

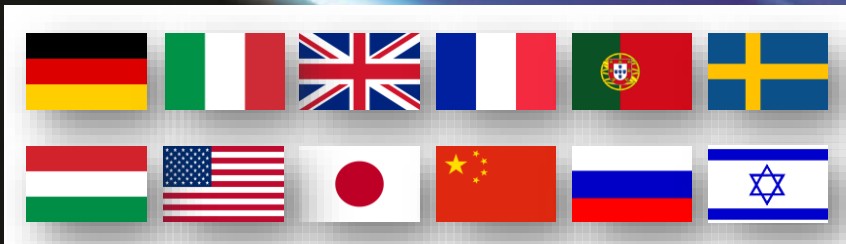
EUROPEAN  
PLASMA RESEARCH  
ACCELERATOR WITH  
EXCELLENCE IN  
APPLICATIONS



# 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.

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



**Need to define:**

- Report outline
- Deadlines + contributors

Contents

1 List of Authors and Contributors.....	2
2 Executive summary.....	8
3 Introduction.....	8
4 Scientific Case Study.....	8
4.1 Flagship science goals.....	8
4.2 Need for External Users.....	8
4.2.1 Summary User Needs and Possibilities.....	8
4.2.2 Accelerator Science.....	8
4.2.3 Laser Science.....	8
4.2.4 Photon Science.....	8
4.2.5 High Energy Physics.....	8
4.2.6 Medical Accelerators.....	8
4.2.7 Inspection and Material Studies.....	8
4.3 User Access.....	8
4.3.1 Conditions for User Access.....	8
4.3.2 User Facility Modes and Organization.....	8
4.4 Added Value for European Research and Technology Landscape.....	8
4.5 Scientific Background.....	8
5 EuPRAXIA Conceptual Design.....	9
5.1 Performance Goals.....	9
5.2 Overall Facility Layout and Major Parts.....	9
5.3 Laser Power Technology.....	9
5.3.1 EuPRAXIA Baseline(s).....	9
5.3.2 Development Path(s) Included.....	9
5.3.3 Backup and Risk Mitigating Options.....	9
5.4 RF Power Technology.....	10
5.4.1 EuPRAXIA Baseline(s).....	10
5.4.2 Development Path(s) Included.....	10
5.4.3 Backup and Risk Mitigating Options.....	10
5.5 Electron Injector.....	10
5.5.1 EuPRAXIA Baseline(s).....	10
5.5.2 Development Path(s) Included.....	10
5.5.3 Backup and Risk Mitigating Options.....	10
5.6 Electron Accelerator to 1 GeV.....	10
5.6.1 EuPRAXIA Baseline(s).....	10
5.6.2 Development Path(s) Included.....	10
5.6.3 Backup and Risk Mitigating Options.....	10
5.7 Electron Accelerator to 5 GeV.....	10
5.7.1 EuPRAXIA Baseline(s).....	11
5.7.2 Development Path(s) Included.....	11
5.7.3 Backup and Risk Mitigating Options.....	11
5.8 Beam Transport and Handling Systems for 1 GeV Beam.....	11
5.8.1 EuPRAXIA Baseline(s).....	11
5.8.2 Development Path(s) Included.....	11
5.8.3 Backup and Risk Mitigating Options.....	11
5.9 Beam Transport and Handling Systems for 5 GeV Beam.....	11
5.9.1 EuPRAXIA Baseline(s).....	11
5.9.2 Development Path(s) Included.....	11
5.9.3 Backup and Risk Mitigating Options.....	11
5.10 Beam Diagnostics and Electron-Based Feedbacks.....	11
5.10.1 EuPRAXIA Baseline(s).....	11
5.10.2 Development Path(s) Included.....	11

