



MADE IN
FRANCE

CLEARSY

Safety Solutions Designer

Development and Maintenance
support tool

CLEARSY

**DAME: Development and Maintenance
Support Tool**

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DAME

Development and Maintenance Support Tool

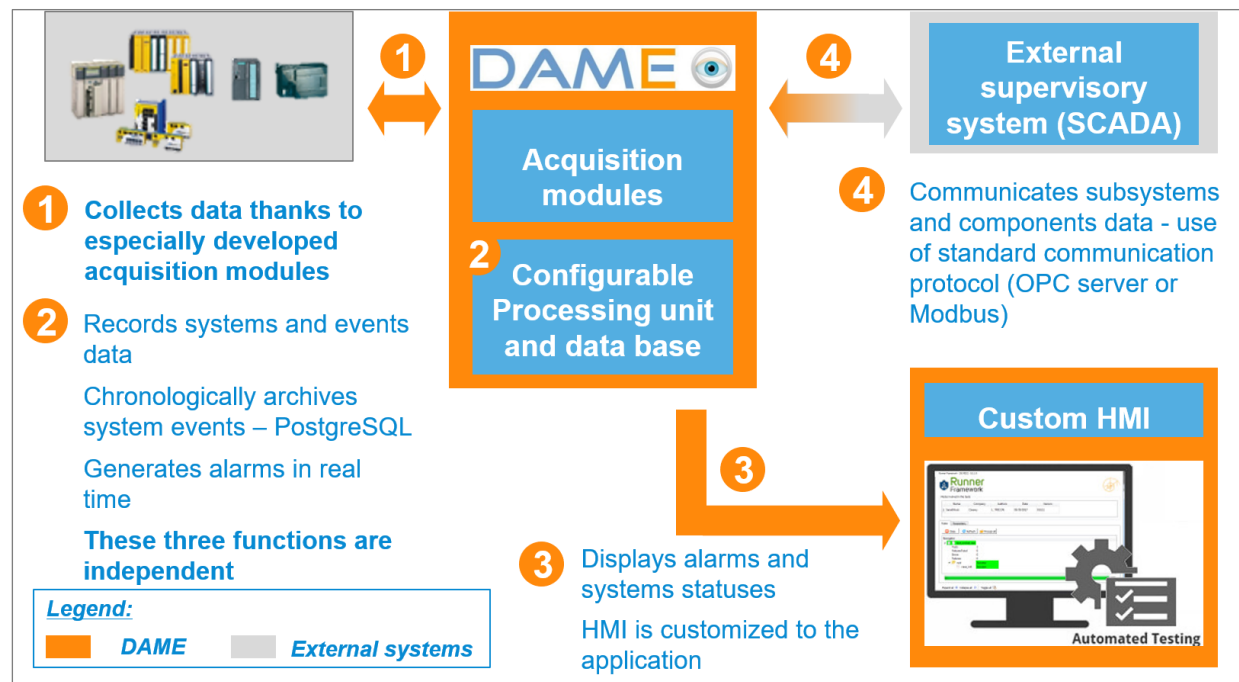
The high-performance data logger from CLEARSY is a software dedicated for real-time supervision of industrial systems dealing with large amount of information, specifically from programmable logic controller (PLC).

It is designed for two purposes:

- **Development support tool.** Interfaced with a system in development, it records system events, chronologically archives them and traces system execution. It also runs automatic tests of the whole system, it is interfaced with, to avoid functional regression.
- **Maintenance support tool.** It records and communicates system events and raises alarms for maintenance and operational monitoring. It also plays the role of a middleware and so allows easy integration of a new sub system into an industrial larger scale system. In this case, DAME collects sub system events data and communicates it to the SCADA in operation.

Compared to a SCADA, DAME is focused on software interface with many subsystems or components which it makes it complementary to SCADA system.

Developed for local interaction with a large variety of systems, DAME has a modular architecture which provides flexibility and separates communication protocols from the generic part of the architecture. Consequently, DAME can be interfaced with any subsystems without modifications of its processing unit.



DAME integration and functions

Processing Unit

The processing unit is the core of DAME and isn't modified depending on sub systems which are monitored. The processing unit records and chronologically archives systems events (PostgreSQL), it also generates alarms in real time. These three functions are independent.

