



SLHC-PP

DELIVERABLE REPORT

EU DELIVERABLE: 2.2.2

Document identifier: **SLHC-PP-D2.2.2-982412-v1.0**

Contractual Date of Delivery to the EC of **End of Month 12 (March 2009)**

Actual Date of Delivery to the EC of **30/3/2009**

Document date: **17/02/2009**

Deliverable Title: **Project web site linked to the technical databases: Machine layout database, hardware baseline database, project notes and reports**

Work package: **WP2: Coordination for the SLHC accelerator implementation**

Lead Beneficiary: **CERN**

Authors: **Gijs DE RIJK**

Document status: **Released**

Document link: <https://edms.cern.ch/document/982412/1>



DELIVERABLE REPORT

Doc. Identifier:
SLHC-PP-D2.2.2-982412-v1.0

Date: 17/02/2009

History of Changes

Version	Date	Comment	Authors
1.0	17-02-09	First draft	G. de Rijk

Copyright notice:

Copyright © Members of the SLHC-PP Collaboration, 2009.

For more information on SLHC-PP, its partners and contributors please see www.cern.ch/SLHC-PP/

The Preparatory Phase of the Large Hadron Collider upgrade (SLHC-PP) is a project co-funded by the European Commission in its 7th Framework Programme under the Grant Agreement n° 212114. SLHC-PP began in April 2008 and will run for 3 years.

The information contained in this document reflects only the author's views and the Community is not liable for any use that may be made of the information contained therein.



DELIVERABLE REPORT

Doc. Identifier:
SLHC-PP-D2.2.2-982412-v1.0

Date: 17/02/2009

TABLE OF CONTENTS

1. SLHC GENERAL WEB PAGES.....	4
2. WEB PAGE FOR LINAC4.....	6
3. WEB PAGE FOR INNER TRIPLET PHASE1	7
4. WEB PAGE FOR PS2	8
5. WEB PAGE FOR SPL.....	9
6. WEB PAGE FOR SPS UPGRADE.....	10
7. WEB PAGES FOR SLHC LUMINOSITY UPGRADE NETWORKS	11
8. CONCLUSIONS	12

1. SLHC GENERAL WEB PAGES

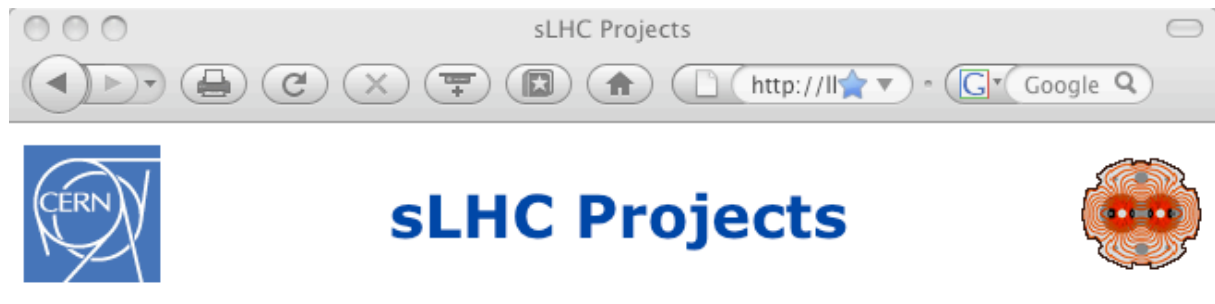
The sLHC web page is at the moment a page providing links to the sub-projects: http://lhc.web.cern.ch/lhc/slhc_projects.htm and is reachable via the CERN top page.

The aim of the project is described in page <http://info-slhc-pp.web.cern.ch/info-SLHC-PP/PUBLIC.htm>.

Links to the sub-projects can also be found at and <http://info-slhc-pp.web.cern.ch/info-SLHC-PP/SLHC.htm>.

An effort is ongoing to assemble a more 'fancy' sLHC front page to guide both public and participant access to the work.

In the section below copies can be found of the front pages of all the sub-projects.



