Guidelines

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FOR IT MANAGEMENT

Desert Island Standards

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Daniel focuses the expertise of NCC's technologists and the experience of its membership, into the formulation of new and improved IT standards and best practice guides, nationally, across Europe, and globally through the International Standards Organisation. Daniel has written and contributed to a wide variety of standards on topics including user documentation, usability, software escrow and other elements of software engineering. He was an active member of the review team of the latest BSI TickIT Guide. Daniel's standardisation work has also enjoyed the support of the European Commission.

Daniel also maintains certification for all NCC activities to ISO 9001/TickIT/BS 7799 and has taken his practical experience outside NCC to help members and clients install and improve quality systems. He has also developed and run popular training courses which include review and inspection techniques.

As a technical author, Daniel's expertise is often called on by NCC's Documentation Team which combines technical writing resources with on-demand printing and Internet/intranet technology.

Before joining NCC, Daniel worked for Ferranti International. During his time with Ferranti, he worked as a Technical Author at several sites dealing with large civil and military projects. This included the documentation of urban and motorway traffic control systems, flight simulators and procedural trainers. He also wrote and edited sales proposals and acceptance test schedules. Daniel worked to in-house standards, the JSP series (he was the site expert on the application of JSP 188), AvP 70 and NES 40. Daniel was also responsible for writing and editing procedures designed to meet the requirements of AQAP 1 and AQAP 13. In connection with his work with standards, He advised project teams on the implementation of documentation standards and procedures.

Currently an Associate of the Institute of Quality Assurance, Daniel has an Honours Degree in Combined Studies of Applied Physics and Computing Science and a diploma in the Business Excellence Model.

Speaker Topics

- *IT standards and best practice (applicable to software, e-commerce etc)*
- *Technical and scientific communication*
- *Usability*
- *Getting IT right*
- *IT and society*
- *IT Security*
- *E-business*

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CONTENTS

1. CAST AWAY

Imagine you're suddenly called to manage the information technology on a desert island and you're only allowed to take eight standards with you to help. I'm not putting the scenario up for analysis. Just say that you can only have eight standards. Which standards would you take? After many years of projects involving standards development and standards implementation, this Guideline makes NCC's recommendations.

Just as in the BBC set-up you can have the equivalent of The Bible and the Complete Works of Shakespeare only in this fantasy you get ISO 9001 for Quality Management and BS 7799 (or the international version ISO 17799) for Information Security Management.

Of course we'd never let our members go without the relevant NCC Guidelines so you also get a few Guidelines[1], stuffed into a bottle and washed up in your first week.

Why are standards are so important? What do I want from them? Just in case you are one of those people who won't admit to needing standards let's just take a moment to try to understand the flavours that standards come in and how they may be used.

Standards come in two types: process and product. Process standards describe the 'how to'. They cut a path from the problem to the solution by showing you the procedural down to the local work instruction. For example ISO 9001 tells you that a good management system trains its staff and equips them to do their jobs; review the work and so on. Product standards provide specifications of how end-products should be such as: the coding standards for software; the transport protocols for communications; or the wiring in a cable. Both types of standard are benchmarks to be used as goals for measurement and improvement.

'The nice thing about standards is that there are so many to choose from.' [2]

2. WHY STANDARDS?

I'm not sure why standards get such short shrift. After all, they are usually a distillation of best practice prepared by the peers of those who should be glad of their support. The need for standards to apply to so many 'unique' situations means that some of their advice will be honed down to be generic and inoffensive – that makes for polished, pure elements that provide a strong foundation to be built upon.

Standards provide an anchor for all the change that must be managed in an agile business. They are a toolbox which is too often rejected unopened, and the tools needed to fix a solution overlooked as proverbial wheels are reinvented.

Standards users need the attitude to go in and take what's useful and not deliberate on the irrelevant – the parts you don't need are probably not irrelevant to someone else.

In this Guideline, we've selected the eight most important standards in Information Technology. So for this set of standards, NCC recommends you need these in place to implement what you hithertofore may have considered a more pressing business need; they are:

- ISO 15288 Information Technology – Life Cycle Management – System Life Cycle Processes.
- ISO 9126 Software engineering – Product quality.
- BS 15000 IT service management.
- ISO 15504 Information technology – Software process assessment.
- The Data Protection Act 1998.

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[1] *To help you implement a management system you'd need Guideline 193 Documenting Quality Procedures and to make it secure there would be Guideline 268 Managing information security – getting certificated to ISO 17799. To put these into practice on a daily basis, you need Guideline 269 Managing Risk – a practical guide.*

[2] *Professor Andrew S. Tanenbaum Computer Networks, Prentice-Hall, Inc., (first published in 1980) which describes the International Standards Organisation Open Systems Interconnection model*

- STARTS Software Techniques for Reliable, Trusted Systems.
- e-GIF (the e-Government Interoperability Framework).
- ISO 18019 Guidelines for the design and preparation of user documentation for application software.

And for each standard we consider its objectives, why it is so good, what is in it, and how it should be used. So put on your straw hat, crack open a coconut and let's look at the first standard...

