EUROPEAN
PLASMA RESEARCH
ACCELERATOR WITH
EXCELLENCE IN
APPLICATIONS

EuPRAXIA

Conceptual Design Report – Deadlines & Contributions

Maria Weikum

Steering Committee Meeting 22.03.2018

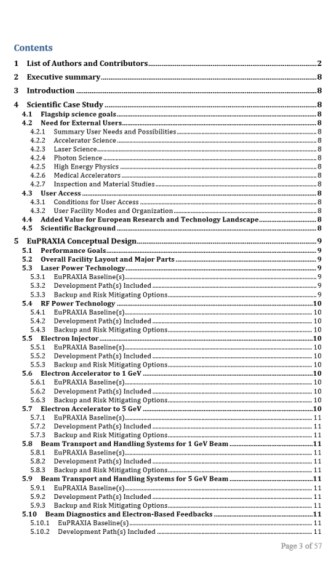
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653782.

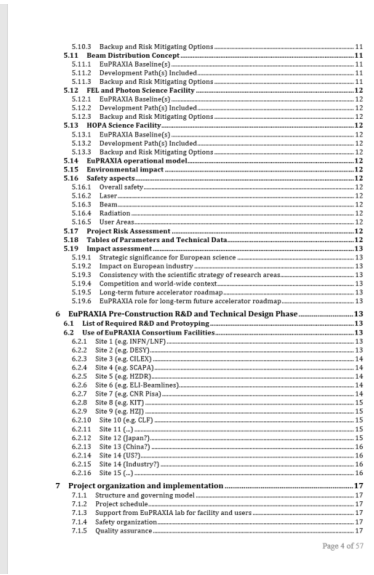
Next steps towards Design Report

- > 700 pages of deliverable and milestone reports
- > 35 publications
- conference presentations

Need to define:

- **Report outline**
- **Deadlines + contributors**





31.10.2019: Deadline Final Conceptual Design Report

Open questions to answer – Technical Options

Criteria:

1. Technical Readiness Level 5 years
2. Technical Readiness Level 10 years
3. FEL Performance 1 GeV based on start to end simulations
4. FEL Performance 5 GeV based on start to end simulations
5. Innovation and Technical Disruptiveness
6. Technical judgement criteria: 5 GeV performance
7. New parameter reach beyond conventional ac
8. Future technology/performance reach
9. Cost
10. Size
11. Flexibility and tuning capabi
12. Upgradeability

See WP1 Summary at Yearly Meeting 2017 (R. Assmann)

1. EuPRAXIA Baseline(s)
2. Development Path(s)
3. Backup and Risk Mitigating Options

Proposed deadlines:

- **Input on criteria weightings until 20.04.2018**
- Proposals for prioritisation of technical options until 10.06.2018

Criteria weightings:

- EuPRAXIA management will collect & sort proposals
- Working decision by Steering Committee

1. How to weigh the defined criteria to prioritise technical options?

2. Based on these, how to prioritise technical options?

Open questions to answer – Technical Options

Criteria:

1. Technical Readiness Level 5 years
2. Technical Readiness Level 10 years
3. FEL Performance 1 GeV based on start to end simulations
4. FEL Performance 5 GeV based on start to end simulations
5. Innovation and Technical Disruptiveness
6. Technical judgement criteria: 5 GeV performance
7. New parameter reach beyond conventional ac
8. Future technology/performance reach
9. Cost
10. Size
11. Flexibility and tuning capabi
12. Upgradeability

See WP1 Summary at Yearly Meeting 2017 (R. Assmann)

1. EuPRAXIA Baseline(s)
2. Development Path(s)
3. Backup and Risk Mitigating Options

1. How to weigh the defined criteria to prioritise technical options?

2. Based on these, how to prioritise technical options?

Proposed deadlines:

- Input on criteria weightings until 20.04.2018
- **Proposals for prioritisation of technical options until 10.06.2018**

  → finalised in Liverpool Collaboration Week

Prioritisation of technical options:

- Proposals by WP leaders
- EuPRAXIA management will collect & sort proposals
- Overall working decisions by Steering Committee (or Collaboration Board for decisions affecting scope and overall goals)

Open questions to answer – Site Studies

3. What criteria should the site studies be based on? I.e. Which questions / topics should be addressed in the site study?

