SWP 4.8 – Maintenance & Operation Living Laboratory

Guideline for Living Laboratory

WP 4.0 Living Laboratory: Compliance

Version: 03.60

Release Date: 2016-07-29

Overview of changes

No.	Version	Status	Date	Type of Change
1	03.10	Released	2015-10-28	Third Release – Update
2	03.50	Released	2016-04-29	Third Release – Second Update
3	03.60	Released	2016-07-29	Third Release – Third Update

Table 1: Document History

Reference to the status and version administration:

Status:

In progress   the document is currently in editing mode

Released   the document has been checked and released by quality assurance; it can only be modified if the version number is updated.

Versions:

Takes place in two stages. Released documents receive the next highest integral version number.

00.01, 00.02 etc.   Not released versions, with the status in progress

01, 02, etc.   Released version with the status released

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1   Document Information

1.1   Purpose of this document

The Guideline for Living Lab contains general information for ECo-AT project partners and 3rd parties in order to access the Living Lab environment for performing conformance and acceptance tests:

- Living Lab Network Access and Integration
- Installation Guideline Roadside Infrastructure
- Test Procedure
- Contact Persons
- Terms & Conditions

1.2   Definitions, Terms and Abbreviations

Abbreviation / Term	Definition
AG	Amsterdam Group – co-operation of C2C-CC, CEDR, ASECAP & POLIS for European roll-out of Cooperative ITS
C2C-CC	Car to Car Communication Consortium
C-ITS	Cooperative ITS – C-ITS is a *"subset of overall ITS that communicates and shares information between ITS stations to give advice or facilitate actions with the objective of improving safety, sustainability, efficiency and comfort beyond the scope of stand-alone systems"* (ISO/TR 17465-1)
FOC	Fiber Optic Cable
ISS	Intersection Safety [ECo-AT SWP2.1 UC ISS]
ITS	Intelligent Transport Systems – systems that use information and communication technology to improve transport systems
IVI	In-Vehicle Information [ECo-AT SWP2.1 UC IVI]
MAP	Message to convey local, detailed network topology in specific areas, as specified in ISO/PDTS 19091 and [ECo-AT SWP2.1 UC ISS]
MC	Media Converter
PKI	Public Key Infrastructure
PP	Project Partners
RSE	Road Side Equipment
RWW	Road Works Warning

Abbreviation / Term	Definition
SPAT	Signal Phase & Timing [ECo-AT SWP2.1 UC ISS]
TLS	Roadside unit in compliance with "Technische Lieferbedingungen für Streckenstationen" TLS 2012 by BAST
TT	Testfeld Telematik
WP	Work Package

Table 2: Definitions, Terms and Abbreviations

1.3   References

All references in this document can be found in the master table of references available in the "ECo-AT_SWP2.3_MasterTableOfReferences_v03.60.pdf" document.

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2   Introduction

Third parties (not being project partners of ECo-AT) will have access to the system specifications as they will be published. It is the aim of the ECo-AT partners to assure a short time frame between the elaboration of interim results in the different releases and the publishing of releases in order to assure that third parties have the chance to give feedback to the specifications in due time.

The feedback from partners and third parties to the overall system architecture of ECo-AT will be treated by change requests.

Until the start of the Living Lab, the Testfeld Telematik installations will remain operational. Project partners as well as third parties are invited to test against the system specification in the Living Lab on a voluntarily basis. For this purpose, access to the Living Lab and test system will be granted under specific terms, which are defined in this document. The Living Lab will start for third parties as well as for project partners at the same time.

Third parties are free to participate in the Living Lab with an entire ECo-AT system (C-ITS-S, R-ITS-S and V-ITS-S) or even with single ECo-AT system components. In case a third party strives for executing system test cases, but has only a single system component (e.g. R-ITS-S) available for testing, it shall cooperate with an ECo-AT project partner or with another third party. If cooperation is not possible, this third party will not be able to execute system test cases. In this case, testing is limited to component tests.

If a third party has C-ITS-S and R-ITS-S available for testing in Living Lab phase 1, the implementation of interface IF3 may be different to the ECo-AT specification. Due to the fact, that only ECo-AT test cases are supported by the Living Lab, component and IOP tests are not possible with this setup. This setup only allows system tests, where IF3 is an internal interface of the system under test (SUT). Interface IF1 still need to be compliant to the ECo-AT specification. Interface IF2 need to be compliant to the Pilot PKI specification of the C2C-CC, which is applied in ECo-AT. This concession is valid for ECo-AT phase 1 but not for phase 2. In phase 2, interface implementations different to ECo-AT specification will not be allowed.

The execution of non-ECo-AT test cases in the Living Lab is not supported. Third parties may execute non-ECo-AT test cases in the Living Lab as long as the test procedure is not affected. Third parties shall ask the Living Lab operator, see chapter 7, for permission anyway.

3 Living Lab Network Access and Integration

This chapter describes the needed steps in order to access the Living Lab network environment and to integrate with the existing Living Lab components.

3.1 Living Lab Network Access

ASFINAG uses an IP-based core network, which enables several services, and subnetworks, which are clearly separated from each other using a zone concept.

The ASFINAG IP-subnetwork „IPC_KOS", previously used for „Testfeld Telematik", can be used for ECo-AT and the Living Lab. ECo-AT industry partners already have central- and roadside equipment and servers operational in IPC_KOS from „Testfeld Telematik", which can be accessed using personalized VPN accounts realized over the Cisco AnyConnect client. Third parties will get the same network and VPN access.

