EUROPEAN
PLASMA RESEARCH
ACCELERATOR WITH
EXCELLENCE IN
APPLICATIONS

EuPRAXIA 15th Steering Committee Meeting – 4th July 2019

Paris, France

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653782.

Agenda (1/2)

- 11:00 Welcome and approval of agenda (5 min.)
- 11:05 Approval of minutes from 14th Steering Meeting (5 min.)
- 11:10 Action items from 14th Steering Meeting (10 min.)
- 11:20 Round table (WP1-WP15): Short verbal report, no slides (30 min.)
- 11:50 EU budget & reporting (T. Minniberger) (15 min.)
- 12:05 Finalising EuPRAXIA concept & executive summary (R. Assmann et al.) (30 min.)
- 12:50 Lunch break (60 min.)

Agenda (2/2)

- 13:50 Status of the CDR (M. Weikum) (30 min.)
- 14:20 Discussion on future consortium agreement (R. Assmann) (45 min.)
- 15:05 Calendar management / next events (20 min.)
- 15:25 AOB (15 min.)
- 15:40 Adjourn – End of Meeting (5 min.)

Agenda (1/2)

- 11:00 Welcome and approval of agenda (5 min.)
- 11:05 Approval of minutes from 14th Steering Meeting (5 min.)
- 11:10 **Action items from 14th Steering Meeting** (10 min.)
- 11:20 Round table (WP1-WP15): Short verbal report, no slides (30 min.)
- 11:50 EU budget & reporting (T. Minniberger) (15 min.)
- 12:05 Finalising EuPRAXIA concept & executive summary (R. Assmann et al.) (30 min.)
- 12:50 Lunch break (60 min.)

Action Items (1/2)

1) Update executive summary along the comments made by the SC (Action: **R. Assmann**).

2) Add budget item which would fund travel and access at associated facilities (Action: **A. Walker**).

3) Create map of associated facilities and ask for support letters (Action: **M. Weikum**).

Action Items (2/2)

4) Contact potential international partners not linked to EuPRAXIA (Action: **R. Assmann**).

5) Distributes dates of the Final Event as soon as they are available (Action: **R. Rudolph**).

6) Propose high-impact guests (funding agencies, ministries, etc.) to be invited for Final Event (Action: **all**).

7) Ask SAC chair when the new SAC report will be available (Action: **F. Burkart**).

Agenda (1/2)

- 11:00 Welcome and approval of agenda (5 min.)
- 11:05 Approval of minutes from 14th Steering Meeting (5 min.)
- 11:10 Action items from 14th Steering Meeting (10 min.)
- 11:20 **Round table (WP1-WP15): Short verbal report, no slides** (30 min.)
- 11:50 EU budget & reporting (T. Minniberger) (15 min.)
- 12:05 Finalising EuPRAXIA concept & executive summary (R. Assmann et al.) (30 min.)
- 12:50 Lunch break (60 min.)

Agenda (1/2)

- 11:00 Welcome and approval of agenda (5 min.)
- 11:05 Approval of minutes from 14th Steering Meeting (5 min.)
- 11:10 Action items from 14th Steering Meeting (10 min.)
- 11:20 Round table (WP1-WP15): Short verbal report, no slides (30 min.)
- 11:50 **EU budget & reporting (T. Minniberger)** (15 min.)
- 12:05 Finalising EuPRAXIA concept & executive summary (R. Assmann et al.) (30 min.)
- 12:50 Lunch break (60 min.)

Agenda (1/2)

- 11:00 Welcome and approval of agenda (5 min.)
- 11:05 Approval of minutes from 14th Steering Meeting (5 min.)
- 11:10 Action items from 14th Steering Meeting (10 min.)
- 11:20 Round table (WP1-WP15): Short verbal report, no slides (30 min.)
- 11:50 EU budget & reporting (T. Minniberger) (15 min.)
- 12:05 **Finalising EuPRAXIA concept & executive summary** (R. Assmann et al.) (30 min.)
- 12:50 Lunch break (60 min.)

EUROPEAN
PLASMA RESEARCH
ACCELERATOR WITH
EXCELLENCE IN
APPLICATIONS

EuPRAXIA

Finalising EuPRAXIA Concept & Executive Summary

Ralph Assmann et al

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653782.

EuPRAXIA Concept & Ex. Summary

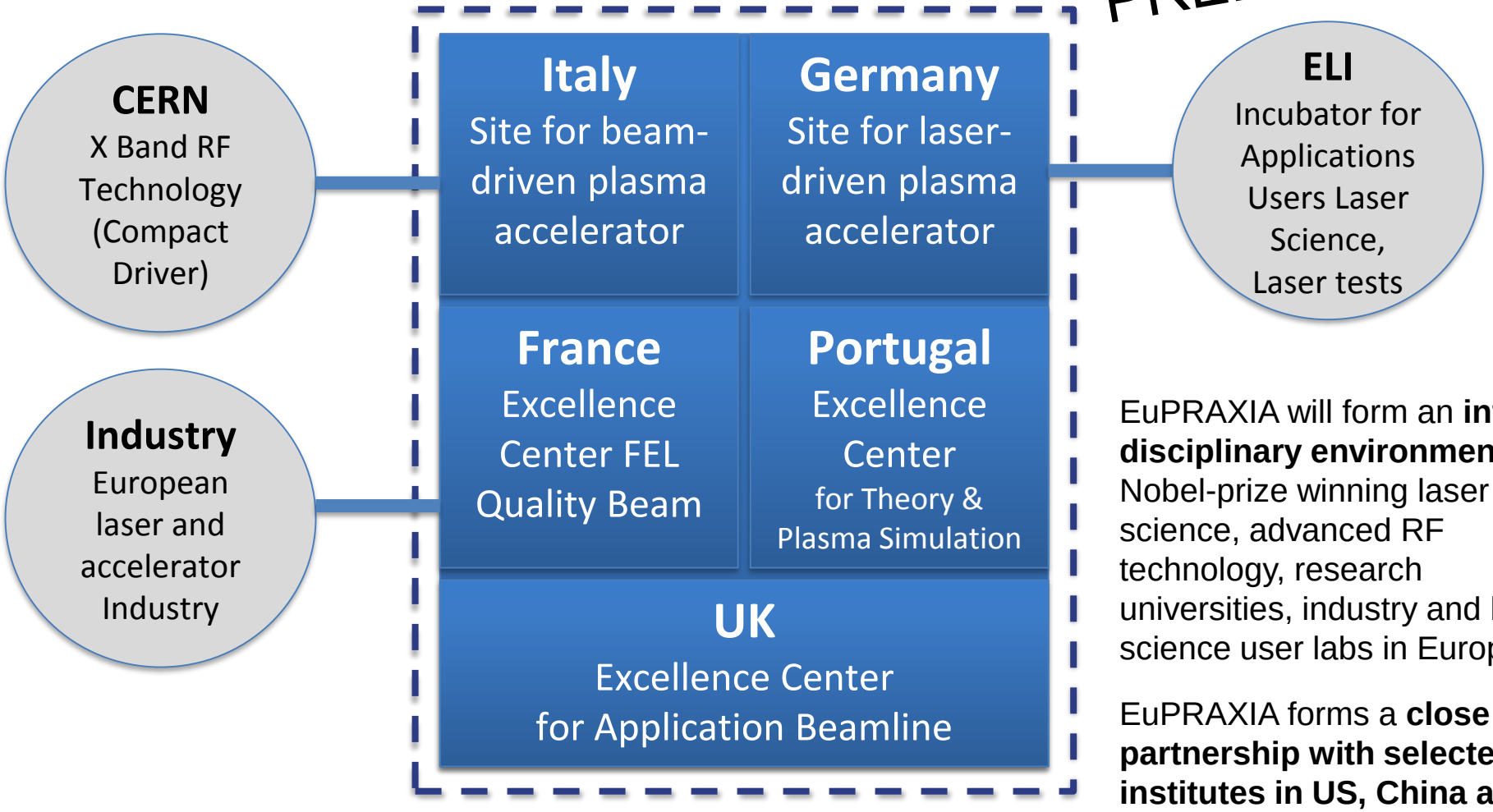
- **Technical concept** developed, documented in >1000 pages of EU reports, with more than 100 co-authors, new and high impact **solutions published at highest level** (including PRL).
- **Possible implementation model developed**: based on existing facilities, multiple near-term and realistic applications, distributed constrcution model, integrating all European activities.
- **Major lobbying in scientific, industrial and science-political environment**: high level talks, connections to industry, impact on funding agencies,

