Horizon 2020 Program (2014-2020)

Cybersecurity, Trustworthy ICT, Research & Innovation Actions

Security-by-design for end-to-end security

Secure Hardware-Software Architectures for Robust Computing Systems

D1.1: Website and collaboration tools†

Abstract: This document discusses the website of the SHARCS project. We focus on its different content sections, the integration of social networking features, and the content update mechanism. Then we provide a short overview of the platform and methods used for its development. Finally, we conclude the website report.

Contractual Date of Delivery	28/02/2015
Actual Date of Delivery	10/03/2015
Deliverable Security Class	Public
Editor	Antonis Krithinakis
Contributors	All *SHARCS* partners
Quality Assurance	Manolis Stamatogiannakis

The *SHARCS* consortium consists of:

FORTH	Coordinator	Greece
VUA	Principal Contractor	The Netherlands
CTH	Principal Contractor	Sweden
TUBS	Principal Contractor	Germany
NEU	Principal Contractor	The Netherlands
ONAPP	Principal Contractor	United Kingdom
IBM	Principal Contractor	Israel
EB	Principal Contractor	Germany

Document Revisions & Quality Assurance

Internal Reviewers

    1.   Manolis Stamatogiannakis (VUA)

Revisions

Version	Date	By	Overview
1.0	10/3/2015	Antonis Krithinakis	Changes suggested by reviewer.
0.0.1	8/3/2015	Manolis Stamatogiannakis	Review.
0.0.0	2/3/2015	Antonis Krithinakis	First draft.

Table of Contents

1   Introduction

This document details the SHARCS website which is one of the objectives of Task WP1 of the project. The SHARCS website is publicly available at http://www.sharcs-project.eu. The website will be the main channel through which the general public will gain access to SHARCS results, publications, news and new tools developed in the context of this project. It will fulfill three different roles:

- It will deliver the general information about the project: participants, objectives, status reports and acknowledge EC contribution.
- It will deliver end-user-oriented output in a friendly, helpful and effective way. The website, along with various means of spreading information on the web, will be the main channel through which the general public will gain access to SHARCS results.
- Finally, the website will be a complete repository of all the information the project has delivered (e.g., software, public deliverables and demonstrators).

For better dissemination of the information, we took advantage of social media such as Twitter and Facebook, as a way to aggregate and reach out to our constituency.

1.1   Document Outline

In the following Chapters, we will describe the SHARCS website as it was at the time of delivery of this document. In Chapter 2 we initially present the content and features of the SHARCS website and then in Chapter 3 we describe how the website can be updated using a web browser. Next, in Chapter 4 we describe the tools used to create the website and why we chose them. We also briefly present the principles that the site is based on and the web standards that the SHARCS website adheres to. In Chapter 5 we present the hardware and network infrastructure we use to run the site. In the next chapter (Chapter 6) we describe our presence on social media. Finally, in Chapter 7 we summarize the website setup and outline possible future additions and enhancements. These are content and features that are can be added at any time through the course of the project to help the website to better serve its purpose.

2   Website Layout

In this section we will briefly present the current layout of the SHARCS website. At this point of time, the main goal of the website is to provide information on the project and its goals and to enable interested parties to get in touch with the project. Of course, the website will be a work-in-progress throughout the duration of the project.

2.1   Home Section

The primary goal of the Home section is to provide a quick overview of the SHARCS project. We can see that Home section (Figure 1) uses a two-column layout. The larger left part is used to provide the overview of the project. The right part of the layout is used to show the latest SHARCS news. The displayed news are obtained real-time from the SHARCS Twitter feed.

