BBC Technology Strategy

Issued: January 2010

For more information contact:

Spencer.piggott@bbc.co.uk

TECHNOLOGY STRATEGY

Introduction

This paper defines the BBC's Technology Strategy in terms of key principles and a framework for the development of detailed strategies for each technology area.

The strategy takes a long-term view of the technology direction for the BBC. However, due to the complexity and breadth of factors affecting technology and the business, the strategy has a rolling two year detailed outlook.

The currently ongoing and subsequent step to this paper is the development of the detailed technology strategies which are being written to reflect the direction set out in this paper. As an when these strategies are completed they will be made available.

2 Context

Technology is central to much of what the BBC does and this is becoming increasingly so right across the BBC. Key drivers for this include the pace of technology change, competitive forces, greater demands on the business and audience behaviour changes. Additionally the media industry is going through significant transition towards greater integration of technology and content, both in the linear broadcast world as well as in the online and interactive media space. Greater interconnection between all of the BBC's systems as well as with the systems of our suppliers and partners means that technology delivery is becoming more complex and challenging.

The move towards digital content and file based media is leading to significant demand on the BBC's IP based networks, data centres, storage and metadata systems. All of this creates security, monitoring, resilience and service engineering demands well beyond where the BBC is today.

In the same way that content and technology are moving closer together, blurring once clear demarcation, the line between online and broadcast technologies is no longer clear.

Greater choice: Audiences are spending more of their time getting their information, entertainment and education from interactive and on demand services online through mobile, PC and set top box. Our audiences are now spending a rising proportion of their media consumption time with international players such as Hulu, Google, Microsoft and Facebook.

In the television arena HD, 3D and interactive television are introducing challenges from commissioning right through to distribution. The share of online live streaming and on demand content consumption for both television and radio is growing, in some cases up to 15% of all viewing of specific shows now being on demand.

Interactive experience. The Internet is democratising content distribution. Today's users expect not just to passively view content on linear channels, but to choose when they want to consume it, comment on it and share it with friends. Technology is required to do much more than simply distribute content over one broadcast network. The barrier of entry for mass distribution of media is coming down quickly. The Internet is providing an easy and inexpensive way for new and existing media providers to reach audiences of tens and even hundreds of millions of people for relatively modest investment. Caching and cloud services are bringing the ability to serve millions online users into the reach of small companies and even individuals while services such as YouTube are making distribution of media, including HD content, simple and free. The BBC will need to be able to react to increasing levels of consumer expectation.

Rapid pace of change. Competitors are able to reach mass audiences more quickly than ever before. For example, the number of Facebook registered users increased exponentially in 2009, from 100 million in

January to 250 million in July. The BBC can thus no longer think of technology in time-periods of decades, but of years; the amount of new technical information is doubling every two years. Strategies should allow agility in responding to these ever-changing audience demands.

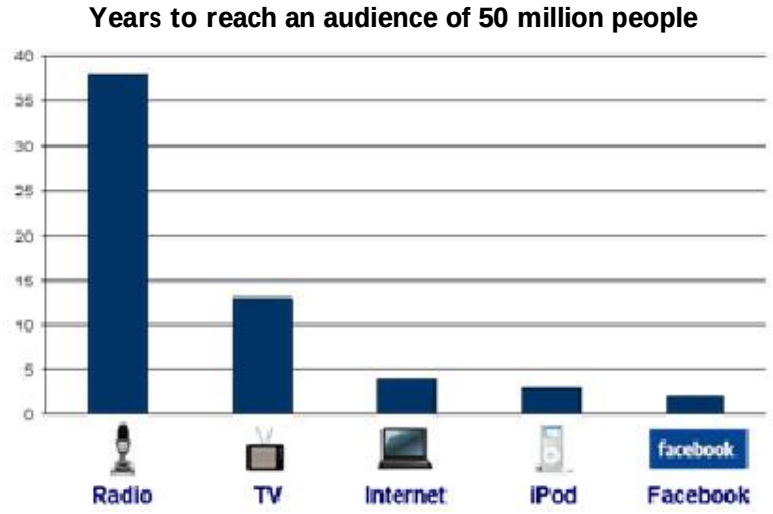


Diagram which shows radio took approximately 37.5 years for Radio to reach 50 million subscribers and facebook only approximately 2.5years.

