



alphawave

OSIRIS Enterprise

Presentation

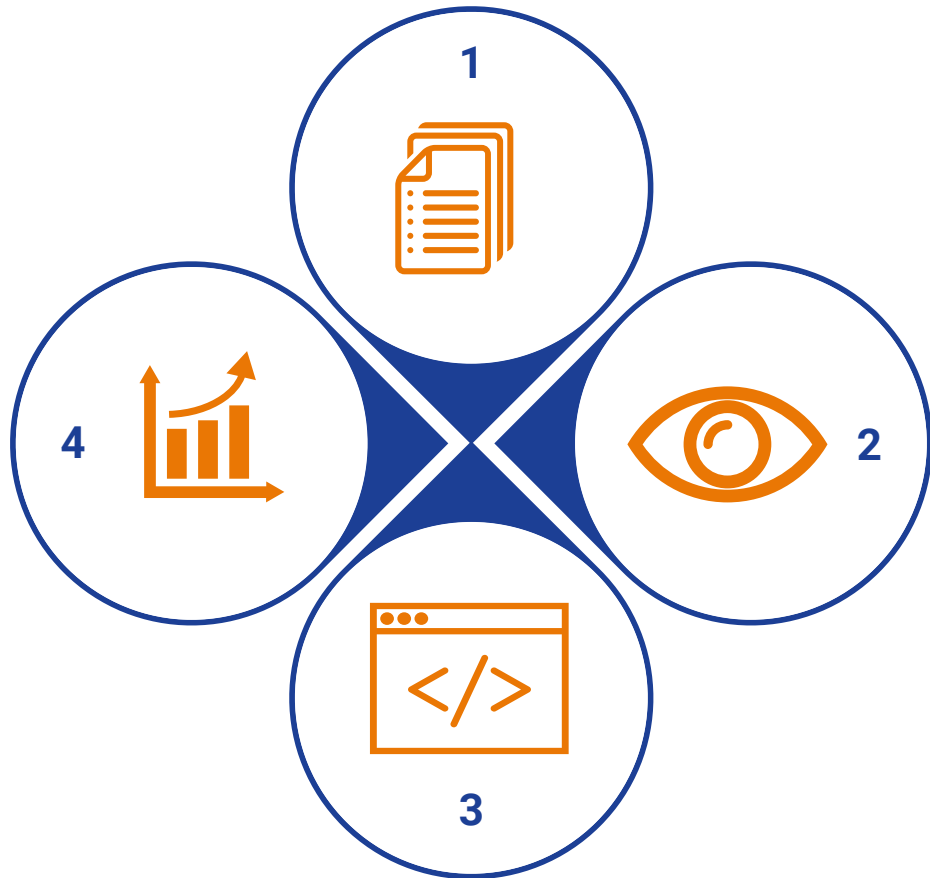
FEATURES



OSIRIS Enterprise is a web application available in SaaS (Software as a Service) whose objective is to meet the analytical challenges of the financial sector. In order to cover the entire value chain, Osiris Enterprise aims to meet these three challenges:

- **Data transformation and quality enhancement:** our **RPA** (Robot Process Automation) solution processes and manages data from integration to use. It is developed specifically for insurers, reinsurers, mutuals or banks
- **Quantitative analysis:** based on flexible and scalable **cloud computing** technologies, we enable our clients to develop their models and run them in a secure environment
- **Reporting:** from transformed data to model results, OSIRIS offers a variety of possibilities to exploit them: online, export, API,...

OSIRIS Fonctionnalités



1. Absorb and Standardize

OSIRIS has an integrated reader which can recognize, store and standardize any type of data format (csv, xls, pdf, jpg, fichiers, etc....)

