SEVENTH FRAMEWORK PROGRAMME

Information & Communication Technologies
Trustworthy ICT

NETWORK OF EXCELLENCE

A European Network of Excellence in Managing Threats and
Vulnerabilities in the Future Internet: *Europe for the World*

D2.2: Final Report on Web Access

Abstract: This deliverable presents an assessment of the overall operation of the project's websites and social media channels for the whole duration of the project.

Contractual Date of Delivery	30/11/2014
Actual Date of Delivery	29/12/2014
Deliverable Security Class	Public
Editor	A. Krithinakis, Ch. Papachristos
Contributors	All *SysSec* partners
Quality Assurance	Herbert Bos

The *SysSec* consortium consists of:

FORTH-ICS	Coordinator	Greece
Politecnico Di Milano	Principal Contractor	Italy
Vrije Universiteit Amsterdam	Principal Contractor	The Netherlands
Institut Eurécom	Principal Contractor	France
IICT-BAS	Principal Contractor	Bulgaria
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Document Revisions & Quality Assurance

Internal Reviewers

1. Herbert Bos (VUA)

Revisions

Version	Date	By	Overview
0.0.4	23/12/2014	R1	Added Red Book figure + minor edits
0.0.3	10/12/2014	Editor	Final changes committed
0.0.2	30/11/2014	Editor	All chapters committed
0.0.1	25/11/2014	Editor	Complete draft
0.0.0	20/11/2014	Editor	First skeleton of the deliverable.

Table of Contents

1   Executive Summary

This document is the final report on web access for the whole duration of the SysSec project. The deliverable consists of three main chapters. In Chapter 2, we present all the public sections of the SysSec website and we provide web statistics such as the number of visits (sessions) and page views for each section, for each one of the four years of the project. Moreover, we provide a categorization for the documents hosted on the website and present statistics about the number of downloads they had throughout the duration of the project.

In Chapter 3 we present web statistics for the website that was created for the promotion of the RedBook, our updated Roadmap in the area of Systems Security and the number of downloads of the RedBook.

Finally, in Chapter 4, we present statistics about the social media channels that were established throughout the duration of the project.

2 SysSec Website

The SysSec website launched in the first month of the project on September 23, 2010. The public sections of the website aim to:

- provide information about the project and its goals.
- make public the results produced by the project, such as papers, organized events, talks etc.
- help interested parties to get in touch with the SysSec consortium and community.

In this section we provide information about the role of each section, the visibility they had throughout the duration of the project and finally we present statistics about the documents hosted by the website.

2.1 Website Sections

2.1.1 Home section

The primary goal of the Home section is to provide a general overview of SysSec and its goals. Since this is the default landing page of the website, it also provides the latest news on the project. The Home section of the website can be seen in Figure 1.

Figure 1 -SysSec Homepage

2.1.2 Partners section

The Partners section (see Figure 2) provides information on the members of the SysSec consortium, aiming to get the visitor known to them and also to make their position evident as leaders in the systems security research in Europe. This is very important for the consortium of a Network of Excellence. For each partner a general organization overview is provided which is followed by details on their SysSec related activities. Next each partner's description their logo is displayed.
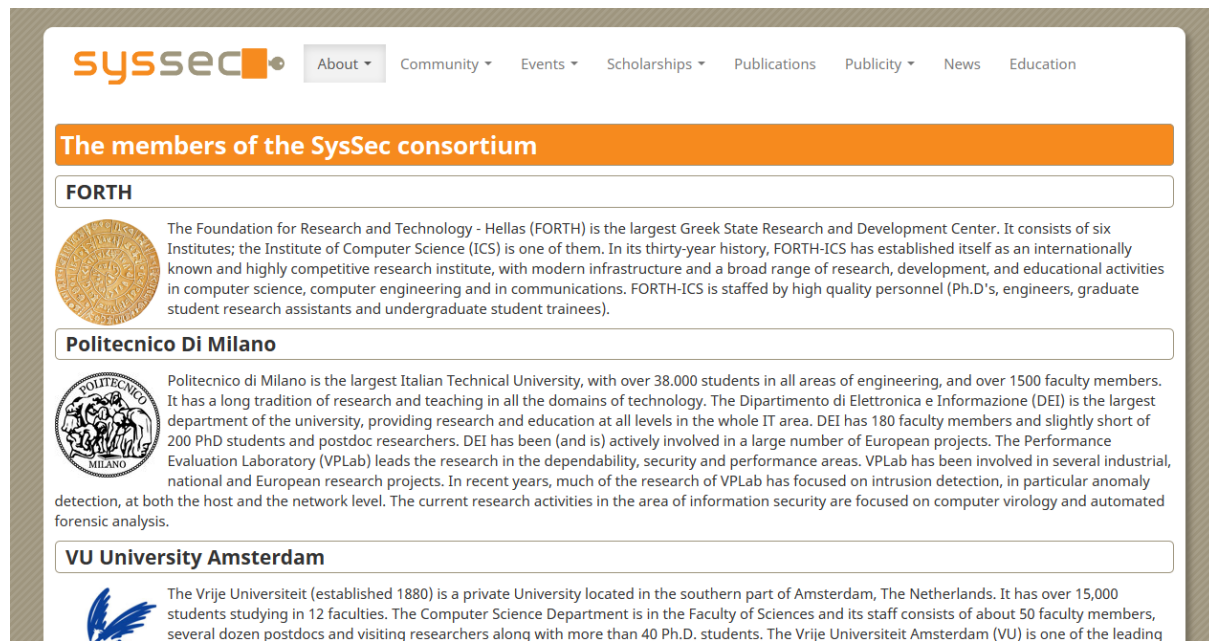

Figure 2 - SysSec website Partners section

2.1.3 Publications section

The Publications section is used to make available to the public the documents published by SysSec. It contains a single page with a list of deliverables, whitepapers, journals and conference papers that have been funded by SysSec.

The title of each paper is added to the page as soon as its acceptance notification is received. The download link is added later when the text of the paper has been finalized (camera ready version). All documents in this section are associated with anchor links. When a visitor reaches the page from a link that contains an anchor, the corresponding document will be highlighted. This way of linking a publication is preferred because it is less obtrusive to the user than a direct link to the PDF (Portable Document Format) file, which in many configurations results in the document being loaded "inside" the browser and is considered a major distraction. It is also less beneficial to the dissemination of the project results because it does not let the user browse through the other SysSec publications.

2.1.4 Publicity section

This section contains information for the remaining dissemination actions of the consortium. Because these actions can be quite diverse, this section has been structured in two levels from the launch of the website.

- Presentation page: details the talks, seminars and presentations made by the consortium to promote the project.
- Media page: lists the references to the project found online and in traditional media.

2.1.5 Events section

The Events section (see Figure 3) was added in January 2011 to accommodate the Call for Papers for our 1st SysSec workshop and after that to provide information about all public events, workshops and summer schools organized within SysSec. For each event we had created its own page under this section where more information is hosted (2nd SysSec workshop, 1st SysSec summer school, 2nd SysSec summer school). This section also hosts the webpages of DIMVA 2012, EUROSEC 2012, EUROSEC 2013, EUROSEC 2014 and EUROSEC 2015. One of our contributions was the design, hosting and support of their websites. The websites are hosted under the main SysSec website, but use a different theme.
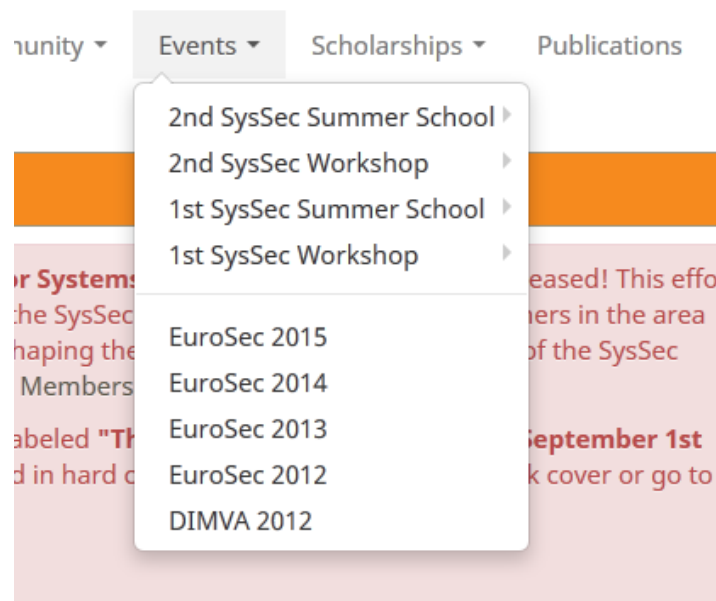

Figure 3 - Webpages under Events section

Figure 4 - EUROSEC 2014 website was hosted under www.syssec-project.eu.

