

EUROPEAN
PLASMA RESEARCH
ACCELERATOR WITH
EXCELLENCE IN
APPLICATIONS

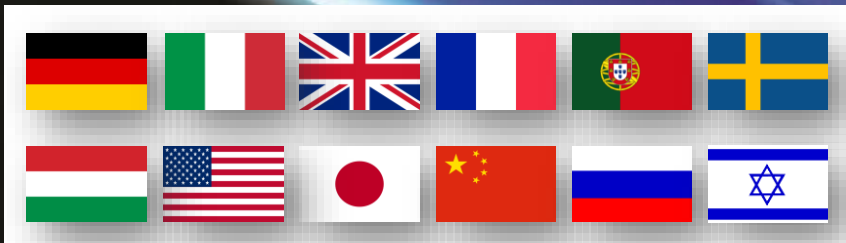


EuPRAXIA as a User Facility

M. Weikum

F. Brottier, A. Walker, R. Assmann, A. Specka, R. Walczak and others

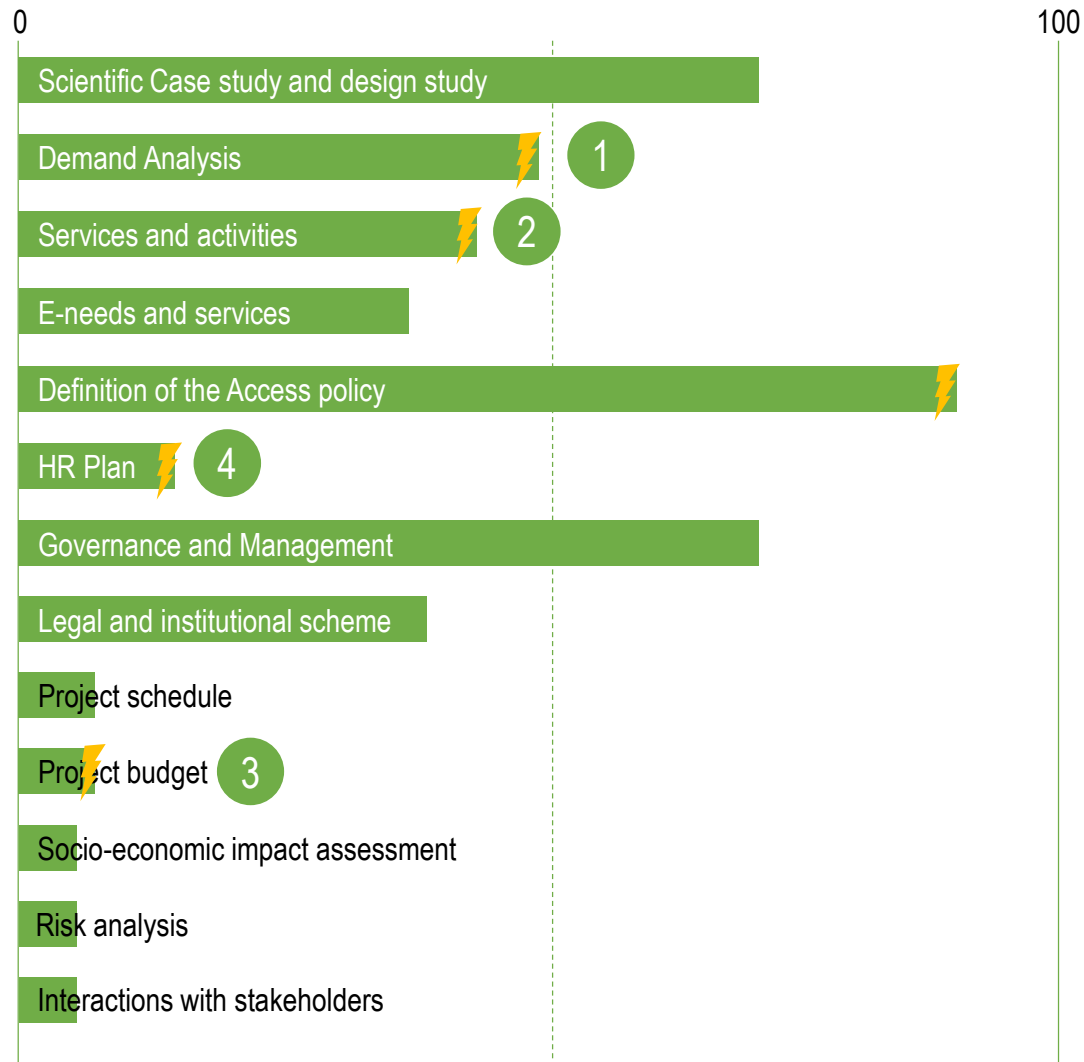
EuPRAXIA Retreat, 28th Feb 2019



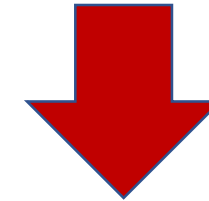
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653782.

- ESFRI Application Status
