O A

## Closing Report 2016 (all in kCHF)

Budget no power: 4,692

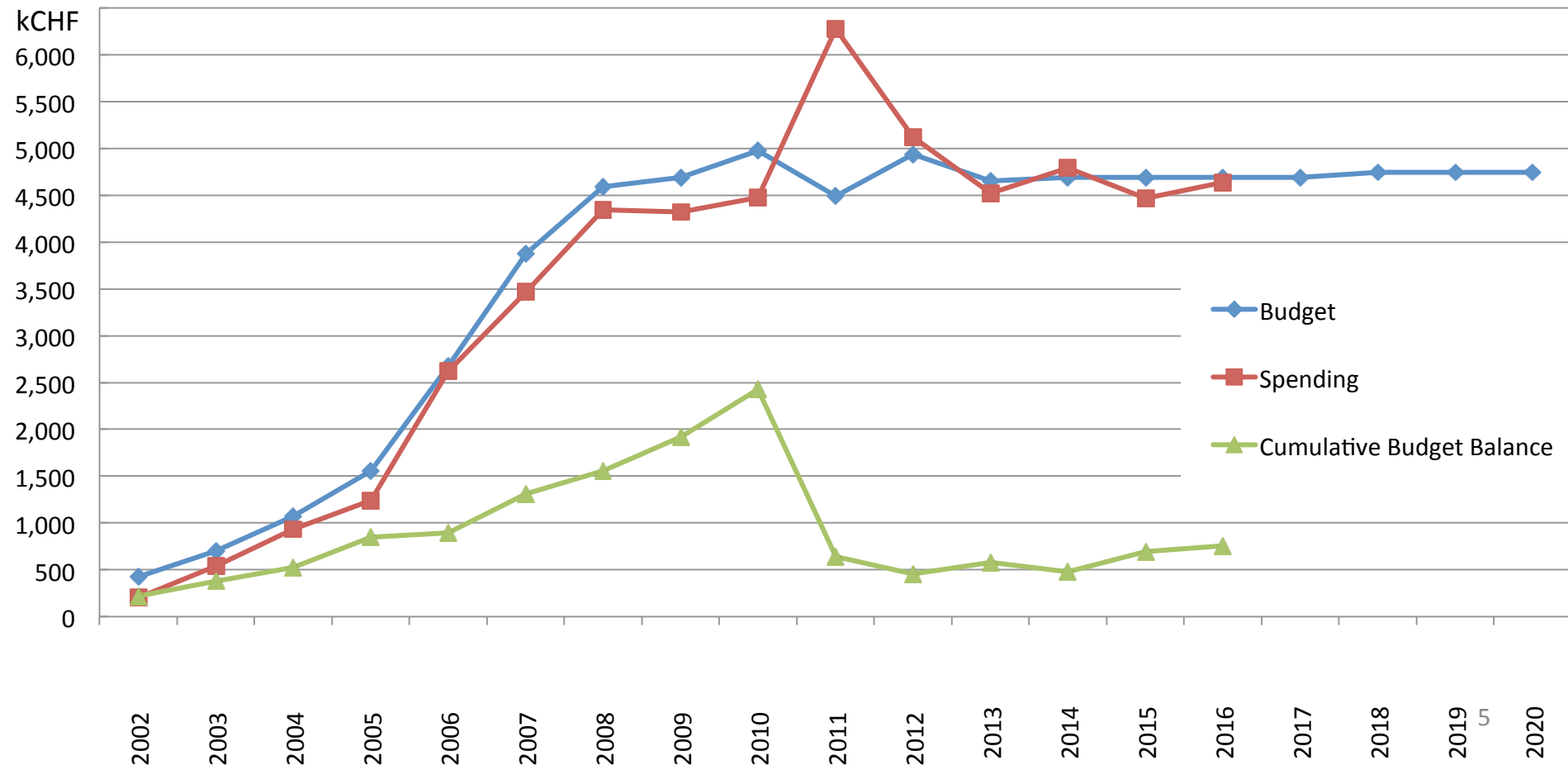
Actual costs: 4,633

End of Year Open Commitments: 72

NMS Power cost: 616

YEAR	2017	2018	2019	2020
No power	4,692	4,743	4,743	4,743
Full power	6,398	6,626	4,777	4,777

