OETCS/WP7/D7.5

openETCS

ITEA2 Project
Call 6 11025
2012 – 2015

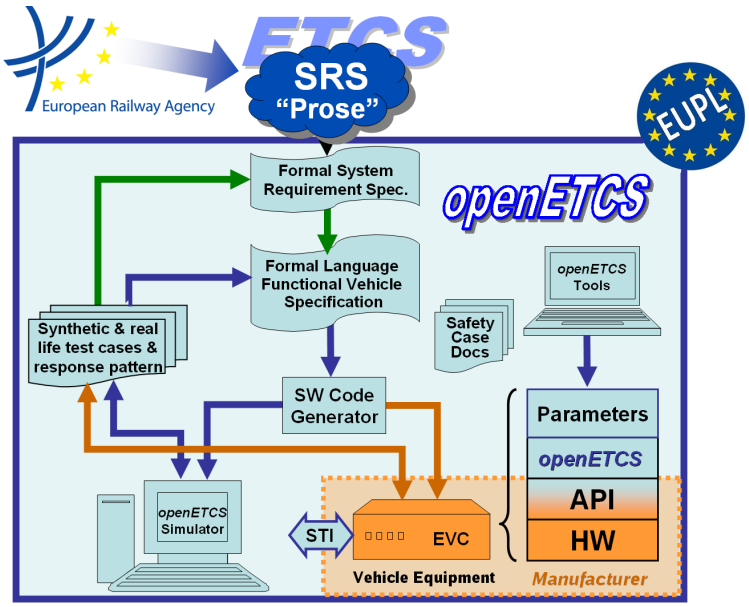
Work-Package 7: “Tool chain”

openETCS: Ecoystem Artifacts

Release 1.0

Michael Jastram

December 2015



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Document approbation

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Ecosystem Artefacts

Prepared for openETCS@ITEA2 Project

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Abstract: This document describes the openETCS artefacts of the ecosystem.

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1 Overview

This document references the core ecosystem artefacts of the openETCS project.

1.1 What is openETCS?

The openETCS tool chain provides the tool support and the development process to achieve a (semi-)formalized specification of ETCS EVC down to and an executable code of the OBU. The tool chain implements the development lifecycle defined in [1].

1.2 Inspiration from Open Source

From the onset it was decided to model the development on the approach taken by the Eclipse Foundation. In particular, the project took the mentality of open projects into account, which are strongly based on meritocracy. This has been stated concisely in the opening page of the Governance repository [1]:

> The openETCS@ITEA2 project like most open source R&D projects do not have a traditional organization with a (more or less) clear top/down structure and traditional "managers" and "directors" on the top and "workers" — more on the down side — who get "managed" or "directed". OSS projects are usually in a context, which is more like a network of individuals and peer groups with their own and mostly diverse managerial structure with different management and working cultures. Working groups in such projects mostly consist of people coming from different organizations, in the best case volunteering to work in such projects. Traditional management need tree-like structures ("top/down) to work well. It does not function too well in networks. Also such networked groups need "Leadership", which helps to structures activities, helps to solve conflicts, get decisions made, however without the power of directing people what to do, when and in what way. (...) But even self-managed groups need some "guidance" and "rules" and that is where the "Governance" comes into play.

As stated in the last sentence above, guidance and rules are necessary. The ecosystem artefacts described in this deliverable represent this.

Consistent with the agile nature of this project, the artefacts evolved over the lifetime of the project. The infrastructure of this project reflects this.

1.3 gitHub

Within weeks after project launch, the team decided to use gitHub[2] as the infrastructure provider for the development. This decision proved of value and stood the test of time: Not only did the platform provide all essential features required for a distributed development, like issue tracking, collaborative documentation (via Wiki), access control and much more; due to the strong features with respect to version management it enabled the controlled evolution of the

[1] `https://github.com/openETCS/governance/wiki`
[2] `https://github.com/openETCS/`

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openETCS ecosystem. In fact, each element that is managed in openETCS has a history that can be inspected, including the openETCS website[3].

The ecosystem artefacts are stored in their own repository[4].

[3] http://openetcs.org
[4] https://github.com/openETCS/ecosystem/wiki

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2 Evolution of the Ecosystem

During the early stages of the project, the team was primarily concerned with organizing tasks and producing documents.

2.1 Managing Tasks

The gitHub issue tracker proved itself as an effective tool for assigning and discussing tasks.

2.2 Access Control

Most repositories were open, allowing everyone (even interested parties outside the project) read-access to the project's artefacts. A few repositories were kept private, which was the exception.

In order to gain write access to a repository, a person (not organization) had to become a committer. The process is described in Section 3.2.

But even non-committers could provide changes to a repository by creating pull requests for their proposed changes. Pull requests had to be approved by an existing committer.

2.3 Right management

By submitting the committer agreement, contributors had to agree to release their work under a public license, usually the EUPL, as described in Section 3.1. As the contributions may contain additional intellectual property, this had to be regulated separately in the IP policy, see Section B.

2.4 Version Control

All artefacts stored in gitHub use the git version control system, which support cloning and branching, merging of conflicts, and of course provides a full history of every file in the system.

2.5 Collaboratively producing documents

In the beginning, a lot of collaborative work on documents was necessary. This was done using the LaTeX word processor. As it uses plain text using a special markup language, collaborative work was very easy, and merge conflicts could be resolved without any loss of information.

2.6 Development

As the project started to produce code and models, more processes had to be established, see Sections **??** and 3.5.

As recommended for any kind of developement, a continuous integration system was added to the ecosystem to build both the toolchain, its documentation and the model. For this purpose, ClouldBees[5] was integrated into the ecosystem, which uses the Jenkins build system.

[5] https://openetcs.ci.cloudbees.com/job/openETCS-tycho/

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2.7 Scrum of Scrums

The ecosystem described so far served the the project well until the end of 2014. At that point it was clear that better coordination between the work packages was necessary. This was done by means of an online tool called Waffle[6], which provides a card-based view on the issues of any gitHub repository. During weekly scrum-of-scrum grooming sessions, this tool was used to effectively manage the project as a whole.

[6] http://waffle.io/

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3 Ecosystem Artefacts

3.1 Terms of use

The terms of use are primarily determined by the license used. For openETCS, the first choice are the openETCS Open Licens Terms (oOLT), which can be found in Appendix A. This is a dual-licens, consisting of the European Public License (EUPL) and Creative Commons Attribution-ShareAlike.

It is also acceptable to just use EUPL or the Eclipse Public License (EPL).

3.2 Committer Agreements

The committer agreement was one of the first artefacts produced for the project, as it serves as the foundation for individuals to make contributions to the project. Consequently, we do not have a complete version history of this template. The current version is stored in the repository as a read-only PDF version, dated August 1st, 2013, see Section D

3.3 IP Policy

The IP policy was created and maintained as a Wiki page in the ecosystem repository, see Appendix B. It underwent six revisions between July 27th, 2012 and April 3rd, 2013.

3.4 Development Process Description

The development process was created and maintained as a Wiki page in the ecosystem repository, see Appendix C. It underwent 33 revisions between July 11th, 2012 and November 14th, 2012.

3.5 Development Process Guidelines

Due to the agile nature of the project, there is no single development process guideline. Rather, relevant support documentation is included in various places, to facilitate the work of the developers. Also, the extensive process description (Section 3.4) already contains some content that guides the developer.