Technology is intrinsic to content delivery. Technology now plays an increasingly important role for the creative industry, in both the production and distribution of content. Technology can not be regarded as a commodity element. As competition for audiences intensifies, in many cases the production of excellent content must be developed in conjunction with the appropriate technology. Technology enables competitors to be adaptable, efficient and effective. There is a greater dependence on technology to provide the tools to build and distribute the content and services that keeps the BBC relevant to audiences. The BBC has always been a media technology corporation and should continue to be one.

Convergence is driving behaviour. Technology convergence has been evident for some time with commodity IT being utilised for solutions which were historically delivered by broadcast specialist systems such as video editing and distribution. However, convergence is also occurring across enterprise technology and online. Audience expectations of interactive and on-demand services like BBC iPlayer are the same as for linear broadcast. This means that the reliability, robustness and scalability historically associated with linear are increasingly important for interactive and on demand. While on the broadcast engineering side the demands generated by technology change, audience expectation and competitive pressures mean that these systems need to be increasingly agile and flexible, able to adapt quickly to new demands.

Continuous Improvement

Over the last 6 years the BBC has embarked on an aggressive program of outsourcing technology. It is essential that the BBC continues to develop a robust and objective policy around outsourcing and the management of outsourced technology and service delivery. This is inextricably linked to the BBC's Technology Strategy as it forms a major part of the delivery of that strategy.

In addition to focussing on audience facing technology and services the BBC needs to ensure it meets the evolving demands in our back office and business systems in order to provide the business with the ability to deliver on our goals.

3 Aims of the Technology Strategy

The BBC has emerged from a technology plateau which meant that we could take advantage of commoditising and outsourcing technology to enable funds and resources to be re-directed to on air propositions. The outsourcing and commoditisation of technology in recent years has resulted in a reduced onus on technology to inform and shape the corporation direction. The technology operating model was built around these principles and still exists today.

The rapid pace of technology change in the market and steep upward curve on technology dependency means that the BBC needs to change gear in terms of its relationship with technology and how it fulfils some of the BBC's public purposes such as sustaining civil society and helping to deliver the benefits of emerging communications technologies and services.

In response to the needs of the BBC divisions the technology strategy aims to enable the BBC to become a more agile, responsive and dynamic organisation. The strategy also has to be conscious of growing financial pressures, organisational strain and maintaining if not improving quality of service. The BBC needs to be technically agile and must be responsive to internal developments and market influences to keep at the forefront of its primary function to inform, educate and entertain.

To achieve this, the core ambitions at the heart of the technology strategy are:

Focus on the core building blocks
The BBC needs to focus more on core infrastructure and business sytems. There is a growing dependence on business systems such as commissioning, scheduling, production systems to play an increasingly important role in the efficient development and integration of new audience facing services as well as performing their primary function.

Frictionless - Technology used in the BBC should be fit for purpose and just work. Technology should make tasks simpler, faster or better. This includes focus on accessibility and flexible working to allow employees outside BBC buildings to interact with systems and services as if sitting in the office, but should be baked into all aspects of technology.

In all technology innovation, the BBC should be looking to create flexible and adaptable solutions that will enable future demands. An example of this would be to use services based architectures that allow connection from yet undefined systems.

Connected and Collaborative
It is vital that the BBC focuses on and improves the collaboration and engagement model both across divisions and within them to realise financial and operational benefits.

Achieving a connected BBC requires a continuing shift towards open, modular and IP based technologies to create a BBC infrastructure and core services which are needed now and in the future.

