RPW Operation Centre

ROC Engineering Guidelines For External Users

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Acronym List

Acronym	Definition
ANT	Antenna
BASH	Bourne-Again SHell
BIA	BIAS unit
CDF	Common Data Format
ESA	European Space Agency
ESAC	European Space Astronomy Centre
ESOC	European Space Operation Centre
GIGL	Groupe Informatique Générale du LESIA
HFR	High Frequency Receiver
ID	Identifier
ISTP	International Solar Terrestrial Physics
LDPA	Lightweight Directory Access Protocol
LESIA	Laboratoire d'Etudes Spatiales et d'Instrumentation en Astrophysique
LFR	Low Frequency Receiver
NFS	Network File System
OS	Operating System
RCS	RPW Calibration Software
ROC	RPW Operation Centre
RODP	ROC Operations and Data Pipeline

RPW	Radio and Plasma Waves experiment
RSS	ROC Software System
SCM	Search-Coil Magnetometer
SSH	Secure SHell
SVN	SubVersioN
S/W	Software
TC	Telecommand
TDS	Time Domain Sampler
TM	Telemetry
TNR	Thermal Noise Receiver
URL	Uniform Resource Locator
VCS	Version Control System

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1 GENERAL

1.1 Scope of the Document

This document addresses guidelines for the external users involved in the engineering activities of the RPW Operation Centre (ROC) [RD1].

In the framework of this document, the definition of external users covers the people and teams that do not belong to the ROC engineering team in the LESIA site (Meudon, France). Especially, it includes the teams in charge of delivering to the ROC the RPW Calibration Software (RCS). The RCS are software autonomously run by the ROC Operations and Data Pipeline (RODP), in order to produce RPW calibrated science data files at the LESIA.

The guidelines concerning the ROC team at LESIA are listed in the "ROC Engineering Guidelines" document [RD10].

1.2 Applicable Documents

This document responds to the requirements of the documents listed in the following table:

Mark	Reference/Iss/Rev	Title of the document	Authors	Date
AD1				
AD2				

1.3 Reference Documents

This document is based on the documents listed in the following table:

Mark	Reference/Iss/Rev	Title of the document	Authors	Date
RD1	ROC-GEN-SYS-PLN-00002-LES/1/3	RPW Operation Centre Concept and Implementation Requirement Document (CIRD)	Y.de Conchy, X.Bonnin	20/12/2016
RD2	SOLO-RPWSY-IF-55-CNES_0401(=EID-B).pdf/04/01	Experiment Interface Document Part B (EID-B) for RPW	RPW Team	21/12/2012
RD3	SOL.EST.RCD.0050/03/00	Experiment Interface Document Part A (EID-A)	Erik de Witt	03/08/2012
RD4	ROC-PRO-DAT-NTT-00006-LES/1/0	RPW Data Products	X.Bonnin	23/12/2016
RD5	ROC-TST-GSE-SPC-00017/2/1	Data format and metadata definitions for the ROC-SGSE data	X.Bonnin	14/10/2016
RD6	ROC-PRO-PIP-ICD-00037-LES/01/01 (draft)	RPW Calibration Software ICD	M.Duarte, X.Bonnin	19/03/2017
RD7	ROC-GEN-SYS-PLN-00015-LES/02/02	ROC Software Development Plan	X.Bonnin	27/09/2016

RD8	http://nvie.com/posts/a-successful-git-branching-model/	A Successful Git Branching Model	Vincent Driessen	05/01/2010
RD9	https://git-scm.com/	Git	Git developer community	30/05/2017
RD10	ROC-GEN-SYS-NTT-00008-LES/1/3	ROC Engineering Guidelines	X.Bonnin	09/11/2016

2 GUIDELINES FOR THE RPW CALIBRATION SOFTWARE (RCS)

This section gives the general convention for the RCS, to be delivered by RPW sub-system teams and to be run in the RODP at the LESIA.

2.1 Context

The RCS play a key role in the processing of the RPW science data. They are delivered to the ROC with a dedicated interface [RD6], which allowing the RODP to produce calibrated RPW data files at the LESIA site.

The general convention and the way the RCS must be delivered are described in the next sections.