- ▶ [Linac4](#)
- ▶ [LHC Insertions Upgrade Project](#)
- ▶ [SPL](#)
- ▶ [PS2](#)
- ▶ [SPS Upgrade](#)

info-SLHC-PP Site

LARGE HADRON COLLIDER UPGRADE

OUTREACH

[Homepage](#)

- [SLHC-PP News](#)
- [Participants](#)
- [Activities](#)
- [Contact](#)

[Management](#)

- [Calendar](#)
- [Meetings](#)
- [Milestones and Deliverables](#)

[Internal Pages](#)

- [Public Pages](#)
- [Cosmic Article](#)
- [SLHC Project](#)

Luminosity-upgraded Large Hadron Collider (SLHC)

The facility: The Large Hadron Collider (LHC) luminosity upgrade project, called Super-LHC (SLHC), aims at a tenfold luminosity increase for 14 TeV proton-proton collisions, by the successive implementation of several new elements and technical improvements during the years 2012-2017. These comprise: major replacements of several accelerators within the LHC proton injector chain, upgrades of the LHC interaction regions, and upgrades of the general purpose experiments ATLAS and CMS.

Background: The Large Hadron Collider (LHC) starts operation in 2008 and produces proton-proton collisions at a centre-of-mass energy of 14 TeV and a luminosity of up to $10^{34} \text{ cm}^{-2}\text{s}^{-1}$. In addition, the LHC will provide high-energy lead-lead ion collisions at a centre-of-mass energy of 1.15 PeV. The LHC uses superconducting technologies for its accelerating cavities and magnets, and is housed in a circular tunnel of 27 km in circumference, buried 50 m to 175 m underground. It straddles the Swiss and French borders on the outskirts of Geneva.

The LHC experiments will search for new discoveries in the head-on collisions of protons and ions of extraordinarily high energy. This will enlarge our insight about the basic forces that have shaped our universe since the beginning of time and that will determine its fate. In particular, particle physics experiments at the LHC are expected to increase our knowledge on the origin of mass, the formation of matter, matter-antimatter asymmetries, extra dimensions of space, microscopic black holes and dark matter in the universe.

What's new? In order to push up the luminosity limits of LHC, pulses of protons will be injected more efficiently, by the reduction of space charge effects and the increase of pulse beam brightness. This is achieved through the successive implementation of 3 new injectors within the LHC injector chain: LINAC4, the Low-Power Super Proton Linac (LPSPL) and the new Proton Synchrotron (PS2). In the LHC itself, major elements of the interaction regions will be replaced; in particular the new focusing triplets will have higher field and larger aperture using Nb-Ti superconducting technology. The experiments ATLAS and CMS will undergo major upgrades in order to push their sensitivity limits in the presence of the higher interaction rates. In particular, the tracking detectors will be completely replaced.

Which impacts? Physics at SLHC will allow more detailed probing for phenomena initially detected at LHC. In addition SLHC will give better access for the detection of low-rate phenomena inaccessible to LHC and will push the sensitivity limits for new physics processes to higher mass-scales.

The SLHC will be the main scientific tool for a large particle physics community comprising more than 5000 physicists from over 350 institutes worldwide. As a unique world-class facility out-rating other facilities with a large factor, it will allow for the full exploration of hadron interactions at the present high-energy limit.

Timeline and estimated costs: Setting up a detailed work plan and cost estimate is part of the SLHC preparatory phase project (SLHC-PP), co-funded by the European commission. Initial estimates indicate new investments at the level of 1 BE, comprising the upgrades of both the accelerators and the experiments. Installation of the stage-1 elements (LINAC 4 and the new Nb-Ti focusing triplets) is foreseen for 2012-2013, while the additional upgrades of the injector complex (LPSPL, PS2) will be completed by 2016-2017.

L.Linsen
May 2008
CEBN

<http://cern.ch/SLHC-PP>

Grant Agreement 212114

© Members of SLHC-PP collaboration

PUBLIC

5 / 12

2. WEB PAGE FOR LINAC4

<http://linac4.web.cern.ch/linac4/>

Complete pages with access to all databases and documentation of the Linac4 project.