The IP_KOS subnetwork includes a DMZ (IPC_DMZ_KOS) to expose parts of the network / services to larger networks / the Internet. This was used in „Testfeld Telematik" to enable a GUI for the central side and can be used in ECo-AT for enabling services like the PKI connection. Putting a server into the DMZ and enabling an outbound service is an exception only for selected and reasonable services with specific attributes (IP-address / port) and has to be coordinated with ASFINAG.

The server for Interface 1 (IF1), which facilitates the connection between TCC and C-ITS-S, will be running inside of IPC_KOS and therefore be easily accessible for all components and servers within. It has specific access to the necessary TCC data (DDS) outside of IPC_KOS. There will be no separation or isolation or firewalling between participants of the IPC_KOS network. All project partners (and third parties) are sharing a common network and are expected to behave accordingly. Only VPN access to the network can be tailored to a specific IP range.

The whole network will have access to a NTP server for time synchronization.

Administration, IP allocation and IP management, VPN access, firewall configuration, routing, communication management, activation of ports and services and DMZ management for the IPC_KOS and IPC_DMZ_KOS subnetwork will be handled by ASFINAG. Contact persons can be found in chapter 6.1.
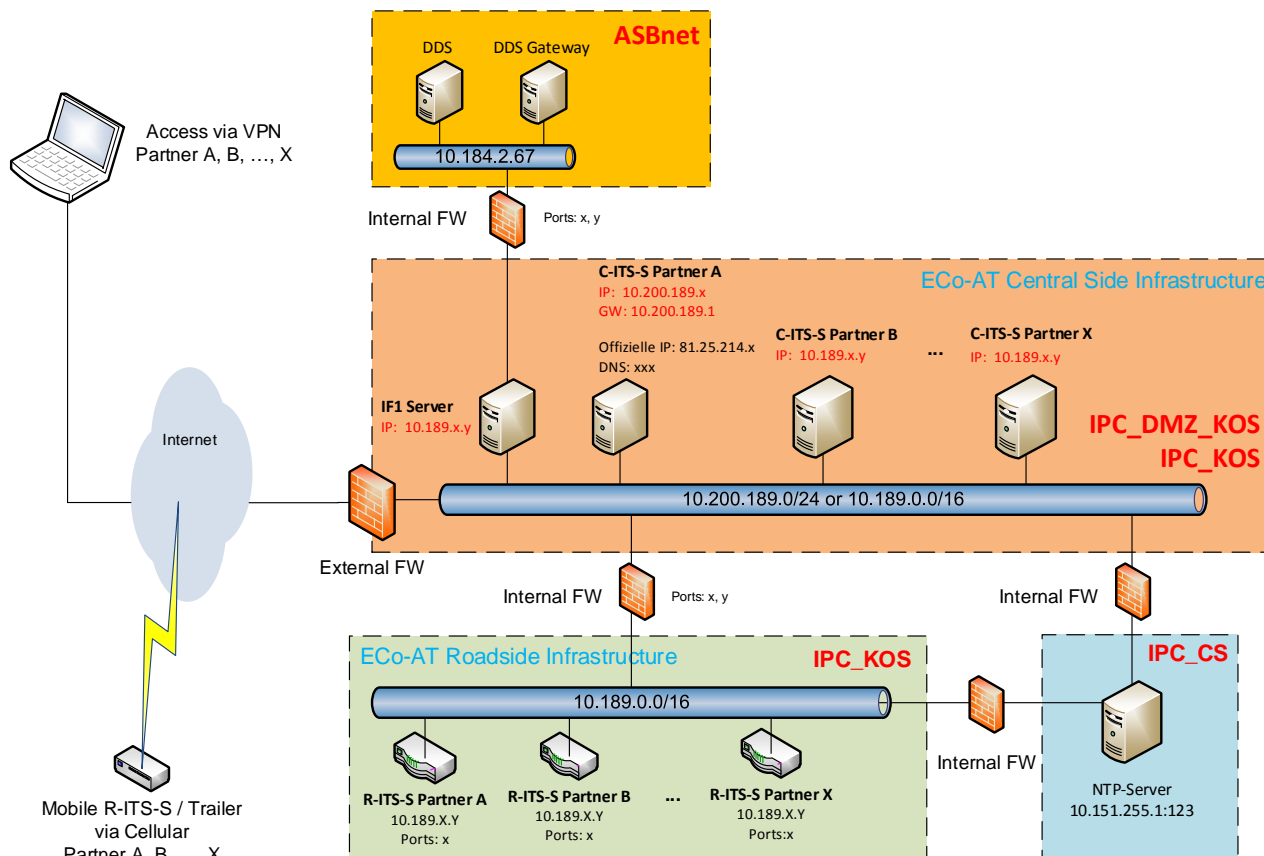
Figure 1: Living Lab network overview

3.2 Living Lab Integration (Server / C-ITS-S)

Regarding the integration of C-ITS-S into the Living Lab, two scenarios are possible. Contact persons for both scenarios can be found in chapter 6.2.

3.2.1 Virtual Server in the IPC_KOS or IPC_DMZ_KOS subnetwork

In this scenario, ASFINAG provides the virtualization host / VMWare without a Guest-OS while project partners and third parties operate and maintain the Guest-OS. The resulting C-ITS-S Server is placed in the IPC_KOS subnetwork. Parameters of virtualization (like CPU, RAM, HDD, network access, …) have to be clearly defined and agreed upon with ASFINAG before any deployment. Installation media / images can then be provided for the initial setup of the Guest-OS. Provision of an OS, installation or configuration, backup, updates or any other care for the Guest-OS are not part of the ASFINAG service.

