Breaching the virtual frontier:
Human machine collaboration
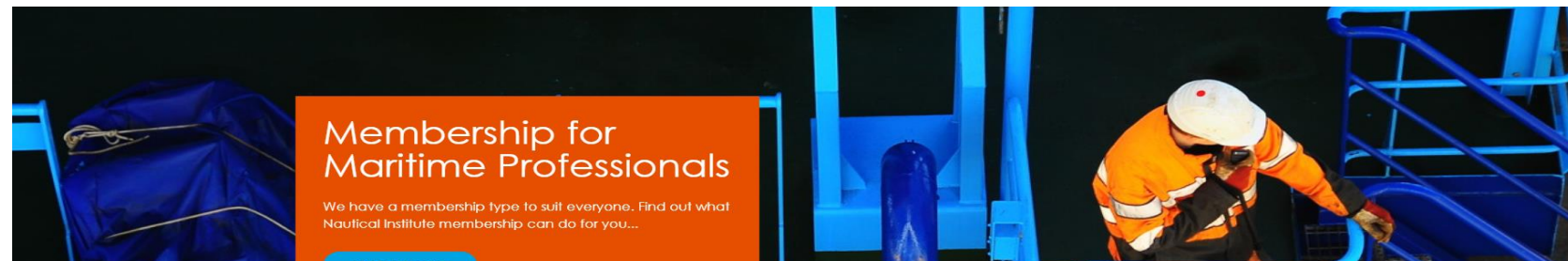
Jillian Carson-Jackson, FNI, FRIN
President, the Nautical Institute