- User Demand Analysis
- Access Model
- To Do's & Open Questions

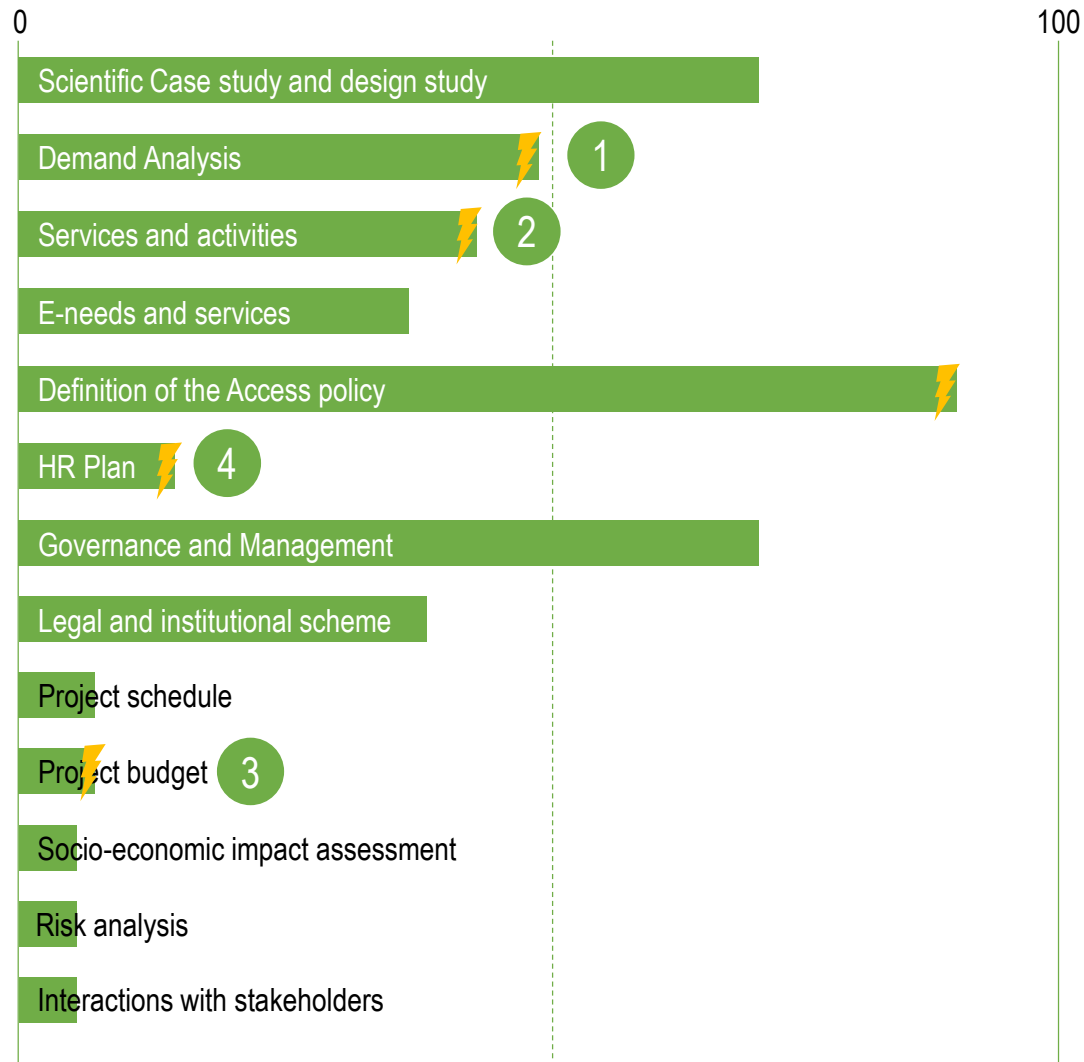
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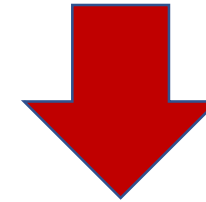
- Work on many aspects started and progressed
- **Many aspects overlapping with CDR work** (risk analysis, schedule, budget, governance, etc.)
- Other aspects go beyond (HR plan, e-needs and services, cost-benefit analysis, etc.)



