

Machine Safety enforced by digital credentials

– not paperwork or supervision

A large Dutch vocational college replaced manual paper checks with verifiable credentials, enforcing machine safety protocols at both the reservation and physical access stages, allowing supervisors to focus on education and safety.

Sector / Environment	Sphereon role	Project status
Vocational education · Machine workshops · Netherlands	Software · Architecture · Integration · Pilot delivery	Operational pilot

1. THE CHALLENGE

A large vocational college operates practice workshops equipped with industrial machinery, such as power saws, CNC equipment, and similar high-risk tools. Before students may operate any machine, they must complete a certified safety training. The stakes are real: inadequate enforcement will result in accidents, and the liability exposure from a serious injury is significant. Compliance with occupational safety regulations is not optional.

2. WHY EXISTING APPROACHES FELL SHORT

Safety certificates existed on paper or as entries in the Student Information System. Verifying either required a staff member physically present at every session to check documents or look up records manually. Continuous supervision across many campuses offering 250 programmes was neither operationally feasible nor financially sustainable. The process was inconsistent, created friction at the start of every practical session, and left no auditable digital trail for compliance purposes.

3. WHAT SPHEREON BUILT

An end-to-end verifiable credential system covering three connected moments: issuance, reservation, and physical access enforcement.

After completing safety training, a student receives a machine-specific safety credential issued directly to their personal wallet. That credential must be presented to make an online booking for a machine session. At the machine itself, the credential is verified by proximity presentation to a physical access controller. The machine unlocks only if the credential is valid and current.

Key architectural decision: two credential formats serve two distinct verification contexts. SD-JWT is used for the safety certificate and for remote presentation in the online booking module, well-suited to server-to-server verification flows. ISO mdoc (ISO 18013) is used for in-person, proximity presentation at the physical machine, following the EUDI wallet standard for device-bound credentials. Forcing a single format across both contexts would compromise the trust and holder-binding requirements of each.

4. WHAT THIS DEMONSTRATED

- Machine safety credential issued in under 2 seconds
- Credential verified in the booking module in under 1 second
- Successful integration with Pronto, a leading physical access management platform by Simac Access Solutions
- Physical machine unlock triggered by credential, eliminating the need for manual administrative checks by supervisors at the point of access
- Online machine reservations now possible, this did not exist before
- Staff and management can demonstrate regulatory compliance through a complete, auditable digital record, replacing manual verification or lookups in the SIS

5. WHERE THIS PATTERN APPLIES

The same architecture — remote eligibility verification followed by in-person, proximity-based access enforcement — applies wherever access to a physical asset, space, or service depends on a verified qualification or entitlement.

The client is already extending the approach to room access and student advisor appointment booking.

The pattern is directly relevant to industrial safety across sectors, equipment rental and sharing, secure facility and area access, and event or venue entry.

Any setting where 'are you allowed to be here?' must be answered reliably and without manual intervention is a candidate.

STANDARDS & TECHNOLOGY

OID4VC OID4VP	SD-JWT	ISO 18013 (mdoc)	EU Business and Personal Wallets	SURF eduID	Simac Pronto
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Interested in the architecture, delivery approach, or lessons learned?

This reference describes an operational pilot. While client details are anonymised under a standard confidentiality clause, in many cases we can connect you directly with the people who lived this challenge first-hand.

info@sphereon.com · sphereon.com · +31 (0)85 004 9600