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## BBC DMI Technical Review

Hypotheses and Findings from  
Independent Technical Review (Phase 1)

8 March 2013

Final Version

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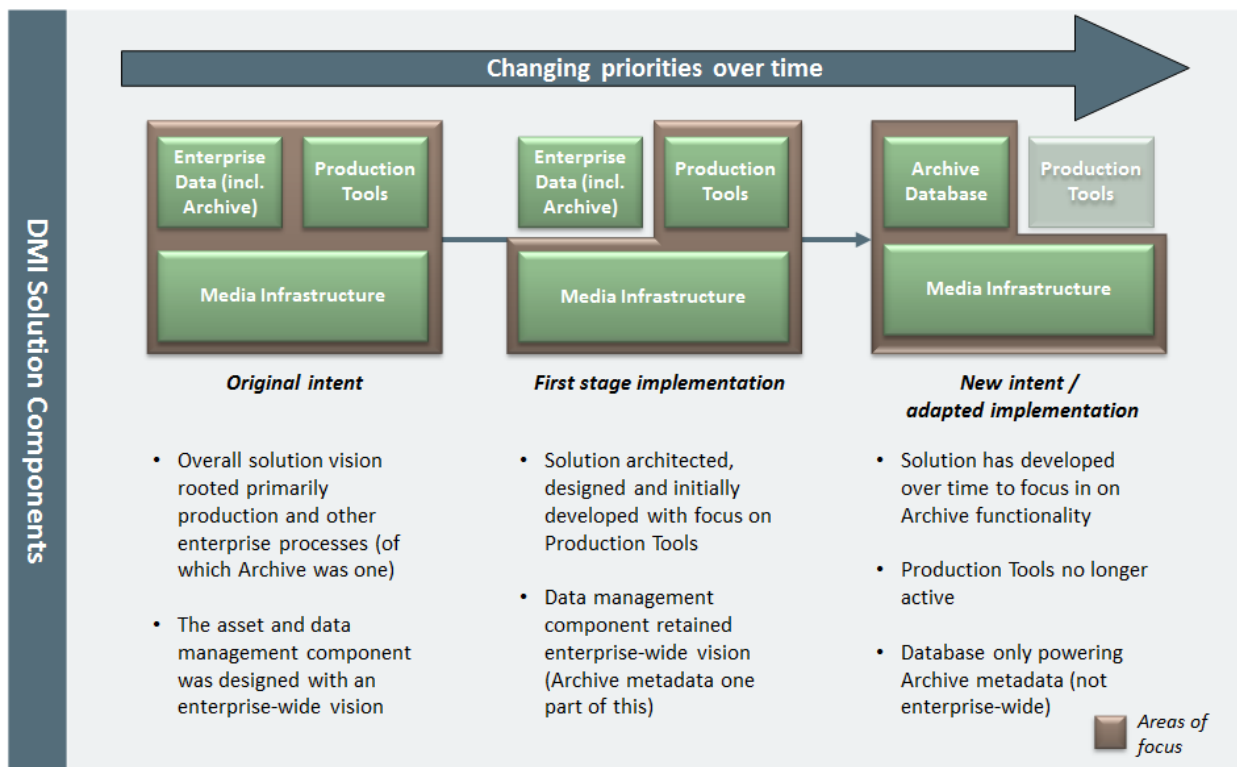
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# 1 Executive Summary

The BBC asked us to conduct an independent review to aid decision-making on the future of the DMI solution. This review took place over the course of 5 weeks in January and February 2013, informed by reviews of documentation and conversations with the DMI and wider BBC technology teams as well as business users of the current solution.

Fruitful discussion of DMI requires a common understanding of the main solution components and key terms used. An inventory of DMI documenting its major components and capabilities, and a glossary of around 80 key terms can both be found in the Appendix.

The focus of this paper is on what assets exist today that have value or potential value to the BBC as it moves forward with its vision for End-to-End Digital capability. In order to understand what exists today, a little history is required. In particular how the priorities of the DMI programme have changed over time.