External partnerships are key to the BBC. The development of technology going forward must therefore be designed to be open and modular enough to allow benefits to be leveraged by key partners.

Fostering Innovation
Innovation is at the heart of what the BBC delivers and the application of technology innovation should be encouraged and enabled in all aspects of technology provision. Externally, consumer innovation is heavily influencing what new services the BBC provides based on trends in consumer technologies, platforms and creative and innovative ideas from new competitive organisations. Technology in the BBC should embrace this and ensure that developments, opportunities and implications of new consumer and broadcast technologies are tracked and are able to influence creative services as early as possible.

Development of innovative ideas should also be made easier by ensuring there are mechanisms and support in place to be able to advance the nucleus of an idea into a fully formed proposition. Developments like BBC iPlayer should be made easier and more common.

Delivering value

Technology is both a key enabler for new services, but also a means to ensure efficiencies in delivery and value for money.

The BBC must strive for further standardisation in the technology solutions it employs to minimise the overall costs and maximise re-use. The use of commercial off the shelf (COTS) technologies and solutions should be the preferred option. Whilst specific customisation is necessary it must be done consciously and when commercial off the shelf offerings have been evaluated.

4 Responding to the BBC's needs

The BBC has a wide range of current and future goals which have varying degrees of dependency on technology.
Taken from the BBC's corporate and divisional objectives 6 key business requirements have been identified:

- **Integrated and tapeless content production tools:** Acquisition to distribution production tools and the migration to fully tapeless and digital solutions. Digital and connected solutions will improve production efficiency and sharing of content
- **Collaboration and sharing solutions:** Technologies and solutions which enable collaboration and knowledge sharing amongst people both inside and outside the BBC
- **Core business systems and services:** Providing a future proof core infrastructure and business systems to enable corporate efficiency and the development of existing and new audience facing solutions
- **Secure Data Management:** Ensuring that BBC data is kept secure to protect the information and assets generated and managed by the BBC
- **Scalable Platforms:** A delivery and distribution infrastructure which can support the changing demands of audience services, i.e. Growth in HD and digital radio services.
- **Promote research and innovation:** Technology innovation which can enhance the creative output or production efficiency of the BBC

Three common approaches to working:

- **Flexible Ways of working:** Appropriate talent and skills in place and an integrated engagement model between production and technology which increases relevance and maximises creativity and innovation
- **Adaptable and flexible:** Technology and structures in place to make the BBC adaptable to change and enable short time to technology deployment both for internal and audience facing solutions
- **Value:** Enable efficiency savings through cost effective solutions – e.g. low unit cost of technology and commodity solutions

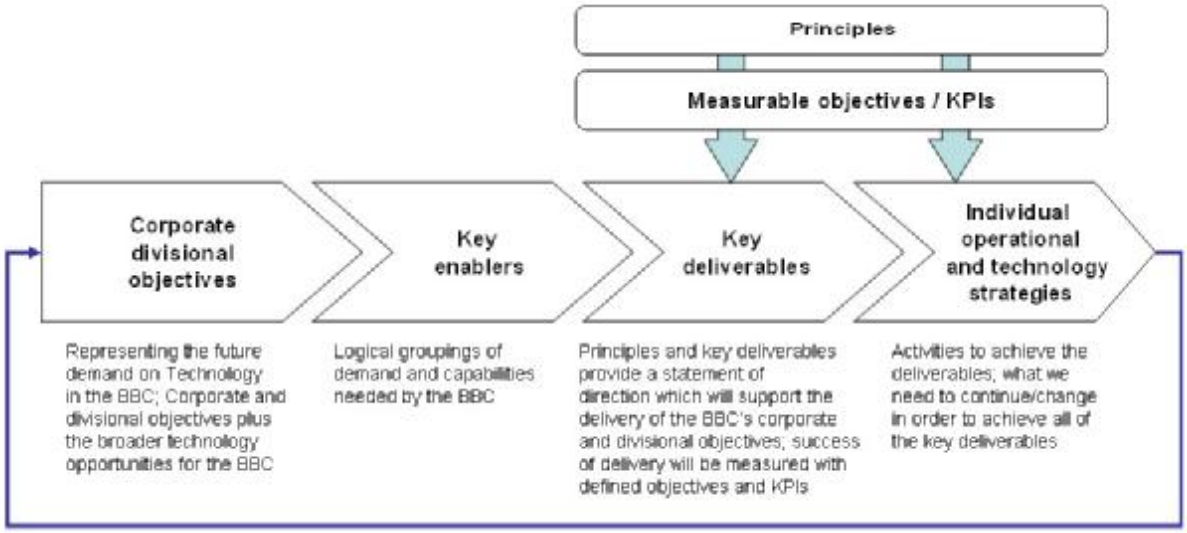
The technology strategy framework proposes how these divisionally led objectives drive technology behaviours and plans.

