



WP12 Management Report & EuCARD-2 Updates

Peter.mcintosh@stfc.ac.uk

Nicoleta.baboi@desy.de

Juliette.plouin@cea.fr

8 - 9th April 2015

WP12 2nd Annual Review Meeting, DESY



- Status of the Project
- Publications
 - Accreditation
- Monographs
- Accelerating News
- Annual Review Meeting
- EuCARD-3
- Our meeting this week



Status of the Project

- In April, we will be half-way through the project.
- So far, so good (milestones, deliverables, achievements, reports) but a few worries, for example publications.
- Time to underline the **Impact** of EuCARD-2 (on science – ideas, projects, technologies, and on society – applications, outreach, industrial) in preparation for the closing of the project.
- Time to prepare the next EC check-point, the **Mid-Term review in May at CERN**.

Milestone	Title	Beneficiary	Date	Comments
MS87	Fundamental SRF Thin Film physics report	CEA	M48	Final Activity Report
MS84	Deposition test facility designed at CEA.	CEA	M40	Facility designed and validated
MS78	Characterisation test facility implemented at HZB	HZB	M30	Facility implemented and validated
MS88	Report summarising the results obtained in characterising the various new thin film technologies developed, which include both multilayer and monolayer techniques	CEA	M48	Final Activity Report
MS81	RF design CLIC_DDS_B	UNIMAN	M36	Activity Report.
MS86	RF design of fully interleaved structure and CLIC SW study.	UNIMAN	M45	Activity Report. Concluding final report
MS76	1D-2D Code Benchmarking for a High Efficiency Klystron	CEA	M24	Activity Report
MS74	Design concept RF front end	PSI	M12	Activity Report
MS77	Phase stabilisation experiment design	ULANC	M24	Activity Report
MS79	Crab cavity electromagnetic design	ULANC	M30	Activity Report
MS82	Completed coupled cavity simulations of 8-cavity module	UNIMAN	M36	Activity Report
MS80	Demonstrated operation of improved deposition system, Pb layers of 1 µm in thickness.	NCBJ	M30	Report on sample characterisation
MS73	Commissioning of the SAPI for operation with metal photocathodes	STFC	M8	Publication report
MS75	Investigation of quantum yield and energy spectrum of the electrons, emitted from the metal photocathode surface in SAPI	STFC	M18	Intermediate scientific report
MS83	Manufacturing and commissioning of the photocathode transport system	STFC	M36	Technical design report
MS85	Investigation of the brightness of different metal photocathodes in a S-band NCRF gun	STFC	M42	Scientific report