2. Qualify and Check

OSIRIS gives you access to a simple explorer to browse through your data and generate all the necessary coherence checks or reports

3. Calculate and Model

OSIRIS provides an environment for your R scripts and models capable of processing and distributing calculations

4. Analyze et Export

Osiris allows you to provide your accounting or regulatory environments with reliable data or to generate assumptions for your models

Smart reader

1. Absorb and Standardize



Reading: the OSIRIS robot is able to read a wide variety of formats: Excel, text, emails, pdf, json,... Our reader also relies on **OCR** (Optical Character Recognition) to read scanned documents (image format). Finally, if a format is not supported, the user can drop his own R function to specify how to read and process his documents.

Learning and transformation: the reader is able to **learn** new data and especially to suggest **associations** for unidentified data in order to facilitate the update of the reference **dictionnary***. These suggestions are based on syntactic distance algorithms or machine learning. Thus, the data will be transformed according to the dictionnary and all data sources will be standardized to have a common reference language for variables naming and content.

Completion and quality setting: the reader offers the user the possibility to define **calculation functions** to complete missing information in their data or to amend data if necessary.

These functions apply directly to the data variables in OSIRIS and are easy to use.

* Osiris has a standard reference dictionary for the insurance sector that can be adapted according to needs

Simple file explorer

2. Qualify and Check



File tracking: files are organized and stored according to the grid defined in the tool with the client. All raw data are stored before any transformation to ensure a complete understanding and **audit trail** of each modification. The imported and transformed files can have different **states** corresponding to the data validation steps. It allows to **secure** the process by marking the validated data and delete the incoherent ones.

Monitoring reports: a number of **reporting templates** are available to check the data consistency and help to validate of the imported data. The user can of course define his own report templates for specific needs. These reports can be executed on more than one source files and provide a detailed and consolidated view of the absorbed data.

Calculation requests: as the number of managed files can become large, the platform provides tools to create and execute **calculation tasks** on a selection of files. This will allow the user to explore his data, to export statistics, or to search for detailed information through **Big Data** techniques.

The virtual machines allow to run transparently all these calculations for the users

Models manager

3. Calculate and Model



Open platform: advanced users can upload or update their calculation scripts (**R language**) on the platform and create models adapted to their processes. Thus, it is possible to create deterministic and ALM projection models or pricing models for the different standards: **MCEV**, **Solvency 2**, **IFRS17**. We also offer ready-to-use models to perform liabilities (SCR proxy) and assets (full valuation) projections.

Model design: the user configures his models by choosing input and output variables of his R calculation scripts. All models are **versioned**, and it is possible to display the differences between two versions of templates and scripts.

Based on the R language, the solution is designed to work natively with **vectors**. It also manages **matrices** to meet simulation needs for example.

Calculation distribution: the user runs his models with a single click. Osiris calculation engine distributes the calculation runs on the virtual machines configured on the **Private Cloud**.

The calculations are **versioned and traceable** from the input data to the output data.

Reporting library

4. Analyze and Export



Exports: from data absorption to model creation, Osiris offers many possibilities to export results.

Imported files and transformed data can be exported in a detailed or **consolidated** way through the reporting functions. Exports are usually provided in Excel or csv format.

Customized reports: it is possible to create customized reports using **R** standard libraries or using examples provided with OSIRIS. The objective is to allow users to create reporting models to **industrialize** the production of results for internal clients or regulatory authorities.

To go further, Osiris provides **web services and API** directly accessible from R* to modeling users.

Online analyses: Osiris also allows you to build reports based on the **Cubes** available on the platform. These reports can then be viewed and modified by users directly on the platform.

