







Distributed REal-time Architecture for Mixed criticality Systems

Intermediate Community Building Report D 9.1.2

Project Acronym	DREAMS	Grant A Numbe	greement r	FP7-ICT-2013.3.4-610640				
Document Version	1.0	Date	2015-09-30	Deliverable No.	9.1.2			
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1 Introduction

This document is the deliverable D9.1.2 of the DREAMS project. It is the second deliverable of task *T9.1 –Community Building* of work package *WP9 - Community building and standardization*. This deliverable *D9.1.2 – Intermediate Community Building Report* presents the activities that have taken place between M18 – M24, with respect to community building, i.e. the design, implementation and launch of a common community building platform, as well as planned events and meetings with the goal of strengthening the collaboration of the Mixed-Criticality forum partners - CONTREX, PROXIMA and DREAMS.

1.1 Position of the Deliverable in the Project

As mentioned in the previous deliverable of this series (D9.1.1), the goal of work package WP9 is to steer and increase European research and technology awareness in the area of distributed mixed-criticality and embedded computing systems. Work package WP9 comprises of three tasks: T9.1, T9.2 and T9.3. Task T9.1 - Community building aims at building a sustainable community focusing on the results of the DREAMS project and other projects on mixed-criticality systems. Task T9.2 - Standardization support aims to provide support towards all standardization efforts emerging from all activities and results of the DREAMS project. Task T9.3 - Innovation roadmap aims to help align the academic and industrial research by developing a research and innovation roadmap on the topic of mixed criticality to achieve critical mass and facilitate breakthrough innovations in the medium and long- term.

D9.1.2 relates to task T9.1, which sums the following deliverables:

- Deliverable D9.1.1 Community Repository: This deliverable provides an overview of the activities related to the start of the community building activities, i.e. the setup of the respective infrastructure for providing services to the community.
- Deliverable D9.1.2 Intermediate Community Building Report: This deliverable focuses on the intermediate report on building up a sustainable community for mixed-criticality systems and particularly the "Mixed-Criticality Cluster" (representing the DREAMS, PROXIMA and CONTREX projects).
- Deliverable D9.1.3 Final Community Building Report: This deliverable is the final report on the results of the DREAMS project with respect to community building both within the Community Repository and within already existing communities (e.g. HIPEAC).

D9.1.1 has been already delivered on M18, and this deliverable (D9.1.2), continues to list and describe further Community building activities. The confidentiality level of this deliverable is public (PU) and it will be published on the DREAMS website, once approved by European Commission.

1.2 Contents of the Deliverable

In chapter 2, we provide the continuous goals and objectives of Community Building, while updates in regards to the Community building platform are described in chapter 3. Chapter 4 deals with the introduction of Continuous Integration as a feature for project partners, and chapter 5 lists previous events and venues. Finally in chapter 5 the conclusions and next steps are presented.

2 Goals of Community Building

As described in D9.1.1 – Community Repository, the overall goals for the Community Building activities in DREAMS are:

- Cross-fertilization of the European industry and strong cooperation between European universities, R&D centers, large enterprises and SMEs. Eased access to leading edge technology, contacts to complementary SMEs, support on the take-up and use of technology and tools as well as support and participation in standardization activities. This is facilitated by *harmonization of mixed-criticality efforts* allowing for long-term reduction of development efforts and increased innovation uptake, by building on the expertise in the European mixed-criticality community and promoting knowledge exchange.
- **Streamlining of research efforts** is achieved by *identifying industrial needs and research challenges in the innovation and research roadmap* that is shared among European stakeholders through the mixed-criticality community building activities.
- **Standardization and coordinated future development** is made possible by a thriving mixedcriticality community that can promote standard practices, i.e. de facto industry standards. Standardization reduces fragmentation and supports further collaboration in European industry, reducing costs and entry-barriers of proprietary solutions.
- **Reinforced competitiveness of European technology** suppliers across the computing spectrum by supporting R&D efforts and support the rapid take-up of project results beyond the project consortium, providing a single 'hub' for European R&D on mixed-criticality systems. This comes directly at the advantages particularly of small and medium enterprises that profit from the network and community ranging from component developers to application developers and system integrators.

