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Automation systems and integration — Asset-intensive industry interoperability —

Part 2: Vocabulary

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Systèmes d'automatisation et intégration — Interopérabilité pour les industries nécessitant des ressources importantes —

Partie 2: Vocabulaire

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Introduction

Asset-intensive industries are typically defined by sectors where physical assets play a critical role.

Examples of such industries include:

— Oil and Gas, that relies on rigs, pipelines, and refineries for exploration, production, and distribution;

— Mining, that depends on heavy machinery, excavators, and processing plants to extract and refine resources;

— Utilities, that use power plants, grids, and water treatment facilities to deliver electricity, gas, or water;

— Manufacturing, that employs factories, assembly lines, and equipment to produce goods such as cars or electronics;

— Transportation, that operates fleets of planes, trains, trucks, or ships as well as roads, bridges and tunnels, for moving goods and people;

— Chemical Processing, that operates plants and reactors to produce chemicals, fertilizers, or pharmaceuticals;

— Aerospace, that maintains aircraft, hangars, and testing facilities for production and operations;

— Construction, that utilizes cranes, bulldozers, and temporary infrastructure for building projects;

— Telecommunications, that depend on towers, cables, and data centres to provide network services;

— Forestry and Paper, that use logging equipment, mills, and factories to process timber into products.

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Such industries invest heavily in physical assets, making the management and maintenance of these assets essential. While they are characterized as industry sectors, collectively, they also form a substantial portion of public/private infrastructure in most developed and developing nations.

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Asset-intensive industries typically struggle to adopt digital tools for key business tasks. For example:

— industrial systems cannot easily connect like consumer electronics do;

— finding and using information for designing industrial plants is time-consuming and costly;

— operating and maintaining these plants, platforms, and facilities safely and profitably is also challenging.

These problems are a common root cause of delays and cost overruns in projects. They also make operations and maintenance less efficient over time. These industries need a better way to manage risks throughout the life of the plant, platform, facilities, or other infrastructure's lives.

Despite some progress, many asset-intensive industries still have inefficient practices. Many issues come from working in separate “silos.” This affects asset management across different stages and companies. Suppliers and equipment manufacturers also frequently work in their own silos. Efforts to solve these issues have not always been successful. Current industry solutions often strengthen these silos instead. Digital transformation could help solve these problems. However, industry lacks a practical, neutral plan to achieve this.

The digital ecosystem concept has been developed and applied to achieve improved levels of interoperability within an ecosystem in the consumer sector, and some industry sectors, but most often within their respective sectors. These ecosystems are often proprietary to the supplier or vendor which provides them to their customers thus creating silos limiting interoperability with other applications, systems, platforms and digital ecosystems provided by other suppliers and vendors. The asset-intensive industry sectors include many such silos, and they are often interdependent with other silos in other sectors, so an inclusive supplier and vendor neutral digital ecosystem for these sectors must be able to adapt and federate as required.

Banking and finance have made significant progress with open standards as has the electronics sector. Oil and gas share most tools and practices with other process industries and many such tools and practices with

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