STANDARDS FOR INDUSTRIAL ROBOTS

Getting It Right The First Time

Why Follow Standards?

- Addresses real problems such as safety and reliability
- Represents industry best practices
- Developed by industry in partnership with other stakeholders
- Increases user confidence in robots

Easier Market Access

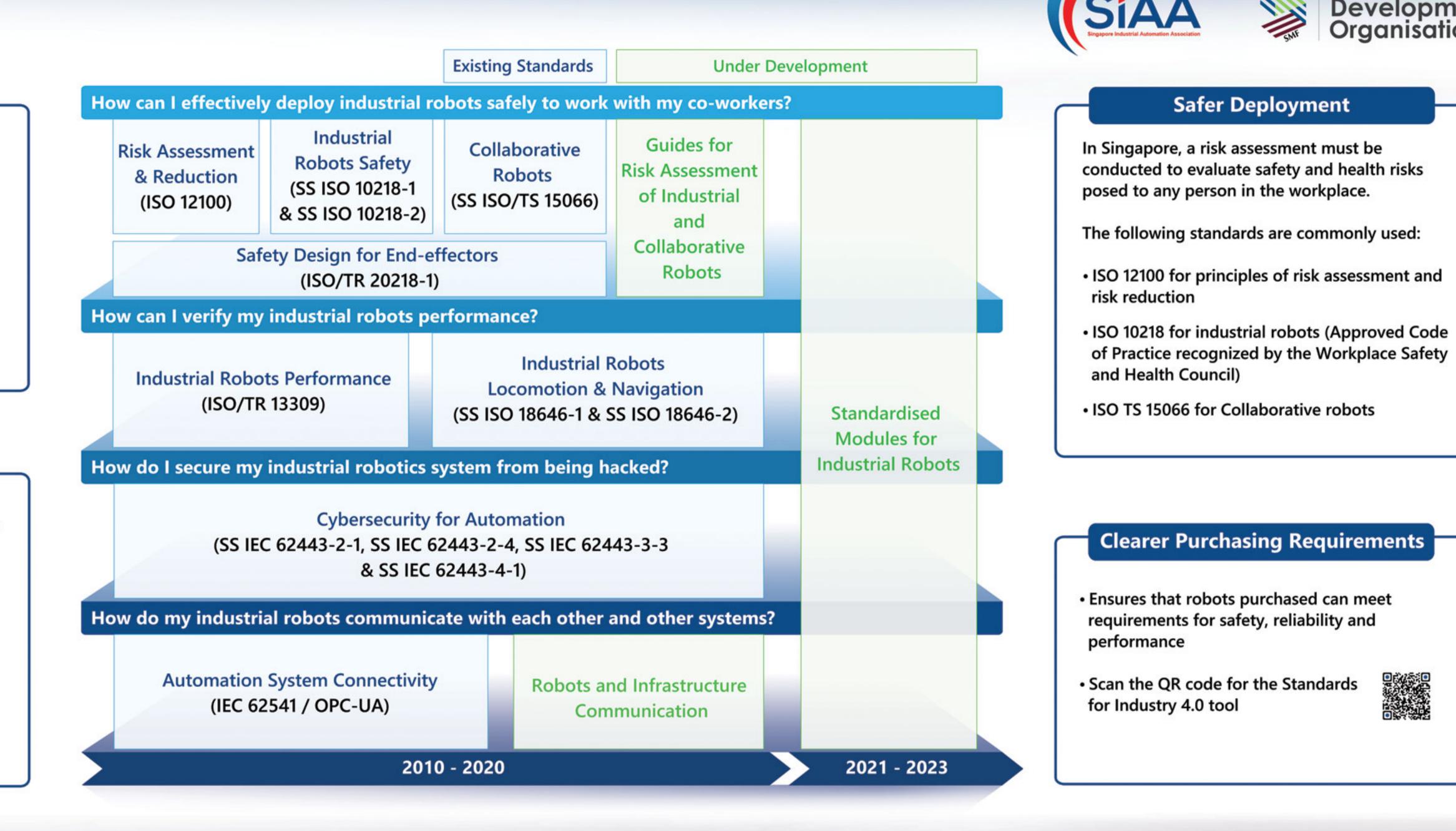
 Facilitates market access by meeting standards required in different markets

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• E.g. CE marking (Europe) uses standards such as ISO 10218

(scan QR code for more info)





Safer Deployment

In Singapore, a risk assessment must be

risk reduction

performance

for Industry 4.0 tool

and Health Council)

The following standards are commonly used:

ISO 12100 for principles of risk assessment and

of Practice recognized by the Workplace Safety

Clearer Purchasing Requirements

Ensures that robots purchased can meet

requirements for safety, reliability and





Supported by:

Enterprise Singapore

STANDARDS FOR SERVICE ROBOTS

How can I effectively deploy service robots safely to work with my co-workers?

Existing Standards

Robots

(SS ISO/TS 15066)

Safety-related parts

of control systems

(ISO 13849-1)

Getting It Right The First Time

Under Development

Trucks and their Systems

(ISO/FDIS 3691-4)

Why Follow Standards?

- Addresses real problems such as safety and reliability
- Represents industry best practices
- other stakeholders
- Increases user confidence in robots

Easier Market Access

- required in different markets
- E.g. CE marking (Europe) uses standards such as ISO 13482

(scan QR code for more info)

- Developed by industry in partnership with

- Facilitates market access by meeting standards



 Testing & Certification for robots are provided by certification bodies

How can I verify my service robots performance? Service Robots Locomotion & Navigation (SS ISO 18646-1 & SS ISO 18646-2)

How do I secure my service robotics system from being hacked?

Equipment

of Machines

(IEC 60204)

Risk Assessment Safety of Electrical

& Reduction

(ISO 12100)

Personal Care Robots

(SS ISO 13482)

Cybersecurity for Automation (SS IEC 62443-2-1, SS IEC 62443-2-4 & SS IEC 62443-3-3)

How do my service robots communicate with each other and other systems?

Robots and Infrastructure Communication

2010 - 2020

Safer Deployment

In Singapore, a risk assessment must be conducted to evaluate safety and health risks posed to any person in the workplace.

The following standards are commonly used:

- ISO 12100 for principles of risk assessment and risk reduction
- ISO 13482 for personal care robots
- ISO TS 15066 for Collaborative robots

Clearer Purchasing Requirements

- Ensures that robots purchased can meet requirements for safety, reliability and performance
- Scan the QR code for the Standards for Industry 4.0 tool