The Nautical Institute

SINGAPORE MARITIME INSTITUTE | 10TH ANNIVERSARY

SINGAPORE MARITIME INSTITUTE | FORUM 2021

MARITIME SAFETY IN THE 4.0 ERA:
BREAKING NEW FRONTIERS

14 OCTOBER 2021, THURSDAY

GUEST-OF-HONOUR
MR CHEE HONG TAT
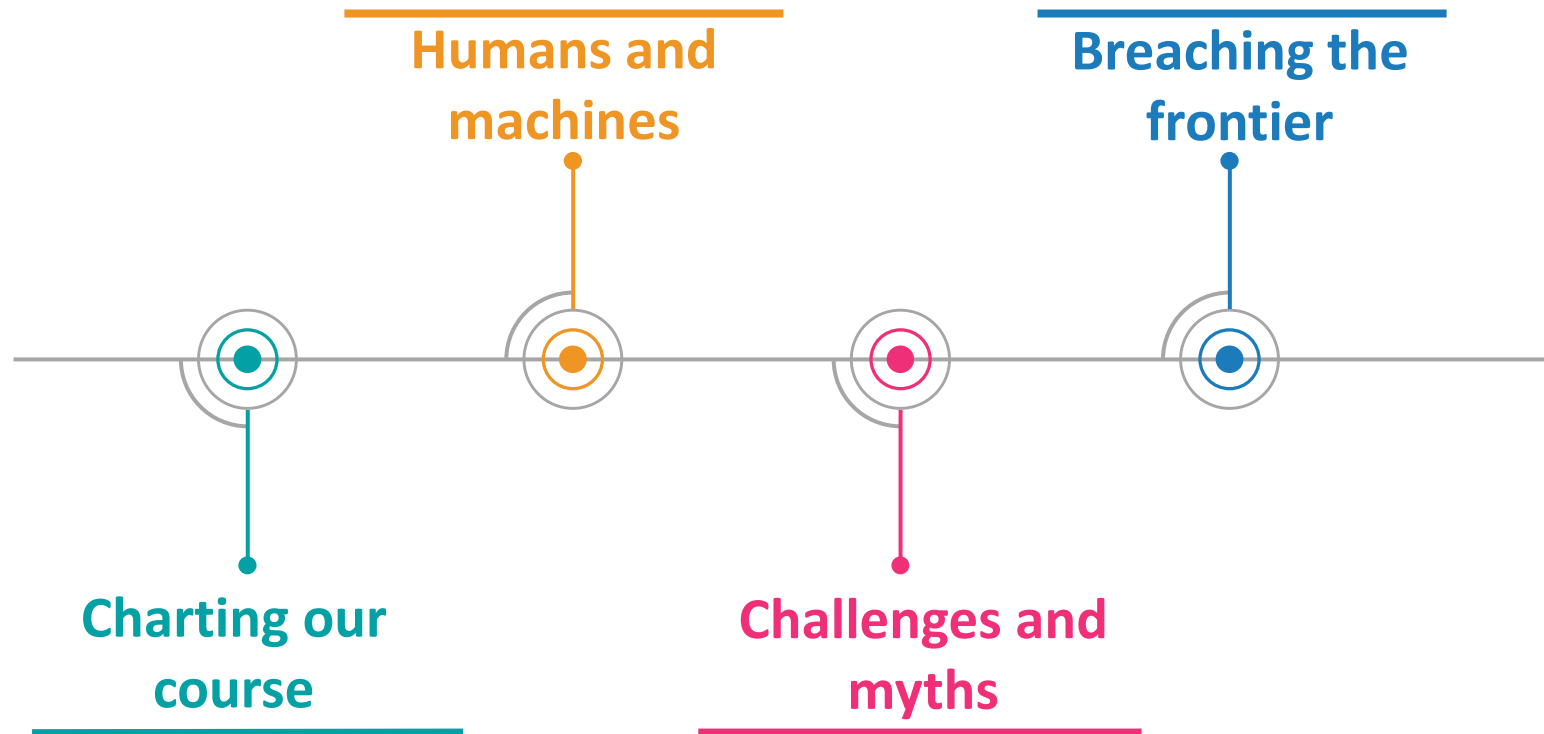SENIOR MINISTER OF STATE, MINISTRY OF TRANSPORT

The Nautical Institute

- A global representative body for maritime professionals
- Maritime publications – by maritime professionals, for maritime professionals:
  - 'Seaways', the 'Navigator'
  - Maritime books and guides
- Accreditation maritime training and services
- Consultative status at IMO
- Active in sister organisations – i.e. IALA
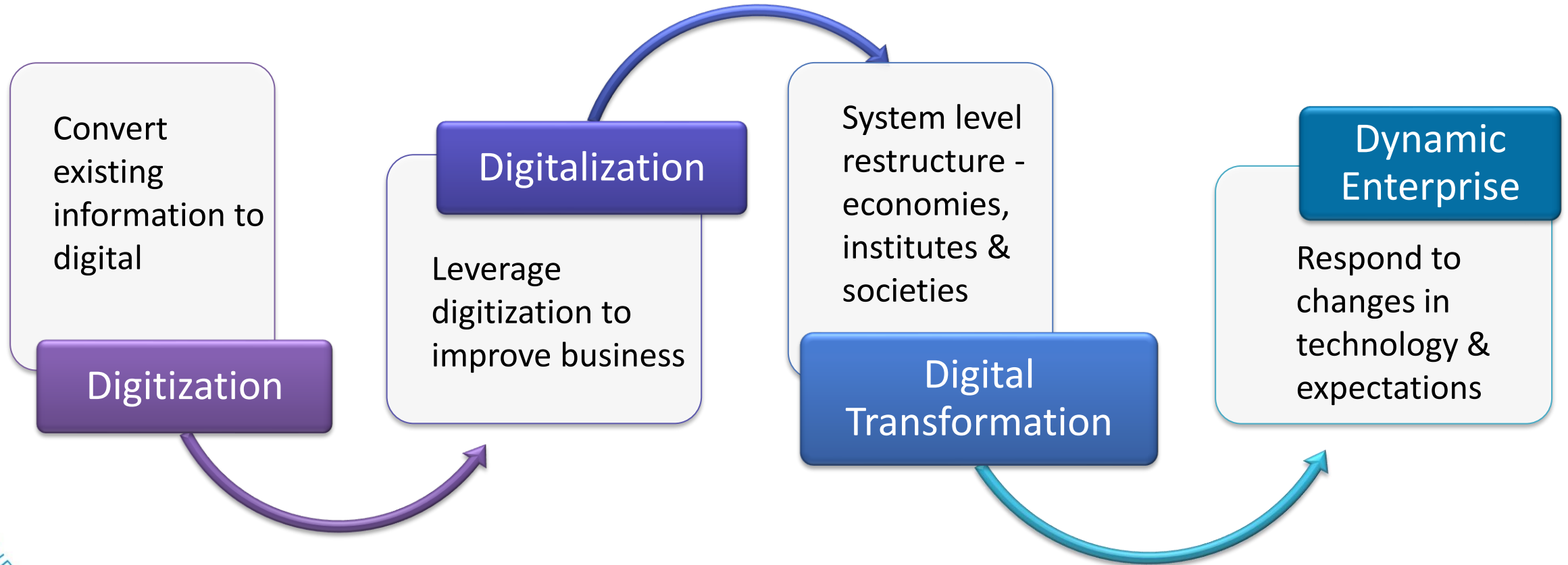- Members access free training, resources, and more!