The real-time alarm generation engine is programmed with powerful algorithms, offering complex links between all data recorded from external systems, thanks to edition of rules and logical expressions by using a simple text editor.

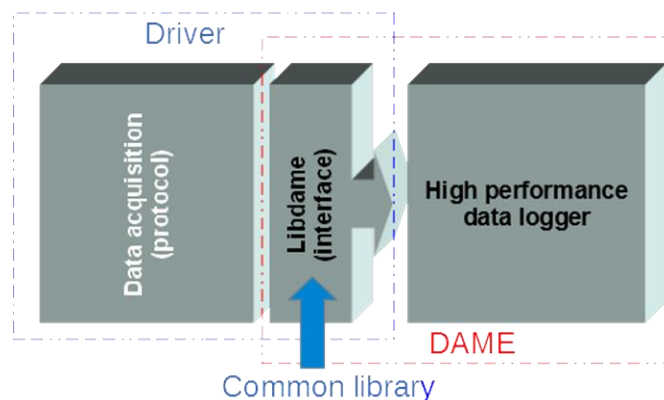
Acquisition module (driver)

This module is responsible for interaction with subsystems or components. Each acquisition module is specific to a component or external system. His role is to collect data of the external system and translate its statuses into variables compatible with DAME processing unit.

In addition, it gives the possibility to filter the collected data (smooth data, manage delays and associate data with other variables).

It is composed of two parts:

- **The data acquisition** which is the protocol to communicate with the external system. This part is different for every external system and is software-based. That is the part to develop to interface a new system;
- **The Libdame** which is the interface with the processing unit of the DAME.



Composition of a driver

The driver can collect data of a system every few milliseconds.

Drivers have already been developed to interface DAME with:

- PLC : Siemens S7 (Modbus interface), VM110N Welleman, CONTEC, Advantech
- SNMP devices to manage network
- IP Cameras and laser scanners (products from SICK and BEA)

Interfaces with SCADA or other management systems

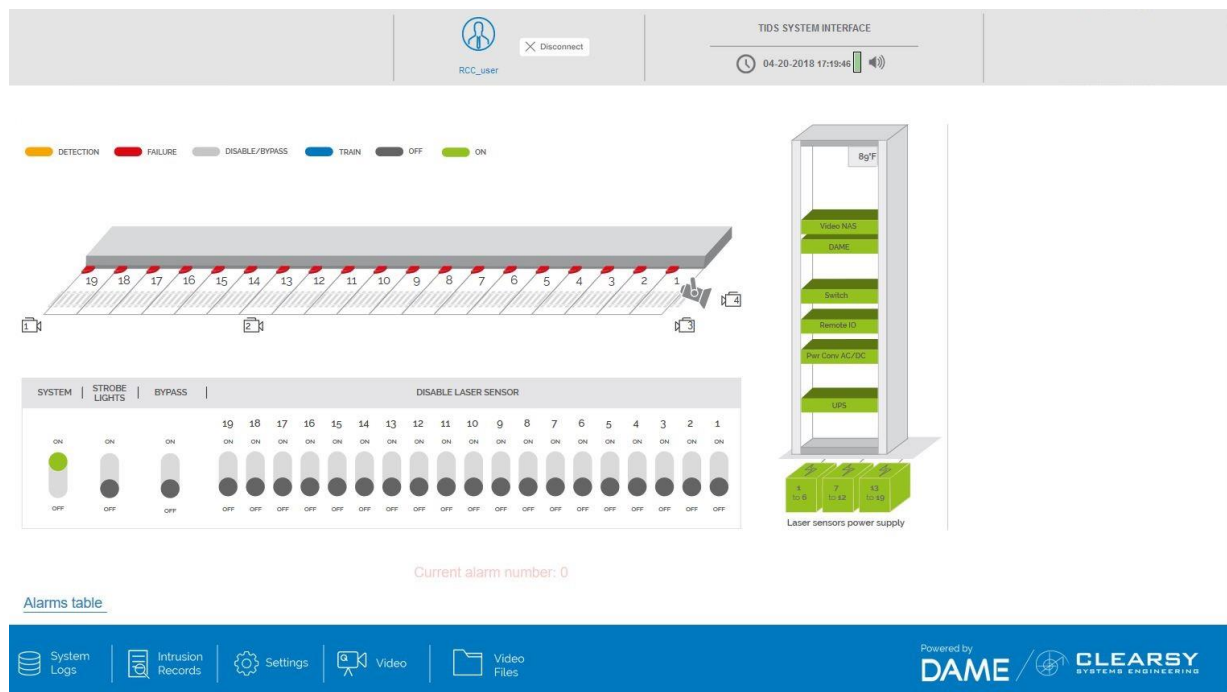
On the other side of the chain, DAME makes its data available to larger scale management system like a SCADA. These systems are usually large, complex and configured to fit existing installation, consequently it is often hard to interface directly new systems with a different communication protocol. That's why DAME plays the role of a middleware.

