PROC24/46 – ENTSO-E WAP Project

Request for Information – Project Brief

PREAMBLE

All information contained within this document is confidential and is provided only to give Candidates an adequate understanding of ENTSO-E requirements. Under no circumstances should information be disclosed to any third party.

The use, reproduction, distribution, or disclosure of this document, in whole or in part, without the express written permission of ENTSO-E, is strictly prohibited.

This RFI is issued solely for information and planning purposes and does not constitute a solicitation or offer to contract. All information received in response to this RFI that is marked proprietary will be managed accordingly.

ENTSO-E reserves itself the right to invite suppliers for the RFP independently of the RFI responses however vendors that are interested in participating in RFP for WAP are strongly encouraged to respond to the RFI with their proposed solution as well as their responses to the questions provided in this document.

Respondents are solely responsible for all expenses incurred when replying to this RFI.

Package of this RFI:
- o   This Project Brief
- o   ''Response Document'' of which cells in yellow need your answer.

PART 1: TERMS & CONDITIONS OF THIS RFI

You are invited to answer this RFI (Request for Information) following the rules and specifications included in this document.

The objective of this request for information is to better understand how your company might accompany ENTSO-E in implementing a WAMS (Wide Area Measurement System) ex-post analysis platform (WAP) using high-resolution PMU (Phasor Measurement Unit) data.

Objectives

The WAP should enable dynamic stability experts of ENTSO-E to quickly perform continuous ex-post analyses based on merged PMU data from TSO WAMS and also correlate them with other operational data from the synchronous area (e.g. ENTSO-E Transparency Platform). The WAP will be operated in a secure/on-premise environment.

ENTSO-E is aiming to implement an ex-post analysis platform in the following stages:
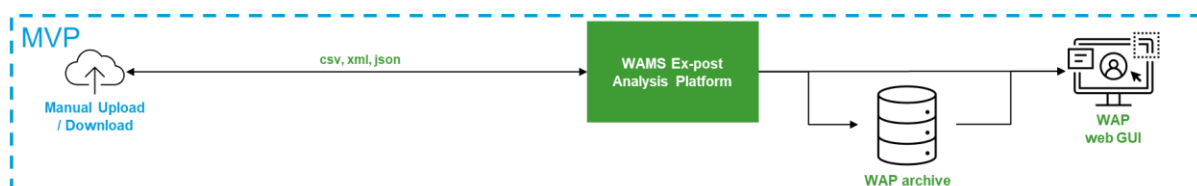
1) Manual upload/download of PMU data

Figure 1: High-level overview of requested system functionality (1st stage)

2) Upload of PMU data from the already existing WAMS Protocol Converter via OPC-UA + integration of operational data from ENTSO-E Transparency Platform
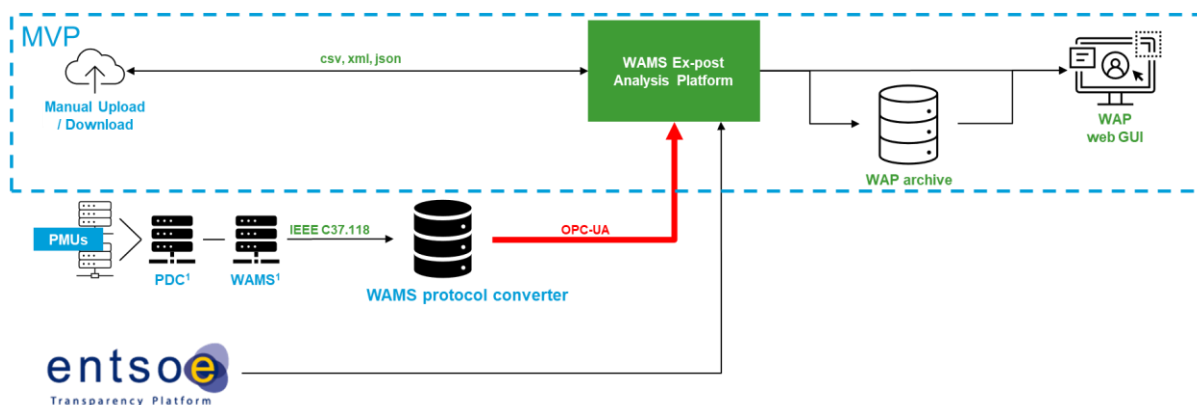

Figure 2: High-level overview of requested system functionality (2nd stage)

Cost of the proposal

ENTSO-E will not reimburse any costs associated to this RFI. The Candidate will support all the costs linked with the RFI without any limit, including:

- Modification / review of the RFI

- Preparation of the response to the RFI, as well as any discussion with ENTSO-E

This is valid even if a contract between the parties should be signed afterwards. No claim can be addressed by a Candidate against ENTSO-E regarding neither this RFI nor any aspect of the proposal process.