The second set of activities under the Community Building flag deal with updating and enhancing the current infrastructure set by D9.1.1, which aims to "*Support the mixed-criticality community by facilitating active exchange of ideas as well as technological building blocks*". In a similar fashion with the goals, the main objectives of Community Building are:

- **Support the Innovation Roadmap:** By developing a roadmap for research and innovation on mixed critically to establish the state-of-the-art in the area and identify research challenges by harnessing the collaborative efforts of the partners.
- **Provide News on Mixed-Criticality Activities:** Through the MCS forum more details are provided with the news section and member activities are highlighted.
- **Mixed-Criticality Projects Visibility:** The MCS community infrastructure provides additional information about the projects in the Mixed-Criticality Cluster and the on-going research activities and status.
- **Catalogue of Project results:** As mentioned in chapter 3, with the updates of the MCS forum website, specific details can be found for the projects' building blocks and results. In particular the focus is on Meta-models for application and platform modeling, Virtualization components, Simulation environment, Tool support, and Documentation and training material.
- **Code repositories and continuous integration:** On top of the MSC forum website another layer of infrastructure is offered, with the aim of sharing information and software, as well as providing features for versioning control and automated testing. The details for the code repository infrastructure and CI features are mentioned in chapter 3 and 4.

3 Community Building Platform

In this chapter we list the ongoing effort and updates on creating a relevant and feature-full Community Building Platform, including the Mixed-Criticality Forum website as well as the Code repositories.

3.1 Mixed-Criticality Forum

One core mechanism for achieving the goals mentioned in chapter 2 is provided by the Mixed Criticality Forum (MCF). The MCF connects DREAMS with other projects in the area of mixed-criticality systems in order to provide a common place for these projects to share news, events, results and general information about mixed-criticality systems. The MCF objectives and its development have been described extensively in the deliverable D9.1.1 – Community Repository. **The MCF was officially launched in September 2014**.



Figure 1: Mixed-Criticality Forum Homepage

After the major development efforts done, the focus of the phase of the MCF was to fill the platform with results from the various projects. Since its start, over 75 organizations from the community have registered themselves currently representing 6 European projects, and with good hope that the platform will be filled with more projects and results in the area of mixed-criticality.

Furthermore, the MCF provides information about mixed-criticality events such as e.g. HIPEAC, workshops and conferences in the area of MCS etc.



Figure 2: Mixed-Criticality Forum News & Events



Figure 3: Mixed-Criticality Forum Twitter Feed

A twitter-feed is embedded in order to further provide news and easy-to-access content, furthermore, a LinkedIn group helps connect DREAMS and MCF stakeholders Figure 3.



Figure 4: Project highlighting

Furthermore, based on the input from partners we have started to showcase specific projects to highlight the results that come from the project directly on the MCF home, as depicted in Figure 4.

The project catalogue has been filled with several items from the various projects are connected, and will continue to be marketed and filled by these and other new projects (see Figure 5).



Figure 5: Project results from the catalogue

3.2 Code repository updates

Part of the community building infrastructure activity is also dedicated to creating a full featured version control and project management system for all users of the Mixed-Criticality Forum. In the last deliverable, D9.1.1, this infrastructure was documented and described, explaining the overall goals and rationale for selecting GitLab as the proposed solution.

During M18 through M24, the Gitlab repository infrastructure has been used by many partners for various content, including deliverables, firmware and kernel source code, as well as user-space application code. Additionally, GitLab has been updated from version 7.3 to 7.13.5, introducing new features and functionalities, and directly integrated with automated project building, as described in the next chapter. Over the next paragraphs some of the new features and changes will be documented to reflect the ongoing growth of the repository infrastructure.

In the following list the most important updates and new features are mentioned since GitLab 7.3:

- New and improved UI with faster response time and mobile device support
- Comments on side-by-side diffs, to quickly give inline feedback in submitted patches
- Custom git hooks which enable pre/post-receive and update actions on git events
- General API, security and performance improvements
- Full Gitlab Integration with Gitlab CI, an open source continuous integration solution

Forgot your password?

- Integration with GitHub to directly fork existing projects
- Two-factor authentication option for more secure login process



Sign in

Password

Remember me

Username or Email

Mixed-Criticality Forum

Welcome to the Mixed-Criticality Forum project repositories

Manage git repositories with fine grained access controls that keep your code secure. Perform code reviews and enhance collaboration with merge requests. Each project can also have an issue tracker, a wiki and additional continuous integration features.