Specifically, the following non-exhaustive list of resources allows the developers to find guidance:

- The ecosystem repository contains the article “How to get started: Agile Development and Scrum in openETCS”[7]
- The toolchain repository provides a number of pointer on its entry page[8]

[7] `https://github.com/openETCS/ecosystem/wiki/How-to-get-started:-Agile-Development--and-Scrum-in-openETCS`

[8] https://github.com/openETCS/toolchain/wiki

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- The openETCS documentation contains a chapter “Developer Documentation”[9]. This information is not just available on the wiki, but is also included in the application, where it becomes part of the built-in help system (Eclipse Help).

3.6 Infrastructure Documentation

Similar to the Development Process Guidelines, there is just an entry point for the infrastructure documentation, see Appendix E. All further infrastructure information is distributed throughout the respositories, primarily in the form of Readme-files that are processed automatically by gitHub.

3.7 Other Artefacts

Ultimately, the openETCS itself is the main artefact, consisting of a large number of ecosystem artefacts, including, but not limited to, the ones described here.

The gitHub statistics indicate that to date (November 2015):

- 172 people contributed to openETCS
- 19 teams have formed
- roughly 10,000 commits were placed in the various repositories
- over 1500 issues were created

[9] `https://github.com/openETCS/toolchain/wiki/Developer-Documentation`

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Appendix A: openETCS Open License Terms

The following is the text of the oOLT:

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Appendix B: openETCS IP Policy

The following is the text of the IP Policy, which can also be found at:

`https://github.com/openETCS/ecosystem/wiki/IP-Policy`:

> Updated April 4th, 2013, Version 0.1
>
> openETCS is defined as an Open Source Project. To apply Open Source Licenses on any contributions to the project is a basic requirement for both, the funding and the grant of the ITEA2 label by the ITEA2 committee. Thus it is not mandatory but rather compulsory that all contributions to the project (software, proofs, tools, documents et cetera) are licensed under Open Source and/or Open Content Licenses. The details of the openETCS license strategy will be thoroughly examined by a specialized lawyer and a corresponding contractual agreement between the project partners will be concluded within the first working package of the project (during 2012). Unless such examination comes to different recommendations, the following licenses will be applied for all openETCS contributions:
>
> For software contributions: The European Public License (EUPL), Vers. 1.1 (see the license text at: http://joinup.ec.europa.eu/software/page/eupl/licence-eupl). This license was already named in the full project proposal (FPP). For other content (esp. documents): A dual licensing approach applying the European Public License (EUPL), Vers. 1.1 and the Creative-Commons-Attribution-ShareAlike 3.0 Unported (cc-by-sa) License (see license text at: http://creativecommons.org/licenses/by-sa/3.0/).
>
> All contributors agree hereby that their contributions will be licensed under these licenses and they declare that they are unrestrictedly entitled to apply the respective license(s) to their contributions. The final decision about the definite licenses to be used for the openETCS contributions will be taken, after consultation of all project partners, by the openETCS Project Coordination Committee (PCC). The PCC will take the recommendations of the license strategy examination into consideration. The final decision about the license scheme will be made subject of the Project Cooperation Agreement (PCA).

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Appendix C: openETCS Development Process

The following is the text of the development process, which can also be found at:

`https://github.com/openETCS/ecosystem/wiki/openETCS-Development-Process`

C.1 1. Purpose

This document describes the Development Process for the openETCS project. In particular, it describes how participants influence, and collaborate with Projects to achieve these openETCS purposes. The process follows the template of the Eclipse development process, including minor adaptations.

The openETCS project is a vendor-neutral, open development project supplying methods, methodologies, tools, frameworks, specifications and implementations of ETCS onboard units and related components. openETCS software are extensible in that their functionality is accessible via documented programmatic interfaces. The purpose of the openETCS project, is to advance the creation, evolution, promotion, and support of work products related to openETCS and to cultivate both an open source community and an ecosystem of complementary products, capabilities, and services.

This document has the following sections: Principles outlines the basic principles upon which the development process is based. Requirements describes the requirements that the open ETCS community has for its development process. Structure and Organization specifies the structure and organization of the projects and project community at openETCS. Development Process outlines the lifecycle and processes required of all openETCS projects.

C.2 2. Principles

The following describes the guiding principles used in developing this Development Process.

C.3 2.1 Open Source Rules of Engagement

- Open - openETCS is open and provides the same opportunity to all. Everyone participates with the same rules; there are no rules to exclude any potential contributors which include, of course, direct competitors in the marketplace.
- Transparent - Project discussions, minutes, deliberations, project plans, plans for new features, and other artifacts are open, public, and easily accessible.
- Meritocracy - openETCS is a meritocracy. The more you contribute the more responsibility you will earn. Leadership roles in openETCS are also merit-based and earned by peer acclaim.

C.3.1 2.2 openETCS Ecosystem

openETCS is the sum of its parts (all of the Projects), and Projects should strive for the highest possible quality in documents, extensible frameworks, exemplary tools, transparent processes, and project openness.

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It is the responsibility of the project participants to . . . cultivate. . . an ecosystem of complementary products, capabilities, and services. . . . It is therefore a key principle that the openETCS Development Process ensures that the projects are managed for the benefit of both the open source community and the ecosystem members. To this end, all openETCS projects are required to: * communicate their project plans and plans for new features (major and minor) in a timely, open and transparent manner; * create high-quality and understandable documents, which follow standards and common vocabulary * create platform quality frameworks capable of supporting the building of commercial grade products on top of them; and * ship extensible, exemplary tools which help enable a broad community of users

C.3.2 2.3 Three Communities

Essential to the Purposes of openETCS is the development of three inter-related communities around each Project:

- Contributors and Committers - a thriving, diverse and active community of developers is the key component of any openETCS Project. Ideally, this community should be an open, transparent, inclusive, and diverse community of Committers and (non-Committer) Contributors. Attracting new Contributors and Committers to an open source project is time consuming and requires active recruiting, not just passive “openness”. The Project Leadership must make reasonable efforts to encourage and nurture promising new Contributors.
- Projects must have diversity goals to ensure diversity of thought and avoid relying on any one company or organization. At the same time, we acknowledge that enforcing a particular diversity metric is a poor way to achieve these goals; rather we expect the project leadership to help the diversity evolve organically.
- Diversity is a means to an end, not an end in itself, thus diversity goals will differ by project based on the other accomplishments of the project(s).
- Projects are required to explain their diversity efforts and accomplishments during Reviews.
- Users - an active and engaged user community is proof-positive that the Project’s exemplary tools are useful and needed. Furthermore, a large user community is one of the key factors in creating a viable ecosystem around an openETCS project, thus encouraging additional open source and commercial organizations to participate. Like all good things, a user community takes time and effort to bring to fruition, but once established is typically self-sustaining.
- Adopters - an active and engaged adopter developer community is the only way to prove that an openETCS project is providing extensible frameworks and extensible tools accessible via documented APIs. Reuse of the frameworks within the companies that are contributing to the project is necessary, but not sufficient to demonstrate an adopter community. Again, creating, encouraging, and nurturing an adopter community outside of the Project’s developers takes time, energy, and creativity by the Project Leadership, but is essential to the Project’s long-term open source success.

