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CIPRNet

Critical Infrastructure Preparedness and Resilience Research Network

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D8.110 CIPRNet project web site design: technical report on project web site design and built up

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Dissemination Level		
PU	Public	**X**
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Remarks	No security issues

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1 Introduction – Rationale of this document

The CIPRNet web site is one of the major dissemination means of CIPRNet. It addresses all types of audiences: from other researchers, CIPRNet end users and stakeholders to the general public. Also, the CIPRNet web site will become the "face" of the planned Virtual Centre of Competence and Expertise in Critical Infrastructure Protection (VCCC), delivering certain services to the multi-disciplinary CIP communities and to end users.

This deliverable is a technical report on the design and implementation of the CIPRNet web site. It describes the initial design considerations, the employed infrastructure, the state of the development and the roadmap for future extensions and evolution into the VCCC web portal. Also, it details who is involved in design, maintaining and evolving the web site.

2 CIPRNet web site design

In this section, we present the design rationale of the CIPRNet web page layout and the general appearance design approach, aimed at a clear CIPRNet Corporate Design.

2.1 Layout of the web pages

An intuitive information "architecture" is one of the most important features of the CIPRNet website. The careful layout and placement of information elements facilitates the accessibility of the web site contents by avoiding navigation barriers. To achieve this, the website layout has five main areas. On top of the site we placed a header that contains the logo, the main headline, the EU FP7 logo and the search bar. Below the header there are three columns. The left column is used for the main navigation, the middle column contains the main contents of the page and the right column additional information and quick links. The footer at the bottom of the page, right underneath the main content, currently contains links to contact information, publishing notes and the data protection policy. In general, this is the part of the web page that will contain links to legal information.

2.2 Appearance of the web pages – CIPRNet Corporate Design

Professional web designers of Fraunhofer have created the web site appearance. Based on the design of the CIPRNet logo, Fraunhofer IAIS developed a modern web design for the CIPRNet website, aiming at a clear Corporate Design. The main colour of the logo and the website is blue. The dark blue of the CIPRNet logo is used for the main menu background, all headlines and all links. As second colour a light blue is used to separate the additional information in the right column from the main content in the middle column. To highlight the currently visited webpage the page title in the main menu is coloured orange, as well as links in the content area on rollover.

An abstract reduced illustration of a grid in the background of the website symbolises the complexity of the different critical infrastructures involved in the CIPRNet project. The oblique lines of the grid are found again in the end of the three columns, which gives the website its recognition value. Figure 1 shows a screenshot of CIPRNet's summary page.