Explore Documentation About GitLab

Figure 6: New repositories login page

M	Inbox - xaviergr@gmail.co	× ⊌ Dash	board GitLab	×	🤞 GitLab 7.8 r	released with	Git ×	🕞 GitLab CI	×	+								X
(*)	https://git.mixedcriticalit	tyforum.org					⊽ C	Q. Search		☆	Ê		÷	Â	ABP -	ŵ	ø	=
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\checkmark	GitLab	Da	ashboard					Q Search			0	0	ß	1º	+	\$	•	-
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Figure 7: New dashboard view

4 Continuous Integration

Continuing to support and expand the current community building infrastructure, the project's git repositories have been further enhanced by integrating them with continuous integration features that allow users to easily create automated actions upon git push events. Continuous integration as a software engineering practice is quintessential for a modern workflow development process, providing ways to immediately test a project's source code by building, testing and deploying on each change of the code base.

The CI infrastructure for MCF can be visited at: http://ci.mixedcriticalityforum.org/

4.1 Gitlab CI

For the Mixed-Criticality Forum infrastructure, since the source code repositories are already implemented with GitLab, the selected solution is GitLab CI, which offers direct integration with it. GitLab CI is a scalable, user-friendly continuous integration web application based on GitLab and it is a free and open source project, providing a unified sign-on interface for pre-existing GitLab users.

GitLab CI is comprised of two parts, the server for the Web UI and database and a number of runner processes responsible for running the test, which could be either be located in a real server or even distributed devices, such as desktop workstations and laptops. In order to execute automated build/deploy tests; the requirement is a GitLab CI instance and at least one GitLab runner.

The workflow of GitLab CI is straightforward and easy to use. First, the Owner of a GitLab repository authorizes Gitlab CI access to the repository, then creates any number of trusted runner processes on a machine of his selection. The actual build will trigger when a push commit event happens on the git repository, which at this point GitLab CI will parse a .gitlab-ci.yml file with the build instructions and pass them to the runners appointed by the user. As soon as the automated build process starts, the status of the build process can be checked in the GitLab CI user interface.



Figure 8: GitLab CI and runners relation

4.2 User interface

GitLab CI offers a minimal but easy to use user interface, where users can add their GitLab projects and check their build status. Sign-in happens through GitLab user credentials without the need to create extra user accounts for GitLab CI.

GitLab Cl Help			Login with GitLab
Public projects			
Login with GitLab to see your private projects			
Name	Last commit	Access	Commits
Łukasz Nowicki / fdroiddata	success (aaa0bc12) about 2 hours ago	@ Public	8
Nobaddy Knouws / fdroiddata	failed (fbac04e3) about 3 hours ago	O Public	2
GitLab.org / GitLab Community Edition	success (5fcfba27) about 3 hours ago	O Public	3029
Aurélien Bompard / Mailman	success (d037d16e) about 3 hours ago	O Public	6
gnutls / Gnutls	skipped (ea87b7c9) about 4 hours ago	O Public	459
Hans-Christoph Steiner / fdroidclient	success (452666bb) about 5 hours ago	O Public	19
mayan-edms / mayan-edms	skipped (7687618e) about 5 hours ago	O Public	27

Figure 9: GitLab CI public section

Once logged-in the user can inspect his private repositories and the status of each build per commit. Additionally from the project view sidebar, various statistics can be viewed with charts, runner settings to add or remove build clients, and general settings for the project build system.

GitLab CI Admin Hel	p				Alexander Spyridak	is 🕩 Logout
dreams-integration / I	inux-upst	tream 😦 Pub	lic			View on GitLab
E Commits 8	All com	mits ma	ster			
III Charts	Status	Commit	Message	Branch	Total duration	Finished at
Runners	success	a884ae04	Gitlab-CI: Add automated build script for ARMv7	master	4 minutes 58 seconds	1 day ago
Variables	success	b7c55609	sctp: donot reset the overall_error_count in SH	master	4 minutes 25 seconds	14 days ago
% Web Hooks	success	a7d60cc0	Linux 4.2-rc8	master	4 minutes 28 seconds	18 days ago
Services	success	c7244a67	x86/xen: make CONFIG_XEN depend on CONFIG_X86_L	master	4 minutes 14 seconds	21 days ago
📕 Events	success	4d189de3	Gitlab-CI: Add automated build script for ARMv7	master	3 minutes 55 seconds	23 days ago
	success	bdf815d8	Gitlab-CI: Add ARMv8 build commands Signed-off	master	3 minutes 55 seconds	23 days ago
📽 Settings	success	4db1070a	Merge branch 'master' of git://git.kernel.org/p	master	1 minute 47 seconds	23 days ago
	success	4ce3c3f7	Add .gitlab-ci.yml file for automated builds S	master	1 minute 47 seconds	24 days ago

Figure 10: GitLab CI project view

Upon a push event on the git repository, the GitLab UI gets updated immediately where a user can check how the build process develops. The complete log is updated in real-time even while building is underway and be inspected for any failure reasons or other details.