ENTSO-E's prerogatives

ENTSO-E is entitled to:

- Stop the negotiations / discussions with one or all the Candidates contacted.

- Modify, re-publish, or cancel the RFI or any other document linked to it at any time, without any responsibility towards the Candidate.

ENTSO-E is not forced to accept the lowest price and will not reimburse any of the costs to a Candidate whose proposal has not been accepted.

This request is only for information purpose.

ENTSO-E is free to make any deal with one or several Candidates.

Process to answer this RFI

Under this initiative, your company ("Candidate") has been identified by ENTSO-E ("Customer") to submit a response to this Request for Information ("RFI") for the supply of services related to this project.

Your presentations/documents should be sent via e-mail to the persons responsible for this RFI (see "Contacts for this RFI").

Any complementary information can be sent via e-mail to the persons responsible for this RFI (see "Contacts for this RFI").

Schedule of the RFI

RFI activities have been scheduled as follows:

RFI schedule	Milestones
Issue RFI	08/11/2024
Candidates confirms their participation to the RFI	15/11/2024 end of day
Written RFI answers sent by Candidates to ENTSO-E	27/11/2024 end of day
Selected vendors invited to a presentation/workshop with ENTSO-E & member representatives (estimated 3 hours in co-creation)	December

Expected contents and format of the response

- All documents must be in English.
- A completed Response Document.
- Other documentation associated to demonstrate the capabilities of the vendor is limited to 15 pages (in PDF).
- Other information will not be read.

The Candidate must clearly describe how the proposed system can address the main themes, describing the solution and the components used. This RFI focuses on the solution capabilities.

Please also provide a high-level budget indication to implement such a system, solely used for ENTSO-E budgeting purposes (not as a knock-out criterion for this RFI and not interpreted as an offer).

Candidate's acknowledgement

Each Candidate who responds to this RFI agrees that they understand all of its sections.

Candidates and third parties

If the Candidate needs support from third parties, the Candidate shall include the name of associated third parties for the provision and management of all services included in their proposal and shall specify the geographical areas/services where the third parties will intervene.

Contacts for this RFI

Please find below the contact list for this RFI:

Matthias Vandenhove
ENTSO-E Procurement Manager a.i.
procurement@entsoe.eu

Martin Encinas Perez
WAP Application Lead
martin.encinasperez@entsoe.eu

Martin Van den Heuvel
WAP Project Manager
martin.vandenheuvel@ext.entsoe.eu

Martin Lenz
WAP Project Manager
martin.lenz@apg.at
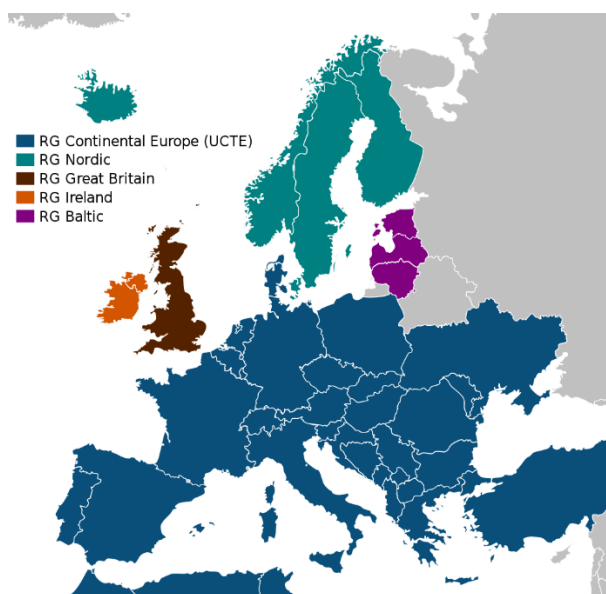

Please send any question, request, or documentation to these contacts.