3.2.2 Server Housing in the IPC_KOS or IPC_DMZ_KOS

In this scenario, ASFINAG provides rack space for the housing of actual C-ITS-S hardware in one of its data centers in the Vienna region. See Figure 2 for the most suitable C-ITS-S location in the Living Lab. Individual

installations are expected not to exceed a height of 1-2 rack units. This scenario includes the provision of power and network access (into the IPC_KOS subnetwork) after agreement on all parameters of this server housing. ASFINAG reserves the right to refuse further server housing requests if there is no sufficient space available. Provision of an OS, installation or configuration, backup, updates or any other care for the OS on the servers to be accommodated are not part of the ASFINAG service and shall be provided by project partners / third parties.

3.3   Living Lab Integration (New roadside installations / R-ITS-S)

ECo-AT partners will integrate more than 20 previous roadside installations on the motorway triangle around Vienna used in the "Testfeld Telematik" project into the ECo-AT Living Lab. New installations will also be possible, new locations shall be defined in coordination and agreement with ASFINAG based on local availability of technical resources. The principles for new roadside installations are outlined in an installation guideline as presented in chapter 4. All new installations shall adhere to the principles presented in this guideline. The current integration status is illustrated in Figure 2. Light and dark green flags represent R-ITS-S locations whereas orange flags represent C-ITS-S locations.

For third party installations, specific test locations will be named by ASFINAG, providing easier than usually access and allowing faster turnaround between different third parties. The two locations most suitable are marked in Figure 2 with a red flag and the lable "3rd party".
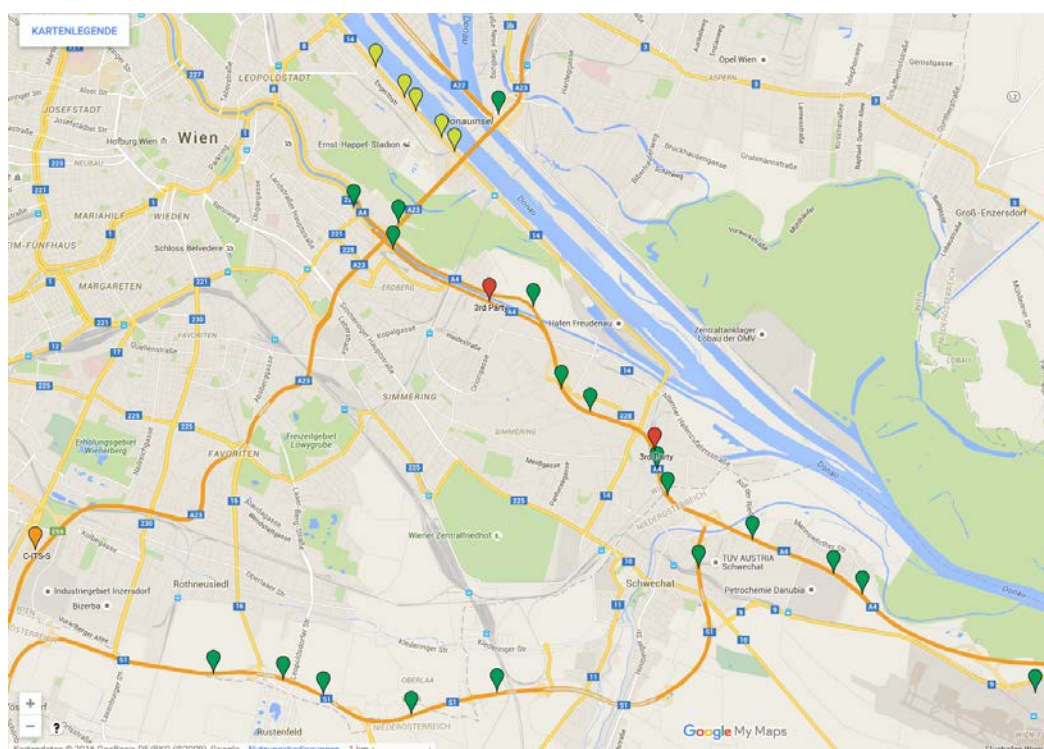

Figure 2: Living Lab installations integrated from "Testfeld Telematik"

4 Installation Guideline Roadside Infrastructure

4.1 Introduction

The Living Lab provides both project partners and interested third parties a possibility to test cooperative systems in a real environment. For these tests, ASFINAG's overhead gantries shall be used to install communication equipment, hereinafter referred to as road side equipment (RSE).
It has to be considered that there is existing equipment from the previous finished project "Testfeld Telematik" (TT).

The installation of RSE should be conducted by the project partners (PP) themselves with support by ASFINAG. ASFINAG grants PP the right to install and use their RSE free of charge on certain sections of the road for the duration of the project. The mounting of the necessary equipment takes place on existing infrastructure facilities located on ASFINAG motorways and expressways.
For the time being, the Living Lab equipment shall be installed at the following motorway sections:

- Motorway A2 section between km 0 and km 7
- Motorway A4 section between km 0 and km 14
- Motorway A23 section between km 0 and km 12
- Expressway S1 section between km 0 and km 16

4.2 Infrastructure

4.2.1 Roadside Infrastructure

Roadside Infrastructure includes any kind of infrastructure, which is installed next to a motorway or an expressway.

Figure 3 shows a schematic plan of a typical ASFINAG overhead gantry including the associated TLS road-side unit ("Streckenstation").

The components in orange colour indicate ASFINAG's existing infrastructure, where components in red colour indicate possible RSE of the PP. The picture can differ from the actual installation.