Task 12.2

Task 12.3

Task 12.4

Task 12.5

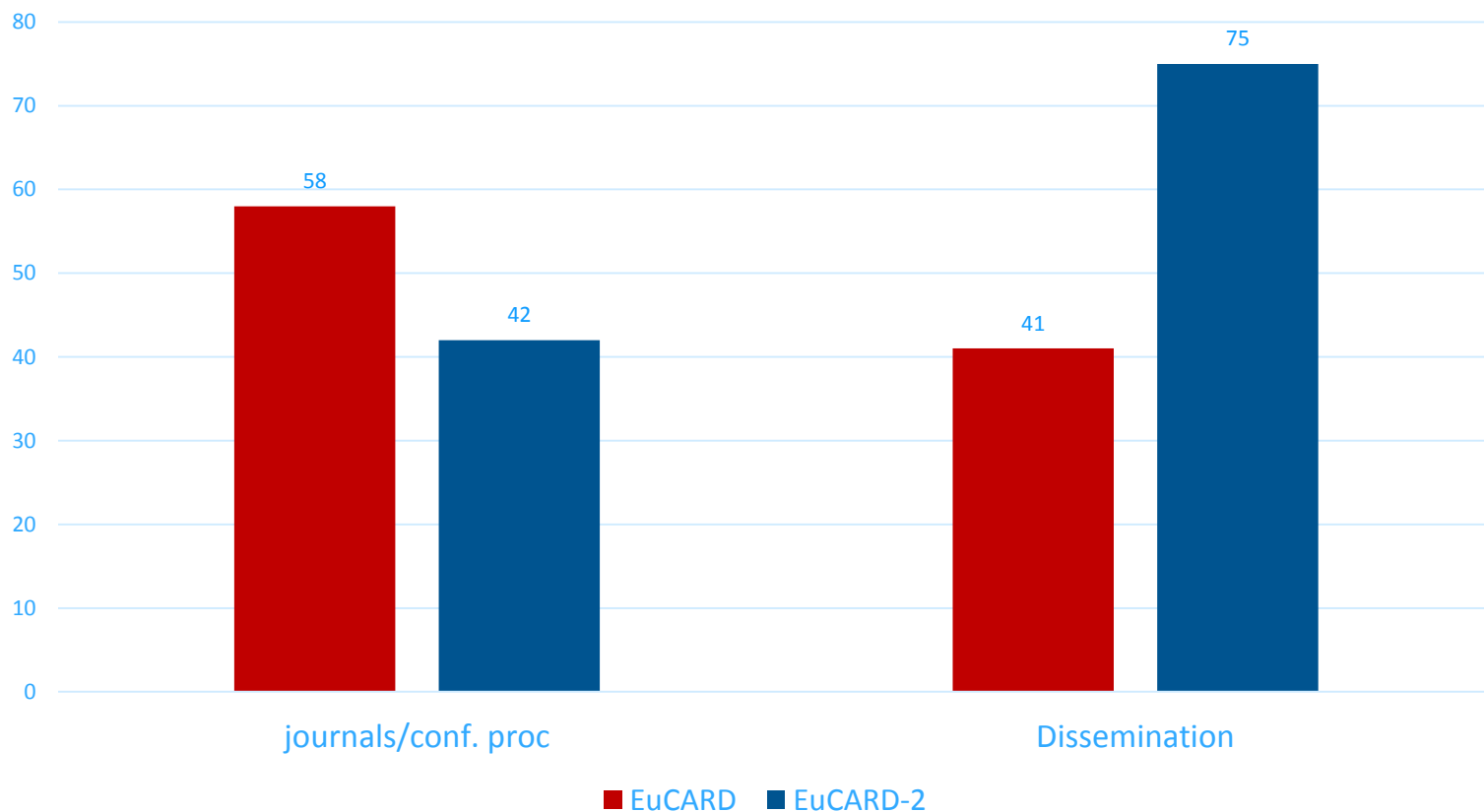
Deliverable	Title	Beneficiary	Date	Comments
D12.1	Deposition test facilities implemented and verified at CERN and INPG.	CERN	M18	Report
D12.5	First resonator deposited and qualified at CERN.	CERN	M36	Report
D12.10	Cavity deposited and qualified at CEA.	CEA	M48	Report
D12.2	Initial progress report of task 12.3.	CERN	M18	Report
D12.6	Intermediate progress report of task 12.3.	CERN	M36	Report
D12.11	Final report of task 12.3.	CERN	M48	Report
D12.3	Design of electronics for XFEL HOM diagnostics.	DESY	M18	Report
D12.7	Completed characterisation of HOMs in the 8-cavity XFEL 3HC module.	UNIMAN	M36	Report
D12.12	Report on characterisation of HOMs in XFEL coupled 3HC cryomodule.	UNIMAN	M48	Report
D12.4	Scientific report on photocathode R&D.	STFC	M18	Report
D12.8	Optimised procedure for microdroplets flattening with an UV laser.	NCBJ	M36	Report
D12.9	Pb/Nb plug photocathodes measurements and characterization.	HZDR	M42	Report
D12.13	Results of DAC implementation in SRF guns.	HZB	M48	Report

Task 12.2

Task 12.3

Task 12.4

Task 12.5



- EuCARD-2 status on 19th February
- CDS only, certain related publications (e.g. TA related) are in EDMS
- Dissemination: newsletters, presentations, scientific notes.

