

Clients, developers & users



A. Salzburger (CERN) for the ACTS project

This workshop

Friday

Introduction	09:00 - 09:10
ATLAS	<i>Tomohiro Yamazaki</i> 09:10 - 09:25
ALICE	<i>Pavel Larionov</i> 09:30 - 09:45
Coffee Break	09:50 - 10:20
FASER	<i>Ke Li</i> 10:40 - 10:55
CEPC and STCF	<i>Xiaocong Ai</i> 10:55 - 11:10
13:00	
NA60+	<i>Roberta Araldi</i> 13:05 - 13:20
LDMX	<i>Pierfrancesco Butti</i> 13:25 - 13:40
Lohengrin	<i>Jan-Eric Heinrichs</i> 13:45 - 14:00
14:00	
ePIC	<i>Barak Schmookler</i> 14:05 - 14:20
sPHENIX	<i>Joe Osborn</i> 14:25 - 14:40

Discussion items

- Where are common development items that can be shared amongst partners?

Simulation study of BESIII with stitched CMOS pixel detector using ACTS #8
 Yi Liu (Zhengzhou U.), Xiaohong Chen (Beijing, Inst. High Energy Phys. and Beijing, GUCAS), Yubo Han (DESY), Gang Li (Beijing, Inst. High Energy Phys.), Linghui Wu (Beijing, Inst. High Energy Phys.), Shuiting Xin (Beijing, Inst. High Energy Phys. and Beijing, GUCAS) et al. (May 29, 2023)
 Published in: *Revs. Mod. Phys.* 95 (2023) 015001
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Implementation and verification of the CEPC baseline tracker using a modern track reconstruction software #13
 Yebo Chen (Beijing, Inst. High Energy Phys. and Beijing, GUCAS), Yubo Han (DESY), Gang Li (Beijing, Inst. High Energy Phys.), Linghui Wu (Beijing, Inst. High Energy Phys.), Shuiting Xin (Beijing, Inst. High Energy Phys. and Beijing, GUCAS) et al. (May 29, 2023)
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ATHENA detector proposal — a totally hermetic electron nucleus apparatus proposed for IP6 at the Electron-Ion Collider #17
 ATHENA Collaboration • J. Adam (Brookhaven) et al. (Oct 10, 2022)
 Published in: *JINST* 17 (2022) P07026
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Implementation of ACTS for STCF track reconstruction #17
 Xiaocong Ai (Zhengzhou U.), Xingtao Huang (Shandong U.), Yi Liu (Zhengzhou U.) (Jan 10, 2023)
 Published in: *JINST* 18 (2023) 07, P07026 • e-Print: 2301.04306 [hep-ex]
 PDF icon, DOI icon, cite icon, claim icon, reference search icon, 1 citation icon

The HL-LHC Beam Gas Vertex Monitor - Performance and Design Optimisation Using Simulations #33
 Bernadette Kolbinger (CERN), Stephen M. Gibson (Royal Holloway, U. of London), Helene Guerin (CERN and Royal Holloway, U. of London), Owain Rhodri Jones (CERN), Robert Kieffer (Royal Holloway, U. of London) et al. (Oct 2, 2021)
 Published in: *JACoW IBIC2021* (2021) 249-253 • Contribution to: *IBIC 2021*, 249-253
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Machine learning for track reconstruction at the LHC #27
 L.G. Gagnon (UC, Berkeley) (Feb 14, 2022)
 Published in: *JINST* 17 (2022) P07026
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Studying quantum algorithms for particle track reconstruction in the LUXE experiment #28
 Lena Funcke (MIT, Cambridge, CTP and IAIFI, Cambridge), Tobias Hartung (Cyprus Inst. and Bath U.), Beate Heinemann (DESY and Freiburg U.), Karl Jansen (DESY, Zeuthen), Annabel Kropf (DESY) et al. (Feb 14, 2022)
 Published in: *J.Phys.* Conf. Ser. 2582 (2022) 012001
 DOI icon, cite icon