PART 2: GENERAL CONTEXT INFORMATION

ENTSO-E overview

ENTSO-E, the European Network of Transmission System Operators, represents 39 electricity transmission system operators (TSOs) from 35 countries across Europe, thus extending beyond EU borders. ENTSO-E was established and given legal mandates by the EU's Third Package for the Internal Energy Market in 2009, which aims at further liberalising the gas and electricity markets in the EU.

The role of Transmission System Operators has considerably evolved with the Third Energy Package. Due to unbundling and the liberalisation of the energy market, the transmission system has become the meeting place in which the various players interact. The importance of TSOs and of ENTSO-E's work products for a well-functioning market, a reliable system and the success of energy policy keeps on growing.

ENTSO-E members share the objective of completing and ensuring the optimal functioning of the internal energy market. They also support the ambitious European energy and climate agenda. Important issues are the integration of a high degree of renewables in Europe's energy system, the development of the correspondingly needed system flexibility, and a much more customer centric approach than in the past. ENTSO-E is committed to developing the most suitable responses to the challenge of a changing power system while maintaining security of supply. Innovation, a market-based approach, customer focus, stakeholder focus, security of supply, flexibility, and regional co-operation are key to ENTSO-E's agenda.

WAMS related initiatives within ENTSO-E

On Friday, 8 January 2021 at 14:05 CET, the Continental Europe Synchronous Area was separated into two areas (the North-West area and the South-East area) due to cascaded trips

of several transmission network elements. In the immediate aftermath of the system separation, European TSOs, in close collaboration through the ENTSO-E, decided to start a joint process to collect all relevant facts regarding the incident. Furthermore, a detailed technical analysis of the main causes of the incident has been completed.

The technical report of the incident revealed necessary improvements to the ENTSO-E Awareness System (EAS), e.g. the integration of PMU data from TSO WAMS (voltage phasors and frequency measurements) and the development of new WAMS based alarming functionalities within the EAS.

Based on this recommendation, ENTSO-E System Operations Committee approved the start of WAMS integration into EAS project, which went operational in 2023. The interfacing between the existing EAS and the TSO WAMS is realized by so-called "WAMS protocol converters", which are hosted by the TSOs Amprion and RTE.

PART 3: PURPOSE OF THE RFI

The purpose of this RFI is to gather comprehensive details from potential vendors to assess how your company could support us in implementing the WAP. This assessment will help us understand your capabilities, solutions, and overall fit for our needs. Based on this evaluation of your responses, your company might be invited to participate in the subsequent RFP process if your solution is deemed favourable.

Organisation and governance

The present RFI is under the responsibility of PT WAP (Project team WAMS Ex-Post Analysis Platform). This project reports to several ENTSO-E bodies (committees and working/expert groups) in charge of the operations and evolutions of the EAS and WAMS related initiatives.

RFI expected content

The document attached to your reply should detail the answers to the questions listed below and how the ability of your product to fulfil the expected features. Your written response should fully comply with the proposed structure below.

1. An overview of your company (max 15 pages)

- A short company presentation
- Market position of your company
- Market coverage of your company by country in Europe
- Main contacts for the RFI (names, e-mails, phone numbers)
- References

We refer to the sheet ''about the respondent'' in the response document.

Vendor response to RFI content

- Vendor response to be provided to the questions in the provided Reponses Document (Excel attachment to this RFI)

RFI content

The main themes to be addressed are:

1. **Data acquisition & processing features**
   Is your system ready to receive and process high sampling data (10 fps) from WAMS converter via the protocols listed below (in question 2 & 3)?

2. **Communication protocol OPC-UA**
   OPC-UA communication protocol will be used to collect data from the already existing WAMS protocol converter. Does your system comply with this requirement?

3. **Additional communication protocols**
   In the future, it is likely that data may also be exchanged via additional protocols. Taking this into account, does your system comply with the AMQP and MQTT protocol requirements?

4. **Integration features**
   - Capability of your product to interface or be integrated with MATLAB and PYTHON environment? What is your recommended integration approach for scripts (e.g. *.m, *.p, *.py files) and compiled executables (e.g. *.exe files requiring MATLAB Runtime or PYTHON libraries)?