2.1.6 Scholarships section

This session was added to the SysSec website in late April 2011. It initially contained the call for scholarship proposals. Soon after, it was augmented with a FAQ list aimed to clarify potential misunderstandings on the application process. Finally, in June 2011, the call for Marie Curie postdoctoral fellowship proposals was added. With this call, we aimed to provide support to postdoctoral researchers returning from abroad in requesting funding.

2.1.7 News section

During the 1st SysSec workshop, we were contacted about job offers in organizations which could be of interest to the wider systems security community in Europe. To promote such job openings and encourage the mobility of systems security experts within Europe, we created the News section in our website (see Figure 5). In general, this section worked as complementary to the existing Twitter-based SysSec news feed. The latter is better suited for pushing short announcements rather than verbose posts.

Figure 5 - News section of SysSec website

2.1.8 Community section

The Community section was added late in August 2012, in order to host information about the SysSec Associate Members. Initially, it contained the form for applying to be a member and the list of accepted associate members. Then we added a page presenting the benefits of being a SysSec Associate Member. Additionally, we have a world map showing in which countries we have associate members (see Figure 6). In order to stress our focus on strengthening the Systems Security community in Europe, the default map view shows Europe. A world map view is also available by clicking the respective link.

Associate Members of SysSec

Map of Associate Members

SysSec currently lists **76 Associate Members** around the world. The distribution of the members across different countries can be seen in the map below.

Europe | World
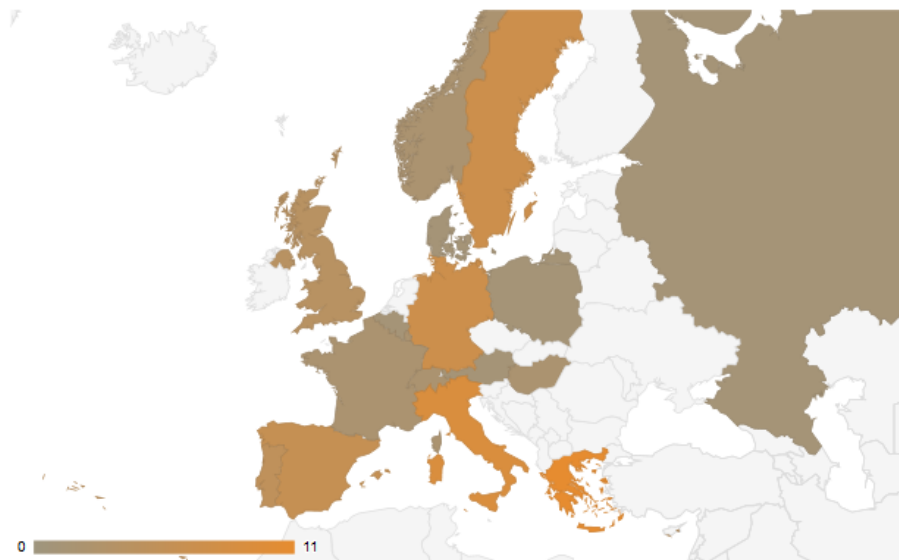
Want to join our community? Just fill our application form.

Figure 6 - Map of SysSec associate members

2.2 Visitors & Trends

2.2.1 First Reporting Period

The visits to the SysSec website per month during the first year of the project can be seen in Figure 7. We can see that a total of **9,207 visits** were recorded in this period. This means that we had an approximate of more than **25 visits per day**.
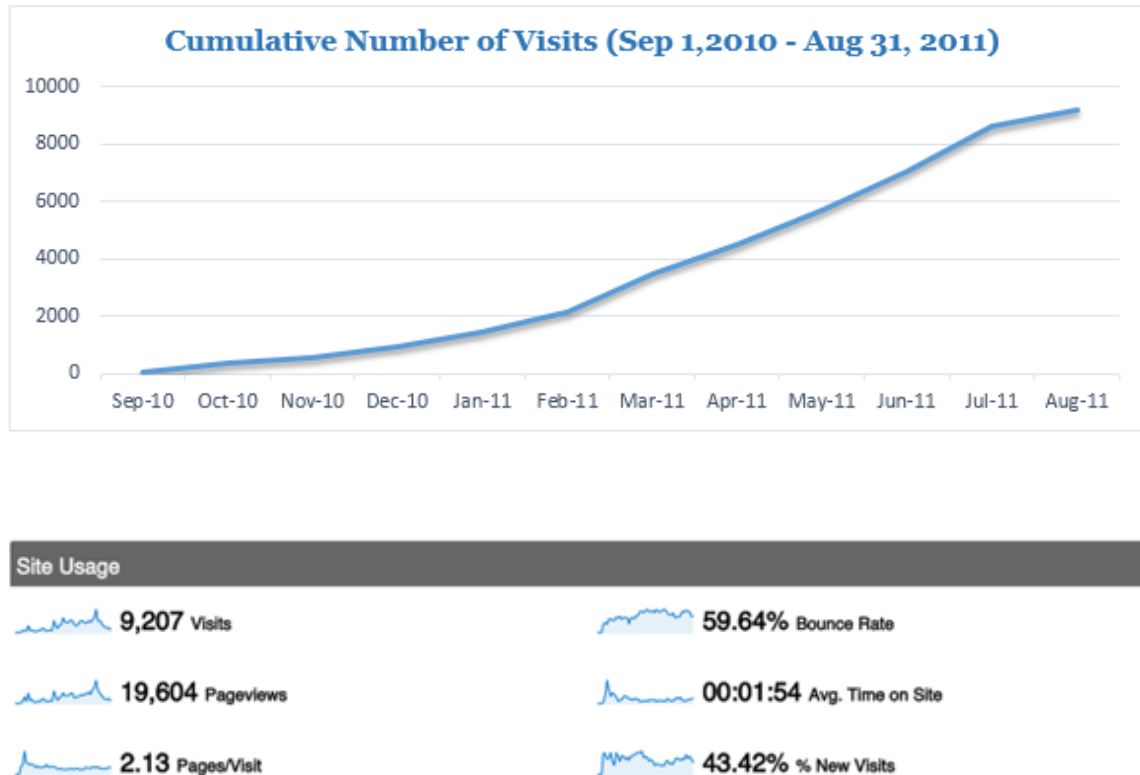
Figure 7 - First year visits to the SysSec website

It is important to notice that important events in our dissemination activities: the public website announcement, the promotion and organization of the 1st SysSec workshop and other announcements (e.g. about the SysSec scholarships) helped to increase the rate of visits.

The pages viewed by the visitors of our website for the first year of the project appear in Figure 8. Naturally enough, the front page of the website and the 1st SysSec workshop dominate the page views. It also seems that there was a considerable interest in our Publications and Presentations section. The grey slice in the pie represents the percentage of pages other than those in the top ten list.