The openETCS community considers the absence of any one or more of these communities as proof that the Project is not sufficiently open, transparent, and inviting, and/or that it has emphasized tools at the expense of extensible frameworks or vice versa.

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C.3.3 2.4 Clear, Concise, and Evolving

It is an explicit goal of the Development Process to be as clear and concise as possible so as to help the Project teams navigate the complexities, avoid the pitfalls, and become successful as quickly as possible.

This document imposes requirements and constraints on the operation of the Projects, and it does so on behalf of the openETCS community. It is an explicit goal of the Development Process to provide as much freedom and autonomy to the Projects as possible while ensuring the collective qualities benefit the entire openETCS community.

Similarly, this document should not place undue constraints on Project Leads, the Project Management Board (PMB) or committers that prevent them from governing the process as necessary. We cannot foresee all circumstances and as such should be cautious of being overly prescriptive and/or requiring certain fixed metrics.

The frameworks, documents, specifications, tools, projects, processes, community, and even the definition of Quality continues to, and will continue to, evolve. Creating rules or processes that force a static snapshot of any of these is detrimental to the health, growth, and ecosystem impact of openETCS.

Part of the strength of this document is in what it does not say, and thus opens for community definition through convention, guidelines, and public consultation. A document with too much structure becomes too rigid and prevents the kind of innovation and change we desire for openETCS. In areas where this document is vague, we expect the Projects and all participants to engage the community-at-large to clarify the current norms and expectations.

C.4 3. Requirements

This document and any additional criteria contains requirements, recommendations, and suggestions.

Required - Certain responsibilities and behaviors are required of participants in openETCS open source projects. Projects that fail to perform the required behaviors will be terminated by the PMB. In keeping with the Guiding Principles, the number of requirements must be kept to an absolute minimum.

Guideline - Other responsibilities and behaviors are recommended best practices. Collectively, we have learned that Projects are more likely to be successful if the team members and leaders follow these recommendations. Projects are strongly encouraged to follow these recommendations, but will not be penalized by this Process if they do not.

C.4.1 3.1 Requirements and Guidelines

This document is entirely composed of requirements. In addition to the requirements specified in this Development Process, the PMB with advise from the ecosystem project is instructed to clarify, expand, and extend this Process by creating a set of openECTS Project Development Guidelines to advance the creation, evolution, promotion, and support of the openECTS project and to cultivate both an open source community and an ecosystem of complementary products and services.

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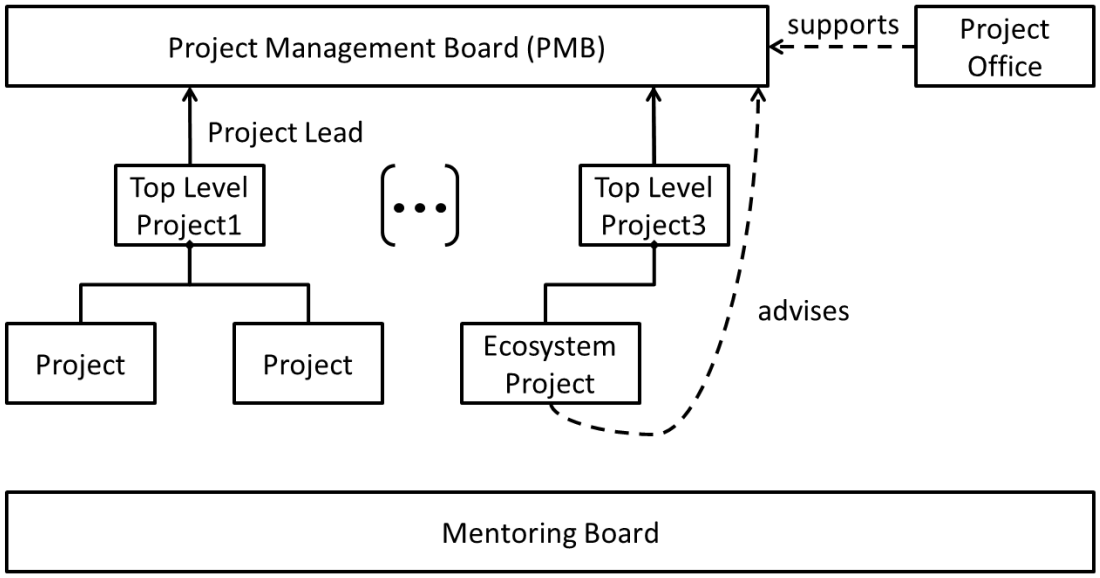
The PMB is not permitted to override or ignore the requirements listed in this document without agreement of the mentoring board.

C.5 4. Project Structure and Organization

A Project is the main operational unit at openETCS. Specifically, all open source software development, all creation of documents, specifications and requirements at openETCS occurs within the context of a Project. Projects have leaders, developers, documents, code, builds, downloads, websites, and more. Projects are more than just the sum of their many parts, they are the means by which open source work is organized when presented to the communities of developers, adopters, and users. Projects provide structure that helps project participants expose their hard work to a broad audience of consumers.

openETCS Projects are organized hierarchically. A special type of Project, Top-Level Projects, sit at the top of the hierarchy. Each Top-Level Project contains one or more Projects. Each Project may itself contain zero or more Projects. A Project that has one or more Projects is said to be the "parent" of those Projects. A Project that has a parent is oftentimes referred to as a Sub-Project. The term Project refers to either a Top-Level Project or a Sub-Project. Projects may be referred to as Sub-Projects or Components, but the choice of common name does not change the characteristics of the Project.

This diagram shows an example project structure as well as the openETCS councils and boards, which are described in the following.



Note: In the document "bootstrapping" the initial structure of projects, PMB and board members is described.

The descendants of a Project are the Project itself and transitive closure of its child Projects. The top parent of a Project is the Top-Level Project at the top of the hierarchy.

Projects are the unit entity for:

- Committers

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- Code
- Documents
- Releases
- IP Records
- Community Awareness

C.5.1 4.1 Committers

Each project has exactly one set of committers. Each Project's set of Committers is distinct from that of any other Project, including Sub-Projects or parent Projects. All Project Committers have equal rights and responsibilities within the Project. Partitioning of responsibility within a Project is managed using social convention. A Project may, for example, divide itself into logical partitions of functionality; it is social convention that prevents Committers from one logical partition from doing inappropriate work in another. If finer-grained management of committer responsibilities is required, a project should consider partitioning (via a Restructuring Review) into two or more Sub-Projects.

The Committers of a project have the exclusive right to elect new Committers to their Project–no other group, including a parent Project, can force a Project to accept a new Committer.

There is no roll-up of Committers: the set of Committers on a Project is exactly that set of people who have been explicitly elected into that role for the project (i.e. being a committer on a sub-project does not give you any automatic rights on the "parent" project).

In practical terms, each Project has a single group of its Committers that provides write-access to the Project's resources. Pictorially below, we see that a Project, in addition to the various resources and Committers it has, can also have zero or more Sub-Projects. Each of these Sub-Projects has its own distinct set of Committers and resources.

C.5.2 4.2 Resources and Releases

Each Project owns and maintains a collection of resources.

