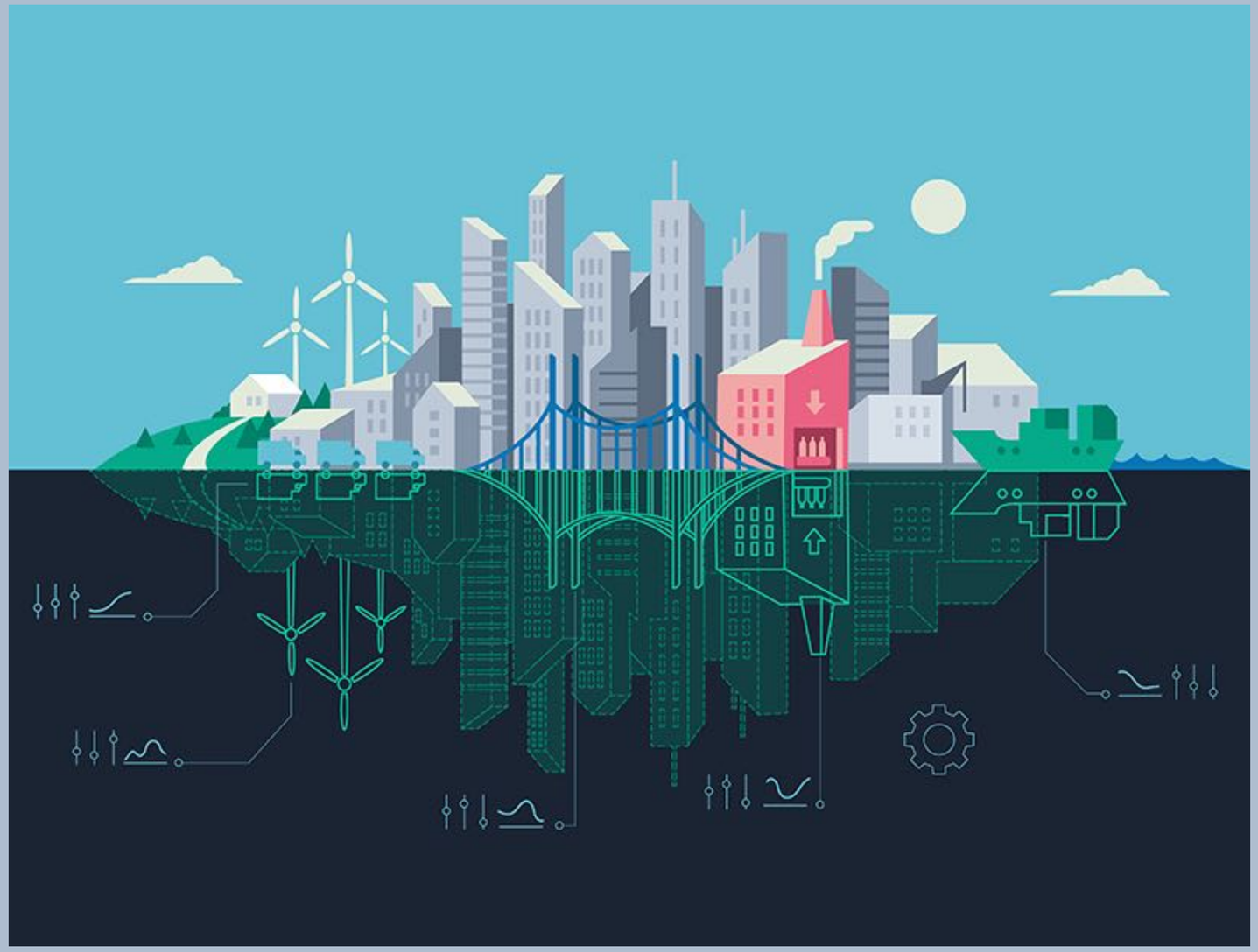
The Alan Turing Institute

Community Pulse Check: Assurance of Digital Twin Systems

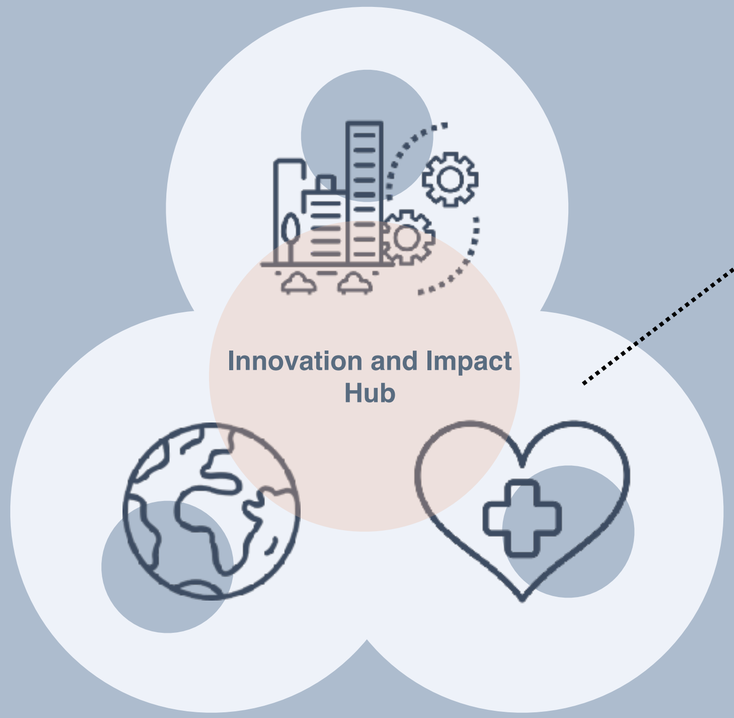


Turing research and innovation cluster in digital twins (TRIC-DT)

30/04/2023

Dr Sophie Arana

Turing Research and Innovation Cluster for digital twins



Advance the **science** and **implementation** of digital twinning

Produce **open and reproducible computational tools** for DT design, development, and deployment

Build a **multidisciplinary community of practice** in digital twinning

Responsible Technology Adoption Unit

Centre for Assuring Autonomy

UK Research and Innovation

ASSURING AUTONOMY INTERNATIONAL PROGRAMME