Finally, we can see that there was already some interest on the SysSec scholarship scheme.

Unique pageviews (Sep 1, 2010 - Aug 31, 2011)

[Chart: Unique pageviews line graph from Sep-10 to Aug-11, y-axis 0 to 16000]

84 pages were viewed a total of 19,604 times

Content Performance

Pageviews	Unique Pageviews	Avg. Time on Page	Bounce Rate	% Exit	$ Index
19,604	14,558	00:01:41	59.64%	46.96%	$0.00
% of Site Total: 100.00%	% of Site Total: 100.00%	Site Avg: 00:01:41 (0.00%)	Site Avg: 59.64% (0.00%)	Site Avg: 46.96% (0.00%)	Site Avg: $0.00 (0.00%)

Page	Pageviews	Pageviews	Pageviews
■ /	5,911	30.15%	
■ /events/1st-syssec-workshop/	5,027	25.64%	
■ /publications/	2,231	11.38%	
■ /events/1st-syssec-workshop-program/	1,763	8.99%	
■ /partners/	1,303	6.65%	
■ /publicity/presentations/	1,032	5.26%	
■ /publicity/media/	345	1.76%	
■ /scholarships/applications/	327	1.67%	
■ /events/1st-syssec-workshop/?fb_xd_fragment=	263	1.34%	
■ /scholarships/faq/	212	1.08%	

[Pie chart showing: 30.15%, 25.64%, 11.38%, 8.99%, 6.65%, 5.26%, 6.07%]

Figure 8 - Unique page views of the website content the first year

2.2.2 Second Reporting Period

The number of visits to the SysSec website of the second year and a comparison of the visits between the first and the second year of the project can be seen in Figure 9. We can see that a total of **11,500 visits** were recorded during the second year of the project, which is an increase of 25% compared to the first year. This means th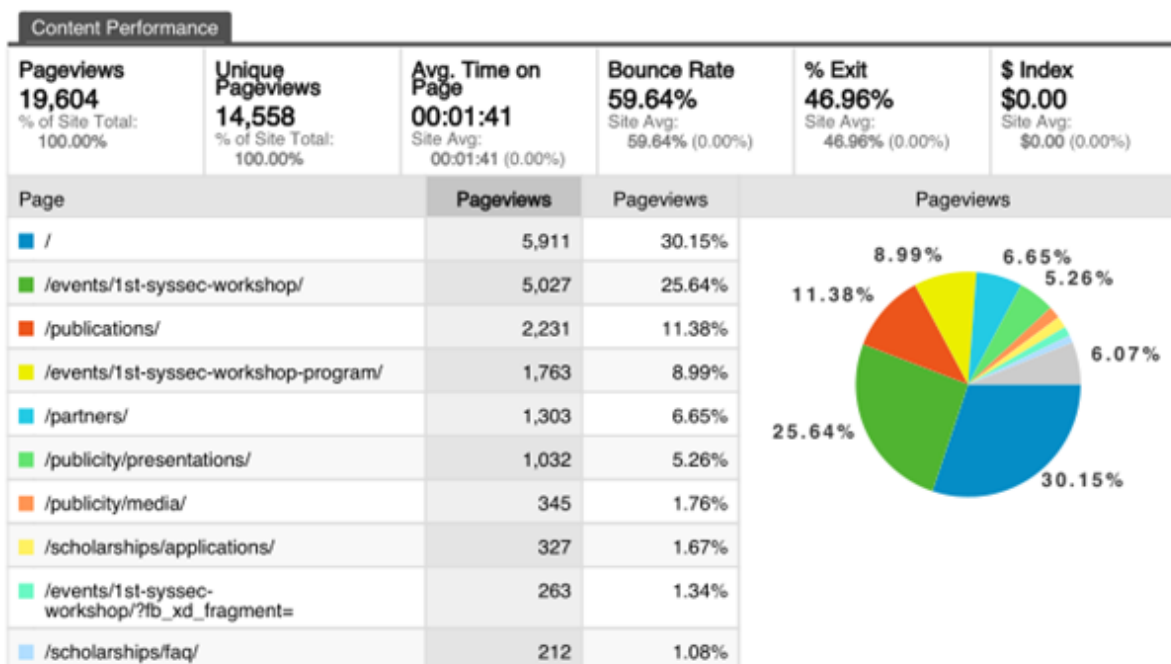at we had an approximate of more than **30 visits per day**. More important, there was a **58.69% increase in the unique visitors** as well as a significant increase in the average time the visitors spent on the website.

A comparison of the unique website page views during the first two years of SysSec appears in Figure 10. In both years the front page of the website had the most views. Naturally enough, the Publications and Presentations sections followed. These pages were the most frequently updated, so it was expected to rank high in views. There was also an increased interest for the SysSec scholarship scheme, which we had started promoting in the final quarter of the first year of SysSec.

Cumulative Number of Visits (Sep 1,2011 - Aug 31, 2012)

Visits: **25.00%**
11,509 vs 9,207

Pages / Visit: **12.90%**
2.40 vs 2.13

Bounce Rate: **-5.75%**
56.21% vs 59.64%

Unique Visitors: **58.69%**
6,365 vs 4,011

Avg. Visit Duration: **32.06%**
00:02:31 vs 00:01:54

% New Visits: **23.76%**
53.74% vs 43.42%

Pageviews: **41.12%**
27,666 vs 19,604

Figure 9 - Second year visits to the SysSec website

Unique pageviews (Sep 1, 2011 - Aug 31, 2012)