5 Technology Strategy Framework

The framework for technology strategy is based on two key aspects

- Business requirements (above) driven by objectives and leading to key deliverables in the business
- A set of common principles including the approaches to work identified above that run across all the technology areas

The following diagram illustrates how these objectives are connected to individual operational and technology strategies.



Strategy framework diagram to show link from corporate/divisional objectives through to individual technology strategies. Flow is corporate/divisional objectives to business requirements to key deliverables to individual technology strategies. The key deliverables and individual strategies also link to the strategy principles and measurable KPI's.

The detailed technology strategies will thus be driven by a series of key deliverables and principles which individually and collectively provide direction and focus areas for technology delivery within the BBC. These individual strategies are summarised in the appendix to this paper and will be developed in more detail by strategy owners based on the principles discussed below.

6 Principles

The following principles of the technology strategy will be applied to all technology decisions moving forward.

Strategy Principles		Technology Principles
Unified teams		Agile and reusable
Be open and leverage the market		Standardisation
In-source and Outsource		Metadata
Driving efficiencies		Frictionless technologies
Living and practical		Platform Agnostic
Pan BBC		Embrace commodity technologies
Protecting the environment		
Accountability		

In more detail:

Unified Teams
Close working relationships between commissioning, production and technology increase accuracy and relevance as well as maximise creativity and innovation. Therefore, the engagement model between production and technology teams should be in place as early as possible in the creative workflow to realise these benefits.

Be open and Leverage the Market
External partnerships can deliver benefits to the BBC through access to appropriate expertise, technical services and commercial models. The BBC will be open, sharing its technology strategy and appropriate technologies with the industry and setting technology in the context of the wider UK media market. The BBC will champion open source technology wherever possible.
By working closely with partners, that BBC will be in a better position to influence developments and allow partners to develop more appropriate solutions for the BBC. The BBC will ensure it works with the right partners for the task. It will enable flexible and agile organisations to supply the BBC. The barriers to entry for smaller organisations will be removed and structures put in place to mitigate the risk to the BBC of working with less financially secure organisations. This marks a major change from current tendency to agree mostly large, inflexible contracts.

In-source and Outsource
The decision to in-source or outsource technology projects should be based on individual circumstances for each project. For example, where technologies have a high degree of intellectual value or where agility, innovation and control is required then the BBC should look to in-source the project as a preferred option. Outsourcing is applicable where there is a proven product, faster to deliver and cheaper.

Agile and Re-Usable
Move to a services based architectures which includes utilising 'Cloud' based architectures where applicable. Services based architectures and solutions deliver re-usable software components, which allows the BBC to be agile and more easily adapt to changes in demand. By delivering common components, used across the BBC, as-reusable services efficiencies in software development, investment and speed to deployment can be achieved.

Adoption of open and modular systems and architectural frameworks will allow more rapid and cost effective integration between existing and new systems. Traditional systems can be accused of being 'closed' and therefore difficult to integrate with. As a principle, open and modular architectures and solutions will facilitate a more connected BBC.

