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Supply chain interoperability and integration —

Part 110: Verification of certificates in the supply chain

Interopérabilité et intégration dans la chaîne d'approvisionnement —

Partie 110: Vérification des certificats dans la chaîne d'approvisionnement

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This document was prepared by Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 5, *Interoperability, integration, and architectures for enterprise systems and automation applications*.

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Introduction

A certificate is a representation of a record of an assertion or an observation of the occurrence of an event by a third party. Common certificates include certificate for key life events such as birth, marriage or death as well as certificates representing title to an asset such as land, a vehicle or shares in a company or to debt as in a mortgage or loan note. Beyond those issued by government, certificates are commonly issued by an organization to assert the completion of an event which they govern. A good example of this is education certificates.

Certificates are some of the oldest written records with examples of certificates (written record) of birth and land ownership over 4 000 years old. Registers of births and land appeared as early as the governments themselves were formed to pass and enforce laws on its citizens and property ownership, if for no other reason than the collection of taxes.

It is important to know if it is the register or the certificate which is authoritative. While the earliest registers were compilations of authoritative certificates, today it is most common for the register to be authoritative and for a certificate to be an extract of an entry in an authoritative register. With the conversion of registers to digital form, the ability to quickly and easily access a register to verify a certificate is enhanced.

Certificates are essential to the functioning of the supply chain, from processes of plan, source, make, deliver, return and disposal, to performance, people, and practices. There are certificates for potential trading partners (i.e. safety and health inspected, minority-owned business, no forced or child labour, fair trade, environmental responsibility, licenses), products (i.e. quality, safety, content, function), services (i.e. completion of service), and people (i.e. trainings, licenses, education). The certificates must be verifiable with the authoritative source (the entity issuing the certificate) and, given the need for interoperable, integrated, efficient, and sustainable supply chains, through automated processing.

Certificates identify both a recipient and a certificate authority which is the certificate issuer. In order to prevent possible fraudulent certificates or confusion on what the certification represents, the certificate is verified with the certificate authority. ISO 8000-115 describes a quality identifier as definitive, resolvable, and consisting of a prefix element (to represent the issuer of the identifier) and the identifier element (including the identifier assigned by issuer to the object that points to the data describing it).

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Beyond the identity of the issuer, the domain covered by the certificate can be identified and described. The domain covered by a certificate can be identified by a reference, a certificate description identifier, formatted in accordance with ISO 8000-115.

This document uses the industrial internet (see ISO 25500-1 and ISO 25500-100); the industrial internet is an efficient and trusted environment for data sharing to occur that uses callback security where the legal identity of the party requesting data verification and the legal identity of the party replying to the request are verified. This is achieved by using registered ISO 8000-115 compliant prefixes for both parties and routing the requests and the replies through a prefix name server (PNS). The prefix records in the PNS make publicly visible only the verified IBID of the prefix owner; this enables both parties to know the sending or responding entity's verified legal identity at the same time as it protects their privacy by keeping confidential their electronic address information used for the exchange of verified data.

Annex A contains an identifier that conforms to ISO/IEC 8824-1. The identifier unambiguously identifies this document in an open information system.

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