BSI Standards solutions

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By Royal Charter

Who is BSI?

Experienced: The world's first National Standards Body established in 1901 and a founding member of ISO

Trusted: established by Royal Charter, reinvesting profits back into our business to improve our clients' experience

Independent: acting in the national interest balancing industry, government, and societal needs and expectations

Leading Global Standards Creation Body: British, European, ISO, Public, Private

Specialist Focus on Knowledge, Assurance, and Compliance

The UK National Standards Body: The source of British Standards, members of CEN and ISO

Global Network: 70,000 clients in 150 countries worldwide including governments, global brands and SMEs

Thought Leaders: Shaped the world's most adopted standards, including ISO 9001

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BSI supporting innovation in the UK

- Accelerate and support the development of innovation in the UK
  - Providing a source of guidance for developers and designers
  - Improving safety, security and performance, thus increasing public acceptance
  - Promoting interoperability and integration between digital/physical infrastructure

- Support the UK as a global Centre of Excellence
  - Complementing UK regulation with standards that support innovative testing environments
  - Harnessing and exploiting knowledge from testbeds/demonstrators into world-leading standards

- Shape the development of international standards to drive exports and overseas investment
  - Internationalising UK standards and ideas through BSI strategic position and partnerships

Smart factories and digital manufacturing

BSI, Innovate UK, Made Smarter UK

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Made Smarter *developing a Standards roadmap for digital technologies relating to smart factories*

Key operational issues	1.Interoperability –seamless machine to machine communication, open access to information with common communication protocols
	1.Cyber security
	Integration with customers and supply chain partners
	Lack of knowledge about digitalisation
	Improving productivity and competitiveness
	Meeting customer procurement requirements

Objectives	To publish a directory of industry standards appropriate for setting up and running a smart factory within its business
	Including consideration of the whole lifecycle ie design and development, procurement, logistics, distribution, sales service and end of life
	To publish a multi-year roadmap of required standards to ensure accelerated development of smart factory capabilities and quality systems
	Addressing obstacles to the development of smart factories, gaps in current landscape, including a Standards roadmap, with industry stakeholders
	To publish a white paper on how to propose Made Smarter demonstrators should incorporate BSI and standards in their forthcoming bids

Risk

- Investment in *technology that becomes obsolete* before realizing a return
- IP loss from *insecure data storage*
- Data formats for design, testing and performance require *long term accessibility*, and *may not be backwards-compatible*
- Health and safety ie *integrating technologies safely* while *maintaining regulatory obligations*

Cost

- New *equipment integration*,
- Unaccounted *data storage costs*
- Upfront *costs versus long term savings* from automation, speed, increase in accuracy etc

Security

- Understanding risk from *employee behaviour*
- Training needs
- *Other countries legislation* may expose IP

Interoperability

- Numerous standards for *data formats, industrial communications and automation* including from ISO and IEC, also 3GPP and IETF
- Some *conflicting, duplicating* and *out-dated*
- ISO and IEC reviewing this issue
- *Guidance* needed in this area

Integration of legacy systems

- Old machinery or equipment, or back office systems running on outdated and unsupported operating systems
- An "integrator" will install protocol translators on legacy machines to translate data into common formats
- Concern about access to technical files, losing control over their data and the longevity of such organizations

Made Smarter project outputs

Made Smarter white paper, recommendations and directory of standards – due June 2019

New Standards activity so far:

- PAS 1040:2019 Digital readiness. Adopting digital technologies in the manufacturing sector – Guide *due July 2019*

- PAS 7040:2019 Digital Manufacturing – Trustworthiness and precision of networked sensors – Guide *due July 2019*

The role of standards in offsite construction

Research project and report

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BEIS funded BSI research project

Chris Goodier led a team from Loughborough university including Nigel Fraser, and links with Buildoffsite

Focus on

- Buildings
- Modular/volumetric and panelised systems
- Precast concrete, timber, steel

How does the offsite industry use Standards?

Are existing standards fit for purpose?

Where could standards usefully support an increase in uptake of offsite construction techniques?

Includes a detailed review of c50 existing standards

General findings

The construction industry is a highly regulated and standardised sector...Building Regulations and the Construction Products Regulations reference 1,264 standards.

These were developed for traditional building practice.

- Very few current standards for offsite and they are out of date (1980s)
- *Unique requirements – asset management, logistics, maintenance/retrofit, end of life*
- Installation/performance testing issues – in-factory versus on-site testing
- *Conflicting requirements in different quality schemes*
- Complexity of using existing (traditional build) performance standards – thermal, acoustic, fire, dangerous substances

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Key Findings

Products/Materials

- Assemblies **no product specifications for modular/volumetric, panelised systems, pods,** some EOTA guidance
- Pre-cast concrete most standardised product area
- Steel frame light steel frame under SCI guidance
- Timber uses mix of STA standards, ETAGs, abandoned EN

Accuracy

- Clashing and fitting problems from out of date standards
- Tolerances in existing standards may not be compatible with the elements supplied without identifying and quantifying
- Up to date guidance needed to identify and specify critical tolerances for
  - substructure/foundation to module,
  - module to module,
  - module to structural frame, and
  - module to cladding

Connections

- Integrating different materials, systems, products difficult - even common materials from different suppliers
- Pipework and cabling problems between modules
- Causes include:
  - Dominance of individual bespoke designs
  - *Single supplier interest*
  - Poor communication
  - *Control of IP*

Key Recommendations

The Role of Standards in Offsite Construction white paper

https://www.bsigroup.com/en-GB/about-bsi/uk-national-standards-body/about-standards/Innovation/offsite-construction/

1. *Current Standards portfolio* – work with standards makers to address offsite requirements and take action to update or amend standards where required
   a) Met B/524 Precast concrete, CB/203 Structural steel and steel products, B/555 BIM
   b) Ongoing discussions – fairly slow response – *no offsite experts on BSI committees*
   c) BS 5606 Accuracy in buildings – work started

2. *New standards* – prioritise need where gaps have been identified and work with key stakeholders to develop detailed proposals
   a) PAS 1025 *CoP for the design and procurement of generic offsite systems for residential development* (HTA 50% funding so far)
   b) Modular and volumetric – a big gap
   c) Quality management for production of offsite (early discussions)

3. *Further research* - scope out and deliver a detailed investigation into issues around *interfaces* in order *to identify "commons"* where standardisation is possible