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Comprehensive Modelling for Advanced Systems of Systems

C O M P A S S

## **Dissemination Report 1**

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## Abstract

This report summarises the dissemination activities carried out in Year 1 of COMPASS. The activities have included development of the COMPASS website, newsletter, white papers and technical publications, and recruitment of members of the COMPASS Interest Group.

We observe that dissemination has been successful, particularly in the areas of publication and website development, but that opportunities to increase CIG membership and interaction will need to be a focus for dissemination in Year 2.

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## 1 Introduction

This report provides a summary of the dissemination activities which have taken place during Year 1 of COMPASS. The activities have included the development of the COMPASS web site, a newsletter, publications and COMPASS Interest Group membership. Plans for further activities such as webinars are also discussed.

## 2 Dissemination activities in Year 1

The planned dissemination activities for COMPASS are divided under the following headings:

- Website
- White papers
- Publications
- Software downloads
- Newsletters
- COMPASS Interest Group (CIG)
- Project fiche

These correspond to the dissemination routes identified in the Description of Work for COMPASS [COM11]. The following sections discuss progress under each of these headings for the first year of the project.

### 2.1 Website status

The COMPASS website ([www.compass-research.eu](http://www.compass-research.eu)) was up and running before the official start of the project. This has enabled the project to have a web presence that is advertised widely in the project fiche, LinkedIn groups such as Dependable Systems of Systems and INCOSE, and in the newsletter.

The website provides a project overview and details, recent news, publications and a link to the project wiki. In the past year nine news items have

Month	Visits	Unique Visitors	Pages/Visit	% New Visits
Dec	79	57	2.62	72
Jan	207	119	1.99	51
Feb	247	145	2.09	49
Mar	256	148	2.04	48
Apr	141	84	2.42	47
May	195	120	2.05	50
Jun	224	110	2.38	35
Jul	181	118	2.40	54
Aug	185	119	2.01	53

Table 1: COMPASS monthly website usage statistics for COMPASS Year 1

been added, referring to new CIG members, conference updates and newsletter publication. All public deliverables issued to date have been added to the website.

Access to the website is tracked using Google Analytics<sup>1</sup>. Table 1 provides a monthly summary of website access.

The statistics for unique visitors can be seen to peak around February/March, settling at 110-120 over the summer months. The percentage of new visits has held at around 50% for most of the year. Increases to 54% in July, and 53% in August, coincide with conference attendance at INCOSE, SoSE and FM. COMPASS was well represented at these conferences with paper sessions, panel sessions and workshops (see Section 2.3).

Table 2 shows the top 10 website visitors by country during the first year of COMPASS. The countries of the project partners account for the top 5 hits. The summary for individual cities (Table 3) shows some additional cities, such as Loughborough, which are connected to the project through related EU projects such as T-AREA-SOS.

The following observations can be made about the website statistics:

- While project partners still account for the majority of the website visitors, traffic from elsewhere (including United States, Spain, France, Belgium) is also present.
- The bounce rate<sup>2</sup>, pages per visit and average duration indicate that visitors are not spending very long on the site. The site is still quite

<sup>1</sup>[www.google.com/analytics](http://www.google.com/analytics)

<sup>2</sup>The percentage of visitors who see only one page during a visit to the site

Country/Territory	Visits	Pages / Visit	Avg. Duration	% New Visits	Bounce Rate
United Kingdom	665	2.31	00:01:34	41.95%	60.45%
Denmark	369	1.75	00:01:06	32.25%	75.61%
Italy	97	2.34	00:01:44	52.58%	58.76%
Brazil	83	2.37	00:01:42	56.63%	60.24%
Germany	60	2.73	00:01:20	65.00%	51.67%
United States	59	1.37	00:00:30	88.14%	79.66%
Spain	54	1.35	00:00:46	33.33%	83.33%
France	46	2.74	00:02:27	67.39%	47.83%
Portugal	28	2.93	00:03:03	35.71%	42.86%
Belgium	27	3.07	00:03:08	55.56%	37.04%
	1,715	2.18	00:01:32	49.33%	63.73%

Table 2: Website visitors by country

sparse, however, with deliverables, news items and newsletters being the only items that are being modified regularly, short visits are to be expected.

## 2.2 White papers

White papers present short entry-level technical reports on topics both within the project and relating to current topics in systems engineering. Released white papers will be publicly available on the COMPASS website.

It is intended that regular issue of white papers will follow the schedule of those project deliverables which relate to a topic suitable for an entry-level description. In the first year, two white papers have been drafted, on Modelling Systems of Systems architectures (following D22.1 Initial report on SoS Architectural Models) and Specifying Requirements for Systems of Systems (following D21.1, Guidelines for SoS Requirements). These white papers will be finalised and released early in Year 2.

## 2.3 Conferences and Publications

Conferences and workshops at which COMPASS material has been presented or accepted for presentation include the following. These are listed on the COMPASS website<sup>3</sup>, with links to pdf copies where available.