The convergence between traditional broadcast environments and enterprise IT is well known. Adopting an IP based infrastructure will enable convergence of all elements of technology which has traditionally been more separated such as office communications and broadcast signals. This in turn will enable more flexible, innovative and cost effective services to be built on top. Achieving connectivity between services is more straight forward and cost effective and the BBC must continue to transition to a fully IP based infrastructure.

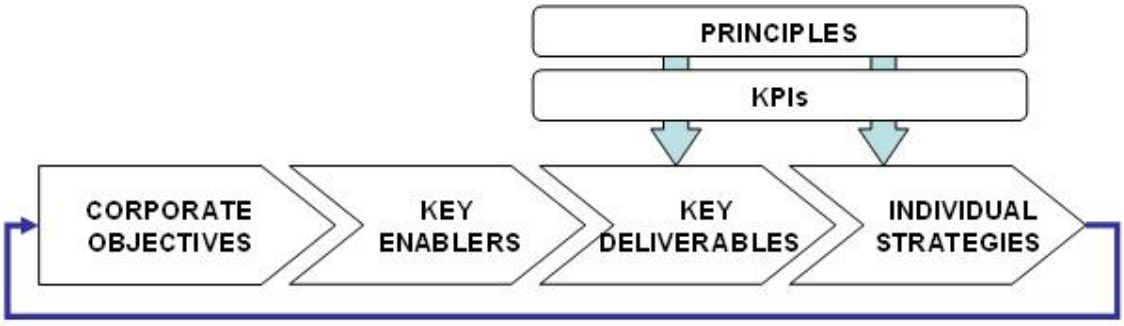
Drive technology standardisation
The BBC should drive and encourage the adoption of industry technology standards and rationalisation of duplicate solutions and technology processes. Standardisation of key technology layers, such as having a common data model, will simplify integration and overall cost of ownership to the BBC. There is still a place for non standard technologies and solutions, however this should always be a conscious decision with the broader implications to the BBC fully understood.

Metadata at the core

The importance of metadata to enable connected and efficient workflows cannot be underestimated. Any new technology introduced into the BBC must be able to capture and pass through metadata. In conjunction with the technology the BBC divisions must redevelop working processes and policies to leverage the wealth of information generated throughout the content production lifecycle.

