



Project no. 826278

SERUMS

Research & Innovation Action (RIA)
SECURING MEDICAL DATA IN SMART PATIENT-CENTRIC HEALTHCARE SYSTEMS

Initial Project Website/Presentation **D8.2**

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*Responsible institution: University of St Andrews
 Editor and editor's address: Vladimir Janjic, University of St Andrews*

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Project co-funded by the European Commission within the Horizon 2020 Programme		
Dissemination Level		
PU	Public	√
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)	

Change Log

Rev.	Date	Who	Site	What
1	28/03/19	Vladimir Janjic	USTAN	Original Version

Executive Summary

This deliverable describes the **Serums** project website, that is publicly accessible at serums-smartpatient.eu. The website is used for project dissemination, planning of meetings, publishing of project reports (deliverables), publications, talks, posters, etc.

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Chapter 1

Introduction

The key objectives of WP8 are to:

- disseminate research results to the scientific community;
- ensure awareness of the results in the user community;
- raise general public awareness of the **Serums** project, including an Open Science model;
- define individual exploitation plans; and,
- manage existing and new intellectual property.

As such, this deliverable describes the **Serums** website, which aims to address the key objectives for dissemination, awareness, and exploitation of the project results. We introduce the design of the website in terms of its structure and hosting. In the deliverables that will describe the dissemination of the project results (D8.4, D8.5 and D8.8), we will also report on the statistics of the traffic to the website, including the number of unique visitors, their geographical distribution etc.

Chapter 2

The Serums Website

2.1 Website Hosting

The website is hosted by Weebly and can be accessed at

<http://serums-smartpatient.eu/>

Similarly, the following URL will also link:

<http://serums-smartpatient.com/>

All project participants who are active in maintaining the website have been granted access to this server. Vladimir Janjic and Christopher Brown from the University of St Andrews are the lead website maintainers. The website is implemented using a combination of static HTML and CSS. There is no dynamic content creation. The content of the website is updated manually by the maintainers. This permits to increase security (by avoiding logins on the website itself) and also to simplify the website implementation. Maintenance is performed by logging into the Weebly service and performing changes to the website pages files. Furthermore, external users cannot obtain membership to documents that are not public. Only documents that are publicly available are published to the website.

2.2 Website Structure

The website is designed to have a classic and simple layout. Figure 2.1 illustrates the main page of the website. The layout is such that the navigation is displayed across the top of the page. Underneath the navigation, there is a large logo clearly displaying the project name. Underneath the logo, is the main content panel. Currently, the main control connect panel contains just the information that is relevant to the current page, but we will also add the columns to the left, displaying a twitter feed with real time updates live from the project's Twitter account (@serums_h2020, shown on Figure 2.2) and to the right, displaying the news items. Each page of the website follows this structure, with the centre panel changing appropriately depending on the theme of the page being displayed.



Securing Medical Data in Smart Patient-Centric Healthcare Systems

WELCOME TO THE SERUMS PROJECT

The Serums Project is an EU Horizon 2020 research project which deals with security and privacy of future-generation healthcare systems, putting patients at the centre of future



Figure 2.1: The main project webpage.

2.2.1 About

The About section lists the project's aims and objectives as outlined in the project proposal. Figure 2.3 shows an illustration of this page as it is on the website. The Partners subpage of this page lists the institutions and companies involved in the project, as shown in 2.4.

2.2.2 Publications

Figure 2.5 shows details of the project's publications. These include conference, journal and workshop publications by the project participants; also technical reports and project posters. The details of each publication includes the authors of the publication, the venue, year and month, publisher, title and a short abstract. If the publication is published in an open access venue, a link to the PDF will also be provided. Currently, this list is maintained manually, with participants emailing the website maintainer with details of their publications to be uploaded to the website. Project participants are reminded once a month to send relevant and up to date details.

2.2.3 Deliverables

Figure 2.6 illustrates the webpage for the project deliverables. Here *public* deliverables for the project are available for download, including a description and title of the deliverable and which work-package it belongs to. If any deliverable contains commercial sensitive information, provided by an industrial partner, for example,



Figure 2.2: The **Serums** Twitter.

a cut-down version of the deliverable can be available for download instead. The deliverables are grouped by the workpackage to which they refer.

2.2.4 News and Events

Up to date relevant news and events are displayed on this page. Here, current news items relating to the project's dissemination activities are displayed, with their date. All relevant news items are passed to the website maintainer. In addition to this dedicated page, news items will also be displayed on each page of the website, on the far right column of the main content panel. Events that are organised by the project, including project workshops, meetings, conferences and other events are displayed on the events page. These are organised and maintained by the project participants and give a chance for the public to attend the non-private project events.