The screenshot shows the LINAC4 Project website interface. At the top, there is a browser window with the URL <http://linac4.web.cern.ch/linac4/>. The main header features the 'L4' logo and the 'LINAC4 Project' title, with the CERN logo on the right. A left-hand navigation menu includes links for Description, Organization, Collaborations, Committees, Meetings and Working groups, Documentation, Seminars and conference presentations, Templates, and Quality Assurance. The central content area displays a site map of the CERN complex with LINAC 4 highlighted, a 3D cutaway of the Linac4 tunnel structure, and an acceleration chain diagram. The diagram shows the following stages: H⁺ source (45 keV), RFQ (3 MeV), chopper, DTL (50 MeV), CCDTL (102 MeV), and PIMS (160 MeV), all operating at 352.2 MHz. A right-hand navigation menu lists links for Technical Design Report (2006), Parameter Table, Planning, Hardware Baseline (EDMS), Linac4 Integration, and 3 MeV Test Stand. The footer contains various logos and links: LHC, sLHC Projects, Twiki, EDMS, EDMS Site, MTF Site, CDD, and Drawing Directory. A revision note states 'Revised: 13-Mar-2009 Linac4 Webmaster'.

3. WEB PAGE FOR INNER TRIPLET PHASE1

<http://slhc-irp1.web.cern.ch/SLHC-IRP1/>

Complete pages with access to all databases and documentation of the Inner Triplet Phase 1 project.

LHC IR Upgrade Phase I

Project

- [Project Goal](#)
- [Organization](#)
- [Planning](#)
- [Collaborations](#)
- [Conceptual Design Report](#)

Meetings

IR Upgrade Working Group

- [Meetings 2007](#)
- [Meetings 2008](#)
- [Meetings 2009](#)

Documents

- [Baseline Specifications](#)
- [TDG documents \(EDMS\)](#)
- [Hardware Baseline \(EDMS\)](#)
- [Quality Assurance](#)

Reports and Presentations

- [Presentations](#)
- [LHC Project Reports](#)
- [CARE Workshops](#)

Links

- [LHC](#)
- [SLHC Projects](#)
- [EDMS](#)
- [CDD](#)

LHC Interaction Regions Upgrade – Phase-I

Welcome to the home page of the "LHC IR Upgrade – Phase-I" project

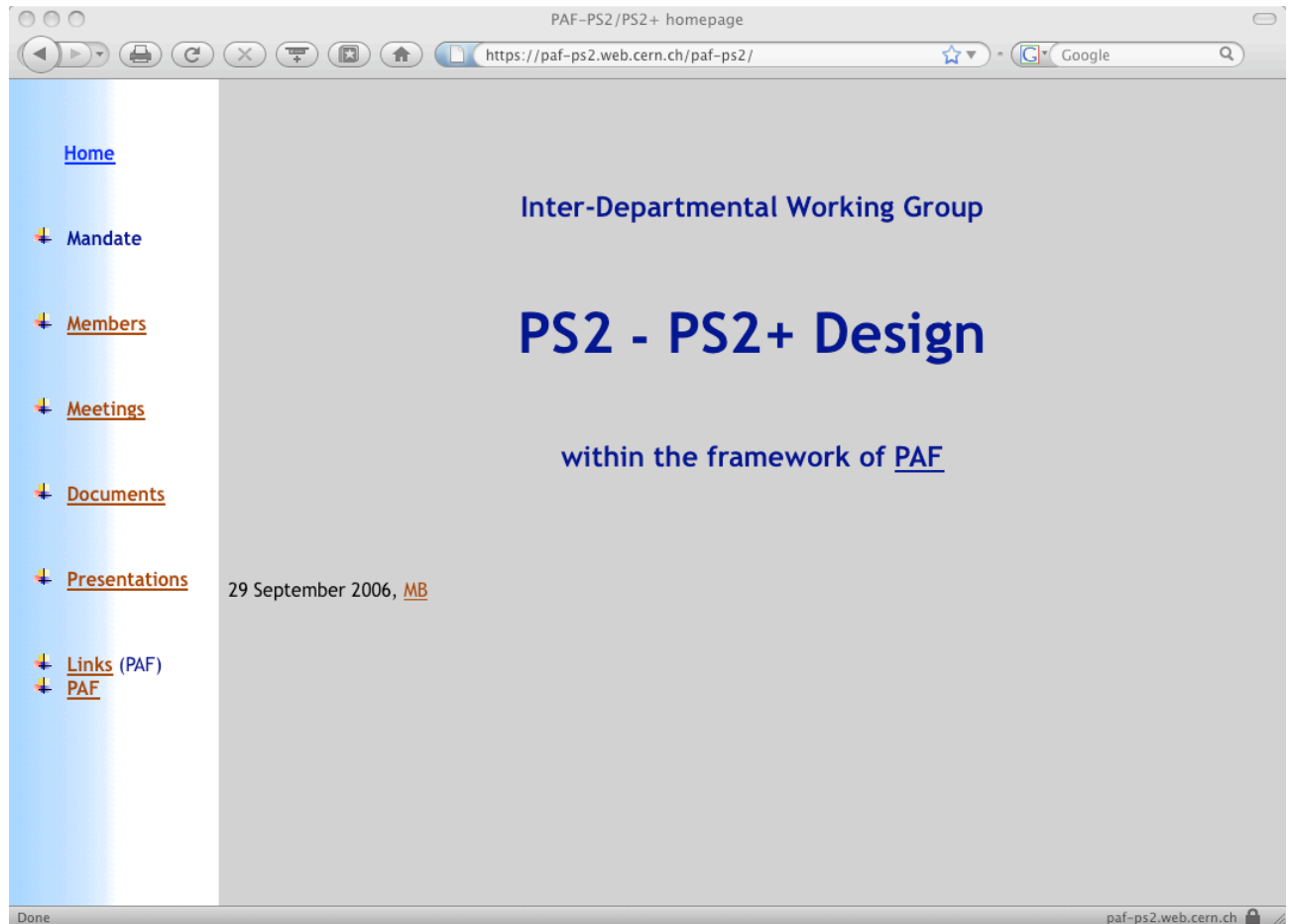
- [Project goal](#)
- [Organization](#)
- [Planning](#)
- [Collaborations](#)
- [Conceptual Design Report](#)