3. ISO 15288: SYSTEM LIFE CYCLE PROCESSES

3.1. What is the objective of the standard?

I've started with this standard because it is the root from which all others may be derived. It recognises the basic problem that you are never your own master in IT. The application has to work with the operating system, the operating system has to work with the hardware, and the hardware with any number of business processes. The complexity of the interaction between systems and subsystems needs to be modelled so that development and maintenance – and their associated costs – can be planned and controlled. But where to start and how can this be done in such a way that plans can be meaningful to any number of project teams building any number of systems, subsystems or components. Not only now. These project teams may exist in the future when the original designers may have long departed. ISO 15288 establishes a common framework for describing the systems from conception, through implementation to decommissioning and disposal.

The objective of the standard is communication: setting out well-defined processes and associated terminology. Selected sets of these processes may be applied throughout the life cycle for managing and performing the stages of a system's life cycle. This is accomplished through the involvement of all interested parties with the ultimate goal of achieving customer satisfaction.

3.2. Why is it so good?

It really does provide a scalable 'big picture' that can be applied to any project. It really helps you to decide whether you are doing enough? It provides an allegory for systems design: no one makes an automatic telling machine without a bank; no one makes manufacturing control software without a supply chain; no one's business is 'e-mail'. So many of present-day, man-made systems contain, are modelled by, and or are supported by computer technology. The combination of hardware, software and human operators has increased system complexity to an unprecedented level so starting, stopping, or just keeping up the momentum can distract the energies that should be focused on the real goals. ISO 15288 applies to one-of-a-kind systems, mass-produced systems and customised, adaptable systems. It explains how to take a pure, distilled, generic set of circumstances and tailor them to what those, who never admit to wanting standards, would refer to as the 'real world'.

3.3. What's in it?

15288 describes the 'processes' should you have to manage the creation and implementation of successful systems. At the top level, 15288 describes the **Agreement Processes** that you need to do to get agreement between two organisations. These are the purified aspects, see the STARTS handbook (q.v.) for the more detailed, pragmatic view. Once the foundations for agreement are set, the next stage is the **Acquisition Process** – used by organisations for acquiring products or services, and the corollary, the **Supply Process** – used by organisations for supplying products or services. All of these processes are interconnected with the operation of the organisation and so **Enterprise Processes** set out what is needed to effect the systems, that is a competent, equipped organisation to fulfil the obligations laid out in the agreement processes. These foundation processes put everything in place to make ready the processes that enable delivery. These are the **Project Processes** that set out plan-do-check-act cycles of activity that leave you only to 'expect the unexpected' and tool up resources to manage the risk, and the **Technical Processes** – what you need to do to collect requirements (remember the Agreement Processes) and turn them into the products or services that realise those requirements. Requirements ranging from the functional to the non-functional, the perceived need to the legislative, or environment, frameworks.

3.4. How do you use it?

Remember the toolbox analogy. Take this standard and pick and mix the stages in your project and quality plans and identify (for that's covered in the standard) what they should deliver. With planned,

project activities, you can categorise and prioritise them and allocate them to people with the most appropriate sets of skills, responsibility and authority.

Now that we've put in place a standard which comprises a framework for getting the work methods correct, we need to look to measurement/quantification standards to identify the systems correctly. The next three standards do just that.

4. ISO 9126 SOFTWARE ENGINEERING – PRODUCT QUALITY

4.1. What is the objective of the standard?

Perhaps the greatest challenge in developing high quality software is the problem of describing an intangible product in which small changes can have enormous detrimental effects. Specification and evaluation go hand in hand and so if you have your processes in place to capture your user requirements, you need the tools to specify those requirements unambiguously and in a way that can be tested. Good advice for any developer is never to accept a requirement that cannot be tested[3]. ISO 9126 is that standard. It sets out to provide those definitions so that they can be quantified and applied meaningfully to systems. Only then can success or failure have any context for systems.

4.2. Why is it so good?

ISO 9126 actually helps us all to say what we mean by 'quality' by removing emotive and debatable term such as 'fit for purpose', 'conformance to requirements', 'degree of excellence', or... 'OK'.

4.3. What's in it?

ISO/IEC 9126 describes a two-part model for software product quality: i) internal quality and external quality, and ii) quality in use. The first part of the model specifies six characteristics for internal and external quality, which are further subdivided into subcharacteristics. These subcharacteristics are manifested externally when the software is used as a part of a computer system, and are a result of internal software attributes. For example, functionality (if I may be so bold as to use the 'f' word) is defined in terms of:

- Suitability.
- Accuracy.
- Interoperability.
- Security.
- Compliance.
- Reliability.

In ISO 9126, the much-maligned catch-all of software marketing 'functionality' is only one of the characteristics of software quality. We can see this in the definition of reliability that has been broadened to 'maintain a specified level of performance...' instead of, as is too often favoured, '...perform a required function'. The standard goes on to realise specifications of usability, efficiency, maintainability, and portability.

4.4. How do you use it?

The applications for this standard are legion. It is such a basic tool for communicating software characteristics. For example, use it to define with your customers (or vice versa) reliability in the service level agreement (SLA) that you put together using BS 15000 (again, q.v.).

5. BS 15000 IT SERVICE MANAGEMENT

5.1. What is the objective of the standard?

This is a diamond amongst the rubies of other standards. As IT issues are far more a service than a product issue, it is vital to have a route to define and control those services, to make the intangible, tangible. BS 15000 provides management direction and the framework to plan for putting adequate resources in to delivering services.