A non-linear Kalman filter for track parameters estimation in high energy physics #32
 Xiaocong Ai (DESY), Heather M. Gray (UC, Berkeley and LBNL, Berkeley), Andreas Salzburger (CERN), Nicholas Styles (DESY) (Dec 17, 2021)
 Published in: *Nucl.Instrum.Meth.A* 1049 (2023) 168041 • e-Print: 2112.09470 [physics.ins-det]
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First Direct Observation of Collider Neutrinos with FASER at the LHC #7
 FASER Collaboration • J. Adam (Brookhaven) et al. (Oct 10, 2022)
 Published in: *Phys.Rev.Lett.* 129 (2022) 261801
 PDF icon, links icon

Software Performance of the ATLAS Track Reconstruction for LHC Run 3 #3
 ATLAS Collaboration • Georges Aad (Marseille, CPPM) et al. (Aug 18, 2023)
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Data Reconstruction for the sPHENIX experiment
 sPHENIX Collaboration • Ross Corliss (Stony Brook U.) for the collaboration. (Nov 23, 2022)
 Published in: *PoS ICHEP2022* 224 • Contribution to: *ICHEP 2022*
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Detector design and feasibility studies ...

... not exhaustive, for illustration only

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Algorithmic research ...

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Production software ...

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Experiment map

● **SLAC**
LDMX

● **BNL**
sPHENIX
EIC

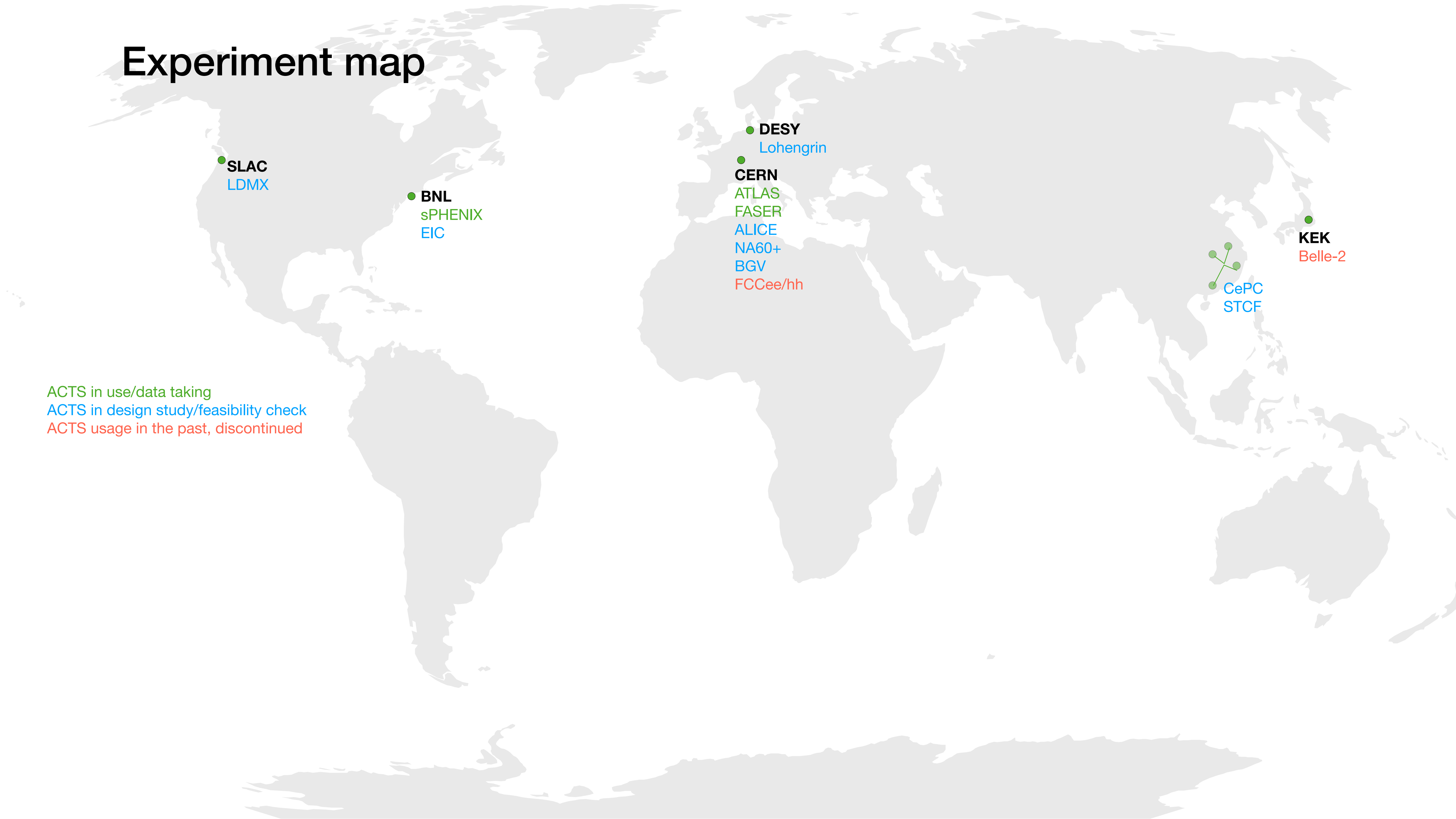
● **DESY**
Lohengrin

● **CERN**
ATLAS
FASER
ALICE
NA60+
BGV
FCCee/hh

● ● ● ●
CePC
STCF

● **KEK**
Belle-2

ACTS in use/data taking
ACTS in design study/feasibility check
ACTS usage in the past, discontinued