BRAID Bridging Responsible AI Divides

Project Goals and Objectives

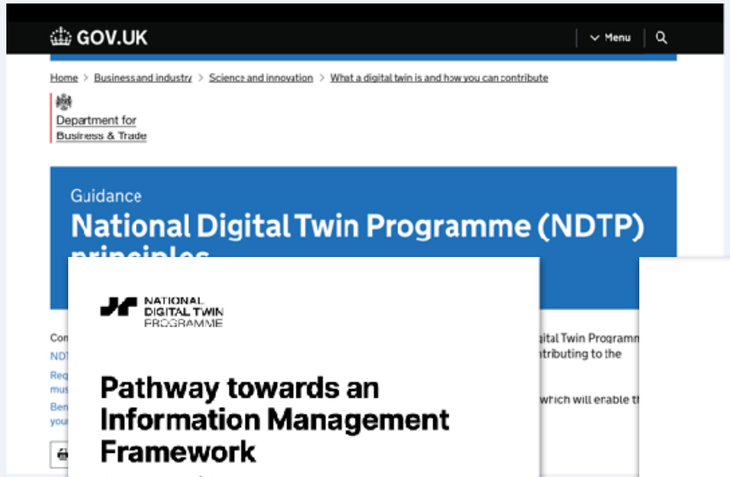
Trustworthy and Ethical Assurance of Digital Twins

1. Scoping Research
2. Co-creation of open tools and practices
3. Build a multidisciplinary community of practice

Assurance is the process of measuring, evaluating and communicating something about a system or product

Assurance is the process of measuring, evaluating and communicating something about the trustworthiness of a system or product

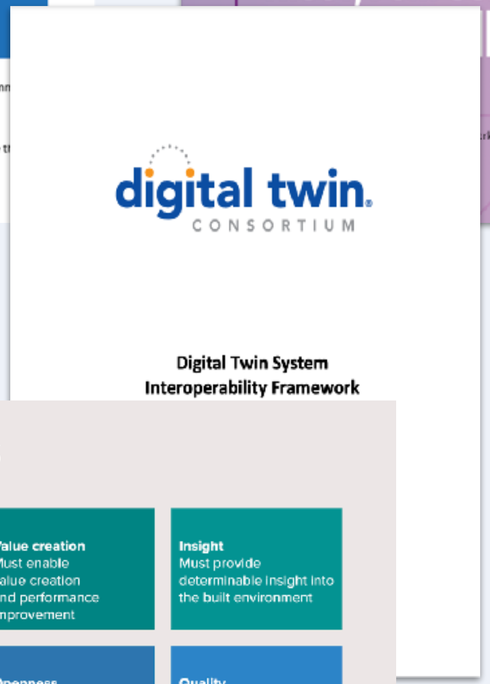
Assurance is the process of measuring, evaluating and communicating something about the trustworthiness of a digital twin