   - Have you already project experiences where this integration was done?

   - Can your solution integrate to data streaming platforms like Kafka? Have you already project experiences where this integration was done?

5. **Scalability**
   - Limit in terms of number of high sampling data (10 fps) points from WAMS converter

   - Maximum number of parallel users and/or parallel calculations

6. **Modularity**
   Is your solution integrating data pre-processing features, such as basic filtering, outlier detection, arithmetic, or logical operations? Are these functionalities and the corresponding algorithms configurable based on customer needs? Could you elaborate based on your product standard features?

7. **Analytics and reporting capabilities**
   Proven experience with performing all kinds of analytics on the data available in the databases of the system. The outcome of the analytics can be stored in the databases, shown on a GUI and/or sent to TSO experts as reports who have subscribed to the mailing list of the service.

8. **UI/UX**
   Proven experience with a modern and intuitive user interface/experience. The UI/UX shall be able to show raw data and calculated results from algorithms. Additionally, dedicated users with privileged rights shall be able to configure specific values / parameters of the WAP (e.g. PMU location information, algorithm parameters,...).

9. **Technical or infrastructure requirements for the hosting of the solution**
   What would be typical technical or infrastructure requirements for the hosting of the
   solution (number of servers, hardware,…)?

   Can the solution be deployed in high availability mode?

   The supplier can assume that the required hosting environment is contributed by
   ENTSO-E. The system should not require internet access during the implementation and
   operation stages. Is your company able to support this kind of implementation strategy?

10. **Compliance with cyber security guidelines**
    Proven compliance with ISO 27001

11. **Project implementation capability**
Based on the information provided as part of this RFI, provide a time estimation to complete
the project and the proposed resourcing to achieve that timeline.

   - Estimated project start: March 2025

   - Estimated go-live WAP Phase 1 (MVP): December 2025

   - Estimated go-live of WAP Phase 2 (full solution): December 2026

12. **Typical budget for implementation of the product**

Proposal guidelines

1. The Response to the Request for Information (RFI) shall be drafted in English.

2. The RFI Response shall be submitted as attached document(s) and sent by email to ENTSO-E to both of the contacts in the RFI (Martin Encinas Perez & ENTSO-E Procurement).

3. The RFI Response has to be received by ENTSO-E no later than on **27/11/2024**, noon (Brussels time). The Candidate bears the risk of late receipt of its Response by ENTSO-E at all times.

4. The Candidate is requested to submit its Response to the RFI by e-mail with the following requirement:

    o **Subject line**
      RFI ENTSO-E WAP [name of the Candidate]

    o **E-mail body**
      Containing the name of the Candidate and name/contacts of a contact person.

5. Response to RFI must be signed by the duly authorised representative(s) of the company doing the document and perfectly legible, so that there can be no doubt as to words and figures.

6. Response to RFI must be clear and concise, with continuous page numbering, and assembled in a coherent fashion, following a clear structure.

7. ENTSO-E reserves its right to invite a Candidate to a (maximum two hour) conference call walkthrough session, to individually outline the proposal and answer questions ENTSO-E may have regarding the submitted response.

8. ENTSO-E does not commit itself to order any services by the issuance of this RFI process or by the review of received quotes. ENTSO-E may therefore freely decide not to award the contract to any of the Candidates to the RFI, without the duty to provide any justification.

9. ENTSO-E shall treat the submitted Response to RFI as confidential information, which shall be disclosed exclusively to the ENTSO-E members and direct support involved in the decision process. Therefore, ENTSO-E shall not provide to any Candidate information relating to the assessment or the content of other proposals received in the framework of present RFI process. A detailed motivation of ENTSO-E decision shall therefore not be provided to the Candidates.

Confidentiality

In light of the nature of the Services, which are subject to present RFI, a particular emphasis is put on the strict observance by the Candidates of a confidentiality duty.

Candidates are required to treat as confidential the Scope of Services and all other information whether in written, visual, or oral form supplied to them by, or on behalf of, ENTSO-E, or acquired in the course of present RFI process and possible visits to ENTSO-E's premises.

Reproduction of any such information, whether in whole or in part, other than for the purpose of the process, is strictly forbidden without prior written permission.