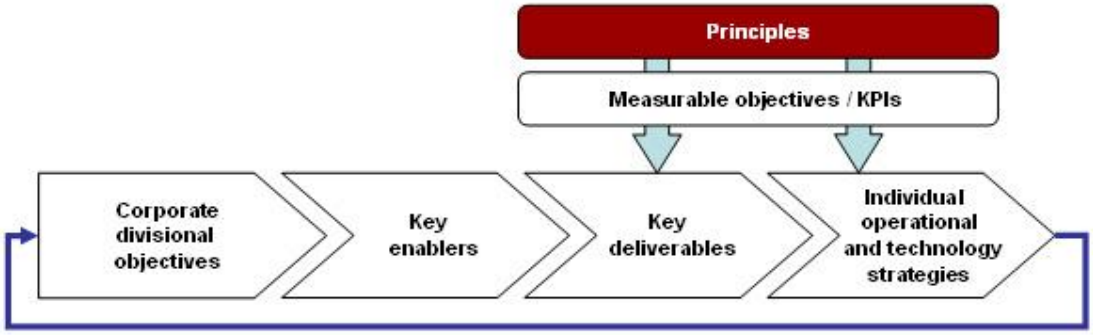
7 Appendix

The appendix provides the detail where currently completed of the framework



Strategy framework diagram

Complete Principles

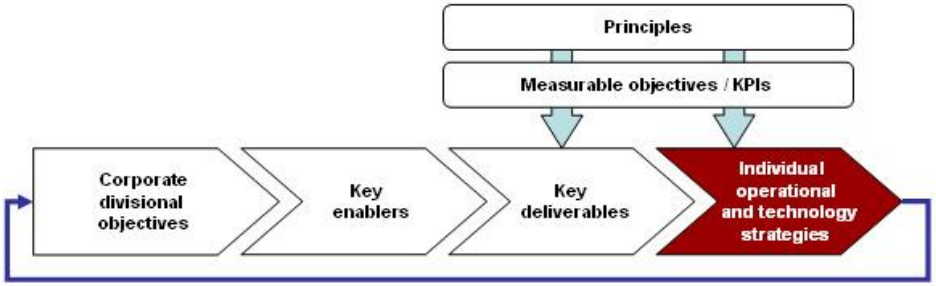


Strategy framework diagram with Principles highlighted

Technology Principles	
Frictionless technologies	Technology should be implemented which delivers simpler, quicker and better user experience to the business
Standardisation	Drive and encourage the adoption of industry technology standards and rationalisation of duplicate solutions; there should always be conscious use of non-standard technology
Platform Agnostic	Solutions should be developed which are independent of the distribution platform to enable efficient multi-platform delivery
Metadata	The creation, management and movement of metadata are key to the delivery of BBC solutions. All technology decisions must consider the metadata workflow and ensure that solutions developed support the metadata workflows
Embrace commodity technologies	Technology solutions should identify whether consumer off-the-shelf technologies can be used to meet the business requirement
Agile and reusable	Solutions should always seek to re-use existing technology investments wherever appropriate; solutions and services should be accessible through open, standard interfaces so that they can be really integrated, extended and re-used

Strategic Principles	
Unified teams	Excellence and innovation in the BBC's output through an alliance of technology and business
Be open & Leverage the market	External partnerships can deliver benefits to the BBC through appropriate expertise, technical services, commercial models
Driving efficiencies	Best value for the BBC over lifetime of assets, representing the appropriate level of investment for the benefit (or opportunity) being delivered
Living and practical	Living and practical strategies, updated to reflect changes in the BBC, our audiences and the technology market, as well as deliverable, supportable and fit for purpose
Pan BBC	Support BBC goals across the business with pan-BBC solutions
In-source and Outsource	Outsourcing should be adopted when solutions are clearly better, faster or cheaper. In-sourcing should be adopted when there is a high degree of value, innovation to the BBC, or when agility is required
Protecting the environment	Any new technology should measure the impact on the environment and demonstrate best practice between business and environmental impact
Accountability	Clear ownership & accountability with maintained product catalogue
Business Continuity	Ensure the business's risk-appetite, and the impact of technical failure to the business is articulated, signed-off and owned by an authoritative business manager; then ensure Availability, Recovery Time Objectives and the Disaster Recovery methodologies are defined and appropriate mitigation measures, or insurance funded, put in place and tested regularly.

Individual Strategies



Strategy Framework diagram with Individual strategies highlighted

Below is a list of the titles and grouping of the individual technology strategies and roadmaps. Each of the individual strategies will be published online once they are complete.

Audience Facing	Line of Business	Enterprise	Infrastructure
Online streaming	Planning, commissioning & scheduling systems	Enterprise Portal	Desktops and client services
On-demand	Development platforms	Enterprise search solutions	Server
Online interactive	Media Asset and metadata management	Media Search	Data centres & technology accommodation
Mobile (consumer) platforms	Archive Management	External collaboration	Storage
IPTV	Rights Management	Transcoding & media movement	Virtualisation
Internet distribution	Content Production systems (Scope: Desktop /commodity production tools)	Service based architectures	Cloud
Broadcast distribution	Online content production and management	Media integration & standards	Databases
High Definition	Post Production systems (Scope of this is finishing tools, inc: Video Editing, Graphics, Grading, Dubbing)	Business Systems	Networks
3D	Publishing systems		Information security
	Content Acquisition		Messaging & collaboration
	Marketing, Communications and Audiences Tools		Flexible working
	Studios		Buildings and Bureaux
	Vehicles		Accessibility
	Service Engineering		Capacity management
	CCA/CTA's		Telephony
			Environmental