Page 3 of 57

5.10.3 Backup and Risk Mitigating Options.....	11
5.11 Beam Distribution Concept.....	11
5.11.1 EuPRAXIA Baseline(s).....	11
5.11.2 Development Path(s) Included.....	11
5.11.3 Backup and Risk Mitigating Options.....	11
5.12 FEL and Photon Science Facility.....	12
5.12.1 EuPRAXIA Baseline(s).....	12
5.12.2 Development Path(s) Included.....	12
5.12.3 Backup and Risk Mitigating Options.....	12
5.13 HOPAS Science Facility.....	12
5.13.1 EuPRAXIA Baseline(s).....	12
5.13.2 Development Path(s) Included.....	12
5.13.3 Backup and Risk Mitigating Options.....	12
5.14 EuPRAXIA operational model.....	12
5.15 Environmental Impact.....	12
5.16 Safety aspects.....	12
5.16.1 Overall safety.....	12
5.16.2 Laser.....	12
5.16.3 Beams.....	12
5.16.4 Radiation.....	12
5.16.5 User Areas.....	12
5.17 Project Risk Assessment.....	12
5.18 Tables of Parameters and Technical Data.....	12
5.19 Impact assessment.....	13
5.19.1 Strategic significance for European science.....	13
5.19.2 Impact on European industry.....	13
5.19.3 Consistency with the scientific strategy of research areas.....	13
5.19.4 Competition and world-wide context.....	13
5.19.5 Long term future accelerator roadmap.....	13
5.19.6 EuPRAXIA role for long-term future accelerator roadmap.....	13
6 EuPRAXIA Pre-Construction R&D and Technical Design Phase.....	13
6.1 List of Required R&D and Prototyping.....	13
6.2 Use of EuPRAXIA Consortium Facilities.....	13
6.2.1 Site 1 (e.g. INFN/LNF).....	13
6.2.2 Site 2 (e.g. DESY).....	13
6.2.3 Site 3 (e.g. CERN).....	13
6.2.4 Site 4 (e.g. SLAC).....	13
6.2.5 Site 5 (e.g. DESY).....	13
6.2.6 Site 6 (e.g. DESY).....	13
6.2.7 Site 7 (e.g. DESY).....	13
6.2.8 Site 8 (e.g. KIT).....	13
6.2.9 Site 9 (e.g. PSI).....	13
6.2.10 Site 10 (e.g. CLF).....	13
6.2.11 Site 11 (.....).....	13
6.2.12 Site 12 (.....).....	13
6.2.13 Site 13 (.....).....	13
6.2.14 Site 14 (.....).....	13
6.2.15 Site 15 (.....).....	13
6.2.16 Site 15 (.....).....	13
7 Project organization and implementation.....	17
7.1.1 Structure and governing model.....	17
7.1.2 Project schedule.....	17
7.1.3 Support from EuPRAXIA labs for facility and users.....	17
7.1.4 Safety organization.....	17
7.1.5 Quality assurance.....	17

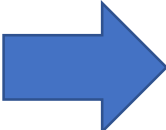
Page 4 of 57

**31.10.2019: Deadline Final Conceptual Design Report**

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 accelerators
8. Future technology/performance reach
9. Cost
10. Size
11. Flexibility and tuning capabilities
12. Upgradeability

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



**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

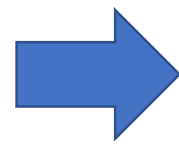
- 1. EuPRAXIA Baseline(s)**
- 2. Development Path(s)**
- 3. Backup and Risk Mitigating Options**

1. How to weigh the defined criteria to prioritise technical options?
2. Based on these, how to prioritise technical options?

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 accelerators
8. Future technology/performance reach
9. Cost
10. Size
11. Flexibility and tuning capabilities
12. Upgradeability

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



**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

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

**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)

- 1. How to weigh the defined criteria to prioritise technical options?**
- 2. Based on these, how to prioritise technical options?**

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

**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

**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

<b>Task</b>	<b>Approximate duration</b>	<b>Proposed deadline</b>
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



## 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

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

## 6 EuPRAXIA Pre-Construction R&D and Technical Design Phase

6.1 **List of Required R&D and Prototyping**

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)

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\* - important component of ESFRI Roadmap Application

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

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\* - important component of ESFRI Roadmap Application

## Comments?

- Now or via email: [eupraxia-admin@desy.de](mailto: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?

## 16 Participants



## 24 Associated Partners

(as of December 2017)