Experiment map - discontinued studies

● SLAC
LDMX

● BNL
sPHENIX
EIC

● DESY
Lohengrin

● CERN
ATLAS
FASER
ALICE
NA60+
BGV
FCCee/hh

● CePC
STCF

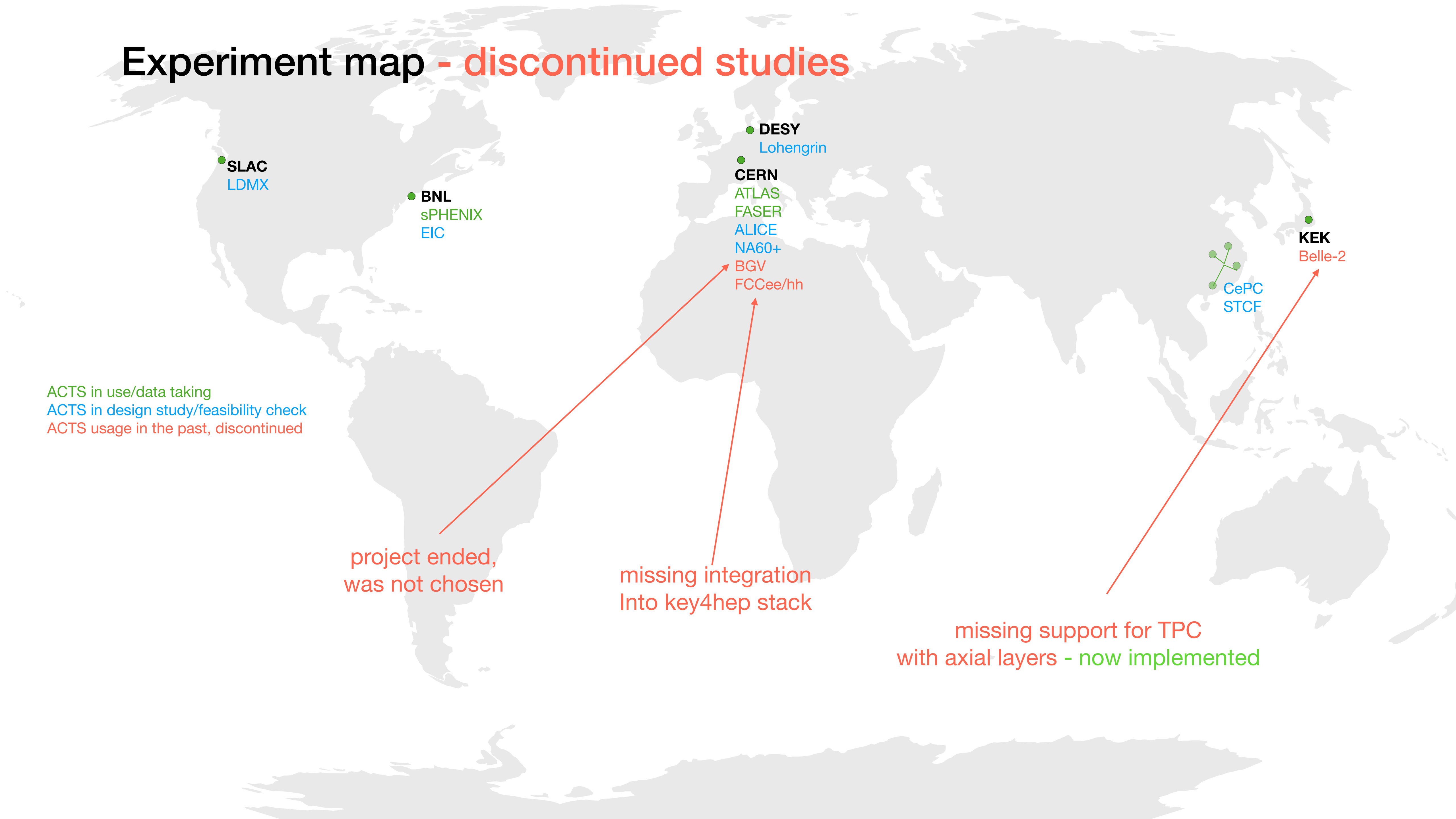
● KEK
Belle-2

ACTS in use/data taking
ACTS in design study/feasibility check
ACTS usage in the past, discontinued