GitLab Cl Admin Help		Alexander Spyridakis 🖙 Logout
dreams-integration / linux-upstream @ a884ae04 ← Back to project commit		
Build for commit a884ae04 from master success	O 4 minutes 59 seconds 12:42 Sep 10	Build Retry Duration: 4 minutes 59 seconds Counted 4 days are
gitlab-ci-multi-runner 0.5.2 (adb8153) Using Shell executor Running on vosys-s1		Finished: 1 day ago Runner: #1
Fetching changes Removing .config Removing .config.old Removing .missing-syscalls.d Peroving .tan Surtam gan		Commit a884ae04 Compare: b7c55609a884ae04
Removing .tmp_kallsyms1.o Removing .tmp_kallsyms1.o Removing .tmp_versions/ Removing .tmp_vmlinux1 Removing .tmp_vmlinux2 Removing .version		Branch: master Author: Alexander Spyridakis Message: Gitlab-CI: Add automated build script for ARIW/7 and ARIM/8 targets Signed-off-by: Alexander Spyridakis ca entrichic/fib/ticapacuttares comp
Removing .vmlinux.cmd Removing Module.symvers Removing System map Removing arch/arm/boot/.lmage.cmd Removing arch/arm/boot/.2lmage.cmd Removing arch/arm/boot/.lmage		~a.əpymdnis@mtuaiupensystems.com>

Figure 11: Project build log in GitLab CI

5 Events

Several community events have been organized at different locations, with a strong interaction from the community. The following events were organized in this context:

- Brussels, 29-30 October 2013
- Vienna, 20-22 February 2014
- Brussels, 2 July 2014
- Amsterdam, 19-20 January 2015

The further activities focused on the presentation of the intermediate project results in the catalogue of the mixed-criticality forum and its promotion among partners and beyond the DREAMS project (e.g. on the HIPEAC and other project/community websites), which is an ongoing activity.

5.1 Brussels, 2013 event

22 participants attended the first Mixed-Criticality Workshop in Brussels that was organized by the DREAMS project. It focused on the following main points:

- Session 1: Mixed-Criticality Systems and Certification Technical and Economic Perspectives
- Session 2: Embedded Multi-Core Platforms taking stock of achievements and economic perspectives
- Session 3: Exploitation, Innovation and Commercial Impact Towards Platform Building and Industrial Exploitation, Panel Discussion on Innovation and Commercial Impact
- Conclusions of Day 2/Future of the area: MCS & Multicore.

The conclusions of the workshop focused on the three key messages that were taken from the sessions as they were presented by many projects and industrial and academic stakeholders in the field of MCS, related to:

- 1 Technological Challenges
- 2 Innovation
- 3 Community Building

A separate report of the Brussels 2013 Event has been provided directly to the EU under the title:

"Cyber-Physical Systems: Uplifting Europe's Innovation Capacity, Report from the Workshop on Mixed Criticality Systems - Platforms for the Future", held on 30th October 2013 in Brussels, Belgium, November 2013.

5.2 Vienna, 2014 event

The Vienna 2014 event was organized in conjunction with the HIPEAC conference in the form of a workshop with invited speakers from the various projects dealing with mixed-criticality systems. The workshop was organized as a 2-day event.

The first day was devoted to ongoing projects, which presented their main results, those that will impact the future design of MCS; the second day was devoted to present the goals, objectives and approach of recently accepted projects. Overall, the audience enjoyed a good balance among results from currently running projects and new challenges to be addressed by just-started projects.

An excellent representation of the European research projects, under both FP7 and Artemis programs, on the field was present at the workshop: *RECOMP, parMERASA, T-CREST, PROARTIS, MultiPARTES, CERTAINTY, CRYSTAL, PROXIMA, CONTREX, DREAMS and EMC*². They featured talks focusing on the following topics: Multi-Processor Systems-on-a-Chip (MPSoCs) for mixed-criticality applications, hypervisors and operating systems for MPSoCs, hard



real-time guarantees and certification aspects, model-driven engineering tools for effort reduction, applications in automotive, avionics, railway, energy and industrial control and existing future research directions.