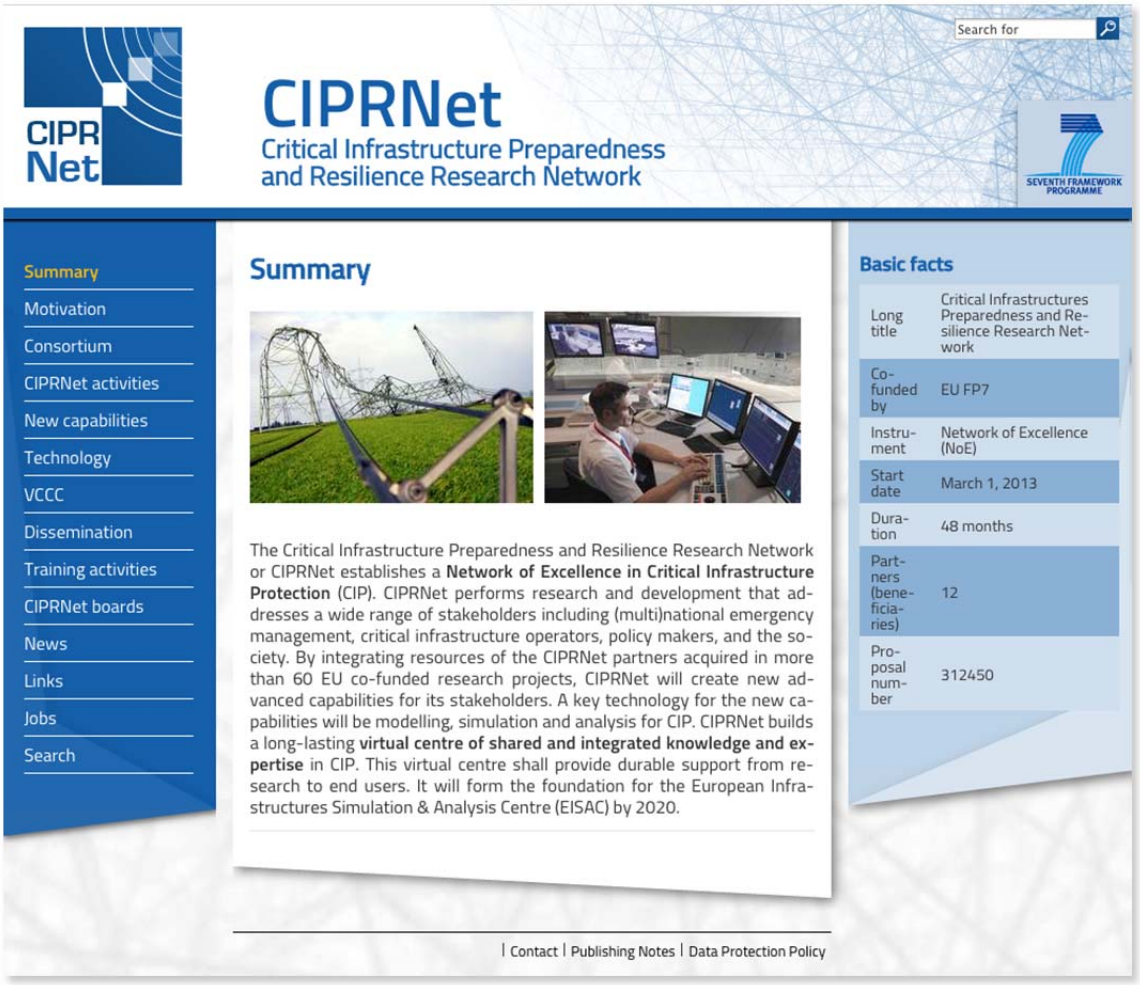

Figure 1: CIPRNet home page, presenting a summary of the project and the key data.

3 CIPRNet web site infrastructure

This section describes Fraunhofer's infrastructure for running and maintaining the CIPRNet web server and for editing the website's contents.

3.1 Web server, backup and security

The CIPRNet web site is run and maintained on one of Fraunhofer's own servers. The CIPRNet web server is dedicated exclusively for the CIPRNet website. Fraunhofer's servers and web servers are run in a professional daily backup scheme. All backups are done using an automated backup process. The backup tapes are stored in a vault that stands outside of the fire zone where the servers and storage is located. The possibility of recovering data from backups is being verified on a regular basis. All backup activities adhere to the Fraunhofer wide security policy.

All Fraunhofer servers run an industry standard virus and malware protection software that is kept up to date 24/7. Fraunhofer has an own IT security policy that is being updated on a regular basis. All Fraunhofer institutes comply with this security policy. Some important elements are:

- All institutes do have one appointed general security officer and an IT security officer
- All IT services are offered on a "need to know" principle

- Clear backup policies
- Separated networks
- Firewalls
- Update and security policies for all servers, individual computer work stations and other essential IT components.
- IT security handbook describing security procedures.

3.2 Content Management System

Fraunhofer IAIS uses the popular open source software TYPO3 as a Content Management System (CMS) for its web servers. With more than 500.000 web sites, TYPO3 CMS has become one of the leading open source CMS [T3]. TYPO3 CMS is based on the script language PHP. All required contents data are stored in a MySQL database. TYPO3 is highly flexible and customisable by using extensions. TYPO3 CMS users can choose from over 5000 existing extensions or, if necessary, may develop their own extensions. Fraunhofer's Media Engineering department at IAIS has considerable expertise in setting up and operating web sites based on TYPO3 CMS. Fraunhofer IAIS uses TYPO3 CMS also for maintaining its own institute web page. The choice of TYPO3 as a CMS was a natural one, based on the large existing expertise and the positive experience with this system. Figure 2 shows a screenshot of TYPO3 CMS showing elements of the CIPRNet web page "Motivation".

