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# Structuring Knowledge: Standards Development Briefing





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# Foreword.

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By Scott Steedman CBE  
Director of Standards



“In this first Standards Development Briefing we discuss some of the main projects we have completed recently and shed light on new issues we are addressing”

Standards matter. Standards represent the distilled wisdom of what 'good' looks like. Standards are open, consensus-based frameworks for sharing knowledge between stakeholders such as researchers, developers, investors, manufacturers and service providers, their employees, end-users, consumers and government. Standards bring competitive advantage.

The role of standards in the market is frequently confused with the role of regulation and this obscures the real value of standards to the economy and society. The concept of standards as voluntary tools for industry, working alongside regulation, brings real opportunity for companies to demonstrate their commitment to product quality and business excellence.

Standards are most effective in raising the level of performance of an organization, bringing benefits to shareholders and customers alike. Standards are used where supply chains are working to overcome technical, process or organizational issues.

BSI is the UK's national standards body and is responsible for overseeing the national standards making process and for representing the UK on the European and international standards organizations, CEN, CENELEC, ISO and IEC. We maintain strong relations with other national standards bodies around the world. We are proud of our long history in helping to shape many of the most well known international standards that are used by business and industry around the world today.

We are active not only across industry, but also in the professional services sector, helping to address business issues by bringing communities of interest together to agree the best way forward on various issues.

The standards we produce come in many forms, ranging from the sponsored PAS standard, which can be published in a matter of months, to British Standards, European standards and global ISO or IEC standards. None of this would be possible without the tireless work of our 10,000 Committee Member experts and their Committee Chairmen, who guide and coordinate the technical experts and public consultation processes. We greatly appreciate their commitment and support.

We see huge potential for voluntary, market driven standards to power innovation and growth, to strengthen businesses and to deliver better social, economic and environmental outcomes for all. In this first Standards Development Briefing we discuss some of the main projects we have completed recently and shed light on new issues we are addressing.

Whether you have ideas for new standards, comments about existing work or suggestions for the future, we would be delighted to hear from you.

A handwritten signature in black ink, appearing to read 'Scott Steedman'. The signature is fluid and cursive.

**Scott Steedman CBE**  
Director of Standards  
January 2013

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# Introduction.

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## Shirley Bailey-Wood MBE Director of Publishing



“We’re recognized throughout the world for our independence, continual improvement and inclusivity in the creation of standards-based solutions”

BSI Standards is part of the BSI Group, a global independent business services organization providing standards-based solutions that inspire confidence in businesses and deliver assurance to the market and consumers.

With our longstanding international reputation, we have a unique global vantage point that crosses all industry sectors. Our focus is informed by industry working globally and locally, helping our customers and partners to engage in creating standards. We develop the best information and workflow tools to take the knowledge within standards into a modern business setting.

We participate in 7,000 standards projects worldwide, uniquely informed by the people and challenges that are part of our DNA – more than 10,000 contributing experts.

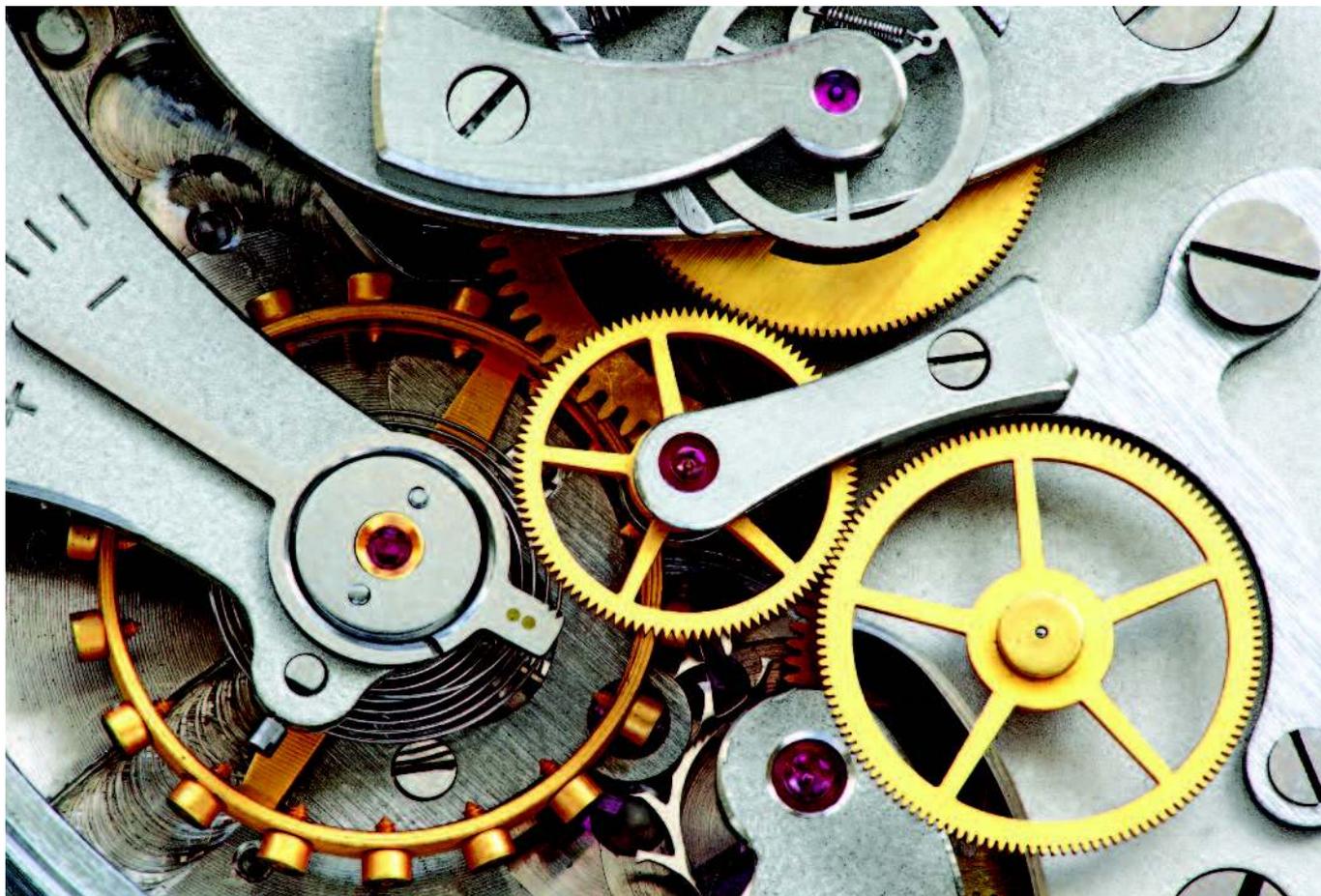
Each year we research existing and emerging standards and combine this with our intelligence as to how they are used, to track developments across industries and forecast trends. We’re recognized throughout the world for our independence, continual improvement and inclusivity in the creation of standards-based solutions.

### Significant change

The past year has been one of significant change across the standards landscape and we expect this to continue and accelerate. During 2012 we saw economic pressures impact the time and ways in which individuals can contribute to standards development, spurring new approaches to standards creation. This has been accompanied by changes in the regulatory landscape, most notably in Europe with the release of the new standardization regulation (EU No 1025/2012) in October 2012, as well as moves in numerous countries to clarify the referencing of standards in regulation.

BSI was active in shaping the new European standardization regulation, reinforcing the values and independence of the standardization network internationally (see page 11). At the same time, we continued to collaborate with experts to understand how they can best contribute their knowledge in these pressured and fast-changing times. Our people and systems are adapting to respond to the requirements of speed and to harness technology to produce, by increasingly innovative means, solutions that can enable organizations to succeed and prosper.

This changing environment is marked by the emergence of new standards and new ways to support their use. Our theme for 2013 is one of assuring excellence. Not only in these difficult times, but also making excellence a habit as part of day-to-day business operations.



## “Advances in standardization are only possible through the collaborative effort of our valued network of standards experts and stakeholders”

### Key to success

As we develop standards we capture the expectation that everything can and will be measured according to its contribution. Standards overcome an industry’s challenges and must create market value. As businesses strive to thrive, those with an agile mindset – and the right people and standards in place – are more likely to succeed.

The briefing that you are about to read, including a range of insightful case studies, shows how standards are continuing to respond to market needs and deliver value. You will be able to find out how businesses great and small, from a wide range of sectors, are improving their efficiency and performance through working with standards.

Much of our activity is multi-faceted. As well as working with business, our work benefits government, consumers and places of

learning. While helping organizations to maximize their performance, be more efficient and profitable, standards also enable greater sustainability, as well as supporting innovation.

Standardization extends far beyond products and processes. It impacts many aspects of the business and professional services we take for granted and new approaches are occurring faster and more radically than is generally visible.

### Collaborative effort

These advances in standardization are only possible through the collaborative effort of our valued network of standards experts and stakeholders who contribute to the standards knowledge-creation process. You can read about some of them in the pages that follow. We thank them for their significant contribution and hope this briefing encourages many

more experts to get involved in helping to shape the future.

I hope this briefing will prove to be interesting and informative as you learn more about our activity in many areas. I thank all those who have contributed and we look forward to working with you in 2013 and beyond.

**Shirley Bailey-Wood MBE**  
Director of Publishing  
January 2013

# BSI Standards in numbers.

## Standards



34,000

Standards in our current portfolio



2,500

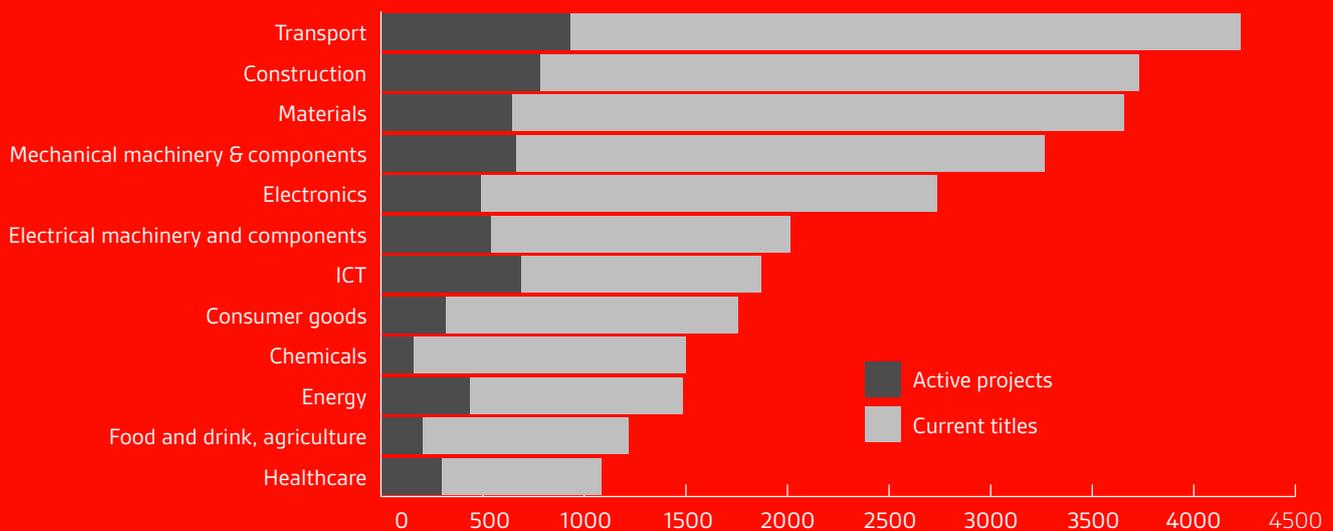
Standards we publish each year



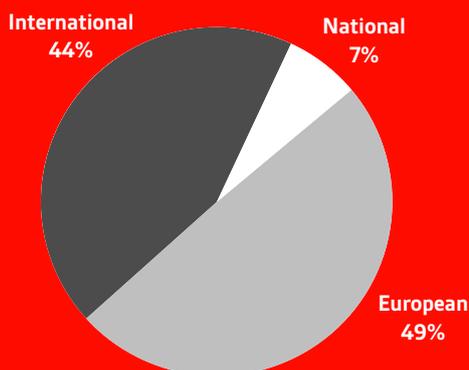
7,000

Standards projects in development

## Existing published portfolio and projects in development



## Origins of standards published



## Online draft review

Our online draft review system provides an easy way to comment on draft standards

Year	Users	Comments
2008	7,045	4,449
2009	4,481	3,856
2010	6,261	5,240
2011	8,458	9,629
2012	6,136	6,819

## Top 10 standards in 2012

- 1 *Quality management systems. Requirements, BS EN ISO 9001.*
- 2 *Emergency lighting, BS 5266-1.*
- 3 *Installation of EEM. Improving the energy efficiency of existing buildings. Specification for installation process, process management and service provision, PAS 2030.*
- 4 *Medical electrical equipment, BS EN 60601-1.*
- 5 *Medical devices. Quality management systems. Requirements for regulatory purposes, BS EN ISO 13485.*
- 6 *Information technology. Service management, BS ISO/IEC 20000-2.*
- 7 *Trees in relation to construction. Recommendations, BS 5837.*
- 8 *Societal security. Business continuity management systems. Requirements, BS ISO 22301.*
- 9 *Explosive atmospheres, BS EN 60079-11.*
- 10 *Fire extinguishing installations and equipment on premises, BS 5306-8.*



# 285

BSI Standards employees



# 36,000

British Standards customers



# 14,909

Subscribing members

## Committees



# 10,000

Active committee members who come from more than 2,700 nominating organizations



# 186

Number of international standards committees we manage



# 1,200

**BSI technical and sub-committees**

**Committee members are leading experts** who help to create published standards. They come from industry, trade associations, government organizations, professional associations, research institutions, academia, consumer and public interest bodies.

## Top 10 trade associations on our committees

	Committees/sub-committees
1	GAMBICA Association 100
2	UK Steel Association 80
3	British Cables Association 70
4	British Plastics Federation 68
5	Safety Assessment Federation 54
6	Energy Networks Association 54
7	Society of Motor Manufacturers and Traders 53
8	Intellect 48
9	Association of Manufacturers of Domestic Electrical Appliances 46
10	Engineering Equipment and Materials Users' Association 41

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# Working with business.

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As well as supplying off-the-shelf standards, we help businesses to develop their own bespoke solutions

We can supply businesses of all sizes and types with ready-made solutions from our portfolio of tens of thousands of formal consensus standards.

Standards can boost efficiency and profitability by enabling organizations to improve quality, streamline their processes and eliminate waste. Working with standards provides competitive advantage and enables businesses to attract and retain customers who are reassured by demonstrable commitment to quality and best practice.