ASFINAG overhead display gantry
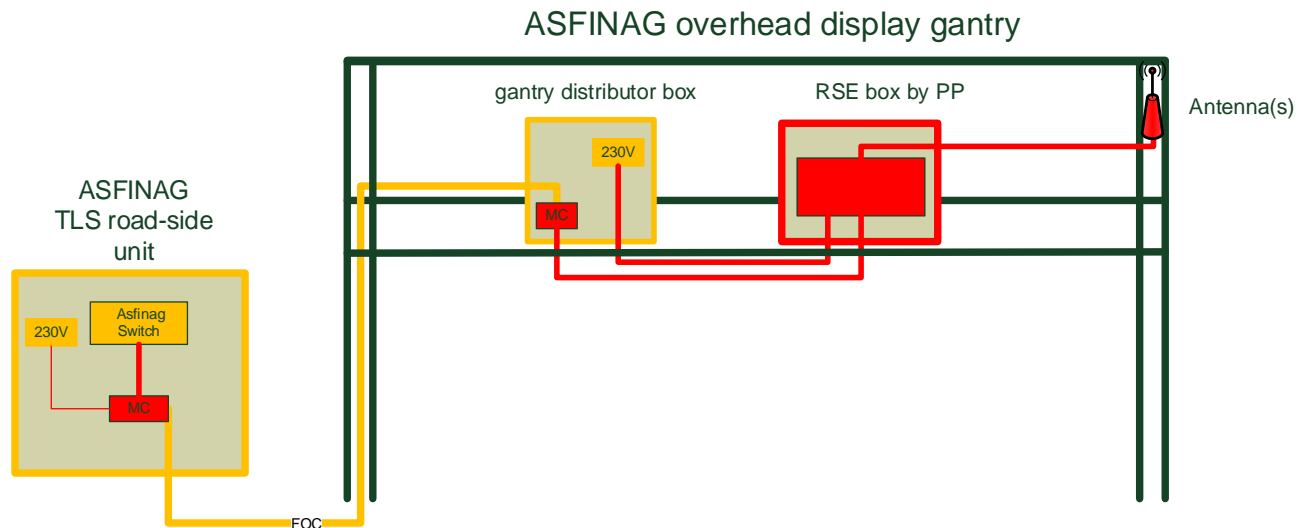
Figure 3: Schematic plan of an overhead gantry including the TLS road-side unit

Site visits are required for the detailed design of each site. Appointments for these site visits have to be made with the responsible ASFINAG contact person.

4.2.2   Existing Sites

The ECo-AT project partners Kapsch, Siemens and Swarco already maintain around 30 sites in the motorway triangle around Vienna. These sites are integrated in the subnetwork IPC_KOS and will be transferred into the Living Lab.

4.2.3   Power supply for equipment

The gantry distributor box of a particular overhead gantry is agreed as interconnection point 1 between ASFINAG and PP. ASFINAG will provide the power supply (230 V) at this point.

Any further required cabling from this point has to be done by and at the expense of the PP. ASFINAG cannot guarantee a continuous availability of power supply and data supply.

The power and fusing requirements, the equipotential bonding and the lightning protection for a specific site have to be coordinated with the responsible ASFINAG contact person.

4.2.4   Data Link

The data link from the switch (interconnection point 2) in the TLS road-side unit ("Streckenstation") via the existing fiber optic cable (FOC) to the gantry distributor box has to be done by and at the expense of the PP.

For the network connection of the RSE at the gantry, there are typically 2 fibres of a FOC (Multimode, 50/125, SC) available. Each end of the FOC is attached to a patch panel (at the TLS road-side unit and gantry distributor box). The installation of required fibre media converter (MC) is in the responsibility of the PP.

For each specific site, ASFINAG will provide the PP with a static IP address (Subnet-mask + gateway) at the interconnection point 2 (switch port). If required, the PP can request additional IP addresses from ASFINAG. These particular IP addresses will be routed into the virtual LAN IPC_KOS.

Details about the IPC_KOS network, its DMZ, time synchronisation (NTP) options and external access via VPN using the CISCO AnyConnect client can be found in chapter 3.1 and Figure 1.

4.3   Site visits

Site visits are carried out by the respective PP in agreement with the responsible ASFINAG contact person as listed in chapter 6.3. Since sites might be different, a site-specific coordination with the responsible ASFINAG regional maintenance manager is mandatory. Contact Details can be requested from ASFINAG. The following list shows the responsible contacts in charge of turnpike maintenance ("Autobahnmeistereien") for particular road sections in the area of Vienna.

Road Section	Responsible Contact
A2 km 0 up to km 7,3	Autobahnmeisterei Inzersdorf
A23 km 0 up to km 10,25	Autobahnmeisterei Inzersdorf
A23 km 10,25 up to km 15	Autobahnmeister Kaisermühlen
A4 km 0 up to km 6,6	Autobahnmeister Kaisermühlen
A4 km 6,6 up to km 14	Autobahnmeisterei Schwechat
S1 km 0 up to 12,8	Autobahnmeisterei Inzersdorf
S1 km 12,8 up to km 16,6	Autobahnmeisterei Schwechat

Table 1: List of responsible contacts

4.4   Planning

During the site visits, photos have to be taken of all relevant sites and components for detailed planning of the installation

Photos of all positions, where RSE should be mounted, need to be taken and marked. Examples can be found in Figure 5. In addition, a detailed schematic design (example in Figure 6) has to be created which shows the all to-be-installed components and their connections (including details on the kind of connection).

All responsible persons (as listed in 6.3) must be informed about the implementation plan.