Graph does not include open commitments



# ALICE M&O A

- Current LS2 schedule assumed in projections
- Initial estimates for post-LS2 M&O A:
  - Staff increase reflecting larger O2 computing system (discussion to be finalised in 2018 scrutiny round)
  - SLAs to be adapted to requirements of upgraded experiment (not yet estimated)
  - Replacement cost of O2 system in 2026 taken into account in accumulation profile in the Special Online Replacement account
- The SG recommends approval of the ALICE M&O A closing report for 2016 and the budget request for 2018

# ALICE M&O B

- 2016 spend: 1.2 MCHF (budget: 1.4 MCHF)
- 2018 budget request and projection:

	2017	2018	2019	2020	2021
Total (kCHF)	1,425	1,451	1,259	1,031	1,589
Tech. Man-months	212	224	210	210	238

- The SG recommends approval of the ALICE M&O B closing report for 2016 and the budget request for 2018

# ALICE Upgrade Common Fund

- Budget approved at 5,800 kCHF
- Already 3,400 kCHF in hand
- Spending on the Beam Pipe is behind schedule
- Engineering work is progressing well



# ATLAS M&O A

## Closing Report 2016 (all in kCHF)

Budget no power: 14,045

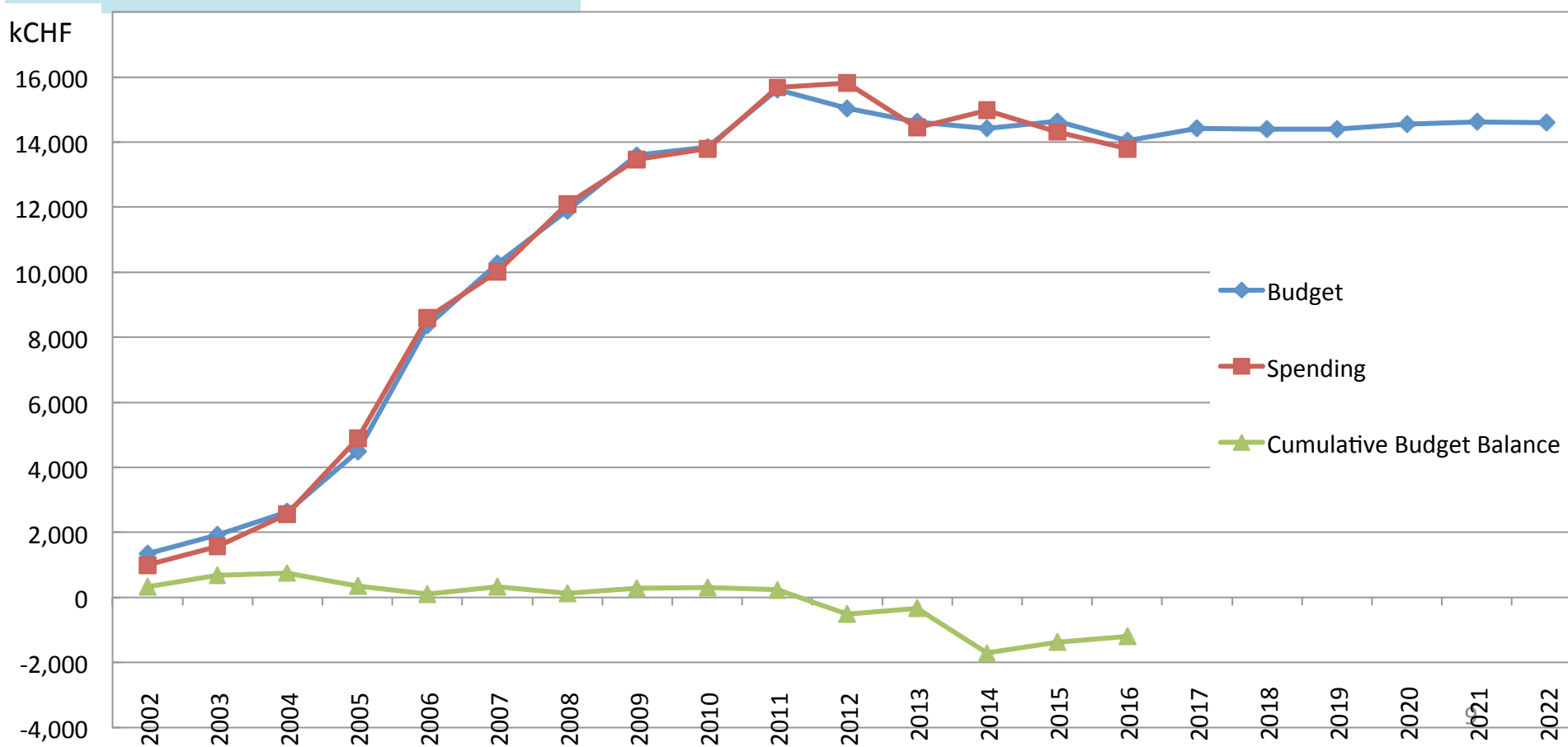
Actual costs: 13,795

End of Year Open Commitments: 86

NMS Power cost: 706

YEAR	2017	2018	2019	2020	2021
No power	14,418	14,404	14,388	14,555	14,616
Full power	16,618	16,604	16,588	16,755	16,816

Graph does not include open commitments



# ATLAS M&O A

- 2016: small underspending mainly on detector related items
- The SG recommends approval of the ATLAS M&O A closing report for 2015 and the budget request for 2017

# ATLAS M&O B

- 2016 spend: 4,628 kCHF (budget: 4,765 kCHF before returns)
- 2018 budget request after returns, and projection:

	2017	2018	2019	2020	2021
Total (kCHF)	4,785	4,796	4,812	4,645	4,584
Technical FTE	284	259	269	257	250
Computing FTE	152	152	152	152	152

- The SG recommends approval of the ATLAS M&O B closing report for 2016 and the budget request for 2018

# ATLAS Upgrade Common Fund

- Only covers New Small Wheel related costs
- Total budget stands at 3.05M (2016-19)