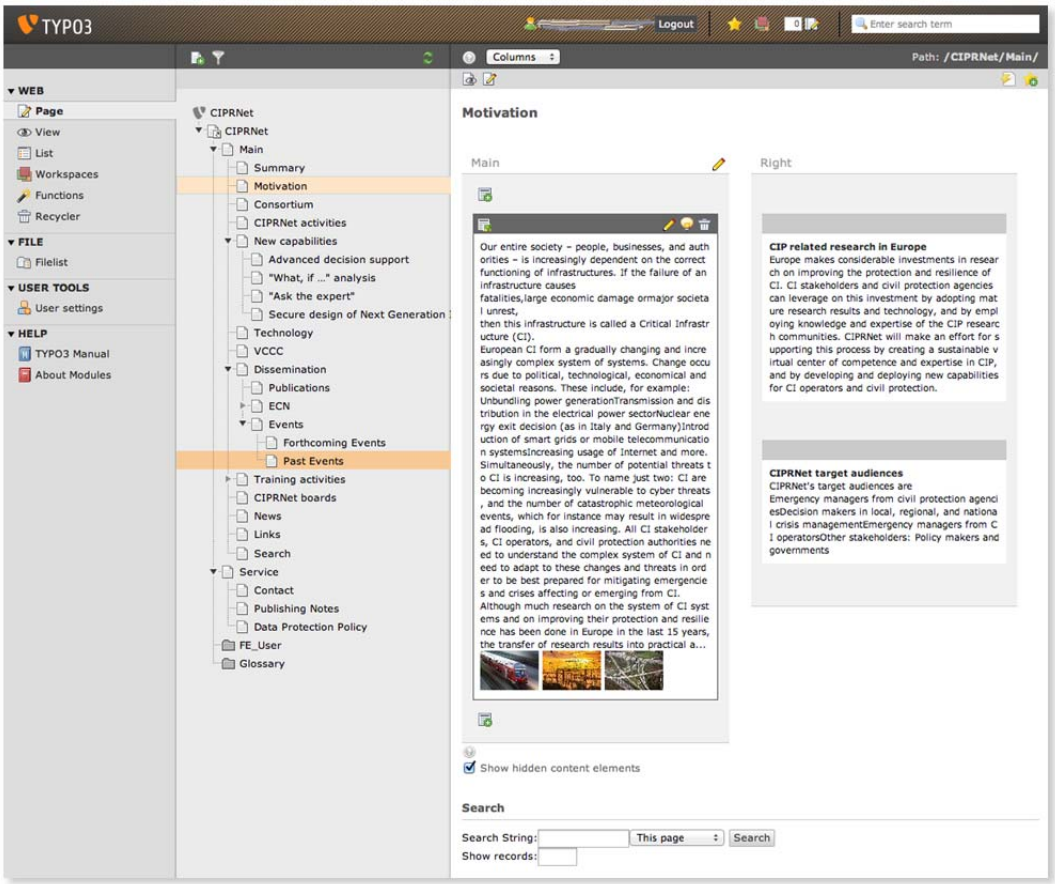

Figure 2: Screenshot of TYPO3 CMS showing Motivation page elements of the CIPRNet web site.

TYPO3 CMS's backend is customised for website-editors. They get only the needed input masks and can focus on the contents, while TYPO3 CMS does all styling of the contents. Parts of the website can be configured to be accessible only after login by a registered user.

In addition, TYPO3 CMS offers different workspaces. In a draft workspace editors can work on the website content without changing the live website. Before publishing the changed contents in the live workspace it can be checked by a reviewer via a private preview link.

TYPO3 CMS has an integrated web applications framework that allows building entire web applications. The core of TYPO3 CMS can be extended via plug-ins. A new system version, TYPO3 NEOS, based on the new framework TYPO3 FLOW, is currently under development.

4 CIPRNet web site implementation

This section is structured as follows. We start with explaining the choice of the web site domain and the handling of basic legal web site standards. Then we explain how security assessment of web site contents is organised and actually performed and how features of the chosen content management system support this. We conclude with briefly explaining the web site structure and organisation of the contents.