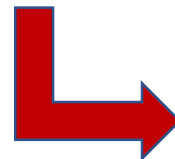
Currently limited by open design questions (performance, user applications, etc.)



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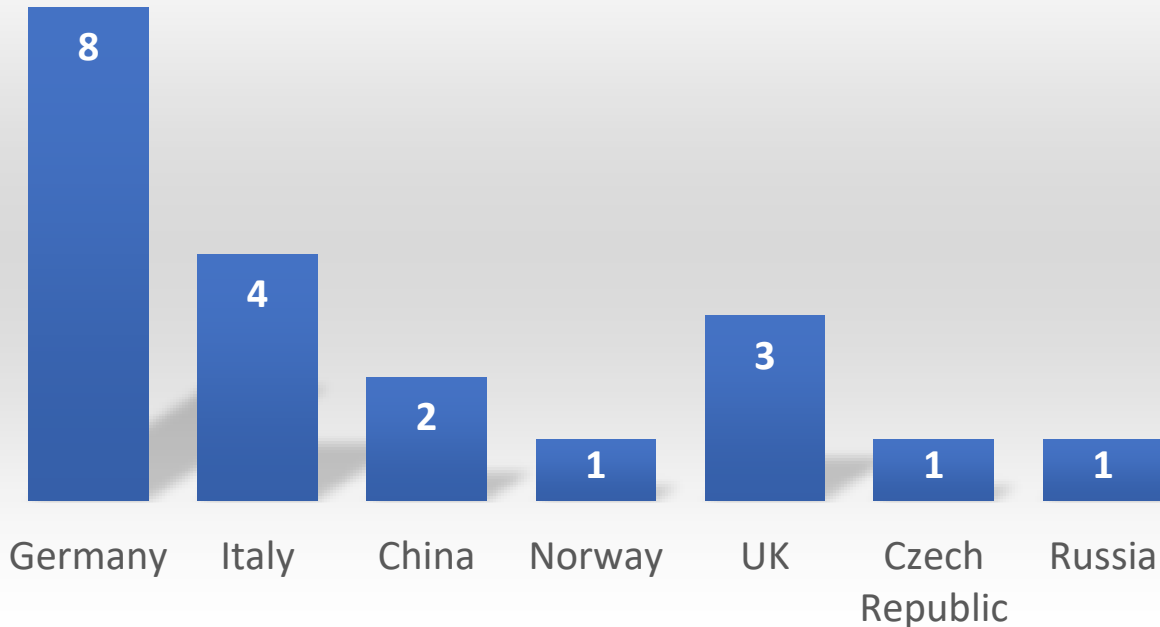


- Important to produce clear design for CDR
- Get ready for further, more detailed input for ESFRI Roadmap Application (also after CDR)