Each Candidate shall limit disclosure of information related to present RFI process to those of their employees who need to know them to perform their tasks as required to assess the RFI requirements and, if relevant, to prepare a quote on behalf of the concerned Candidate. Such disclosure is subject to the prior commitment of the employees to a confidentiality obligation at least as stringent as present provision.

Involvement of third parties in the RFI process, for preparation of a quote and/or participation to the process or the performance of the Services must be disclosed to ENTSO-E on a complete and transparent manner. Candidates are responsible for ensuring the compliance with these requirements by any third party involved with the proposal and shall hold ENTSO-E harmless from any damages caused to any such non-compliance attributable in whole or in part to any third-party they involved in the RFI process or performance of the Services.

Conflicts of Interest

Any conflicts of interest involving a Candidate must be fully disclosed to ENTSO-E particularly where there is a conflict of interest in relation to any recommendations or proposals put forward by the Candidate. Any registrable interest involving the Candidate and ENTSO-E, or their relatives must be fully disclosed in the response to this RFI or should be communicated to ENTSO-E immediately upon such information becoming known to the Candidate, in the event of this information only coming to their notice after proposal submission.

Exclusion

In case of any non-compliance of a Candidate with the requirements set forth in present RFI documentation, ENTSO-E may decide to exclude the concerned Candidate from the process.
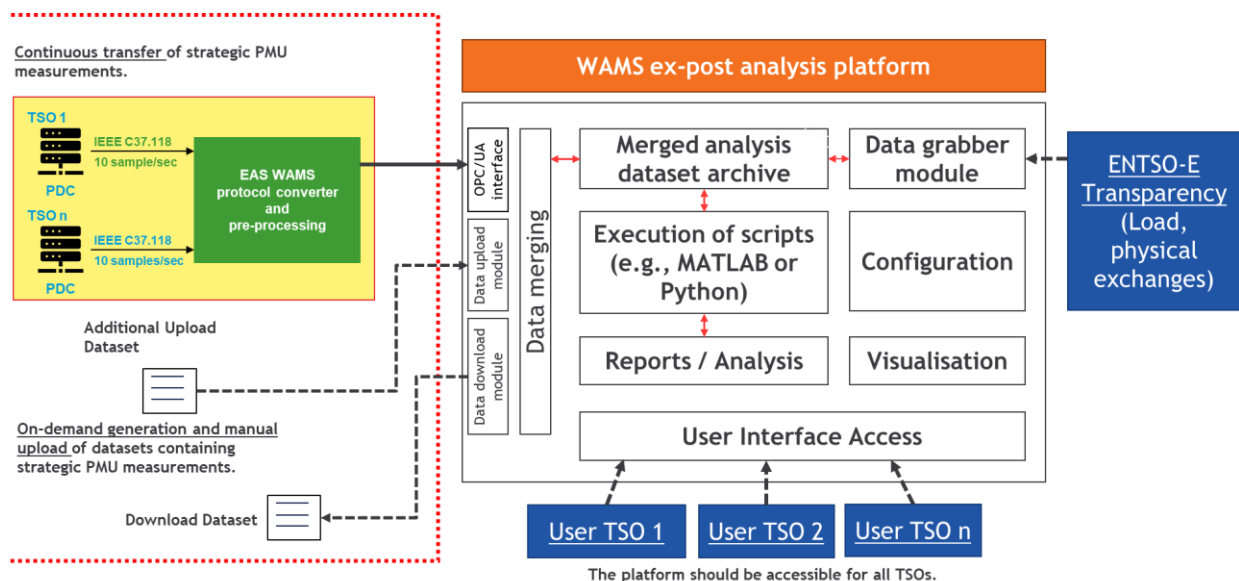
APPENDIX A: BACKGROUND INFORMATION