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3 *Myers, Glenford J., The Art of Software Testing, John Wiley and Sons, 1979, ISBN 0471043281*

BS 15000 is a two-part standard with component sections to:

- Continually improve service quality.
- Ensure that service management personnel are competent to undertake their roles.
- Provide evidence of service management operations.
- Demonstrate the implementation of service management objectives.
- Define, agree, record, and manage levels of service.
- Translate requirements contained in SLAs into availability targets and to manage availability.
- Ensure that agreed obligations to customers can be met in the event of major service failure or disaster.
- Produce timely, reliable, concise, reports for decision support.
- Account for the cost of service provision and also its recovery, where this is applicable, in a controlled manner.
- Ensure that the organisation has, at all times, sufficient resources, to deliver the business workload.
- Put the effective management of information security within the service management activities.
- Engender and maintain a good relationship between the service provider and the customer, based on understanding their business drivers.
- Proactively manage the provision of seamless, quality services from service providers.
- Restore normal service to the business as soon as possible in the event of an incident.
- Identify and manage the underlying causes of service incidents whilst minimising or preventing disruption to customers.
- Account for, control the components of the service or infrastructure, and protect the integrity of the information systems and services.
- Ensure that requests for change to the service are assessed, approved, and implemented in a controlled manner.
- Plan and implement a release into the live environment successfully with minimal impact to the business environment.

5.2. Why is it so good?

More and more people rely on the delivery of IT as a service, requiring advanced facilities at minimum cost, whilst the service providers must satisfy their customers within a cost-effective framework. BS 15000 explains to service providers how to manage and improve the quality of the services to their customers and, for the customers, how to work with the service providers to agree the levels of service.

5.3. What's in it?

BS 15000 comprises a specification of what independent experts consider to be best practice for service management (Part 1) and a Code of Practice (Part 2). This provides service organisations with the definition of the elements that need to be implemented within their management systems and so provide auditors (internal, external, first, second. and third party) with the benchmarks that they need to look for when assessing the capability of the service provider.

If at this point in the Guideline you shout 'What about 15504?' then I reply that ISO 15504 is the framework for assessment with a view to continuous improvement. BS 15000 focuses on the elements for best practice and continuous improvement in service delivery.

5.4. How do you use it?

Use it to write service level agreements, making sure that all the relevant items are covered in the terms of management. You can focus on feeding the SLA with the business requirements within this framework. Use it as a stipulation to suppliers or as reassurance to customers.

Hopefully an independent compliance and certification service will emerge.

6. ISO 15504 INFORMATION TECHNOLOGY – SOFTWARE PROCESS ASSESSMENT

First some politics (standards development is full of it). You will probably have heard about the Capability Maturity Model developed by the Software Engineering Institute of Carnegie Mellon University. Well, ISO 15504 is the international standard version. It is not derived from the CMM. In fact, as a benchmark for a good model of capability, you should say that the CMM is compatible with this standard. CMM is more famous because its budget is underwritten by the Department of Defense. Now read on.

6.1. What is the objective of the standard?

It's a framework for making sure that you are doing your best at the time, and collects the information you need to make plans for improvement It's a framework where you can:

- Calibrate assessments and assessors (removing as much of the subjectivity as possible).
- Compare apples with oranges – see how projects compare with best practice, levels of maturity (see below) and each other.

6.2. Why is it so good?

It delivers a framework from which assessments can have some meaning. You really can look at your business and ask 'are we doing the right thing?'.

6.3. What's in it?

A word of warning. It's huge! It was developed over several years by testing out the ideas it collated. It fully explains the concepts and vocabulary – very important given that the number of parties involved in assessments. There's a reference model for the processes you would expect to find within an organisation and a way of describing the capability of business processes to deliver what is required of them. The capability of business processes to deliver is measured in levels. ISO 15504 defines the following model:

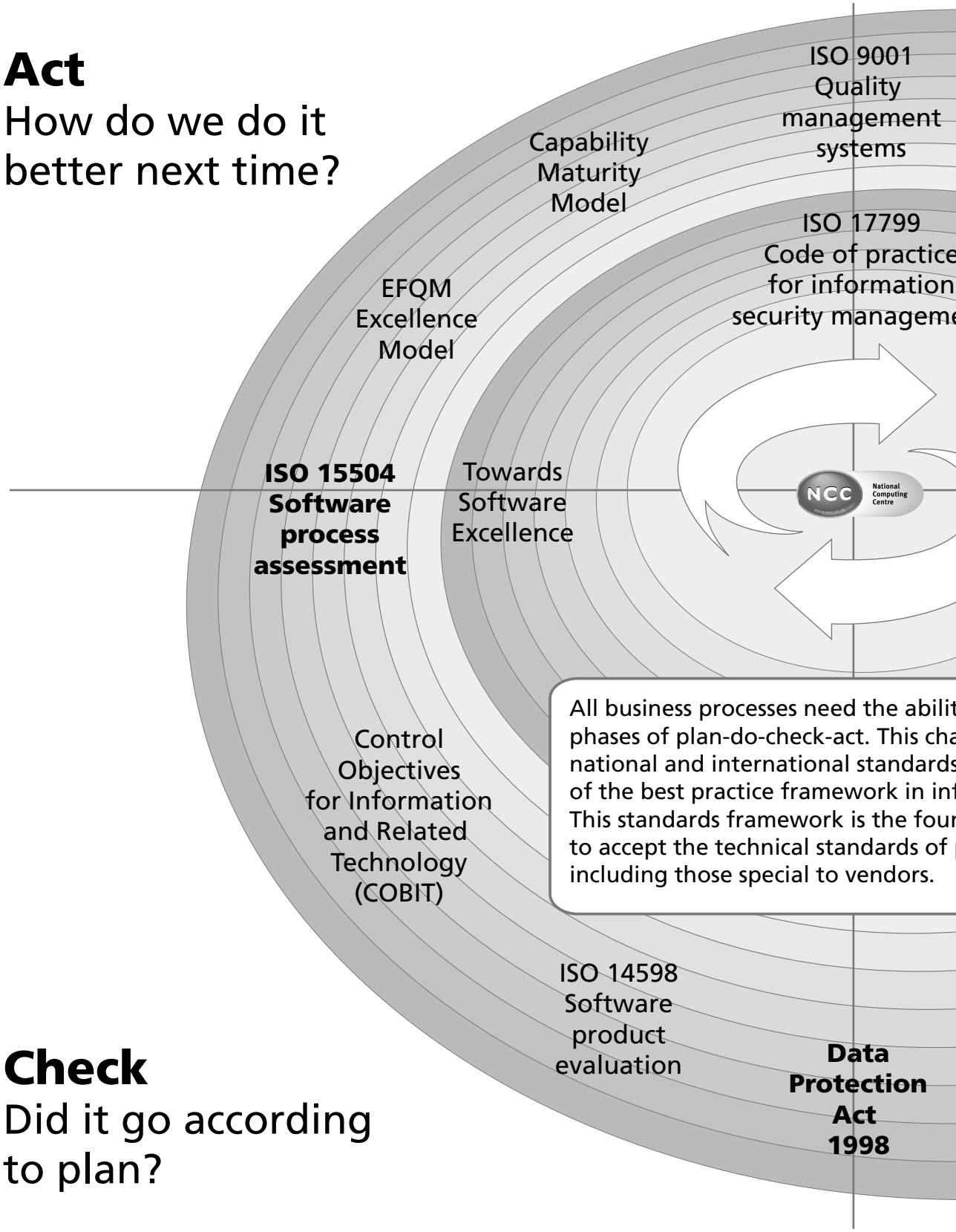
Level	What's done or not	What's going on in the business
0	Not Performed	We (or they) don't do that...
1	Performed Informally	We've got some work so just do it. OK?
2	Planned and Tracked	Yes, we decided what we're going to do and keep an eye on it.
3	Well Defined	We've picked out all the things that work and do them over and over on other projects (tailoring them to fit with due consultation).
4	Quantitatively Controlled	Not only do we know what processes are best we know how much to put in so that we know what will come out. Pretty good way of planning and estimating eh?
5	Continuously Improving	Not only do we measure, we take note of the results so that we can get better and better. It's a positive feedback loop!

The standard explains not only how to carry out assessments but also the competency that assessors need to make their observations meaningful. Then, when you've carried out an assessment, the standard describes how to look at the results and then use them to improve your business processes.