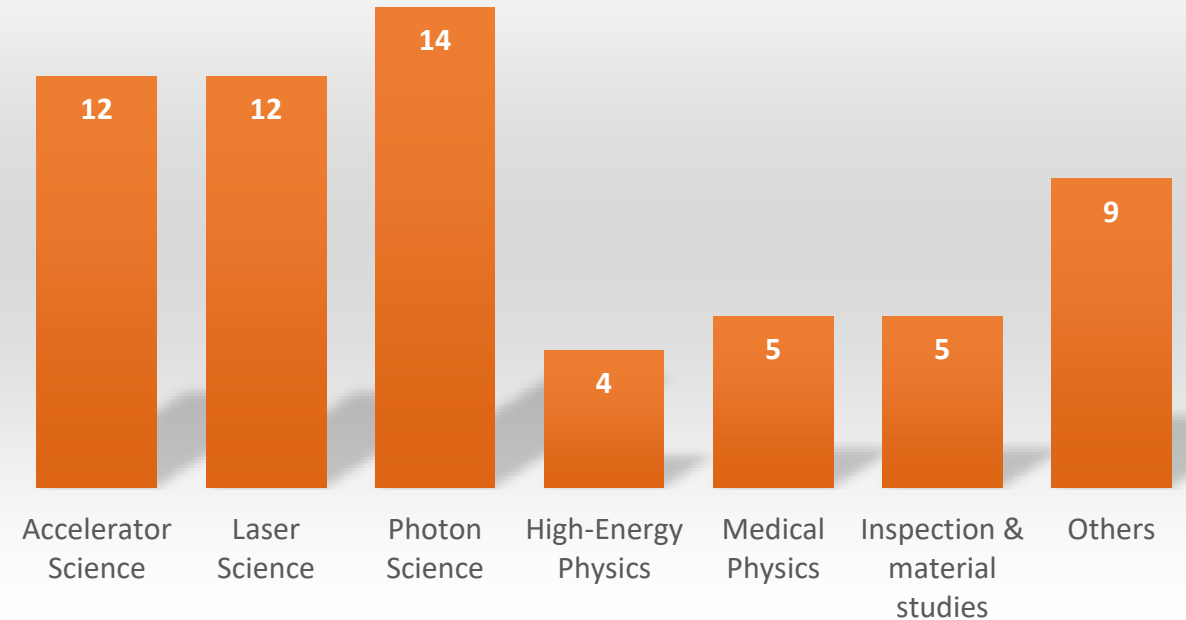
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- Ultrashort pulse lengths and point-like sources (comparable or better than conventional machines)
- Compact facility & “massively parallel” beamlines → reduced construction & operation costs → reduced costs per beam per hour
- Possibility for future technology transfer to academia and industry
- Focus on co-development represented in access structure (access times, etc.)
- For plasma accelerator experiments: state-of-the-art beam properties with improved repetition rate, stability and robustness
- *What else?*