Standards encourage innovation by building confidence across the supply chain around the direction of travel and main relevance. Standards also help businesses to develop new products that boost profits and fuel growth, as well as shape the future of a market. They can also help businesses to manage risk more effectively or manage their way through a crisis when things go wrong.

## Commissioned standards and PAS

We also work with businesses that have spotted opportunities or wish to resolve issues in the market to develop sponsored standards and publicly available specifications (PAS). These fast turn-around, tailored solutions can be used privately or made available as public standards for general use.

Working with us, businesses can take a leading role in developing an industry standard driven by their specific requirements, yet with the credibility of BSI's independent consensus-building process. This shows customers, supply chain partners and others that quality and best practice are key and the speed of delivery and high quality of the documents enables users to benefit significantly from early move advantage.

The document covering design requirements for food safety in the manufacture and provision of food packaging, PAS 223, is part of a series of highly successful pre-requisite programme standards we have developed to support the food industry in implementing food safety management system standard, BS ISO 22000, across the supply chain.

The PAS was sponsored by the G5 (Coca-Cola, Danone, Kraft, Nestle and Unilever) with support and participation from leading global packaging manufacturers including ALPLA, Amcor Flexibles, Owens-Illinois, Rexam and Tetra Pak, as well as the Institute of Packaging Professionals and FSAP (Food Safety Alliance for Packaging).

The methodology has been adopted widely throughout the world and its use continues to spread rapidly. It is also being used as the basis for the development of an ISO technical specification, due to be published in 2013.

Such market-establishing work often leads to progression to full consensus standards. For example, business continuity specification PAS 56, was first published in 2003 and it became BS 25999 three years later.

In May 2012 we were pleased to announce the publication of its international successor, BS ISO 22301, which represented another landmark for UK industry and BSI in our ability to lead and shape international thinking.



“Working with standards enables businesses to attract customers who are reassured by demonstrable commitment to quality and best practice”

## Case Study

## Net gains for engineering businesses.

How we created an innovative online information solution that makes life easier for civil and structural engineering companies

### Challenge

When the Eurocodes came into effect in 2010, some experts described them as the biggest ever change in construction standardization. This large suite of codes was developed for civil and structural engineers across Europe to provide the world's most technologically sophisticated standards and to remove barriers to trade throughout Europe. However, businesses needed a cost-effective way to work with the Eurocodes.

### Solution

Recognizing and responding to this evident industry need, we set about developing an innovative, sophisticated solution that would benefit Europe's civil and structural engineering sector.

We began by talking to a wide cross-section of representatives from construction and engineering companies to find out what specific challenges they faced when working with the Eurocodes. We carried out interviews, held workshops and distributed questionnaires.

One of the businesses that provided feedback was Arup, a multi-national professional services firm with headquarters in London that provides engineering, design, planning, project management and consulting services for all aspects of the built environment.

Feedback from Arup and many other companies influenced the creation of a new pioneering online service, *Eurocodes PLUS*, which enables users to quickly and conveniently get answers to their Eurocodes queries. It also offers practical guidance on the application of the Eurocodes and informs users when changes are made.



Brian Simpson, a Fellow at Arup, comments: "I'm very enthusiastic about *Eurocodes PLUS*. Increasingly engineers, particularly younger ones, instinctively look online if they need information and that's true if they're looking for codes of practice. I was involved in the development of Eurocode 7, which provided me with the opportunity to comment when BSI was developing *Eurocodes PLUS*." *Eurocodes PLUS* also provides innovative workflow tools that enable engineers to address specific issues, such as how to share knowledge with colleagues and create project files and design manuals for repeat designs.

**"Feedback from Arup and other companies influenced creation of Eurocodes PLUS"**

### Outcome

"Eurocodes PLUS offers the potential for businesses to save time, which, of course, provides cost savings too," adds Simpson. "Our engineers are already trying out *Eurocodes PLUS*. For people who are good with computerized systems, it works very well. It's particularly useful for those who need to quickly find the knowledge they lack about the Codes."

The result of this collaboration between BSI and industry stakeholders is that many civil and structural engineers are working with *Eurocodes PLUS*. This is helping their employers to manage projects with added confidence, while optimizing team performance and ensuring that knowledge within their organization is kept up to date.

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# Working with government.

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## How we're spreading the standards message in government circles

Via a memorandum of understanding with BIS (the Department for Business, Innovation and Skills), the UK government recognizes BSI as the UK's national standards body.

As the department responsible for the government's relationship with BSI, BIS has responsibility across all government departments for standards policy. However, the task of engaging with government on matters relating to standards is a broad one, which is why we place great emphasis on direct engagement with key departments to talk about the potential benefits standards can deliver for government policy in many areas.

Throughout the year BIS convenes the TSF (Taking Standardization Forward) committee, a cross-government group we support. BSI is an active participant, assisting in the development of briefing papers and helping to set the standardization agenda.

Our work with the TSF committee to help develop better understanding and promote the use of standards by government saw us deliver a standards and accreditation e-learning package in 2012. We collaborated on this with UKAS (the United Kingdom Accreditation Service) and BIS to produce a tool for government officials on using standards and accreditation to achieve policy goals. This will be hosted on the Civil Service Learning website.

For many years, working in partnership with UKAS, we've run an event for senior civil servants at the House of Lords, consisting of a lunchtime reception with invited key speakers. In 2011 and 2012, both events focused on the role of standards and accreditation in delivering government policies. In 2011, our keynote speaker was Graham Turnock of the Better Regulation Executive and in 2012 it was Oliver Letwin MP, Minister for Government Policy.

### Alternative to regulation

Significant strands of government engagement in 2012 included work that shows how standards can be used to help create better regulation. Through the Coalition's Red Tape Challenge and other initiatives, government departments and agencies have been tasked with removing unnecessary regulation.

Working alongside a minimum set of regulations, a key role for standards is to provide government, business, consumers and other stakeholders with assurance that industry is striving to deliver better practice. We worked informally with the Better Regulation Executive throughout 2012 to explore ways standards can be used as an effective alternative to regulation.

We also have a well-established relationship with numerous government departments and agencies via their representation on our standards technical committees. We frequently collaborate on specific projects to deliver government policy priorities, for example, with the Home Office on forensic science (see page 12) and the BIS construction team on supplier pre-qualification (see page 14).

We strongly support the BIS Innovation Infrastructure Group to ensure that standards continue to play a key role in supporting the UK's innovation system (see pages 34-39).





## “We’ve worked with the Better Regulation Executive throughout 2012 to explore ways that standards can be used as an alternative to regulation”

### European Directives

One of the most significant ways that standards complement regulation is in the use of European standards to support implementation of European Directives. The Directive that governs the European standardization system has been under review and during 2012 we’ve been working with government to influence the new standardization regulation. This is likely to come into force in January 2013, replacing the old Directive.

Our work has focussed on supporting BIS to achieve the best outcome for the UK. We welcome the outcome, which has strengthened the role of voluntary consensus industry standards in Europe and helped to re-emphasize the role of national standards bodies such as BSI in the European system.

### In-department seminars

In 2012, we started a series of in-department seminars through which our people visited a range of government departments with the aim of enabling staff to gain a much better understanding of how standards can help them to achieve their objectives.

The first seminar took place at Defra (the Department for Environment, Food and Rural Affairs) in October and 12 members of Defra’s Green Economy Team were in attendance, as well as a representative from BIS and seven BSI staff members.

BSI sector teams gave brief overviews of their areas of work, before fielding questions from Defra’s team, including how enforcement of voluntary standards might work and how standards enable better procurement. Many more such events are planned.

We will be seeking to grow our government outreach activities in 2013 and beyond to foster greater understanding of the role and benefits of standards. We’ll also be seeking to increase the number of experts from government departments on our technical committees, because their knowledge and experience can play a key role in helping to shape standards in the UK.

Case Study

## Helping the fight against crime.

A look at our recent work in the fascinating field of forensic science services in the UK and overseas



Common forensic standards could play a key role in helping to combat crime in Europe – much of which is carried out by criminals operating cross-border in several countries. A CEN (European Committee for Standardization) project committee – *Forensic science services* was formed in May 2012 to develop a standard for scene of crime and forensic evidence management. This is likely to be the first of three European standards covering forensic processes; the other two will relate to forensic science laboratories and forensic databases.

In late 2012 we worked with the Home Office and the Forensic Science Regulator, Andrew Rennison, to gather and present the UK's views on proposed European standardization initiatives. We worked with experts from the Home Office Quality Standards Specialist Group. Feedback will help to shape European standardization in the important area of forensic science.

The resulting standard will concern the collection of crime scene evidence, recording and documentation, packaging, labelling, transportation and storage to secure its integrity for law enforcement and judicial purposes. It will also provide specifications for products used to collect and package evidence for forensic purposes and ensure

**“In late 2012 we worked with the Home Office and the Forensic Science Regulator to provide the UK's viewpoint on proposed European standardization”**

traceability, and will extend to competence of personnel, equipment and consumables, collection, analysis, interpretation, recording procedures, protocols and validation.

Approval has been given for the formation of an ISO project committee – *Minimizing the risk of contamination in products used to collect and analyse biological material for forensic DNA purposes*. Standards Australia submitted the proposal and the committee will meet in 2013. The UK strongly believes that forensic science standards should be international. A relationship between the European and International committees should be established as soon as possible to ensure coherent standards development.

We have now published a specification for *consumables used in the collection, preservation and processing of material for forensic analysis – Requirements for product, manufacturing and forensic kit assembly*, PAS 377, which will help safeguard the integrity of consumables used in UK forensic science.

This work came after the Forensic Science Regulator identified a gap in standards concerning the quality of kits and consumables provided. He commissioned development of the PAS, which was produced in a joint project between the Forensic Science Regulator, Home Office and BSI.

PAS 377 will assist the police and forensic science community when purchasing consumables for forensic evidence used in the criminal justice system. The standard provides confidence in the purity of items used to collect and store forensic evidence, for example, that swabs used to collect DNA samples are free from other DNA traces that could provide inaccurate or unreliable results.

## Case Study

## Enabling government to hit targets.

### How we developed two publicly available specifications to help DECC deliver Green Deal commitments

#### Challenge

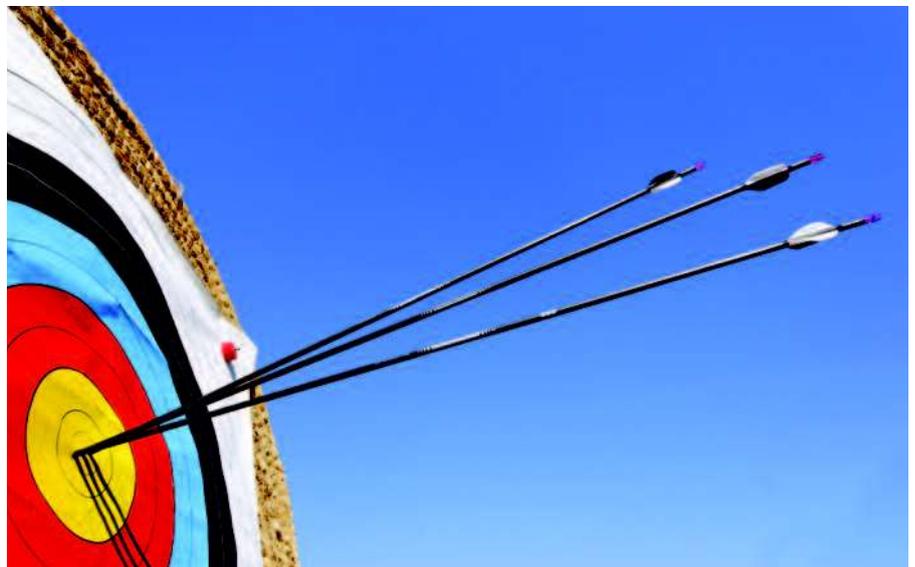
The DECC (Department of Energy and Climate Change) has been tasked with delivering the Coalition's Green Deal commitments, as set out in its programme for government. The Green Deal is the Coalition's flagship policy for improving the energy efficiency of buildings in the UK. It is based on the principle that measures that boost energy efficiency are self-funding because of the savings on fuel bills they provide. Inspiring consumer confidence in providers of energy saving products and services was identified as key to the success of the Green Deal.

#### Solution

Establishing a rigorous standards-based process for certifying Green Deal service providers offered a solution, but DECC faced two key challenges: an extremely tight deadline and the need for cross-industry consensus. Drawing on our experience of managing creation of consensus-based standards, we were able to deliver two publicly available specifications in less than a year, with full cross-industry support.

The process began with DECC asking BSI to review the current regime of standards and schemes. Following our feedback, we were commissioned to manage the development of two new standards: *Improving the energy efficiency of existing buildings*, PAS 2030, and *Certification of energy efficiency measure installation services*, PAS 2031.

PAS 2030 was published in February 2012. It is designed to assist those who install, manage and provide energy efficiency measures in existing buildings. It also recommends best practice for managing the installation process and providing services to the customer before, during and after sale. PAS 2030 provides a



robust way to demonstrate compliance, as well as proving that energy efficiency measures installed meet customer expectations.

PAS 2031 was published in March 2012. Certification bodies use it when evaluating conformity of those working with PAS 2030, while ensuring that their work is consistent and reliable.

**“Establishing a rigorous standards-based process for certifying Green Deal service providers offered a solution”**

#### Outcome

As a good practice benchmark, DECC has used PAS 2030 to set out requirements for installation of energy efficiency measures under the Green Deal, in accordance with the *Green Deal code of practice*. The PAS provides useful guidance for energy efficiency measure installers and others.

Both PAS 2030 and PAS 2031 are helping to encourage greater consumer and business confidence in the Green Deal, while also helping to achieve the government's key objective to ensure that consumers are protected from poor quality installations.

Case Study

## Streamlining construction procurement processes.

How we created a specification for BIS that brings significant cost savings to the construction industry



### Challenge

For many years, UK construction industry businesses have had to embrace 'pre-qualification' to tender for work. This can be very wasteful, because it involves repeatedly providing the same information to different potential buyers to make the invitations-to-tender shortlist. Moreover, many businesses have had to employ specialist staff to complete pre-qualification forms, while a proliferation of pre-qualification schemes has created a significant amount of unnecessary effort and cost for buyers *and* suppliers.

### Solution

To make the whole process more efficient, BIS (the Department for Business, Innovation and Skills) asked us to develop a PAS (publicly available specification) for a set of common questions, recognized across the construction industry, so that would-be suppliers would only need to complete one questionnaire.