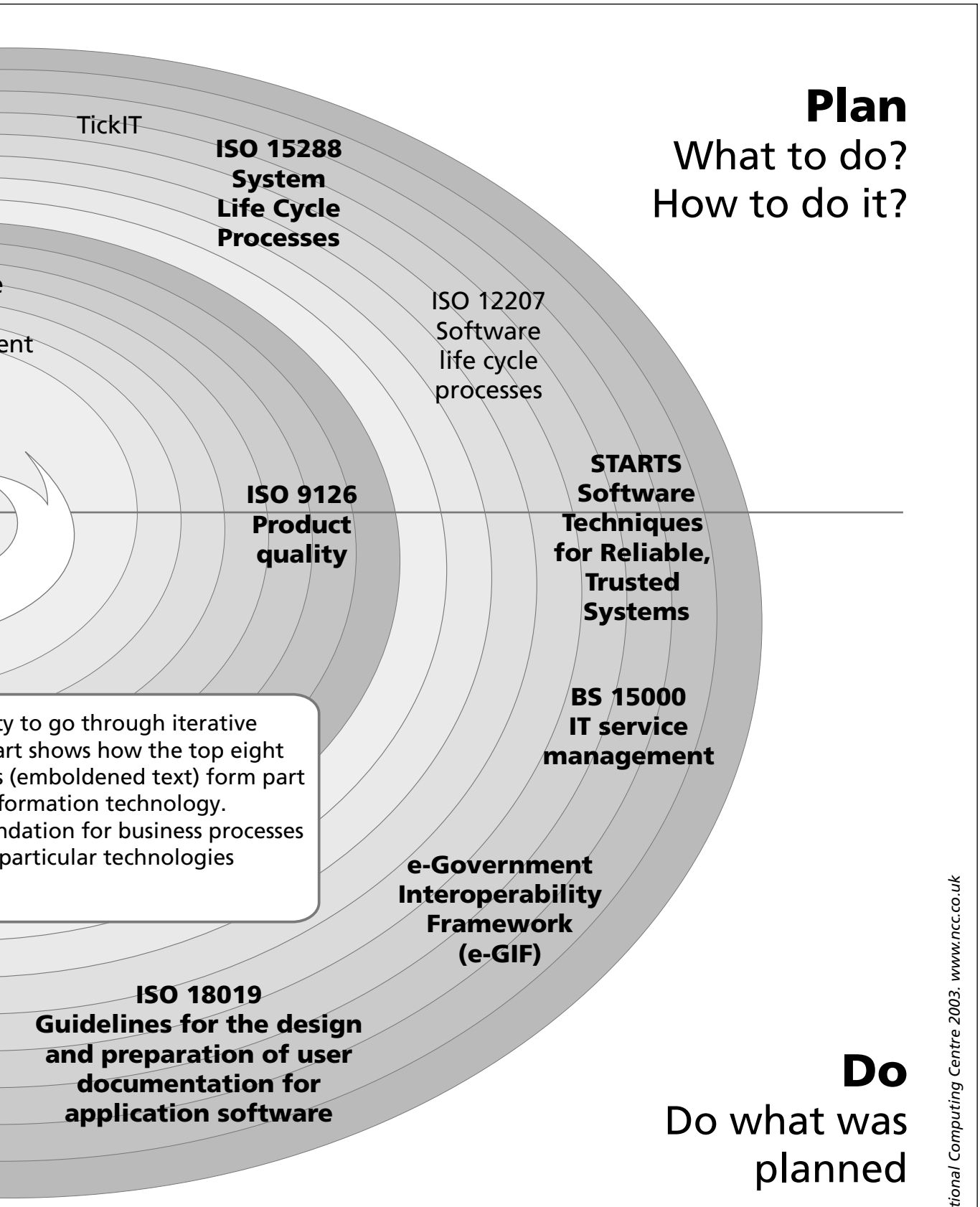
6.4. How do you use it?

It's big. If you've not carried out a formal, repeatable assessment on your project or organisation, this is not something that you can get into overnight. Also, there may be only one small part of your activities that you want to scrutinise. However, this standard has an excellent, web-based tool available to help you get started.

Act
How do we do it better next time?



Check
Did it go according to plan?



To give more organisations dealing with IT a fast track to using standards, NCC developed a quick benchmark and advice tool with the support of DTI, called 'Towards Software Excellence'[4]. Although it's all about software, so much of it is good, solid, common sense you can apply it to many different fields. TSE allows you to assess all or a small part of your activities, get a quick opinion as to how you are doing, and some advice for improvement. Once you're bitten by the improvement bug, keep going and get into ISO 15504!

ISO 9001/BS 7799 only tells part (however significant) of the story when you are selecting a supplier. Use ISO 15504 to tell you whether your (potential) suppliers have business processes with the capability to supply what you need.

7. THE DATA PROTECTION ACT 1998

7.1. What is the objective of the standard?

Are you surprised to see this on the list? Did you ever consider this to be a standard? Think about it. This is an example where the law becomes a standard. There are situations where the law calls for due diligence and, in a way, the standards become the law – standards become 'soft law'[5]. Now that we have all this information and communications technology to make business processes more efficient or precise, our digital obligations are thrown into sharp relief and we must not abuse the opportunities[6].

Now that we can get sophisticated computing resources and global communications in the living room at home, never mind what corporate business can do, we need to be aware of our responsibility to use this technology in ways that are legal, decent, honest, moral and truthful. The wider picture is being referred to as corporate social responsibility. However, it comes down to individuals to put this into practice. What standards are there for handling data? Well it can get very technical and great papers are published on the subject. However when it comes down to it, the most basic framework is:

- How confidential should it be?
- How much work is needed to protect the integrity of the information?
- How available should the information be?

7.2. Why is it so good?

It's difficult to be objective sometimes when you believe in your organisations 'right' to do what it does. You may think that your services are the 'bee's knees' but there will be plenty of people who are happy to find out about what you do when they are ready, not you. You might be one of the good guys. You wouldn't make a fast buck selling information about someone, nor would you cut corners keeping your customer databases up to date. We – as a society – need to do our utmost to respect each other's privacy, and this is what the Data Protection Act is all about. Proper implementation is a frontline defence against identity theft – not an Orwellian nightmare but a scary fact of our information society.

7.3. How do you use it?

Perhaps because it touches so many, the Data Protection Act must be one of the most widely explained pieces of legislation ever. There are guides galore available from the Information Commissioner[7] as well as independent, business-based support[8].

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[4] *www.software-excellence.org.uk*

[5] *Although the instance of the standards makers being held liable for mistakes after a standard is followed is as yet untested. Time will tell; let's hope reason prevails.*

[6] *For example, software designed to manage software licences and usage and billing of applications could be applied to 'time and motion studies'. Doing this without explicitly informing those under scrutiny and in some instances, getting permission, can conflict with protective legislation such as the Regulation of Investigatory Powers Act or the Human Rights Act.*

[7] *http://www.informationcommissioner.gov.uk/*

[8] *See http://www.ncc.co.uk/ for Data Protection – The New UK Law, by Simon Chalton ISBN 0-85012-868-4*

In its simplest terms, put the law into effect by:

- Getting the consent from individuals before publishing their personal data on your website.
- When collecting information via the Internet always inform the user:

  - Who you are.