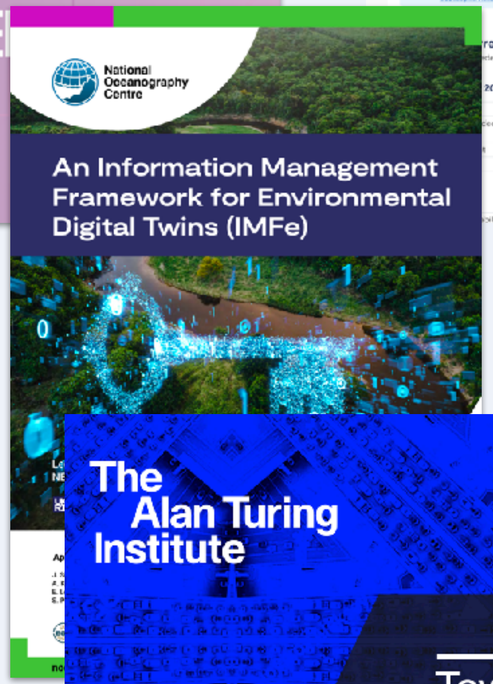

GOV.UK
Menu
Home > Business and industry > Science and innovation > What a digital twin is and how you can contribute
Department for Business & Trade
Guidance
National Digital Twin Programme (NDTP)

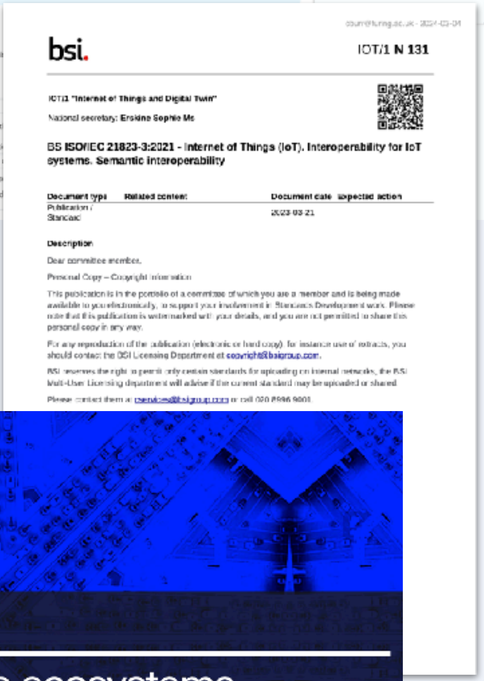
GEMINI
TRUST, PURPOSE,

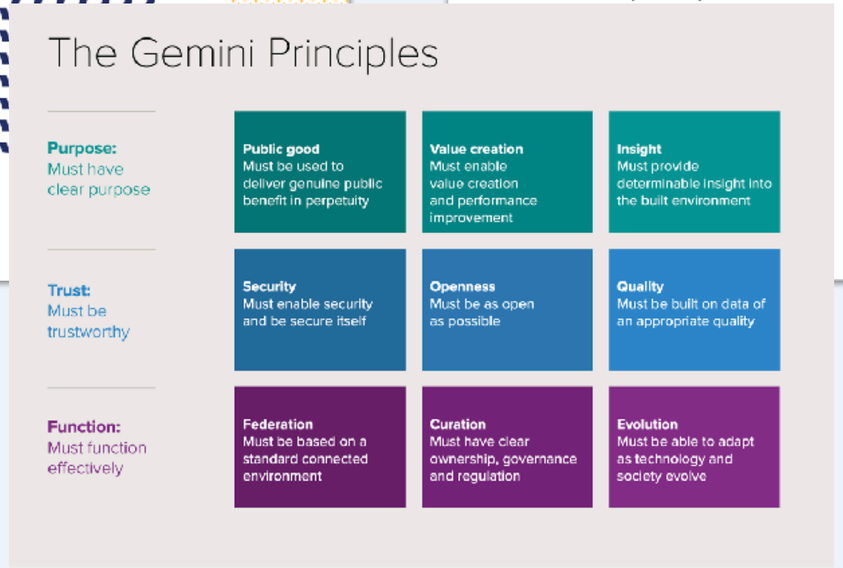
DNV
Rules and Standards Explorer
Assurance of digital twins

NATIONAL DIGITAL TWIN PROGRAMME
Pathway towards an Information Management Framework
Summary of Consultation Responses
cdbb