Number of responses per country



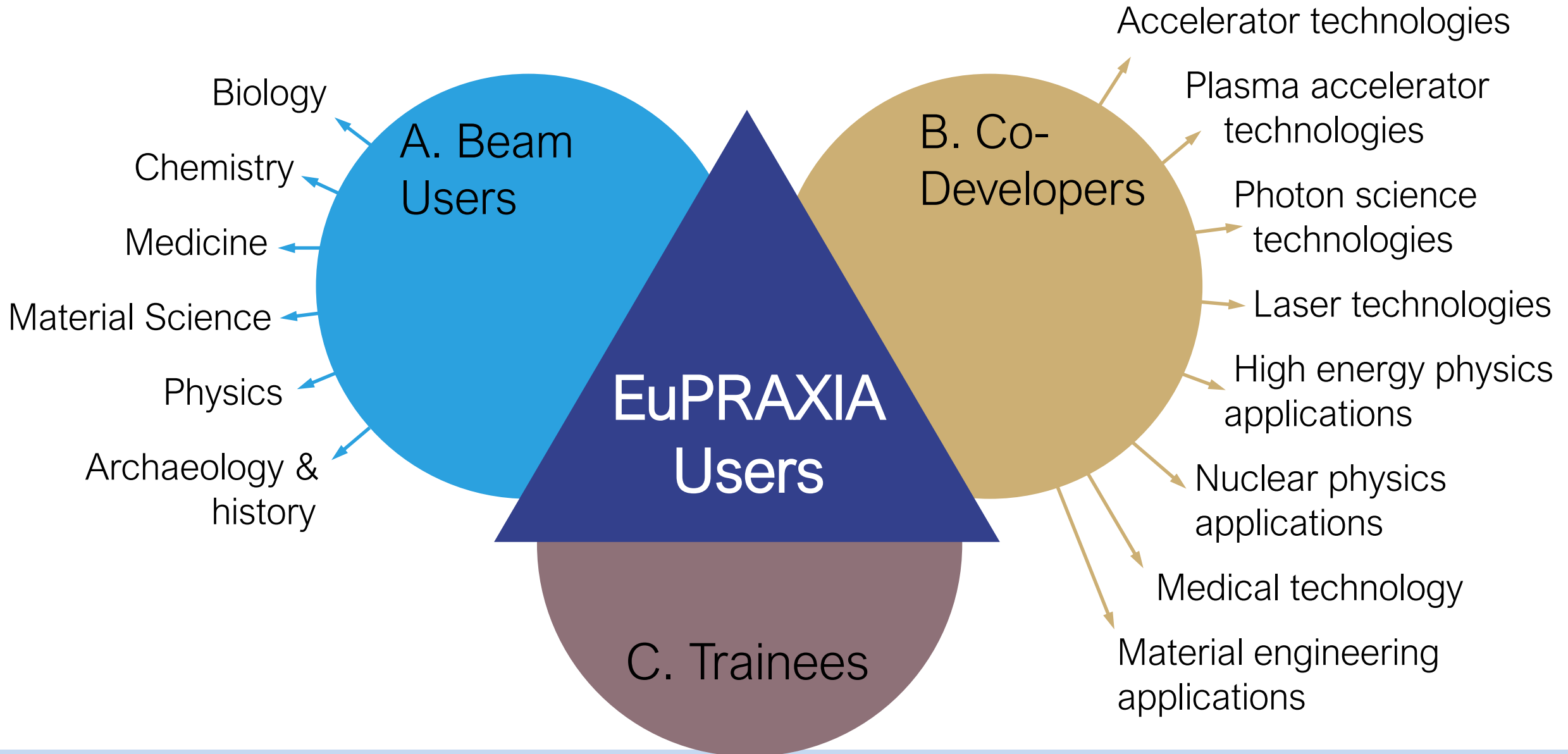
Number of responses per field of activity