Outstanding CDR with very high impact by 31.10.2019 fully on track

EuPRAXIA Concept: Implementation Proposal

Matching project needs, existing infrastructure and interests

PRELIMINARY



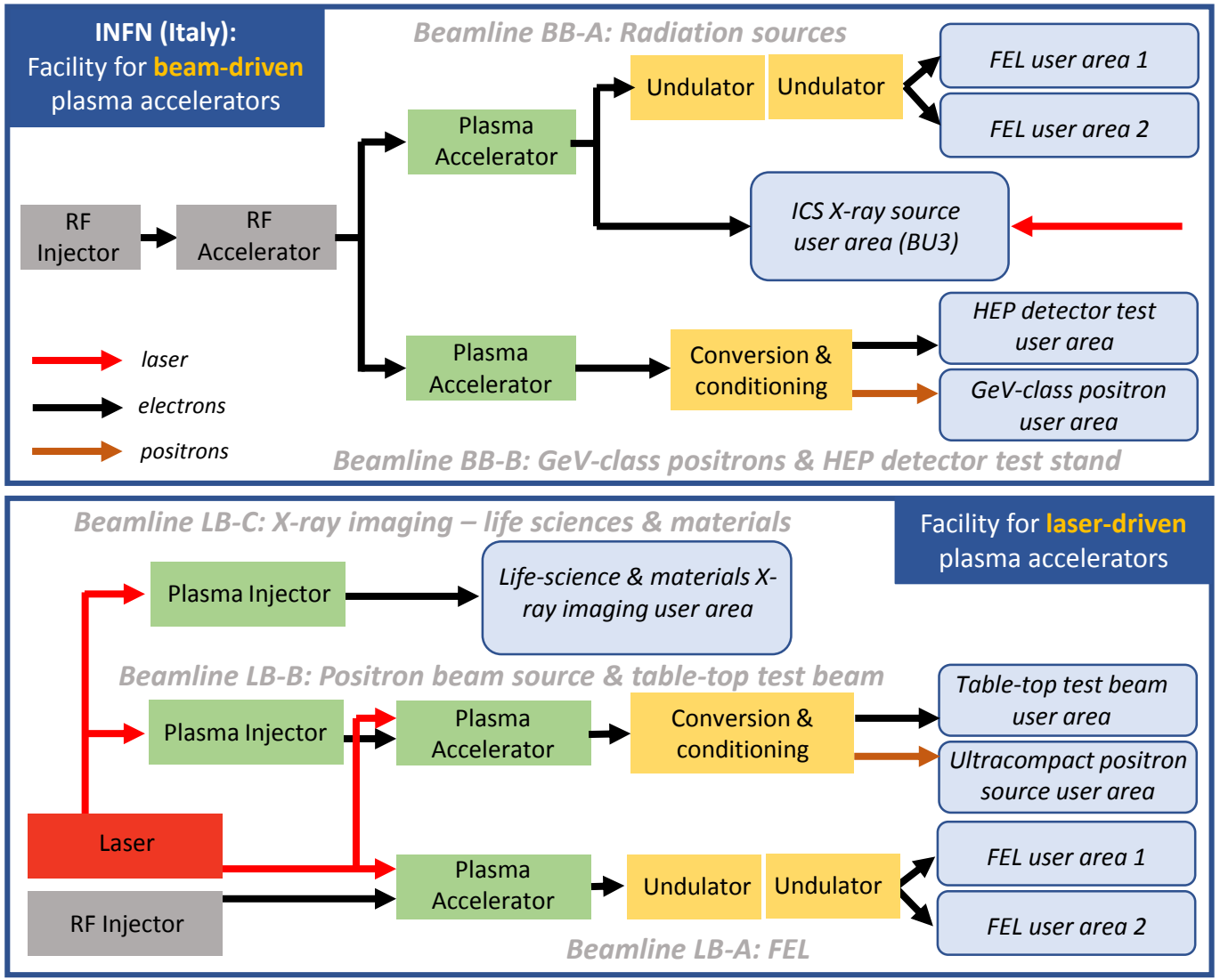
EuPRAXIA will form an **inter-disciplinary environment** of Nobel-prize winning laser science, advanced RF technology, research universities, industry and big science user labs in Europe.

EuPRAXIA forms a **close partnership with selected institutes in US, China and Japan**.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653782.

Phased Implementation of Construction Sites

	Laser-driven	Beam-driven
Phase 1	✓ FEL beamline to 1 GeV + user area 1 ✓ Ultracompact positron source beamline + positron user area	✓ FEL beamline to 1 GeV + user area 1 ✓ GeV-class positrons beamline + positron user area
Phase 2	✓ X-ray imaging beamline + user area ✓ Table-top test beams user area ✓ FEL user area 2 ✓ FEL to 5 GeV	✓ ICS source beamline + user area ✓ HEP detector tests user area ✓ FEL user area 2 ✓ FEL to 5 GeV
Phase 3	✓ High-field physics beamline / user area ✓ Other future developments	✓ Medical imaging beamline / user area ✓ Other future developments



Project Schedule

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	...	2065	2066
Project Phases	Conceptual Design Phase		Technical Design Phase (Jan 2020 – Dec 2025)						Implementation & Construction (Jan 2026 – Dec 2029)				Operation (Jan 2030 – Dec 2065)				Decommissioning (Jan – Dec 2066)
	HORIZON 2020								HORIZON EUROPE								
	Application ESFRI Roadmap			Decision			ESFRI Review 1				ESFRI Review 2						

Funding Landscape

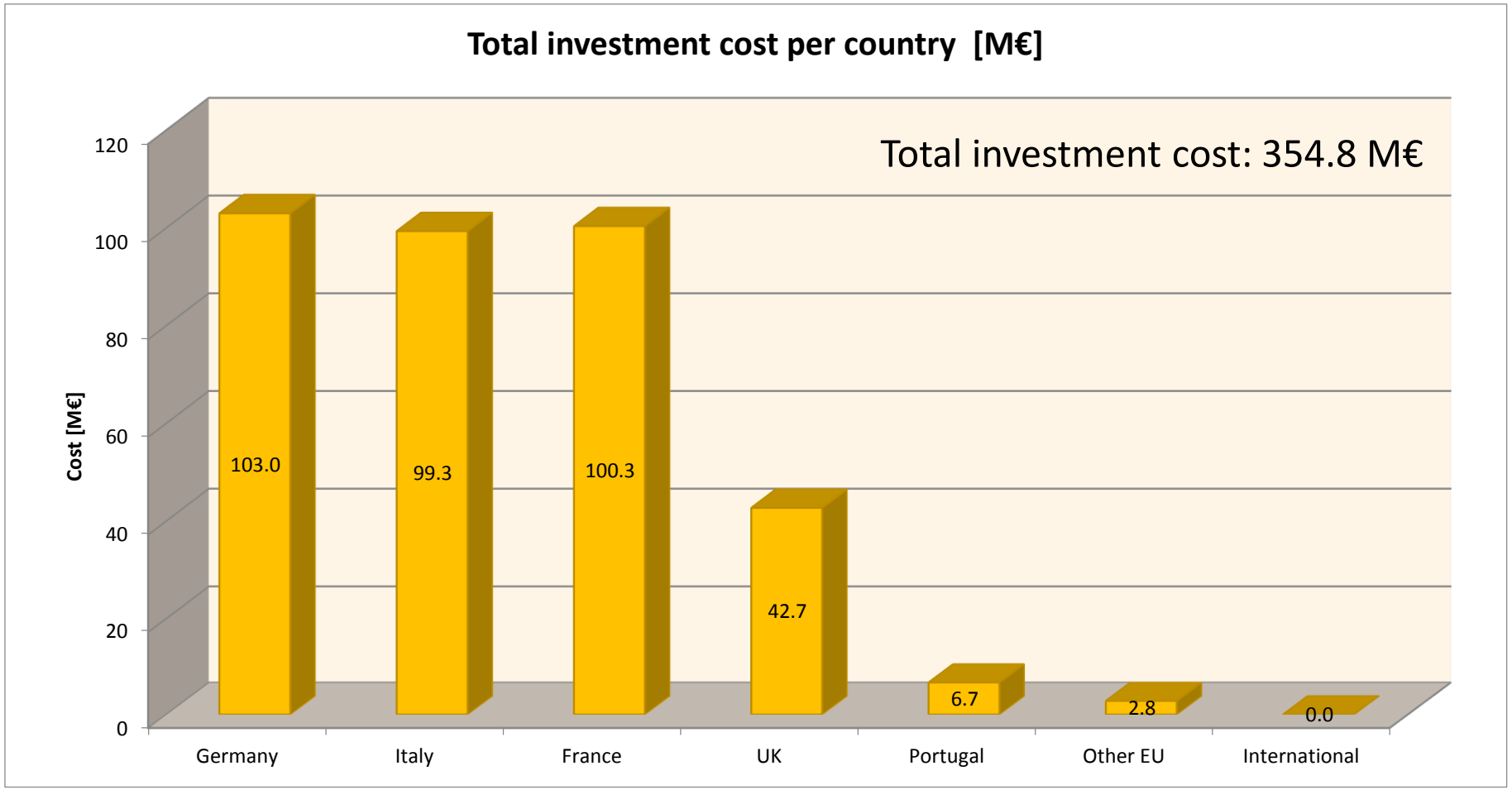
Horizon 2020 Design Study	**"Funding gap" ?**	Horizon Europe Preparatory Phase	Horizon Europe / Structural Funds / National Funding ?
3 Mio. € & in-kind contributions	???	Up to 4 Mio. € (& in-kind contribution)	>200 Mio. € from various sources