Figure 1 Homepage

2.2   Partners Section

A short profile for each project partners is provided through the Partners section (Figure 2) of the website. All the official partners' logos have been included in this page for the visitor to have a clear view of the SHARCS consortium.
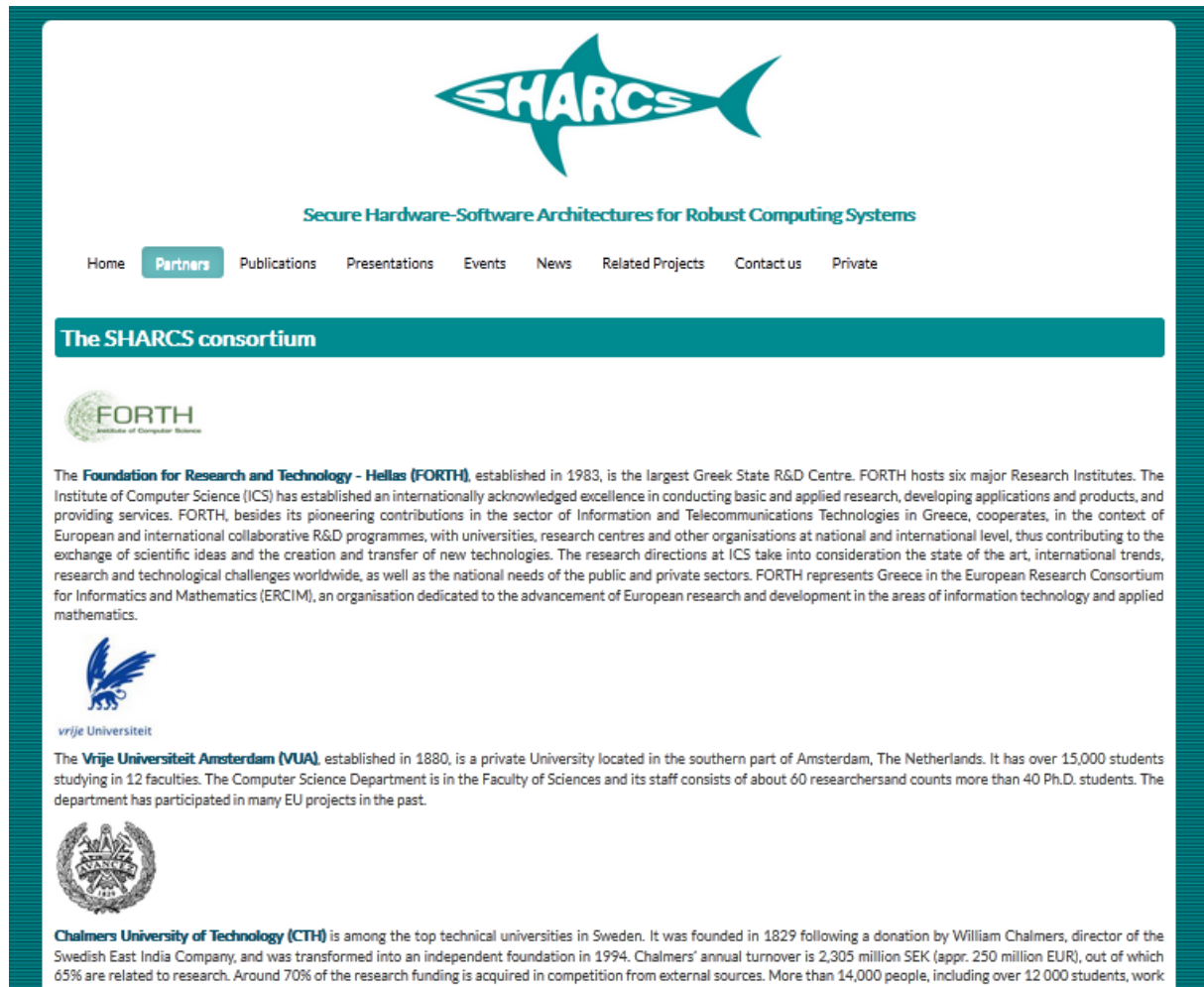

Figure 2 Partners Section

2.3   Publications Section

The *Publications* section is intended to make available to the public the documents published by SHARCS. As the list of published documents will expand both in length (i.e. more conference papers) and in diversity (i.e. inclusion of deliverables) it is expected that more pages will soon be added to this section. In its current state, the title of each paper is added to the page as soon as its acceptance notification is received. The full text of the paper or a link to the paper on the publisher website is added at the same time or shortly after.

2.4   Presentations Section

This section details the talks, seminars and presentations made by the consortium to promote the project.

2.5   Events Section

This section will provide information about all public events, workshops and summer-schools organized by SHARCS. It is expected that the visitor will be also able to see there photo galleries related to these events.