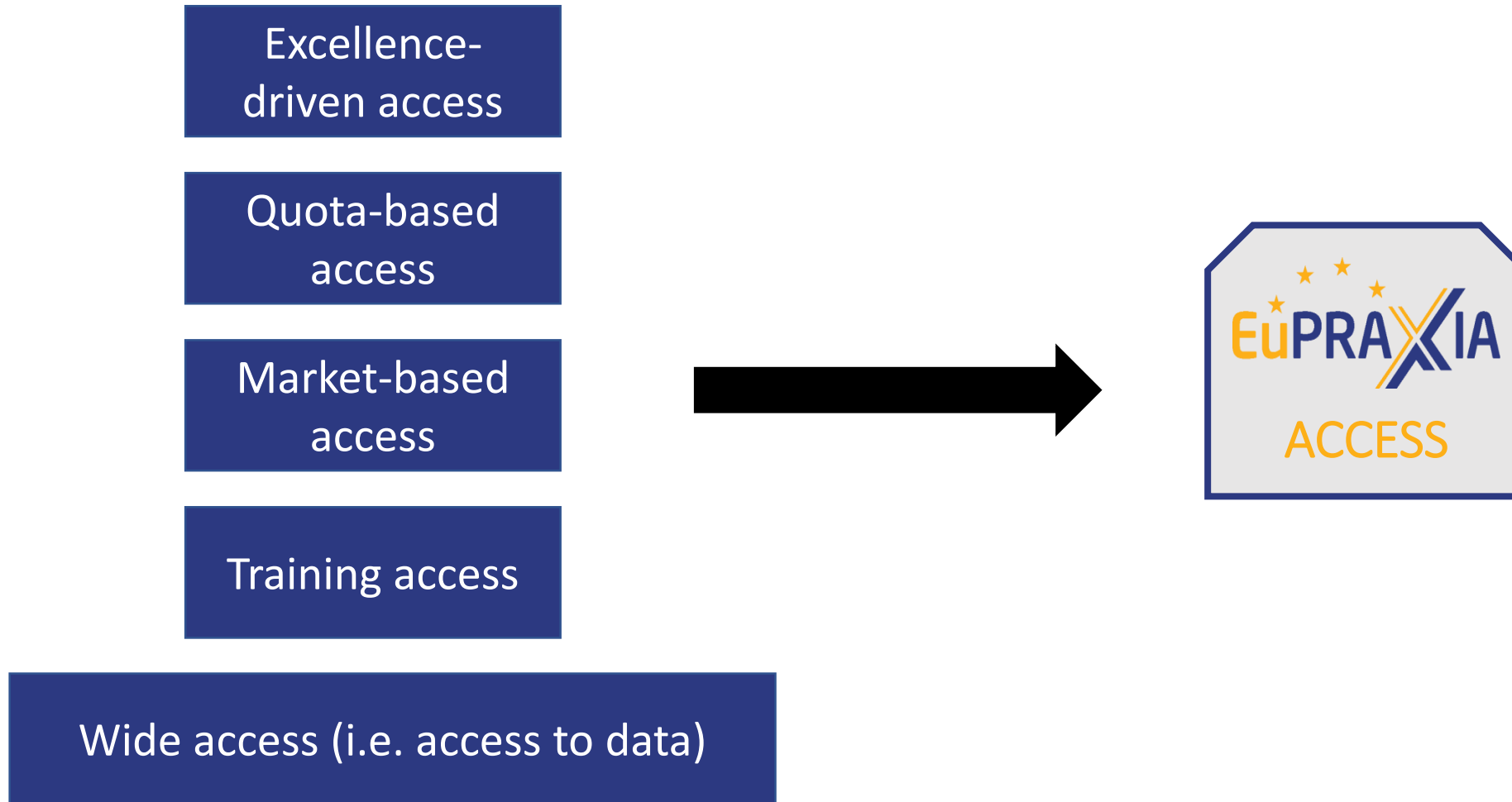
Responses from 20 groups/departments, >850 researchers

100% interest in further contact, 95% interest in workshop participation

Still need more statistics, more countries represented & more industry input



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- **For non-commercial users interested in using beamlines**
- Proposals selected based on scientific excellence and compatibility with EuPRAXIA mission, as assessed by the EuPRAXIA Research Program Advisory Committee
- **Quota-based access:** excellence-based as well, but only proposals endorsed by one or several members of the EuPRAXIA Collaboration Board can apply

Dimension	Explanations	Points	Min. Threshold
Points granted on the basis of the evaluation by the Research Program Advisory Committee			
1. Scientific excellence	An assessment made by considering the extent to which the experiment proposed will further knowledge	60	35
2. Societal impact	An assessment made by considering the extent to which the experiment proposed will have a socio-economic impact	10	0
Points granted on the basis of factual elements communicated by applicants and controlled by the User Office			
3. Track-record of the applicant	Applying a point system on the publications by members of the research team.	15	0
4. Compliance with the EuPRAXIA Mission	The experiment proposal should demonstrate how it contributes to the fulfilment of the EuPRAXIA Mission.	15	10
5. Gender & Youth	Points are granted when the average age of the research team is below 40 and when more than 30% of researchers in the research team are female	10	0
TOTAL		110	45

