

SUMO FUNCTIONALITY

1. Tasks repository

The definition of the operation and maintenance tasks include:

- ❖ Tasks detailed description (also, the link to a separately defined procedure, where the task is defined in detail, can be provided)
- ❖ Tasks periodicity (if applicable)
- ❖ Links among tasks (if any)
- ❖ Tasks estimated duration
- ❖ Tasks estimated priority
- ❖ Resources needed for each task

The Task Form interface includes the following sections:

- Task Form:** Fields for PT Code (TELE-IN-SP-CR), Code (TA/TELE-IN-SP-CR/0001), Task name (Crystal LN2 filling), Priority (High), Description, Period (2 days), Type (Preventive), Duration (1.5 hours), and Comments.
- Linked tasks:** A table with columns for Task and Time between tasks (in hours). Currently empty.
- Manpower:** A table with columns for Skill, Men, and Total manhours. Shows 'Mechanical technician | 1' with a total of 1.5 manhours.
- Equipments:** A table with columns for Equipment, Amount, Document, and File. Shows 'Scissors platform | ECP10...' with amount 1.
- Spare parts:** A table with columns for Spare, Amount, and Supply. Shows 'Liquid nitrogen (LN2) | SLP...' with amount 1.
- External services:** A table with columns for External service and Workshop. Currently empty.

2. Resources and configuration control

SUMO allows storing and managing the information related to the operation and maintenance resources, such as goods inventory, operation and maintenance related documents, spares, supplies, equipment, workshops, personal profiles and external services.

In addition, the purchase orders generated when acquiring new assets can be registered.

The Purchase Order Form and Spare Form interfaces include the following sections:

- Purchase Order Form:** Fields for PT element code (TELE-IN-SP-CR), Code (ORD/TELE-IN-SP-CR/0001), Title (Liquid nitrogen (LN2) supply January 2014), Description (LN2 supply), Responsible (Jane Smith), Company purchase order code, Status (Received), and Updated purchase order file.
- Provider / Company information:** Fields for Provider name (Linde), VAT Code, Address (Bule. 105 - 08038 BARCELONA), and Contact person name (ind@linde.com).
- Spare Form:** Fields for Spare code (SPA/00001), Spare name (Elevation drive), Amount (3), Minimal amount (1), Location, and Comments. Includes checkboxes for Critical and Repairable.
- Spare purchases:** A table with columns for Purchase order, Date, and Amount. Shows 'Elevation drive purchase March 2013 | 1' and 'Elevation drive purchase April 2014 | 3'.
- Consumed spares:** A table with columns for Task, Date, and Amount. Currently empty.
- Associated PT elements:** A table with columns for PT element, Document, and File. Shows 'TELE1 | Telescope 1 | 1', 'TELE1-OPT | Telescope Optics | 3', and 'TELE1-OPT-M1 | Primary Mirror | 4'.
- Associated documents:** A table with columns for Document and File. Currently empty.

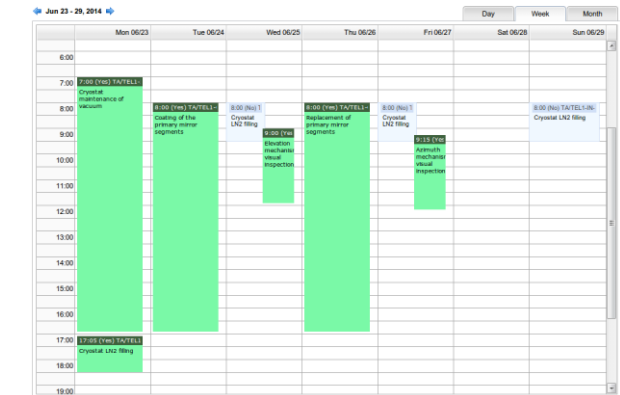
3. Problems tracking

Anomalies can be registered and corrective actions scheduled and tracked.