- **DAME uses standard communication protocols:** integration of SCADA systems with a server OPC UA and/or Modbus.
- **DAME makes data available via Websocket:** Use a subscription mechanism, to receive data from the DAME at any modification.

Human-Machine Interface

DAME is usually delivered with its own HMI. The HMI is customized to the system. Two different technologies are possible:

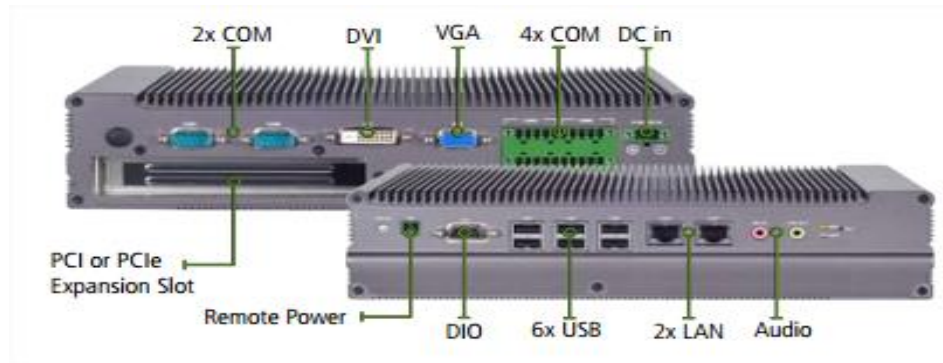
- **Web application:** It is displayed from any internet browser. User has only to connect to the DAME via a computer. A login mechanism may be added.
- **Application:** The application is installed on the user's computer. Without the application installed, it is impossible to access the interface of DAME.



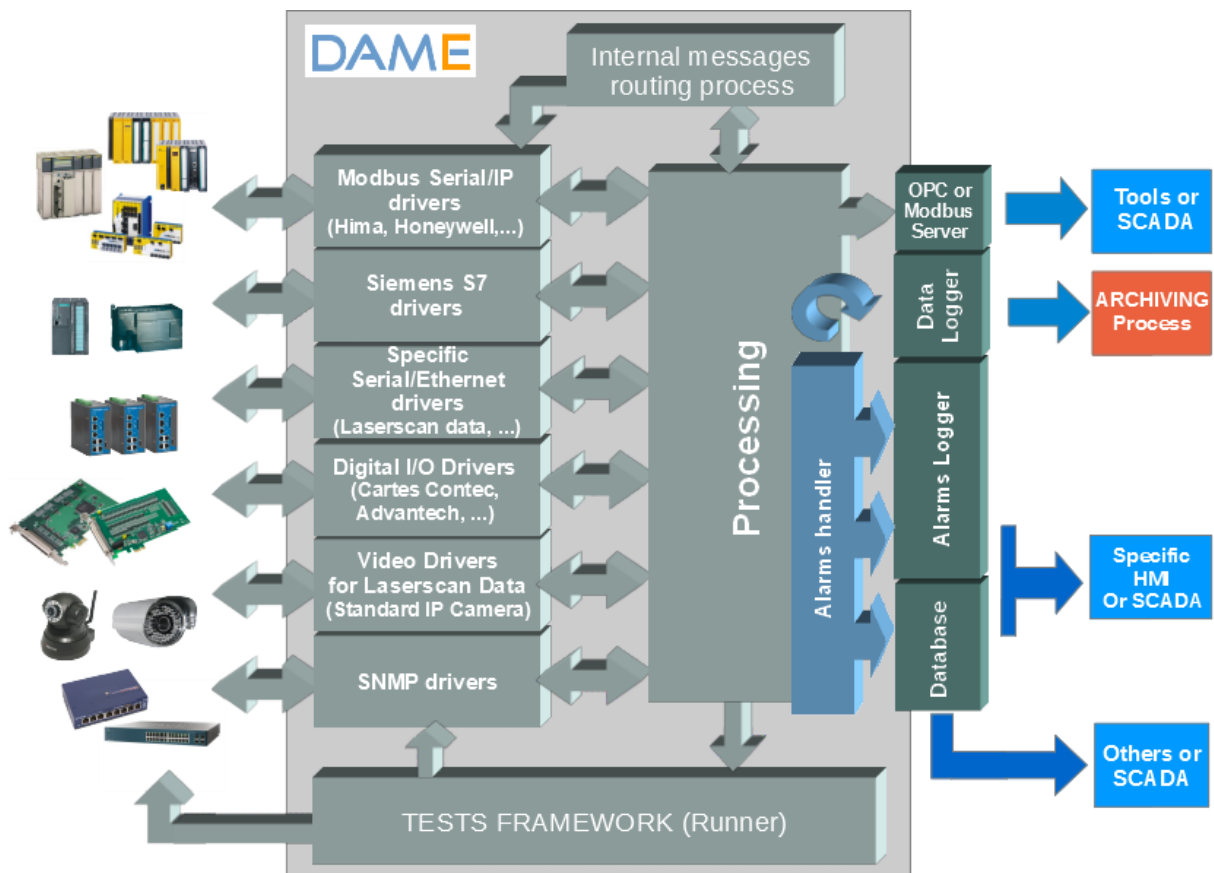
Supervision of a system to detect ingress onto the track