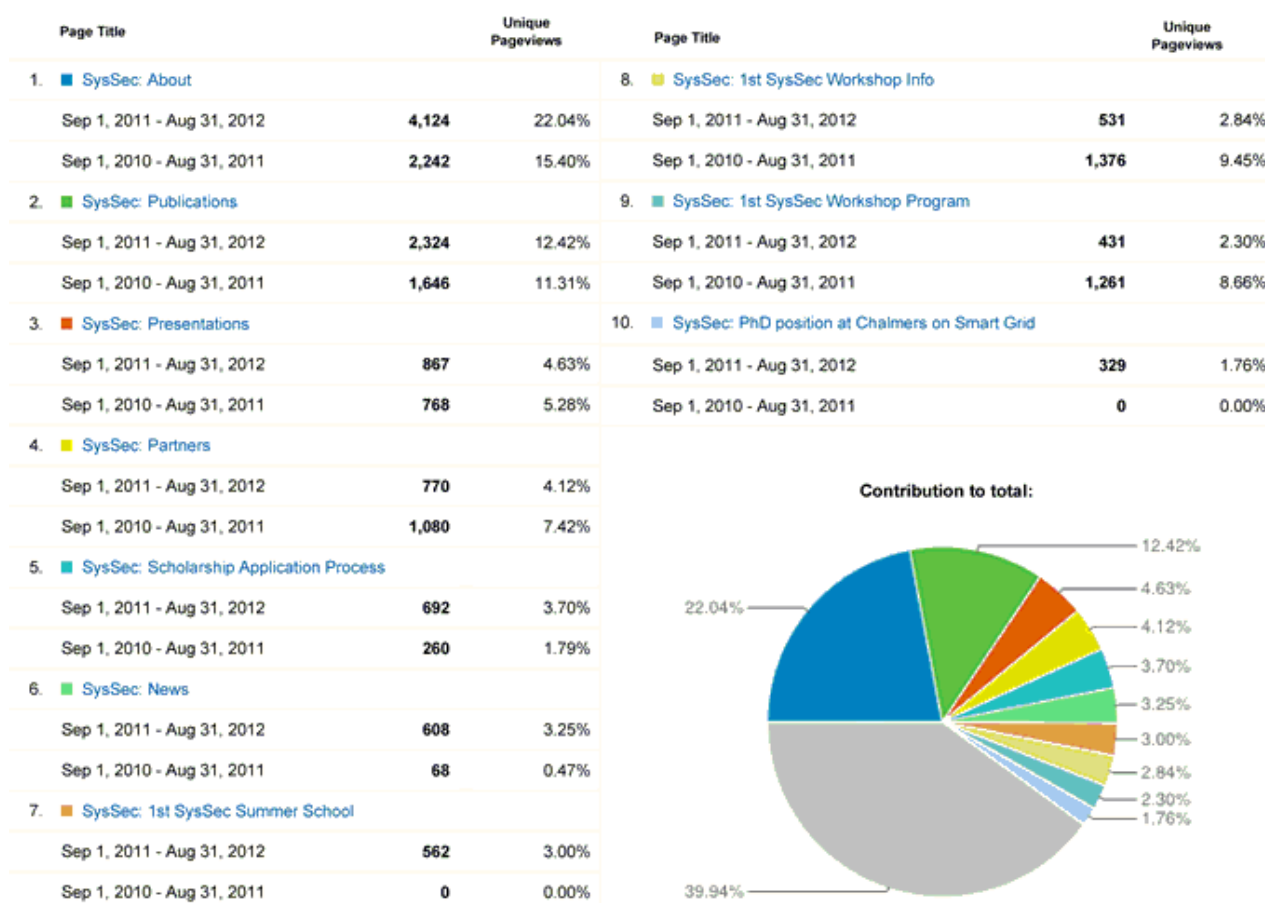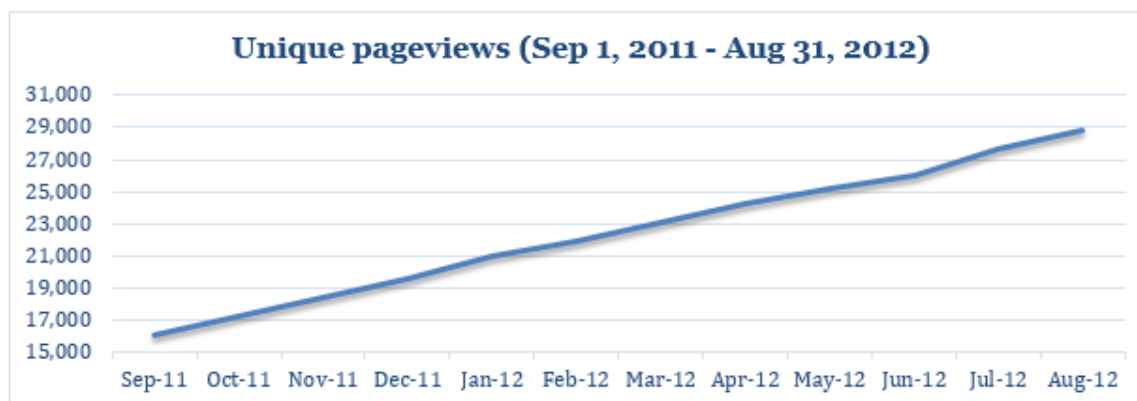| Page Title	Unique Pageviews		Page Title	Unique Pageviews	
1. SysSec: About			8. SysSec: 1st SysSec Workshop Info		
Sep 1, 2011 - Aug 31, 2012	4,124	22.04%	Sep 1, 2011 - Aug 31, 2012	531	2.84%
Sep 1, 2010 - Aug 31, 2011	2,242	15.40%	Sep 1, 2010 - Aug 31, 2011	1,376	9.45%
2. SysSec: Publications			9. SysSec: 1st SysSec Workshop Program		
Sep 1, 2011 - Aug 31, 2012	2,324	12.42%	Sep 1, 2011 - Aug 31, 2012	431	2.30%
Sep 1, 2010 - Aug 31, 2011	1,646	11.31%	Sep 1, 2010 - Aug 31, 2011	1,261	8.66%
3. SysSec: Presentations			10. SysSec: PhD position at Chalmers on Smart Grid		
Sep 1, 2011 - Aug 31, 2012	867	4.63%	Sep 1, 2011 - Aug 31, 2012	329	1.76%
Sep 1, 2010 - Aug 31, 2011	768	5.28%	Sep 1, 2010 - Aug 31, 2011	0	0.00%
4. SysSec: Partners					
Sep 1, 2011 - Aug 31, 2012	770	4.12%			
Sep 1, 2010 - Aug 31, 2011	1,080	7.42%			
5. SysSec: Scholarship Application Process					
Sep 1, 2011 - Aug 31, 2012	692	3.70%			
Sep 1, 2010 - Aug 31, 2011	260	1.79%			
6. SysSec: News					
Sep 1, 2011 - Aug 31, 2012	608	3.25%			
Sep 1, 2010 - Aug 31, 2011	68	0.47%			
7. SysSec: 1st SysSec Summer School					
Sep 1, 2011 - Aug 31, 2012	562	3.00%			
Sep 1, 2010 - Aug 31, 2011	0	0.00%			

Contribution to total:

Figure 10 - Comparison of the unique website page views during the first two years

2.2.3 Third Reporting Period

During the third year of the project, we received a total of **11,635 visits** to our website. This represents an increase compared to the second year. The number of **unique visitors were also increased by 7.34%**. A comparison of the website visitors during the second and third year can be seen in Figure 11.

Figure 11 - Website visitors during the third year

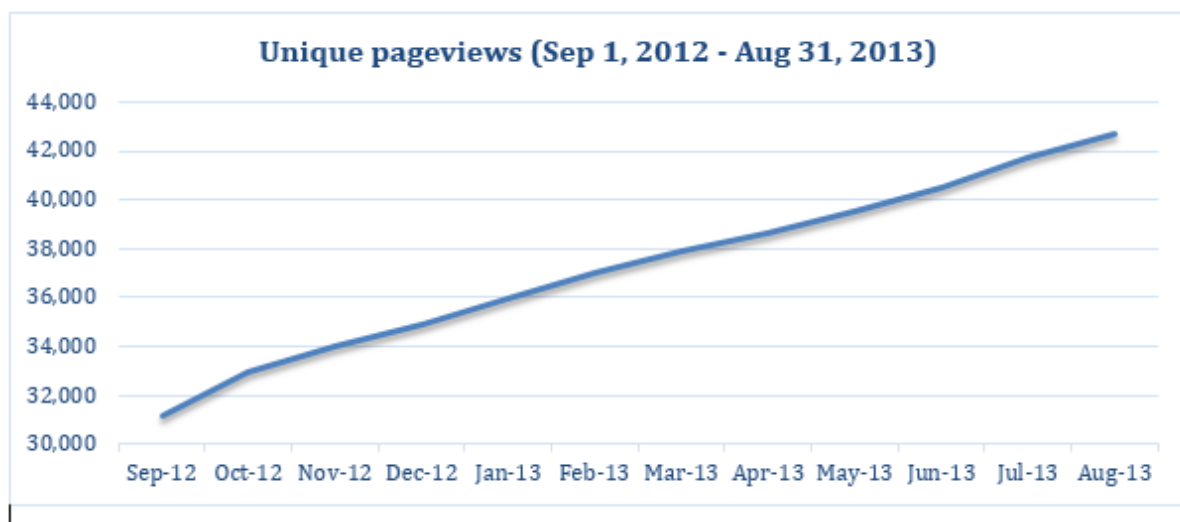In Figure 12 we can see the number of unique page views on the website the third year.

Figure 12 - Unique page views of the website content the third year

2.2.4 Fourth Reporting Period

During the fourth year of the project and the three months of the project extension, we received a total of **12,362 visits** to our website (see Figure 12).