Resources may include documents, specifications, models, requirements, source code, a project website, space on the downloads server, access to build resources, and other services provided by the openETCS infrastructure. The exact infrastructure used by openETCS varies over time and is defined outside this process document.

A project is not strictly required to make use of all the resources made available; a project might, for example, opt to not maintain a source code repository. Such a Project might operate as an organizational unit, or container, for several Sub-Projects. Similarly, a Project might opt to provide a consolidated website, build and/or download site for its Sub-Projects (the Sub-Projects would then not require those resources for themselves).

Each Project has a single task tracker for its open tasks, issues or bug reports.

Any Project in the Mature Phase may make a Release. A Project in the Incubation Phase with two Mentors may make a pre-1.0 Release. A Release may include the code from any subset of the Project's descendants.

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C.5.3 4.3 Community Awareness

Projects are the level of communication with the larger openETCS community and ecosystem. Projects may either have their own communications (website, mailing lists, forums/newsgroups, etc) or they may be part of a parent Project's communications (website, mailing list, forums/newsgroups, etc). In either case, the Project is required to maintain an open and public communication channel with the community including, but not limited to, project plans, schedules, design discussions, and so on.

All Projects must make the communication channels easy to find. Projects are further required to make the separate communication channels of their child Projects (if any) easy to find.

Any Project in the Incubation Phase must correctly identify its website and Releases. A Project with at least one descendant Project in Incubation Phase must correctly annotate its own website so as to notify the community that incubating Projects exist in its hierarchy. Any Release containing code from an Incubation Phase project must be correctly labeled, i.e., the Incubation Phase is viral and expands to cover all Releases in which it is included.

C.5.4 4.4 Scope

Each Top-Level Project has a Charter which describes the purpose, Scope, and operational rules for the Top-Level Project. The Charter should refer to, and describe any refinements to, the provisions of this Development Process. The PMB approves the Charter of each Top-Level Project, if it divers from this process.

Sub-Projects do not have separate Charters; Sub-Projects operate under the Charter of their parent Top-Level Project.

All Projects have a defined Scope and all initiatives within that Project are required to reside within that Scope. Initiatives and code that is found to be outside the Scope of a Project may result in the termination of the Project.

The Scope of a Sub-Project is defined by the initial project proposal as reviewed and approved by the Project Management Board (PMB) (as further defined below) of the Project's Project's top parent. A Project's Scope must be a subset of its parent's Scope. ### 4.5 Leaders

There are two different types of Project leadership at openETCS: The Project Management Board (PMB) and Project Leads. Both forms of leadership are required to:

- ensure that their Project is operating effectively by guiding the overall direction and by removing obstacles, solving problems, and resolving conflicts;
- operate using open source rules of engagement: meritocracy, transparency, and open participation; and ensure that the Project and its Sub-Projects (if any) conform to the openETCS IP Policy and Procedures.

The leadership for a Project is composed of the Project's Project Lead(s), the leadership of the parent Project (if any) and the project lead of the Top-Level Project.

4.5.1 Project Lead

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openETCS Projects are managed by one or more Project Leads. Project Leads are responsible for ensuring that their Project's Committers are following the openETCS Development Process, and that the project is engaging in the right sorts of activities to develop vibrant communities of users, adopters, and contributors. The initial project leadership is appointed and approved in the creation review. Subsequently, additional Project Leads must be elected by the project's Committers and approved by the PMB.

In the unlikely event that a member of the Project leadership becomes disruptive to the process or ceases to contribute for an extended period, the member may be removed by the unanimous vote of the remaining Project Leads (if there are at least two other Project Leads), or unanimous vote of the PMB.

In exceptional situations, such as projects with zero active committers or projects with disruptive Committers and no effective Project Leads, the Project Leadership Chain has the authority to make changes (add, remove) to the set of committers and/or Project Leads of that project.

4.5.2 Project Management Committee (PMC)

If top-level projects grow, the PMB can nominate a Project Management Committee (PMC). A PMC has one or more PMC Leads and zero or more PMC Members. Together the PMC provides oversight and overall leadership for the projects that fall under their top-level project. The PMC as a whole, and the PMC Leads in particular, are ultimately responsible for ensuring that the openETCS Development Process is understood and followed by their projects. The PMC is additionally responsible for maintaining the top-level project's charter and aprooving new projects and committers.

PMC members are elected by the existing PMC Leads and Members, and approved by the PMB. ### 4.6 Committers and Contributors

Each Project has a Development Team, led by the Project Leaders. The Development Team is composed of Committers and Contributors. Contributors are individuals who contribute content, code, fixes, tests, documentation, or other work that is part of the Project. Committers have write access to the Project's resources (repository, task tracking system, website, build server, downloads, etc.) and are expected to influence the Project's development. See these guidelines and checklists for electing a new committer.

Contributors who have the trust of the Project's Committers can, through election, be promoted Committer for that Project. The breadth of a Committer's influence corresponds to the breadth of their contribution. A Development Team's Contributors and Committers may (and should) come from a diverse set of organizations. A Committer gains voting rights allowing them to affect the future of the Project. Becoming a Committer is a privilege that is earned by contributing and showing discipline and good judgment. It is a responsibility that should be neither given nor taken lightly, nor is it a right based on employment by any company employing existing committers.

The election process begins with an existing Committer on the same Project nominating the Contributor. The Project's Committers will vote for a period of no less than one week of standard business days. If there are at least three (3) positive votes and no negative votes within the voting period, the Contributor is recommended to the project's PMB for commit privileges. If there are three (3) or fewer Committers on the Project, a unanimous positive vote of all Committers is substituted. If the PMB approves, and the Contributor signs the appropriate Committer legal

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agreements (wherein, at the very least, the Developer agrees to contribute under the EUPL), the Contributor becomes a Committer and is given write access to the source code for that Project.

At times, Committers may become inactive for a variety of reasons. The decision making process of the Project relies on active committers who respond to discussions and vote in a constructive and timely manner. The Project Leaders are responsible for ensuring the smooth operation of the Project. A Committer who is disruptive, does not participate actively, or has been inactive for an extended period may have his or her commit status revoked by the Project Leaders. (Unless otherwise specified, “an extended period” is defined as “no activity for more than six months”.)

Active participation in the appropriate developer mailing lists is a responsibility of all Committers, and is critical to the success of the Project. Committers are required to monitor and contribute to the mailinglists.

Committers are required to monitor the mailing lists associated with the Project. This is a condition of being granted commit rights to the Project. It is mandatory because committers must participate in votes (which in some cases require a certain minimum number of votes) and must respond to the mailing list in a timely fashion in order to facilitate the smooth operation of the Project. When a Committer is granted commit rights they will be added to the appropriate mailing lists. A Committer must not be unsubscribed from a developer mailing list unless their associated commit privileges are also revoked.

Committers are required to track, participate in, and vote on, relevant discussions in their associated Projects and components. There are three voting responses: +1 (yes), -1 (no, or veto), and 0 (abstain).

Committers are responsible for proactively reporting problems in the task tracking system, and annotating problem reports with status information, explanations, clarifications, or requests for more information from the submitter. Committers are responsible for updating problem reports when they have done work related to the problem.

Committer, PMC Lead, Project Lead, and Board Representative(s) are roles; an individual may take on more than one of these roles simultaneously.