4.1 Website domains and legal aspects

For deploying the website, Fraunhofer acquired the domains *ciprnet.eu*, *ciprnet.org*, *ciprnet-project.eu*. The main website address is *ciprnet.eu*, the other two are being redirected to the main address. A research of Fraunhofer conducted in the first half of March 2013 for a brand called "ciprnet" yielded no result. Therefore, we assume that the usage of "ciprnet" does not violate other parties' rights.

In the earlier EU project DIESIS, Fraunhofer and some of its partners acquired several domains for EISAC and redirected them to the DIESIS project website. Fraunhofer's EISAC domains are now being redirected to the CIPRNet website.

In compliance with current legislation, the web site includes Publishing Notes and a description of the Data Protection Policy. The latter is identical to the general data policy of Fraunhofer. All images used on the CIPRNet web site are either own creations of the CIPRNet partners or licensed images. Fraunhofer's main source of licensed images is Fotolia [Fotolia].

4.2 Security assessment

Since all CIPRNet dissemination material must be security assessed [DoW], parts of the CIPRNet web site also need security assessment. The coordinator and main responsible of the web site has agreed with the Security Advisory Group which parts of the web site can safely be excluded from security assessment (like consortium page etc.). All other parts need to be security assessed. A detailed list of the web site sections that need to be security assessed is contained in D1.20 Project Handbook [D1.20].

The employed CMS TYPO3 allows drafting web pages and web page revisions and can provide external previews of new or changed pages. CIPRNet uses this feature for security assessment of web pages. The procedure is as follows:

- The web editor creates or changes a CIPRNet web page that needs to be security assessed.
- At the end of the editing process, he or she creates a preview link (URL).
- Then the web editor sends a request for security assessment to the Security Advisory Group (SAG), along with the preview link.

- The web editor implements any changes requested by the SAG, creates a new preview link to the amended draft web page and informs the SAG. This is repeated until the web editor receives clearance from the SAG.
- When the SAG clears the assessed web page, the web editor publishes it, and only then it is visible on the CIPRNet web site.

4.3 Website contents

The web site contains overviews on all aspects of CIPRNet's work plan and achievements. A news section announces latest information and additions to the web site. An events section lists all CIPRNet related events and announces upcoming new events. The European CIIP Newsletter's (ECN) home page is hosted by the CIPRNet web site (Figure 3). All published ECN issues can be downloaded from the CIPRNet web site, including archived issues that appeared between 2006 and 2010.

The current CIPRNet website structure, as displayed in the navigation menu, comprises the following web pages (some of them have subpages):

- **Summary**: Home page and project abstract
- **Motivation**: A short introduction into the background of CIPRNet and its ultimate goal.
- **Consortium**: List of all twelve partners, links to their home pages.
- **CIPRNet activities**: Overview of CIPRNet's main activities (capacity building and capability forming, VCCC)
- **New capabilities** (has sub pages): A more detailed presentation of CIPRNet's four new capabilities.
- **Technology**: A presentation of the DIESIS interoperability approach to federated modelling, simulation and analysis for Critical Infrastructures.
- **VCCC**: A presentation of the rationale of the VCCC.
- **Dissemination** (has sub pages): These (sub) pages contain
  - the list of CIPRNet's scientific publications (including those that will appear shortly),
  - the home page of the European CIIP Newsletter, and
  - a list of CIPRNet's dissemination events (has sub pages):
    - Forthcoming events announces upcoming events
    - Past events details CIPRNet's past dissemination activities
- **Training activities** (has sub pages):
  - Lectures: Announcement of CIPRNet lectures and list of lectures performed (currently under construction)
  - PhD Award: Announcement of PhD Award (Call for application), terms of participation, award winners (currently under construction)
  - End user training: Announcement of CIPRNet end user training events and list of End user trainings performed (currently under construction)
- **CIPRNet boards**: Overview and rationale of CIPRNet's International Advisory Board, the Independent Ethics Board and the Security Advisory Group.
- **News**: Brief list of news items. All items are linked to their pages on the CIPRNet website. An RSS feed allows interested parties to be kept up-to-date regarding CIPRNet news.
- **Links**: A brief list of relevant links
- **Jobs**: A page that allows CIPRNet partners to post job advertisements
- **Search**: Search input mask and display of search results page. Visitors may search the CIPRNet web site with an integrated search function. The search includes the full text and PDF documents on the website.

Figure 3: Screenshot of ECN newsletter home page (part) at the CIPRNet web site.