Figure 13 - Fourth year visits to the SysSec website

Unique website page views during the fourth year of SysSec appears in Figure 14. We had an **increase of 12% at unique page views** compared to the previous period (Sep 1, 2012 – Dec 1, 2013.

Figure 14 - Unique page views of the website content the fourth year

Finally, in Figure 15 we can see the visits per month for the whole duration of the SysSec project. Overall, we had about 45,700 visits to the website and 105,500 unique pageviews.
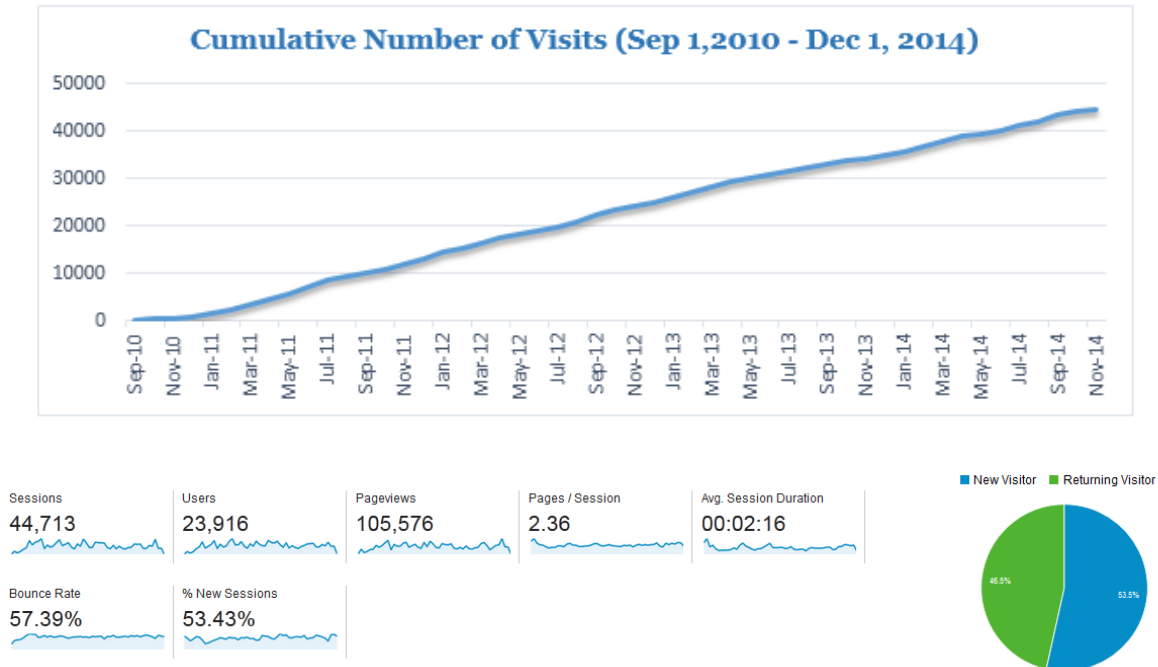

Figure 15 – Visits (sessions) to the website for the whole duration of the project

2.3 Documents Downloads

Other website statistics metrics that could be mentioned (except sessions, visitors and unique page views) include the number of downloads of the material (and especially documents) that have been produced by the project consortium. This is because most of the results of the project are being published online as PDF documents and not as simple HTML pages.

- The first year of the project: a total of **7,937** copies of documents were downloaded from the SysSec website, out of the 116 published documents.
- The second year of the project: a total of **18,324** copies of documents were downloaded from the SysSec website, out of a total of 200 published documents. This means that the number of downloads **increased by 130%** compared to the first project year or that each unique visitor downloaded approximately 3 documents.
- The third year of the project: a total of **42,708** copies of documents were downloaded from the SysSec website, out of a total of 265 published documents. This represents **more than twice (133%)** the number of

downloads we had in the second year of the project and three times the number of downloads we had in the first year.

- The fourth year of the project and the three months of the project extension: a total of **100,547** copies of documents were downloaded from the SysSec website, out of a total of 406 published documents. The number of downloads is **increased by 135%** compared to the third year.

In the next figure (Figure 16) we can see the above information in terms of Gbytes downloaded and served per year from our website for each one of the four year of the SysSec project. We can see a significant increase in Gbytes downloaded during the four years of the project and especially at the fourth year where we had more than twice the number of Gbytes downloaded totally in previous years. Moreover we should notice that we had about 10,5 Gbytes more in the fourth reporting period due to the downloads of the RedBook (see Chapter 3).
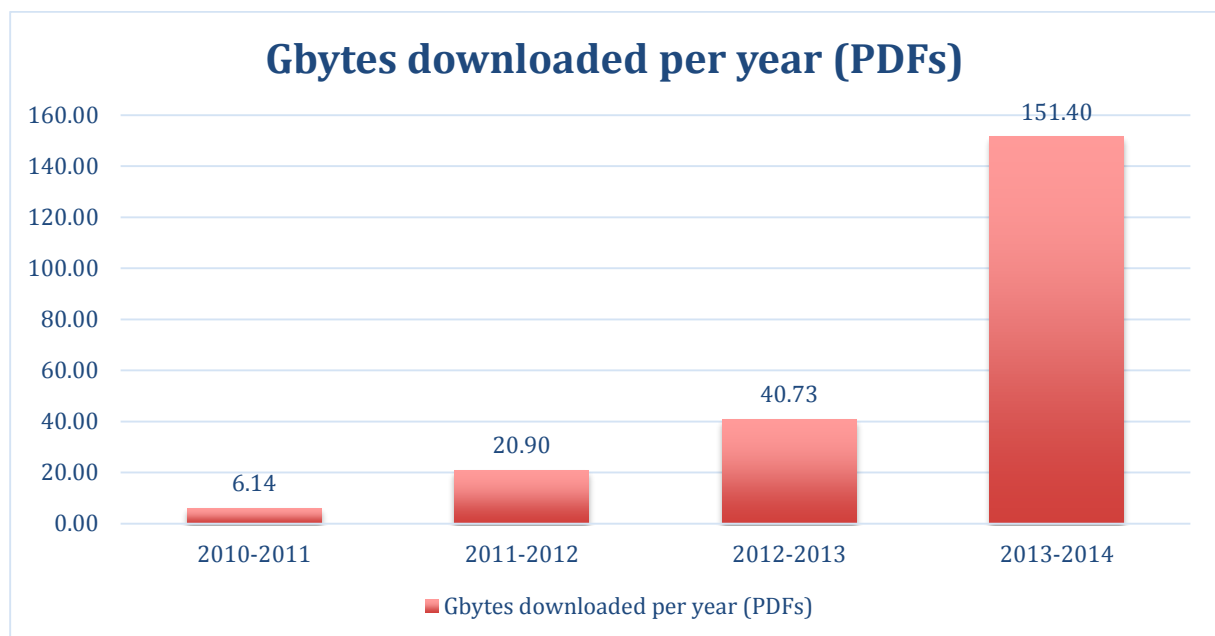
Gbytes downloaded per year (PDFs)

Figure 16 - Number of Gbytes download from the SysSec website per year

Subsequently, we present some graphs related to the category of the documents that were downloaded from the website. To gain some insight on the preferences of our website visitors we categorized the documents to the following categories:

- Publications: SysSec sponsored papers published by the consortium in peer reviewed conferences and journals.
- Presentations: Presentations made by the consortium in events related to the project.
- Deliverables: The deliverables produced by the project, as outlined in the Description of Work document.

- Other: Everything else. This includes material from hosted events (EuroSec, DIMVA 2012, etc.), clippings from SysSec related articles in magazines, and papers, presentations as well as organization information from events organized by SysSec. This includes the SysSec summer schools and workshops.

