Challenges in managing controlled technical data in a digital world
Huge shifts in technology and public policy have eroded barriers that once impeded the flow of information, resources, and products.

Compliance must be an enabler for companies seeking to take advantage of these trends, particularly in the area of technical data management.
Readiness for digital transformation

Digital Maturity* Needs Cultivation and Vision

Companies are unprepared, largely due to internal obstacles.

An organization’s digital maturity:

- 5% (1)
- 11% (2)
- 16% (3)
- 13% (4)
- 14% (5)
- 15% (6)
- 14% (7)
- 8% (8)
- 3% (9)
- 1% (10)

87% believe digital technologies will disrupt their industry.

44% feel adequately prepared for disruptions projected to occur in their industry due to digital trends.

How are companies responding?

Companies are seeking to drive efficiency across global engineering functions through:

• Standardisation of engineering processes and tools across companies

• Prioritising their needs, gaining an understanding of what differentiates their business in order to build a vision and execution plan
PROCESS AND TOOLS OPTIMISATION
Global companies aim to accelerate innovation, design and manufacture of better products through unified systems, using single source view of product and manufacturing data, providing global collaboration both internally and externally.

- Bridging legacy systems
- Integrating with suppliers
- Outsourcing design activities offshore
- Centralised storage of technical data for collaboration purposes
- Data migration activities from multiple different systems to support new systems and processes
What is the impact on technical data?

**Challenges**

- Significant data cleansing activities required to ensure violations do not occur as part of new solution implementation
- Many systems for storing and sharing technical data do not have mature controls for tech data management
- While controls can be implemented, these are often heavily customised as few companies have an out of the box solution
- Regulations are constantly changing, which presents a risk to heavily customised, system based controls.

**Solutions**

- Develop a data management strategy to support ongoing collaboration
- Companies that implement tech data controls in IT systems must engage all parties (e.g. export controls, engineering, IT) as early as possible in the design phase
- Assess the cost/benefit of more sophisticated solutions for attribute based access controls
Global Trade Automation
Solutions to manage intangible exports

There are several software solutions designed to enable companies to protect their intellectual property and export-controlled technical data. Examples of service providers in the market include:

**Some of the key solution providers**
- Nextlabs
- Titus
- Symantec
- Boldon James
- OpenText
- Brainloop
- Other solutions such as PLMs, MS software (e.g. Sharepoint, Office 365), and Cloud Service providers have enabled export management functionality

**Key functionalities**
- Centralised access management
- Metadata tagging
- User activity monitoring and reporting
- Marking of controlled data
- Document classification
- Data Loss Prevention
- Secure file transfer platforms
- Automated audit trails
- Data analytics

*(Please note that the above list is provided for illustrative purposes, and is not a comprehensive list. Deloitte has not independently reviewed each solution, and provides no assurances regarding their functionalities or effectiveness.)*

**Understanding the solutions’ functionality strengths and weaknesses is critical**
DISRUPTIVE TECHNOLOGIES
Supply chains will be reconfigured and follow new rules

Digital technologies disrupt traditional business models in a way that forces all participants to redefine their overall role – Example of 3D printing

Technology controls will be a critical component of compliance in the new supply chain
Manufacturing examples

IoT spans the manufacturing value chain and address multiple challenges, but create new issues for export controls

**Predictive maintenance**
Tracking asset condition, part and system failures, and operating performance to maximize uptime

- Evaluation of controls on data that is transferred in relation to system performance (e.g. for digital simulation models)

**Intelligent products**
Equip products with IoT capabilities, create a new revenue stream from existing products

- Encryption considerations for IoT chips
- Potential for controls on information that is gathered or communicated

**Connected factory**
Automate processes on the factory floor, monitor for progress and issues remotely

- Evaluation of controls on data that is transferred in relation to manufacturing and production
What lies ahead?

• **Ecosystems** typically bring together multiple players of different types and sizes in order to create, scale, and serve markets in ways that are beyond the capacity of any single organization—or even any traditional industry.

• Their diversity—and their collective ability to learn, adapt, and, crucially, innovate together—are key determinants of their longer-term success.

• Export controls cannot be seen as a blocker to global collaboration – it must be positioned as an enabler, and part of the solution.
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