During the process we engaged stakeholders from throughout the construction industry to create a set of questions that were common to all construction-related procurement that would prompt unambiguous responses and

**“We engaged stakeholders from throughout the construction industry to create a set of questions that were common to all construction-related procurement”**

increase potential for recognition by various pre-qualification processes and schemes.

A key objective was to reduce the duplication, unnecessary paperwork and excessive costs the industry had put up with for too long.

Published in 2010, PAS 91 presented two sets of common questions to be used in pre-qualification processes. The first set (the core questions) is to be asked in every situation and addresses supplier identity and contact information, financial information, business and professional standing and health and safety policy and capability.

The second set (which includes questions about equal opportunity and diversity, environmental management and quality management) concerns areas of supplier capability that buyers frequently want or need to know about.

PAS 91 did *not* seek to introduce new questions, rather to formalize questions already asked of suppliers by buyers.

### Outcome

The project is a good example of the flexibility that the PAS process provides for refinement and improvement.

Early in 2012, work began on reviewing PAS 91, guided by user experience, with a view to refining the questions to enable universal adoption. Experts have added questions on BIM (Building Information Modelling and Management), an increasingly significant topic, while another objective has been to modify question format to make them more suitable for electronic application. The revised version of PAS 91 is scheduled for publication in February 2013.

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# Working with trade and professional associations.

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## How and why trade and professional organizations continue to work with BSI to shape standards

The involvement of a wide range of trade and professional associations is essential to the standardization process in the UK.

Representatives from such organizations sit on BSI technical committees to represent their members' views when relevant standards are being developed or updated. They also report back to their associations on the committee's work and progress, which helps to ensure that members are aware of which standards are being developed.

Keith Hawken is Technical and Standards Director at AEA (the Agricultural Engineers Association). "The AEA's involvement with BSI goes back to 1901, but it's been fairly close since the 1960s. I've been a BSI committee member since 1994 and I participate in more than 100 BS/CEN/CLC/ISO/IEC committees.

"Previously, I worked for Bosch and wrote many standards for outdoor power products. Since coming to the AEA in 2000, working with my committee colleagues, I've written many more standards for the agricultural machinery sector. Our view is that it's important to help industry to work with stakeholders to try to introduce level playing fields for all.

"What we do is shape standards by agreement. Our members participate in international standards groups – we encourage that participation – and I convene many work groups. We have great times as committee members, sharing information and opinions, and helping to shape the future. It's like R&D in a company, but with all the experience of many other companies coming together to achieve a goal. We know where to stop commercially and we have common interests. Consensus is key."

Association representatives are often appointed by national committees to represent the UK on European and international standards committees. Secretaries on national technical committees often come from relevant trade associations.

Many associations also work with us to produce standards guidance materials and informal standards. BSI sponsors the Trade Association Forum annual conference and throughout the year holds breakfast and lunch briefings so Trade Association Forum members can air their views on standards.

To find out more about some of the trade and professional associations we work with see page 7.



"Many associations also work with us to produce standards guidance materials and informal standards"

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# Working in education.

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## How our partnerships with universities and colleges are raising the profile of standards on campus

To ensure that the employees of tomorrow in construction, manufacturing, electro-technology and other key disciplines learn about the benefits of standardization, we're working with many of the UK's universities and further education colleges.

Our people are delivering lectures in support of a range of courses to show how standards provides solutions to a range of challenges. In recent years we've worked with Middlesex University, the University of Manchester, De Montfort University in Leicester, Kingston University in Surrey and Birmingham City University.

We've also helped to design a standards management master's degree at Swansea University's School of Business and Economics and the course will welcome its first students in 2013.

We were pleased to be able to connect directly with students by taking part in National Union of Students fringe events, which focused on how universities can help to improve graduate employment prospects.

BSI is helping to influence education elsewhere in Europe and beyond. We're part of the CEN/CENELEC/ETSI joint working group, Education about Standardization. CEN is the European Committee for Standardization and CENELEC is the European Committee for Electrotechnical Standardization, while ETSI (the European Telecommunications Standards Institute) produces globally applicable standards for information and communications technologies.

We led on the development of the CEN/CENELEC/ETSI Masterplan for Education and we're writing a new strategy for 2013-2015, following a first meeting of an education steering group made up of academics from a range of UK universities that took place in August 2012 in Loughborough.

Our people have spoken at international meetings aimed at increasing collaboration between standards bodies, industry and places of learning. Indeed, our educational work has been presented as an example of best practice at international conferences in Denmark and Indonesia.

Our education micro website ([www.bsieducation.org/](http://www.bsieducation.org/)) enables university and college students to find out key facts about standards. The site also features information for 7-19 year olds and explains how British standards are used in the design and manufacture of products, which we believe will encourage an early awareness of standardization. Teachers can use ready-made lesson plans, while pupils can use the site as a resource that enables them to find out more about standards and how they contribute to society.



“Our people are delivering lectures in support of a range of courses to show how standardization provides solutions”

## Case Study

## Combining knowledge and expertise.

### How businesses and academia could benefit from our work with the EPSRC Centre for Innovative Manufacturing in Through-life Engineering Services

#### Challenge

The UK remains a key international player in many high-value engineering sectors, including aerospace and defence. However, these sectors are becoming more competitive as emerging economies enter the market. Consequently, many large UK engineering companies are moving their offering from one based on sale of products to one based on high-value services linked to products. This fundamental shift requires significant innovation.

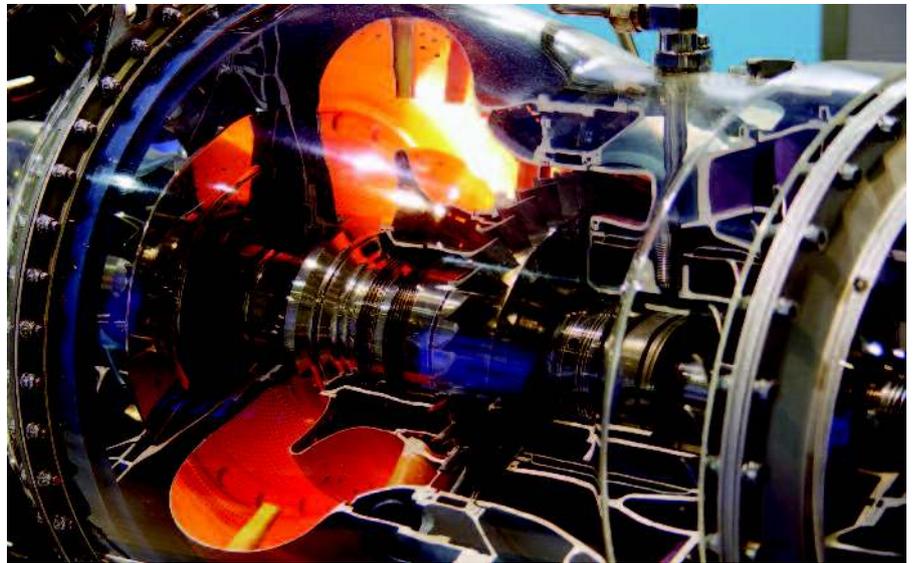
#### Solution

We have entered into a strategic partnership with the £11.1m national EPSRC Centre for Innovative Manufacturing in Through-life Engineering Services, which is hosted at Cranfield University and Durham University.

The centre's Director is Professor Rajkumar Roy. "TES (through-life engineering services) are the technical services necessary to guarantee the desired, predictable performance of a complex engineering system throughout its expected operational life, with optimum whole-life costs," he explains.

"The key question is how should we better design and manufacture complex systems so that their operational life is extended, with optimum whole-life cost? This is crucial for UK manufacturing, because 55 per cent of current manufacturing revenue for large companies comes from TES. So it's very important that we develop technologies and best practice to support innovation and industrial development.

"Our strategic partnership with BSI is highly significant. If the UK really wants to be a world leader in this field, we need to create TES standards that enable and drive



innovation. Solutions developed by individual manufacturers in isolation aren't the answer."

Supervised by Professor Roy and Centre Manager Andy Shaw, eight MSc students carried out a three-month project that set out to identify where obsolescence management standards needed to be improved or created. "We shared the findings with BSI and the

**"If the UK really wants to be a world leader, we need to create TES standards that enable and drive innovation"**

**Professor Rajkumar Roy, Director of the EPSRC Centre for Innovative Manufacturing in Through-life Engineering Services**

project also led to the development of new TES terminologies, which have been submitted in draft form to BSI's obsolescence management technical committee."

#### Outcome

Following input from stakeholders from industry and elsewhere on the committee, Professor Roy hopes the draft forms the basis for what will become a consensus standard that will help UK manufacturers.

"We're looking at many other important areas," he continues. "For example, how do you assess the capability of the supply chain for obsolescence management? Where there are no TES standards, we will work with BSI and others to help create them, because it will help UK manufacturers."

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# Maximizing performance.

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## How we're continuing to create standards that enable organizations to become leaner and more productive

Maximizing performance is key to all organizations, whether government, multi-nationals, large or medium-sized companies or small firms. Many businesses already recognize the value of applying standards as tools to help improve performance.

While citing an individual technical product standard can reduce procurement costs by allowing for clear specification of goods and services, we also have a large body of standards that are focussed on how organizations work and can learn to create improved efficiency, reduce costs, deliver a consistent quality of output, increase innovation and lead to more effective value creation and better overall performance.

We have a strong track record in working to develop effective performance-boosting standards and indeed BSI was the first standards body to develop a standard for quality management, BS 5750, which later became the international BS EN ISO 9001. This standard is now used and recognized throughout the world.

We continue to develop new ways to help organizations to improve their performance and ensure that knowledge and experience gained is maximized. Our current three key focus areas are asset management, quality management and project management.

### Asset management

Customers, shareholders, directors, managers, employees and other stakeholders all demand that businesses are run effectively and efficiently. Measures for effective governance must be in place, while costs and performance must also be well managed.

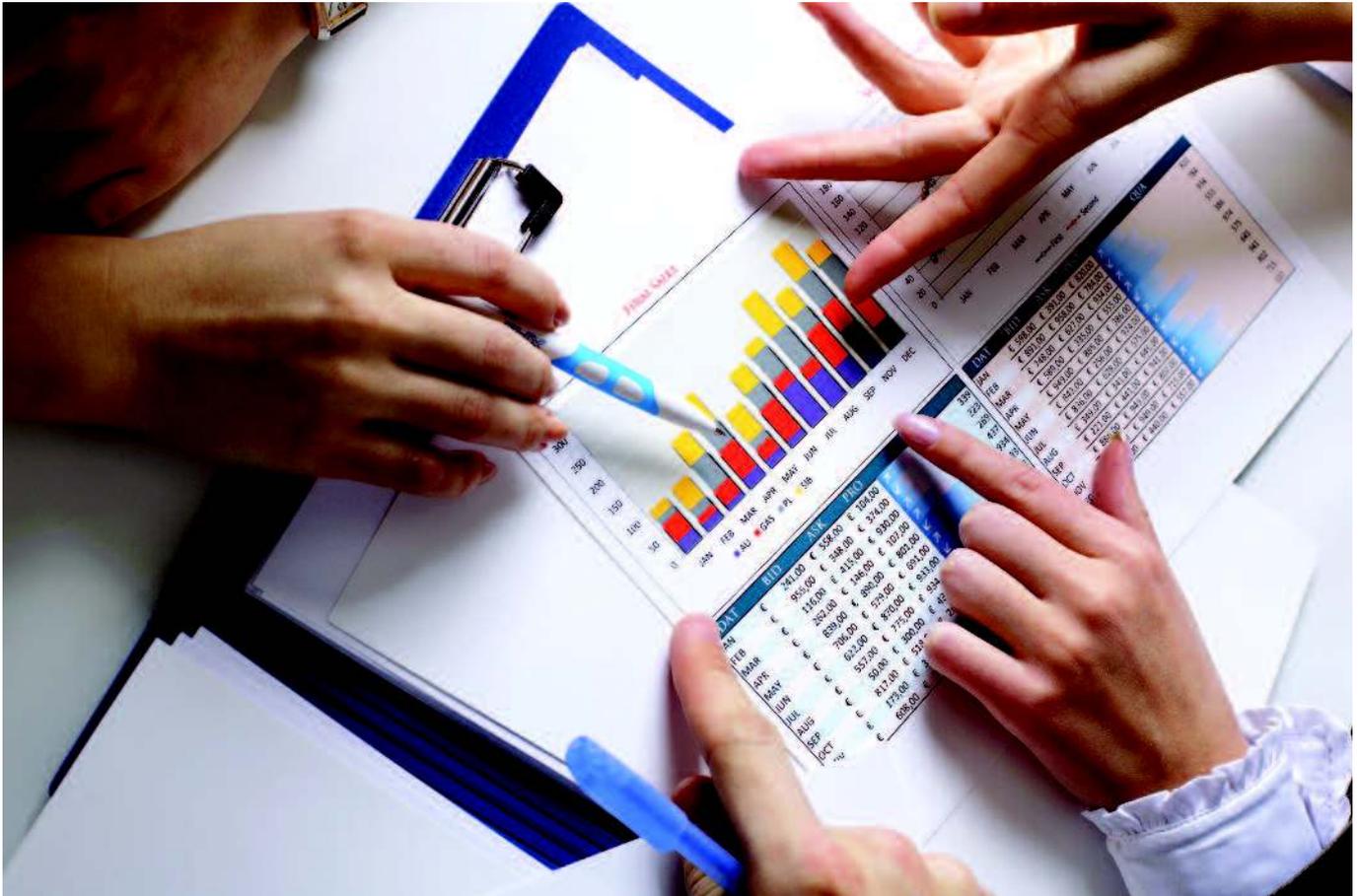
Asset management is a fast-growing discipline that deals with the optimal management of physical asset systems and their life cycles. Asset management is a cross-disciplinary collaboration that seeks to achieve best net sustained value for money in the selection, design/acquisition, operations, maintenance and renewal/ disposal of physical infrastructure and equipment.

Working with the IAM (Institute of Asset Management), we developed asset management specification PAS 55, which was originally published in 2004 and revised in 2008 as a two-part standard. Part one provides a specification for asset management with which organizations can comply or be certified, while part two provides guidelines on implementing the specification.

Uptake has been extremely high and we've received requests from around the world from those wishing to access or adopt the PAS. As a result, work started in 2010 on an international standard in the field of asset management, which will become BS EN ISO 55000. IAM has also published further detailed guidance on the standard.

The ISO 55000 series will be published in 2013. It will be in three parts, including an international specification, guidance and an auditor competency component. The UK has played a major role in the development work, leading the process to ensure that the knowledge and expertise of industry and excellence in asset management contained in PAS 55 is challenged, reviewed and shared throughout the development process of the ISO 55000 series.





