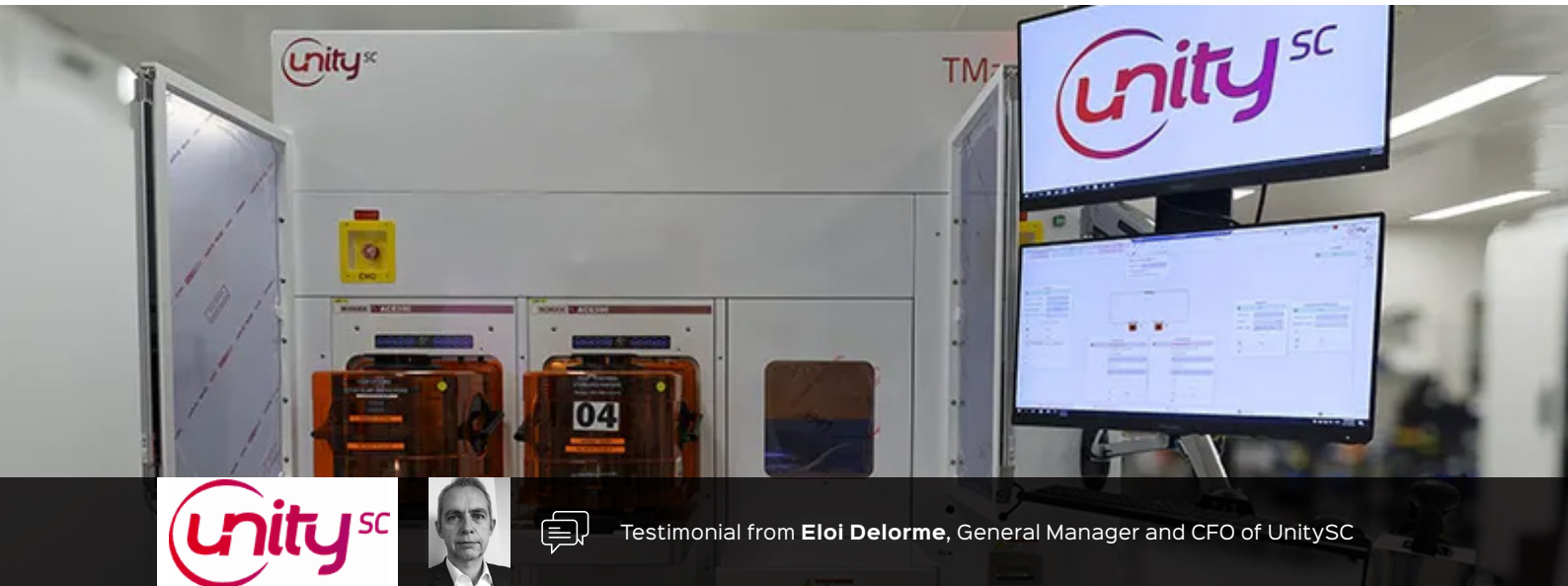




BUSINESS CASE

UnitySC

• SEMICONDUCTORS • METROLOGY-INSPECTION • AUTOMATION



*"Agileo's **A²ECF-SEMI** framework adapts to all the EFEMs that we need to control and significantly reduces the production ramp-up time of our process modules."*



A framework allowing the **control of multiple equipment front-end modules (EFEMs)**



The **ability to adapt** to manage a wide variety of process modules



Tailor-made and involved support to ensure the success of the most complex projects

The client: UnitySC

Located near Grenoble, France, UnitySC is a **leading global supplier of semiconductor metrology and inspection equipment**. By combining technologies such as 3D microscopy, temporal-mode interferometry, spectrometry, bright-field and dark-field inspection, or deflectometry over a wide range of wavelengths, the company helps its customers – foundries and integrated device manufacturers (IDMs) – **optimize their production yield** for such applications as artificial intelligence (AI), automotive, the internet of things (IoT), or high-performance computing (HPC).