  - What personal data you are collecting, processing and storing and for what purpose.

Note: Do this before a user gives you any information, when they visit your site and wherever they are asked to provide information, for example via an on-line application form. It is good practice to ask for consent for the collection of all data and it is usually essential to get consent if you want to process sensitive personal data.

- Always let individuals know when you intend to use 'Cookies' or other covert software to collect information about them.
- Never collect or retain personal data unless it is strictly necessary for your purposes. For example you should not require a persons name and full address to provide an on-line quotation. If extra information is required for marketing purposes make this clear (and make provision of the information optional).
- Only use personal data collected on-line for marketing purposes where the user has already been told that his or her information was to be used in this way.
- Given the opportunity to opt out of the use of personal data for marketing.
- If a user asks you to stop using his or her data for marketing purposes, do so.
- It is worthwhile to get the individual's consent before using their information for marketing.
- You must always get consent to use sensitive data for marketing purposes.
- Use the most relevant, up-to-date technologies to protect the personal data collected or stored on your site.
- Use reliable encryption technologies for especially sensitive or valuable information, such as financial details.

7.4. What's in it?

Of course there are many clauses to describe the controls for data protection within the law but they are designed to define the framework of eight data protection principles, namely:

- That personal information is collected fairly and lawfully processed.
- That personal information is processed for limited purposes (under the terms for which it was originally collected).
- That personal information is collected it adequate, relevant, and not excessive for the tasks at hand.
- That throughout the life of the uses to which personal information is put, that information is accurate.
- That personal information is not kept longer than necessary.
- That personal information is processed in accordance with the data subject's (that is, who the data is about) rights.
- That personal information is kept securely, which has implications on everything from staff, storage media and business processes.
- That personal information is not transferred to countries outside of the European Union without adequate protection or agreement.

8. STARTS

I'm almost tempted to refer to STARTS as the equivalent of the bible amongst the essentials cast away with me on the desert island (rather than ISO 9001 and BS 7799), and when you consider its history perhaps you'll understand why. In the mid 1980s, NCC was sponsored by DTI to run a programme that became known as Software Tools Applied to Real Time Systems. Its objective was to produce a software tools catalogue guide to help developers get to grips with the real time systems that had taken over from their batch-processing ancestors.

The 'STARTS' Guide was a comprehensive comparison of the tools which made up the development environment of the time. The same programme then published *'The STARTS Purchaser's Handbook'* by creating a knowledge network of leading authorities in IT. The Handbook is still unsurpassed in its quality of concept and contents, formulating a full path for users to specify and manage the requirements of their software systems. The Handbook became the basis of the ISO 9000 TickIT scheme (designed by Logica for DTI, and now managed by BSI). This substantial tome is still sought after today and is available from NCC. The purchaser's view was complemented by the lesser known *'STARTS Developer's Handbook'* which again fed the upcoming the TickIT Guide.

Now STARTS is a programme with a wider view covering Software Techniques Applied to Trusted, Reliable Systems (for a definition of 'reliable' see ISO 9126). As with the purchaser's handbook, the current programme is built in an unparalleled atmosphere of cooperation between leading industry organisations. STARTS has itself a achieved a level of 'trust' in an industry that so often missing this attribute. STARTS recognises that customers and suppliers have roles throughout procurement and implementation that are key to the success of information and communication technologies (ICT) and STARTS suggests where the knowledge of the virtual team can best be deployed.

8.1. What is the objective of the standard?

STARTS presents a model for co-operation, setting out who does what and recognising that social issues are every bit part of an IT project as the technological challenges. STARTS retains a degree of realism and recognises that the test beds of development don't always grow flowers and so it brings in mediation to synthesise agreements from conflicting viewpoints. Importantly, it relies on dispute resolution rather the litigious, adversarial roles that come to the fore so often when requirements change or systems fail.

STARTS is a working environment for customer/supplier relationships. Its main objectives are to accelerate the uptake of best software engineering practice and methods. STARTS is delivered through four mechanisms:

- Providing guidance on best practice to in-house developers and external suppliers, with information about, and assessments of, the best available software engineering activities.
- Promoting the use of best practice amongst purchasers and users when procuring and specifying systems.
- Promoting co-ordinated and constructive demand from purchasers for suppliers to use the best software engineering practice.
- Involving the user more productively in the development process and increasing awareness amongst senior management.

8.2. Why is it so good?

STARTS' pedigree is the secret of its success. It is based on the experience of a much larger roll-call than many standards and contains the advice of a significant cross section of applied information technology. It is designed for cooperation and uses mediation to build virtual teams and resolve disputes before the expensive litigation that too many systems have been brought to.

8.3. How do you use it?

Use the STARTS guidance material as the basis for the process of requirements collection and templates for procurement documentation. Much of it has been made accessible through its on-line progeny – Towards Software Excellence.