## “BSI was first to develop a standard for quality management, BS EN ISO 9001, which is used and recognized throughout the world”

### Quality management

BS EN ISO 9001 is one of the world's most widely used and recognized standards. It is seen as not only a way to improve the quality of products and services so that customers receive greater benefits, but also as a way to assess how an organization delivers excellence, which can deliver cost savings. Compliance with BS EN ISO 9001 can also be key to many tender applications, so it can help organizations to win important contracts.

The review cycle for BS EN ISO 9001 is now underway and we expect the UK and BSI to play a significant role in this latest revision.

The focus in 2012 was on setting up international teams to review ISO 9001, but in 2013 the activity will focus on drafting the revised text of the standard, a process that is being led by the UK team. It is hoped that the latest version of this hugely popular quality

management standard will be available for public comment in 2014, with publication expected in 2015.

### Project management

Project management has been practised long before the term or professional discipline came into existence. Although projects can vary greatly according to their initiation, duration, complexity and in some cases continued development of the original project outcome, there are several principal features that characterize all projects.

*Guidance on project management*, BS ISO 21500, is a new international standard. Its development was the result of a UK-led initiative that used *Project management – Part 1: Guide to project management*, BS 6079-1:2010 (originally published in 2002), as the base document to propose this new area of work in ISO.

The UK provided input from a broad section of expertise across industry, government and academia, including organizations responsible for PRINCE2, APMBOK and other well-known publications and methodologies in this area. The UK was joined by 37 participating nations and 14 observing nations.

This initiative has sparked a global conversation about portfolio, programme and project management, leading to the establishment of a new ISO technical committee, jointly led by UK and US, to create overarching and globally relevant standards for portfolio, programme and project management and related disciplines, such as value management. A new international standard for portfolio management is already being developed.

Case Study

## Enabling better commercial collaboration.

How BS 11000-1 is helping organizations to realize the many benefits of working together more efficiently and effectively



### Challenge

Collaboration can help organizations become more profitable. It can be particularly successful for smaller firms, because it can provide a way to win a share of larger, more lucrative contracts. Collaboration can also reduce costs and boost efficiency, while enabling businesses to work together to create innovative new products and services. However, collaborative partnerships can go wrong and relationships can sour quickly – often because of poor communication.

### Solution

In 2004, ICW (the Institute for Collaborative Working) established a route map that resulted in the launch of CRAFT, a strategic framework that brought together 'holistically tried and tested approaches to building business relationships'.

ICW approached BSI with the idea of developing a national standard, which led to

the publication of PAS 11000 in 2006. This was the result of input from government, procurement and commercial project practitioners from the aerospace, defence, engineering, infrastructure, rail construction and outsourcing sectors.

**“BS 11000 gives us the framework to develop policies and processes, culture and behaviours required to establish successful collaborative relations”**

**Simon Kirby, Network Rail Managing Director, Infrastructure Projects**

In 2010 we published the first national standard for collaborative business relationship management, BS 11000-1. Its eight-stage approach allows organizations of any size and sector to apply best-practice principles to maximize returns from their business relationships. It requires embedding processes and behaviour through joint working and governance, and places greater emphasis on continual review than PAS 11000 and is more closely aligned with other management system standards.

BS 11000-1 has now been adopted by Costain, Skanska, Lockheed Martin and Raytheon Systems. Network Rail and Balfour Beatty use BS 11000-1 for the South-East section surface Crossrail works. The overall Crossrail scheme is planned to open in 2018 when the new 118-km (73-mile) track will connect Berkshire and Buckinghamshire to Essex and Kent via central London.

Simon Kirby, Managing Director of Infrastructure Projects for Network Rail, says: “BS 11000 gives us the strategic framework to develop, with our key suppliers, the policies and processes, the culture and behaviours, required to establish successful collaborative relations and to drive continual improvement. Maintaining collaborative business relations can only lead to benefits for Network Rail and its suppliers, for the rail industry and for Britain.”

### Outcome

Developed after consulting a range of SMEs (small and medium-sized enterprises), BS 11000-2 was published in 2011 and provides guidance on how to implement the framework standard. We continue to help SMEs to better understand how standards can enable them to gain from collaboration.

## Case Study

## Making supply chains more efficient.

How we're working with government and industry to create standards that will cut costs by improving construction supply chain data access

### Challenge

Inefficient communication of data through supply chains is believed to account for up to 25 per cent of the total cost of large-scale construction projects, often because information is inaccurate, incomplete or ambiguous. Improving efficiency in the process will reduce capital cost and bring through-life benefits.

### Solution

BIM (Building Information Modelling and Management) is the process of generating and managing building and infrastructure data during its life cycle, typically by using 3-D and non-geometric data through information exchanges in a collaborative environment to increase productivity in the design, construction and operation of an asset. BIM also enables data to be shared more efficiently by members of a project supply chain.

BSI has been working with government and industry to develop BIM standards that facilitate more efficient data interoperability. A broad range of stakeholders helped to create *Building information management – Information requirements for the capital delivery phase of construction projects*, PAS 1192–2.

David Philp, Cabinet Office Head of BIM Implementation, says: "Recently we met with the UK Contractors Group [the primary association for UK building contractors] and they said because their members had been involved in helping to shape the PAS, they already felt it was theirs."

Mark Bew chairs the HM Government BIM Task Group. He led creation of the BIS BIM report that ultimately fed into the Government Construction Strategy, which declared that by 2016, Level 2 BIM would be



implemented on all centrally procured public sector construction contracts.

He says: "Standards can play an important role in ensuring the wider adoption of BIM technologies, processes and collaboration. By ensuring that the same accurate data can be accessed throughout the supply chain,

**"Standards can play an important role in the wider adoption of BIM technologies, processes and collaboration"**

**Mark Bew, Chair of the HM Government BIM Task Group**

standardization of BIM could help save significant sums." But the benefits don't end there. Bew adds: "Standardization of BIM could fuel major growth and investment in the construction industry in the UK and elsewhere. We need to ensure that the UK is at the leading edge of BIM, now and in the future."

### Outcome

As well as bringing together experts from industry, government, institutes and academia to form the BIM Task Group, BIS and the Cabinet Office paid the development costs for PAS 1192–2, a specification that organizations of all types will be able to use without charge. "The idea is to remove barriers to use, particularly for SMEs," stresses Philp.

In 2013, work will begin on developing PAS1192-3, which will provide guidance on using the asset information model, the specification for BIM data that will be given to clients for use during the operational phase of the asset.

Case Study

## Design MADE simple.

### Shedding light on the BS 8887 series of standards and their influence on sustainable design in the UK and beyond



Since publication of the first part of the design for manufacture BS 8887 series in 2006 (*Design for Manufacture, Assembly, Disassembly and End-of-life processing MADE – Part 1: General concepts, process and requirements*), the BSI committee with responsibility for the work in this area has focussed on developing standards that support the sustainable design agenda and the need for designers to consider the whole life cycle of products.

Most of a product's environmental impact during its life cycle is determined at the design stage. "The BS 8887 series of standards helps designers to make informed choices about a product's function and use, the materials from which it is made, manufacturing processes and ability to recycle or reuse the product at the end of its life," explains Committee Chairman, Professor Brian Griffiths. "Materials and energy used during production can be used

more efficiently if the aim to re-use and recycle is built into the design philosophy."

BS 8887-1 specifies requirements for the preparation, content and structure of design output and related technical product documentation for MADE products. It describes appropriate methodologies and conventions for the preparation of documentation to transfer a design concept to manufacture.

**"Most of a product's environmental impact during its life cycle is determined at the design stage"**

Griffiths continues: "In 2012, BS 8887-1 was put forward to the ISO [the International Organization for Standardization] and it has been accepted onto the work programme of the ISO committee with responsibility for technical product documentation. A new working group is being set up, which will be led by the UK, and work to convert BS 8887-1 into an international standard."

Various other parts of the BS 8887 series apply to processes that can be specified for the re-use of products. "BS 8887-220 on remanufacture was the first process-specific part of the series," explains Griffiths. "It outlines the steps required to change a used product into an 'as-new' product, with at least equivalent performance and warranty of a comparable new replacement product."

BS 8887-211, published in 2012, is the series' first sector-specific standard. It focuses on the information and communication technology sector, more specifically on computer hardware. It was created to provide the vocabulary and procedures for 'remarketed products' (ie products that cannot be sold as new).

The UK team now plans to develop a generic remarketing standard for use by all sectors, using BS 8887-211 as a template, while a review is underway to establish the need for new standards in areas such as design for manufacturing systems.

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# Delivering sustainability.

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## Helping organizations to assess and manage their economic, environmental and social impact

The traditional model of development based on a presumption of unlimited access to resources has long been identified as unsustainable for humankind. Global population growth is placing increasing pressure on food production, energy and mineral reserves, biodiversity and water and there are deep concerns about the consequences of climate change.

People, businesses, government and non-government organizations can all help to build a more sustainable future. For businesses, the key to sustainable development lies in integrating delivery of economic development, social progress and environmental quality.

In all areas, standards offer organizations the opportunity to become more sustainable. Standards can help organizations to ensure their growth doesn't come at the expense of the environment or their social responsibilities. Not only can this help to protect an organization's reputation, but it can also boost efficiency and profitability.

Our sustainability management standards are focused on four key areas: environmental footprinting, responsible sourcing, organizational improvement and community-level initiatives.

### Environmental footprinting

'Environmental footprinting' refers to the assessment of the impact an organization, product, service or initiative has on natural resources or the surrounding environment or community. We've led on the development of standards for carbon footprinting of products, for example, with the development of PAS 2050 (see page 26). We're also working on standards for other facets of an environmental footprint, including water footprinting.

In 2006, we published PAS 2010, a code of practice for biodiversity conservation in planning and development. Early in 2013, this will be replaced by BS 42020, which builds

on the PAS but revisits and revises every aspect of its recommendations and guidance. The consensus required for this standard will help ensure it contributes effectively to the UK target of no net biodiversity loss by 2020.

More standards on biodiversity management and biodiversity issues in general are planned to meet the demand for clear, authoritative guidance on the topic, as realization of its importance continues to grow.

### Responsible sourcing

Organizations of all types face pressure to consider the social and environmental impacts of the materials, products and services they buy. However, responsible sourcing can be problematic due to a lack of harmonization, proliferation of differing labelling schemes and confusion among buyers. Producers are understandably eager to avoid increasing their costs and they recognize the link between resource depletion and price rises.

Responsible sourcing is a key area in which standards can help organizations to better understand their supply chains and source products and commodities more sustainably. Until now, responsible sourcing initiatives and schemes have focused on a specific product or commodity, such as timber, cocoa, coffee, etc. But the absence of a common framework and principles makes the process much less efficient for all concerned and reduces buyer confidence.



We're working to support harmonization in responsible sourcing with several initiatives, one example being sustainable cocoa. Work has started in Europe (with global participation) to develop a standard for the sustainability and traceability of cocoa.

Producers currently must contend with a confusing array of sustainability and traceability requirements from different customers and certification schemes. There is now broad agreement that harmonization is essential, and the new standard will for the first time establish a common approach.

### Organizational improvement

BS EN ISO 14001 continues to offer organizations a proven path towards improving their environmental management systems. The standard's revision cycle started in early 2012 and BSI is ensuring that the UK has a powerful voice in its further development. This will include addressing the market need for guidance directly applicable to small and medium-sized enterprises and how organizations can respond to the challenges posed by climate change.

An energy audit is the first step to improving organizational energy efficiency and cost savings and energy audit standard BS EN 16247-1, published in July 2012, takes a step-wise approach to this process. The new standard underlines the importance of energy audits within an energy management system (such as BS EN 50001). BS EN 16247-1 is recommended as best practice in the 2012 *Energy Efficiency Strategy*, published in

## "A new focus for sustainability management has emerged at community level. Early in 2012, we led the way with the publication of a national standard for the sustainable development of communities, BS 8904"

October 2012 by DECC's (the Department of Energy and Climate Change) Energy Efficiency Deployment Office.

BS 8900 was published in 2006 and it is the parent standard for managing sustainability. It provides a framework that enables organizations to take a structured approach to sustainable development by considering the environmental, social and economic impacts of their actions. Numerous standards have been developed from BS 8900 and these deal with specific sustainability issues, such as the responsible sourcing of construction products schemes, sustainable procurement (see pages 27 and 28), sustainable events management (see page 29) and sustainable materials.

BS 8900 is being revised to take account of the lessons learned in its application over the past six years, including the development and application of derivatives. The new edition will include a certifiable component, providing organizations with a way to demonstrate their comprehensive approach to sustainability management.

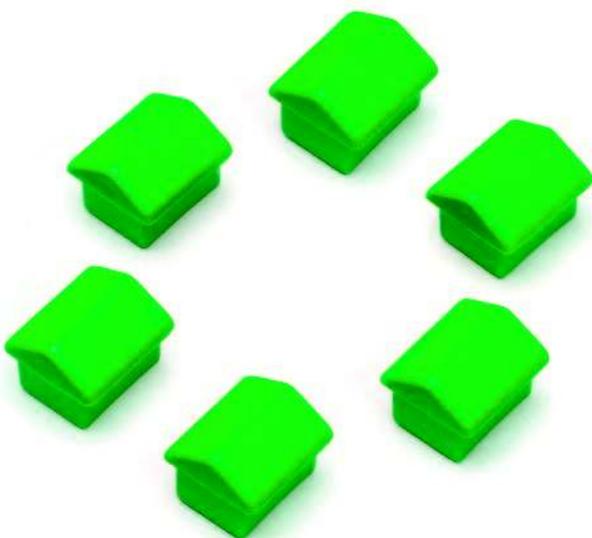
### Community-level initiatives

More recently, a new focus for sustainability management has emerged at community level. Early in 2012 we led the way with the publication of a national standard for the sustainable development of communities, BS 8904. This standard assists community leaders in understanding and improving sustainability. The aim is to strengthen communities, promote enduring economic and social stability and improve environmental impact.

As a national standard, BS 8904 is particularly suited to grass roots organizations. An international ISO standard is now being developed that will provide a sustainable development methodology for local authorities around the world. A second ISO standard, based on the Global City Indicators project, will provide common measures of service provision and quality of life and will offer key performance indicators for city authorities. The city indicators will include housing, education, health services, crime and policing.

One vital indicator for cities and communities alike is the level of GHG (Greenhouse Gas) emissions. We're working with the Greater London Authority to develop PAS 2070, a standard for the assessment of GHG emissions at city scale, using London as a case study, but applicable to any other city. It will be published in 2013 and will be listed as an option for GHG assessment in the city indicators standard.