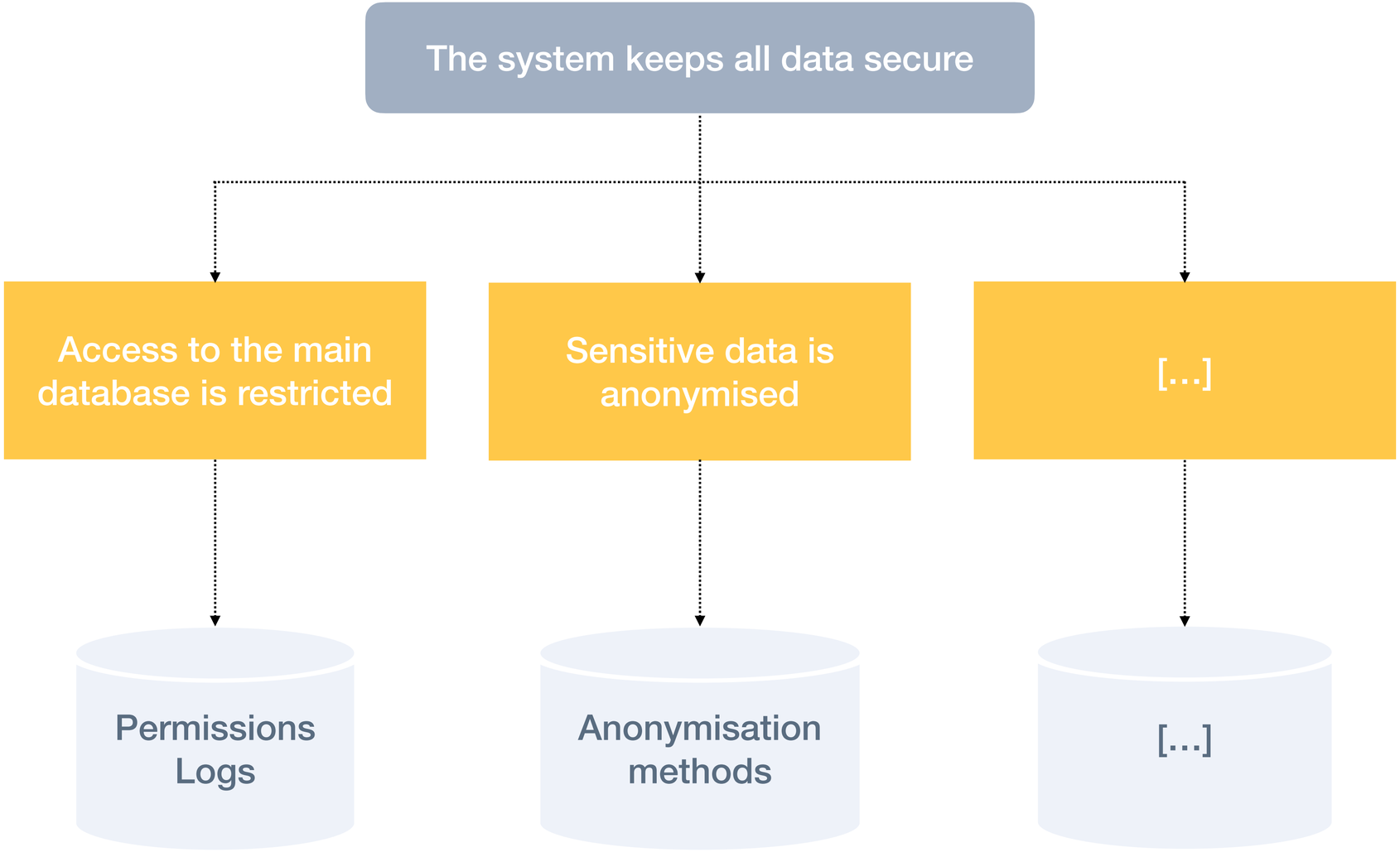

digital twin
CONSORTIUM
Digital Twin System Interoperability Framework


National Oceanography Centre
An Information Management Framework for Environmental Digital Twins (IMFe)


bsi.
IOT/1 N 131
BS ISO/IEC 21823-3:2021 - Internet of Things (IoT). Interoperability for IoT systems. Semantic interoperability


The Gemini Principles
Purpose: Must have clear purpose
Public good
Must be used to deliver genuine public benefit in perpetuity
Value creation
Must enable value creation and performance improvement
Insight
Must provide determinable insight into the built environment
Trust: Must be trustworthy
Security
Must enable security and be secure itself
Openness
Must be as open as possible
Quality
Must be built on data of an appropriate quality
Function: Must function effectively
Federation
Must be based on a standard connected environment
Curation
Must have clear ownership, governance and regulation
Evolution
Must be able to adapt as technology and society evolve

The Alan Turing Institute
Towards ecosystems of connected digital twins to address global challenges
Successes and recommendations from The Alan Turing Institute's AI for science and government programme


The system keeps all data secure
Access to the main database is restricted
Sensitive data is anonymised
[...]
Permissions Logs
Anonymisation methods
[...]