An additional, forthcoming feature will be an integrated glossary of definitions. It allows that brief definitions of special technical terms explained in the glossary show up by tooltip when a visitor rolls over the displayed term with the mouse cursor. The glossary contains the current body of definitions that CIPRNet uses. It will be the basis of the planned CIPedia© ([D8.4], cf. section 5.4), a Wiki collaboration tool. This Wiki will present various definitions

of CIP-related terms and discuss their respective fields of application or comment on controversies that arise in their usage.

5 CIPRNet web site maintenance and evolution

This section is structured as follows. We start with a description of regular web server maintenance activities. Then we introduce the web editors and their roles and explain how web site contents are updated. We conclude with a presentation of the planned roadmap of CIPRNet web site extensions, eventually turning it into a web portal.

5.1 Maintenance

The maintenance activities described in this section regard the administrative aspects of the web server and the contents management system TYPO3 CMS.

The IT administrator cares for maintaining the operating system software, the antivirus and backup software of the web server up to date. The web server is a part of Fraunhofer IAIS' IT landscape and thus maintenance of the server, network and firewall hardware is an inherent part of the institute's general IT maintenance activities. In addition, the IT administrator ensures that any security patches and updates for TYPO3 CMS will be installed on the server as soon as possible. The administrator checks error-, hacking- and virus-messages immediately and takes up required countermeasures.

Since autumn 2013, logging of visits of the CIPRNet website is enabled, which allows the production of access statistics (Figure 4).

5.2 Web editors

CIPRNet has assigned a small number of persons that are allowed to edit the CIPRNet web site contents. These are:

- Achim Kapusta (Fraunhofer, main editor). The main editor has special access rights. He can configure other user's access rights. He can also restrict the visibility of design element and the elements that may be edited by regular web editors.
- Andrij Usov (Fraunhofer). Regular web editor.
- Jingquan Xie (Fraunhofer). Regular web editor.
- Erich Rome (Fraunhofer). As the project coordinator, Erich Rome needs to have the possibility to change contents directly.
- Elias Kyriakides (UCY). As the leader of the dissemination work package WP8, Elias Kyriakides needs to have the possibility to change contents directly, without forwarding change requests to Fraunhofer.

All CIPRNet functional assignments are documented in the Project Handbook [D1.20]. Depending on the roadmap of web site extensions (see next section), CIPRNet may assign more web editors for special tasks, if required.