Among the tools for community sustainable development is the use of smart infrastructure to improve the efficiency and environmental impact of service delivery. We are supporting work on another ISO project to establish agreed standards for managed and integrated infrastructure such as water, electricity, gas, transport and telecoms.



## Case Study

## Providing energy efficiency savings.

How using energy management system standard BS EN ISO 50001 enabled London South Bank University to reduce its energy consumption

### Challenge

Sustainability has long been a key focus area for LSBU (London South Bank University), which is one of the city's largest and oldest universities. In 2011, after implementing its wide ranging environmental management system, LSBU achieved BS EN ISO 14001 certification. The university sought to align its environmental management system with international standard BS EN ISO 50001, which draws upon more current best practice.

### Solution

Introduced in June 2011, experts from more than 60 countries helped to create ISO 50001, making it the first internationally recognized energy management standard and the most comprehensive to date. BS EN ISO 50001 details practical measures that organizations can introduce to reduce their energy consumption, which enables them to save money and enhance their reputation as an environmentally minded organization.

The standard stipulates the requirements for an energy management system. It also covers the development of energy policies, planning, legal requirements and carrying out energy reviews. BS EN ISO 50001 also explains how to demonstrate competence, operational control and best practice procurement of energy services, products and equipment.

While BS EN 16001 helped enable LSBU to identify where most energy was being used, BS EN ISO 50001 was able to help the university understand why its consumption was so high. LSBU analysed the key environmental impacts of university life and nominated its Estates and Facilities Directorate to lead on sustainability initiatives. One of the main objectives was to manage and reduce carbon emissions to



conform with the EU Energy Performance of Building Directive Carbon Reduction Commitment scheme.

LSBU has set a voluntary target of a 35 per cent reduction by 2020, using 2005/06 results as a benchmark. LSBU has analysed energy use across all university buildings and compiled an energy-saving action plan based on its findings. Already having a certified environmental management system in place was an advantage. "Understanding general system processes definitely helped," admits

**“LSBU has reduced its energy use by 10 per cent, which has provided significant cash savings”**

Anuj Saush, LSBU Energy and Environmental Manager, “but implementing BS EN ISO 50001 enabled us to review the processes for both systems and make big improvements”.

### Outcome

Working with BS EN ISO 50001 underlined the importance of monitoring the university's energy consumption, while the auditing process helped to raise awareness of links between overall use and everyday actions. As a result, LSBU has already been able to reduce its energy use by 10 per cent, which has provided significant cash savings.

As another example, Sheffield Hallam University implemented the standard across its facilities between January and May 2012 and saved £50,000 on its electricity bill. BSI estimates that the UK's 115 universities could save up to £13.8m a year if they adopted BS EN ISO 50001.

Case Study

## Enabling better emissions management.

How carbon footprint specification PAS 2050 helps organizations throughout the world to minimize their carbon footprint



In 2008, BSI published the world's first carbon footprint specification, PAS 2050, *Specification for the assessment of the life cycle greenhouse gas emissions of goods and services*. It was developed to help organizations assess and better manage the climate change impact of their products and services.

Recognized and applied internationally to a wide range of products and services, PAS 2050 also offers a methodological benchmark that can inform and improve other national and international footprint initiatives.

PAS 2050 was revised in 2011. The aim was to make its methodology more accessible and more relevant to a wider range of businesses, following advances in theory and user feedback.

In this process, cooperation with organizations such as ISO, the World Resources Institute,

World Business Council for Sustainable Development and the European Commission during the revision process meant PAS 2050 became more closely aligned with other international footprint methods to promote best practice and harmonization of standards.

Using PAS 2050 enables businesses to assess the life cycle GHG (greenhouse gas)

**“PAS 2050 was revised in 2011. The aim was to make its methodology more accessible and relevant to a wider range of businesses”**

emissions of their products or services, to identify hotspots and make cost and energy savings. They can also use the specification to devise ongoing programmes aimed at reducing GHG emissions and evaluate alternative configurations, sourcing and manufacturing methods, raw material choices and suppliers.

### Sector-specific guidance

We have now published a guide to PAS 2050 that offers specific, interactive and practical advice, as well as examples and useful references to support users of the standard.

The 2011 revision of PAS 2050 also introduced a framework that enabled the development of supplementary sector-specific requirements, for example, horticultural products (PAS 2050-1) and aquatic food products (PAS 2050-2).

A new standard is in development, PAS 2070, *Specification for the assessment of consumption-based greenhouse gas emissions in cities*. The PAS will explain how to measure citywide GHG emissions and it will be able to be used all over the world (see page 24 for information about community-led initiatives).

The PAS 2050 family of specifications addresses just one aspect of global warming and the sustainability agenda. GHG emissions must be considered within a much wider environmental and social context. We are working on a growing portfolio of specifications and standards aimed at helping organizations manage the full range of their commitment towards sustainable development.

## Case Study

## Supporting sustainable procurement.

### How the Marks and Spencer procurement team used BS 8903 to embed sustainable procurement

#### Challenge

Marks and Spencer (M&S) launched Plan A in 2007 aiming to become the world's most sustainable major retailer. Through Plan A, M&S is working with its customers and suppliers to combat climate change, reduce waste, use sustainable materials, trade ethically and help customers to lead healthier lives. M&S believed BS 8903 would help it to achieve its sustainability objectives in non-merchandise procurement.

#### Solution

BS 8903 helps organizations to better understand what sustainable procurement is and what benefits it brings. They can also use the standard to embed sustainable procurement best practice into their operation.

According to BS 8903, sustainable procurement means, 'only purchasing goods that are needed, and buying items or services whose production, use and disposal both minimize negative impacts and encourage positive outcomes for the environment, economy and society. Sustainable procurement is good procurement and should not be viewed as an abstract, idealistic goal, but as a practical and achievable objective for all organizations'.

Sustainable procurement can bring a positive impact in a specific area, for example, by reducing carbon emissions. It can also mitigate risk by highlighting activities that could damage an organization's reputation. Sustainable procurement might even open up new markets.

The M&S Procurement team adopted the BS 8903 framework to integrate sustainability objectives into non-merchandise procurement. Tim Brennan, M&S Head of Logistics and International Procurement,



explains: "By designing and implementing a process which is based on the principles of BS 8903, we aimed to ensure that the successes of Plan A would be built on and leveraged effectively."

M&S used BS 8903 to develop a concrete definition of sustainable procurement and a clear vision to help sustainable procurement become embedded in the business. It also

**"BS 8903 is comprehensive, easy to interpret and simple to apply in a complex business environment"**

**Tim Brennan, M&S Head of Logistics and International Procurement**

committed to achieving BS 8903's four main aims of sustainable procurement: to minimize the demand for resources; minimize negative impacts; respect ethical standards; and promote diversity and equality.

M&S wanted to make sure its procurement staff understood the role they needed to play in implementing sustainable procurement practices, so two training modules were developed and delivered to the Procurement team. Suppliers are crucial too, of course, which is why M&S will only buy from suppliers that meet its sustainability criteria.

#### Outcome

Brennan adds: "BS 8903 is comprehensive, easy to interpret and simple to apply in a complex business environment. We found it relatively straightforward to adapt it to meet our business requirements and challenges, and it has been extremely useful in our planning and development work."

Case Study

# Achieving sustainable procurement goals.

## How the FA Group is using BS 8903 to achieve its sustainability objectives in procurement



### Challenge

The Football Association (The FA) consists of the Football Association (the governing body of the game in England); the National Football Centre Limited (the recently opened St George's Park training facility); FA Learning Limited (the organization's educational arm); and Wembley National Stadium Ltd (which runs Wembley, the spiritual home of English football). Sustainable procurement remains a key objective, but The FA must also consider other issues that affect its business model.

### Solution

The FA Group realizes the importance of developing a sustainable approach that makes both economic and environmental sense. Sustainability has been embraced as a positive challenge and is a core business objective. Formalizing its approach to environmental management in 2007, Wembley Stadium implemented an EMS (environmental management system) in 2008.

"Wembley's EMS has resulted in outstanding environmental and financial wins," explains Alex Horne, FA Group General Secretary. "To demonstrate the FA Group's commitment to environmental leadership we decided to develop EMSs for the FA and St George's Park. The continual improvement of our sustainability performance remains a priority."

**"The FA Group chose BS 8903, which enables organizations to embed sustainable development into their procurement and supply chain activities"**

After carrying out an extensive review of best practice tools, the FA Group chose BS 8903, which enables organizations to embed the principles of sustainable development into their procurement and supply chain activities.

The FA Group's commitment to improving environmental performance is demonstrated through the establishment of its Green Team, which meets quarterly. It drives environmental strategy, sets and reviews environmental objectives, and ensures legislative compliance.

Led by the FA Group Procurement Manager, Ian Fenwick, the Green Team's Sustainable Procurement Sub Group is responsible for developing the strategy for sustainable procurement and supporting the integration of sustainability across its procurement activities. "When developing our Group procurement policy, a key objective was to ensure that sustainability issues informed our supplier selection and contract management processes, not just included simply as a box to be ticked," stresses Fenwick.

"At Wembley Stadium we've demonstrated that the benefits of working collaboratively with suppliers to address sustainability issues can be realized through financial savings and competitive advantages for our business. This model is now being used to deliver similar benefits across our organization."

### Outcome

The FA Group is proud of its record on integrating sustainability into its procurement. It remains committed to making improvements to sustainability performance across its procurement activities. The FA Group is now aiming to have a more direct impact on improving the sustainability performance of its first and second tier suppliers.

## Case Study

## Gold medal standard sustainability.

How certification to BS ISO 20121 helped an Olympic venue to prove its sustainability credentials and reduce its utility costs by 15 per cent

### Challenge

WPNSA (Weymouth and Portland National Sailing Academy) was already an impressive facility, but as part of its Sustainable Sourcing Code for the 2012 Games, the London Organizing Committee for the Olympic Games required its suppliers to implement a sustainability management system for its events that was compliant with BS ISO 20121.

### Solution

Evolving from our *Specification for a sustainability management system for events*, BS 8901, BS ISO 20121 was developed to help events industry businesses operate more sustainably. It sets out requirements for a sustainable event management system to ensure a long-lasting, balanced approach to economic activity, environmental responsibility and social progress.

Organizations working with BS ISO 20121 must identify, understand and minimize the negative effects their activities have on the environment, society and the economy.

"WPNSA is a world-class facility that aims to operate in the very best way," says its CEO, John Tweed. "It was imperative to support LOCOG's ambition to deliver a sustainable Games. Early adoption of, originally BS 8901, and subsequently BS ISO 20121, put us in an excellent position to minimize any negative impacts relating to sustainability.

"Now that we meet the requirements of an internationally recognized standard, we believe that independent certification will help us attract more corporate functions and sailing regattas from those seeking to integrate sustainability into their supply chain." BS ISO 20121 sets out a framework of management best practice and requires that



organizations understand sustainability issues relevant to their event and create measures to control and minimize impacts. They must prepare a statement that describes what activities and functions will be managed within their sustainability management system.

**"Certification to BS ISO 20121 demonstrates that we operate to a best practice framework and embed sustainability in all that we do"**

**John Tweed, CEO of Weymouth and Portland National Sailing Academy**

WPNSA started by identifying stakeholders, so it could detail broader sustainability issues relating to its business. Although it already had a firm commitment to the environment and consideration of socio-economic factors, many of its procedures were not documented. BS ISO 20121 also requires organizations to identify legal requirements that apply to their activities, products and services and to understand their potential implications.

### Outcome

Working with BS ISO 20121 has enabled WPNSA to reduce its utility costs by 15 per cent, while photovoltaic cells generate about one-fifth of energy used by the facility. Having its sustainability credentials certified has also increased WPNSA's appeal as a conference venue. "Our vision is to set the benchmark for sustainability," states Tweed. "By implementing BS ISO 20121 we hope to host more sailing events post-2012 and attract many more organizations to our conference facilities."

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# How standards are made.

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## The methods, people and processes involved in creating British standards



### Method

Usually a technical committee or sub-committee tasks a drafting group or panel with drafting a formal consensus standard. Occasionally a consultant is commissioned.

There are specific rules for drafting standards to ensure they provide, for common and repeated use, rules, guidelines or characteristics for activities founded on usability, verifiability and commonality.

British standards are usually developed within 12–15 months, while European or international standards take about three years. Commissioned or sponsored standards (eg publicly available specifications) can be developed within months.



### People

We bring together technical committees of experts who volunteer to help us develop standards. They are representatives from industry, professional institutions, certification bodies, testing and inspection bodies, research organizations, consumer interest organizations, educational bodies and government departments.

BSI content developers manage the drafting process of national standards from inception to publication. Technical project editors advise on the content, structure and presentation of European and international standards at all formal stages of their development and manage the drafting process for UK implementation.



### Process

**1 Proposal for new work**  
Anyone can bring a proposal for a new standard to a BSI committee, although committees usually generate proposals. Suggestions for new standards can also be made directly to BSI through the Director of Standards.

**2 Project acceptance**  
Standards making requires dedicated resources and careful assessment of the market need and likely take-up. Before a decision is taken to proceed, a business case is prepared for each project to assess costs and benefits against acceptance criteria.

**3 Drafting**  
Drafting is generally carried out by a small group of experts, before being forwarded to the technical committee for wider consultation.



### Transparency of standards in development

Full details of all ongoing standards projects, all of our committees and the organizations that are currently involved are available online at <http://standardsdevelopment.bsigroup.com>

To protect their independence, BSI does not publish the names of experts on technical committees, but we do publish, with permission, the names of the organizations represented on each committee.

“British, European and international standards are reviewed at least once every five years or on receipt of new information that would prompt immediate action”

**4 Public comment period**  
Once the committee is satisfied, a draft for public consultation is produced and published free online for anyone to comment. This enables a broader audience to view the draft document, ensuring transparency and acceptability of the resulting standard. Comments on all draft British standards and some European and international standards can be made via the online BSI Draft Review System (<http://drafts.bsigroup.com>).

**5 Final approval**  
Final approval for British standards is agreed by committee consensus. European and international standards are also subject to voting by the member bodies of the respective organizations.

**6 Endorsement to publish**  
Before a standard can be published, the Secretary and Chair of the relevant committee and/or sub-committee must give their endorsement. The BSI Director of Standards must confirm that the full process has been followed.

**7 Publication**  
Details of new publications are available on the BSI website and through BSI's magazine, *Update Standards*.

**8 Maintenance and review**  
British, European and international standards are reviewed at least once every five years or on receipt of new information that would prompt immediate action. The relevant BSI technical committee is asked whether a standard should be: confirmed without change; confirmed after minor amendment; confirmed after major amendment; withdrawn; or declared obsolescent.