Why a community-based tools for trustworthy and ethical assurance?

Why a community-based tools for trustworthy and ethical assurance?

Deliberation & Transparent Communication

Foster Market Trust

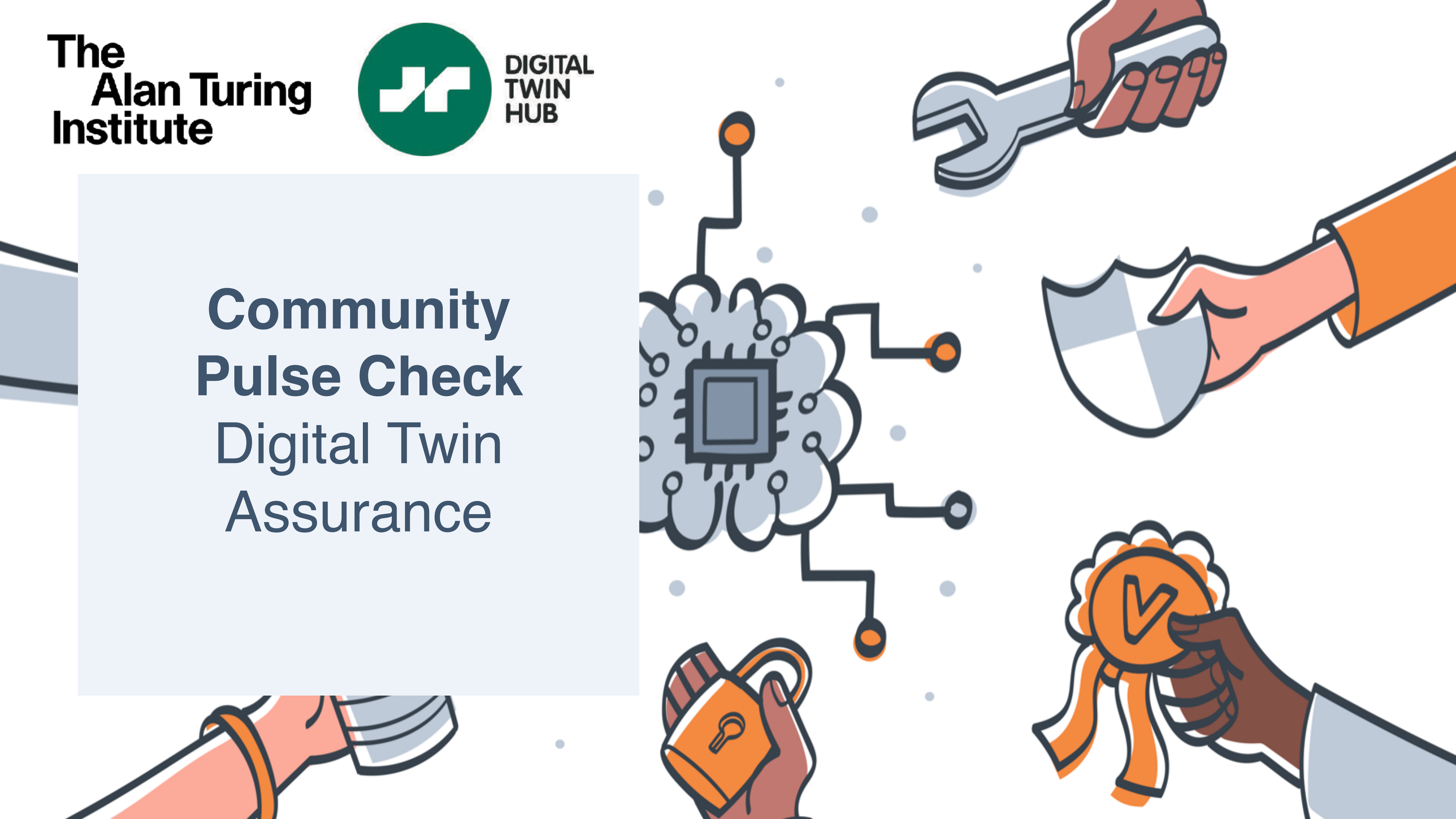
Enhance Compliance and Reporting

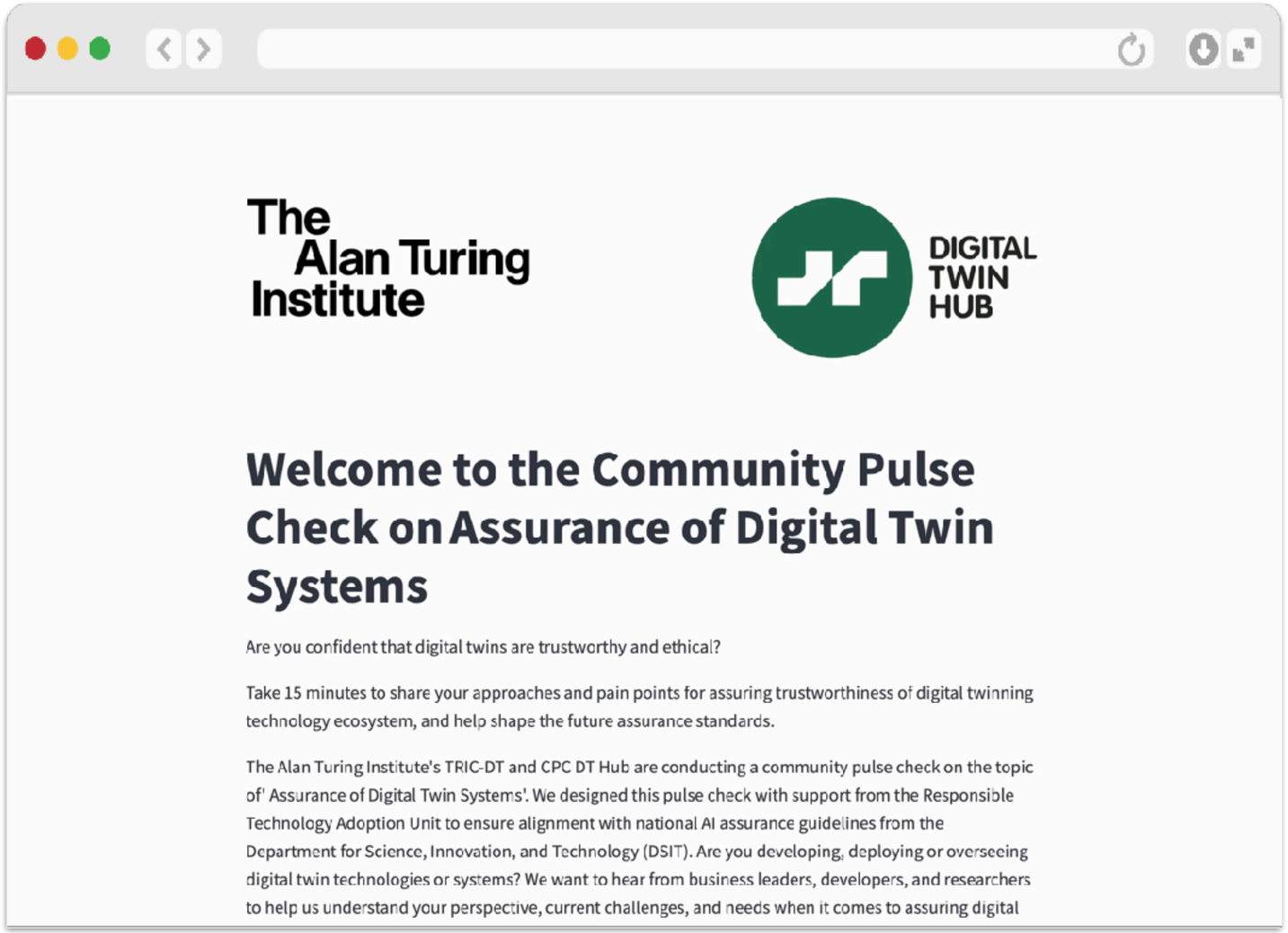
The Alan Turing Institute

DIGITAL TWIN HUB

Community Pulse Check

Digital Twin Assurance





Digital Twin Assurance

Community Pulse Check

1. Promote **trustworthy and ethical** digital twins
2. **Share & learn best practices** with the community
3. **Voice your needs** and **shape** development of assurance **tools**

Help us refine our community pulse check!

subject “assurance"

digitaltwins@turing.ac.uk