



Antares Simulator **SERVICES OFFER**

June 2020



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1. ABOUT US



SHEDDING LIGHT ON THE FUTURE OF THE ENERGY SYSTEM

Antares-Simulator is an Open Source (GNU GPL 3.0) power system simulator meant to be used by anybody placing value in quantifying the adequacy or the economic performance of interconnected energy systems, at short or remote time horizons. With an adequate modelling of the energy consumption, generation and transportation, the software performs probabilistic simulations of the system throughout many year-long scenarios made of 8760 hourly time-frames each.

Transmission system Operators, Power and Gas Producers, Regulators, Academics, Consultants, NGO and **all other actors concerned by energy policy issues are welcome to use the software.**

The Antares-Simulator project was initiated by RTE (French Electricity Transmission system Operator) in 2007. Since then, the software has been proving very useful to many users when it comes to

- Explore prospective visions of the energy sector
- Analyse the costs and benefits of a new generation or interconnection project
- Assess the impact of a given energy policy on the generation mix
- Evaluate the level of security of supply of the upcoming years



RTE international promotes and markets RTE's know-how and expertise abroad, with a wide range of services (consulting, technical assistance and training) provided by RTE experts guaranteeing highest quality services and field experience. Its main areas of expertise cover asset management, system operation, tariffs, market design and smart grids.



2. ANTARES TRAINING OFFER



2.1. INTRODUCTION

The Antares software, developed by RTE, has been available in **open source since 2018**. To help you get used to the Antares software and take away the full value of the tool, RTEi is proposing beginner and advanced training on Antares.

RTE international, a wholly owned subsidiary of RTE, was created in 2006 to take benefit of RTE's expertise and to promote and market its know-how in electricity grid management to customers around the world.

2.2. PROPOSED APPROACH

Antares Simulator is a sequential Monte-Carlo simulator designed for short to long term studies of large interconnected power grids. Since 14th July 2018, RTE has released the source code of the Antares Simulator 6.0 (now 7.0) software under the Open Source GNU GPL 3.0 license.

RTE international has developed an extensive knowledge of the Antares software, in various context and has used the tool to manage studies for different types of networks and domains.

2.3. BEGINNER TRAINING SESSION

This training is intended for news users of the tool or for inexperienced users who need to strengthen their basic skills on the tool.

The Antares Beginner training is a 3 days session in our office at Paris, France where you will learn about:

- The challenges of system adequacy forecast
- The organization of the interface and how to navigate easily into
- Main principles of modelling a system with Antares with a market approach
- The different options of simulation and their impact on the results
- How to fulfil Load, Solar and Wind time-series
- How to use the different Hydro models and understand their differences
- How to well describe a thermal fleet from a technical and economical point of views
- How to model a Hydro Pump Storage and a Battery
- How to understand the results
- Presentation of the R packages

Half of the training time is devoted to practical work. At the end of the training, the objective is that the participants will be able to create their own study from scratch

The price of this training is € 3,000 per trainee.

2.4. ADVANCED TRAINING SESSION

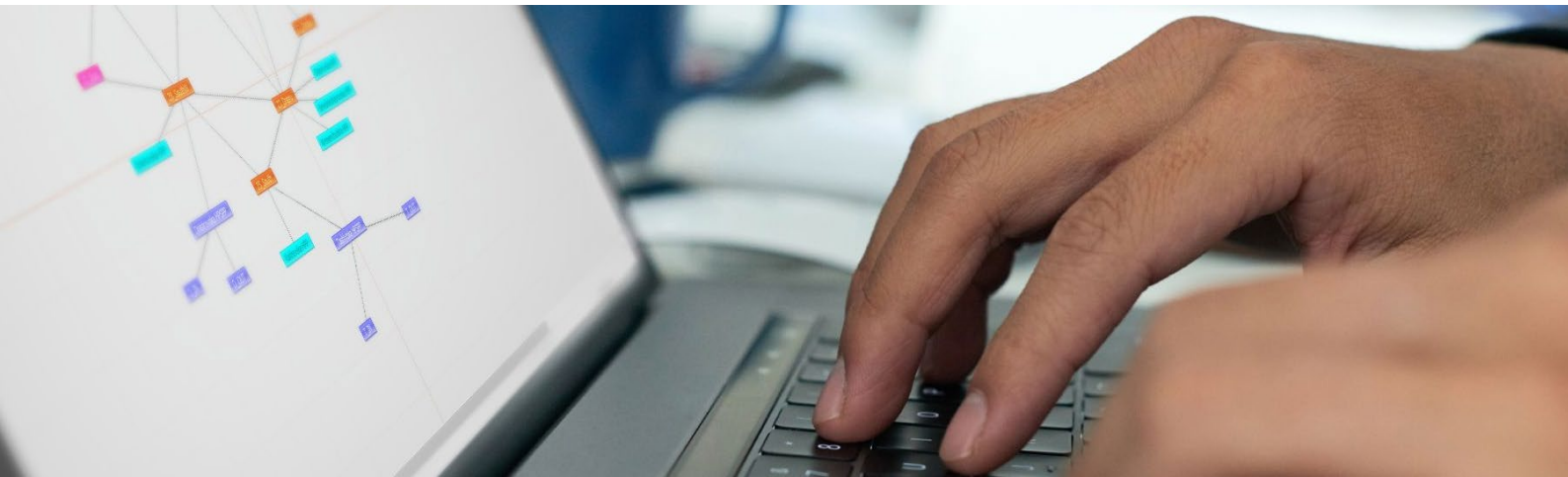
This training is intended for users who master all the basic functionalities of the tool, and who want to learn advanced modelling.