2.2 General convention

2.2.1 RCS naming

S/W must be named using alphanumerical characters only. If required, only the underscore "_" or hyphens "-" must be used as separators.

2.2.2 RCS versioning

S/W version must be a unique number sequence identifier "X.Y.Z", where "X" is an integer indicating the release (major changes, not necessarily retro-compatible), "Y" is an integer indicating the issue (minor changes, necessarily retro-compatible) and "Z" is an integer indicating a revision (e.g., bug correction).

The first stable release of S/W must have its major number "X" equals to 1, its minor number "Y" equals to 0 and its revision number "Z" equals to 0 (i.e., "1.0.0").

S/W preliminary versions (e.g., alpha, beta, etc.) must have their version number "X" equals to 0 and must not have a character as a prefix/suffix ("0.Y.Zb" for the 0.Y.Z beta version for instance).

In all cases, any change in the S/W must lead to update the version number.

2.2.3 RCS identification

The allocation of the RCS identifier (ID), as defined in the descriptor file [RD6], must be done before the first delivery. The ROC must validate the ID, in order to avoid ID naming duplication in the RSS.

2.2.4 RCS output data identification

The teams have the responsibility to define the list of the datasets produced by their S/W. However, the dataset ID allocation must be done in collaboration with the ROC, in order to avoid ID naming duplication in the RSS.

2.2.5 Storage of the RCS at the LESIA site

The ROC uses Git [RD9] as a Version Control System (VCS) to store its source codes at LESIA.

To ensure the archiving of RCS versions, a copy of each S/W must be also stored in a specific git repository in the dedicated ROC Gitlab server.

The URL of a given RCS must be:

https://gitlab.obspm.fr/ROC/RCS/[name_of_rcs]

Where [name_of_rcs] is the name of the RCS, which must follow the convention in the section 2.2.1.

The teams are free to use or not this repository to develop and test their RCS, however the following rules must be applied:

- The "master" branch must be used only for storing new version of the S/W to be delivered at the ROC. In another word, dev. or test versions must not be committed on this branch.
- Any RCS version committed on the "master" branch must be tagged. The name of the tag must be the version of the S/W without the "V" prefix. In the very special case where a modification in the "master" branch is required, but does not need to update the version of the S/W, a fourth integer can be appended as a suffix to the tag name (i.e., "X.Y.Z.k", where "X.Y.Z" is the S/W version number, and "k" is the integer that can be incremented by 1, starting at 1).

If teams also use the Git repository to perform the S/W development and testing, the ROC developer team strongly recommends to protect the "master" branch, and to apply the Vincent Driessen's branching model [RD8].

In the case where teams use another VCS, or a different Git server, to store its RCS source code, quasi-automated interface should be set up with the support of the ROC, in order to transfer the content to the ROC Gitlab server, with a minimal human intervention.

2.3 Procedures related to the RCS

2.3.1 Delivery of a new RCS version

Each time a new version of RCS is available, the team in charge must:

1. Upload (i.e., push) the RCS content in the dedicated Git repository in the ROC Gitlab server (see section 2.2.5).
2. Inform the ROC and the teams involved, sending a message to the roc.teams@sympa.obspm.fr mailing list. The object of the mail must contain the name and version of the S/W as well as the purpose (e.g., "NAME -- VERSION -- NEW RELEASE:").

The ROC team will then realize the deployment and integration test of the RCS, as explained in the section 2.3.3. If at least one test has failed, then the ROC will inform the team in charge. If all of the tests are passed successfully, then the RCS is integrated into the RODP and all the teams involved are informed via the roc.teams@sympa.obspm.fr mailing list.

Note that if the changes in the new version of the RCS have impacts on the data products, the integration of the S/W might require upgrading also other RCS that use these data as inputs. In this case, the procedure might be longer if discussions are needed.

Any RCS release must be at least delivered with the following items:

- The S/W descriptor file, as defined in [RD6].
- At least the mandatory context files, placed at the root of the S/W directory, as defined in [RD10].