Last update 19 January 2009

4. WEB PAGE FOR PS2

<https://paf-ps2.web.cern.ch/paf-ps2/>

Complete pages with access to all documentation of the PS2 study project.



5. WEB PAGE FOR SPL

<https://twiki.cern.ch/twiki/bin/view/SPL/SplWeb>

Complete pages with access to all documentation of the SPL study project.

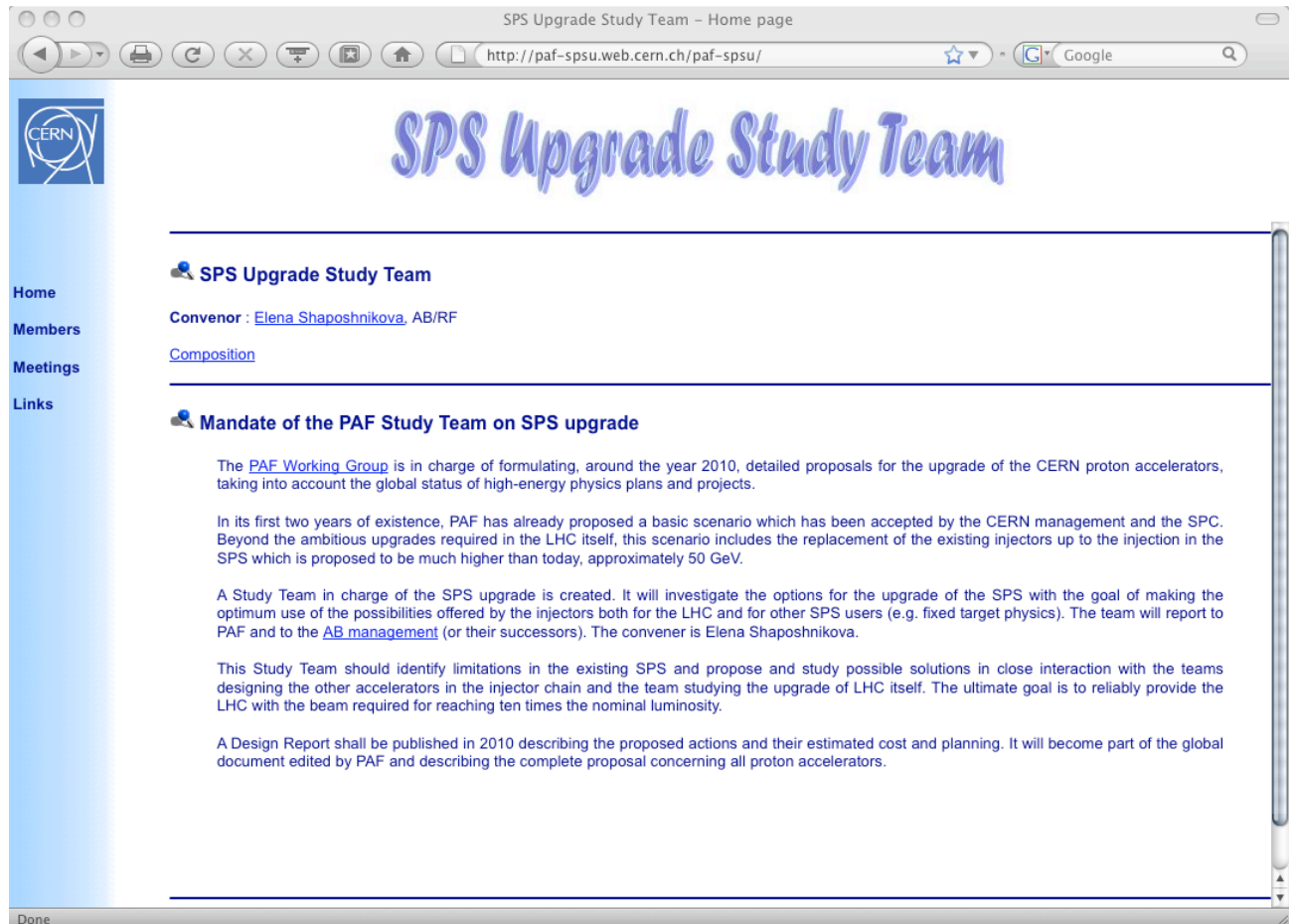
The screenshot shows a web browser window displaying the TWiki page for SPL Web. The browser's address bar shows the URL <https://twiki.cern.ch/twiki/bin/view/SPL/SplWeb>. The page content includes:

- Navigation:** A top bar with 'collaborate with TWiki' and a search box.
- Breadcrumb:** 'You are here: TWiki > SPL Web > SplWeb'.
- Diagram:** A flow diagram showing the acceleration chain: Linac4 (180 MeV, 352.2 MHz) → $\beta=0.65$ (643 MeV, 704.4 MHz) → $\beta=1.0$ (4/5 GeV) → PS2, neutrinos, RIB.
- Project Information:**
 - [SPL parameter list](#)
 - [Conceptual Design Report \(2006\)](#)
 - [SPL documentation](#)
 - [members of the mailing list](#)
 - [Recent Talks with relevance to the SPL](#)
- Meetings:**
 - [SPL study group](#)
 - [Minutes of civil engineering meetings](#)
 - [SPL steering group](#)
 - [collaboration meetings](#)
- Links:**
 - [Proton Accelerators for the Future \(PAF\)](#)
 - [PS2 working group](#)
- Events (see also the EventCalendar):**
 - 11/12 December 2008: [1st SPL collaboration meeting](#)
 - 30 April 2008: [Internal review: Status of analysis of SPL RF frequencies and cooling temperature](#)
 - 8/9 April 2008: [SLHC-PP kick off meeting; The Superconducting Proton Linac Source and Low Level RF systems](#)
- Footer:** '-- FrankGerick - 14 Jun 2007' and a list of actions: Edit, WYSIWYG, Attach, Printable, Clone, Raw View, Backlinks, Web, All Webs, History, r27 < r26 < r25 < r24 < r23, More topic actions.

6. WEB PAGE FOR SPS UPGRADE

<http://paf-spsu.web.cern.ch/paf-spsu/>

Complete pages with access to all documentation of the SPS upgrade study project.