EuPRAXIA Budget

Assumptions:

- EU is looking for major high technology projects that advance innovation and involve leading European industry.
- EU is willing to support such a European project in big member states, bringing together existing R&D facilities, close to major Metropolitan areas with significant funding (at least 50% of total cost, we would even expect more).
- This funding would then enable the execution of such a European project, aiming at innovation, giving a platform to young scientists and industry and (hopefully) creating jobs on the long term.

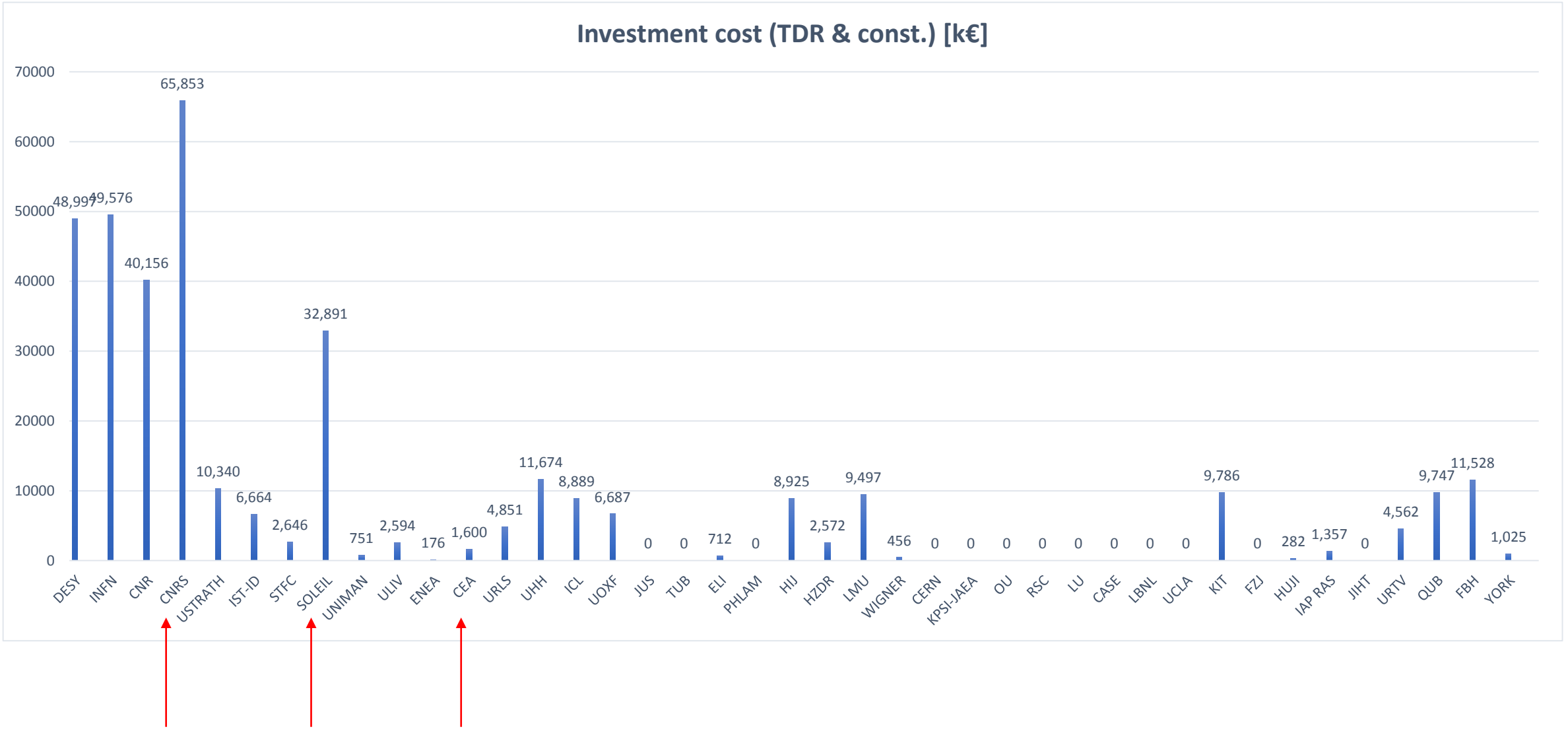
EuPRAXIA Cost Estimate (PREL)



Note:

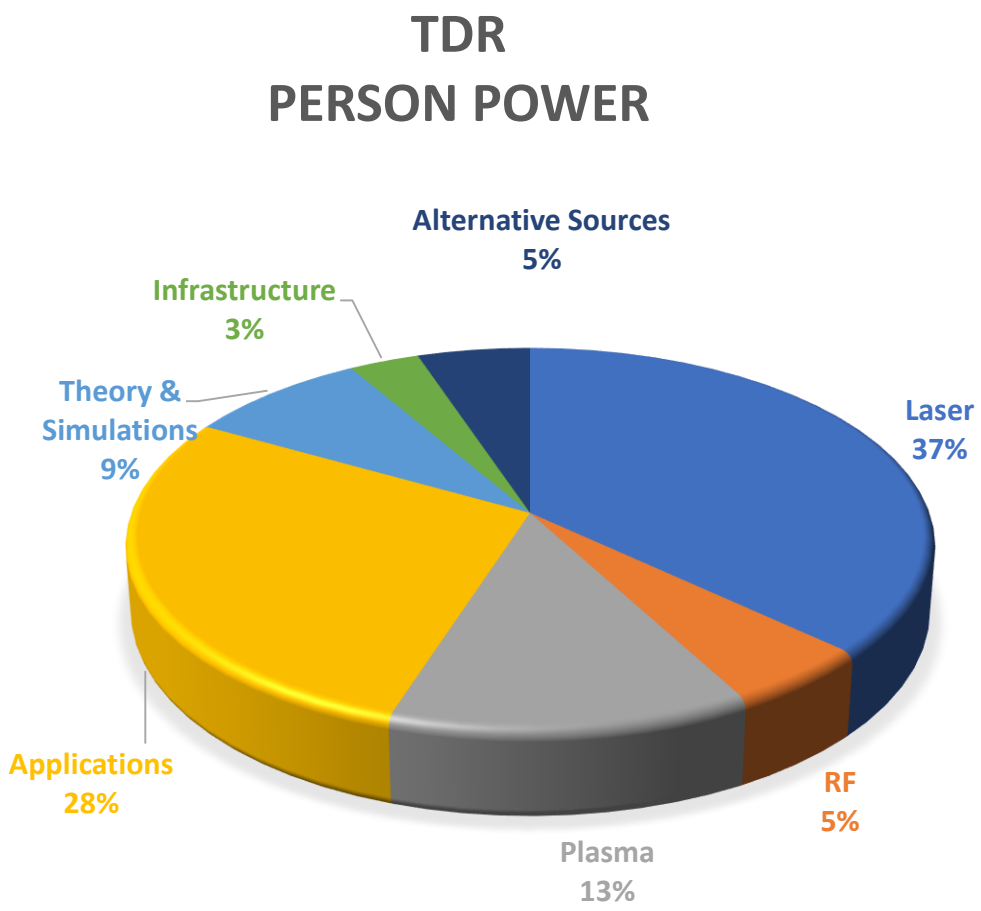
- As of 1.7.2019
- Some budgets (e.g. UK and Portugal) to be finalized mid July
- Duplication removed as best as possible
- Total cost are further separated into TDR/prototyping and Construction (Operation will be added)