Both day's sessions ended with very fruitful panel discussions with recognized experts in the field, moderated by Salva Trujillo (IK4-IKERLAN). The first panel was held on the challenges of the road to certification of mixed-criticality systems with panelists: Roman Obermaisser (University of Siegen), Michael Paulitsch (Airbus Group), Rafael Zalman (Infineon), Jon Perez (IK4-IKERLAN), Christian El Salloum (AVL) and Alfons Crespo (Polytechnic University of Valencia). The second panel was on many-core mixed-criticality systems with panelist: Francisco J. Cazorla (BSC), Alan Burns (University of York), Mathieu Patte (Astrium) and Jaume Abella (BSC).

Almost 80 people from at least 16 countries – representing Europe and Asia – attended the workshop.

The agenda and the workshop material are available at <u>https://alfresco.dit.upm.es/multipartes/eventsInfo/HiPEAC2014.html</u>.

5.3 Brussels, 2014 event

The Brussels workshop was organized by the Mixed-Criticality Cluster in a back-to-back form to the first block review meeting for the projects DREAMS, PROXIMA and CONTREX and served as an input to the Mixed-Criticality Roadmap.

The workshop was jointly organized by the three projects DREAMS, PROXIMA and CONTREX that form a part of the MCC cluster. The people responsible for the organization were the co-ordinators of the before-mentioned projects - Roman Obermaisser (DREAMS – USIEGEN, Germany), Francisco Cazorla (PROXIMA – BSC, Spain), and Kim Grüttner (CONTREX - OFFIS, Germany).

The workshop comprised of 6 technical sessions, 1 session on mixed-criticality community platform – <u>www.mixedcriticalityforum.org</u> and 1 session dedicated to panel discussion focusing on joint exploitation of projects results. The detailed program, a brief summary of each talk in the technical sessions and the slides are available in the public domain through a website hosted by TUKL – <u>http://rts.eit.uni-kl.de/mcc-0714/.</u>

The workshop was a closed event i.e. only open to members of the three projects and the related people (Project Officers, Reviewers etc.). The number of participants was around 50. In all, there were 14 different speakers for the 6 technical sessions from the three projects in the MCC cluster.

Key outcomes of the event have been published as part of the deliverable D9.3.1.

5.4 Amsterdam, 2015 event

The latest event in Amsterdam attracted over 50 participants that actively engaged in both technical discussions and organizational matters with respect to the Mixed-Criticality Community and the online Mixed-Criticality Forum, and as such the results have been summarized below.



Mixed-Criticality Community Workshop

The MCS community aims to solve the challenges to safely integrate applications and systems of higher and lower criticality together on multicore and distributed architectures. In order to safely achieve this, challenges reside at the hardware and software architecture level as well as in the support by means of methodology, modelling, simulation, verification, documentation and training.

At the 3rd MCS Workshop, hosted at HIPEAC on Monday 19th of January 2015, a community session was held focusing on the advancement of the Mixed-Criticality Forum and Community. With a total of roughly 50 engaged participants from academia and industry across Europe, the workshop can be considered successful with fruitful discussions. Discussions were centred on three central themes: expectations, content, and potential barriers.

Group 1: Expectations to the Mixed-Criticality Community

(10 participants)

In the first group, the discussions focused on the expectations of the participants towards a mixedcriticality community. The general comment is that the MCF can become a reference repository for researchers in MCS in different aspects.

• **Requirements/Metrics**: There was a general feeling that academics can be looking into problems of small interest to industry. This can be corrected/prevented by asking different industries (across different domains) to articulate a document with their main requirements in terms of timing, reliability, and any other metric of interest. This will also help academics

to understand what can be done (and what can be assumed) when attacking a problem and what cannot.

- **Overview of standards:** In this respect, it is understood that many requirements come from standards, which are hard to read. However, from the dozens of standards in a domain, the experts in the domain know which are those apply for the problem under interest and the particular paragraphs in those standards that are of interest. It would be great if this information is put in the MCF website
- **Best practices for MCS**: A document with Best Practices in each domain would also be of help. This document cover the main elements to take into account when deploying a software/hardware function that is to be deployed in the targeted application domain
- **Experiences with MCS:** This part covers experiences of people (likely industrialists) on multicore mixed-criticality systems. The feeling is that a lot can be learnt from the experience of other people with MCS. Further, overlaps can be found among different domains.
- Who is doing what in the community: This section covers a good description of what each member of the MCF is doing: in the different application domains and in the different layers of the computing system. This would help industry understanding who is doing what in the Mixed-Criticality community. This helps looking for partners for new projects and building connexion among partners.