# CMS M&O A

## Closing Report 2016 (all in kCHF)

Budget no power: 12,557

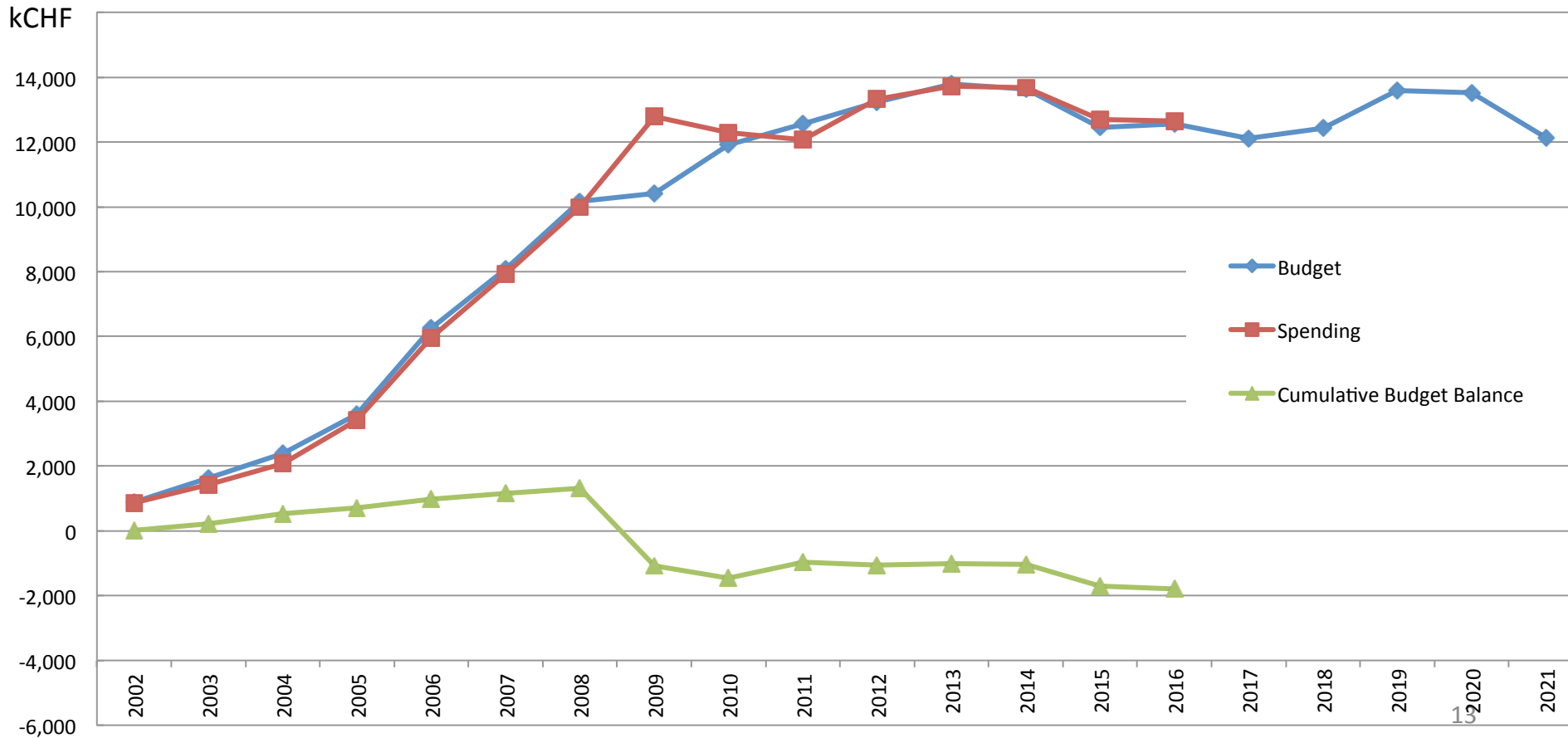
Actual costs: 12,639

End of Year Open Commitments: 673

NMS Power cost: 764

YEAR	2017	2018	2019	2020	2021
No power	12,116	12,420	13,597	13,530	12,134
Full power	13,816	14,120	15,297	15,230	13,834

Graph does not include open commitments



# CMS M&O A

- Overspending mainly from:
  - Consequences of Magnet and Cold Box problems
  - YE1+ leak
- Continued savings from gas consumption
- 2018 request includes adjustment of the accumulation profile of the Special Online Replacement account and current YETS operations plan
- Best current understanding of extra LS2 cost included in projections
- **The SG recommends approval of the CMS M&O A closing report for 2016 and the budget request for 2018**

# CMS M&O B

- 2016 spend on budget
- Certain sub-systems still hold significant reserves
- CMS has put in place a policy for reserves to be followed by all subsystems: to aim for annual carry-overs not more than 30% of their annual budget
- 2018 budget request and projections:

	2017	2018	2019	2020	2021
Total (kCHF)	5,414	4,908	5,117	5,069	5,111
Computing FTE	8	8	8	8	8

- The SG recommends approval of the CMS M&O B closing report for 2016 and the budget request for 2018

# CMS Upgrade Common Fund

- UCF for Phase I: 6.5M
- Funds received from the FAs (98% of total)
- Most spending done, tasks delivered
- Expected uncommitted funds at completion, about 430 kCHF, will be used to get a head start on agreed items (magnet protection, hydraulic opening system, second large crane)