7,000+ members
120 countries
70+ branches!

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Membership for Maritime Professionals
We have a membership type to suit everyone. Find out what Nautical Institute membership can do for you...

Find out more

Overview

Transformation and Innovation

Digitization
Convert existing information to digital

Digitalization
Leverage digitization to improve business

Digital Transformation
System level restructure - economies, institutes & societies

Dynamic Enterprise
Respond to changes in technology & expectations

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Industry 1.0
- Mechanization
- Steam power

Industry 2.0
- Mass Production
- Assembly line

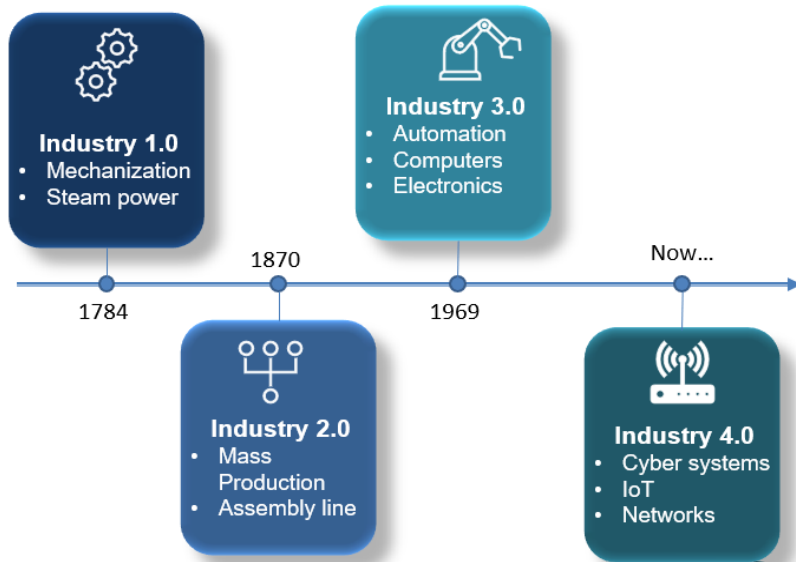**Industry 3.0**
- Automation
- Computers
- Electronics