The PP has to create a detailed installation management plan, which explains the approach and the planned installation work and procedures for all responsible persons.

4.5 Installation

Before commencing with an installation, a written approval of all responsible persons (as listed in 6.3) has to be obtained and forwarded to:

- Peter Meckel (peter.meckel@asfinag.at)
- Marko Jandrisits (marko.jandrisits@asfinag.at)

On the basis of this approval, ASFINAG permits the PP to install equipment, which is required for communication on a particular site's existing steel construction. The PP is responsible that the installation does not at all impact the operation of the site, the system or the traffic. The mounting of the RSE on the steel construction has to be made in a way that no parts might drop on the road.

The beginning of work and the implementation in the area of federal highways has to be agreed with the agency in charge of turnpike maintenance. If safeguarding is required during the installation, it has to be agreed in advance with the agency in charge of turnpike maintenance.

The necessary hand-over of keys for the TLS road-side unit and/or the gantry distributor box has to be coordinated accordingly.

4.6 Documentation

All sites have to be documented completely and reproducibly. A detailed photo protocol has to be provided in soft copy. The photo protocol has to include all components (cases, antennas, cabling etc.) and the cabling has to be traceable.

4.7 Test sites for third parties

As mentioned in chapter 3.3, specific test locations for third party installations will be communicated by ASFINAG. The locations are already defined and illustrated in Figure 2 with red flags. They shall provide easier than usually access and allowing faster turnaround between different third parties. The main goal is to enable third party tests on these test site gantries with reduced effort and a tight schedule.

The two defined test sites (Figure 2) on the motorway triangle around Vienna prodive the following framework conditions

- The test site gantries shall be easier to access than the average gantries and allow for a painless approach, parking, installation and de-installation of equipment without complicated safeguard procedures

- Power supply and data access shall be readily available on the gantry / gantry distributor box with free ports on the switch in the TLS road-side unit

- Data access shall be provided by at least having a fiber optic cable (FOC) between gantry distributor box and TLS road-side unit and patch panels on both sides, using media converters (Multimode, 50/125, SC).

  o Optional: the availability of media converters in the gantry distributor box and/or the TLS roadside unit or the availability of an ready-to-use Ethernet switch in the gantry distributor box would be ideal, but is not required

- No DSRC based tolling equipment shall be present in the vicinity of 200m of the test site gantries.

- Third parties shall receive contact data for an external contractor that can install and de-install equipment on the test site gantries. The commissioning third parties will carry installation costs.

- ASFINAG shall provide a recommendation for the maximum dimensions and mounting principles of the RSE box a third party may provide

- Optional: Ideally, each test installations shall have a possibility to stop or park a vehicle near the gantry and within the communication range of installations on the gantry without third parties requiring special permits or licenses to stop or park a vehicle.

- Optional: Ideally, more than one installation by a third party is possible on one test site gantry at the same time

4.8 Examples

This section includes photos and illustrations as examples. The particular sites may differ from these examples and therefore require site visits.