2.6   News Section

The News section will work as complementary to the existing Twitter-based SysSec news feed. The latter is better suited for pushing short announcements rather than verbose posts.

2.7   Related Projects Section

In this section (Figure 3) we provide a short description of other projects related to the topics of the SHARCS project. For each one of these projects we also provide links to their official webpages.

Figure 3 Related Projects Section
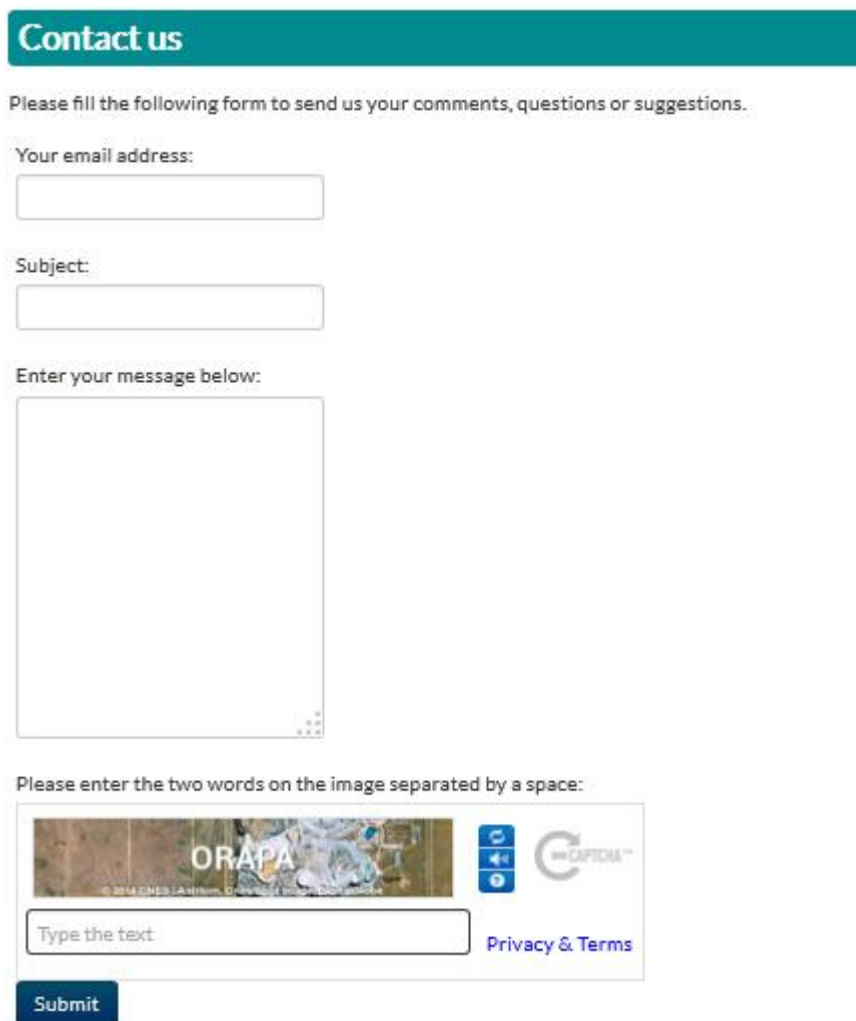
2.8   Contact Us Section

The *Contact* page (Figure 4) contains a contact form allowing visitors to contact project consortium and submit comments, questions, or suggestions. The *email* address of the visitor is required in order to send feedback. We opted for a contact form, instead of publishing a contact email address, in order to avoid having our email address harvested and

spammed through the course of the project. As an additional anti-spam measure, the form is protected by a CAPTCHA.

Figure 4 Contact Us

2.9   Private Area

During the writing of the project proposal, the consortium collaborated using the Subversion version control system. Subversion (SVN) proved very convenient for making concurrent edits to consortium shared files. Additionally, many partners already had login credentials for the shared SVN repository. For these reasons and in order to avoid fragmentation it was decided to stick with the exclusive use of the SHARCS SVN repository as a collaboration platform.

However, because a Subversion client may not always be available, it was decided to integrate access to the repository in the SHARCS website. The Private Area of the website is the web front-end to SVN repository.