This appendix describes the WAP in more detail.
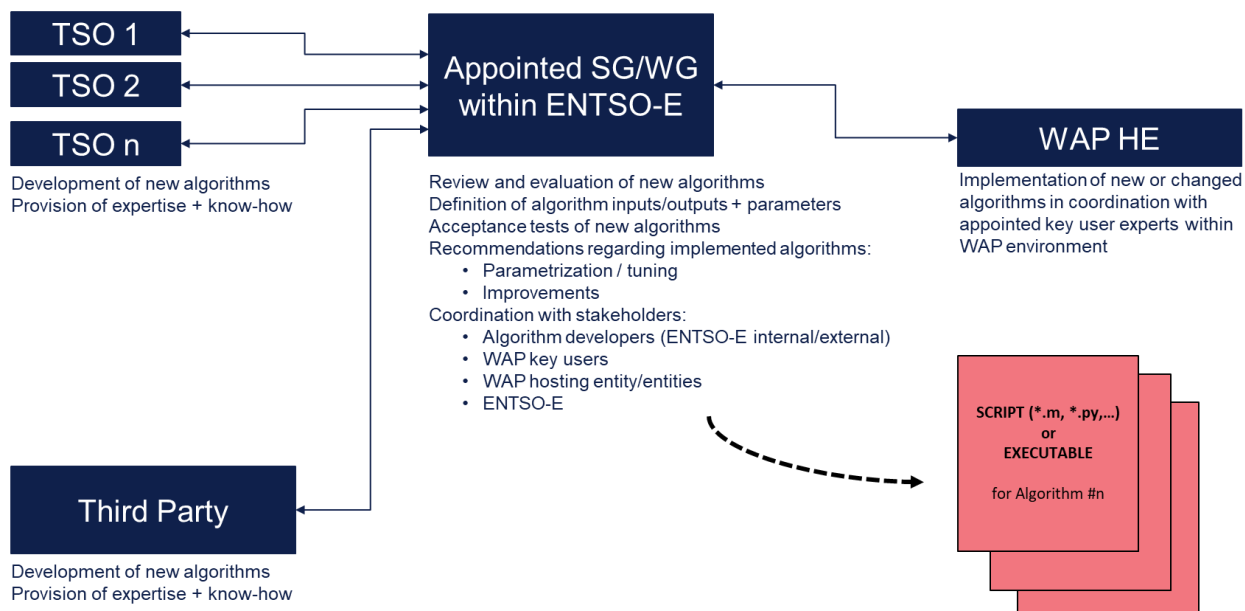
General overview of the WAP

The WAP will perform the following main tasks:

- Handling of manually uploaded PMU data sent by TSOs
- Requesting data continuously from WAMS Protocol Converter (e.g., every 10 minutes as data packets) via OPC/UA, pre-processing data, merging with transparency data and storing in high-efficiency database
- Interfacing with ENTSO-E Transparency Platform API to request operational data
- Execution of (MATLAB or Python) scripts based on already developed algorithms (e.g. modal analysis)
- Ensuring the ability (flexibility) to also integrate new stability algorithms
- Correlation with operational data and statistical distribution of modal properties
- Generation of standardized reports, which can be downloaded or automatically sent via e-mail to a dedicated receiver list
- Web access for users/clients,
- Visualization of measurements, analysis results
- Download of measurements, analysis results and reports
- Privileged access for dedicated users:
  - Configuration of properties (e.g. data points, PMU locations, …),
  - Parametrization of already developed stability algorithms,
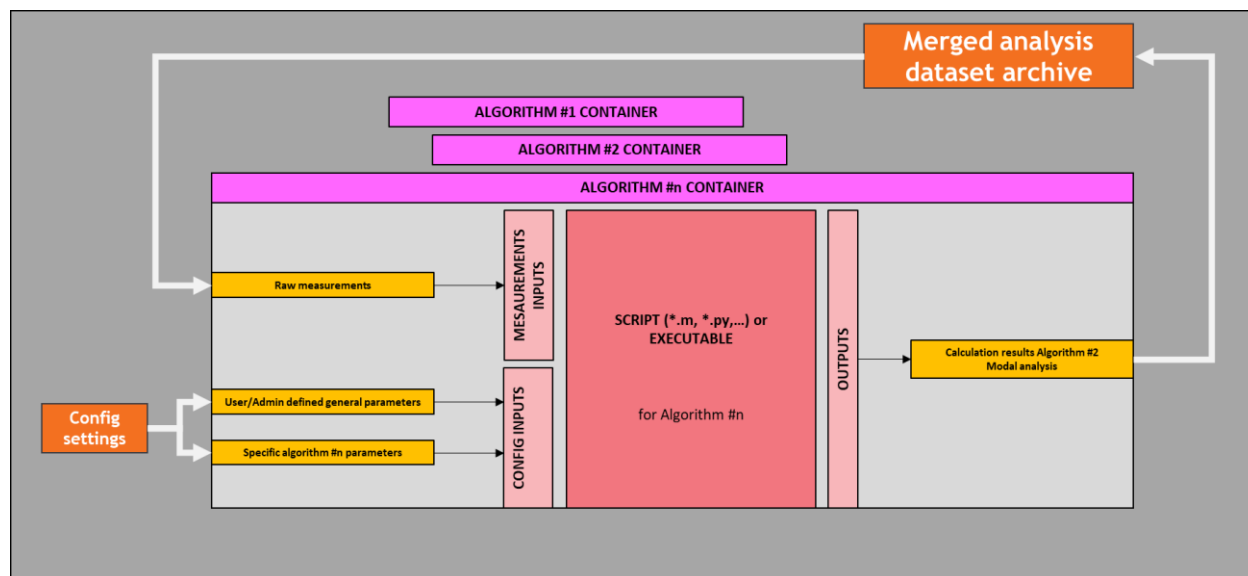 - Upload of new stability algorithms.