<sup>3</sup>[www.compass-research.eu/publications.html](http://www.compass-research.eu/publications.html)



Country/ Territory	City	Visits	Pages / Visit	Avg. Duration	% New Visits	Bounce Rate
Denmark	Arhus	266	1.61	00:01:07	24.44%	78.95%
UK	Newcastle upon Tyne	223	2.06	00:00:57	24.66%	70.40%
UK	York	124	1.99	00:01:36	39.52%	66.13%
Brazil	Recife	62	2.58	00:02:11	54.84%	54.84%
UK	Loughborough	48	3.33	00:03:17	41.67%	33.33%
UK	London	45	1.87	00:01:15	53.33%	62.22%
UK	Edinburgh	38	1.95	00:02:01	34.21%	57.89%
Italy	Trieste	37	1.7	00:01:12	32.43%	70.27%
Spain	Valladolid	36	1.06	00:00:43	13.89%	94.44%
Denmark	Copenhagen	29	2.45	00:01:48	65.52%	62.07%
		1,715	2.18	00:01:32	49.33%	63.72%

Table 3: Website visitors by city

- Workshop on Dependable SoS, York, September 2011  
A talk presented by John Fitzgerald (Newcastle) on *The (Future) Role of Formal Methods in SoS Engineering*.
- Spring/Summer Young Researchers Colloquium on Software Engineering (SYRCoSE 2012), Russia, May 2012  
An invited talk, presented by Peter Gorm Larsen (Aarhus), on *Getting Software Engineering out of Isolation* [LCF12].
- Safety Critical Systems Club (SCSC) SoS Safety Meeting, London, June 2012  
Alexander Romanovsky (Newcastle) contributed in a panel discussion on Safety in Systems of Systems.
- INCOSE International Symposium, Rome, July 2012  
John Fitzgerald (Newcastle) presented a position paper *Modelling and Analysis Technology for Systems of Systems Engineering: Research Challenges* [FLW12].
- IEEE International Conference on Systems of Systems Engineering (SoSE), Genoa, July 2012  
Six papers were presented in a special paper session:
  - *Features of CML: a Formal Modelling Language for Systems of*

*Systems* [WCF<sup>+</sup>12]

- *COMPASS Tool Vision for a System of Systems Collaborative Development Environment* [CML<sup>+</sup>12]
- *Extending VDM-RT to Enable the Formal Modelling of System of Systems* [NL12]
- *Model-based Requirements Engineering for System of Systems* [Hol12]
- *Interface Specification for System-of-Systems Architectures* [PBFR12]
- *Technical Challenges of SoS Requirements Engineering* [HHH<sup>+</sup>12]

In addition, a session on the state of the art in SoS EU projects including a COMPASS presentation from John Fitzgerald (Newcastle).

- IEEE International Conference on Engineering of Complex Computer Systems (ICECCS 2012), Paris, July 2012

An invited talk presented by Jim Woodcock (York) on *Formal Modelling and Analysis of Systems of Systems in CML*.

- International Symposium on Unifying Theories of Programming (UTP 2012), Paris, August 2012

An invited talk presented by Jim Woodcock (York) on *Unifying theories of undefinedness in UTP*.

- 10th Overture Workshop, Paris, August 2012

The 10th Overture Workshop, co-chaired by Steve Riddle (Newcastle), Claus Ballegård Nielsen (Aarhus) and Nico Plat, took place at FM 2012. The workshop included two papers disseminating COMPASS work [CMNL12, LL12].

- 15th Brazilian Symposium on Formal Methods, Natal, Brazil, September 2012

Paper presented by André Didier (UFPE) on *Identifying hardware failures systematically* [DM12].

- IFIP Working Conference on Virtual Enterprises (PRO-VE '12), Bournemouth, October 2012

Paper (to appear) by John Fitzgerald, Jeremy Bryans, Richard Payne and Steve Riddle (Newcastle) on *A Formal Model-Based Approach to*

*Engineering Systems-of-Systems.*

- IFIP International Conference on Testing Software and Systems (ICTSS'12), Aalborg, November 2012

Paper (to appear) by Jörg Brauer, Jan Peleska and Uwe Schulze (Bremen) on *Efficient and Trustworthy Tool Qualification for Model-Based Testing Tools.*

As noted above, the SoSE Conference was very successful for COMPASS, with 6 papers spread over two special sessions, in addition to an invited presentation. One paper [WCF<sup>+</sup>12] also gained a Best Paper Award from the conference.

Several other publications, including journal papers, are in preparation or recently submitted. Journal publication targets include:

- *A model-based approach for requirements engineering for system of systems*, lead by Jon Holt (Atego), to be submitted to IEEE Systems Journal.
- *Model-based Engineering of Systems of Systems*, lead by Claus Ballegård Nielsen (Aarhus), to be submitted to ACM Computing Surveys.
- *Systematic Development of Constructive Component-based Systems: a Quantitative Analysis*, lead by Marcel Oliveira (UFPE), to be submitted to Information Processing Letters.
- *Equivalence Class Partitions for Exhaustive Model-Based Testing*, lead by Jan Peleska (Bremen), to be submitted to Formal Aspects of Computing.
- *Equivalence Class Testing for Certifiable Systems*, lead by Jan Peleska (Bremen), to be submitted to Software Testing, Verification and Reliability.