3   Updating the website

The contents of the SHARCS website can be easily updated using a web browser. This feature
is provided by the CMS we use (see Section 5.1). After successful authentication, the website
editor is presented with the *Site Administration Panel* shown in Figure 5. Through this panel
all of the website's modules can be configured.

Figure 5 Site administration panel. Highlighted is the section of the CMS module, which is used to edit content.

The contents of the site are updated through the *CMS module* which appears highlighted.
Following the Pages link, the *page hierarchy panel* (shown in Figure 6) is displayed. The panel
allows the website editor to restructure the website layout by using *drag & drop* on the
items. Additionally with a single-click the editor may hide a page from the navigation menu
or take it offline.

Figure 6 Page hierarchy panel. The pages can be rearranged by dragging them and dropping them on their new location
in the hierarchy tree.

While it is possible to edit the content of a page through the admin interface we presented, it is usually more convenient to update it through the front-end editor of Django-CMS. The front-end editor feature is automatically enabled when visiting the website after having logged in the administrative interface. When it is enabled, a toolbar appears on the top of the page which enables the user to go into edit mode.

The actual content of the page is encapsulated in *Content Plugins*. Content Plugins produce HTML output which is placed in designated locations in the template called placeholders. Obviously, the most commonly used plugin is the *Text Plugin* which is used to edit and then display html formatted text. However more specialized plugins exist for interfacing with specific data sources (e.g. Twitter).

The built-in editor used for editing the page text offers many of the formatting options found in a full-blown word processor. The formatting options supported by default have been chosen to encourage semantic-based html formatting. I.e. the editor marks-up the contents according to their semantics on the page and their final appearance is determined by the CSS stylesheet used.

From its day-to-day use, we have found the website update mechanism very convenient and easy to use. Currently, the content of the website is updated by FORTH. If the need arises, it would be straightforward for other partners to be involved in adding and updating website content with only minimal training (if any at all).

4   Website design

4.1   Grid based design

We wanted the SHARCS website to have a visual layout which is clean-cut while at the same time is easy to change in order to accommodate future needs. For this, we chose to have it designed and built using *Twitter Bootstrap*. Twitter Bootstrap is a CSS framework that allows the rapid prototyping of *grid based website designs* while working equally well when integrated into a production system.

In grid based designs, the visual blocks that comprise the website (e.g., menus, text boxes, information boxes, ads etc.) are not placed on arbitrary positions. Instead they are laid out on predefined rigid positions on a grid. This may sound restrictive but in practice the resulting design is much more efficient in communicating its contents to the visitor. This is because placing the visual blocks of the website on a grid results in *clear visual paths* and visual *structure and balance* on the design. Additionally, a grid based design also ensures consistency between the website pages and are much easier to update in order to accommodate additional content.

4.2   Browser Compatibility and Web Standards Compliance

The SHARCS website pages have been tested to comply with the *HTML5* standard, using the *W3C Markup Validator*. The situation is more complicated with regards to *CSS* compliance. We have chosen to use *CSS3* for the SHARCS website because it greatly simplifies the implementation of aesthetic elements such as rounded element corners, element shadows etc. Without CSS3, these elements have to be pre-rendered as bitmap images and then included in the page, which degrades the semantic integrity of the produced HTML output.

However, the CSS3 standard is currently a work in progress. So, while we have taken every care for our CSS code, it has been proved impossible to have CSS3 code that both validates on the *W3C CSS Validator and* works on all popular browsers. This made us take a more pragmatic approach and instead strive to have our pages render correctly with the latest versions of all popular web browsers.

5   Website hosting

5.1   Software stack

For serving the SHARCS website we use a *LAMP software stack*:

• **L**inux as the operating system

• **A**pache as the web server

• **M**ySQL as the database backend

• **P**ython for dynamically compiling the web pages

The later components of the stack have been distributed between two servers. The first server is dedicated to running the *MySQL server*, while the second runs the *Apache web server* and generates the dynamic pages using the python-based *Django* web framework.

Django itself is a generic web framework that provides an *Object-Relational-Mapper* (ORM) that allows accessing objects stored in a relational database (in our case *MySQL*) as Python objects. For serving and managing our pages we use *Django-cms* a Content Management System built on top of django.