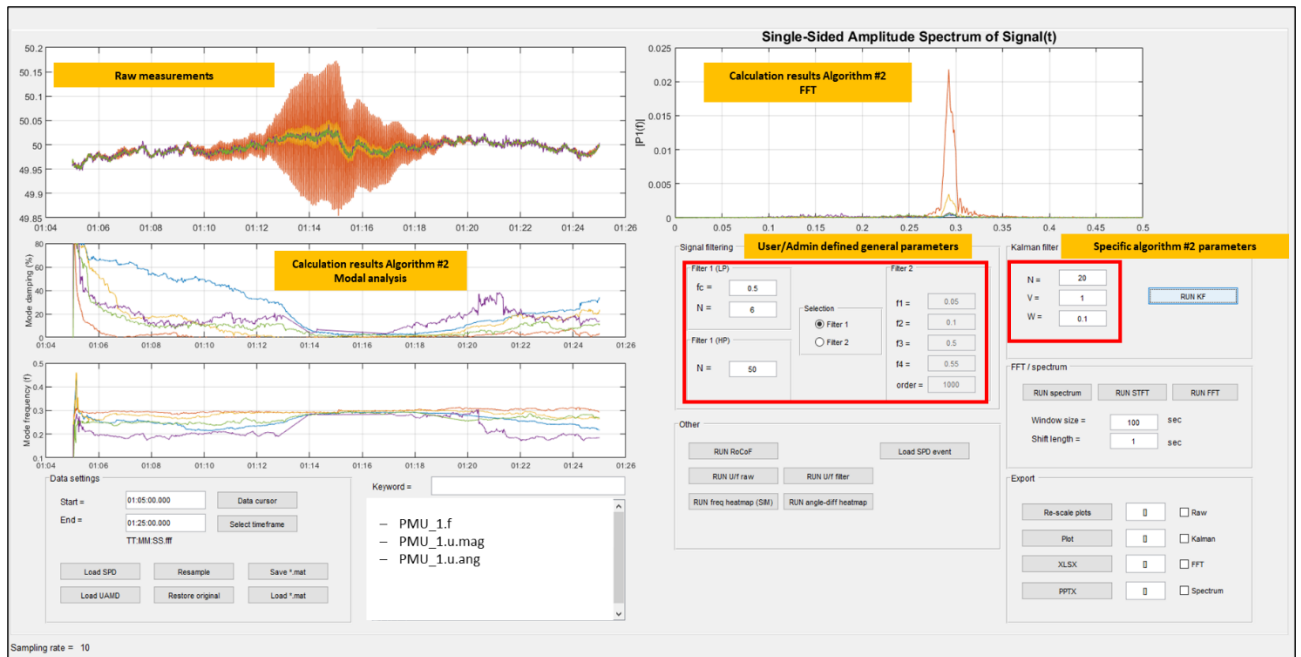# Detailed overview for algorithms development, deployment, interfacing and execution

Governance:

Algorithm interfacing within WAP:

Exemplary GUI with various algorithms and charts (raw measurements and calculated results):

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