4. Tasks scheduler

SUMO allows generating an operation and maintenance schedule for a given period of time, taking into account all the tasks that can be automatically programmed. The task scheduler includes:

- ❖ Automatic update of the periodical tasks and linked tasks
- ❖ Manual edition: task execution date, automatically suggested, can be changed manually
- ❖ Automatic analysis of the feasibility of the generated schedule with the available resources. Warnings are displayed to identify potential resource conflicts



The validation warnings and work time users report include the following sections:

- Validation warnings:** A list of warnings detected by the scheduler, such as 'Warning 6: The planned task '2014-06-23 | Crystal LN2 filling | TA/TELE-IN-SP-CR/00001' is assigned outside the time slot defined in the task.'
- Work time users report:** A table with columns for Date, User, Planned task, and Hours. Shows the total hours worked by users for each task.

SUMO OVERVIEW

SUMO, our **Operation and Maintenance Management Tool**, is a web-based tool intended to manage the operation and maintenance tasks, as well as all type of resources required for the exploitation of a complex facility during the Operation and Maintenance phase. The tool provides:

- ❖ An operation and maintenance information repository
- ❖ Assets and stock control
- ❖ Tasks scheduler
- ❖ Executed tasks archive
- ❖ Configuration and anomalies control
- ❖ Notification and users' management

SUMO automatically schedules periodical tasks and facilitates the search and programming of non-periodical tasks. Tasks planning can be visualized in different formats and edited dynamically. This allows to adjust the available resources, take care of anomalies, already allocated dates and other constrains that may occur during daily operation.

SUMO provides warnings to the users, notifying potential conflicts such as "the required personal is not available" or "the stock has run out of the spares needed for carrying out the scheduled tasks".

SUMO uses a public relational database and provides a graphical user interface based on web forms. No need for any specific software installed on your client computers, just a web browser is enough!

Why is SUMO needed in a project?

Software tools help managing the big amount of information generated during the lifetime of any project. This is particularly important for geographically distributed organizations, where it becomes essential to keep the project's operation and maintenance information in an electronic format, well organized and easily accessible to all people involved.

FRACTAL System & Project Suite includes:

1. System engineering and configuration control

The configuration data management tool, **GECO**, helps to track the system development successfully, from the initial high-level requirements up to integration, verification and operation.

2. Project documentation control

The documentation management tool, **DOCMA**, helps to organize and keep track of your project documents, improving the internal communication among the different members involved.

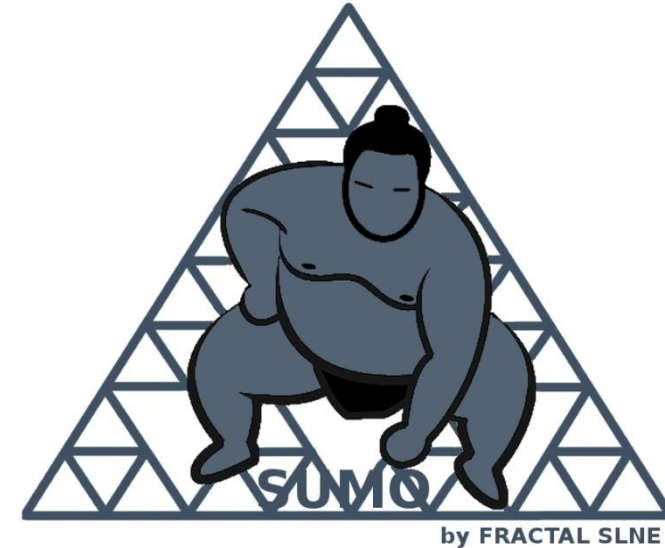
3. Project management tool

The project management tool, **MANATEE**, helps your organization manage your projects efficiently, by controlling the three project parameters (scope, schedule and budget).

All applications can be used independently or in an integrated way.

A trial license and further information about these tools can be found at:

<http://www.fractalsne.es/>
e-mail: info@fractal-es.com



Operation and Maintenance
Management Tool