EuPRAXIA Cost Estimate (PREL)

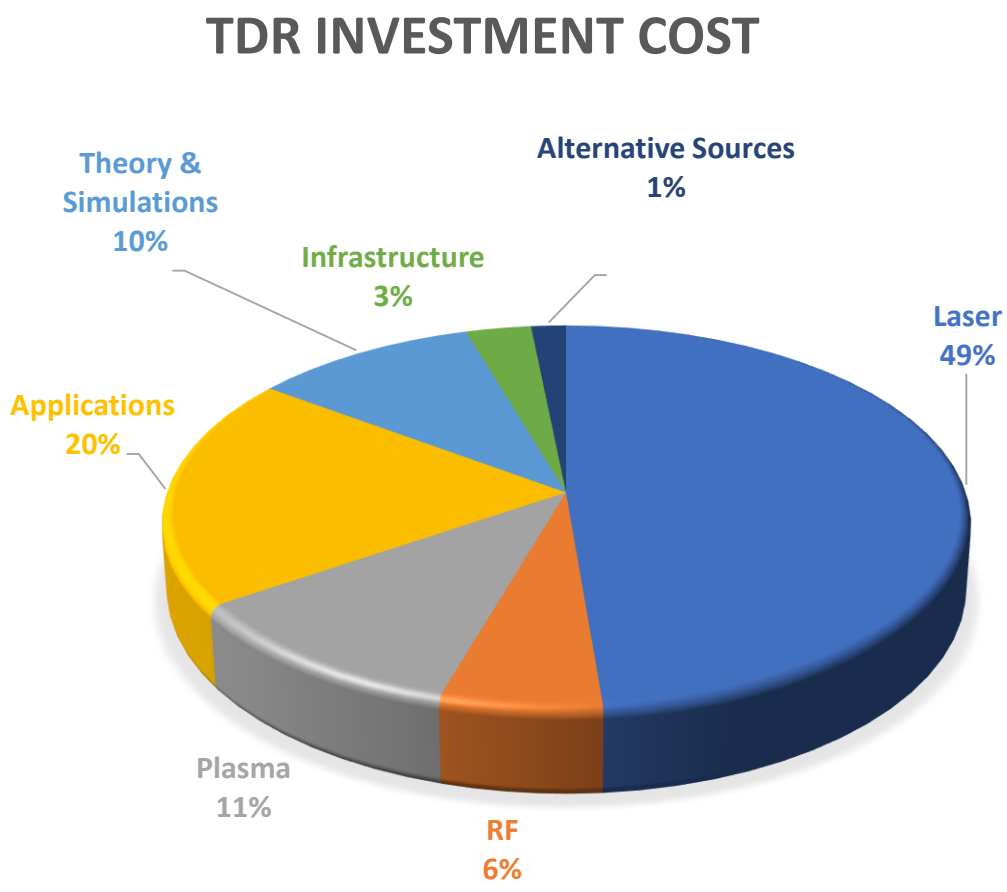


EuPRAXIA Cost Estimate – TDR (PREL)

TDR PERSONPOWER COST (if 1 FTE = 100k€) = **42.3 M€**



TDR INVESTMENT COST = **71.1 M€**

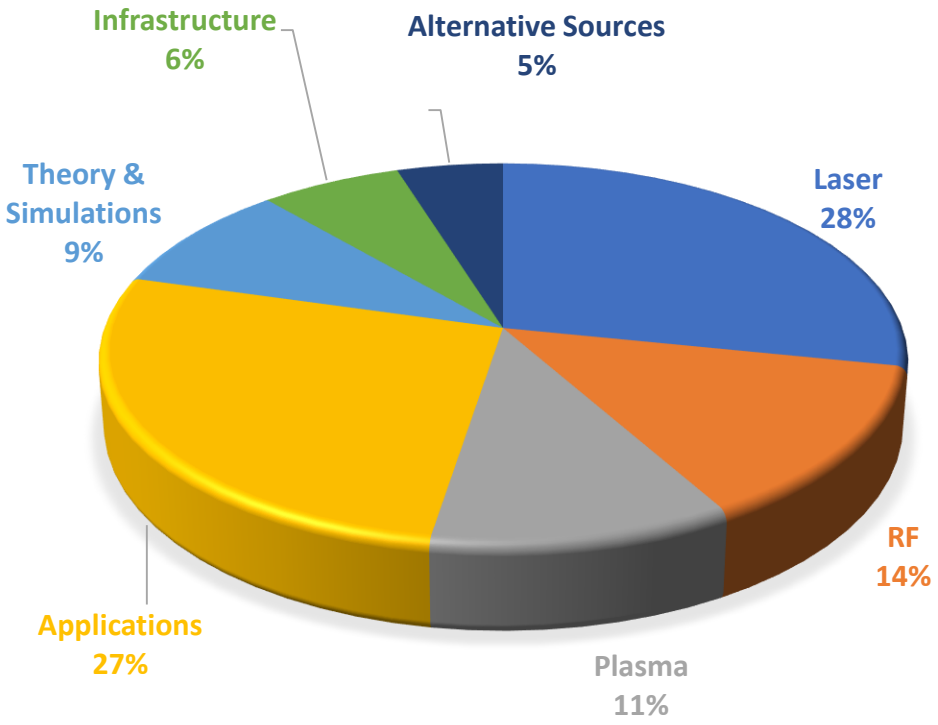


EuPRAXIA Cost Estimate – Constr (PREL)

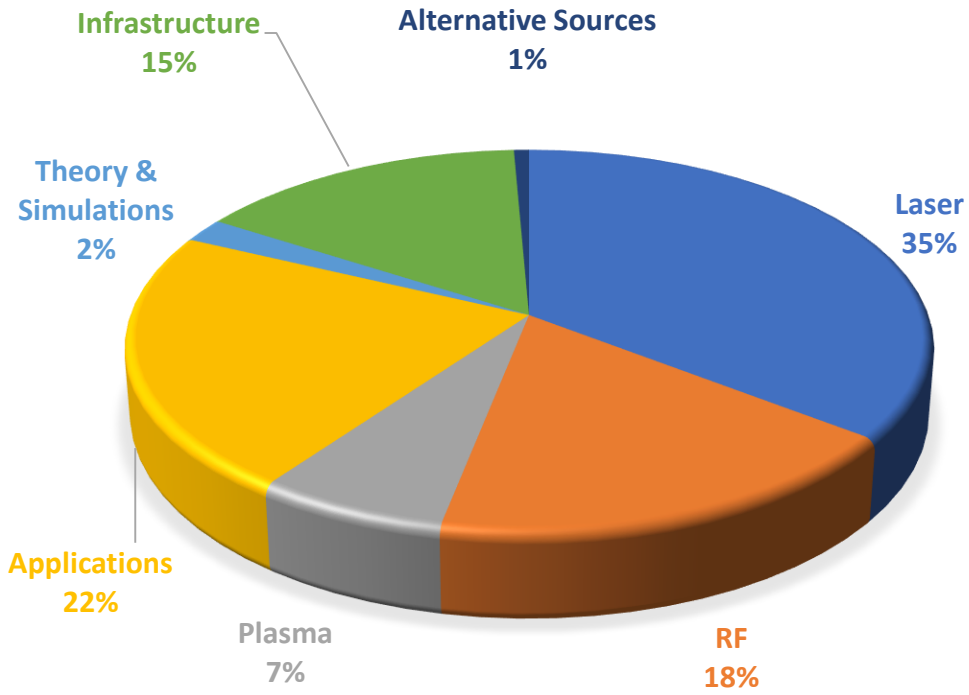
CONSTRUCTION PERSONPOWER COST (if 1 FTE = 100k€) = **52.9 M€**

CONSTRUCTION INVESTMENT COST = **283.8 M€**

CONSTRUCTION PERSON POWER



CONSTRUCTION INVESTMENT COST



What to Ask from EU with CDR Delivery?