Material

DAME is designed to run on low power equipment like industrial computer or nettop (mini-pc).



Example of computer used to run DAME system: Fanless computer with 2GB RAM and 500GB (SATA)

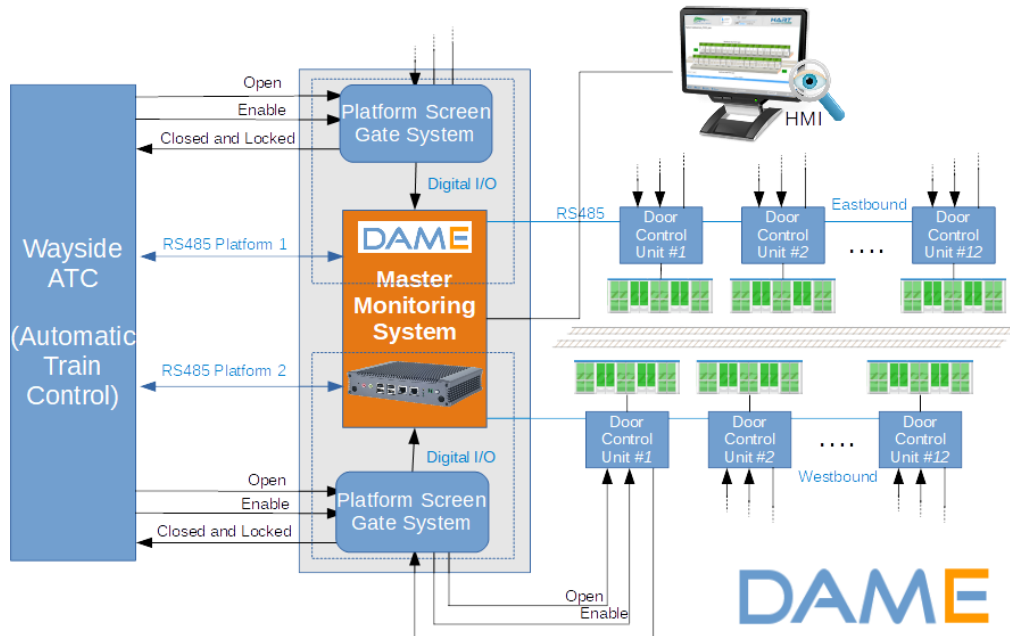


DAME architecture

Use cases

Platform Screen Doors (PSD) control system in Honolulu (USA)