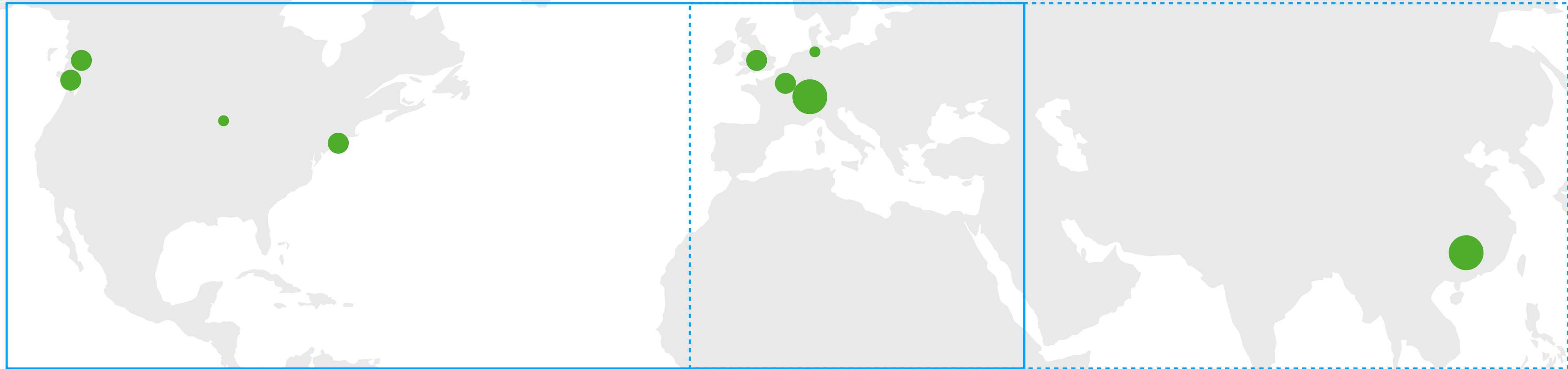
project ended,
was not chosen

missing integration
Into key4hep stack

missing support for TPC
with axial layers - now implemented



Fork map

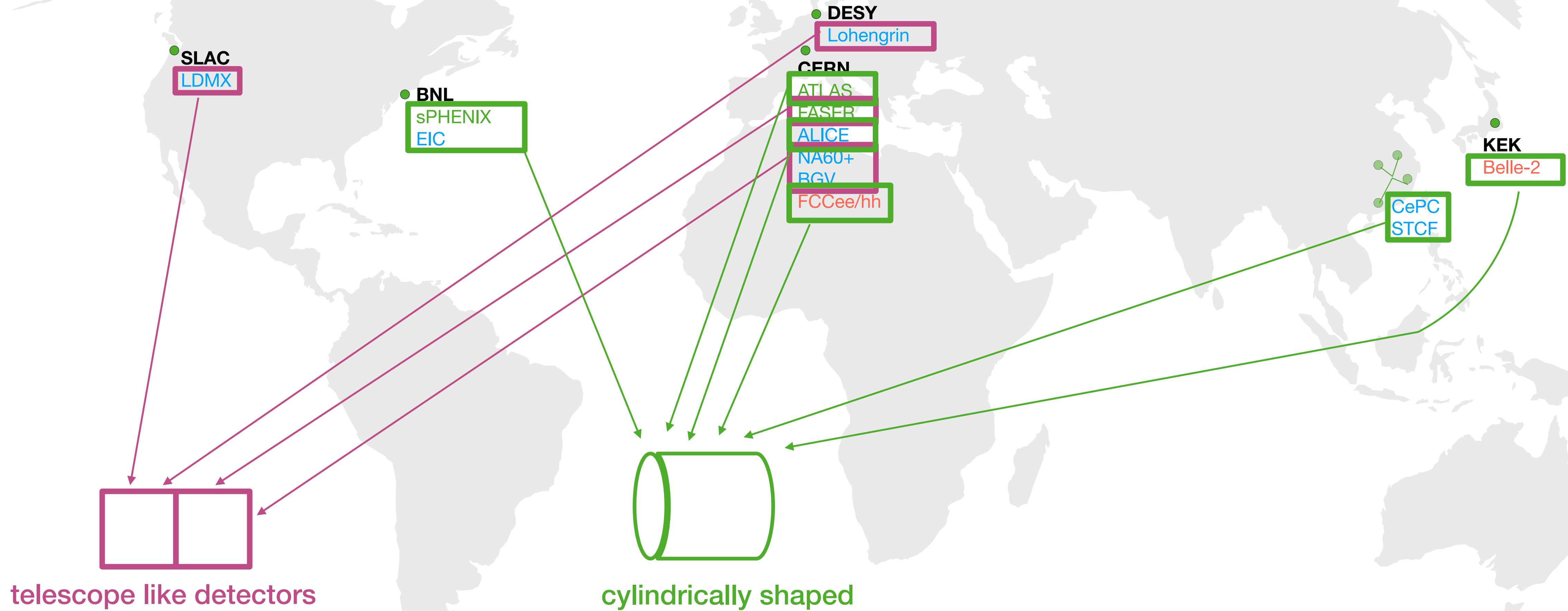


Developers meeting Tuesday 17h00

Discussion items

- Can we find a format to better suite the Asian time zone?
- E.g. 1/month have a morning slot for the developers meeting?

Shape map



Discussion items

- Can we better support telescope like geometries?
- Work package for drift chambers and wire chambers ...