- **Budget for preparatory study (4 M€)**, even before being on the ESFRI roadmap.
  - Prepare details on implementation model
  - Look at budget and resources in more detail
  - Investigate site options in more detail and discuss a realistic implementation model supported by hosts, partners, collaborators that all can commit to
  - Develop the open innovation model with industry and research in more detail.
- **Budget for a Joint Research Activity (JRA, used to be 15 M€)** to start on the TDR work, develop coordinated common research activities and show a few critical feasibility issues.

EuPRAXIA Concept & Ex. Summary

- **Technical concept** developed, documented in >1000 pages of EU reports, with more than 100 co-authors, new and high impact **solutions published at highest level** (including PRL).
- **Possible implementation model developed**: based on existing facilities, multiple near-term and realistic applications, distributed constrcution model, integrating all European activities.
- **Major lobbying in scientific, industrial and science-political environment**: high level talks, connections to industry, impact on funding agencies,
- Candidates for construction sites, excellence sites, ... collected.
- New discussions, opportunities and challenges emerging and need to be included in our vision on how EuPRAXIA can be constructed:

DESY - France - UK

Outstanding CDR with very high impact by 31.10.2019 fully on track

Could go without details here (just scheme) but highly beneficial to describe concrete options to show readiness for funding

Discussion Germany/DESY

Discussion France

Discussion UK

Agenda (2/2)

- 13:50 **Status of the CDR (M. Weikum)** (30 min.)
- 14:20 Discussion on future consortium agreement (R. Assmann) (45 min.)
- 15:05 Calendar management / next events (20 min.)
- 15:25 AOB (15 min.)
- 15:40 Adjourn – End of Meeting (5 min.)

EUROPEAN
PLASMA RESEARCH
ACCELERATOR WITH
EXCELLENCE IN
APPLICATIONS

EuPRAXIA

Status of the CDR

Maria Weikum

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653782.

Status of the CDR Chapters

22. Background
23. Overall Facility Layout and its Building Blocks
24. Beam Distribution Concept
25. Start-to-End Simulations
26. RF System as an Enabling Technology (integrated in Ch. 28/30.1)
27. Laser Systems as Innovative Power Drivers
28. RF Accelerator to 500 MeV as Beam Driver
29. LWFA Plasma Stage as Novel Hybrid Beam Driver
30.1 RF Injector
30.2 Plasma Injector
30.3 Hybrid Plasma Photocathode
31.1 Laser-Driven Plasma Accelerator to 1 / 5 GeV
31.2 Beam-Driven Plasma Accelerator to 1 / 5 GeV
32.1 Beam Transport for the Low-Energy Beam
32.2 Beam Transport for the High-Energy Beam
33. Plasma Diagnostics
34. Electron Beam Diagnostics
35. Electron Beam Dump
36.1 Free-Electron Laser User Area
36.2 Compton Source User Area
36.3 Betatron X-Ray User Area
37.1 High Energy Physics User Area
37.2 Secondary Particles User Areas
38.1 Plasma Injection Mechanisms
38.2 Compact Radiation Generation
38.3 Dielectric Technology for Diagnostics & Beam Control
38.4 Additional application beamlines
39. Command Control System
40. Summary Tables of Parameters and Technical Data

Received draft
Received some content,
Received no content yet

Timeline for CDR Completion

July 2019	❑ **<u>Need all CDR contributions!</u>**
August 2019	❑ Final content revisions ❑ Complete highlight plots / layout drawings (by INFN technical designer team / external company) ❑ Complete CDR page design (partially by external company)
September 2019	❑ Complete proof-reading (by external company) ❑ **<u>Final complete CDR version</u>** ❑ Printing
October 2019	❑ Have printed CDRs ready for Final EuPRAXIA Event ❑ Submit final CDR to EU

Work Clusters

Cluster descriptions	
1. Theory & Simulation	✓
2. Laser Technology	
3. Plasma Components & Systems	✓
4. RF & Accelerator Technology	
5. Diagnostics	✓
6. Additional Innovation Paths	
7. Control & Operation	(✓)
8. Infrastructure	✓
9. Training, Outreach & Dissemination	
10. Safety	(✓)

Work Clusters - Overview

Clusters			Applications							
No.	Name	Institutes	FEL from PWFA - 1GeV	FEL from LWFA - 1GeV	FEL from LWFA - 5GeV	Low-energy positron source	High-energy positron beams	HEP detector test beams	ICS Source	Medical imaging betatron source
			add coordinator	*add coordinator*	*add coordinator*	QUB	QUB	*add coordinator*	*add coordinator*	*add coordinator*
1	Theory & Simulation	DESY, INFN, CNRS, USTRATH, IST-ID, UMAN, ENEA, URLS, UHH, ICL, UOXF, ELI, HIJ, HZDR, LMU, URTV, WIGNER	x	x	x	x	x	x	x	x
2	Laser Technology	DESY, INFN, CNR, CNRS, STFC, UHH, ICL, UOXF, HIJ, HZDR, LMU, IAP RAS, FBH		x	x	x		x	x	x
3	Plasma Components & Systems	DESY, INFN, CNRS, USTRATH, STFC, ICL, UOXF, HZDR, LMU, HUJI, QUB, YORK	x	x	x	x	x	x	x	x
4	RF & Accelerator Technology	DESY, INFN, USTRATH, STFC, SOLEIL, UMAN, ULIV, ENEA, CEA, URLS, UHH, ICL, UOXF, HIJ, URTV, LMU, KIT, QUB	x	x	x	x	x	x	x	x
5	Diagnostics	DESY, INFN, CNRS, CEA, UMAN, HIJ, LMU, WIGNER, KIT, URTV, QUB	x	x	x	x	x	x	x	x
6	Additional Innovation Paths	DESY, USTRATH, HZDR, LMU, QUB								
7	Control & operation	DESY, INFN, USTRATH, ULIV, WIGNER	x	x	x	x	x	x	x	x
8	Infrastructure	DESY, INFN, URLS, KIT	x	x	x	x	x	x	x	x
9	Training, outreach & dissemination	DESY, INFN, USTRATH, ULIV, URLS, WIGNER								
10	Safety	DESY, INFN, USTRATH, UMAN, WIGNER	x	x	x	x	x	x	x	x

Work Clusters - Overview

Clusters			Applications							
No.	Name	Institutes	FEL from PWFA - 1GeV	FEL from LWFA - 1GeV	FEL from LWFA - 5GeV	Low-energy positron source	High-energy positron beams	HEP detector test beams	ICS Source	Medical imaging betatron source
			add coordinator	*add coordinator*	*add coordinator*	QUB	QUB	*add coordinator*	*add coordinator*	*add coordinator*
1	Theory & Simulation	DESY, INFN, CNRS, USTRATH, IST-ID, UMAN, ENEA, URLS, UHH, ICL, UOXF, ELI, HIJ, HZDR, LMU, URTV, WIGNER	x	x	x	x	x	x	x	x
2	Laser Technology	DESY, INFN, CNR, CNRS, STFC, UHH, ICL, UOXF, HIJ, HZDR, LMU, IAP RAS, FBH		x	x	x		x	x	x
3	Plasma Components & Systems	DESY, INFN, CNRS, USTRATH, STFC, ICL, UOXF, HZDR, LMU, HUJI, QUB, YORK	x	x	x	x	x	x	x	x
4	RF & Accelerator Technology	DESY, INFN, USTRATH, STFC, SOLEIL, UMAN, ULIV, ENEA, CEA, URLS, UHH, ICL, UOXF, HIJ, URTV, LMU, KIT, QUB	x	x	x	x	x	x	x	x
5	Diagnostics	DESY, INFN, CNRS, CEA, UMAN, HIJ, LMU, WIGNER, KIT, URTV, QUB	x	x	x	x	x	x	x	x
6	Additional Innovation Paths	DESY, USTRATH, HZDR, LMU, QUB								
7	Control & operation	DESY, INFN, USTRATH, ULIV, WIGNER	x	x	x	x	x	x	x	x
8	Infrastructure	DESY, INFN, URLS, KIT	x	x	x	x	x	x	x	x
9	Training, outreach & dissemination	DESY, INFN, USTRATH, ULIV, URLS, WIGNER								
10	Safety	DESY, INFN, USTRATH, UMAN, WIGNER							x	x

- *More general applications / deliverables?*
- *Need coordinators for applications*
- *Confirm cluster involvement of institutes*

Work Clusters - Example

EuPRAXIA Cluster – 3. Plasma Components & Systems

Lead Partner: CNRS All Partners: DESY, INFN, CNRS, USTRATH, STFC, ICL, UOXF, HZDR, LMU, HUJI, QUB, YORK, IST