Figure 17 illustrates how many documents were downloaded from each category. We can see that the publications are dominant (123,683 downloads), which is indicative of the quality research conducted by the SysSec consortium. Downloads of deliverables are also going on strong, with 18,554 downloads.
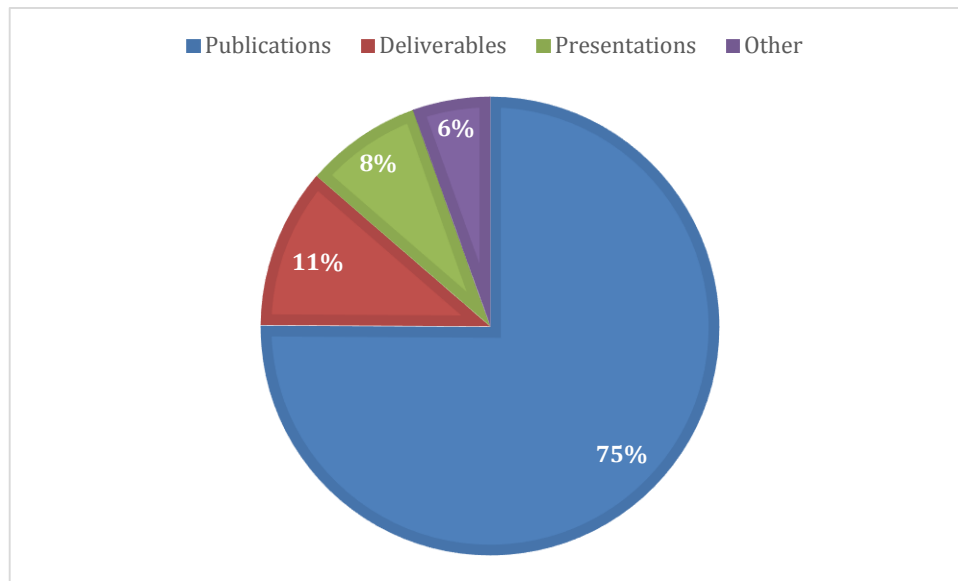

Figure 17 - Downloads per document category

In the following tables and figures (Figure 18, Figure 19 and Figure 20) we present the top-10 downloaded documents for each of the first three categories.

#	Publications
1	Dennis Andriesse, Christian Rossow, Brett Stone-Gross, Daniel Plohmann, Herbert Bos. Highly Resilient Peer-to-Peer Botnets Are Here: An Analysis of Gameover Zeus.
2	Davide Canali, Davide Balzarotti. Behind the Scenes of Online Attacks: an Analysis of Exploitation Behaviors on the Web.
3	Marco Balduzzi, Jonas Zaddach, Davide Balzarotti, Engin Kirda, Sergio Loureiro. A Security Analysis of Amazon's Elastic Compute Cloud Service.
4	Christian J. Dietrich, Christian Rossow, Felix C. Freiling, Herbert Bos,

|	
	Maarten van Steen, Norbert Pohlmann. On Botnets that use DNS for Command and Control
5	Iasonas Polakis, Georgios Kontaxis, Spiros Antonatos, Eleni Gessiou, Thanasis Petsas, Evangelos P. Markatos. Using Social Networks to Harvest Email Addresses.
6	Leyla Bilge, Engin Kirda, Christopher Kruegel, Marco Balduzzi. EXPOSURE: Finding Malicious Domains Using Passive DNS Analysis.
7	Manuel Egele, Christopher Kruegel, Engin Kirda, Giovanni Vigna. PiOS: Detecting Privacy Leaks in iOS Applications.
8	Theodoor Scholte, Davide Balzarotti, William Robertson, Engin Kirda. An Empirical Analysis of Input Validation Mechanisms in Web Applications and Languages.
9	Danesh Irani, Marco Balduzzi, Davide Balzarotti, Engin Kirda, Carlton Pu. Reverse Social Engineering Attacks in Online Social Networks.
10	Pierre Kleberger, Tomas Olovsson, Erland Jonsson. Security Aspects of the In-Vehicle Network in the Connected Car.
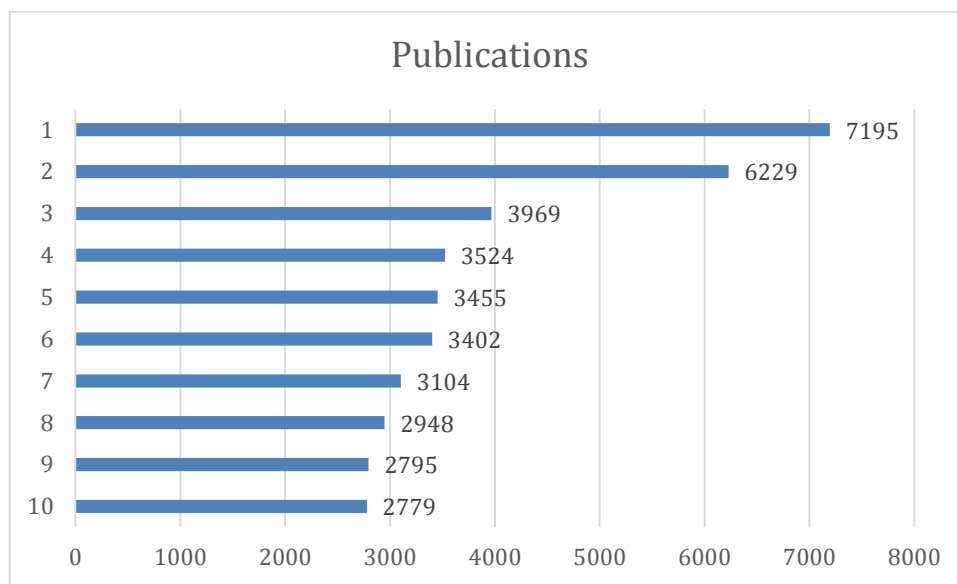
Figure 18 - Top-10 downloaded publications

#	Presentations
1	Federico Maggi. The Long Story of Short URLs.

| 2	Evangelos Markatos. Managing Threats and Vulnerabilities in the Future Internet.
3	Federico Maggi. Malicious Android Apps: Overview, Status and Dilemmas.
4	Pierre Kleberger, Tomas Olovsson, Erland Jonsson. Security aspects of the in-vehicle network in the connected car.
5	Zlatogor Minchev. Cybersecurity and cyberdefense - Smart defense elements in 21 century - Trends and Progress.
6	Zlatogor Minchev, Plamen Gatev. Social Networks Threats Psychophysiological Validation: A Facebook Study.
7	Gabriele Bonetti, Marco Viglione, Alessandro Frossi, Federico Maggi and Stefano Zanero. Comprehensive Black-box Methodology for Testing the Forensic Characteristics of Solid-state Drives.
8	Zlatogor Minchev. Social Networks.
9	Todor Tagarev, Zlatogor Minchev, Nataliya Ivanova. Academic Research on Cybersecurity.
10	Martina Lindorfer. Lines of Malicious Code: Insights Into the Malicious Software Industry.