Task	Author	Title	Publication	Accreditation
12.2	C.B. Baumier et al	Multilayers Activities at Saclay/Orsay	SRF2013	
12.2	G. Terenziani et al	Nb coating developments with HIPIMS for SRF applications, SRF2013 Proceedings	SRF2013	
12.2	F. Weiss et al	Chemical vapor deposition techniques for the multilayer coating of superconducting RF cavities	SRF2013	
12.2	F. Mercer et al	Niobium Nitride Thin Films deposited by High Temperature Chemical Vapor Deposition, Journal of Surface and Coatings Technology	10.1016/j.surfcoat.2014.08.084.	
12.3	M Dehler et al	Wake field monitors in a multi purpose X Band accelerating structure	IBIC2013	
12.3	G. Burt et al	Bead-Pull Measurement Method and Tuning of a Prototype CLIC Crab Cavity	Linac14	
12.4	T Flisgen et al	Scattering Parameters of the 3.9 GHz Accelerating Module in a Free-Electron Laser Linac: A Rigorous Comparison Between Simulations and Measurements	Phys. Rev. ST Accel. Beams 17, 022003.	
12.4	T. Flisgen et al	Time-Domain Absorbing Boundary Terminations for Waveguide Ports Based on State-Space Models	IEEE Transactions on Magnetics, 50 (2).	EuCARD
12.4	N. Baboi et al	Commissioning of the Electronics for HOM-based Beam Diagnostics at the 3.9 GHz Accelerating Module at FLASH	IBIC2014	
12.4	L. Shi et al	Stability Study of the Higher Order Mode Beam Position Monitors at the Accelerating Cavities at FLASH	IBIC2014	
12.4	T. Wamsat et al	First Tests of a uTCA-Based Downconverter Electronic for 5GHz Higher Order Modes in Third Harmonic Accelerating Cavities at XFEL	IBIC2014	
12.4	J. Heller et al	Quantification of Geometric Uncertainties in Single Cell Cavities for BESSY VSR Using Polynomial Chaos	IPAC14	EuCARD
12.4	T. Flisgen et al	Computation of Eigenmodes in Long and Complex Accelerating Structures by Means of Concatenation strategies	IPAC14	
12.5	R. Barday et al	Characterization of a Superconducting Pb Photocathode in a Superconducting RF Photoinjector Cavity	Phys. Rev. ST Accel. Beams 16, 123402.	
12.5	R. Kleindienst et al	Development of an optimized quadrupole resonator at HZB	SRF2013	
12.5	R. Nietubyć et al	Recent development in optimization of superconducting thin film lead photocathodes at NCBJ in Świerk	Proc. SPIE Vol. 8903 89032B	??
12.5	J. Lorkiewicz et al	Deposition and optimization of thin lead layers for superconducting accelerator photocathodes	Phys. Scr. 2014 014071	EuCARD



Publication Accreditation

- **Long version:**

"The research leading to these results has received funding from the European Commission under the FP7 Research Infrastructures project EuCARD-2, grant agreement no.312453"

- **Short version:**

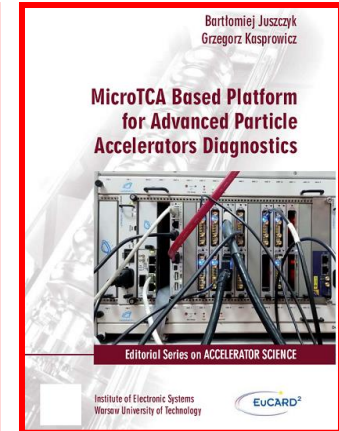
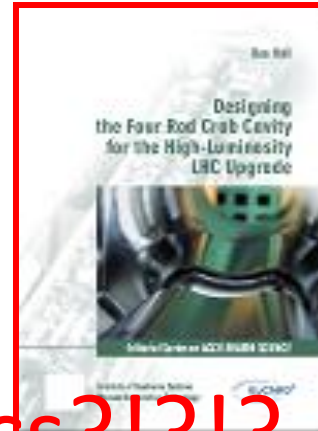
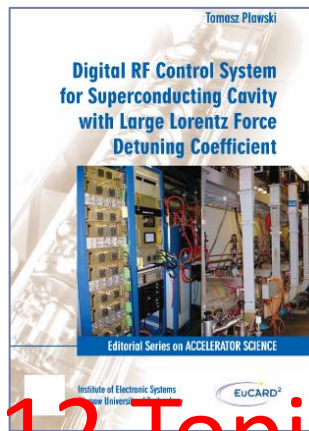
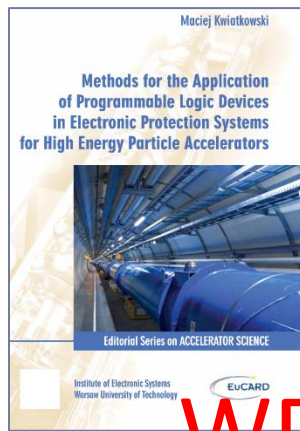
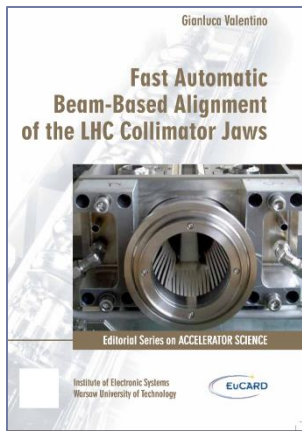
"The work is part of EuCARD-2, partly funded by the European Commission, GA 312453."