C.5.5 4.8 Project Management Board (PMB)

The PMB is responsible for (i) maintaining and revising the openETCS Development Process, (ii) asure the implementation of the requirements of the development process described in this document.(iii) monitoring, guiding, and influencing the software architectures used by Projects, (iv) establishing the communication between specification projects and implementation projects

C.5.6 4.9 Mentoring Board

The Mentoring board is responsible for mentoring projects and advising.

C.5.7 4.10 Project Office

The project office is responsible for administrative tasks around the openETCS development process. Therefore the project office has the ability to grant access rights to projects, can maintain the openETCS documentation and so on. The project office is instructed to clarify, expand, and extend this Process by creating a set of openECTS Project Development Guidelines. The project

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office is not permitted to override or ignore the requirements listed in this document without agreement of the PMB.

C.5.8 4.11 Ecosystem Project

The ecosystem is a regular project, which is responsible for developing proposes solutions for the infrastructure as well as process refinements and additional guidelines. Therefore the ecosystem collaborates with the project office.

C.5.9 4.12 Incubator Projects

A Project may designate a Sub-Project as an “Incubator”. An Incubator is a Project that is intended to perpetually remain in the Incubation phase. Incubators are an excellent place to innovate, test new ideas, grow functionality that may one day be moved into another Project, and develop new committers.

Incubator Projects never have releases; they do not require yearly continuation reviews. Incubators may have builds, and downloads. They conform to the standard incubation branding requirements and are subject to the IP due diligence rules outlined for incubating Projects. Incubators do not graduate.

The scope of an Incubator Project must fall within the scope of its parent project. The committer group of the Incubator Project must overlap with that of the parent project (at least one committer from the parent project must be a committer for the Incubator). Incubator projects do not require mentors (the parent project’s committers are responsible for ensuring that the Incubator project conform to the rules set forth by the openETCS Development Process).

An Incubator project should designated as such by including the word “Incubator” in its name (e.g. “VV Incubator”). To do otherwise is considered exceptional and requires approval from the PMB.

Only Top-Level Projects and Projects in the Mature phase may create an Incubator. Incubators are created via a Creation Review. Alternatively, an Incubator can be created as part of a Graduation, Promotion, or Restructuring Review. A proposal is not required to create an Incubator project.

C.6 5. Development Process

Projects must work within their Scope. Projects that desire to expand beyond their current Scope must seek an enlargement of their Scope using a public Review as described below. Further, projects must fit within the scope defined by their containing projects and the scope defined in the charter of their Top-Level Project.

All projects are required to report their status at least quarterly using the defined status reporting procedures.

Projects must provide advanced notification of upcoming features and frameworks via their Project Plan. ### 6.1 Mentors

New Proposals that intend to do a Release are required to have at least two Mentors. New Proposals that will only release as part of a parent Project’s Release are not required to have Mentors. Mentors must be members of the Mentoring Board. The Mentors (including name,

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affiliation, and current projects/roles) must be listed in the Proposal. Mentors are required to monitor and advise the new Project during its Incubation Phase, but are released from that duty once the Project graduates to the Mature Phase.

C.6.1 6.2 Project Lifecycle

Projects go through six distinct phases. The transitions from phase to phase are open and transparent public reviews.

[[/images/Development-process-small.gif]]

6.2.1 Pre-proposal

See guidelines and checklists about writing a proposal.

An individual or group of individuals declares their interest in, and rationale for, establishing a project. The menotring board will assist such groups in the preparation of a project Proposal. The Pre-proposal phase ends when the Proposal is published by the project office and announced to the membership by the project office.

6.2.2 Proposal

See guidelines and checklists about gathering support for a proposal.

The proposers, in conjunction with the destination PMB and the community, collaborate in public to enhance, refine, and clarify the proposal. Mentors (if necessary) for the project must be identified during this phase.

- The Proposal phase ends with a Creation Review, or withdrawal.
- The Proposal may be withdrawn by the proposers.
- The project office will withdraw a proposal that has been inactive for more than six months.

6.2.3 Incubation

See guidelines and checklists about incubation.

After the project has been created, the purpose of the incubation phase is to establish a fully-functioning open-source project. In this context, incubation is about developing the process, the community, and the technology. Incubation is a phase rather than a place: new projects may be incubated under any existing Project.

- The Incubation phase may continue with a Continuation Review or a Release Review.
- Top-Level Projects cannot be incubated and can only be created from one or more existing Mature-phase Projects.
- The Incubation phase ends with a Graduation Review or a Termination Review.
- Designated Incubator Projects may remain perpetually in the Incubation phase; no reviews are required.

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Many Projects are proposed and initiated by individuals with extensive and successful software development experience. This document attempts to define a process that is sufficiently flexible to learn from all its participants. At the same time, however, the Incubation phase is useful for new Projects to learn the community-defined open source processes. See guidelines and checklists for utilizing the Parallel IP process.

Only projects that are properly identified as being in the incubation phase (including designated Incubator Projects) may use the Parallel IP process to reduce IP clearance process for new contributions. #### 6.2.4 Mature See guidelines and checklists about the mature phase.

The project team has demonstrated that they are an open-source project with an open and transparent process; an actively involved and growing community; and Quality work products. The project is now a mature member of the openETCS Community. Major releases continue to go through Release Reviews.

- Mature phase projects have Releases through Release Reviews.
- A Mature Project may be promoted to a Top-Level Project through a Promotion Review.
- A Mature Project that does not participate in a Release in given year may continue through a Continuation Review.
- Inactive Mature phase projects may be archived through a Termination Review.

6.2.5 Top-Level

See guidelines and checklists about being a top-level project.

Projects that have demonstrated the characteristics of a Top-Level Project (e.g., consistent leadership in a technical area and the recruitment of a wider developer community) can be promoted to Top-Level Project status. This promotion occurs through a Promotion Review. #### 6.2.6 Archived See guidelines and checklists for archiving projects.

Projects that become inactive, either through dwindling resources or by reaching their natural conclusion, are archived. Projects can reach their natural conclusion in a number of ways: for example, a project might become so popular that it is absorbed into one of the other major frameworks. Projects are moved to Archived status through a Termination Review.

If there is sufficient community interest in reactivating an Archived Project, the Project will start again with Creation Review. As there must be good reasons to have moved a Project to the Archives, the Creation Review provides a sufficiently high bar to prove that those reasons are no longer valid. ## 6.3 Reviews

The openETCS Development Process is predicated on open and transparent behavior. All major changes to projects must be announced and reviewed by the membership-at-large. Major changes include the Project Phase transitions as well as the introduction or exclusion of significant new technology or capability. It is a clear requirement of this document that members who are monitoring the appropriate media channels (e.g., mailing lists or RSS feeds) not be surprised by the post-facto actions of the Projects.

All Projects are required to participate in at least one Review per year.

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For each Review, the project leadership prepares documentation for, and receives feedback from, the community.

A Review is a fairly comprehensive process. Gathering the material for a Review and preparing the documentation is a non-trivial effort, but the introspection offered by this exercise is useful for the Project and results are very useful for the entire community. In addition, Reviews have a specific relationship to the requirements of the IP Policy.