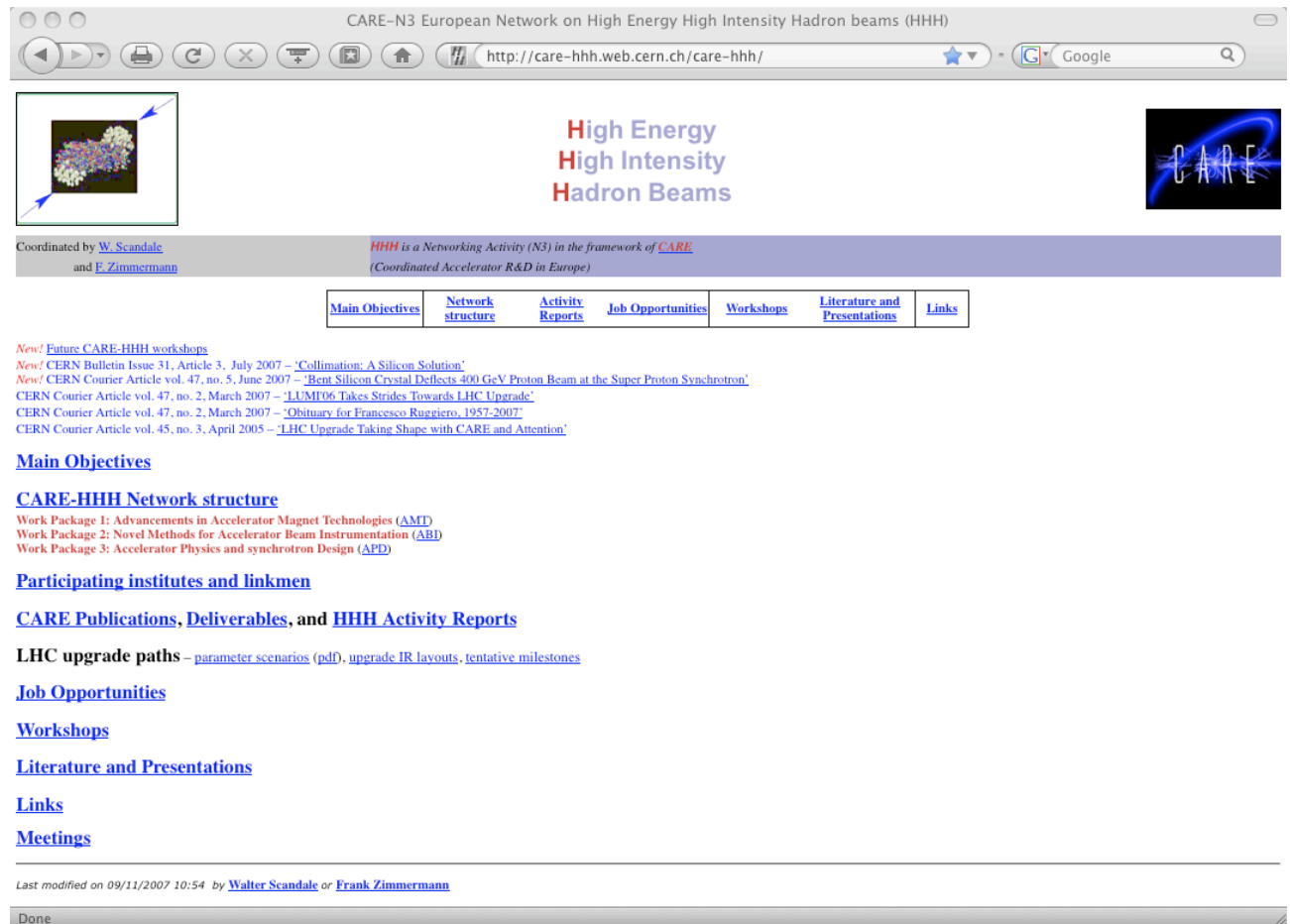


The screenshot shows a web browser window displaying the homepage of the SPS Upgrade Study Team. The browser's address bar shows the URL <http://paf-spsu.web.cern.ch/paf-spsu/>. The page features a blue header with the CERN logo on the left and the title "SPS Upgrade Study Team" in a large, stylized font. A navigation menu on the left includes links for Home, Members, Meetings, and Links. The main content area is titled "SPS Upgrade Study Team" and lists the convenor as Elena Shaposhnikova, AB/RF, with a link to the team's composition. Below this, a section titled "Mandate of the PAF Study Team on SPS upgrade" provides a detailed overview of the team's mission, including the goal of formulating proposals for the upgrade of the CERN proton accelerators by 2010, the team's focus on the SPS and other accelerators, and the planned publication of a Design Report in 2010.