The Antares Advanced training is a 2 days session in our office at Paris, France, where you will dive in the following domains:

- Physical approach by using Kirchhoff law
- New options in hydro modelling the version 7.0
- Multi Energy studies with Antares
- Scripting in R to edit studies, post process and display results
- Flow Based modelling
- Presentation of Antares Xpansion

The price of this training is € 2,000 per trainee.

contact@antares-simulator.org



3. ANTARES USER'S CLUB



3.1. INTRODUCTION

The Antares software, developed by RTE, has been available in **open source since 2018**. To foster usage and features of the tool, RTE international is willing to propose knowledge and experience sharing, development of advanced features and fostering the community of Antares user's, in an open source approach. These services are accessible by subscribing to the Antares User's Club.

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3.2. PROPOSED APPROACH

Antares Simulator is a sequential Monte-Carlo simulator designed for short to long term studies of large interconnected power grids. Since 14th July 2018, RTE has released the source code of the Antares_Simulator 6.0 (now 7.0) software under the Open Source GNU GPL 3.0 license.

RTE international proposes to set up a User's club for Antares in order to provide its members with premium services linked to its use. By subscribing to the User's Club, each MEMBER will benefit from services such as:

- **Development of new features,**
- **Expert advices and documentation**
- **Users club meetings**

In addition to services for users, the purpose of the club is to create a community around the tool as RTE international believes that energy transition's challenges require to increase cooperation.

3.3. USERS CLUB MEMBERSHIP

Two types of membership are proposed to the client and described in this document:

1. The **Basic membership** offer contains:
 - Participation to the User's Club meeting (2 times a year)
2. The **Advanced membership** offer contains:
 - Participation to the User's Club meeting (2 times a year)
 - Expert advices and documentation
 - Rights to select the developments (10 votes)

3.4. USERS CLUB PROCESS

Two meetings of the user's club will take place each year.

These meetings will contain:

- Technical discussion on new features of the tools
- Presentation of the roadmap of Antares
- Presentation and selection of new features to be developed on behalf of the user's club
- Ad hoc discussion on proposed topics by the users

Before the user's club meetings, all members will be able to propose new features to be developed.

RTEi will manage the proper specification of these features and their quotation. During the meeting, the members having the "Advanced membership" will select the developments to be implemented within the next releases.

3.5. USER'S CLUB MEMBERSHIP FEES

The prices for the two types of membership are the following:

- The "Basic membership": 1 000 €
- The "Advanced membership": 9 000 €

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4. ADVANCED SUPPORT



4.1. INTRODUCTION

The Antares software, developed by RTE, has been available in **open source since 2018**. To foster usage, RTEi is willing to propose support on the tool. The “Advanced support offer” presented in this document is aimed at providing our customer with an advanced service level to ease the implementation of Antares in their business process.

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4.2. DEVELOPMENT OF THE SUPPORT OFFER

Antares Simulator is a sequential Monte-Carlo simulator designed for short to long term studies of large interconnected power grids. Since 14th July 2018, RTE has released the source code of the Antares Simulator 6.0 (now 7.0) software under the Open Source GNU GPL 3.0 license.

The need for this software has arisen from a new way of power system development planning, for which purpose it is necessary to also take into account different stochastic sources of power production, including a great deal of uncertainties inherent to any planning process.

Multiple TSOs and electricity systems stakeholders have acquired the ANTARES software in 2017, but the relevant software support expired in September 2018. RTE international is willing to propose yet again global support for the Antares Simulator.

4.3. DESCRIPTION OF THE SUPPORT SERVICE

1. Correction of identified errors in software operation

In case of issues:

- making the software use impossible or leading to results that do not comply with the documentation.
- occurring during the software use in accordance with the documentation.
- remaining repetitive and reproducible in the reference configuration.

As of the date of receipt of the written description of such error, RTE-International will contact the customer within a maximum time of five (5) working days so that the error can be processed. RTEi will then send back a detailed analysis of the cause of the error to the customer within a maximum period of one (1) month.

RTE international shall perform the analysis of the corrective steps to be taken. RTE international shall release a corrected version or the proposed workaround on the website.

2. Responses to questions relating to software operations

As of the date of receipt of a question in writing, RTE international undertakes to:

- contact the customer within a maximum period of five (5) working days to consider the question.
- reply to the customer within a maximum period of two (2) weeks.

RTE international undertakes to answer throughout the year any questions concerning the normal and expected software use or questions concerning the interpretation of the documentation.

If the question requires to dive into the client's model and to do a detailed analysis of its model, RTE international undertakes to carry out these analyses for the equivalent of one (1) working week over the year.

3. Availability to new software versions that are appearing on the market during the validity period of the Support

Any new version of the software will be released on the Antares website. When a new version is released, a Notification will be sent to the customer Together with a description of the new version.

4.4. ADVANCED SUPPORT OFFER FEES

The price for the support service described above is of 6 000 € per year.

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