All Reviews have the same general process:

- Projects are responsible for initiating the appropriate reviews. However, if a Project does not do so and the project office believes a Review is necessary, the project may initiate a Review on the Project's behalf.
- A Review then continues with the Project's Leadership requesting that the project office schedule the Review. Prior to the start of the review period, the Project leadership provides the project office with review documentation.
- The review documentation material always includes a document that describes the review. The minimum contents of the document are specified by the individual Review types.
- The review documentation must be available in a format that anyone in the openETCS membership can review. PDF and HTML are acceptable single formats.
- The review documentation must have a correct copyright statement and license.
- The review documentation must be archival quality. This means that the materials must be comprehensible and complete on their own without requiring explanation by a human presenter, reference to a wiki, or to other non-archived web pages.
- The project office announces the Review schedule and makes the documentation available to the membership-at-large.

The criteria for the successful completion of each type of Review will be documented in writing by the project office in guidelines made available via the openETCS website. Such guidelines will include, but are not limited to the following:

- Clear evidence that the project has vibrant committer, adopter and user communities as appropriate for the type of Review.
- Reasonable diversity in its committer population as appropriate for the type of Review. Diversity status must be provided not only as number of people/companies, but also in terms of effort provided by those people/companies.
- Documented completion of all required due diligence under the openETCS IP Policy.
- For Continuation, Graduation and Release Reviews, the project must have a current project plan, in the format specified by project office, available to the community.
- Balanced progress in creating both frameworks and extensible, exemplary tools.
- Showcase the project's quality through project-team chosen metrics and measures, e.g., coupling, cyclomatic complexity, test/code coverage, documentation of extensions points, etc.

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The Review period is open for no less than one week and usually no more than two weeks of generally accepted business days.

The Review begins with the project offices's posting of the review materials at the start of the Review period. The proper functioning of the openETCS Development Process is contingent on the active participation of the openETCS Members and Committers, especially in Reviews, thus each Review has an project-designated discussion and feedback communication channel: a forum/newgroup, a mailing list, or some other public forum. * If a Committer election is required for a Review (for example, for a Creation Review), then it is held simultaneously with the Review period. Thus the election and the Review will end at the same time, allowing quick and efficient provisioning of the resulting Project. * The project office approves or fails the Review based on the public comments, the scope of the Project, and the Purposes of the openETCS project. * The Review ends with the announcement of the results in the defined Review communication channel (the project office will request that the Project Lead make this announcement).

If any Member believes that the project office has acted incorrectly in approving or failing a Review may appeal to the PMB to review the decision. ### 6.3.1 Creation Review See guidelines and checklists about Creation Reviews.

The purpose of the Creation Review is to assess the community and membership response to the proposal, to verify that appropriate resources are available for the project to achieve its plan, and to serve as a committer election for the project's initial Committers. The openETCS strives not to be a repository of "code dumps" and thus projects must be sufficiently staffed for forward progress.

The Creation Review documents must include short nomination bios of the proposed initial committers. These bios should discuss their relationship to, and history with, the incoming code and/or their involvement with the area/technologies covered by the proposal. The goal is to help keep any legacy contributors connected to new project and explain that connection to the current and future openETCS project, as well as justify the initial Committers' participation in a meritocracy. ### 6.3.2 Graduation Review See guidelines and checklists about Graduation Reviews.

The purpose of the Graduation Review is to confirm that the Project is/has:

- a working and demonstrable code base of sufficiently high quality
- active and sufficiently diverse communities appropriate to the size of the graduating code base: adopters, developers, and users
- operating fully in the open following the Principles and Purposes of openETCS
- a credit to openETCS and is functioning well within the larger openETCS community

The Graduation Review is about the phase change from Incubation Phase to Mature Phase. If the Project and/or some of its code is simultaneously relocating to another Project, the Graduation Review will be combined with a Restructuring Review. ### 6.3.3 Release Review See guidelines and checklists about Release Reviews.

The purposes of a Release Review are: to summarize the accomplishments of the release, to verify that the IP Policy has been followed and all approvals have been received, to highlight

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any remaining quality and/or architectural issues, and to verify that the project is continuing to operate according to the Principles and Purposes of openETCS . 6.3.4 Promotion Review

The purpose of a Promotion Review is to determine if the Project has demonstrated the characteristics of a Top-Level Project, e.g., consistent leadership in a technical area and the recruitment of a wider developer community. The Project will already be a well-functioning Mature openETCS Project, so evidence to the contrary will be a negative for promotion. Top-Level Projects, both through their existence and their Council memberships, have substantial influence over direction and operation of openETCS, thus it behooves the membership to grant Top-Level status only for merit: for demonstrated service to the larger openETCS ecosystem. ### 6.3.5 Continuation Review

The purpose of a Continuation Review is to verify that a Proposal or Project continues to be a viable effort and a credit to openETCS. The Project team will be expected to explain the recent technical progress and to demonstrate sufficient adopter, developer, and user support for the Project. The goal of the Continuation Review is to avoid having inactive projects looking promising but never actually delivering extensible frameworks and exemplary tools to the ecosystem. ### 6.3.6 Termination Review See Termination Review “How To” for more information.

The purpose of a Termination Review is to provide a final opportunity for the Committers and/or openETCS community to discuss the proposed withdrawal of a Proposal or archiving of a Project. The desired outcome is to find sufficient evidence of renewed interest and resources in keeping the Project or Proposal active. ### 6.3.7 Move Review

A Move Review is considered to be a special type of Restructuring Review. ### 6.3.8 Restructuring Review

The purpose of a Restructuring Review is to notify the community of your intent to make significant changes to one or more projects. “Significant changes” includes:

- Movement of significant chunks of functionality from one project to another;
- Modification of the project structure, e.g. combining multiple projects into a single project, or decomposing a single project into multiple projects; and/or
- Change of project scope.

A Restructuring Review may include the movement of significant chunks of code. A move is considered significant if it has an impact on the community (i.e. if segments of the community will notice that the code has moved). This may include entire projects, bundles, and features, but likely excludes small fragments, code snippets and individual files. The IP Log of all moved code must be reviewed prior to the start of the review period (this, typically, is a subset of the project’s IP Log). If all of the code is moved out of a project, a Termination Review for that project can be combined with the Restructuring Review.

Note that, regardless of whether or not a review is required, moving code from one Project to another is subject to the IP Policy.

A Restructuring Review may necessitate the construction of one or more new projects. This tends to occur when an existing project is decomposed into two or more projects. In this case, a

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Restructuring Review is similar to a Creation Review. Any new projects that are created as part of a Restructuring Review must have their scope explicitly specified as part of the review. The scope of any new project must be a subset of the scope of the original project. Likewise, the set of committers assigned to a new project must be a subset of the committers of the original project (additional committers can be elected to the new project after it is created). Any new projects that fall outside of the scope of the original project, or wish to establish a different set of committers, must undergo the full project creation process.

Committers can be moved along with code into a new project as part of the project provisioning process. Committers cannot be moved along with code into an existing project. In this case, the existing project must elect the new committers into the project.

A project is expected to socialize pending changes using established communication channels prior to initiating the review. A Restructuring Review must provide the community with at least one week to review and respond to the changes. Prior to the start of that review period, the community must be provided with (via the project office) completed review documentation that describes in specific terms what will be changed as part of the restructuring.