Figure 4: Example of an overhead display gantry

Figure 5: Examples of edited photos for planning taken during an on-site visit
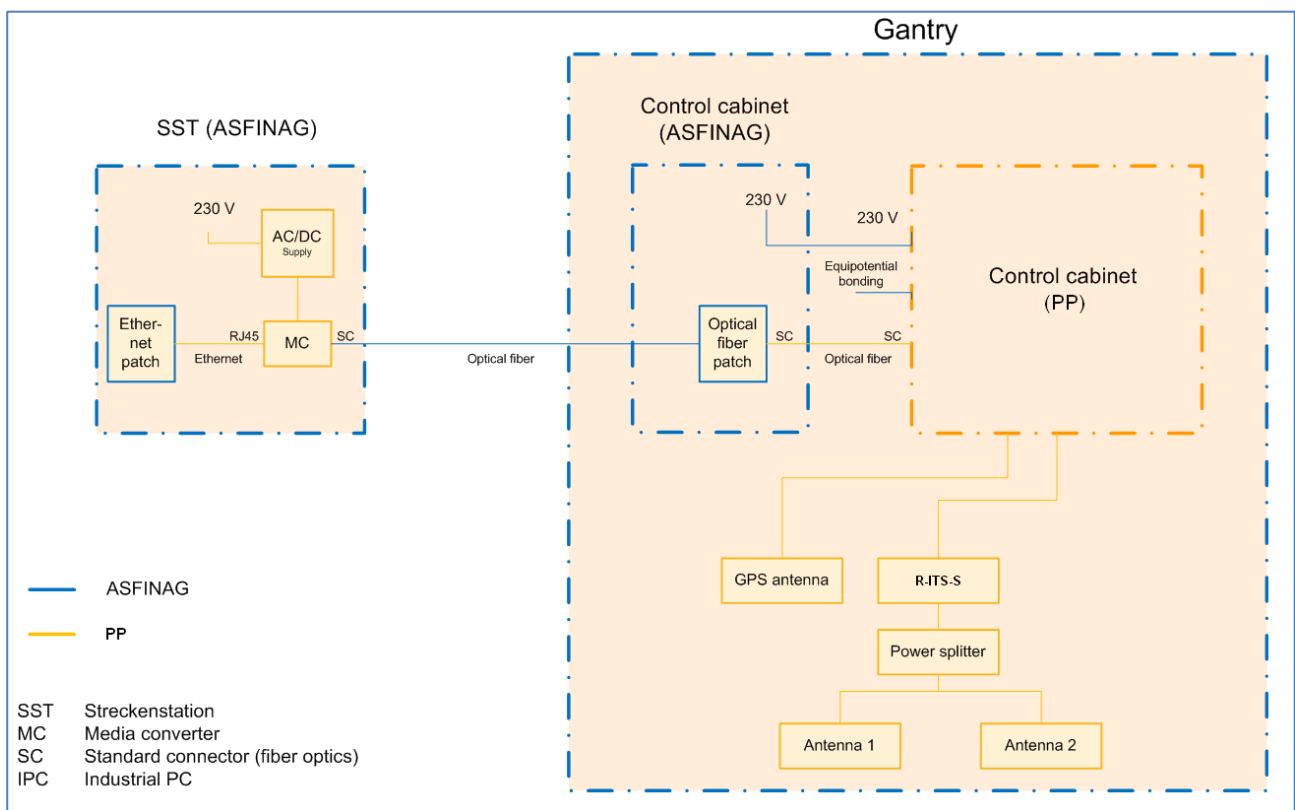
Figure 6: Example of a detailed schematic design
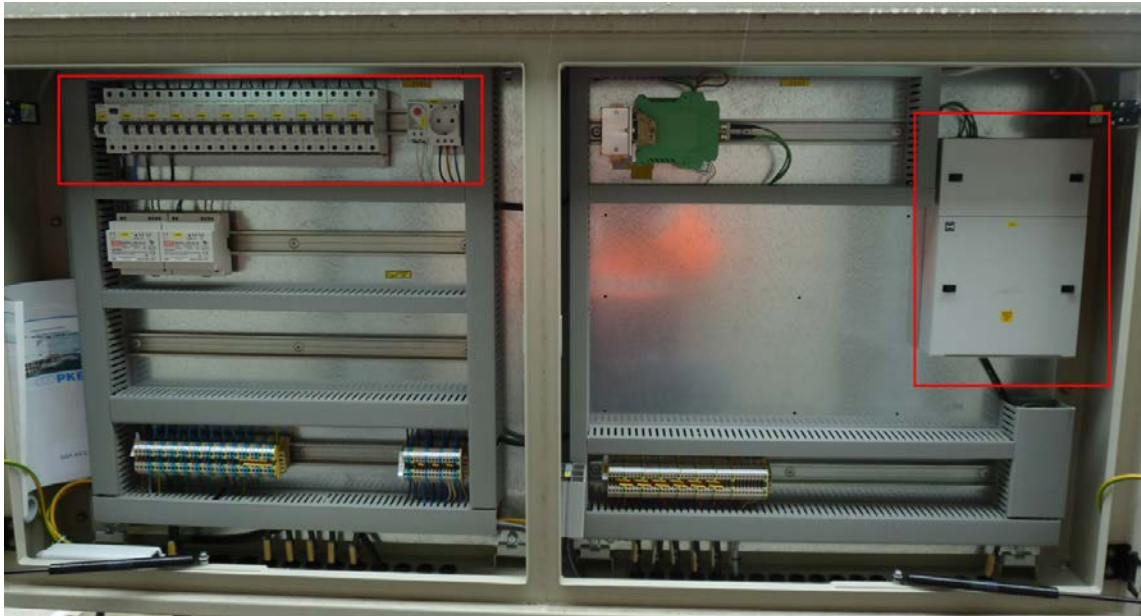
Figure 7: Interconnection point 1: Example of gantry distributors (power supply & optical fiber patch panel)

Figure 8: Interconnection point 2: TLS roadside unit with network switch

5 Test Procedure

The test procedure defines the test setup (test system, SUT) and the test program for each test category (component, IOP and system test). The test categories for the Living Lab are defined in the document Living

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Lab Definition [ECo-AT SWP3.7 living lab] . No matter what test category, it will be appreciated that all parties prepare for testing in the following manner.

1. Contact Living Lab operator and inform about envisaged SUT, test category and test cases in an informal manner.
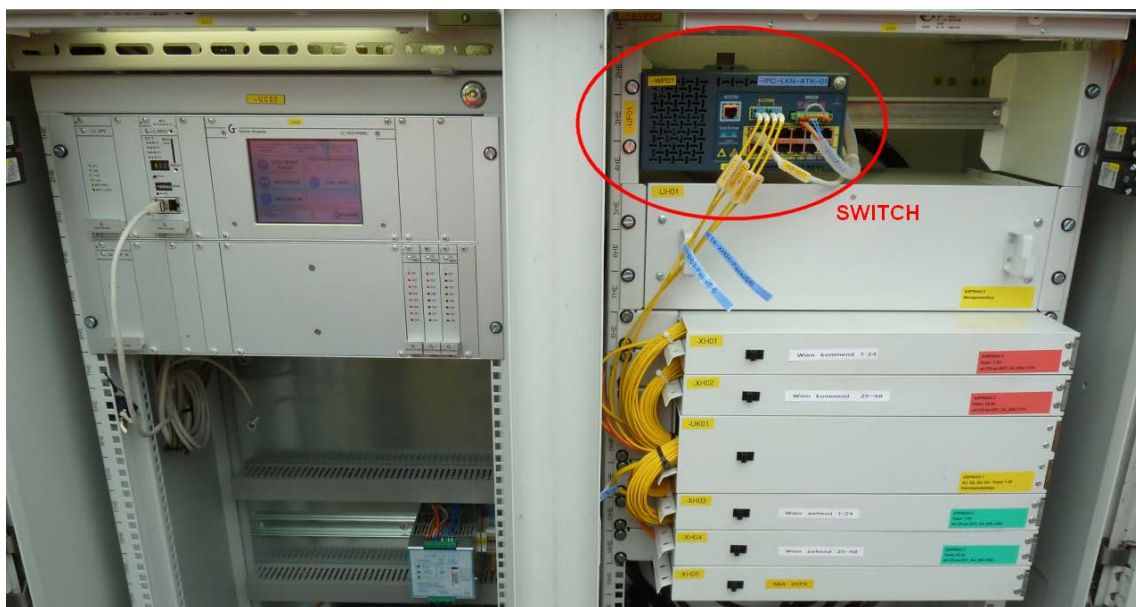2. If required, agree upon cooperation with ECo-AT partners or other parties to take part in the Living Lab as consortia.
3. Agree upon possible test site and time slot with Living Lab operator.
4. If required, install SUT and integrate into Living Lab (e.g. R-ITS-S).
5. Execute test cases within the time slot and provide anonymised test reports to Living Lab operator.
   NOTE: The test report shall be used to validate test cases and test system rather than the performance of the SUT of individual participating party.
6. If required, remove SUT from Living Lab within time slot.