Proposed criteria:

1. Presence of an FEL user area and a HOPA user area on site
2. Presence of a laser-driven accelerator option on site
3. Presence of a RF-based technology option on site
4. Presence of user communities
5. Host lab support
6. Balanced territorial development
7. Existing infrastructure
8. Available space
9. Impact

Proposed deadlines:

- **Comments, additions, etc. until 20.04.2018**
- Finalisation until 30.04.2018

Deadlines for Design Report contributions

M1.3: Draft contributions to the conceptual design report received: deadline **30.04.2019**

Main report sections:

- Scientific Case Study
- Conceptual Design
- Pre-construction R&D & Technical Design Phase
- Appendix with WP Results
- Project Organisation and Implementation
- Resource & Finance Plan
- Cost-Benefit Analysis
- Site Studies
- Public Response, Expressions of Support

Deadlines for Design Report contributions

M1.3: Draft contributions to the conceptual design report received: deadline **30.04.2019**

Proposed internal deadlines:

- Internal draft deadline for contributions to CDR: **Feb 2019**
- Other internal deadlines:
  - Input to pre-construction R&D activities (Ch.6) 31.12.2018
  - Input to site studies (Ch. 10) 31.01.2019
  - Governance model (Ch. 7.1) 31.01.2019
  - Quality assurance plan (Ch. 7.5) 15.02.2019
  - Final concept, layout & project parameters (Ch. 5.2, 5.18) 15.03.2019

Deadlines for Design Report finalisation

Task	Approximate duration	Proposed deadline
Distribution of CDR draft	4 weeks	26.05.2019
Collection of feedback on draft (1st round)	4 weeks	21.06.2019
Discussion of draft in 14th Steering Meeting		19.06.2019
Distribution of updated CDR draft	4 weeks	21.07.2019
Collection of feedback on draft (2nd round)	6 weeks	31.08.2019
Finalising CDR draft	4 weeks	30.09.2019

Contributors for Design Report

Proposal:

- Small editorial team for each chapter (approx. 4 persons)
- In most cases, leaders and / or co-leaders of relevant WPs
  + Andi Walker + Maria Weikum

Proposal: Contributors

	CDR Chapter Titles	Editorial Team Responsible for Chapter Output
2	Executive summary	R. Assmann, P. A. Walker, M. Weikum
3	Introduction	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
4	**Scientific Case Study**	
4.1	Flagship science goals	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
4.2	Need for External Users	M.-E. Couprie, A. Specka, P. A. Walker, M. Weikum (WP6, WP7)
4.3	User Access*	M.-E. Couprie, A. Specka, P. A. Walker, M. Weikum (WP6, WP7)
4.4	Added Value for European Research and Technology Landscape	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
4.5	Scientific Background	R. Assmann, R. Torres, C. Welsch, P. A. Walker, M. Weikum (WP1, WP8)
5	**EuPRAXIA Conceptual Design**	
5.1	Performance Goals	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
5.2	Overall Facility Layout and Major Parts	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
5.3	Laser Power Technology	L. Gizzi, F. Mathieu, P. A. Walker, M. Weikum (WP4)
5.4	RF Power Technology	A. Chance, E. Chiadroni, P. A. Walker, M. Weikum (WP5, WP9)
5.5	Electron Injector	B. Cros, P. Nghiem, P. A. Walker, M. Weikum (WP2, WP3, WP5, WP14)
5.6	Electron Accelerator to 1 GeV	B. Cros, P. Nghiem, P. A. Walker, M. Weikum (WP2, WP3, WP5, WP14)
5.7	Electron Accelerator to 5 GeV	B. Cros, P. Nghiem, P. A. Walker, M. Weikum (WP2, WP3, WP5, WP14)
5.8	Beam Transport and Handling Systems for 1 GeV Beam	A. Chance, E. Chiadroni, P. A. Walker, M. Weikum (WP5)
5.9	Beam Transport and Handling Systems for 5 GeV Beam	A. Chance, E. Chiadroni, P. A. Walker, M. Weikum (WP5)
5.10	Beam Diagnostics and Electron-Based Feedbacks	A. Chance, E. Chiadroni, P. A. Walker, M. Weikum (WP5)
5.11	Beam Distribution Concept	M.-E. Couprie, A. Specka, P. A. Walker, M. Weikum (WP6, WP7)
5.12	FEL and Photon Science Facility	M.-E. Couprie, G. Dattoli, P. A. Walker, M. Weikum (WP6)
5.13	HOPA Science Facility	A. Specka, R. Walczak, P. A. Walker, M. Weikum (WP7)
5.14	EuPRAXIA operational model*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
5.15	Environmental impact	??
5.16	Safety aspects	??
5.17	Project Risk Assessment*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
5.18	Tables of Parameters and Technical Data	P. A. Walker, M. Weikum
5.19	Impact assessment*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)

LEGEND:

Green – chapter content is ready and available through reports, publications, etc.

Yellow – some results have been achieved on chapter content and are available through reports, publications, etc.