Conference targets include:

- *CTGEN - a Unit Test Generator for C*, lead by Jan Peleska (Bremen), submitted to Systems Software Verification Conference (SSV 2012).
- *Model Based Testing from Natural Language Requirements*, lead by Gustavo Carvalho (UFPE), submitted to IEEE International Conference on Software Testing, Verification and Validation (ICST 2013).
- *Model-based development of fault tolerant systems of systems*, lead by André Didier (UFPE), and *Semi-Formal and Formal Interface Spec-*

*ification for System of Systems Architecture*, lead by Richard Payne (Newcastle), both to be submitted to the IEEE Systems Conference (SysCon 2013).

- *Fault Modelling for Systems of Systems*, lead by John Fitzgerald (Newcastle), submitted to the International Symposium on Autonomous Decentralized Systems (ISADS 2013).

In addition, conferences such as IEEE International Conference on Systems of Systems Engineering (SoSE) will again be targeted after the successful publications in 2013.

Coordination of publications takes place via the internal project wiki, which is used to summarise current planned papers and to solicit writing partners.

## 2.4 Software downloads

The COMPASS Annual Exploitation plan (D52.2,[LHL12]) summarises current tool activities. Software is coordinated using a Source Forge tool repository<sup>4</sup>, which is currently actively used by project members. As the project continues and tool releases are delivered, the number of tool downloads will be tracked. The first release of the COMPASS tool is scheduled for month 12 (D31.1,[COM12]).

## 2.5 Newsletters

The first COMPASS newsletter was issued in June 2012. This newsletter introduced the project and the COMPASS Interest Group, gave a more detailed introduction to one of the partners (B&O), and provided a forward look to upcoming conferences. The newsletter was distributed to CIG members, sent to project partners for distribution, made available on the web site<sup>5</sup> and distributed at the IEEE SoSE (Systems of Systems Engineering) conference.

The next newsletter, due in October, will introduce another project partner, review project progress and sum up dissemination events that have taken place to date.

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<sup>4</sup>[sourceforge.net/projects/compassresearch/](http://sourceforge.net/projects/compassresearch/)

<sup>5</sup>[www.compass-research.eu/newsletters.html](http://www.compass-research.eu/newsletters.html)

Company Name	Location
Roke Manor Research	UK
Nokia	Finland
GridManager	Denmark
West Consulting BV	The Netherlands
Rockwell Collins	UK
UNU-IST Center for Electronic Governance	Macao, China
Altran Praxis	UK
3SL	UK
TERMA	Denmark
University of South Australia	Australia
Jaguar Land Rover	UK
National Institute of Informatics	Japan

Table 4: CIG Membership at end of September 2012

## 2.6 COMPASS Interest Group (CIG)

A current list of CIG members is shown in Table 4. More detail on the CIG is given in the COMPASS Annual Exploitation plan (D52.2,[LHL12]).

Twelve members are listed publicly, with two more UK companies who have opted to not be listed. CIG membership is predominantly from the UK (5 members), with Denmark (2 members), the Netherlands, Finland, Brazil, Japan, Australia and Macao providing other members. Market sectors represented by the CIG are include Aerospace and Defence, Space, Medical, Government, Security, Telecomms, Energy and Education.

The main activity of the CIG to date has been to provide challenge problems, which will be used to develop and evaluate the COMPASS technologies. Five challenge problems have been proposed to date, as discussed in the Challenge Problem Review report (D43.1). Further problems will be sought from new members as they join the CIG.

A CIG webinar is planned to take place at the start of Year 2, to encourage further challenge problems and review some of the issues raised by CIG members when completing the CIG application form.

## 2.7 Concertation activity

Concertation includes collaboration with other identified FP7 projects in the SoS area, as directed by the Commission. The relevant projects are DANSE (Integrated Project), ROAD2SOS and T-AREA-SOS (Support Actions). COMPASS has approached the DANSE IP to plan a joint event, but the DANSE IP have not so far come back to us. COMPASS has participated in a Commission SoS Experts meeting to discuss priorities for future research in SoS.

## 2.8 Project fiche

The project fiche was first reported on in Deliverable D51.1 (Website, Project Fiche & Set up of Online Community). The content has not been changed since this version. A review of the fiche content will take place regularly in Years 2 and 3.

## 3 Plans for Year 2

The review of dissemination activities in Year 1 demonstrates a number of successes, and some areas for improvement.

Notable successes include the following:

- Presence at key relevant conferences, notably 6 papers in a special session at SoSE in addition to a contribution to panel discussion.
- Good quality CIG challenge problems to begin work on.
- Regular updates to project website, with reasonable amount of traffic attracted to it.

Areas for improvement, which will be addressed in Year 2, include:

- Increasing the number and range of CIG members.
- Providing more value for CIG members, through webinars and feedback on challenge problems.
- Increase website content, to provide more reason to make regular and extended visits. This includes publishing more white papers and newsletters, and ensuring publications and deliverables are kept up to date.

These areas of improvement aside, the first year of the project has seen active dissemination and laid solid groundwork for further opportunities in the remaining years of the project.

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