Once the national committee has reached its decision, an announcement is made in *Update Standards*, enabling wider comment. Comments are sent to the committee and the final action is announced in *Update Standards*.

## BSI products

Products available from BSI fall into three broad categories:

- **Standards products** (ie publications established by consensus and approved by BSI committees)
- **Non-standards products** (eg guidance documents, training materials and electronic products)
- **Joint products** (ie combinations of standards and non-standards).

There are six types of British standard:

- 1 Specifications** set out detailed requirements to be satisfied by a product, material, process, service or system and the procedures for checking conformity to these requirements.
- 2 Methods** provide a complete account of how an activity should be performed (and, if appropriate, the equipment or tools required) and conclusions reached, to a degree of precision appropriate to the stated purpose.
- 3 Guides** give broad and general information about a subject, with background information where appropriate.
- 4 Vocabulary standards** list definitions of terms used in a particular sector, field or discipline.
- 5 Codes of practice** comprise recommendations for accepted good practice followed by competent and conscientious practitioners, and bring together practical experience and acquired knowledge for ease of access and use of the information.
- 6 Classifications** comprise designations and descriptions of different grades of a product and identify and arranges data in hierarchical order.

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# Global influence.

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## How our international work benefits UK trade and quality infrastructure in countries throughout the world

BSI International Projects coordinates technical assistance and provides support to the development of quality infrastructures in developing countries. Its role is to design, manage and implement projects to strengthen quality institutions worldwide.

While helping to improve fundamental market infrastructure in developing countries throughout the world, the projects we undertake are part of our effort to enhance the UK's influence worldwide. The improved infrastructures we develop are often in fast-growing areas of the world and our work helps to make markets accessible and open to trade with the UK.

We specialize in helping institutions that are responsible for:

- Standardization
- Inspection
- Certification and conformity assessment
- Quality control
- Testing laboratories
- Technical regulations and legislation
- Metrology
- Consumer Protection
- Accreditation
- Market Surveillance

Projects cover a wide range of sectors including:

- Trade, standards and private sector
- Manufacturing and processing
- Construction, transport and infrastructure
- Chemicals
- Food and drink
- Healthcare and medical devices
- Agriculture
- Communications and information technologies
- Environment
- Services
- Energy, utilities and low carbon technology
- Governance and public sector
- Electrical and electronics
- Procurement

### 2013 and beyond

The ongoing strategy for our international work is to apply our expertise and reach to provide advice and guidance in key countries and regions. We will also continue to support British manufacturers and exporters to gain market access in strategically important areas around the world.

We have provided services to clients in 27 countries in Europe and Central Asia, 12 countries in Asia, 19 countries in Latin America and the Caribbean, and almost 20 countries in Africa and the Middle East



More recent highlights of work the BSI International Projects Team has carried out to support the development of standardization around the world includes:



**Eastern Europe/Eurasia**

The European Commission-funded INOGATE Programme is an international energy cooperation initiative between the European Union and the partner countries of Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. Our aim was to help them achieve the Baku Initiative and Eastern Partnership objectives. The programme supports a reduction in dependency on fossil fuels and imports, improvement of energy supply security and overall climate change mitigation.



**Rwanda**

The objectives of this TradeMark East Africa-funded project were to assist the institutional

development of the Rwanda Bureau of Standards by offering strategic support, as well as raise awareness among the private sector of the business benefits of standards and increase its capacity-building in this area.



**Turkey**

Between May 2010 and August 2012, in a €4.8m EC-funded project, we provided technical support that sought to

strengthen Turkey's quality infrastructure. It was a complex project that required delivering some 200 training sessions on such areas as ISO 14001, ISO 14064, energy labelling and the REACH Directive.



**Ukraine**

The purpose of this EC-funded contract was to gain international recognition of the work of the

National Accreditation Agency of Ukraine in providing accreditation services in the areas of testing laboratories, calibration laboratories, management system certification bodies, product certification bodies and inspection bodies.

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# Supporting innovation.

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## How our work in many fields with various private and public sector organizations is driving new thinking

Standards play a vital role in bringing new ideas to market faster because they provide a formal process for knowledge transfer and consensus between the research community, investors and the future supply chain.

BSI is committed to driving more effective use of standardization in the UK to drive innovation and growth. The voluntary standards approach helps business and industry to engage with new and emerging technologies, where standards are vital to define terminology, principles and processes.

To increase investor confidence and the value of research outputs, it is vital to establish standardization strategies – effectively knowledge strategies – for new technologies at the earliest possible stage in the innovation

cycle. Our strength and influence as one of the world's leading national standards bodies allows such strategies, and the standards (including specifications, codes and guidance) that may ultimately flow from them, to be maintained and updated as emerging technologies translate into global markets.

### Heseltine review

The recent review by Lord Heseltine, called *No Stone Unturned in Pursuit of Growth*, which sets out a comprehensive economic plan to improve the UK's ability to create wealth, states: "The UK should exercise leadership in the development of standards that support all areas of technological research, development and innovation to drive growth in UK industry."

It adds: "Early engagement with a future supply chain, end users, customers and government through the standards process is necessary to maximize the benefits of research and innovation for the UK economy."

In practice, this means bringing stakeholders together to agree a way forward in an open, fair and transparent manner. We're actively working to help British businesses and the research community recognize the importance of standardization for innovation and industry growth. One example of this is our partnership with the EPSRC Centre for Innovative Manufacturing in Through-life Engineering Services (see page 17).

At European level, we're participating in an advisory group known as STAIR (STAndards, Innovation and Research), which will provide materials and other guidance to researchers on the benefits of using standardization in their research projects, for knowledge transfer and dissemination of information and as part of the onward development process.

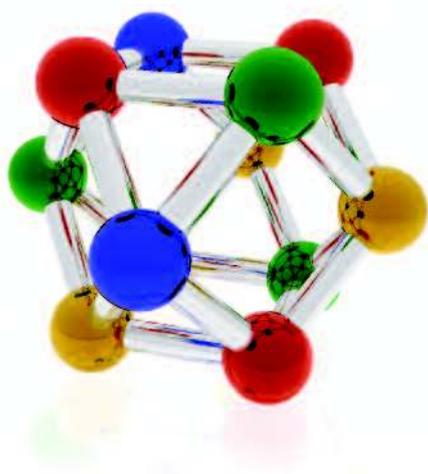
### Nanotechnology standards

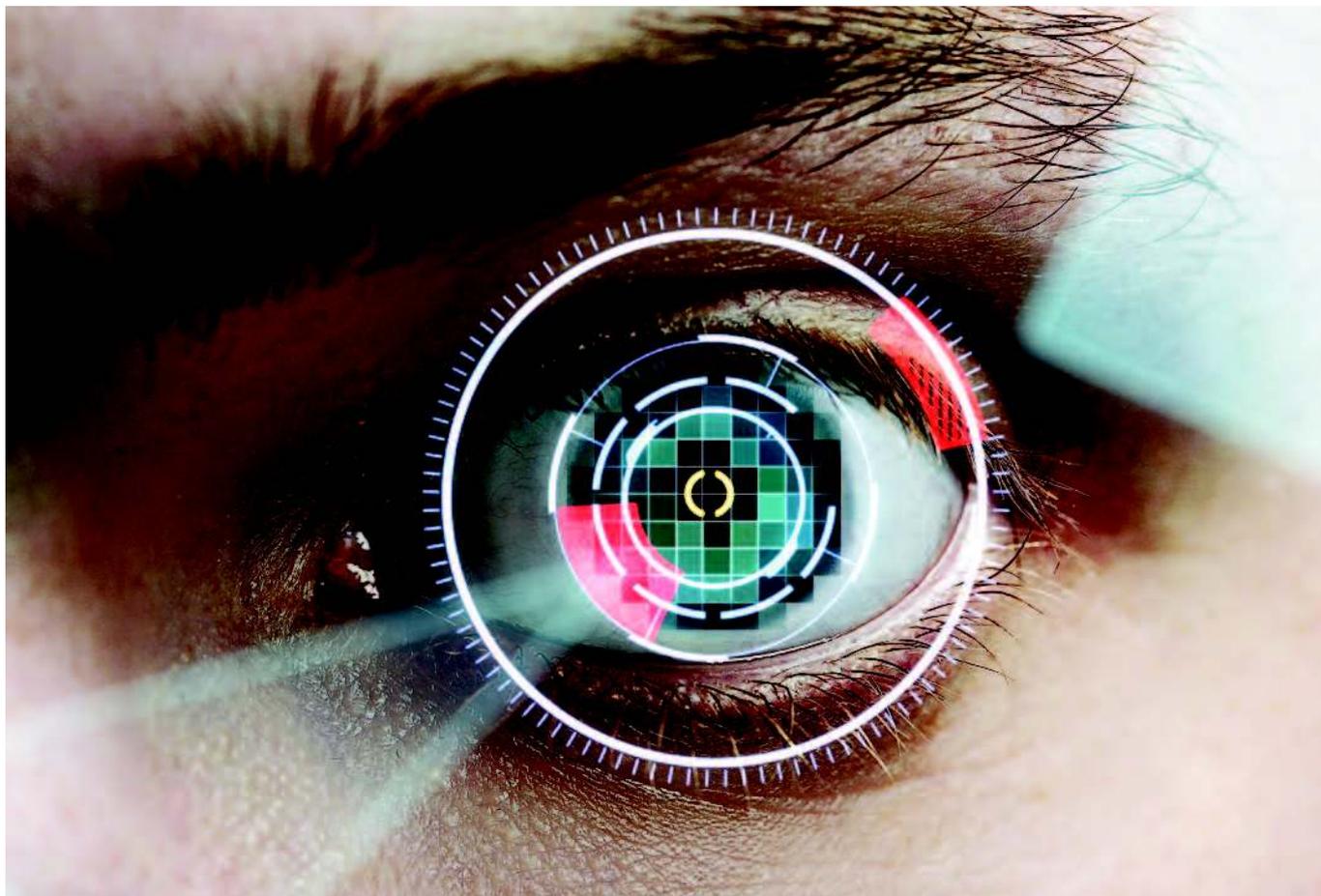
A second example of how we're encouraging use of standards to support innovation is in nanotechnology. We've already published various nanotechnology-related documents that provide guidance for stakeholders.

These address nanotechnology terminology, health and safety issues, product labeling, materials specification, etc. We've published numerous standards in these areas, such as *Vocabulary – Nanoparticles*, PAS 71:2011, and many more documents are being developed.

Standardization will help to ensure that nanotechnology is developed and commercialized in an open, safe and responsible manner. Standards work alongside legislation and regulation to support safety testing to protect people and the environment.

Protection of intellectual property rights, commercialization and procurement is also made easier as a result of standardization, while the benefits, opportunities and potential problems associated with nanotechnologies will be more widely understood through common terminology.





“As biometric technology grows standards will provide a means by which systems, sub-systems and components will be able to function together”

### Biometric technology and systems

Biometrics is another key field in which BSI has been working in recent years (see case study on page 39). Here, too, the role of standards is vital to accelerate business development.

A biometric system enables automated recognition of individuals based on their biological and behavioural characteristics. Examples of biological characteristics include fingerprints, face geometry, iris patterns and hand geometry, while dynamic signature recognition (ie how a signature is written rather than what it looks like) is an example of a behavioural characteristic. Most biometric characteristics comprise elements of both biology and behaviour.

As a result of technological innovation, a person's biological and behavioural characteristics can be detected so that they can be distinguished from others. Where there is a need to identify or verify someone's identity, for example, to safeguard access to buildings, countries (via ports and airports) or even bank accounts, biometrics technology could provide better security.

Standards are enabling the development of biometric technology and systems and this has been gathering pace for many years. In 2011, *Code of practice for the implementation of a biometric system*, PAS 92, was published. BIS (the Department for Business, Innovation and Skills) commissioned PAS 92 to help organizations that are considering buying and implementing a biometric system, as well as specialist security suppliers, biometric system suppliers and system integrators.

### Development committee

To create the standard we brought together representatives from IBM, IBS, Fujitsu, Home Office Science Centre for Applied Science and Technology, the Identity and Passport Service, KeCrypt Systems, Morpho UK, the National Physical Laboratory, the National Policing Improvement Agency, Phoneability, the UK Government Biometrics Working Group and the BSI Consumer and Public Interest Network.

PAS 92 provides practical recommendations and a checklist for the successful procurement, implementation and operation of biometrics systems. It also addresses data protection and privacy concerns associated with the use of biometrics including: obligations under the Data Protection Act 1998 when operating a biometric system; and responsibilities under the Equality Act 2010 when collecting biometric data.

### Enabling interoperability

As biometric recognition system technology grows, standards provide a means by which systems, sub-systems and components will be able to function together (this is called 'interoperability'). Many procurers of such systems, especially those working for public sector organizations, seek compliance to recognized standards. Standards can also enable solutions to reach market quicker, while reducing risk to integrators and end users.

The BSI Biometrics committee is responsible for UK input to standardization of generic biometric technologies relating to human beings to support interoperability and data interchange among applications and systems.

Generic human biometric standards include: common file frameworks; biometric application programming interfaces; biometric data interchange formats; related biometric profiles; application of evaluation criteria to biometric technologies; methodologies for performance testing and reporting and cross jurisdictional and societal aspects. In addition to various published formal consensus and commissioned standards, BSI is working with a range of organizations whose representatives sit on our committees and sub-committees to develop more.

### Synthetic biology

Synthetic biology is an emerging discipline that aims to apply engineering principles to biological science and it will lead to an enormous number of high-value potential applications, including novel chemical and pharmaceutical products, tissue engineering, new energy sources and novel materials.

**“The UK has the potential to take a leading role in commercial exploitation of this technology and we’re working with the main innovators to develop standards to support future prosperity”**

The UK has the potential to take a leading role in commercial exploitation of this technology and we’re working with the main innovators to develop the necessary standards to support future prosperity deriving from this technology.

We’ve developed a partnership with the EPSRC Centre for Synthetic Biology and Innovation at Imperial College. The intention is to develop a strategic approach to standardization that will complement industrial and government investment in the area, thereby accelerating innovation and wealth creation.

### Additive manufacturing

AM (additive manufacturing) is the process of making objects by depositing successive layers of material, often based on a digital model. This is in contrast to traditional manufacturing that uses subtractive methods, such as cutting, filing, and drilling. Crucially, AM reduces the amount of material required to develop the desired shape and composition.

The UK has a strong research base in this technology and government and industry has plans to turn this into a larger scale, vibrant industry. We’re one of the main leaders in international standards development activities to help realize this opportunity, and we’re working directly with the main UK experts in this field.