7. WEB PAGES FOR SLHC LUMINOSITY UPGRADE NETWORKS

<http://care-hhh.web.cern.ch/care-hhh/>

Complete pages with access to all documentation of the sLHC luminosity upgrade networks in CARE-HHH



CARE-N3 European Network on High Energy High Intensity Hadron beams (HHH)

<http://care-hhh.web.cern.ch/care-hhh/>

High Energy
High Intensity
Hadron Beams

Coordinated by [W. Scandale](#)
and [F. Zimmermann](#)

HHH is a Networking Activity (N3) in the framework of CARE
(Coordinated Accelerator R&D in Europe)

Main Objectives	Network structure	Activity Reports	Job Opportunities	Workshops	Literature and Presentations	Links
---------------------------------	-----------------------------------	----------------------------------	-----------------------------------	---------------------------	--	-----------------------

[New! Future CARE-HHH workshops](#)
[New! CERN Bulletin Issue 31, Article 3, July 2007 - "Collimation: A Silicon Solution"](#)
[New! CERN Courier Article vol. 47, no. 5, June 2007 - "Bent Silicon Crystal Deflects 400 GeV Proton Beam at the Super Proton Synchrotron"](#)
[CERN Courier Article vol. 47, no. 2, March 2007 - "LUMI06 Takes Strides Towards LHC Upgrade"](#)
[CERN Courier Article vol. 47, no. 2, March 2007 - "Obituary for Francesco Ruggiero, 1957-2007"](#)
[CERN Courier Article vol. 45, no. 3, April 2005 - "LHC Upgrade Taking Shape with CARE and Attention"](#)

[Main Objectives](#)

[CARE-HHH Network structure](#)
Work Package 1: Advancements in Accelerator Magnet Technologies (AMT)
Work Package 2: Novel Methods for Accelerator Beam Instrumentation (ABI)
Work Package 3: Accelerator Physics and synchrotron Design (APD)

[Participating institutes and linkmen](#)

[CARE Publications, Deliverables, and HHH Activity Reports](#)

[LHC upgrade paths](#) - [parameter scenarios](#) (pdf), [upgrade IR layouts](#), [tentative milestones](#)

[Job Opportunities](#)

[Workshops](#)

[Literature and Presentations](#)

[Links](#)