5.1   Component tests

ECo-AT system components are integrated into the Living Lab in a stepwise manner. That is why component tests shall be executed first of all. The test cases for components are defined in the respective release document [ECo-AT SWP4.1 C-ITS-S] and [ECo-AT SWP4.2 R-ITS-S]. Its aim is to perform the subsequent interoperability and system tests effectively and with minimized risks.

No dedicated test setup or test program is required for component tests from the perspective of ECo-AT. Partners and third parties test their own components in an independent manner and choose test setup and test program by themselves.

5.2   Interoperability tests

Component tests are followed by Interoperability (IOP) tests. Its aim is to verify the collaboration between C-ITS-S and R-ITS-S components from different partners and third parties before an extensive system test. In other words, two components of different vendors shall behave no other than two components from the same vendor. Regarding C-ITS-C and R-ITS-S, IOP tests require no extra setup. However, the IPC_KOS network shall allow a C-ITS-S or R-ITS-S to switch the connection to the appropriate communication partner.

Note: Third parties may not take part in IOP tests of C-ITS-S or R-ITS-S, if interface IF3 is proprietary and does not comply with the ECo-AT specification. More conditions for third parties can be found in section 3.

5.3   System tests

IOP tests are followed by system test. Test topics for system tests are security, co-existence, use cases and cross-testing. Test cases are defined in [ECo-AT SWP4.6 use cases]. The setup for use case tests is described in section 5.3.1 to 5.3.5. Test messages, test environment and test sessions for each Test Cycle are defined in a document that is not part of ECo-AT releases but is distributed to Test Cycle.

Security, co-existence, use case and cross-border tests are topics of system tests. Multiple components of the ECo-AT C-ITS system are involved in test cases for system tests. The execution of test cases for component or IOP tests in parallel to system tests is impossible on that account. Component and IOP tests shall be scheduled before system tests.

All ECo-AT test cases are published along with release documents. Partners and third parties choose test scope and test system in ECo-AT phase 1 on their own and execute compliance tests on a voluntary basis.

Templates for test case and test result documentation is harmonized within ECo-AT and published again with release documents.

5.3.1 Roadworks Warning Use Case Test

Two options (A and G) of the Roadworks Warning use case shall be tests. Option G is conform to the Roadworks Warning use case in CITSC Project Group 7 (Germany). Option A is conform to the ECo-AT specification of the Roadworks Warning use case as defined in [ECo-AT SWP2.1 UC RWW]. Cross-tests within the scope of the Cooperative ITS Corridor (CITSC) shall be possible in the Living Lab after the third Test Cycle of CITSC Project Group 7 in Germany. Real roadworks shall be used for the time slot of cross-tests.

5.3.1.1 RWW Option A

Either the stationary as well as the mobile mode shall be tested for RWW option A. A stationary R-ITS-S in the vicinity of roadworks shall distribute the RWW messages over ETSI ITS-G5 for the stationary mode and a roadworks trailer for the mobile mode. Option A executes the test cases conform to the ECo-AT specification in [ECo-AT SWP4.6 use cases].

5.3.1.2 RWW Option G

The setup for RWW option G shall be the same as for the Test Cycles in Germany. This way, the effort for third parties, which participated in Test Cycles in Germany, using the Living Lab for compliance testing shall be as small as possible.

A Roadworks Trailer, which is placed at the roadworks location, shall distribute the RWW messages over ETSI ITS-G5. The stand-alone and the connected mode (with connection with C-ITS-S) shall be tested. Option G test cases shall conform to the test cases from Test Cycles in Germany. On-site information (cones for start and end of Roadworks) shall be provided on demand by a mobile device application and collected by the TCC. Finally, the TCC triggers the RWW use case based on the mobile device information or a simulated trigger. The C-ITS-S will be instructed to create information according to the RWW trigger from the TCC required for ETSI ITS-G5 message generation at R-ITS-S.

5.3.2 In-Vehicle Information Use Case Test

The setup for the In-Vehicle Information use case [ECo-AT SWP2.1 UC IVI] test involves a traffic message generator that simulates traffic messages for testing in the Living Lab. The TCC is substituted by a message

generator this way. The C-ITS-S shall receive the simulated traffic messages on IF1 and map the traffic message to the respective IF3 protocol data unit for delivery to R-ITS-S on IF3. For the validation of IVI reception at V-ITS-S two options are available: a V-ITS-S on the road or monitor functionality in the laboratory. Due to the one-way nature of the In-Vehicle Information use case, the test setup does not need to support communication starting from V-ITS-S.