- The S/W source code files
- Any script or executable file used to run S/W on the ROC servers. This executable must comply the specification defined in [RD6].
- If required, any additional libraries required to compile and/or to run S/W
- If required, any script or program used to compile S/W on the ROC servers (e.g., makefile or ant build file for instance).
- If it exists, any script or executable file that could permit to test the S/W execution.
- Any data samples required to run the S/W execution tests.
- If required, any shell script required to set/unset the S/W environment variables.
- The corresponding up-to-date documentation. Especially a user manual describing in details the S/W in terms of organization, installation and use. This document must be compliant with the ROC documentation conventions defined in [RD10].

The organization of the S/W root directory may look like to the ROC proposal in [RD10].

2.3.2 Testing and validating the RCS execution

Before delivering the RCS, the teams in charge must perform the test and validation of the RCS execution.

In particular, they must ensure that: (i) their S/W can be compiled and run on the ROC development server. (ii) The interface with the ROC complies the specification in [RD6].

2.3.3 Integration test and validation in the RSS

The integration test consists of deploying the RCS into a testing copy of the RSS. Especially, the compliance with the expected interface, modes and input/output data is checked, then an end-to-end test is run to verify the RCS behaviour. If the integration test has ended successfully, then the RCS is then deployed in the actual RSS and teams are notified.

The integration tests and validations of the RCS are under the responsibility of the ROC.

2.3.4 Maintenance of the RCS

The ROC team monitors the behaviour of the RCS running in its RSS. However, it is the role of the teams in charge to ensure that their S/W are always operational and fully compliant with the ROC interface [RD6].

If an upgrade of the RCS is needed, then it must be considered as a new delivery, and the procedure explained in the previous section must be applied.

2.3.5 Upgrading the RCS data products

Since the outputs of given S/W can be the inputs of another one, the team in charge must inform the other teams, including the ROC, any time the list of outputs for its S/W has been changed, by sending an email to the *roc.teams@sympa.obspm.fr* mailing list.

This modification must lead to deliver a new S/W version, if it requires to update the source code.

In the case where the change only concerns files, such as master CDF or configuration files, a new S/W version is not required, but the “master” branch (containing the new files) must be tagged with the extra “k” integer convention, as explained in the section 2.2.5.

2.3.6 Maintenance of the ROC Operations and Data Pipeline

If a maintenance impacting the RCS is performed on the RODP, the teams are informed by an email sending to the roc.teams@sympa.obspm.fr mailing list.

3 GUIDELINES FOR THE USAGE OF THE ROC ENGINEERING INFRASTRUCTURE

Depending of the need, a part of the ROC infrastructure is accessible to external collaborators. The accessibility concerns more specifically the collaboration tools, but also servers and data disks.

This section gives the rules to be followed by external users relative to this infrastructure.

3.1 ROC team collaboration tools

3.1.1 ROC Gitlab server

The ROC uses git as a main VCS to store its source codes. The ROC git repositories are managed using the Gitlab tool.

The ROC can provide an access to its Gitlab projects on demand.

If the demand concerns software to be implemented in the RODP, the Vincent Driessen's branching model [RD8] might be applied, and only tagged master branch will be used by the ROC.

3.1.2 ROC SVN repository

The ROC can provide an access to its SVN repository on demand.

3.1.3 ROC Baghera Web site

External users can ask for an access to the ROC Baghera Web site, which contains the documentation of the ROC.

Especially, any document relative to the RCS must be archived on the ROC Baghera web site.

3.1.4 ROC Confluence page

The ROC team can provide an access to its Confluence page on demand. The Confluence page is used as a Wiki, in order to share information concerning the ground segment project.

Note that the number of user accounts in Confluence is limited to 25.

3.1.5 RPW Web portal

There is no specific rule concerning the RPW Web portal, which is publicly accessible from Internet at https://rpw.lesia.obspm.fr.

3.1.6 ROC intranet site

The ROC intranet Web site is only accessible by the ROC team at LESIA.

3.1.7 ROC mailing lists

External users can use one of the two following mailing lists to communicate inside the ROC project:

- roc.teams@sympa.obspm.fr, must be used for sending messages for all people involved in the RPW ground segment activities.