The benefit of the Django/Django-cms combo is that they provide a clear, well documented Application Programming Interface. They are much more compact than other solutions which make tweaking and extending them much easier. This could prove useful in case we need to extend the functionality of the SHARCS website beyond the basics. An additional benefit of this combo is the existing expertise of the consortium (specifically FORTH) on building and maintaining Django-cms sites. Finally, we should mention that all the software components are regularly updated in order to be immune to known (and patched) security vulnerabilities.

5.2   Hardware and hosting

The SHARCS website is hosted by FORTH on their premises in Heraklion. The hosting server features two Intel Xeon dual-core CPUs running at 2.66GHz and a total memory of 4GB. It is connected to the Internet through FORTH's Gigabit connection to the GRNET backbone. The server has two high performance SAS disks (10k RPM) arranged as RAID-1 for fault-tolerance.

The server is protected by firewalls in order to minimize the risk from cyber-threats. As an additional security measure, the database server used by the SHARCS website is located on a separate host with even more restricted access rules. Both hosts are internally and externally monitored. Finally, remote backups through the *rsync* utility are performed for both on a daily basis.

It is also important that the hosts reside in a protected physical environment. They are located in one of FORTH's data-centers. For ensuring optimal operating environment, it

is fitted with industrial-strength air conditioning with more than 240.000BTUs efficiency. In power emergencies, it is supported by a UPS power supply and an external power generator which is engaged automatically on power failure. Additionally, the data-center features an automatic carbon dioxide fire-extinguishing system.

6 Social Networks

Currently, SHARCS presence is established in two of the most popular social networks: *Facebook* and *Twitter.*

6.1 Twitter presence

The Twitter profile of SHARCS[1] can be seen on Figure 7. It has been also integrated to the website in the form of the *news feed* in the right part of our layout.
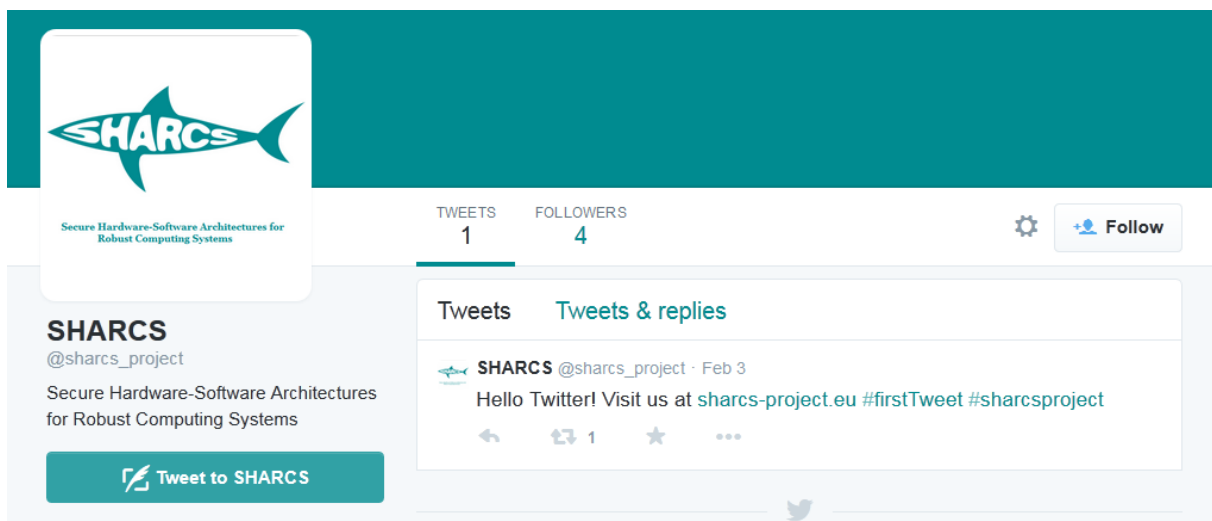

Figure 7 Twitter profile of SHARCS

6.2 Facebook presence

Facebook is the most popular social network site. It was launched in February 2004. Facebook is much more complex than Twitter as it works as a social platform that allows many independently developed applications to run. A page was created for the SHARCS project on Facebook[2] which can be seen on Figure 8.