# LHCb M&O A

## Closing Report 2016 (all in kCHF)

Budget no power: 2,480

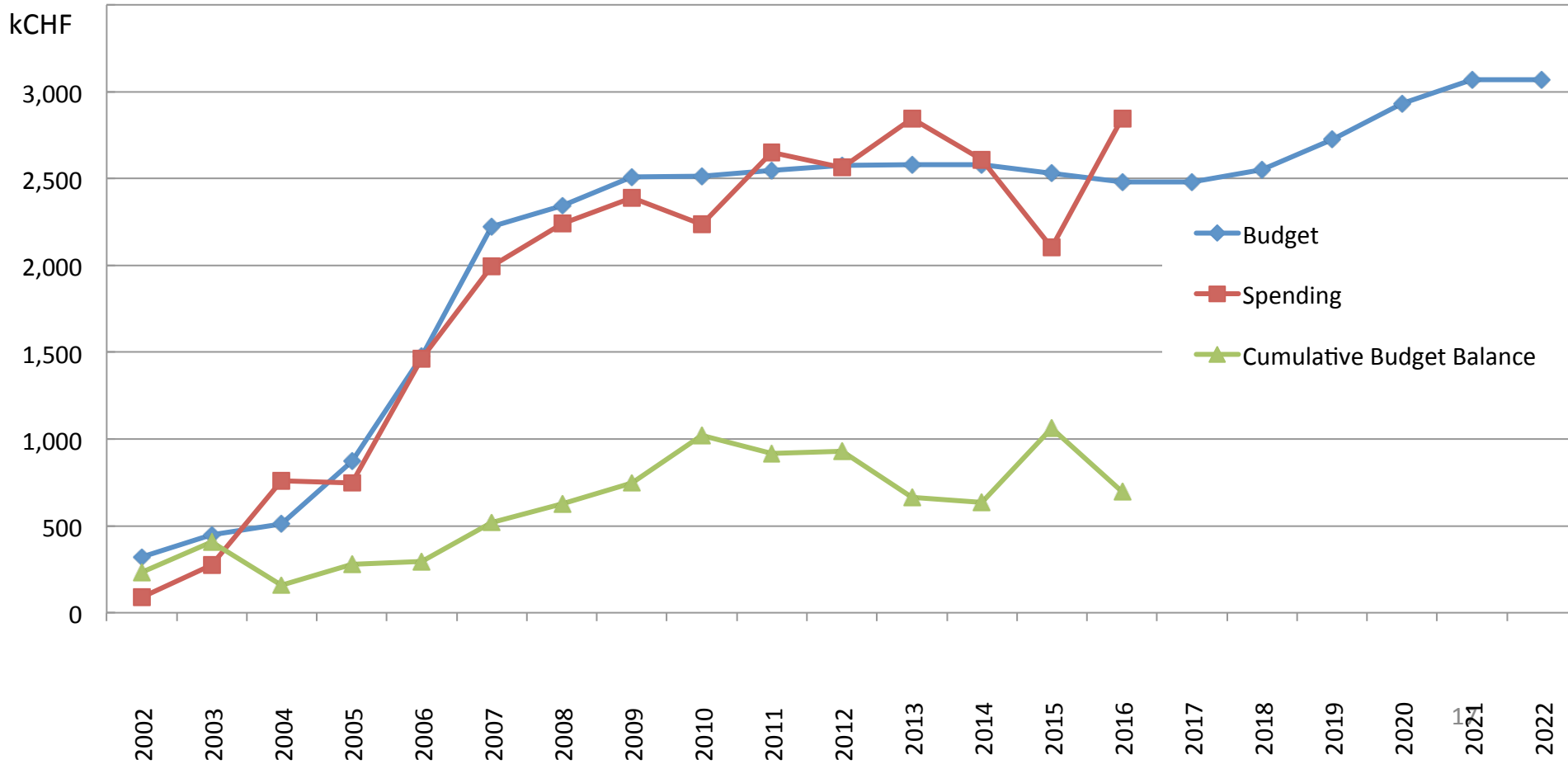
Actual costs: 2,845

End of Year Open Commitments: 0

NMS Power cost: 600

YEAR	2017	2018	2019	2020	2021
No power	2,480	2,550	2,725	2,930	3,070
Full power	3,380	3,150	3,625	3,230	3,370

Graph does not include open commitments



# LHCb M&O A

- 2016 overspending of 365k:
  - Late invoice for CF<sub>4</sub> gas recirculation plant
  - Additional spending in Core Computing to cope with higher than anticipated luminosity delivery
  - Compensates for 2015 underspending
- 2018 request and out year projections adjusted for anticipated extra LS2 and post-LS2 needs
  - 24% increase post-LS2
  - Smooth annual ramp-up implemented
  - Partically compensated by plan to spend down cash reserves in transition period by 500 kCHF
- **The SG recommends approval of the LHCb M&O A closing report for 2016 and the budget request for 2018.**

# LHCb M&O B

- 2016 spend: on budget
- 2018 budget request and projection:

	2017	2018	2019	2020	2021
Total (kCHF)	970	970	970	970	970

- Post-LS2 possible change in needs not evaluated yet
- The SG recommends approval of the LHCb M&O B closing report for 2016 and the budget request for 2018