This cluster brings together experts from partner institutes to develop plasma components and systems requested for the implementation of the EuPRAXIA accelerator and beamlines, in particular: laser driven plasma injectors (LPIs), laser and beam driven plasma accelerators (LPAs & BPAs), interface components such as plasma mirrors and passive or active plasma lenses. Particular efforts will be oriented towards the development of components providing high quality, stable electron beams at high repetition rate. The contribution of identified partners is planned as follows:

Development of LPIs

1/ Development of optimized electron injection schemes in tailored density profiles for the EuPRAXIA accelerator baseline : modelling through fluid, PIC and Monte Carlo simulations, design and construction of relevant gas cells, and experimental testing of stable injection schemes (CNRS, York, LMU, QUB, HZDR, USTRATH); Numerical and experimental investigation of optical injection with spatio-temporally controlled laser pulses (UOXF).
2/ Investigation of physics implications for operation at higher repetition rate, >10 Hz, (York, QUB); development of high repetition rate LWFA targets (IST, ICL); investigation of strategies for post-acceleration removal and recovery of unused wake energy (UOXF).
3/ Development of LWFA integrated targets optimised for betatron radiation and imaging applications (aiming hard x-ray high-quality imaging (> 50 keV) and high magnification (> 20 x or sub-micron resolution) with low noise and low dose) (IST).

Development of LPA

1/ Optimization of plasma parameters and the development of gas-filled discharge capillaries to reach long plasma channel lengths, typically several tens of centimeters (INFN SPARC lab, DESY).
1/ Development of novel long, low-density plasma channels suitable for multi-GeV accelerator stages operating at high repetition rates (UOXF, CNRS, IST, DESY).
3/ Guiding of high intensity laser beams in curved plasma channels: Multi-staged capillaries will be built and tested in guiding experiments (HUJI). Numerical and experimental investigation of curved hydrodynamic optical-field-ionized (HOFI) plasma channels (UOXF).

Development of plasma components for laser or electron beam transport and shaping

Development of active plasma lenses and passive plasma lenses for electron beam shaping (LMU, DESY, QUB); plasma lenses for laser focusing (HUJI); theoretical modeling of plasma channel lenses using a short capillary discharge (2-3 mm) to create a plasma lens, used to increase the intensity of the impinging beam in order to increase the laser intensity; investigation of energy dechirping concepts including multiple plasma stages (DESY, HZDR, USTRATH); plasma mirrors, adaptive mirrors, feedback loops (STFC).

System integration or prototypes development

Multistage design and experiments (LPI and LPA components driven by separate laser beams) (CNRS, DESY, QUB); full start-to-end analysis to optimize the choice of injection energy, and laser and plasma channel parameters in curved plasma channels (HUJI).

To Do's

1. Complete your CDR chapters (if not done yet)

2. Some more input requests for WP leaders regarding WP-related aspects of EuPRAXIA design:

- Main technical risks
- Main required prototyping / R&D activities
- Main technical milestones to achieve

→ *Bulletpoint lists are completely sufficient*

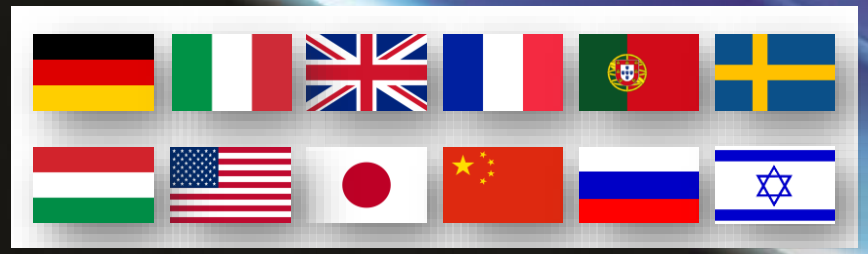
Agenda (2/2)

- 13:50 Status of the CDR (M. Weikum) (30 min.)
- 14:20 **Discussion on future consortium agreement (R. Assmann) (45 min.)**
- 15:05 Calendar management / next events (20 min.)
- 15:25 AOB (15 min.)
- 15:40 Adjourn – End of Meeting (5 min.)

EUROPEAN
PLASMA RESEARCH
ACCELERATOR WITH
EXCELLENCE IN
APPLICATIONS

EuPRAXIA

Discussion on future consortium agreement



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653782.

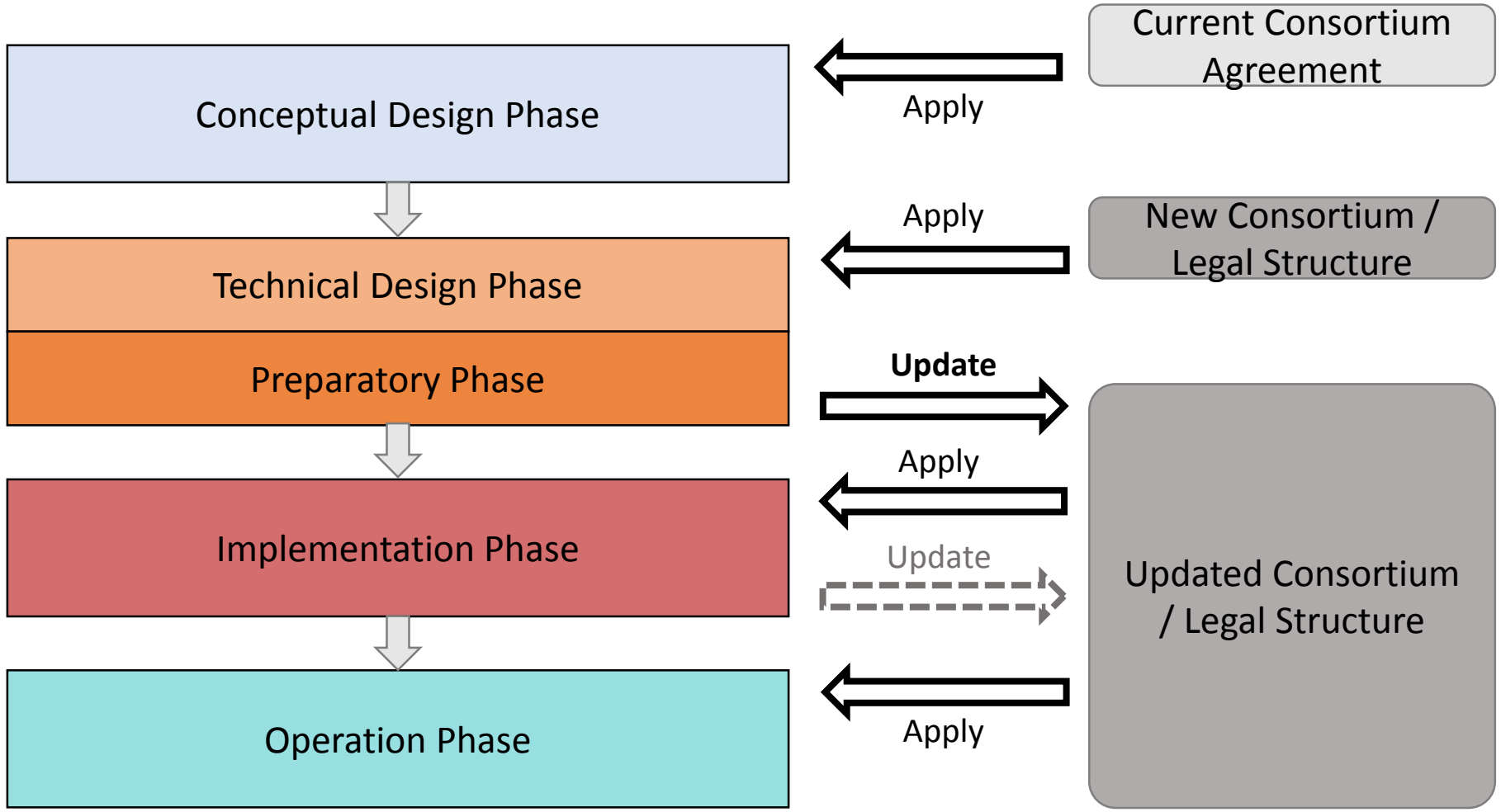
Project Structure & Governance

Proposal for the implementation of a new project structure:

- New consortium or other legal structure for next project phase

→ include general rules for implementation & operation already

- Use Preparatory Phase to update and detail existing agreement for later phases
- If necessary, use Implementation Phase to update existing agreement for operation