* We provide examples of use to facilitate the model industrialization by actuarial modeling teams

Deployment



Our web **platform** is available online through secured browser connection or using a VPN link. The application is hosted on **AWS** and use the following services:

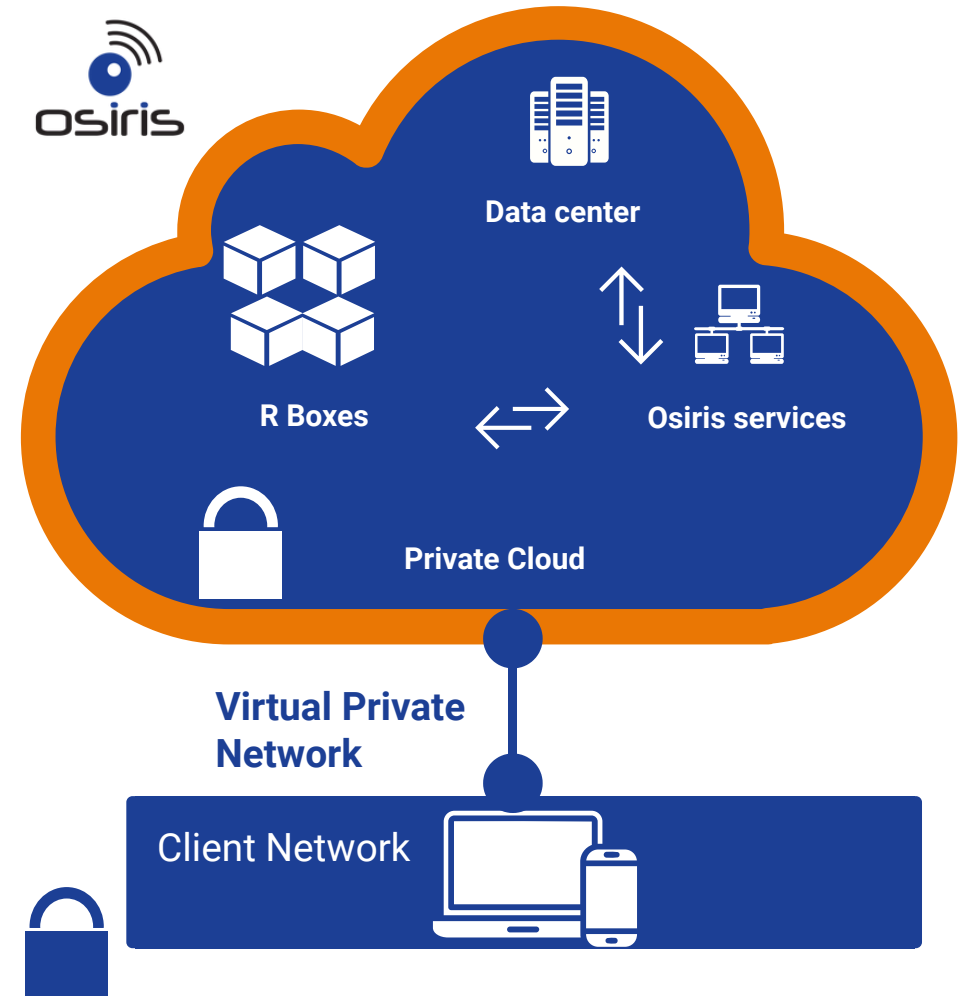
- **EC2 instances:** for the application and the computing machines deployment
- **S3 Storage:** for data and files storage
- **Aurora DB:** for the applicative database and the learning database
- **Route 53:** for the URL web access

Architecture

The OSIRIS platform consists of the following elements:

- **Application server:** it is made up of a central administrative domain and nodes to ensure service continuity. The OSIRIS application is deployed on this application server.
- **R Boxes: servers** on which R is installed with some usual R packages. The application server send the calculation requests to the different R Boxes and get the results back.
- **Files server:** it hosts all the files managed through the database. Our standard deployment offer on **AWS** use the **S3 Storage** service.
- **Database:** it allows to store all the technical data and the learning base. The application server and the R Boxes machines exchange data with this database.

All these items belong to the same virtual, private and secured **network**.



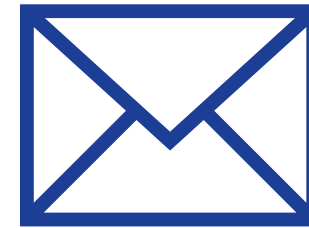
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