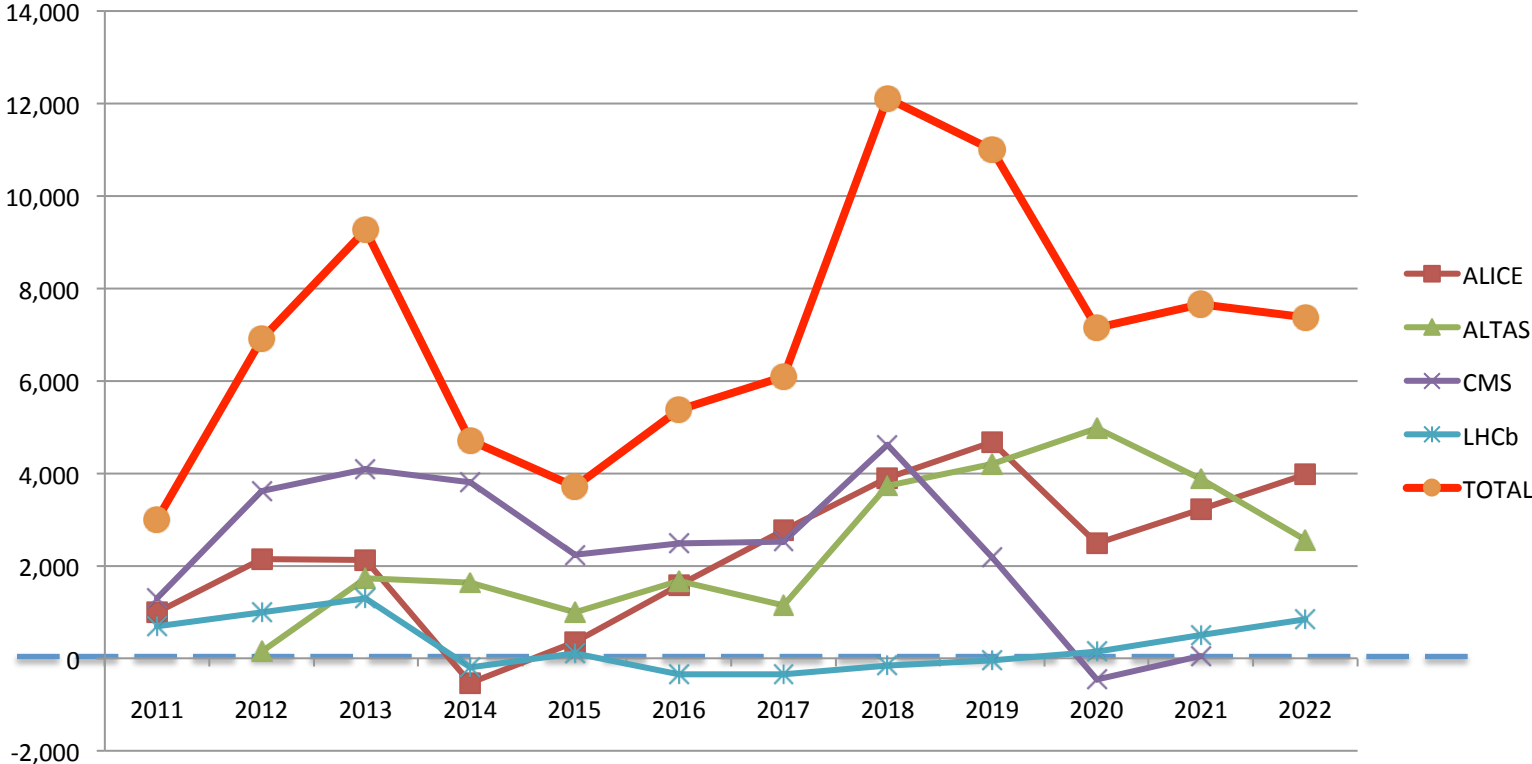
# LHCb Upgrade Common Fund

- Total Phase I UCF: 15.7M
  - 2.5M electronics
  - 2.5M infrastructure
  - 10.7M computing (no M&O replacement burden)
- Spent by end 2016: 161k (half of amount planned)
- Original CF now closed

# TOTEM M&O

- M&O A 2016: budget 492kCHF, spend 489kCHF
- Budget request 2018: 493kCHF
- Budget projection 2019-2021: 473kCHF / year
- M&O B budget constant at 247kCHF / year in 2017-2021.
- The SG recommends approval of the TOTEM M&O closing report for 2016 and the budget request for 2018

# Special Online Hardware Replacement Accounts



# Acknowledgments

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We also thank Patricia Mage-Granados and her team in EP-AGS-SCS for their outstanding support

And, of course, CERN Management