Proposed criteria for excellence-driven and quota-based access. In the latter case this needs to be complemented by an endorsement from a EuPRAXIA Collaboration Board member

Market-based access:

- For commercial users interested in using beamlines
- Access is granted based on a contract developed between the user and EuPRAXIA represented by the Industry Liaison Officer (after technical, legal and ethical review of the experiment proposal)

Training access:

- For commercial users and non-commercial users (e.g. students, accelerator facility operators)
- Access is granted either through a long-term agreement or as an ad hoc, one-off request

Step	
1.	Non-Disclosure Agreement
2.	Feasibility check-up
3.	Ethical concerns (controlled by Ethical Advisory Board)
4.	Cost & Negotiation
5.	Contract

Top: Most important steps for market-based access

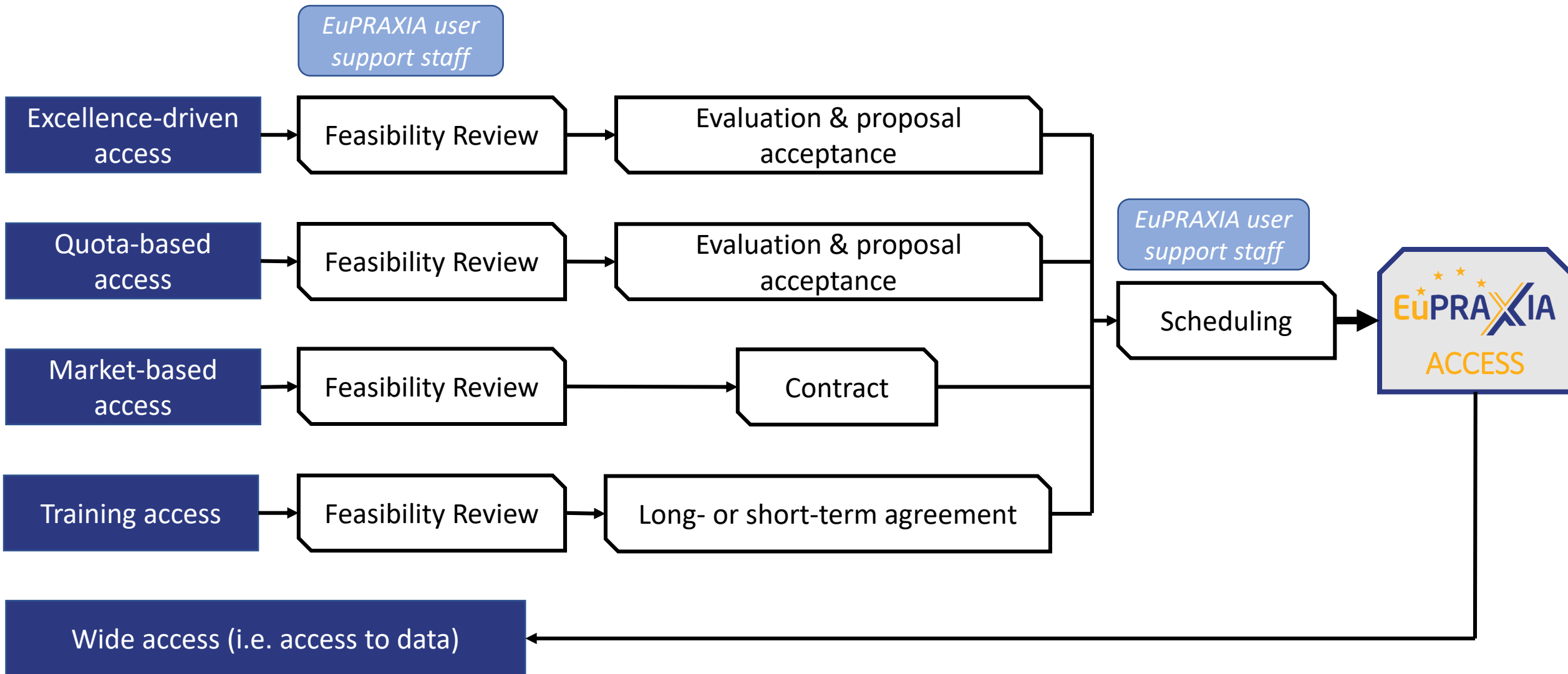
Bottom: Most important steps for training access

