PROTASIS
Restoring Trust in the Cyber Space:
A Systems Security Proposal

D1.1: Website and collaboration tools†

Abstract: This document discusses the website of the PROTASIS 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.

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1 Introduction

This document details the PROTASIS website which is one of the objectives of Task WP1 (Project Management) of the project. The PROTASIS website is publicly available at http://www.protasis.eu/. The website will be the main channel through which the general public will gain access to PROTASIS results, publications, news and new tools developed in the context of this project.

The website will strengthen the spreading of the results of PROTASIS to different types of key stakeholders, such as end users, policymakers, security vendors, businesses and researchers.

1.1 Document Outline

In the following Chapters, we will describe the PROTASIS website as it was at the time of delivery of this document. In Chapter 2 we initially present the content and features of the PROTASIS 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 PROTASIS 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. In Chapter 7 we present our file hosting platform and finally in Chapter 8 we summarize the website setup and outline possible future additions and enhancements. These are content and features that 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 PROTASIS website. At this point of time, the main goal of the website is to provide information on the project, its goals and on the participating organizations. Of course, the website will be a work-in-progress process 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 PROTASIS 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 PROTASIS news. The displayed news are obtained real-time from the PROTASIS Twitter feed.

![Figure 1 - Home section](image)
2.2 Partners Section

A short profile for each participating organization 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 PROTASIS consortium.

![Partners Section](image)

**Figure 2 - Partners section**

2.3 Publications Section

The Publications section is intended to make available to the public the documents published by PROTASIS. 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.
3 Updating the website

The contents of the PROTASIS website can be easily updated using a web browser. This feature is provided by the CMS we use (Django CMS, see Section 5.1). After successful authentication, the website editor is presented with the Site Administration Panel shown in Figure 3. All of the website’s modules can be configured through this panel.

![Figure 3 - Site administration panel. Highlighted is the section of the CMS module, which is used to edit content.](image1)

The contents of the site are updated through the CMS module which appears highlighted (Figure 3). Following the Pages link, the page hierarchy panel (shown in Figure 4) 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 4 Page hierarchy panel. The pages can be rearranged by dragging them and dropping them on their new location in the hierarchy tree.](image2)
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 PROTASIS 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 PROTASIS 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 PROTASIS 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 in order 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 PROTASIS website we use a **LAMP software stack**:

- Linux as the operating system
- Apache as the web server
- MySQL as the database backend
- Python for dynamically compiling the web pages

The 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](https://www.djangoproject.com/).

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](https://www.djangoproject-cms.org) 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 PROTASIS 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 PROTASIS 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 10 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 PROTASIS 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 equipped with industrial-strength air conditioning with more than 240,000 BTUs 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, PROTASIS presence is established in two of the most popular social networks: Facebook and Twitter.

6.1 Twitter presence

The Twitter profile of PROTASIS\(^1\) can be seen in Figure 5. It has been also integrated to the website in the form of the news feed in the right part of our layout.

![Twitter profile of PROTASIS](image)

*Figure 5 Twitter profile of PROTASIS*

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 PROTASIS project on Facebook\(^2\) which can be seen in Figure 6.

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\(^1\) Our Twitter profile can be accessed on [https://twitter.com/protasis_pro](https://twitter.com/protasis_pro)

\(^2\) Our Facebook page can be accessed on [https://www.facebook.com/protasispro](https://www.facebook.com/protasispro)
Figure 6 Facebook profile of PROTASIS
7 File Hosting

PROTASIS partners use the ownCloud platform for file hosting and sharing of consortium documents. ownCloud is a free open source software for data synchronization, file sharing, and remote storage of documents. It is written in the PHP and JavaScript scripting languages and supports several database management systems, including SQLite, MariaDB, MySQL, OracleDatabase, and PostgreSQL.

File access is provided through a web interface or from mobile devices via mobile applications for iOS and Android and from desktop clients available for PCs running Windows, Mac OS, or Linux.

In Figure 7 we can see the web interface of the PROTASIS repository. The ownCloud user interface contains the following fields and functions:

- **Apps Selection Menu**: Located in the upper left corner and by clicking the arrow a dropdown menu opens to navigate to user’s various available apps.
- **Apps Information field**: Located in the left sidebar and provides filters and tasks associated with user’s selected app. For example, when the Files apps is used, a special set of filters for quickly finding files is shown.
- **Application View**: The main central field in the ownCloud user interface. This field displays the contents or user features of the selected app.
- **Navigation Bar**: Located over the main viewing window (the Application View), this bar provides a type of breadcrumbs navigation that enables migration to higher levels of the folder hierarchy up to the root level (home).
- **New button**: Located in the Navigation Bar, this button enables the user to create new files, new folders, or upload.
- **Search field**: The user can click on the magnifier in the upper right hand corner to search for files.
- **Personal Settings menu**: The user can click on her ownCloud username, located to the right of the Search field, to open the Personal Settings dropdown menu. Personal page provides settings and features such as:
  - Links to download desktop and mobile apps
  - Server usage and space availability
  - Password management
  - Name, email, and profile picture settings
  - Group memberships
  - Interface language settings
  - Manage notifications
  - Social media sharing buttons
  - ownCloud Version information
Figure 7 - ownCloud repository of PROTASIS
8 Conclusions

In this document, we discussed the PROTASIS 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 PROTASIS 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.