8.4. What's in it?

The STARTS documentation contains the original V-lifecycle which has much to teach today's software engineers as they abandon robust structure for quick returns. The new STARTS programme preaches the idea of using the law for leverage, not for restriction, fitting it into the larger picture of standardisation. Just as the law defines many of our social responsibilities, so does STARTS overcome the fixation with technology for technology and concentrates on building virtual teams between suppliers, purchasers and users to promote efficiency in the value chain.

The STARTS programme operates at different levels – like its V-lifecycle – but recognises how these levels (a) interact and (b) may not be discrete so that activity in one level may not be complete (and in some instances may not have even started) before the next kicks off. Liken this to the familiar 'people' issue of often doing a job before the evidence of competence and capability brings reward. The people aspect of STARTS operates three levels:

- Leadership.
- Business Processes.
- Tools and methods to effect the processes.

Leadership is the practical implementation of good governance – the manifestation of our digital obligations (q.v.). It is about formulating or nurturing the vision or mission, building up teams and to maintain trust and confidence in what is done and how it is done. The teams are virtual and may at any time have contributions from stakeholders as varied as shareholders, board members, employees, contractors, suppliers, and the shining facet of the STARTS philosophy – the customers.

Business processes are about the realisation of the visions and involve the programme management of change to implement the appropriate technology to the relevant parts of supply chains. The STARTS IT strategy identifies the opportunities offered by technology and deliver what is needed rather than what can be achieved just 'because it's there'.

Leadership and business processes are benchmarked by the third pillar of STARTS – tools and methods to effect the processes. These are standards – of the sort discussed herein: the technical (such as ISO 9001, ISO 17799 or e-GIF), the legal (such as Data Protection, Regulation of Investigatory Powers, Computer Misuse, Electronic Communications, Human Rights, Copyright and Patents, and the upcoming implementation of the Freedom of Information Act). At the 'lowest level' there are the technology standards (such as watermarks, e-mail, Web and intranet technologies, digital signatures, EDI, XML, barcodes and RFID tags).

9. E-GIF

It's a bit cheeky including this in the list of eight standards to take to the desert island. It's a bit like asking your fairy godmother to make the third wish a thousand more wishes. It's not really a standard but an umbrella covering many standards that comprise the e-Government Interoperability Framework (e-GIF). You can extrapolate a lot from this framework for interoperability...

9.1. What is the objective of the standard?

Adherence to electronic-Government Interoperability Framework (e-GIF) specifications and policies is mandated for new systems and legacy systems involved with electronic service delivery targets and for the exchange of information between government systems and the interactions between them. So if two parts of an IT jigsaw comply with e-GIF, they should be able to work together. It's a great vision – obviously some of the STARTS leadership vision at work here – and the e-GIF framework makes it achievable. The Office of the e-Envoy (OeE)[9] , which has defined the e-GIF, has set the goal as an environment of efficient transitions and improvements to e-Government for:

- UK Government and citizens.
- UK Government and businesses (world wide).
- UK Government organisations.
- UK Government and other governments (UK/EC, UK/US etc.).

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9 *http://www.e-envoy.gov.uk/*

e-GIF is drawing international attention already as other governments see its potential and look to adopt the framework.

9.2. Why is it so good?

It recognises the complexity of IT and the need to manage this complexity (remember ISO 15288). e-GIF sets boundaries to make systems work together by identifying where connections must be made rather than setting out to make all connections work – some of them may never be used. The framework of standards has built in its own robust, self-sustaining process to ensure that it is managed as a long-term, ongoing initiative as technologies change and new standards are distilled from the quagmire of innovation and experience. This process, including the roles and responsibilities of key stakeholders, committees, management and working groups, is outlined in the e-GIF documentation. This change management is designed to engage and serve the stakeholder community in a dynamic way and to bring in innovations from industry on a global basis.

9.3. How do you use it?

It's a 'pick and mix' catalogue for you to use to select the appropriate components for what you want to achieve. For example, at the highest level complying with the e-GIF means:

- Providing a browser interface for access.
- Using XML as the primary means for data integration.
- Using Internet and World Wide Web standards.
- Using metadata for content management.

9.4. What's in it?

The main thrust of the framework is to adopt the Internet and World Wide Web specifications for all government systems. This takes advantage of the greatest outsourced networking opportunity ever. e-GIF systems include their interfaces, hence the a strategic decision to adopt XML and XSL as the core standards for data integration and management of presentational data.

The Framework also sets out policies for establishing and implementing metadata across the public sector. The e-Government Metadata Standard will help citizens find government information and resources more easily.

Stipulating policies and specifications in themselves is not enough. Successful implementation will mean the provision of support, best practice guidance, toolkits and centrally agreed schemas. This is a subject close to the heart of NCC and so building on the technology that source practical testing and advice in other areas of standardisation[10], NCC is providing the e-GIF compliance service[11] on behalf of OeE addressing the four components of e-GIF:

- Interconnection.
- Data integration.
- Content management /metadata.
- Information access.

The content of the framework is well structured with goals defined by technical policies and implementation described by specifications. For example, the current version of the e-GIF sets out the technical policy requirements for Interconnection as the need for departments to interconnect using IPv4 and plan for migration to IPv6 in due course (with notes on migration to IPv6). This already demonstrates that a fluid approach to ICT strategy is built in, but recognises the need to be satisfied with what is proven at any one time.