- **Image for presentations:**

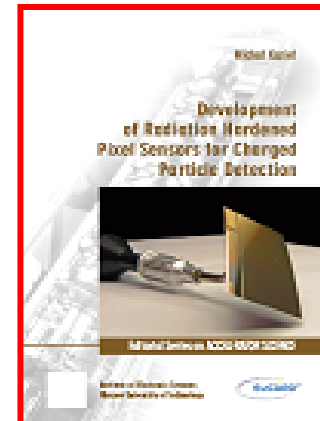
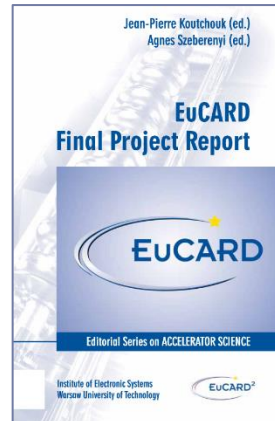
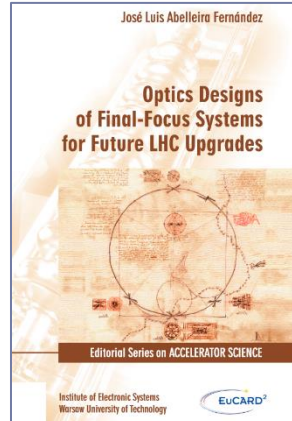
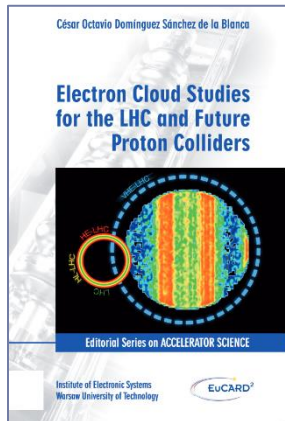
- **PhD theses to be collected on Intranet – Monograph!**



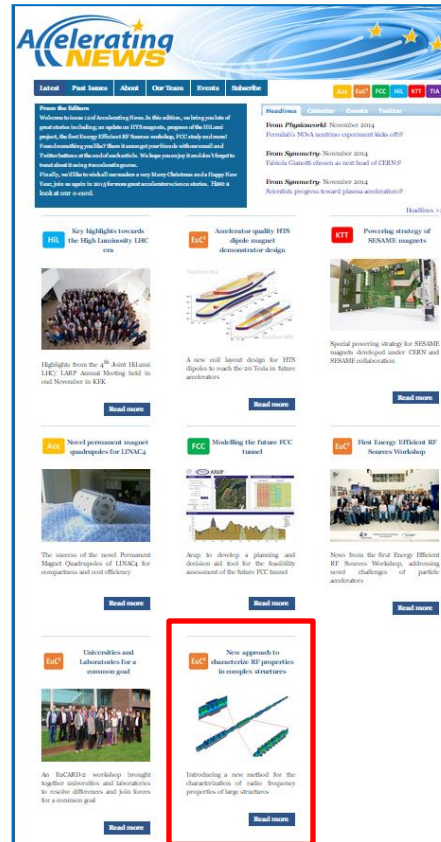
- 9 published so far, incl. EuCARD final report:



WP12 Topics?!?!?



- Issue 12 published (Dec 14)
www.acceleratingnews.eu
- EuCARD-2 related stories in this issue:
 - Accelerator quality HTS dipole magnet demonstrator design (WP13)
 - First Energy Efficient RF Sources Workshop (WP)
 - Universities and Laboratories for a Common Goal (WP)
 - **New Approach to Characterize RF Properties in Complex Structures by T Fligsen, University Rostock (Task 12.4 WP12)**
- Planned stories Issue 13 (April 15)
 - Recent annual review of thin films
 - Roebels cable prototype
 - FCC week summary
- Summer-Issue 14 preparations:
 - Looking for new stories please send us your suggestions.
 - **WP12 suggestions?**



Task 12.2 Performance breakthrough for SRF thin film, utilising multi-layer, high Tc technologies.

Task 12.3 Breakdown free performance capability demonstrated for >100MV/m NC RF structures.

Task 12.4 High performance beam position diagnostic demonstrated for XFEL.

Task 12.5 High performance (intensity, emittance) photocathodes demonstrated for SRF and NC applications.