- roc.lesia@sympa.obspm.fr, must be used for sending messages only to the ROC team at the LESIA.
- roc.cal@sympa.obspm.fr, must be used for sending messages related to the RPW calibrations activities
- roc.sgse@sympa.obspm.fr, must be used for sending messages related to the ROC-SGSE engineering activities
- roc.support@sympa.obspm.fr, must be used for sending messages if an assistance is needed when using ROC infrastructure, data products or software.

3.1 ROC servers

The description of the ROC servers is given in the "ROC Software Development Plan" document [RD7].

3.1.1 Access policy

External collaborators can ask to open a user account on the ROC development server *roc-dev.obspm.fr*.

The ROC development server is only accessible from the Observatoire de Paris intranet and using the SSH protocol only. This requires users to have both a valid LDAP account at the Observatoire de Paris and a user account on the development server.

Note that the users must connect to the *styx.obspm.fr* server first with their LDAP login and password in order to reach the intranet.

Any request concerning an access to the ROC development server must be addressed to the roc.support@sympa.obspm.fr mailing list.

3.1.1 Usage policy

The default user account access privileges are defined by the ROC team, but can be changed if required.

In the same, the space quota per user must be limited to **20 Gigabytes**, but can be also extended on demand. Especially, large data might not be stored directly in the ROC server. They shall be read/saved from/to the dedicated data disks visible on the server (see next section). This requirement avoids exceeding the disk quota on the server, which is dedicated to data processing.

3.2 ROC data disks

The description of the ROC data disks is given in the "ROC Software Development Plan" document [RD7].

3.2.1 Access policy

The ROC has 16 Terabytes data disk mounted on the ROC servers, and accessible through the "/volumes" local directory.

Each user on the ROC development server has a dedicated space on this disk, reachable at the path:

```
/volumes/plasma/rpw/roc/data/https/private/users/[name_of_user]
```

Where `[name_of_user]` is the name of the user account of the server.

Note that this space can also be visible from Internet via the URL:

https://rpw.lesia.obspm.fr/roc/data/private/users/[name_of_user]

Where [name_of_user] is the name of the user account of the server. The access is restricted and will require to login using the LDAP info.

3.2.1 Usage policy

Each user has the right to read/write inside its dedicated space only. The total amount of data stored in the space must not exceed **50 Gigabytes**. This default configuration can be changed on demand.

4 APPENDIX

4.1 Requirement summary list

Requirement ID	Requirement Description

5 LIST OF TBC/TBD/TBWS

TBC/TBD/TBW			
Reference/Page/Location	Description	Type	Status

6 DISTRIBUTION LIST

LISTS See Contents lists in "Baghera Web": Project's informations / Project's actors / RPW_actors.xls and tab with the name of the list or NAMES below		
		Tech_LESIA
		Tech_MEB
		Tech_RPW
		[Lead-]CoIs
		Science-CoIs

INTERNAL

LESIA CNRS	x	M. MAKSIMOVIC
	x	Y. DE CONCHY
	x	X. BONNIN
	x	QN. NGUYEN
	x	**E. HOLLE**
		L. GUEGUEN
		P. PLASSON
	x	M. DUARTE

LESIA CNRS		

EXTERNAL (To modify if necessary)

CNES		C. FIACHETTI
		C. LAFFAYE
		R.LLORCA-CEJUDO
		E.LOURME
		M-O. MARCHE
		E.GUILHEM
		J.PANH
		B.PONTET
IRFU		L. BYLANDER
		C.CULLY
		A.ERIKSSON
		SE.JANSSON
	x	A.VAIVADS
LPC2E		P. FERGEAU
	x	G. JANNET
		T.DUDOK de WIT
	x	M. KRETZSCHMAR
		V. KRASNOSSELSKIKH
SSL		S.BALE

AsI/CSRC		J.BRINEK
		P.HELLINGER
		D.HERCIK
		P.TRAVNICEK
IAP		J.BASE
		J. CHUM
		I. KOLMASOVA
		O.SANTOLIK
	x	J. SOUCEK
	x	L.UHLIR
IWF		G.LAKY
		T.OSWALD
		H. OTTACHER
		H. RUCKER
		M.SAMPL
		M. STELLER
LPP	x	T.CHUST
		A. JEANDET
		P.LEROY
		M.MORLOT
	x	B.KATRA