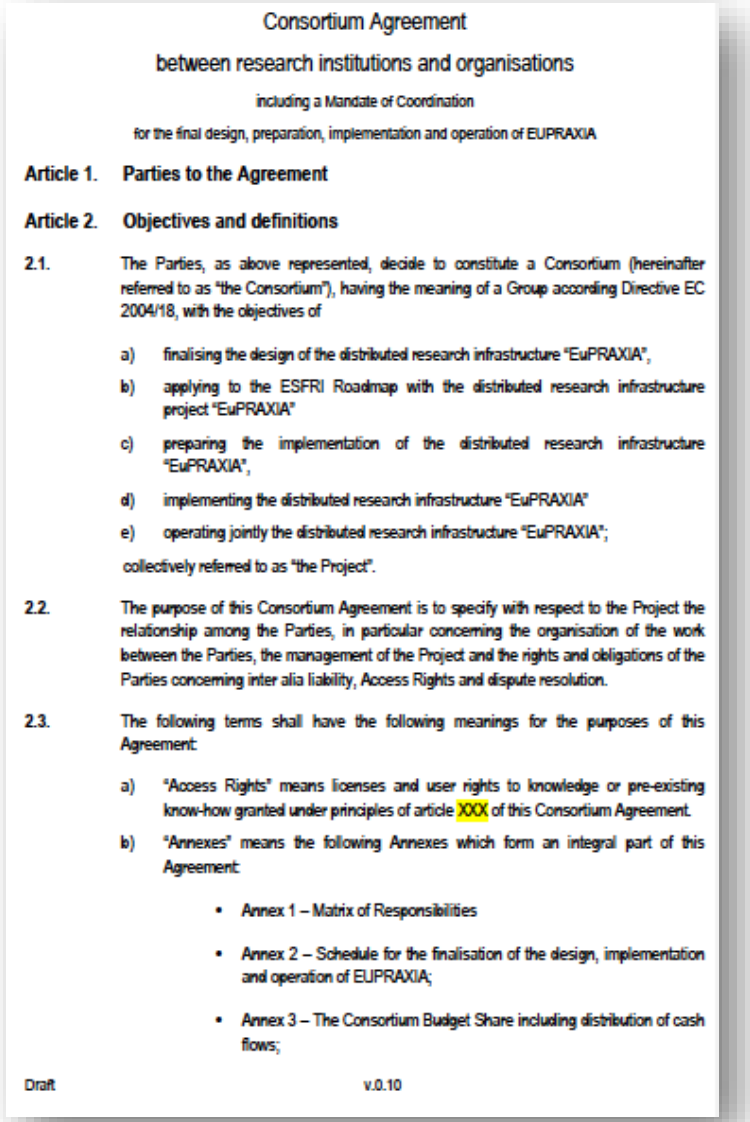
Consortium Agreement & Other Options

There are many different options for the legal structure of EuPRAXIA...

Consortium Agreement (CA) (no legal structure)	International organisation (IO)	European Economic Interest Grouping (EEIG)	Societas Europaea (SE)	European Research Infrastructure Consortium (ERIC)	Association Internationale Sans But Lucratif (AISBL)	National legal forms
e.g. ATLAS detector	e.g. CERN, ITER	e.g. Eurostar, Thalys	e.g. BASF, Airbus	e.g. ESS, CERIC, ELI (soon)	e.g. ELI (currently)	e.g. DESY, European XFEL
+ Most flexible + Members can most easily join + Individual institutions can join	+ Sustainable legal & financial framework + Privileges and immunities	+ Individual institutions can join + Well established legal form + Flexible with quarters, and capital	+ Can carry out activities in all EEC states + Same as GmbH, Sarl, Plc on European level	+ Members have to commit for several years → easier long-term support + Fully recognised with EU and popular with RIs	+ In principle quick to set up + No capital required + Individual institutions can join	+ Quite flexible due to large choice of national structures + Well established legal forms
- No clear entity to interact with, hold capital, employ staff, etc. - Needs comprehensive agreement - National governments not involved → long-term support more difficult	**- Very complicated and lengthy in setup** - Only states and IOs can join	**- Unlimited & joint liability** - No known RIs are EEIG	- Mostly dedicated to entities with economic activities - No known RIs are SE	- Only states and IOs can join - Lengthy setup **- New legal form, not yet well known regionally/nationally**	**- Headquarters have to be in Belgium** - Creation & major changes dependent on royal decree	- For distributed facility: one headquarter with several national subsidiaries (each with their own legal form) needed → **large administrative effort**

Good as a starting option

Draft Exists (36 pages)



Consortium Agreement

between research institutions and organisations

including a Mandate of Coordination

for the final design, preparation, implementation and operation of EUPRAXIA

Article 1. Parties to the Agreement

Article 2. Objectives and definitions

2.1. The Parties, as above represented, decide to constitute a Consortium (hereinafter referred to as "the Consortium"), having the meaning of a Group according Directive EC 2004/18, with the objectives of

a) finalising the design of the distributed research infrastructure "EuPRAXIA",

b) applying to the ESFRI Roadmap with the distributed research infrastructure project "EuPRAXIA"

c) preparing the implementation of the distributed research infrastructure "EuPRAXIA",

d) implementing the distributed research infrastructure "EuPRAXIA"

e) operating jointly the distributed research infrastructure "EuPRAXIA";

collectively referred to as "the Project".

2.2. The purpose of this Consortium Agreement is to specify with respect to the Project the relationship among the Parties, in particular concerning the organisation of the work between the Parties, the management of the Project and the rights and obligations of the Parties concerning inter alia liability, Access Rights and dispute resolution.

2.3. The following terms shall have the following meanings for the purposes of this Agreement:

a) "Access Rights" means licenses and user rights to knowledge or pre-existing know-how granted under principles of article XXX of this Consortium Agreement.

b) "Annexes" means the following Annexes which form an integral part of this Agreement:

- Annex 1 – Matrix of Responsibilities
- Annex 2 – Schedule for the finalisation of the design, implementation and operation of EUPRAXIA;
- Annex 3 – The Consortium Budget Share including distribution of cash flows;

Draft v.0.10

Need to look at this during Summer...

Agenda (2/2)

- 13:50 Status of the CDR (M. Weikum) (30 min.)
- 14:20 Discussion on future consortium agreement (R. Assmann) (45 min.)
- 15:05 **Calendar management / next events** **(20 min.)**
- 15:25 AOB (15 min.)
- 15:40 Adjourn – End of Meeting (5 min.)

EUROPEAN
PLASMA RESEARCH
ACCELERATOR WITH
EXCELLENCE IN
APPLICATIONS

EuPRAXIA

Calendar Management & Next Events

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653782.

Next Events

What?	When?	Where?
Final EuPRAXIA Event (collaboration-internal)	**16.10.2019 13:00 – 17.10.2019 late**	**DESY, Germany**
Final EuPRAXIA Event (public)	**18.10.2019 10:00 – ca. 14:00**	**Hamburg, Germany**