Presentations

Rank	Downloads
1	519
2	328
3	303
4	263
5	249
6	241
7	241
8	239
9	235
10	234
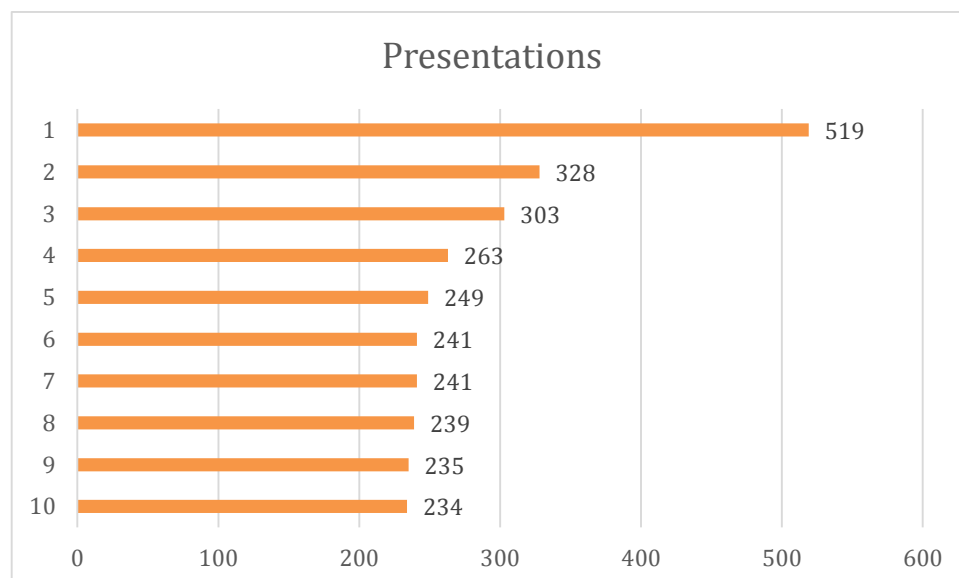
Figure 19 - Top-10 downloaded presentations

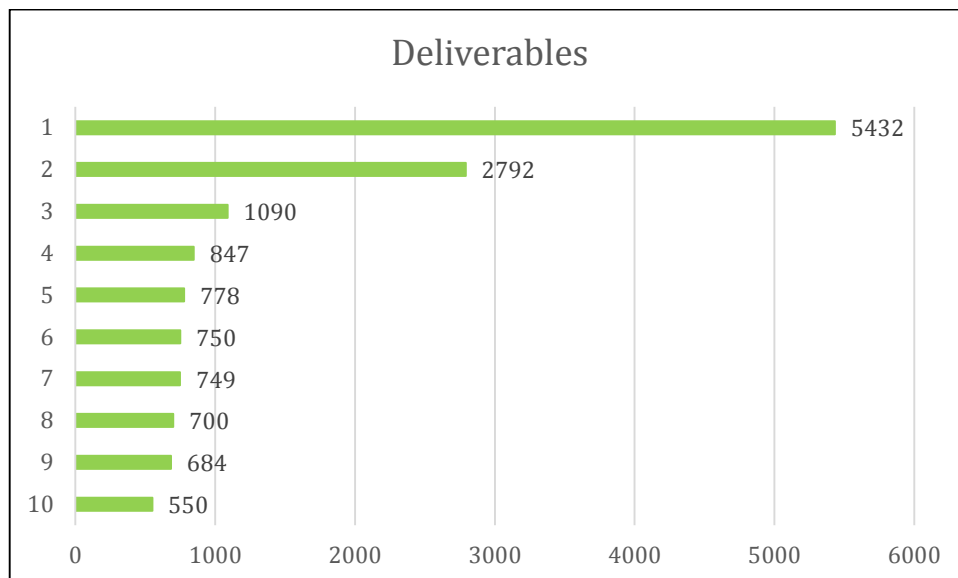| #	Deliverables
1	D2.3: First Public Workshop Proceedings
2	D7.1: Review of the State-of-the-Art in Cyberattacks
3	D5.2: Preliminary Report on Social Networks Security
4	D5.1: Survey of Research and Data Collection Initiatives in Malware and Fraud
5	D6.2: Intermediate Report on the Security of the Connected Car
6	D5.4: Intermediate Report on Internet Fraud
7	D4.1: First Report on Threats on the Future Internet and Research Roadmap
8	D5.3: Case Study: Malicious Activity in the Turkish Network
9	D4.2: Second Report on Threats on the Future Internet and Research Roadmap
10	D7.2: Intermediate Report on Cyberattacks on Ultra-portable Devices

Figure 20 - Top-10 downloaded deliverables

Finally, in Figure 21 we present statistics for our research papers based on the conference they were published. All those statistics provide a clear view of the high impact that the project research results had and how this impact was getting higher while the project was progressing. We can see that several papers published in top-tier security conferences such as USENIX Technical, USENIX security, NDSS and CCS.
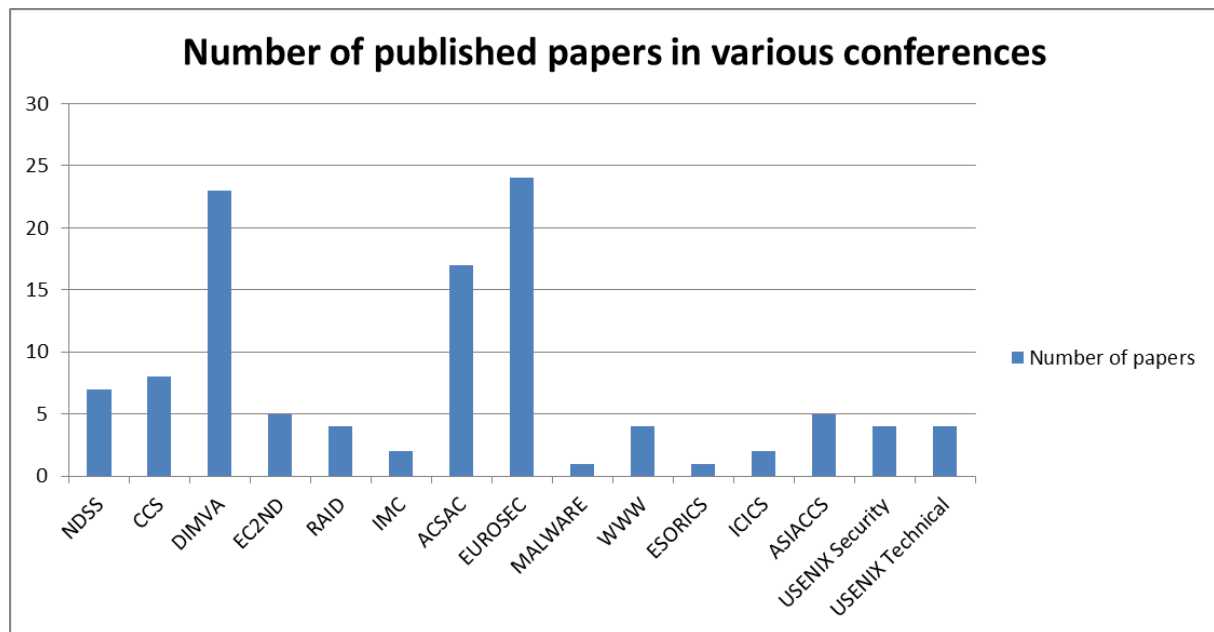
Figure 21 – Number of research papers by conference

3   RedBook Website

The SysSec Red Book is a Roadmap in the area of Systems Security, as prepared by the SysSec consortium and its constituency. For preparing this roadmap a Task Force of young researchers with proven track of record in the area was assembled and collaborated with the senior researchers of SysSec. Additionally, the SysSec Community has been consulted to provide input on the contents of the roadmap.

Figure 22 – The SysSec Red Book web site

A website specifically for the promotion of the Red Book was launched on September 1st, 2013 alongside with the release of the roadmap to the public. The main goal of the website is to host and deliver the digital version of the Red Book.