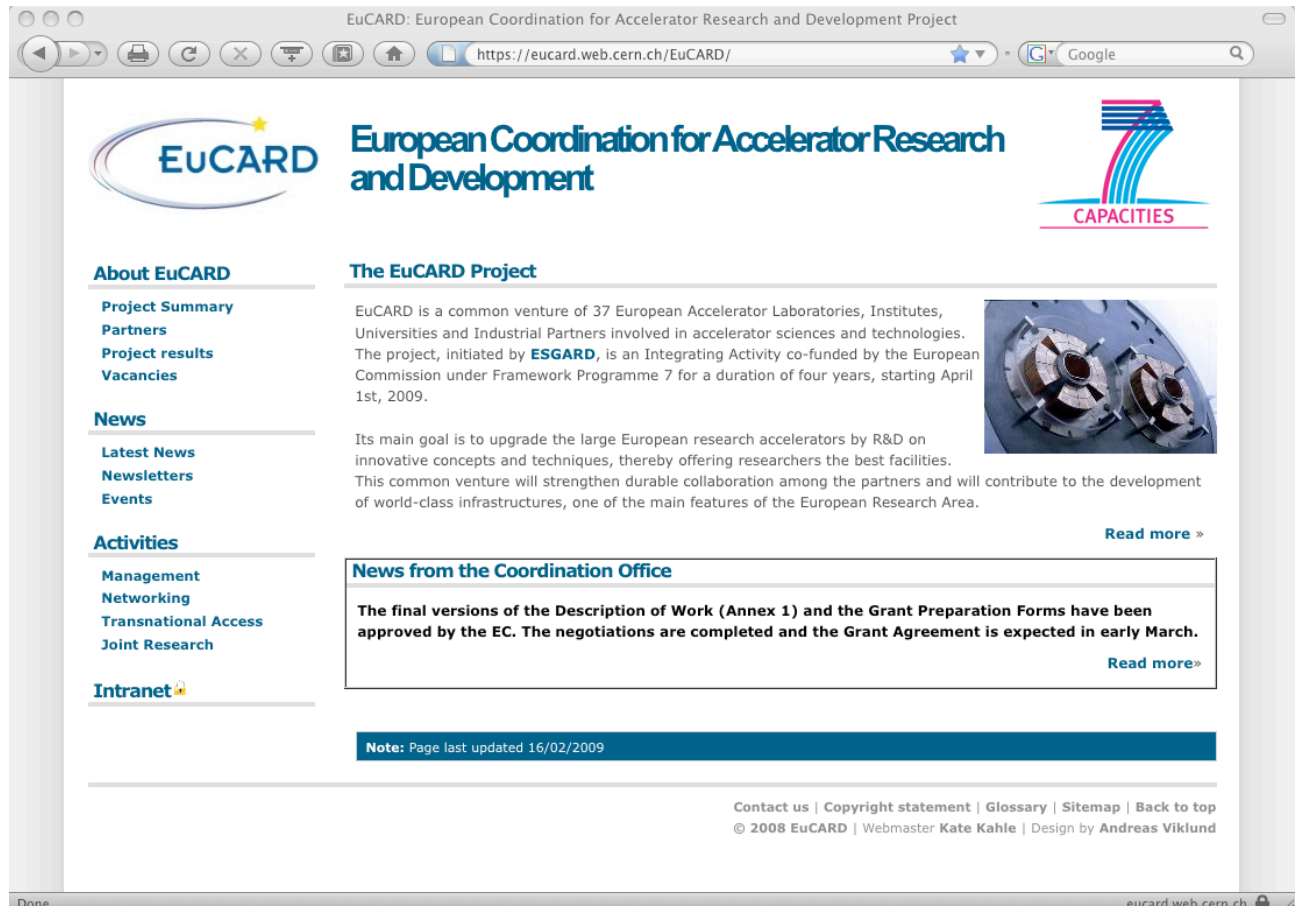
[Meetings](#)

Last modified on 09/11/2007 10:54 by [Walter Scandale](#) or [Frank Zimmermann](#)

Done

<https://eucard.web.cern.ch/EuCARD/>

The EuCARD-AccNet-EuroLumi network will start on April 1st 2009. The web pages for the EuCARD project exist and the pages for the work-packages and networks are part of the EuCARD deliverables and will soon follow.



The screenshot shows a web browser window displaying the EuCARD website. The browser's address bar shows the URL <https://eucard.web.cern.ch/EuCARD/>. The website header features the EuCARD logo, the text "European Coordination for Accelerator Research and Development", and the CAPACITIES logo. The main content area is divided into several sections: "About EuCARD" with links for Project Summary, Partners, Project results, and Vacancies; "News" with links for Latest News, Newsletters, and Events; "Activities" with links for Management, Networking, Transnational Access, and Joint Research; and "Intranet". A "The EuCARD Project" section describes the project as a common venture of 37 European Accelerator Laboratories, Institutes, Universities, and Industrial Partners, initiated by ESGARD. A "News from the Coordination Office" section contains a news item about the approval of the final versions of the Description of Work (Annex 1) and the Grant Preparation Forms by the EC, with a "Read more" link. A "Note" at the bottom indicates the page was last updated on 16/02/2009. The footer contains contact information and copyright details.

8. CONCLUSIONS

A web page system covering the full range of the sLHC project is in place. The pages of the sub-projects feature links to all the project documentation like notes and reports. For the construction projects and the more advance preparation projects links exist to the technical databases, machine layouts and hardware baseline.