UnitySC works with a wide variety of semiconductor materials as well as wafers of very different formats. Wafer loading requires specific equipment front-end modules (EFEMs) that are traditionally controlled using their manufacturer-developed software. The company **relied on the A²ECF-SEMI framework designed by Agileo to simplify the integration of EFEMs into its own process modules**, avoiding the development of software drivers and saving precious time.

Let's take a look back at this collaboration with the testimonial of **Eloi Delorme, General Manager and CFO of UnitySC**.

Reducing dependency on EFEM manufacturers

To integrate its inspection and metrology modules into its customers' industrial production lines, **UnitySC uses different EFEMs** (robotic wafer-loading platforms) depending on the semiconductors and types of wafers used. This diversity of equipment ended up slowing down the integration process. **“Configuring the control of EFEMs using their respective manufacturer’s software can take up to two months, thus delaying the deployment of our process modules on our customers’ production,”** explains Eloi Delorme, General Manager and CFO of UnitySC.

UnitySC entrusted Agileo with solving this challenge and relied on Agileo’s [A²ECF-SEMI](#) framework to manage the different loading platforms available on the market from its process modules. **“We’ve shortened the time needed to configure EFEM control and as a result have reduced our dependency on manufacturers over time while becoming more agile.”**

Automated loading and fab host interface

In 2021, Agileo’s [A²ECF-SEMI](#) framework proved its efficiency on a first project during which UnitySC had to integrate one of its inspection process modules with a world-renowned Asian manufacturer. **“One of the challenges we faced came from the wide variety of compounds used (silicon carbide, gallium arsenide, glass wafers, sapphire, etc.) and wafer formats used. All of this required very different handling as well as an extremely precise loading flow.”**

Agileo’s framework has made it possible to **program the control of a wafer-loading robot with great precision.** **“Everything is done with one single software interface, saving considerable time.”** In addition, the [A²ECF-SEMI](#) framework enabled UnitySC’s process modules to **interface with the customer’s fab host** (MES)

Benefits

- Significant time savings to control new process modules
- A robust framework capable of adapting to any EFEM on the market
- A team offering deep semiconductor expertise and software development rigor

About Agileo Automation

Along-standing expert in the semiconductor industry, Agileo Automation facilitates the interconnexion between the operating parts of factory floor tools and IT systems on manufacturing sites. At the heart of Industry 4.0, the company’s [A²ECF-SEMI](#) framework ensures the precise coordination between the products to be manufactured, production orders from the MES, and the operating parts of factory tools. Agileo Automation assists industrial equipment suppliers with developing digital twins relying directly on the protocols for controlling automated robots and the mechatronic systems that they provide.

according to the SECS/GEM standard. **“Our process modules are therefore fully integrated into the fab’s automated production flows,”** highlights Delorme.

Unlocking complex integrations

Following a successful implementation, UnitySC decided to standardize the use of Agileo’s framework. **“[A²ECF-SEMI](#) can adapt to any type of EFEM, whether Rorze, Brooks, Mechatronic, or any other player on the market. As it offers the tools needed to control loading robots and connect with the fab host in record time, we decided to standardize on Agileo’s framework for the implementation of all of our process modules,”** confirms Delorme.

Agileo’s framework has also demonstrated its **adaptability in specific situations.** In 2024, as part of the production line of a large European chip manufacturer, it facilitated the integration of two of UnitySC’s process modules (WOTAN and THOR) into a same piece of equipment **doted with old software that was difficult to upgrade.** Agileo’s experts resolved the situation by re-architecting the software and retaining the inspection/metrology sections prized for their performance. The EFEM automation and fab host connection were managed by the [A²ECF-SEMI](#) framework and **updated to the last [GEM300](#) communication standards.** This enabled UnitySC to update the connectivity interfaces of its machines in accordance with the requests from semiconductor manufacturers, a crucial criterion for successful site acceptance tests (SAT).

“Agileo not only offers solid expertise in the hardware as well as the sequencing and mastery of SECS/GEM standards, but also a rigor in structuring developments that is seldom seen in the software world,” concludes Delorme.