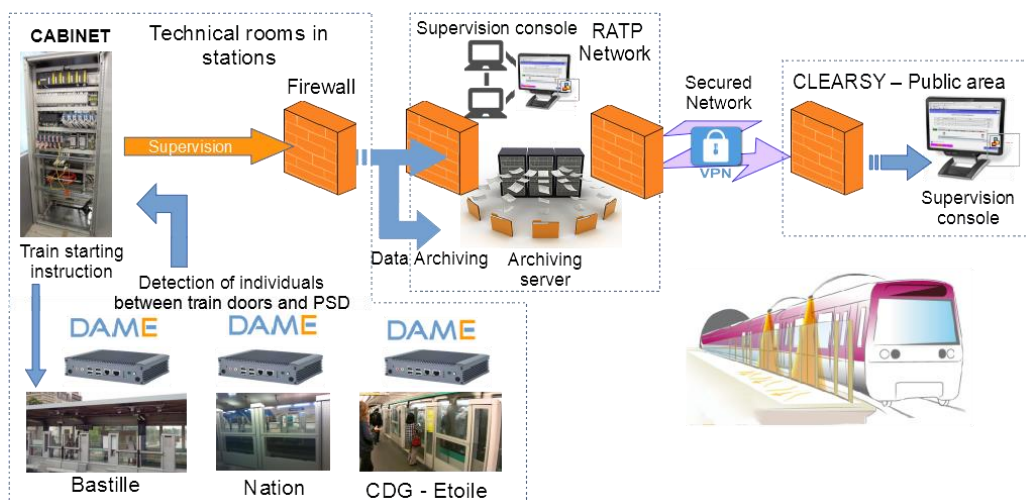
DAME is used for maintenance and operational monitoring of the control system. This DAME application has also a limited operational function: it can force statuses of sub systems of the PSD control system.



DAME architecture for PSD control system in Honolulu

Detection systems in Paris metro (RATP)

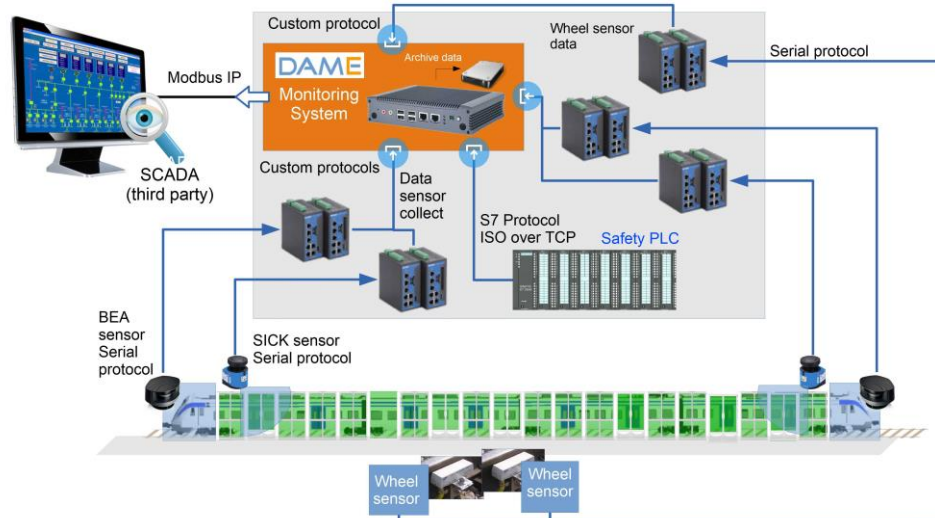
DAME is used to support maintenance and communicate statuses of the system to the supervision system in place. It was also used to monitor the system during its development phase and was the interface between the systems and the development team.



Architecture of the DAME deployed for the detection systems in Paris

Platform Screen Doors control system in Caracas (Venezuela)

First, the DAME was used as a recorder during development phases of the system and now it collects data of the PSD control system to transmit to the SCADA in place in Caracas metro.



Architecture of the DAME in service in Caracas

Track intrusion detection system

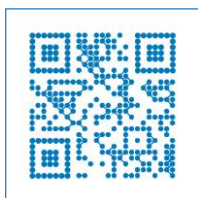
In this application, DAME has an operational mode. It monitors detection of ingress into the tracks. So, its role is to collect data from the sensors, process data and trigger alarms and operational responses in consequence.



Schematics of the DAME deployed in New York

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