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[10] *Towards Software Excellence (based on ISO 15504).*

[11] *http://www.egifcompliance.org/*

10. ISO 18019 GUIDELINES FOR THE DESIGN AND PREPARATION OF USER DOCUMENTATION FOR APPLICATION SOFTWARE

10.1. What is the objective of the standard?

Everyone still wants good instructions for users. Users of application software products generally have one important feature in common: they might be experts in the tasks for which they wish to use the software, but they are not, initially, experts in using the application software itself. This standard describes how to establish what information users need, how to determine the way in which that information should be presented to the users, and how then to prepare the information and make it available.

10.2. Why is it so good?

The standard is the updated amalgamation of two British Standards BS 7649 (which describes best practice for paper-based user documentation) and BS 7830 (which continued the theme of its paper-based counterpart for screen-based documentation such as 'Help' systems). It was written by professional technical authors who have the regular experience of sitting between technically excited developers and exasperated end users. It has also been through a rigorous process of peer reviews to ensure that it doesn't conflict with the cultural nuances that cause amusement to some, and insult to others.

Perhaps it gets the most marks for its structure[12] as ISO 18019 clearly divides the processes from the end products and provides bench marks for both.

10.3. How do you use it?

Like the best process standards, ISO 18019 includes sufficient details of best practice activities that can be included as stages in a project plan. You can tailor this to the way in which your organisation works. A bit like having all the right stages, not necessarily in the right order. To assist with checking that the actuality compares favourably with what should have been done, the standards presents you with checklists. These are useful to make sure that the best sorts of information go into the most appropriate documentation in the clearest format.

10.4. What's in it?

The processes that can be integrated into project plans which span the lifecycle of the application development by presenting a development lifecycle for the documentation itself. This comprises the stages below:

Objectives	Finding out the documentation policy of the enterprise, what the project is about and what has to be achieved.
Planning and control	Drawing up the documentation plans for the project, including monitoring and controlling it.
Analysis and design	Collecting information about the product and users, their tasks and their needs for information, and designing documentation based upon those needs.
Development and review	Using the enterprise, project and product (internal) standards (for example, templates) to develop the product and preparing master versions of the documents.
Evaluation and updating	Evaluating the documentation with the rest of the product.
Production	Preparing the printed documentation on suitable media.

[12] *Defined by NCC in its BS 7649 heritage.*

The benchmarks for documentation products are also well described in the design guidelines which cover the wording, format and presentation of the user documentation. They include:

- What to tell the user in each type of document or information element. For example, what information to include in each sort of topic being provided in the documentation.
- How to structure the information and what facilities to provide for navigating through the on-screen documentation.
- Styles and techniques for writing documents and producing illustrations.
- How to present information so that it is easily understood.

11. LUXURY ITEM

So there I am. Castaway on a desert island with only eight standards (and the mandatory ones), a major IT installation and only 300 IT staff for company... what luxury item should I take? Just look at how the standards have to change to keep up with new technologies and ever challenging expectations. Change is the only standard to paraphrase Heraclitus of Ephesus. But we must move on and hope that progress is not bad things happening faster.[13] So to remind me that things can get better, I'd take my pen holder, made from old paper tape cores and held together by that thin tape that stopped the rolls of paper tape undoing and making you look as if The Mummy has returned. I wonder how many standards I can get on a DVD?

12. USEFUL INFORMATION

www.bsi-global.com/

Website of the BSI – working to support business improvement and trading worldwide. Promoting the adoption of best practices in business trading, business processes and product development.

www.bsonline.techindex.co.uk/

British Standards Online is the most current site for all BSI standards and related publications. The site includes over 38,500 current, draft and historic British Standards, more than 16,000 of which are BSI adopted European and International standards.

British Standards Online has three levels of user access:

Guest: You can search and view results immediately

Registered Guest: In addition to searching and viewing results, registering for Free also allows you to view summaries and order hardcopy documents online.

Subscriber: Become a Subscriber and get instant unlimited online access to standards.

In addition to standards the site also includes:

- Technical handbooks.
- Codes of practice.
- Guidelines.
- Specifications for products, dimensions, and performance.
- Glossaries.

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[13] *Terry Pratchett, Witches Abroad, Victor Gollancz, ISBN 0 575 04980 4*

THE STANDARDS

- ISO 15288 Information Technology – Life Cycle Management – System Life Cycle Processes *www.bsonline.techindex.co.uk/*
- ISO 9126 Software engineering – Product quality *www.bsonline.techindex.co.uk/*
- BS 15000 IT service management *www.bsonline.techindex.co.uk/*
- ISO 15504 Information technology – Software process assessment *www.bsonline.techindex.co.uk/*
- The Data Protection Act 1998: *www.dataprotection.gov.uk/* Website of the Information Commissioner
- STARTS Software Techniques for Reliable, Trusted Systems *www.ncc.co.uk/research/reports_papers/starts*
- e-GIF (the e-Government Interoperability Framework): *www.egifcompliance.org/* website of the e-GIF Compliance Assessment Service.
- ISO 18019 Guidelines for the design and preparation of user documentation for application software *www.bsonline.techindex.co.uk/*

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