5.3.3   Intersection Safety Use Case Test

The test setup and test program for Intersection Safety use case [ECo-AT SWP2.1 UC ISS] is limited to interface IF4. SPAT and MAP messages shall be tested for compliance with ETSI Plugtest ITS-CMS4 2015.

5.3.4   Other DENM Use Case Test

The setup for the Other DENM use case [ECo-AT SWP2.1 UC other DENM] test involves a traffic message generator that simulates traffic messages for testing in the Living Lab. The C-ITS-S shall receive the simulated traffic messages on IF1 and map the traffic message to the respective IF3 protocol data unit for delivery to R-ITS-S on IF3. For the validation of DENM reception at V-ITS-S two options are available: a V-ITS-S on the road or a V-ITS-S simulator in the laboratory. Due to the two-way nature of the Other DENM use case, the test setup needs to support communication starting from V-ITS-S.

5.3.5   CAM Aggregation Use Case Test

Two test setups for the CAM Aggregation use case [ECo-AT SWP2.1 UC CAM aggr] are possible: Live data from a field test or simulated data from a laboratory test. The basic functionality of the use case can be tested in the Living Lab using a small number of V-ITS-S on the road. This allows the execution of test cases that are fine with a small number of different vehicles.

Test cases, that required a large number of different vehicles, shall be executed in a laboratory environment rather than on the road. The test system shall simulate V-ITS-S according to the ECo-AT test case specification in [ECo-AT SWP4.6 use cases]. To distribute the simulated CAM messages, the test system needs to be connected to the ECo-AT C-ITS system.

5.3.6   Security tests

Note: A later release shall define test setup and test program for security tests.

5.3.7   Co-existence tests

Note: A later release shall define test setup and test program for co-existence tests.

6   Contact Persons

The following contact persons are responsible for the operation of the Living Lab.

6.1   Living Lab Network Access

ASFINAG contacts

- Initial application: ASFINAG MSG, TD, TDK

    - Peter Meckel (peter.meckel@asfinag.at)

- Implementation: ASFINAG MSG, SB, IKT, Übertragungstechnologien

    - Tanyel Arun

6.2   Living Lab Integration (Server / C-ITS-S)

ASFINAG contacts

- Initial application: ASFINAG MSG, TD, TDK

    - Peter Meckel (peter.meckel@asfinag.at)

- Implementation: ASFINAG MSG, SE, IT-CC, Infrastruct. Design & Deployment (IDD)

    - Alexander Schein, Thomas Zagler

6.3   Living Lab Integration (New roadside installations / test sites for third parties / R-ITS-S)

ASFINAG contacts

- Initial application: ASFINAG MSG, TD, TDK

    - Peter Meckel (peter.meckel@asfinag.at)

- Implementation:

    - ASFINAG SG, EE, Betriebstechnik Ost, Betriebstechnik Wien

        - Christian Mietler

7 Terms & Conditions

This chapter describes which Terms & Conditions are valid for the access and use of the Living Laboratory environment and components. Accepting the Terms & Conditions establishes the following rights and responsibilities for any party taking part in the Living Lab, be they project partners of ECo-AT or external.

7.1 Regulations for actions on motorways

ASFINAG provides regulations for activities on motorways („Arbeitsanweisung (AA) für das richtige Verhalten an Autobahnen"). All parties intending to use the Living Lab – project partners or third parties – have to prove that all staff as well as all potentially involved subcontractors involved in actions carried out in the Living Lab has been briefed to comply with these regulations.

7.2 Permissions and compliance with legal regulations

All parties intending to use the Living Lab – project partners or third parties – have to take care of themselves that all legally required permits required to carry out the intended actions have been granted. In particular, the regulations of the Austrian Highway Code ("Straßenverkehrsordnung – StVO") have to be respected at any time of the action. Furthermore, the project partner or third party has to acknowledge that it has to respect the road and traffic related orders of the responsible units of ASFINAG ("Autobahnmeisterei") at any time during the action. Note that ASFINAG retains the right to close roads due to traffic and operational safety reasons at any time, independent from the project plans of the activity.

7.3 Right of modification or removal

Subject to evidence being provided, ASFINAG is entitled to request modification, extension, relocation or removal of equipment where needed, especially in case of modification of road layout or roadside equipment or subject to traffic safety requirements.

7.4 Legal position concerning property

Each party acting in the Living Lab retains ownership of its installed components and infrastructure. After the end of the testing period, the party acting in the Living Lab has the duty to re-establish the situation prior to installing its components and infrastructure. Should this be impossible or possible only with prohibitive technical or financial effort, the acting parties agree to find a consensual solution.

7.5 Costs and reimbursement

ASFINAG will not claim any reimbursement for costs for the use of existing infrastructure, data transmission facilities or power supply during the Living Lab period. All other costs for running and operating Living Lab tests have to be borne by the party / the parties running the tests.

7.6   Liability

All parties intending to use the Living Lab – project partners or third parties – have to ensure that implementation, operation and removal of their action do not lead to any damage to the road surface, the steel constructions, and any other existing roadside infrastructure and also do not lead to any safety risk for road users. This includes the duty to satisfy any liability claims that third parties might have against ASFINAG. ASFINAG can only be held responsible for damage that has been done by staff or subcontractors due to deliberate intention or gross negligence.

Any claim of consequential damage, especially of lost revenue, is explicitly excluded for all parties.

7.7   Compliance

All parties intending to use the Living Lab have to ensure that SUTs using interface IF4 comply with ETSI regulations. The same specifications shall be applied that were used by ETSI Plugtest ITS-CMS4 in March 2015.