This may include: * Name, description, scope, and committer lists of new projects that need to be created; * Source and target locations for moves of source code directories; * Reorganization of builds and downloads; * Contribution questionnaires (CQs) that need to be moved or piggy-back CQs that must be created; * Location of the approved IP Log; and * Other information that helps the community understand the change.

C.6.2 6.3.9 Combining Reviews

Reviews can be combined at the discretion of the PMB and project office. Multiple Projects may participate in a single Review. Similarly, multiple review types can be engaged in simultaneously. A parent Project may, for example, engage in an aggregated Release Review involving itself and some or all of its child projects; a consolidated Restructuring Review may move the code for several projects; or a Release Review may be combined with a Graduation Review. When multiple reviews are combined, the review documentation must explicitly state all of the Projects and types of reviews involved, and include the required information about each.

It should be noted that the purpose of combining reviews is to better serve the community, rather than to reduce effort on the part of the project (though it is fortunate when it does both). Combining a Release and Graduation review, or aggregating a Release Review of a Project and several of it’s child Projects generally makes sense. Combining Release Reviews for multiple unrelated projects most likely does not. ## 6.4 Releases

(Most of this section is borrowed and paraphrased from the excellent Apache Software Foundation Releases FAQ. The openETCS community has many of the same beliefs about Releases as does the Apache community and their words were already excellent. The Apache Software Foundation Releases FAQ is distributed under the Apache License, Version 2.0.)

Releases are, by definition, anything that is distributed outside of the Committers of a Project. If users are being directed to download a build, then that build has been released (modulo the exceptions below). All Projects and Committers must obey the openETCS requirements on approving any release.

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(Exception 1: nightly and integration builds) During the process of developing software and preparing a Release, various nightly and integration builds are made available to the developer community for testing purposes. Do not include any links on the project website, blogs, wikis, etc. that might encourage non-early-adopters to download and use nightly builds, release candidates, or any other similar package (links aimed at early-adopters and the project's developers are both permitted and encouraged). The only people who are supposed to know about such packages are the people following the developer mailing list and thus are aware of the limitations of such builds.

(Exception 2: milestone and release candidate builds) Projects are encouraged to use an agile development process including regular milestones (for example, six week milestones). Milestones and release candidates are "almost releases" intended for adoption and testing by early adopters. Projects are allowed to have links on the project website, blogs, wikis, etc. to encourage these outside-the-committer-circle early adopters to download and test the milestones and release candidates, but such communications must include caveats explaining that these are not official Releases.

- Milestones are to be labeled x.yMz, e.g., 2.3M1 (milestone 1 towards version 2.3), 2.3M2 (milestone 2 towards version 2.3), etc.
- Release candidates are to be labeled x.yRCz, e.g., 2.3RC1 (release candidate 1 towards version 2.3).
- Official Releases are the only downloads allowed to be labeled with x.y, e.g., 0.5, 1.0, 2.3, etc.

All official Releases must have a successful Release Review before being made available for download.

(Exception 3: bug fix releases with no new features) Bug fix releases (x.y.z, e.g., 2.3.1) with no new features over the base release (e.g., 2.3) are allowed to be released without an additional Release Review. If a bug fix release contains new features, then the Project must have a full Release Review.

Under no circumstances are builds and milestones to be used as a substitute for doing proper official Releases. Proper Release management and reviews is a key aspect of openETCS Quality.

C.7 6.5 Grievance Handling

When a Member has a concern about a Project, the Member will raise that concern with the Project's Leadership. If the Member is not satisfied with the result, the Member can raise the concern with the parent Project's Leadership. The Member can continue appeals up the Project Leadership Chain and, if still not satisfied, thence to the project office and finally to the Mentoring Board. All appeals and discussions will abide by the Guiding Principles of being open, transparent, and public.

Member concerns may include:

- Out of Scope. It is alleged that a Project is exceeding its approved scope.

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- Dysfunctional. It is alleged that a Project is not functioning correctly or is in violation of one or more requirements of the Development Process.
- Contributor Appeal. It is alleged that a Contributor who desires to be a Committer is not being treated fairly.
- Invalid Veto. It is alleged that a -1 vote on a Review is not in the interests of the Project and/or of openETCS.

A variety of grievance resolutions are available to the project office up to, and including, rebooting or restarting a project with new Committers and leadership.

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Appendix D: openETCS Committer Agreement Template

VERSION: 20130801_openETCS_ICA_v01.docx

openETCS INDIVIDUAL COMMITTER AGREEMENT (oE-ICA)

THIS INDIVIDUAL COMMITTER AGREEMENT (THE “AGREEMENT”) is entered into as of the _____ (the “Effective Date”) by and between the openETCS Project Consortium consisting of organizations as listed on the ITEA2 website, ref: http://www.itea2.org/project/index/view/?project=10135 , AND having signed the openETCS Project Cooperation Agreement (“oE-PCA”) or openETCS Declaration of Acceptance (“oE- DoA”), represented by the openETCS Project-Coordinator and _____ (“Committer”) an individual listed in the openETCS Committer

Database who has been approved to be a committer as further described herein.

INTRODUCTION

Individuals, who give frequent and valuable contributions to the openETCS development project, or component of the project, can have their status promoted to that of a "committer" for that project or component respectively, in accordance with the project’s corresponding charter. A committer has write access to the source code repository for the associated project (or component), or to other content on the openETCS Project website. In order for an individual to become a committer, another committer for the project (or component) must nominate that individual. Once an individual is nominated, the existing committers for the project (or component) will vote using the process and rules determined by the Project Charter and administered by the Project Management Committee (“PMC”). When a new project is started, the responsible corresponding Development Team Leader PMC (Project Management Committee) will nominate an initial set of committers for approval by the openETCS PCC Chairman (or his delegates). Becoming a committer is a privilege that is earned by contributing and showing discipline and good judgment. It is a responsibility that should be neither given nor taken lightly.

By executing this Agreement, Committer agrees that: (a) he or she has reviewed this Agreement, (b) he or she shall comply with all obligations that result from being a committer, (c) he or she shall be entitled to enjoy the rights of a committer, subject to the terms hereof and (d) he or she is fully entitled to license his or her contributions under the terms of the EUPL and/or the Creative Commons by-sa 3.0 unported license (“cc-by-sa”) respectively (see 1.3 below).

1. COMMITTER RIGHTS AND OBLIGATIONS

1.1 Compliance with Bylaws. Committer agrees to abide by the Bylaws of the openETCS Project Consortium as may be amended from time to time, which is hereby incorporated herein by reference.

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1.2 Compliance with Policies and Guidelines. Committer agrees to abide by the IP Policy and Committer Guidelines and any and all additional policies, guidelines and procedures adopted by the openETCS Project Consortium, as may be amended from time to time, which are hereby incorporated herein by reference.

1.3 Compliance with the European Public License, the Creative Commons by-sa 3.0 unported license and the openETCS Terms of Use. All contributions of Committer submitted to the openETCS repository will be published under the terms of the European Public License (“EUPL”) and (concerning Non-code contributions) under the terms of the EUPL and the Creative Commons by-sa 3.0 unported license (“cc-by-sa”). Committer represents that he or she has reviewed and understands the terms and conditions of the EUPL, the cc-by-sa and the openETCS Terms of Use currently located at: http://openetcs.org/termsofuse/. Committer agrees that the openETCS Terms of Use will serve as the general contribution agreement for the openETCS project, unless otherwise agreed to in accordance with the Bylaws and IP Policy. Except as otherwise determined by the openETCS PCC in accordance with the Bylaws and IP Policy, or as set forth in the openETCS Terms of Use, Committer agrees that the EUPL will serve as the distribution license for software contributions and the EUPL and cc-by-sa as the distribution licenses for Non-code contributions (dual-licensing).