Additionally, we’re working strategically with ASTM, which has pioneered much of the existing work in standardization for AM, to help prevent unnecessary proliferation of standards in this area.

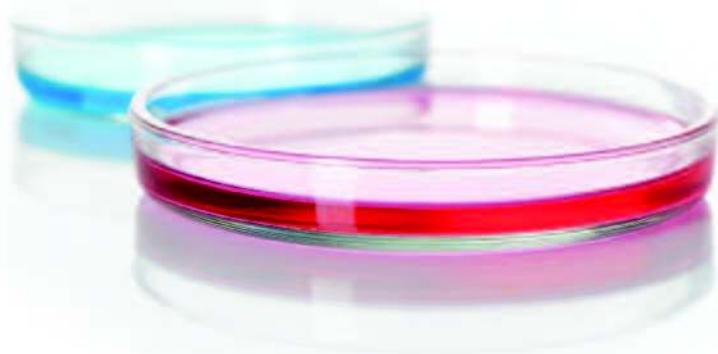
### Innovation infrastructure

BSI is working with BIS and its other innovation infrastructure partners to help implement recommendations from the *BIS Innovation Infrastructure Report – Working towards an Innovation System* (May 2010).

The report identified ways to better align and coordinate services offered by six innovation infrastructure partners (BSI, the Design Council, Intellectual Property Office, National Endowment for Science, Technology and the Arts, National Measurement Office and UK Accreditation Service). It also found that both BIS and wider government were missing opportunities to improve the design and delivery of policy by engaging the UK’s innovation infrastructure.

By collaborating with innovation infrastructure partners, we’re aiming to build even stronger links with other organizations, including the UK research councils, institutes and universities, as well as researchers working in industry.

Standards aid knowledge transfer by providing a formal mechanism for transfer of research output, building confidence with investors, supply chain members, government and consumers. Standards also enable new knowledge to be shared collaboratively much more quickly than by other means, which further helps to drive innovation.



## Case Study

## Preparing the way for smart cities.

### How our work will help to accelerate the rollout of smart cities across the United Kingdom

#### Challenge

Judging a modern city's performance depends not only on its physical infrastructure, but also its social infrastructure, particularly how knowledge is communicated. Tomorrow's cities will harness the latest data capture and communication management technologies to deliver high quality services to citizens.

Smart approaches to transport, utilities and waste management could transform the efficiency and sustainability of urban communities, leading to significant reductions in service provision costs and carbon emissions. But there is a risk that solutions created by one provider may not be compatible with those created by others.

#### Solution

Standards will address this risk and ensure that new technology fulfills its potential. Standards for smart cities will include technical specifications and classifications that support interoperability (ie devices and systems working together), metrics against which benefits can be assessed and good practice documents that detail controls.

BIS (the Department for Business, Innovation and Skills) commissioned BSI to develop a smart cities standards strategy, to identify where standards are needed to accelerate the rollout of smart cities and support UK providers of smart city solutions.

Now successfully completed, the project required us to: research current thinking on smart cities; carry out a gap analysis to identify where standards are needed; organize events and a public consultation document to validate the approach taken; and develop a work programme for the delivery stage.



#### Outcome

The next phase of the programme is underway. A smart cities standards forum has been set up and there are many key themes. Smart city programmes will only work if they stem from a clear understanding of desired outcomes and this requires methodologies and frameworks for identifying needs, as well as metrics to gauge how well cities are meeting those needs and what contribution digital infrastructure investments can make.

Smart city terminology for systems, sensors and devices varies across disciplines and sectors, and this is being addressed in two phases. The first involves reviewing and

documenting existing systems, gathering terms and definitions and creating a smart city terminology document. The second will involve creating methods of analyzing a formalized taxonomy for discovering and identifying objects.

Implementing smart city projects will pose significant challenges for city authorities. Guidance and best practice documentation is required and this will provide a roadmap for delivering smart city projects, as well as an overview of key information governance issues.

Interoperability between devices, other infrastructure elements and service delivery channels will be crucial to the success of smart cities. An interoperability standards workshop has already been held to determine future work, which is an early, but important step forwards on the path to specifying standardized interoperability requirements.

**“Standards will ensure that new technology fulfills its potential”**

Case Study

## Fuelling emerging technologies.

How we are helping to ensure that Europe emerges as a centre of excellence for bio-based products



### Challenge

The manufacture of many products relies heavily on petrochemical sources such as plastics, oils, lubricants and surfactants (substances that reduce the surface tension of liquids). There is a major risk that many essential chemical feedstocks could become unavailable either because they are scarce or too expensive as oil prices rise.

### Solution

Adopting bio-based sources of chemicals, such as plants, fungi or bacteria, could provide a solution. Products manufactured from such sources are renewable and the European Commission wants to quicken the pace of their development, which is why it set up the Lead Market Initiative in Bio-based Products, to encourage innovation of industrial biotechnology through use of policy initiatives.

One of these policy initiatives concerned the development of standards to help accelerate

innovation in this technology and to facilitate the emergence of Europe as a centre of excellence. To this end, we brought together the UK's industrial biotechnology community. The aim was to ensure that the UK's voice was heard, as the European standards development strategy was established.

**“We brought together the UK's industrial biotechnology community. The aim was to ensure that the UK's voice was heard, as the European standards strategy was established”**

Representatives who lent their support came from such organizations as the National Non Food Crops Centre; government departments such as the Department of Energy and Climate Change and the Office of Life Sciences at BIS (the Department for Business, Innovation and Skills); major companies such as Croda and British Sugar; and trade associations such as the Confederation of Paper Industries, Association for Organics Recycling and the Industry Council for Packaging and the Environment.

The involvement of such major stakeholders will ensure that a robust and acceptable standards strategy emerges from this initiative.

### Outcome

The UK is one of the leading players in European standards developments in bio-based products and is active in all five CEN (European Standards) working groups.

We're also working on *SME Guide to standards and regulation in bio-based products*, PAS 600, which aims to help small and medium-sized business users of this technology comply with regulations and supply chain requirements.

European standards are also being worked on, including: *Bio-based products – Determination of the bio-based carbon content of products using the radiocarbon method*; *Bio-based products – Overview of available and possible methods and techniques for determination of the total bio-based content of products*; and *Bio-based products – Vocabulary*.

## Case Study

## Fighting crime internationally.

### How the UK is increasing international understanding of biometric technology applications for mobile devices

#### Challenge

According to communications industry regulator Ofcom, smartphone ownership in the UK has risen by 12 per cent since 2010. Some 40 per cent of adults now own one and that figure is rising rapidly. Many owners use their smartphones to buy goods and services, send private messages via text and email, as well as access social media. Concerns have been raised about the potential consequences should a smartphone fall into the wrong hands, for example, if it is taken by a criminal intent on stealing money from the owner's bank account.

#### Solution

ISO's international biometrics committee was established 10 years ago. The UK is the second-largest contributor after the US, with our focus being on usability and systems engineering of biometric applications, which need to be secure, useable, cost-effective, available and interoperable. The UK has been particularly active in the testing of all aspects of biometric systems and applications.

The BSI technical committee with responsibility for biometrics is currently carrying out a review for ISO into mobile device biometric functionality. The committee includes a broad range of representatives from: government (eg the UK Border Agency, Home Office Science, Identity and Passport Service); industry (eg IBM UK, Sony Europe Ltd, Fujitsu Services); academia (eg University of Cambridge, University of Kent, University of East London); research institutes (eg Biometrics Institute, Institution of Engineering and Technology, National Physical Laboratory); associations (eg European Association for Biometrics, UK Cards Association); and other stakeholders (eg Post Office, Consumer and Public Interest Network, etc).



#### Outcome

Marek Rejman-Greene, Home Office Senior Biometric Advisor, is a member of the technical committee. "The committee is putting together a report for ISO which looks at biometrics and mobile devices – not just

smartphones – it includes a diverse range of other mobile devices, for example, those used by the police, border agencies and other organizations.

"The report will seek to summarize key findings – knowledge that can be shared among the international community. A working draft of the report has been published and there will be a meeting in Winchester in April 2013, when we'll be looking to progress that work and encourage countries throughout the world to input to make it a truly international effort.

"We're still some way off the creation of any international standards for biometrics and mobile devices, but the report seeks to at least establish which type of standardization might be most appropriate, based on the views of a wide range of interests and opinions," he concludes.

**"The report will seek to summarize key findings – knowledge that can be shared among the international community"**

**Marek Rejman-Greene, Home Office Senior Biometric Advisor**

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# Working with consumers.

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## How we work with consumers to ensure their interests are represented when standards are developed

Standards touch all of our lives much of the time. They enable the development and use of everything from the bank cards with which we buy goods to the kettle and toaster we use to make breakfast. That's why consumers' interests must be represented when standards are developed.

CPIN (the Consumer & Public Interest Network), led by consumer journalist, broadcaster and campaigner Lynn Faulds Wood, makes sure that new standards address key consumer issues and tackle the everyday problems that people face.

CPIN is made up of members of the public (who receive training to become CPI Representatives) and experts from such organizations as Citizens Advice, Trading Standards and *Which?* So that consumer opinion is heard, the BSI Consumer & Public Interest Unit ensures that CPI Representatives sit on standards technical committees.

In 2012 CPIN Representatives took part in meetings concerning a huge range of topics, from making fairgrounds and amusement parks accessible to people with disabilities to concerns about future use of robotic devices around the home.

They have also worked internationally to develop standards aimed at ensuring good service for online consumers, as well as considering the safety of telescopic ladders in the home, the quality of sheltered housing, development of sustainable communities and more mundane things such as the performance of vacuum cleaners.

Throughout 2013, CPIN will continue to focus on the key areas of inclusivity, well-being, service standardization, sustainability, security, privacy and identity.

New ideas put forward by consumers in 2012, such as a standard for price-comparison websites, will be followed up and contributions will continue to be made to work in Europe via ANEC (the European voice of consumers in standardization) and internationally via ISO COPOLCO (ISO's consumer policy committee).

One of the two yearly meetings of the CPI network took place at the Trading Standards and Consumer Affairs Conference in Manchester in June 2012, which gave representatives the chance to question consumer organizations, regulators and traders as useful background to their standards work. We were one of the sponsors of the Trading Standards Institute Young Consumer of the Year competition, which encourages school children to understand their consumer rights.

Two more consumer publications, regarding removal services and complaints handling, were also added in 2012 to the list already available on our website.



“The CPIN makes sure that new standards address key consumer issues and tackle the everyday problems that people face”

## Case Study

## Improving wheelchair safety.

### How the new Wheelchair Passport Scheme is making travel for wheelchair users safer and more convenient

#### Challenge

Operators cannot afford to take any chances with safety when transporting people by road, especially if those people are sitting in a wheelchair. A national code of practice was published in 1987, but designs changed significantly in the years that followed, with wheelchairs becoming bigger, heavier and more complex. More people were using wheelchairs and new legislation was introduced (the Disability Discrimination Act 1995 and the Equalities Act 2010), which meant a new code of practice for securing wheelchairs in vehicles was long overdue.

#### Solution

*Code of Practice for Wheelchair Passport Schemes, PAS 900*, which was published in 2010, provides information on how to secure a wheelchair and keep its occupant safe when used as a seat in a motor vehicle used for providing transport services. Essex County Council and Lincolnshire County Council funded its creation, with technical expertise coming from Unwin Safety Systems. People with disabilities and numerous organizations were consulted during the creation of the PAS, which was managed by BSI.

Bob Appleyard, Technical Safety Adviser at Unwin Safety Systems, chair of BSI technical committee CH173/1 and a specialist in wheelchair safety and occupant restraint systems, was heavily involved in the development of PAS 900. "We put on an event at the Volvo Truck Centre in Warwickshire and invited along a wide range of stakeholders and asked them what they wanted us to do.

"A passport scheme was actually requested by wheelchair users and their carers as something that would make life easier and



**"There was an overwhelming need for a more up-to-date system and PAS 900 provides a fantastic solution"**

safer. It provides an effective means of relaying important information to transport providers, drivers and passenger assistants about how to secure a wheelchair to the floor and accommodate its user to maximize their safety and comfort. The passport is attached to the wheelchair and it contains instructions presented in an easy-to-understand, dependable and hard-wearing format."

PAS 900 is meant for use in transport operations where a risk assessment of the

individual passenger's transport needs has taken place as part of an overall risk management process. The scheme is not intended for use on local public transport buses.

#### Outcome

Transport providers that have so far used the scheme include Lincolnshire, Staffordshire, Essex and Oxfordshire county councils. It is also being used on Transport for London's Dial-a-Ride service, which provides door-to-door transport for people with disabilities in the capital. Appleyard adds: "Use of the scheme is growing rapidly, but I'd like to see the standard used throughout the UK. The scheme is now available 'off-the-shelf', so it's very easy to implement and users are even reporting efficiency savings, which is fantastic. There was an overwhelming need for a more up-to-date system and PAS 900 provides a fantastic solution."

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# Enabling risk management.

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## How we're helping to create solutions that enable organizations to manage risk more effectively

All organizations need to identify and manage the risks they face. Threats exist in many forms and things can go wrong quickly, which can severely affect organizations of all types and sizes. Standards provide a solution. They can limit risk or minimize damage and disruption should the worst happen.

In 2012 our risk management activity focused on four key areas: business continuity; anti-bribery and governance; information security, cyber and cloud security and management; and road traffic management.

### Business continuity

Business continuity standards enable organizations to carry on when faced with problems that could otherwise cause severe disruption. This includes being able to continue to deliver products and services to customers, while safeguarding an organization's brand and reputation.

Nine years' development work came to fruition in 2012 with the publication of *Societal security – Business continuity management systems – Requirements*, BS ISO 22301, which internationalized the national standard for business continuity management, BS 25999-2, and the business continuity publicly available specification, PAS 56.

BS ISO 22301 is based on the 'Plan-Do-Check-Act' model that seeks to provide improvements through proficient planning, implementation, supervision, review and maintenance.

The new international standard details requirements for setting up and managing an effective business continuity management system, regardless of an organization's type or size. It can be used to assess an organization's ability to meet its own continuity needs and obligations and establish a management policy that provides a framework for implementing effective business continuity.

Now organizations all over the world can comply with a business continuity standard that is truly global. It was developed following the strong international interest that had built up in our forerunning UK national standard, BS 25999-2, and is a great example of UK leadership in influencing international standardization.