Industry 4.0
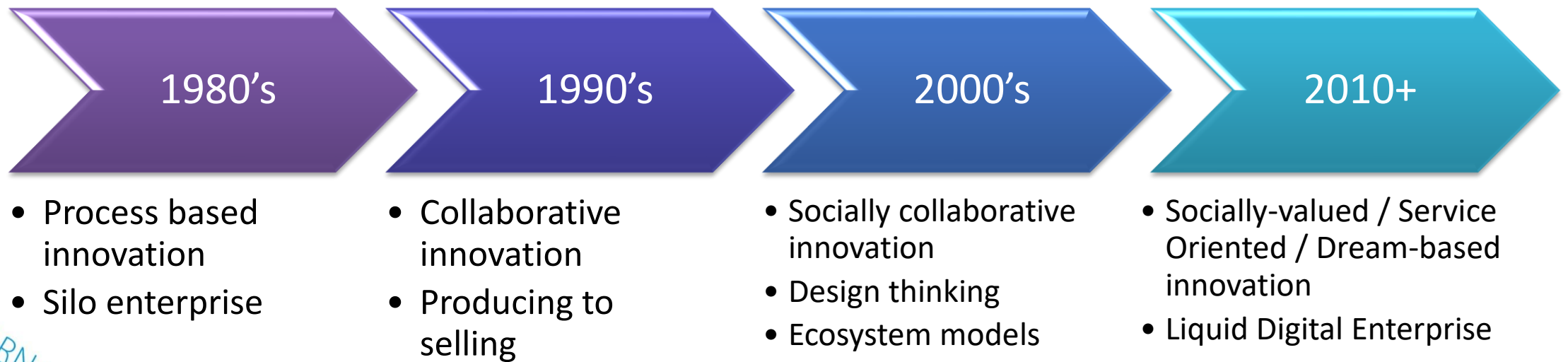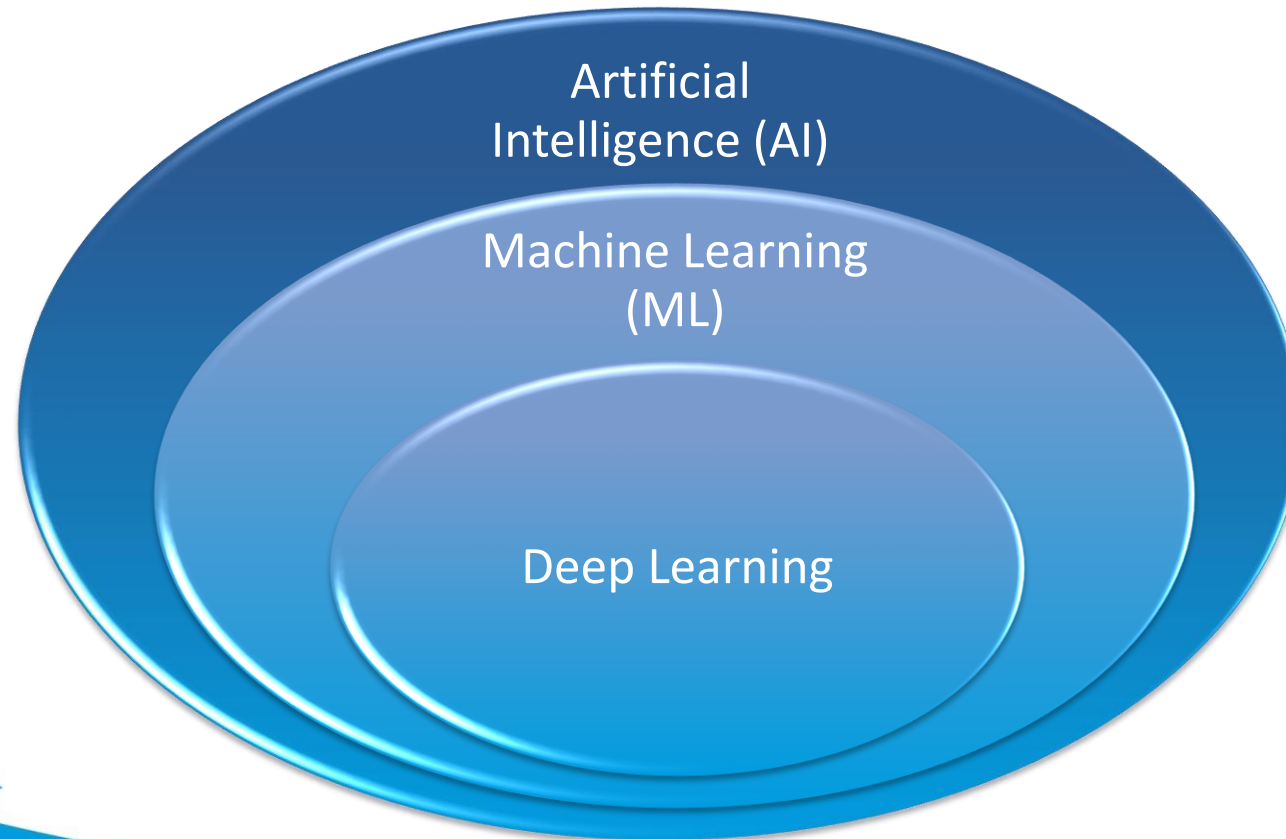- Cyber systems
- IoT
- Networks