Step	Explanation	
1.	Definition of a curriculum	EuPRAXIA and the education partner agree on the exact scope of activities to take place at EuPRAXIA
2.	Relevance for EuPRAXIA	An in-house panel at EuPRAXIA evaluates whether the scope of activities is feasible and interesting for EuPRAXIA
3.	Resource check-up	EuPRAXIA estimates whether the training service can be carried out with the current resources
4.	Scheduling	EuPRAXIA and the education partner agrees on the schedule for the training service to be provided
5.	Cost & Negotiation	Depending on the result of the previous steps, EuPRAXIA defines an offer for the education partner
6.	Contract/Agreement	If the offer is financially acceptable for the education partner, an agreement is signed between the two parties

- **Three types of data to be collected:**

- 1) operational machine data for maintenance & operation purposes,
- 2) personal data for internal personnel and external users,
- 3) scientific data collected from user experiments

- **Need data policy** which defines acquisition, analysis and storage of data
- **For market-based access:** data belongs to user, no analysis or storage unless otherwise agreed
- **For excellence-driven & quota-based access:** storage by EuPRAXIA facilities for 10 years; embargo period of 3 years, afterwards open access



Further aspects to consider for user access and support, including

- Local contacts and support staff
- Supporting laboratories and workshops
- Airport transfers
- Hotels and restaurants
- Consumables procurement
- User workshops and conferences
- Central project office to help with user funding applications
- ...

→ Some of these need to be developed in more detail already for the ESFRI Roadmap Application

How is it done at other facilities?

User Facility	Length of a shift (= access unit)	User beamtime hours per year	Machine studies & experiment preparation hours per year	Maintenance hours	Shutdown & commissioning hours per year
FLASH 1 (2017) ¹	12h	4496h (51.3%)	2472h (28.2%)	71h (0.8%)	1721h (19.7%)
PETRA III (2017) ¹	8h	4001h (45.7%)	1415h (16.2%)	378h (4.3%)	2966h (33.8%)
LCLS (2017) ²	12h	~3372h (38.5%)			
Gemini Laser (2016-17) ³	Normal working hours*	~1753h (20.0%)			
EUPRAXIA?					

* Some out-of-hours time is carried out, which is included in the beamtime estimate.

¹ http://photon-science.desy.de/research/scientific_media/desy_photon_science_annual_reports/

² <https://lcls.slac.stanford.edu/schedules>

³ <https://www.clf.stfc.ac.uk/Pages/Operational%20Statistics.pdf>

Some assumptions:

- INFN site: two beamlines, DESY site: three beamlines
- Each beamline can cater for only one user area at a time (to be refined for positron + HEP beamlines)
- Beamlines at each facility are interdependent to some extent, so not all can run at the same time
- Each beamline operates 24h for 6 days a week, 3 months at a time followed by 1 month maintenance break
- One shift lasts 12h (e.g. 9am-9pm, 9pm-9am)
- Different services for beam users, co-developers and trainees → main emphasis on co-developers, especially in first years of operation
- For beam users and co-developers, each service can be provided through different access modes:
60% excellence-driven – 20% quota-based – 20% market-based

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CDR & TDR:

- Agree on general conditions for user access (for CDR), develop access policy in more detail (for ESFRI application)
- Clarify EuPRAXIA „selling points“ to users (CDR)
- More emphasis on user engagement, especially with industry (ideally with a dedicated liaison officer)

Operation:

- User support via user office and industrial liaison

Thank you!

Any questions or comments?

We need your feedback!



16 Participants



25 Associated Partners

(as of December 2018)