## “Business continuity standards enable organizations to carry on when faced with issues that could otherwise cause severe disruption”

### Anti-bribery and governance

*Specification for an anti-bribery management system*, BS 10500, was published at the end of 2011 to help organizations demonstrate their anti-bribery system’s compliance with legislation and meet wider expectations about how business should be conducted. We worked with a broad range of organizations to develop the standard (see page 45).

All organizations can use BS 10500 to create their own systems to protect themselves in the UK and overseas by: carrying out a risk assessment and due diligence; adopting and communicating their anti-bribery policy; implementing procurement, commercial and financial controls; controlling gifts and hospitality; instituting reporting and investigation procedures; training and offering guidance to employees; and appointing a compliance manager.

We have been asked by several international trade organizations and businesses operating globally to develop BS 10500 into an international standard. To this end, we approached ISO in 2012 and anticipate that work will begin in 2013.

Following on from our anti-bribery standards activity, we held discussions with government departments, professional organizations and others with a view to forming a committee with broad representation and developing a governance standard, to become BS 13500, *Code of practice for delivering effective governance* (see page 46).

The commenting period closed at the end of 2012 and it is anticipated that this new standard will help those within an organization and beyond see what measures should be in place to ensure good governance. We anticipate that BS 13500 will be the start of further standardization in this important area.

### Information, cyber and cloud security

*Information Security Management*, BS ISO/IEC 27001, helps organizations to set up their own system for information security management, monitor its performance and make improvements where necessary. We will be working with others to revise this standard in 2013 to include further user benefits.

Our committees have been feeding into international work relating to standardization of cyber and cloud security. Separately, the Cyber Alliance approached us to produce a cyber security standard that will be published as PAS 555 in the spring of 2013. It will define the outcomes of following processes and systems detailed in previous standards. PAS 555 does not require that outcomes be delivered in any specific way; defining the 'how' will be the job of subsequent standards. But if achieved, the outcomes will inspire confidence that an organization has achieved a high degree of cyber security risk governance and management.

The specification will also define good cyber security practice, providing a framework that enables better understanding of the full scope of capabilities required. Crucially, PAS 555 reinforces the view that effective cyber security requires not just robust technical measures, but also effective management of people and behaviours, physical security, as well as effective leadership and governance. PAS 555 explains the stages a comprehensive approach to effective cyber security should go through, ranging from assessing threat and risk to prioritized protection, identification and response to attacks and successful recovery.

The breadth of representation and consultation during BSI's drafting process provides confidence that organizations of all types and sizes can benefit from using PAS 555. It identifies what effective cyber security looks like, while providing enough flexibility for organizations to identify how best to achieve outcomes in a way that is best suited to their circumstances.

**“Road traffic safety is a global concern. It is estimated that some 1.3 million people each year are killed on roads around the world and up to 50 million are injured. Both figures are rising”**

### Road traffic management

Road traffic safety is a global concern. It is estimated that some 1.3 million people each year are killed on roads around the world and up to 50 million are injured. Both figures are rising. To help combat the enormous impact on people's health and well-being and reduce the huge costs that result, stakeholders such as road authorities, governments, safety groups and others have called for a new international standard for road traffic management.

In 2012 a new international standard, *Road traffic safety (RTS) management systems – Requirements with guidance for use*, BS ISO 39001, was published. It outlines requirements for an effective RTS management system and provides a tool that aims to help organizations reduce and potentially eliminate incidence and risk of road traffic death and serious injuries, which will also make use of the road traffic system more cost-effective.

BS ISO 39001 is designed for public and private organizations that use the road traffic system, especially freight and passenger transport operators, as well as those operating large fleets of private vehicles (eg companies with travelling sales people). The standard could also benefit organizations that manage road networks.

The international ISO committee that developed ISO 39001 was chaired by Sweden, a country with a proud history of road safety initiatives, but many other countries took part, including the UK.

As the UK's national standards body, we brought together representatives from the Department for Transport, Royal Society for the Prevention of Accidents, Society of Motor Manufacturers and Traders, European Road Assessment Programme, Roadsafe, Association of British Insurers, Parliamentary Advisory Council for Transport Safety, FIA (Federation Internationale d'Automobile) UK and the Association of Car Fleet Operators to contribute to the work.

Input was also sought from experts from industry and others from BSI's occupational health and safety committee. It is hoped that the new international standard will soon begin to help reduce death, injury and destruction on the world's roads.

### Looking ahead

2013 holds a number of interesting challenges for our risk work, including reviewing where next in the field of health and safety standards, revision of BS ISO 27001 on information security and further governance-related work.



## Case Study

## Minimizing risk of illegal business activity.

### How we developed a specification to help businesses introduce or assess their anti-bribery management system

#### Challenge

Under the Bribery Act 2010, businesses must prevent their employees and representatives from committing bribery on their behalf. Serious legal consequences can be avoided if the business can prove it has an adequate anti-bribery system in place.

#### Solution

Recognizing the need to help businesses manage bribery-related risks, in 2011 we published the *Specification for an anti-bribery management system*, BS 10500. The standard cannot stop bribery, but it can show that a business took reasonable steps to prevent it.

We began the process by speaking to a broad spectrum of organizations to ask what solution would best serve their needs.

We then brought together a committee of experts from industry, trade associations, professional and academic bodies, government and non-governmental agencies.

They came from such organizations as the City of London Police, National Audit Office, Public Concern at Work and others. Drawing from such a broad range of interests and expertise helps to ensure the standard's independence. The draft standard also underwent public consultation.

Major infrastructure business, Balfour Beatty, one of the world's leading construction companies, was involved in creating BS 10500. Balfour Beatty's Head of Ethics and Compliance, Andrew Hayward, was a member of the BS 10500 drafting panel. "Balfour Beatty was fully behind the creation of BS 10500. We wanted to make a positive contribution to the development of international anti-corruption best practice."



Balfour Beatty has more than 50,000 employees and is active in more than 80 countries. The company maintains the highest ethical standards, but having anti-bribery measures provides extra assurance.

Its existing management system was used in a pilot study of BS 10500. The idea was to see how the standard could be applied in a real-world situation, not to test Balfour Beatty's system, which nonetheless stood up extremely well to the standard's requirements.

**"BS 10500 can be an important tool in the fight against corruption"**

**Andrew Hayward, Balfour Beatty Head of Ethics and Compliance**

"We have a clear anti-corruption policy, which has been communicated to all our people, our suppliers and clients. Our board and senior management lead on implementing the policy and training is provided to employees. Tight controls are in place with regard to transactions, gifts and hospitality, while facilitation payments are strictly prohibited."

#### Outcome

The pilot study proved that BS 10500 works well in practice and provides a useful tool for organizations seeking to assess their anti-bribery management system. "There were no major differences between the requirements of BS 10500 and our own anti-corruption system," Hayward adds.

"The standard isn't unduly prescriptive and its requirements are sufficiently generic. BS 10500 can be an important tool in the fight against corruption and it could help promote and improve consistent best practice."

Case Study

## Setting the standard for good governance.

BS 13500 will be launched in 2013 as the first British standard for governance and its principles provide a benchmark for all organizations



### Challenge

In an age when all organizations face intense scrutiny from the media, public, government and others, poor governance can have disastrous consequences and an organization may never recover from the reputational damage it suffers. Poor governance also hinders productivity and efficiency. But how can organizations demonstrate good governance?

### Solution

Michael Faber, Institute of Operational Risk Executive Committee Member, says: "All organizations need rules and a defined sense of direction and purpose. It's just as important for small businesses to have a governance framework. Indeed, having a sound governance framework can help them to grow significantly."

Governance simply means how an organization is directed and controlled at the highest level. "Good governance grants more control to managers and owners," he adds. "Employees

also have a clear idea of their role, while those outside the organization have a better informed view of how it operates."

Having been involved in developing the risk management standard BS 31100, Faber is also chair of the BS 13500 committee. "Initial research proved the need for an independent, national governance standard for all types of

**"Stakeholders from many spheres brought their experience to bear to help create a standard that forms an excellent benchmark"**

**Michael Faber, Institute of Operational Risk Executive Committee Member**

enterprise, but in particular, smaller firms. It can be used at international level, too."

"Stakeholders from many different spheres of interest – including industry, institutions, professional bodies and associations, research bodies and regulators – brought their experience to bear to help create a standard that forms an excellent benchmark for governance. This is consensus standards-making at work."

Faber adds: "BS 13500 was designed for easy and effective integration. It wasn't developed to compete with existing schemes and codes, but to provide key principles for organizational governance that can be used as a benchmark. One of the areas it promotes is continual review. By benchmarking against BS 13500, organizations will be able to keep improving and measure their development."

The standard focuses on effective structures, relationships and accountability, as well as guidance on how organizations can illustrate good governance. BS 13500 will also support related risk-management standards such as BS 11000-1 (*collaborative business relationships*), BS ISO 31000 (*risk management*) and BS 25999 (*business continuity*).

### Outcome

As well as helping organizations to mitigate the risk of poor governance, Faber believes BS 13500 will become a powerful baseline with which they can implement and measure effective governance. "BS 13500 will allow organizations to show their commitment to quality, which will inspire confidence externally. BS 13500 will help to raise the bar in terms of how organizations are governed, which will improve sustainability and provide benefits for the business and other stakeholders."

## Case Study

## Addressing the risk of flooding.

With flooding predicted to become a more serious problem, we're working with stakeholders to develop effective flood risk management solutions

### Challenge

In recent years, many UK residents and business owners have been severely affected by flooding, which has brought widespread disruption, damage, financial loss, and, sadly, even deaths. Failing to understand the likelihood of flooding and managing it effectively within a new development is a key risk that must be managed.

### Solution

According to the Met Office, 2012 was the second-wettest year the UK has experienced since records began in 1910 (2000 was the wettest). Experts predict that the frequency and severity of flooding in the UK will increase.

*Assessing and managing flood risk in development – Code of practice, BS 8533*, was published in 2011 following two years of development. Its objective is to help those who need to carry out a flood risk assessment, including developers and their consultants, practitioners, local authorities and regulators, etc.

"The standard was introduced to provide clarity and consistency in the application of national planning policy relating to the assessment and mitigation of flood risk," explains Karen Dingley of Golder Associates, a global consultancy and construction business.

"BSI appointed a drafting committee with representatives from a range of government and industry groups, which worked collaboratively under the BSI banner to develop the standard. I chaired the technical drafting group and the committee [Flood Risk and Watercourses] under whose auspices BS 8533 falls."

Dingley worked with another drafting committee member to develop an initial draft. Feedback from stakeholders over a 12-



month period helped shape the document, which was then subject to a three-month public consultation. After the consultation the committee reviewed the document before publishing the standard.

### Outcome

Many developers and practitioners have benefitted from BS 8533 when carrying out flood risk assessments. As Dingley explains: "It

provides a clear and consistent method by which the risk of flooding should be assessed and mitigated against."

*Code of practice for surface water flood risk management, BS 8582*, is a new flood risk assessment standard published in late 2012. BS 8583 relates specifically to flooding from rivers and the sea, while BS 8582 relates to surface water flooding.

**"Effective flood risk management is a key challenge in the UK – and that's unlikely to change"**

**Karen Dingley, Golder Associates Team Leader (Natural Resources) and BSI Committee Chair**

"BS 8582 provides recommendations on the planning, design and implementation of surface water management systems for new developments and redeveloped sites, to mitigate flooding and other environmental risks arising from site surface water run-off as a result of rain or other causes. It will also help to maximize the benefits of using surface water run-off to protect and enhance local water resources. Effective flood risk management is a key challenge in the UK – and that's unlikely to change," Dingley states.

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# Make your voice heard.

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## Put your expertise to good use and work with us to develop new standards

The knowledge embedded in the codes, guidance documents and standards we publish helps organizations to improve their performance, manage risk, innovate and grow. Formalizing knowledge in this way builds trust with users, consumers and industry at large, bringing benefits to the wider community. But for standardization to work, individuals and organizations from a wide range of stakeholder groups need to be involved in creating standards.

By participating, industry experts can represent their organizations and community of interest to ensure that their requirements, understanding of the market and voice is heard and captured into the development of a standard, at either national, European or international level.

Participation in the development process enables you and your organization to take a leading role in the creation of standards that benefit your business, industry and society. Standards take many forms, including guidance, codes and specifications. Good standards need broad, open consultation during their development.

We work with trade associations and other organizations to ensure that users are represented when standards are created or amended. We actively seek representatives from many other groups including: consumer organizations; industry and professional institutions; certification, testing and inspection bodies; educational establishments; research organizations; UK notified bodies; enforcement bodies and government departments. We are committed to the principle that national committees represent the interests of users, manufacturers, government departments and all other relevant bodies.

All participation is voluntary and there are many ways you can be involved in developing standards, including suggesting ideas for new standards, participating in public consultation on standards or becoming a committee member. More than 10,000 members sit on some 1,200 BSI committees.

Committee members give their time and expertise for free, but frequently their employers or trade association supports their participation. The level of commitment required varies, but most committees only meet a few times a year. Some members also represent the UK at European and international meetings overseas.

We can provide training in standardization issues, processes and bodies to committee members and chairs. We support the work of all committees and there are dedicated meeting facilities at our headquarters in Chiswick, London. We also provide extensive online systems to support the work of technical committees.

If you want to become part of a national or international committee call our customer services on **+44 (0)20 8996 9001** or email [cservices@bsi-global.com](mailto:cservices@bsi-global.com) for more information.



“Individuals and organizations from a wide range of stakeholder groups need to be involved in creating standards”

# About BSI group.

## History

BSI was the **world's first national standards body**. Our origins can be traced back to 1901, when the Engineering Standards Committee was founded in London, with Sir John Wolfe-Barry, the man who designed London's Tower Bridge, playing a leading role. We became the British Engineering Standards Association in 1918. After receiving the Royal Charter in 1929, we became the British Standards Institution in 1931. In 1998 our trading name changed to BSI Group.



2,250

Employees

We operate in **100-plus countries** at more than **50 offices**



64,000

**Customers** worldwide, including 78 per cent of the FTSE 100 companies; 53 per cent of the Nikkei; and 44 per cent of Fortune 500 and Hang Seng-listed companies.

## Certification



Operating from more than **69,000 registered sites** across the globe, we're one of the world's largest independent certification bodies for management systems.

## Training



In 2011, we provided training for some **66,000 people worldwide** on how to implement and work with standards.

## Assessment

92%

Of the world's top 25 global medical device manufacturers choose BSI as their notified body for CE marking certification against EU directives



7,400

Total CE Marking Certificates issued

3,600

Number of Kitemark licences we've issued

## Standards

Quality management systems standard **ISO 9001** – which started life at BSI in 1979 as BS 5750 – is the **world's most successful standard**, having been adopted by more than one million organizations in 178 countries.



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