ABOUT



OUR AIMS AND OBJECTIVES

The specific aims of the Serums project are:

- **Aim 1:** To develop new techniques that will allow the delivery of a new form of smart, patient-centric health- care through a holistic approach that integrates home, workplace etc. personal medical care with centralised hospital, specialist consultant and general practitioner provision;
 - **Aim 2:** To establish trust in the correct operation of such a patient-centric smart healthcare system, by developing new mechanisms and techniques that will allow confidential personal medical data to be safely, securely and anonymously shared between healthcare providers, Smart Health Centres, patients, family, personal health monitoring and alarm systems etc, without leaking private information to any unauthorised agents;
 - **Aim 3:** To ensure that the patient has full control over their personal data, in accordance with the provisions of the GDPR and other regulatory frameworks, while allowing rapid exchange of information to support e.g. transnational/cross-border healthcare provision, as required to meet patient needs;
 - **Aim 4:** To demonstrate the effectiveness and generality of Serums' results by considering multiple disparate use cases, under different national regulatory frameworks, and to ensure the maximum possible long-term exploitation of these results in future Smart healthcare Provision.
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- **Objective 1:** To develop new techniques that will ensure the security and protection of personal medical data that is shared as part of a coherent smart healthcare system between patients, hospitals and medical practitioners, including across (possibly open and/or public) untrusted networks.
 - **Objective 2:** To integrate personal medical data from multiple sources into a single coherent smart patient record, including from personal medical monitoring devices, general practitioners, specialists and hospitals.
 - **Objective 3:** To develop new data analytic techniques that will be able to take advantage of advances in the availability of heterogeneous real-time personal healthcare information, as part of a holistic smart healthcare system, while respecting privacy and security concerns.
 - **Objective 4:** To develop/enhance authentication and trust mechanisms that ensure that only properly authorized agents have access to the required parts of (personal and/or) medical data that are required to carry out their duties etc.
 - **Objective 5:** To demonstrate world-leading levels of compliance with emerging legal and ethical requirements for the protection of personal and medical data across national boundaries, including transnational requirements such as GDPR.
 - **Objective 6:** To demonstrate the effectiveness of the Serums techniques against a variety of real-world medical use cases, including both ongoing and emergency medical care scenarios, providing confidence in the delivery of high quality, ethically and legally compliant smart healthcare.
 - **Objective 7:** To ensure good uptake of Serums concepts and technologies through a dissemination and exploitation approach that targets potential users of smart healthcare systems, as well as leading technology and healthcare providers.

Figure 2.3: Webpage showing the **Serums** aims and objectives.

MEET THE PARTNERS

The University of St Andrews, Scotland,
UK



IBM Israel and Science Technology Ltd.,
Haifa, Israel



Software Competence Centre, Hagenberg,
Austria



Zuyderland Medisch Centrum,
Netherlands



Sopra-Steria, Scotland, UK



Universite Catholique de Louvain,
Belgium



University of Cyprus, Cyprus



Accenture B. V., Netherlands



Fundacio Clínic per a la Recerca
Biomedica, Spain



Figure 2.4: Webpage showing the Serums consortium.

M. Belk, C. Fidas, A. Pitsillides, **FlexPass: Symbiosis of Seamless User Authentication Schemes in IoT**. To appear in ACM SIGCHI Human Factors in Computing Systems (CHI EA 2019), ACM Press.

Abstract: This paper presents a new user authentication paradigm which is based on a flexible user authentication method, namely FlexPass. FlexPass relies on a single, user-selected secret that can be reflected in both textual and graphical authentication secrets. Such an approach facilitates adaptability in nowadays ubiquitous user interaction contexts within the Internet of Things (IoT), in which end-users authenticate multiple times per day through a variety of interaction device types. We present an initial evaluation of the new authentication method based on an in-lab experiment with 32 participants. Analysis of results reveal that the FlexPass paradigm is memorable and that users like the adaptable perspective of the new approach. Findings are expected to scaffold the design of more user-centric knowledge-based authentication mechanisms within nowadays ubiquitous computation realms.

C. Hadjidemetriou, M. Belk, C. Fidas, A. Pitsillides, **Picture Passwords in Mixed Reality: Implementation and Evaluation**. To appear in ACM SIGCHI Human Factors in Computing Systems (CHI EA 2019), ACM Press.

Abstract: We present HoloPass, a mixed reality application for the HoloLens wearable device, which allows users to perform user authentication tasks through gesture-based interaction. In particular, this paper reports the implementation of picture passwords for mixed reality environments, and highlights the development procedure, lessons learned from common design and development issues, and how they were addressed. It further reports a between-subjects study (N=30) which compared usability, security, and likeability aspects of picture passwords in mixed reality vs. traditional desktop contexts aiming to investigate and reason on the viability of picture passwords as an alternative user authentication approach for mixed reality. This work can be of value for enhancing and driving future implementations of picture passwords in mixed reality since initial results are promising towards following such a research line.

Figure 2.5: Webpage showing the Serums publications.

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DELIVERABLES

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Our project deliverables are divided up by project workpackage. Please click the links below to see the deliverables for each workpackage. Alternatively, choose the drop down menu for each workpackage from 'Deliverables' above. We aim to publish our deliverables as soon as they are available. If you have any questions about any of the deliverables, please contact us.

WP2: SMART PATIENT RECORD CONSTRUCTION	WP4: SECURITY AND PRIVACY-PRESERVING DATA COMMUNICATION	WP6: INTEGRATION AND TESTING
WP3: PRIVACY-PRESERVING DISTRIBUTED DATA ANALYTICS	WP5: AUTHENTICATION AND TRUST	WP7: REQUIREMENTS, USE CASES AND EVALUATION

Figure 2.6: Webpage showing the Serums deliverables.