1784

1870

1969

Now…

Change – accelerated!

1980's
- Process based innovation
- Silo enterprise

1990's
- Collaborative innovation
- Producing to selling

2000's
- Socially collaborative innovation
- Design thinking
- Ecosystem models

2010+
- Socially-valued / Service Oriented / Dream-based innovation
- Liquid Digital Enterprise

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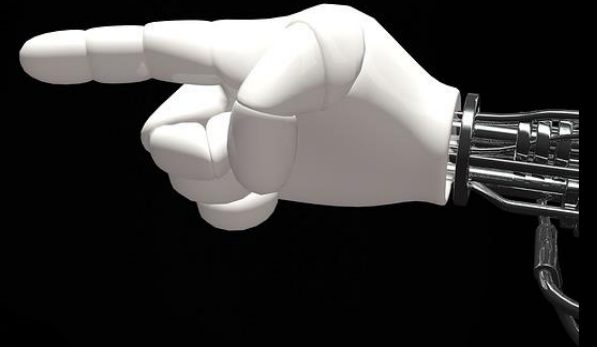
Machine Learning and Artificial Intelligence

Artificial Neural Network (ANN) – network of computing nodes joined together to mimic the way the human brain analyzes and processes information. It is the foundation of artificial intelligence (AI)

Artificial Intelligence (AI)

Machine Learning (ML)