In Figure 23 we can see the number of downloads per month of the digital version of Red Book since its publication date in September 2013. The number of downloads are more or less the same for all months except the first month of the publication and May 2014. In this month we can see an increase in downloads due to the fact that the

SysSec IAB meeting was held in Brussels, where the Red Book was presented and handed to the advisory board. It is important to notice that for October 2014 and November 2014, one year after the publication of the RedBook, we had more downloads compared to the number of downloads we had the same period of the previous year.
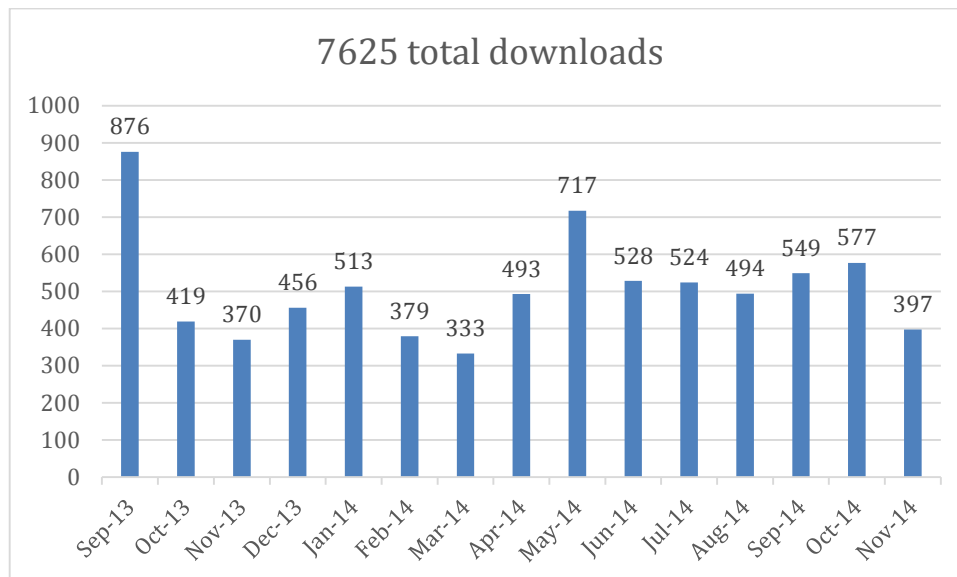

Figure 23 - Number of downloads per month for the RedBook digital version

In the following figure (Figure 24) we can see the total number of downloads of the digital version of RedBook per country. We are happy to observe a strong interest for RedBook by the United States where we had about 30% of our total downloads.
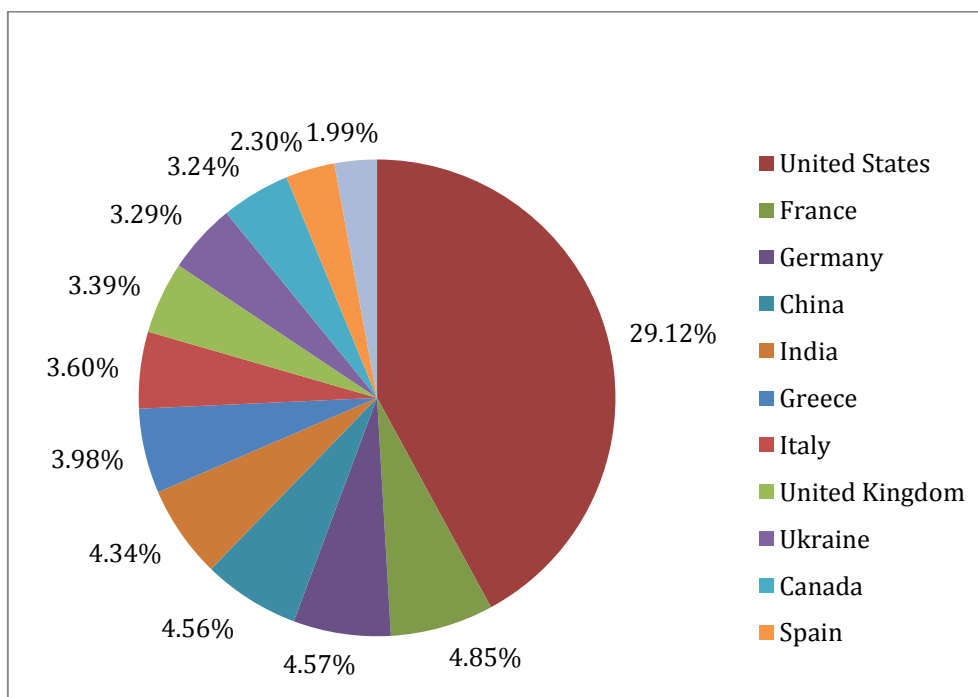

Figure 24 - RedBook number of downloads per country

4 Social Media

From the beginning of the project, the consortium embraced social media as an important tool for disseminating the results of the project and building a community around the project. We created both a Facebook page and a Twitter account linked to each other.

We present statistics to show how our social community grew up during the four years of the SysSec project. We should note that the increase in number of Twitter followers during the SysSec project was much bigger than the increase of "Likes". This probably indicates a preference among the SysSec community towards the Twitter platform. In the following table we can see absolute numbers for each year of the project of Facebook "Likes", Twitter followers and our announcements (Tweets) to the social media channels.

Year	Facebook "Likes"	Twitter Followers	Tweets
1	140	116	38
2	13	88	77
3	38	104	60
4 + project extension	78	158	94
Total followers	**269**	**458**	**269**

In Figure 25 we see the number of announcements (Tweets) per month performed by the SysSec consortium throughout the duration of the project. We had an average of 1.4 tweets per day and 5 tweets per month.
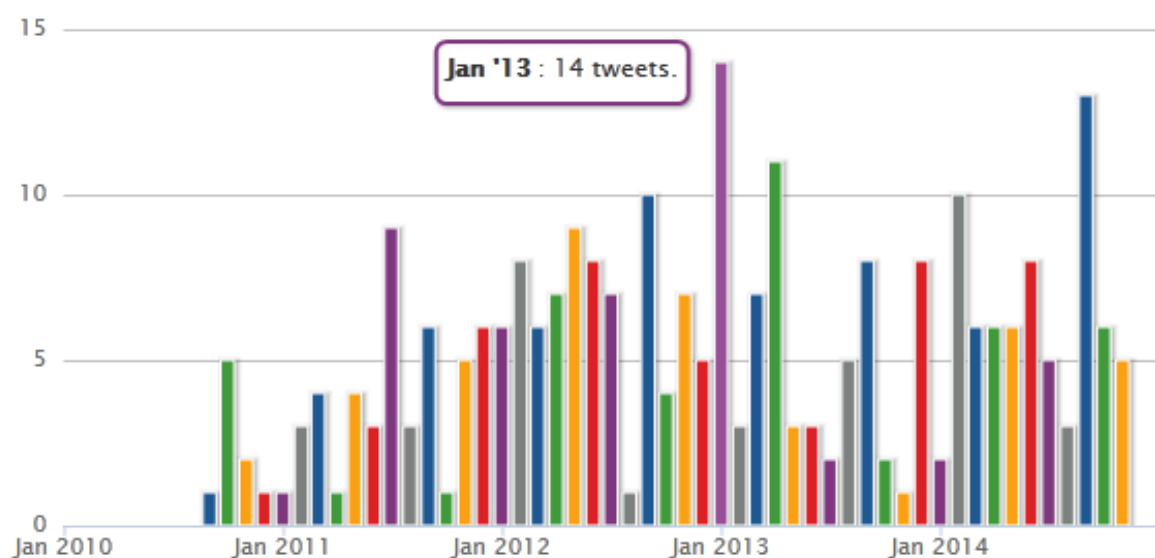

Figure 25 - SysSec Tweets per month

5 Summary

In this deliverable we reviewed and presented statistics related to users accessing the web presence of SysSec. This includes the web site of the project, the announcements published in social networks, such as Facebook and Twitter, as well as material published on-line for the dissemination of Red Book. The results cover the overall duration of the project, which is 4 years and 3 months. It is evident, that the web presence of SysSec project established a public bridge between the activities of the project and the public.

As you can see, our webpages and the hosted documents had a significant number of web accesses indicating the strength of the Systems Security community in Europe, while many users expressed their interest for SysSec through our social media channels.