---

[1] Our Twitter profile can be accessed on https://twitter.com/sharcs_project

[2] Our Facebook page can be accessed on https://www.facebook.com/sharcsproject
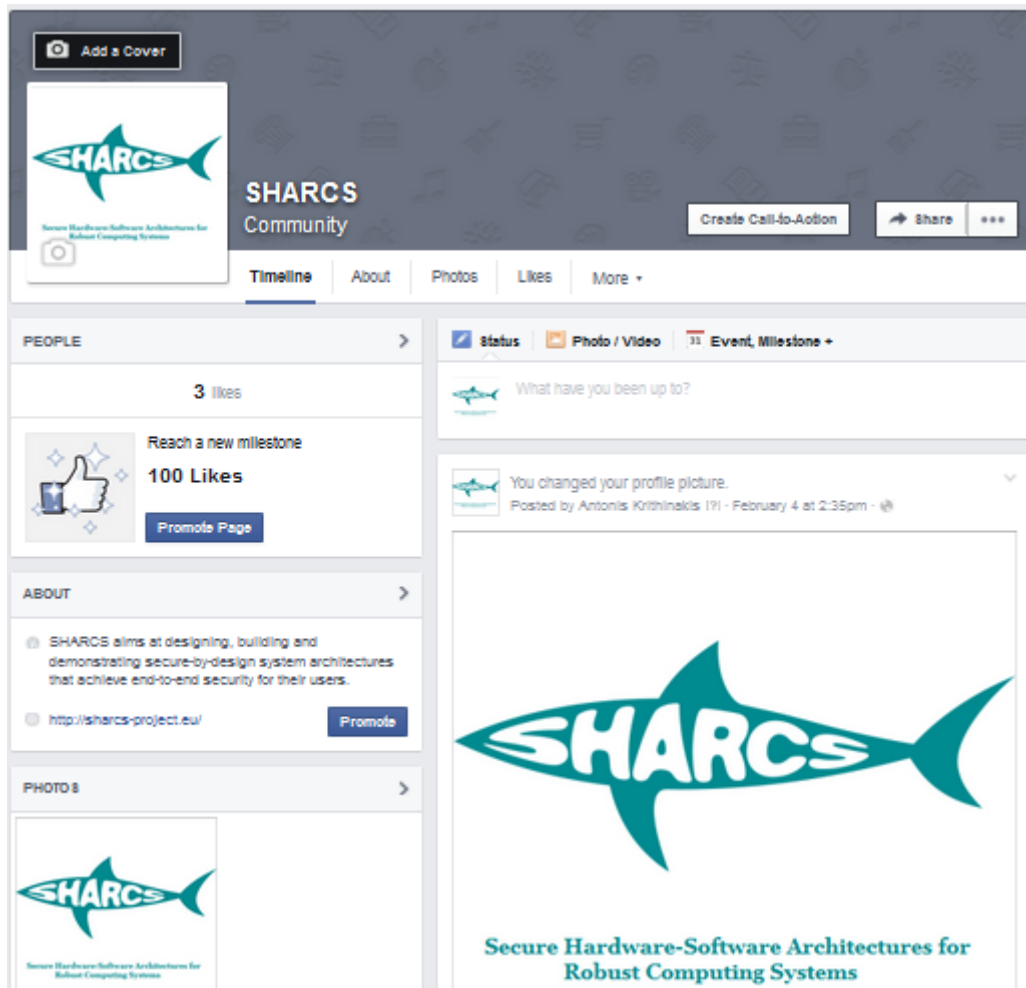
Figure 8 Facebook profile of SHARCS

7   Conclusions

In this document, we discussed the SHARCS website. We provided a description of its sections and content and outlined the social networking features we have integrated. Moreover, we showed the process of updating the website through a user-friendly front-end editor.

Additionally, we provided an overview of the components and the methodology we used to build the website. We also detailed its software and hardware hosting environment.

Closing, we should cite that at the time of writing of this document the SHARCS website was already capable to provide the functionality requirements that had been laid out in the project's description. However, in addition to the existing commitment to keep the website running and up to date, the consortium will continue looking throughout the course of the project for features that could be integrated with it in order to provide an enhanced experience to the visitors.