1.4 Committer Questionnaire. Committers shall complete and submit to the openETCS Committer Questionnaire.

1.5 openETCS Committer Employer Consent Form. If Committer is employed or is otherwise performing services for a third party as an independent contractor, Committer shall have an authorized representative of such employer sign and submit directly to the openETCS project office the Committer Employer Consent Form provided by the openETCS project office.

1.6 Committer Contact Information. Committers shall promptly inform the openETCS project office of any change in the information provided on the Committer Questionnaire, including without limitation address, other contact information and any change in employment or independent contractor status, as well as the change in employer or third party to whom services are being provided. Committer shall, upon the openETCS project offices’s request, confirm the currency of all information provided in the Committer Questionnaire.

1.7 Committer’s rights. Committers working on content in the openETCS.org Github repository may be granted commit rights to specific project directories and/or files in the repository. Committers working on content on the openETCS.org web site may be granted WebDAV access to specific web site directories and/or files. Committers may also be granted other rights necessary to administrate and manage projects such as mailing list administration, Bugzilla administration, etc. The openETCS project office will have complete control and discretion over which capabilities are assigned to a Committer account, and may terminate or temporarily disable Committer access for any reason at any time.

1.8 Treatment of Account. Each Committer shall maintain the strict confidentiality of his or her passwords issued by the openETCS project office (“Password”) and shall not allow any other individual or entity to use his or her username or Password. Should a Committer become aware of any such use, Committer shall notify the openETCS project office immediately by sending an e-mail to helpdesk@openETCS.org, or such other e-mail address as may be designated by the openETCS project from time to time. Until a Committer has provided such notice to the openETCS project, such Committer shall be presumed to have taken and shall be fully responsible for all actions made through its username and Password.

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2. TERM AND TERMINATION

2.1 Term. The term of this Agreement shall begin on the Effective Date and shall continue until terminated by either party, with or without cause, by written notice to the other party.

3. GENERAL

3.1 No Other Licenses. By executing this Agreement, Committer neither grants nor receives, by implication, estoppel, or otherwise, any rights under any copyright, patents or other intellectual property rights of the openETCS project or any Member.

3.2 Limitation of Liability. IT IS THE EXPECTATION OF THE OPENETCS PROJECT CONSORTIUM AND ITS MEMBERS THAT COMMITTER WILL MEET COMMITTER'S OBLIGATIONS, AND NOT EXCEED THE SCOPE OF HIS OR HER AUTHORITY, AS SET FORTH IN THIS AGREEMENT. NOTWITHSTANDING THE PRECEDING SENTENCE, IN NO EVENT WILL EITHER OPENETCS PROJECT CONSORTIUM, ITS MEMBERS OR COMMITTER BE LIABLE TO EACH OTHER OR ANY MEMBER OR THIRD PARTY UNDER THIS AGREEMENT FOR THE COST OF PROCURING SUBSTITUTE GOODS OR SERVICES, LOST PROFITS, LOST REVENUE, LOST SALES, LOSS OF USE, LOSS OF DATA OR ANY DIRECT, INCIDENTAL, CONSEQUENTIAL, INDIRECT, PUNITIVE, OR SPECIAL DAMAGES WHETHER OR NOT SUCH PARTY HAD ADVANCE NOTICE OF THE POSSIBILITY OF SUCH LOSSES OR DAMAGES.

3.3 Governing Law. This Agreement shall be construed and controlled by the laws of Germany without reference to conflict of laws principles.

3.4 Notices. All notices or other communications to or upon any party shall be delivered to or at the addresses set forth on the signature page(s) hereto. For purposes of this Section, notice can include notice by written mail, electronic mail or by facsimile and shall be deemed served when sent; provided, however, that notice of a breach of this Agreement and notice of termination of this Agreement shall be given by overnight courier service or certified mail, return receipt requested. Either party may give written notice of a change of address and, after notice of such change has been received, any notice or request shall thereafter be given to such party at such changed address.

3.5 Complete Agreement; No Waiver. Except with respect to the Bylaws of openETCS Project Consortium, the IP Policy, the EUPL, the cc-by-sa (if applicable), the openETCS.org Terms of Use and any other policies, guidelines and procedures that may be adopted by openETCS Project, from time to time, in accordance with the Bylaws, this Agreement, including all attachments, sets forth the entire understanding of openETCS project, and the Committer with respect to the subject matter hereof and supersedes all prior agreements and understandings relating hereto, unless otherwise stated in this Agreement. The waiver of any breach or default will not constitute a waiver of any other right hereunder or any subsequent breach or default.

3.6 Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but collectively shall constitute one and the same instrument.

3.7 Compliance with Laws. Anything contained in this Agreement to the contrary notwithstanding, the obligations of openETCS project and Committer shall be subject to all laws, present and future, of any government having jurisdiction over openETCS project or Committer including, without limitation, all export and re-export laws and regulations. It is the intention of openETCS

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project and Committer that this Agreement and all referenced documents shall comply with all applicable laws and regulations.

3.8 Independent Contractors. The relationship of openETCS project with respect to Committer established by this Agreement is that of independent contractors. This Agreement does not give either party the power to direct and control the day to day activities of the other, constitute the parties as partners, joint venturer, co-owners, principal-agent or otherwise participants in a joint or common undertaking, or, except as expressly provided herein, allow either party to create or assume any obligation on behalf of the other for any purpose whatsoever.

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Appendix E: Infrastructure

The following is the text of the infrastructure page, which can also be found at:

`https://github.com/openETCS/ecosystem/wiki/Infrastructure`

E.1 Infrastructure

E.1.1 Mailinglist

The project lead can apply for the creation of a new mailing list to the ecosystem project. The ecosystem project will create the new mailing list as an owner. The project lead is responsible of the day-to-day management. All posts to this mailing list are visible to everyone and everybody can join the list. If spam becomes an issue, the mailing list can be turned into a moderated list. However, all non-spam posts must be accepted. The mailing list is a Google group list. For joining and posting to the list, no Google account is needed. Names of the mailing lists follow the following scheme: projectname@openetcs.org, e.g. ecosystem@openetcs.org. To subscribe to a Google group without a Google account, please send a mail to groupname+subscribe@openects.org. To unsubscribe from a mailing list please send a mail to groupname+unsubscribe@openects.org.

E.1.2 Git Repository

All artefacts of the project are under version control via git, and hosted on gitHub. The top level project at gitHub is https://github.com/openETCS

E.1.3 Further Information

Each workpackage is responsible for its own infrastructure. The first point of information is the repository's top level wiki page. Further, repositories should make extensive use of README.md files, which are automatically picked up by gitHub and displayed below the repository browser.

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Appendix: References

[1] Marielle Petit-Doche and Matthias Güdemann. openETCS process. Definition D2.3, openETCS, February 2013.

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