Group 2: Technical contents

(24 participants)

In the second group, the discussions focused on the technical contents and potential contributions of parties involved in research on Mixed-Criticality Systems. Regrettably, time was too short to go into detailed discussions about specific technical contributions. The discussions therefore centered on the organization of the contents within the MCF and how to further enable the contribution of technical content.

- **Application domains**: the definition of mixed criticality as well as the challenges and expectation from the solutions are very diverse in the different domains. All provided content should be linked with an industrial domain. For this purpose, it might be useful to collect the domains covered by the MCC projects.
- **Use cases**: to provide (high-level) use-cases of industrial mixed-criticality problems from the domains avionics and railway. These use-cases can be used to identify common challenges and join forces to work on the solutions. Anyhow, there might be some confidentiality issues that need to be discussed internally first.
- **Common requirements**: A common list on requirements (maybe per domain) for mixedcriticality system could be collected and harmonized across the MCF contributors (each project should have done this anyhow)
- **Terminology**: A common definition and a refined definition of "Mixed-Criticality" in the different domains could give some guidance to new players entering the scene
- Industrial best-practices: Guidelines, procedures and best practices from industrial partners could be collected and published through the MCF
- **Security**: Guidelines what you need to consider would be well received. Specific input from the EURO-MILS (<u>http://www.euromils.eu/</u>) project has been offered. They have developed a matrix to compare different safety and security critical systems. This could be a valuable contribution to the MCF.
- Collection of standards and certification bodies per domain could be very interesting. The MCF could also become a common place to discuss potential shortcomings and roadblocks of existing standards

Furthermore, potential additions to the MCF were discussed to further broaden the scope and usefulness of the Mixed-Criticality Forum. In particular, the following were mentioned:

- **Publication and deliverable database**: A database of publications from each project of the MCC. Each bibtex entry would also carry: a link to the project(s) of the MCC, a link to the industrial domain or the common domain, and a pdf, if possible. This publication database could be Bibtex-based. The database could further be extended with a Public deliverable database of all deliverables from each MCC project to facilitate the interaction between the projects.
- **Social functions**: the group discussed about ways to further facilitate the social interaction between organizations and projects, e.g. the integration of a full discussion forum and mailing list for discussions, and the integration with social media by means of Facebook Fan Page and Twitter Channel.

Group 3: Barriers to adoption

(15 participants)

Within the MCS community, several barriers to the adoption of MCS solutions identified that can be addressed at least in part by community activities. In the group, the following topics were discussed:

- **Common Terminology**: A missing common terminology is perceived as a barrier. For example, there are different definitions of mixed-criticality systems in different communities (e.g., scheduling community vs. certification). In addition, consolidation of terminology from different domains (automotive, avionics, ...) and different technological communities (e.g., real-time, high-performance, ...) is necessary.
- **Certification standards**: High certification cost is a barrier towards the certification of multicore systems. Certification standards need updates to enable the certification of these systems.
- **Ecosystem**: Project results need to be leveraged after research projects finish.
- **Distance between academic and industry**: There is a gap between industrial challenges and academic research. The level of ambition in academic research is often far from industrial state-of-practice and actual industrial challenges.
- **Fail-safe and fail-operational systems**: Both fail-safe and fail-operational systems need to be addressed. Mixed-criticality research at present focuses on fail operational systems.

The session was organized from the context of the Mixed-Criticality Forum at http:// mixedcriticalityforum.org, an initiative within the FP7 project DREAMS to support the 'Mixed-Criticality Cluster' of on-going FP7 projects, i.e. DREAMS, CONTREX and PROXIMA and the growing mixed-criticality community in academia and industry.

6 Conclusions and Next Steps

This document describes the current activities, updates and the ongoing effort of community building in the project. As the first milestone of setting up the initial infrastructure was achieved in M18 with D9.1.1, the next milestone was to build further upon the existing effort, not only in terms of community growth and dissemination, but also on creating proper channels to share information and results. Mixed-Criticality Forum partners have already provided content in order to make a community hub for research activities. Furthermore the MCS community has frequent events that raise awareness of distributed mixed-criticality internationally.

For D9.1.3 – Final Community Building Report (M48), the effort will shift on providing further links to the community buildup process, creating a sustainable community that properly shares and disseminates results, as well as make sure that as many as possible MCC project partners are involved in exchanging technology ideas. Finally, the next milestone is to attract the interest of the industry, and in this line of activities the identification of the relevant stakeholders (end-users, public authorities, suppliers) and the identification of channels where these stakeholders are involved (e.g. workshops) is included.