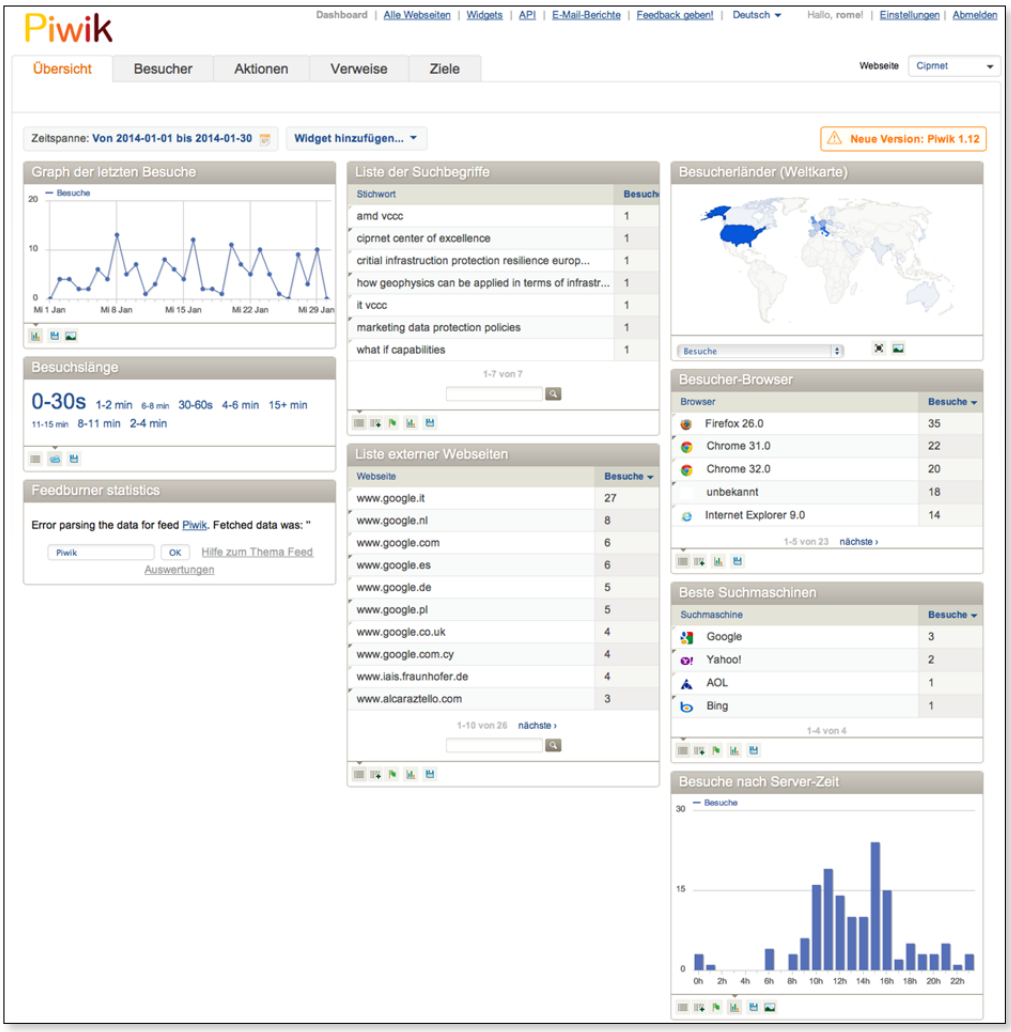

Figure 4: Screenshot of the web statistics tool showing statistics of the CIPRNet web site.

5.3 CIPRNet web site contents updates

The web editors update the CIPRNet web site contents whenever necessary. In particular, that means:

- The list of forthcoming and published scientific papers is updated whenever new entries or status changes occur.
- The ECN home page is updated whenever a new issue appeared.
- The list of forthcoming and past events is updated whenever an event has passed or a new one with active CIPRNet participation is to be announced.
- The News items list is updated whenever significant news is to be reported.
- The list of forthcoming and past events is updated whenever an event has passed or a new one with active CIPRNet participation is to be announced.
- The lists of forthcoming and past training activities and CIPRNet lectures are updated whenever required.
- The PhD Awards announcements are made according to the planning of WP9.
- The pages containing the technical contents, the consortium and boards descriptions are updated whenever changes are necessary.

- New web site functions are implemented according to the evolution roadmap of the web site (see next section).

5.4 Roadmap of web site extensions

During the project runtime new features and functions will be developed and added to the CIPRNet website continuously. The current roadmap gives an overview about the planned activities:

Roadmap phase	Status	Description
Phase 1	Completed	Website design
		Initial web site and CMS implementation and test
		Assigning and specifying the roles of the web editors and IT maintenance persons
		Creating initial web contents
		Clarifying the security assessment requirements (and assessing the initial contents)
		Start of regular web site maintenance
Phase 2	Near end	Search function (completed)
		RSS news feed (completed)
		Web site statistics (enabled)
		Glossary of CIP related definitions (about to be completed)
Phase 3	Near start	Certificate for server / enabling https access
		Restricted access to privileged users (login)
		CIP project database
Phase 4	Preparation	CIP bibliography (Autumn 2014)
		CIPedia© [D8.4] (M14, April 2014)
Phase 5	Specification	CIPRNet VCCC services I, to be specified in [D5.2]:
		• Ask the expert service
		• Support for secure design of Next Generation Infrastructures service
Phase 6	Specification	CIPRNet VCCC services II, to be specified in [D5.2]
		• DSS services
		• What if analysis services
Phase 7	To be planned	Transfer of web portal to VCCC successor

Table 1: Roadmap for CIPRNet web site development

Currently, the evolution of the CIPRNet web site is in the transition from phase 2 to phase 3. Upon request and requiring an internal decision, the roadmap may be updated (altered or extended).