EuCARD-2 2nd Annual Review

EuCARD-2 2nd Annual Meeting

21-24 April, 2015, ALBA Synchrotron, Barcelona, Spain

EuCARD-2, the largest collaborative R&D project in Europe is organizing its 2nd Annual Meeting on 21-24 April 2015, hosted by ALBA Synchrotron in Barcelona, Spain.

The meeting will review the status of accelerator R&D in Europe and will report the progress and activity of the EuCARD-2 work packages in fields as varied as high field magnets, advanced collimation materials, innovative radio-frequency technologies, novel accelerator concepts, accelerator applications, energy efficient accelerators, new accelerator designs and paths to improving performance for existing accelerators.

Organizing and Programme committee:

Ralph Assmann, DESY
Gabriele Benedetti, ALBA
Julia Cachet, CERN
Julia Double, CERN
Francis Perez, ALBA
Daimi Perez, ALBA
Agnes Szeberenyi, CERN
Maurizio Vretenar, CERN
with the contribution of the
EuCARD-2 Steering Committee

- 21-23 April 2015 @ ALBA
- Encourage all WP12 collaborators to attend.
- On Wednesday 22nd April:
 - WP12 Report by P McIntosh.
 - WP12 Highlight talks on:
 - Front-end Electro-Optical Systems and Wakefield Monitor Tests by M Dehler (PSI)
 - Plasma-Pulsed Irradiation Preparation of Lead Coated Photo Cathodes by R Nietubyc (NCBJ)
- On Thursday 23rd April:
 - Parallel WP12 session (3-hour).

For more information and free registration:
<http://cern.ch/eucard2>



<https://indico.cern.ch/event/364085/overview>



Roadmap for EuCARD-3

EuCARD-3 temporary name (a **new name** should mark transition from FP7 to H2020)

Timeline:

- New project start in Spring 2017 (EuCARD-2 end in April 2017), duration 4 years.
- Submission Spring/Summer 2016.
- Need to apply at next call expected for end 2015 or (more likely) beginning 2016. Expected budget up to 10 M€ (for established communities and advanced topics), could be 8 M€. Reminder: no negotiation under H2020!

Process (managed by ESGARD):

1. Consultation of the community on possible topics, deadline end 2014. Form sent to partners (SC, GB) of ESGARD projects calling for Letters of Intent. Keywords: novelty, integration, impact; max. budget 1 M€.
2. ESGARD defines the main themes and nominates theme conveners (Meeting 19.3.2015) to propose coherent Workpackages within specific budget guidelines.
3. Autumn 2015: preliminary organization of the proposal from theme conveners, nomination of project and WP coordinators.
4. At the call (end 2015 / beginning 2016): preparation of the proposal.

- Received (at 21.02.2015) **50 Lol's** for a total requested budget of 32.6 M€ (3.2 x max. budget).
- 10 Networks, 40 R&D, no TNA.
- Origin of Lol: 25 Germany, 7 UK, 7 CERN, 5 Spain, 2 Switzerland, 2 shared, 1 Sweden, 1 France.
- Notable absences: no high-field magnets (community busy with HL-LHC, high cost for continuing HTS). Little on RF (only thin films and some SC activity).

- All the 5 EuCARD2 Networks willing to continue
- Beam instrumentation (6 proposals)
- Electron lenses (2 proposals)
- Thin SC films (3 proposals)
- SC cavities (4 proposals, quite different)
- Special magnets (4 proposals, quite different)
- Advanced materials (2 proposals)
- Compact accelerators for isotopes (2 proposals)
- Photocathodes (2 proposals)
- Laser-driven acc., wakefield and dielectrics (2 proposals)
- Ion sources (2 proposals)
- ...

- More to follow (ESGARD in March).
- Maurizio's opinion:
 - Integrate more accelerators for applied science (synchrotron lights + ESS)
 - Have less on ongoing or near future projects (HL-LHC, ILC, CLIC) and more on long-term (plasma, FCC).
 - Include a JRA on applications and a strong Network on «innovation» with internal funding programs.



WP12 Annual Review

Organisation:

- Review hosted at: <https://indico.cern.ch/event/353446/>
- Group photograph during afternoon coffee break today at 15:30.
- XFEL tour today: 16:10 – 18:00.
- Review dinner this evening at 'Au Quai' at 19:15.
- “Steps to increase collaboration efforts across task activities” tomorrow at 11:10.
- WP12 Steering Committee meeting tomorrow at 13:25.

Many thanks:

- To the DESY organising team and in particular Nicoleta Baboi and Ruth Mundt.
- To all WP12 task leaders.

Looking forward to a successful 2nd WP12 review!