Deep Learning

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Humans and Machines

Leads

Perceives

Discerns

Creates

Capacity

Learns

Processes

Decides

Confirms

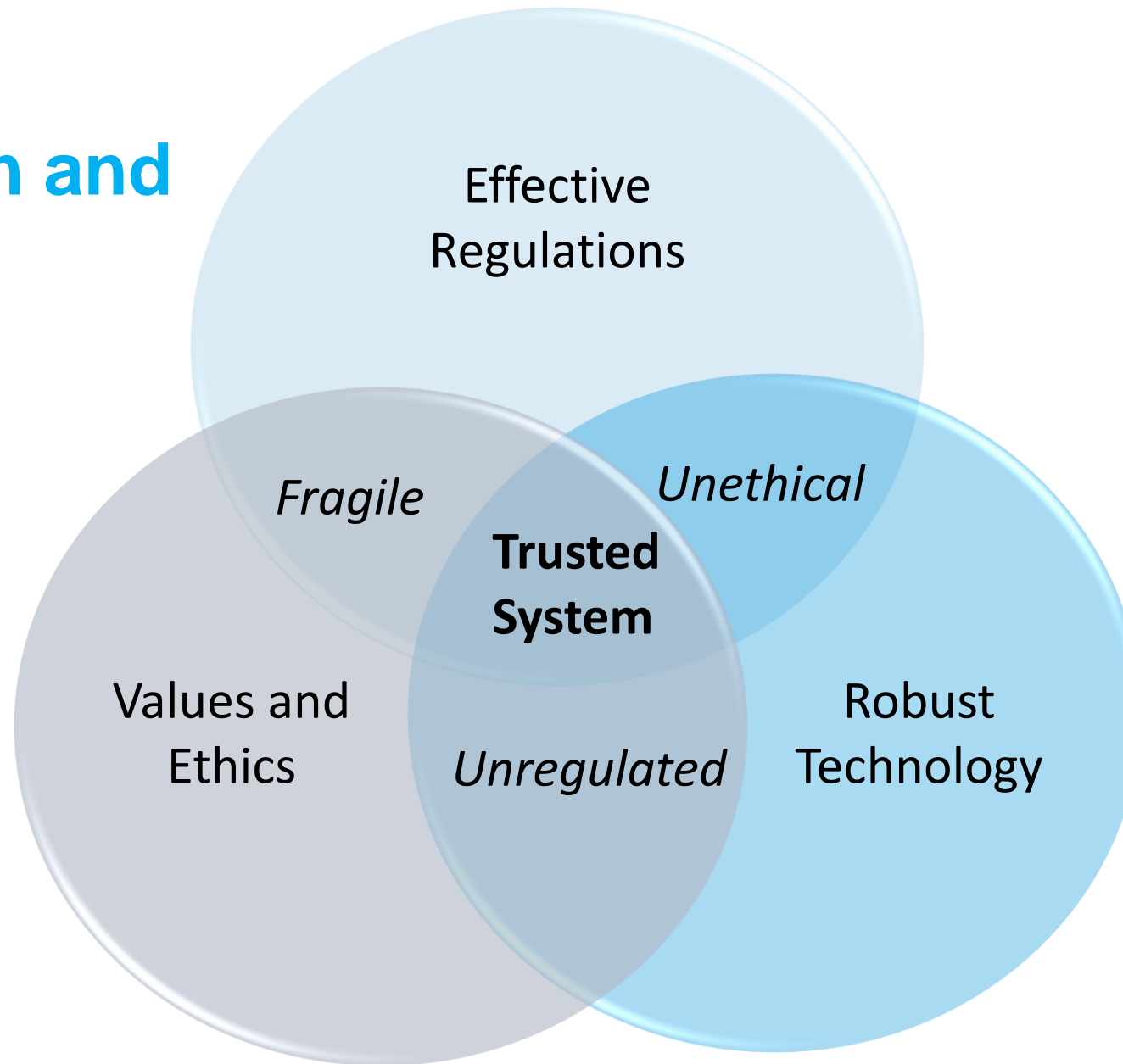Capacity

Challenges and Myths

Humans helping machines

- Human centric
- Training & Jobs
- Data veracity
- Standards
- **CHANGE**

Machines helping humans

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Challenges to breaching the virtual frontier - human machine collaboration

Mentimeter

*Go to **www.menti.com***

Enter the code 5309 3746

Or scan the QR code

Enter your rankings

- *1 – highest / 6 – lowest*

1st	Lack of common standards
2nd	Concerns over job security
3rd	Need to rethink training (& retraining)
4th	Lack of global access to digital communications
5th	Can't keep up with the speed of change

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Challenges to breaching the virtual frontier - human machine collaboration

1st	Lack of common standards
2nd	Can't keep up with the speed of change
3rd	Need to rethink training (& retraining)
4th	Concerns over job security
5th	Lack of global access to digital communications

72

Breaching the frontier

- Digital Transformation
- Inputs and data
- Tensions – Humans & machines
- innovation
- Knowledge and interaction
- Understanding strengths
- Regulations, technology and ethics

When technology is master, we reach disaster faster

-- Piet Hein

--- To avoid the disaster of technology being master, humans and machines must collaborate faster ---

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Breaching the virtual frontier:
Human machine collaboration

SMI's 10th Anniversary!

Jillian Carson-Jackson, FNI, FRIN
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