Red – no results on chapter content have been reported yet

* - important component of ESFRI Roadmap Application

Proposal: Contributors (2)

6 EuPRAXIA Pre-Construction R&D and Technical Design Phase	
6.1 List of Required R&D and Protoyping	A. Mostacci, R. Pattathil, A. Walker, M. Weikum (WP12, WP1)
6.2 Use of EuPRAXIA Consortium Facilities	A. Mostacci, R. Pattathil, A. Walker, M. Weikum (with contributions from all)
7 Project organization and implementation	
7.1 Structure and governing model*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
7.2 Project schedule*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
7.3 Support from EuPRAXIA lab for facility and users*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
7.4 Safety organization	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
7.5 Quality assurance*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
7.6 Proposed financial model*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
7.7 Outreach and communication	R. Assmann, R. Torres, C. Welsch, P. A. Walker, M. Weikum (WP8, WP1)
8 Resource plan / Financial plan	
8.1 EuPRAXIA Technical Design and Pre-Construction*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
8.2 EuPRAXIA Construction and Operation*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
9 Cost-Benefit Analysis*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
10 Site studies	
10.1 Introduction and common assumptions	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
10.2 Site A: CILEX	CILEX (??)
10.3 Site B: CLF	CLF (??)
10.4 Site C: DESY	DESY (??)
10.5 Site D: ELI-Beamlines	ELI-Beamlines (??)
10.6 Site E: SPARCLAB	SPARCLAB (??)
11 Additional information and statements from reviews	
11.1 Outreach and public response	B. Hidding, R. Torres, C. Welsch, P.A. Walker, M. Weikum (WP8)
11.2 Review 1	R. Assmann, R. Torres, C. Welsch, P. A. Walker, M. Weikum (WP8, WP1)
11.3 Review 2	R. Assmann, R. Torres, C. Welsch, P. A. Walker, M. Weikum (WP8, WP1)

LEGEND:

Green – chapter content is ready and available through reports, publications, etc.

Yellow – some results have been achieved on chapter content and are available through reports, publications, etc.

Red – no results on chapter content have been reported yet

* - important component of ESFRI Roadmap Application

Proposal: Contributors (3)

12	Expressions of Commitment*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
13	Expressions of Political Support*	R. Assmann, A. Specka, P. A. Walker, M. Weikum (WP1)
14	References	
15	List of Institutes and Principal Investigators	P. A. Walker, M. Weikum
16	Appendix I: Press Articles	B. Hidding, R. Torres, C. Welsch, P.A. Walker, M. Weikum (WP8)
17	Appendix II: Letters of Support Peers	R. Assmann, R. Torres, C. Welsch, P. A. Walker, M. Weikum (WP8, WP1)
18	Appendix III: Letters of Support Industry /Organisations	R. Assmann, R. Torres, C. Welsch, P. A. Walker, M. Weikum (WP8, WP1)
19	Appendix IV: WP Results	
19.1	Physics and Simulations	P. Nghiem, L. Silva (WP2, WP5, WP6, WP7)
19.2	High Gradient Plasma Accelerator Structure	B. Cros, Z. Najmudin (WP3)
19.3	Laser Design and Optimization	L. Gizzi, F. Mathieu (WP4)
19.4	Electron Beam Design and Optimization	A. Chance, E. Chiadroni (WP5)
19.5	FEL Pilot Application	M.-E. Couprie, G. Dattoli (WP6)
19.6	High Energy Physics and Other Pilot Applications	A. Specka, R. Walczak (WP7)
19.7	Alternative Electron Beam Driven Plasma Accelerator Structure	M. Ferrario, J. Osterhoff (WP9)
19.8	Use of Other Novel technologies	U. Dorda, G. Xia (WP10)
19.9	FEL Application prototyping	A. Maier, V. Malka (WP11)
19.10	Accelerator Prototyping and Experiments at Test Facilities	A. Mostacci, R. Pattathil (WP12)
19.11	Alternative Radiation Generation	D. Jaroszynski, Z.-M. Sheng (WP13)
19.12	Hybrid Laser Electron Beam Driven Acceleration	B. Hidding, A. de la Ossa (WP14)

LEGEND:

Green – chapter content is ready and available through reports, publications, etc.

Yellow – some results have been achieved on chapter content and are available through reports, publications, etc.

Red – no results on chapter content have been reported yet

* - important component of ESFRI Roadmap Application

Next Steps

Comments?

- Now or via email: eupraxia-admin@desy.de until **15th April 2018**
- Happy with proposed deadlines?
- Happy with proposed editor assignments?
  Let us know if you cannot take on a chapter or want to volunteer for another.
- Other suggestions?

Consortium

16 Participants

24 Associated Partners

(as of December 2017)