5.5 Preparation of the VCCC service deployment

The preparation of the VCCC services is complex. It consists of the following activities:

- Design and development of CIPRNet's four new capabilities:

  - Ask the expert (WP5)
  - Support for secure design of Next Generation Infrastructures (WP5)
  - Decision Support System (WP7)
  - What if analysis (WP6)
- Specification of web-based services for providing end users (limited) access to the new capabilities [D5.2]. The final design of these services depends on the finalisation of the implementation of the new capabilities according to the project work plan.
- Implementing secure access mechanisms for registered users. The services must not be accessible for unauthorised persons.
- Clarifying the terms of use and the conditions under which the services are provided.
- Checking any legal issues of the provision of these services: Terms of use, liability, privacy etc. Fraunhofer's lawyers will perform these checks. Also, CIPRNet will inform and consult the Independent Ethics Board on such issues and the proposed solutions.
- Introducing and establishing the VCCC (WP4)
- Transferring the web portal to the successor of the VCCC at the end of CIPRNet.

6 Conclusion

CIPRNet has deployed its web site in late July 2013, starting with a comprehensive presentation of the project and the home page of the newsletter ECN. A clear roadmap describes the planned evolution of the web site into a web portal, which will serve as the external interface to the Virtual Centre of Competence and Expertise in CIP (VCCC). The CIPRNet web site is hosted on Fraunhofer's own servers and is being maintained by qualified IT staff, ensuring regular backups, state-of-the-art malware protection and professional maintenance. Fraunhofer's web designers have equipped the web site with a clear structure for optimal navigability and with a professional Corporate Design (CD). The conformity to the CD is assured by predefined style elements of the Content Management TYPO3 CMS. Specially assigned and trained web editors perform updates of the web site whenever necessary, keeping the web site up-to-date.

A big step in the evolution of the web site will be the deployment of CIPRNet's four new capabilities as web services to registered users. The initial specification of the services will be delivered in CIPRNet deliverable [D5.2]. The final design of these services depends on the finalisation of the implementation of the new capabilities according to the project work plan. Also, the terms of use of these services need to be agreed within the consortium and checked by Fraunhofer's lawyers. CIPRNet will consult its International Advisory Board for feedback on the design of the services.

We will report the progress of the implementation of the web site evolution roadmap on regular basis in the "Plan for dissemination and spreading of excellence" deliverables (D2.32-D2.34). At the end of the project (in Month 48), we will submit a final deliverable reporting the final state of the web portal, the plans for sustaining it at the VCCC (D8.120).

7 References

[CWS] CIPRNet web site: http://www.ciprnet.eu

[D1.20] Fraunhofer: CIPRNet Project Handbook v1, Deliverable D1.20, Sankt Augustin, July 2, 2013

[D5.2] UTP: Services specification, Deliverable D5.2, Bydgoszcz, 2014 (to appear)

[D8.4] JRC: Publicly announced CIPedia, Deliverable D8.4, Ispra, 2014 (to appear)

[DoW] Annex I – Description of Work (Annex to the Grant Agreement of CIPRNet).

[Fotolia] Fotolia: http://de.fotolia.com

[T3] Typo3: http://typo3.org

Annex 1 – Security clearance of sections of CIPRNet website

Content of the website	Security Assessment	Can be excluded from future Security Assessments?	Other remarks
Summary	No objections	Yes	-
Motivation	No objections	Yes	-
Consortium	No objections	Yes	-
CIPRNet activities	No objections	No	-
New capabilities	No objections	No	-
Technology	No objections	No	-
VCCC	No objections	No	-
Publications	No objections	Yes, assuming that (in case of links to full text) publications listed are already assessed and classified as public, or in case of other classifications the full text is not accessible to unauthorized people.	-
Dissemination entry page	No objections	Yes	-
ECN	No objections	Yes, assuming that the content of the newsletter has been assessed prior to publication	-
Events	No objections	Yes, assuming that all information provided about the event (e.g. flyers) have been assessed prior to publication	-
Training	No objections	Yes, assuming that content of the lectures / training is not published on the website unless it has been assessed and classified as public	-
CIPRNet boards	No objections	Yes	-
News	No objections	Yes, assuming that all news items such as press releases have been assessed prior to publication.	-
Links	No objections	Yes, assuming that the website will only provide links to public websites and not to restricted information	-
Jobs			
Imprint			
Publishing notes			
Glossary	To be done		