Option for the location: Baseline

CSSB Hörsaal

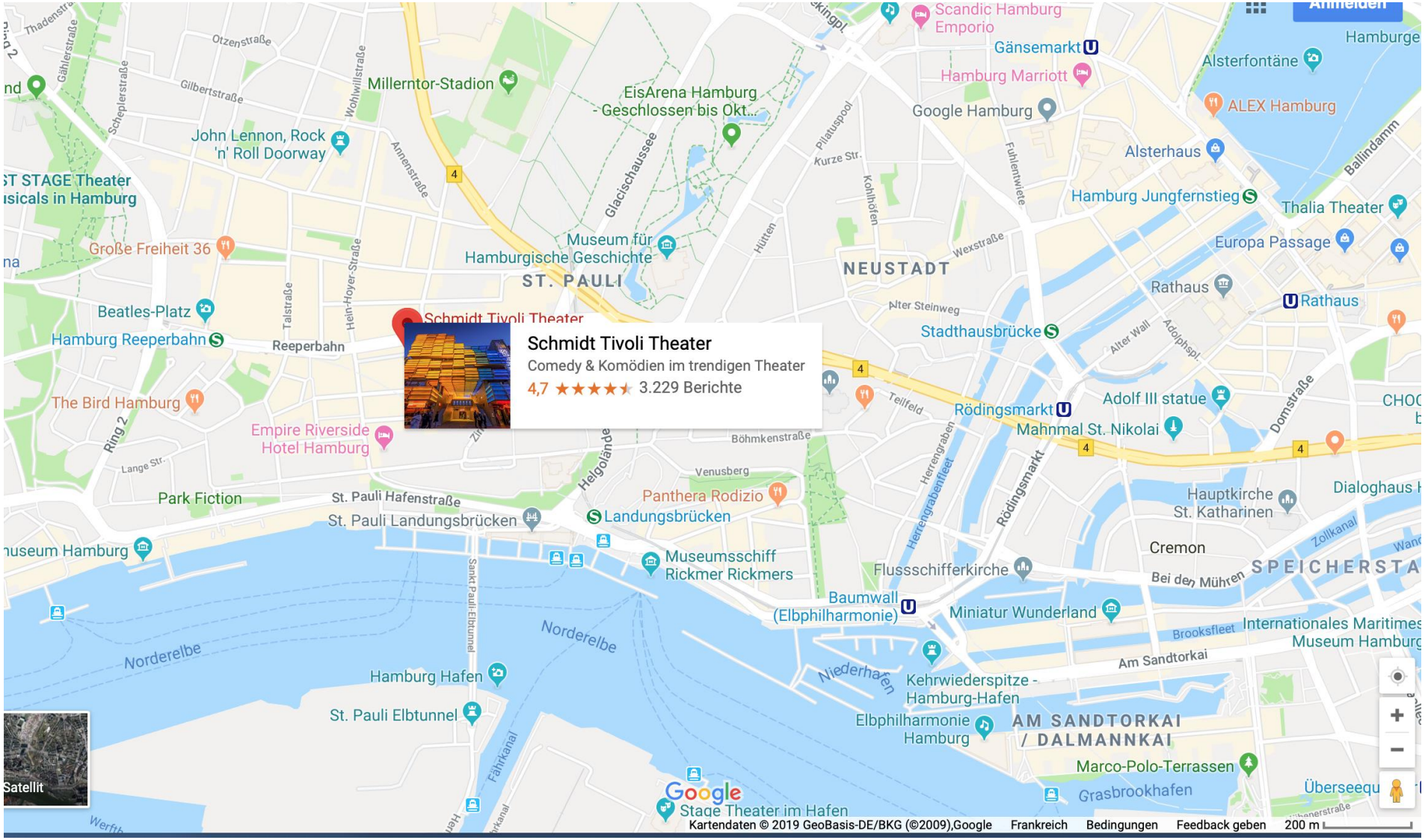
Option for the location?

DESY Hörsaal

Option for the location?

Schmidt’s Tivoli Theater

Option for the location?



Collaboration-Internal Final Event - Agenda (1/2)

	16.10.2019
13:00-14:00	Lunch (in DESY canteen) + Registration (60 min.)
14:00-15:30	Welcome and practical information (R. Assmann, 5 min.)
	Four years EuPRAXIA – lessons learned (R. Assmann, 25 min.)
	Dissemination of the CDR and wider EuPRAXIA results (C. Welsch, 20 min.)
	Simulations and theoretical studies (P.A.P. Nghiem, J. Vieira, 10 min. each, incl. questions)
	Plasma accelerator structures (B. Cros, Z. Najmudin, 10 min. each, incl. questions)
15:30-16:00	Coffee Break
16:00-18:00	Laser design and optimisation (L. Gizzi, F. Mathieu, 10 min. each, incl. questions)
	RF system and beamlines (C. Vaccarezza, A. Chance, 10 min. each, incl. questions)
	FEL pilot application (M.-E. Couprie, G. Dattoli, 10 min. each, incl. questions)
	High-energy physics and other pilot applications (A. Specka, R. Walczak, 10 min. each, incl. questions)
	Electron-beam driven plasma accelerator structures (M. Ferrario, J. Osterhoff, 10 min. each, incl. questions)
	Use of other novel technologies (U. Dorda, G. Xia, 10 min. each, incl. questions)

Collaboration-Internal Final Event - Agenda (2/2)

	17.10.2019
9:00-9:30	Coffee discussions
9:30-11:00	FEL application prototyping (A. Maier, V. Malka, 10 min. each, incl. questions)
	Accelerator prototyping and test experiments (R. Pattathil, A. Mostacci, 10 min. each, incl. questions)
	Alternative injection mechanisms and radiation generation (D. Jaroszynski, Z. Sheng, 10 min. each, incl. questions)
	Hybrid laser-electron-beam driven plasma acceleration (B. Hidding, A. Martinez de la Ossa, 10 min. each, incl. questions)
	Electron beam diagnostics (A. Cianchi, N. Delerue, 10 min. each, incl. questions)
	Views from industry (one of industry partners, 20 min.)
11:00-11:30	Coffee Break
11:30-13:00	Impressions from the Scientific Advisory Committee (C. Biscari, 30 min.)
	Roundtable discussion – Lessons learned (30 min.)
	Keynote talk? (30 min.)
13:00-14:30	Lunch (in DESY canteen)
14:30-16:00	ESFRI Roadmap Application (F. Brottier, 30 min.)
	Next Steps for EuPRAXIA (25 min + 20 min. discussion)
	Final Remarks (15 min.)
From 18:00	Social Dinner (self-paid?)

Public Final Event – State of Discussion

Key messages:

- Plasma acceleration as a new, ground-breaking technology that could improve accelerator science and open up significant new applications
- Extremely versatile, possible impact and applications for plasma accelerators both in science and industry
- Based on its highly competitive accelerator landscape and world-leading laser industry, Europe should push the development of this technology benefitting science, industry and society
- EuPRAXIA project as a unique collaboration of European and international experts providing a realistic strategy for developing plasma acceleration to user readiness as the necessary stepping stone from proof-of-principle to production facility
- EuPRAXIA fits well into the existing European accelerator landscape as a complementary technological development to large-scale infrastructures; important role of CERN and ELI as associated partners guaranteeing close interplay with particle physics and laser science community

Target audience:

- Decision-makers on national, European and facility level, including European Commission representatives, ESFRI representatives, management representatives of the main institutes in EuPRAXIA
- Industry representatives and scientific experts (e.g. the EuPRAXIA Scientific Advisory Committee, Nobel prize winner Gerard Mourou)
- The EuPRAXIA Consortium members should also be invited to join the event.

Public Final Event – Ideas for the Agenda

Welcome to the guests
Opening address
Europe as a pioneer in particle accelerators
Introduction to plasma accelerators and EuPRAXIA (incl. handover of the EuPRAXIA Conceptual Design Report to an EU Commission representative)
International perspective on the potential of plasma accelerators
Coffee Break
Panel discussion: Applications and impact of plasma acceleration (with industry experts, perhaps someone from the SAC or Gerard Mourou)
Panel discussion: Driving technology development on a European scale (with funding agency and EU representatives)
Closing remarks
Reception with light lunch

Public Final Event – Guest List

- EuPRAXIA Steering Committee, Collaboration Board + Scientific Advisory Committee
- A high-level representative (accelerator director / department head / etc.) of each EuPRAXIA partner
- *European Union*: EuRPAXIA EC project officer, EC/ERC representative(s), ESFRI chair / ESFRI members
- *Germany:* DESY directorate, plus to be decided
- *Italy:* INFN president & vice-president, INFN-LNF director, ministry of research representative, vice-president of region Lazio
- *France:* directors of SOLEIL / relevant subdivisions of CNRS / CEA, ministry of research representative, chairman of CNRS committee for Large Research Infrastructures, lab directors of LLR/LOA/LPGP
- Representatives of TIARA / ARIES
- Attendees of EuPRAXIA user workshops (2016 HOPA Workshop + 2019 FEL Workshop)

Next Steps

- Finalise event location
- Send out official invitations
- Determine and invite speakers
- Further local organisation
- ….

Agenda (2/2)

- 13:50 Status of the CDR (M. Weikum) (30 min.)
- 14:20 Discussion on future consortium agreement (R. Assmann) (45 min.)
- 15:05 Calendar management / next events (20 min.)
- 15:25 **AOB** (15 min.)
- 15:40 Adjourn – End of Meeting (5 min.)

Agenda (2/2)

- 13:50 Status of the CDR (M. Weikum) (30 min.)
- 14:20 Discussion on future consortium agreement (R. Assmann) (45 min.)
- 15:05 Calendar management / next events (20 min.)
- 15:25 AOB (15 min.)
- 15:40 **Adjourn – End of Meeting** (5 min.)