The key points to note about the changing priorities are:

- The vision of DMI in 2009-2010 was to prepare for “a new creative environment in which production would take place in a digital file format from the moment of filming to the moment of consumption by the audience” (End-to-End Digital: The Story So Far, Jan 2013)
- This would be enabled by a single digital end to end system for business, production and delivery processes, encompassing other aspects such as archiving and metadata management

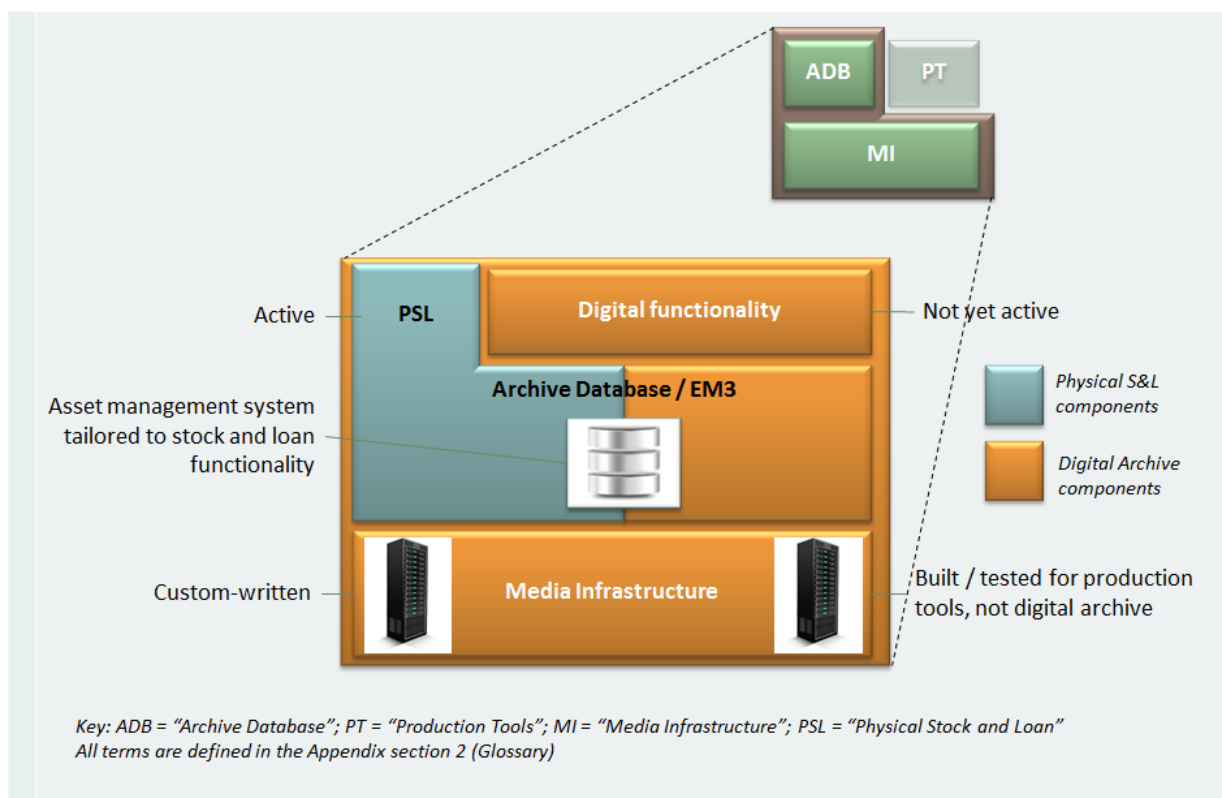
*“Fabric will benefit everyone involved in the development, creation, sharing and management of BBC’s content, by bringing together the production and enterprise*

*processes and tools through a web-based user interface and a universal media storage for archive and production need” (Making ‘A Chicken in France’ in Fabric, May 2010)*

- DMI was initially developed with this vision in mind. The core database (EM3) was scoped and architected as an enterprise wide system for data management across the BBC and a technical platform not just for DMI but for other programmes. The Media Infrastructure (MI) component was designed and built with a focus on Production Tools (PT), enabling users to ingest, organise, edit and send content to craft or archive using through a single interface
- Over time the priority of DMI has shifted from being production-centric and cross-enterprise to being archive-centric and siloed from other enterprise activity.

The technical solution has not moved in lockstep with the changing priorities. Governance of the solution, including its scope, requirements, ongoing design and delivery, has lacked robustness – with the result that, at present, the solution is being used in a manner it was not originally designed for. Below is high level illustration summary of the current state of DMI.

### High Level Component View of DMI



The key points to note about the current state are:









- Currently the only live element of DMI is what is now called the Archive Database (Archive DB, with EM3 at its core), which is an asset management system designed to enable physical and digital archive functionalities, currently only active as a Physical (i.e. mostly tape) Stock and Loan system
- A Digital Archive is not yet operational. Testing of key components (in particular the Media Infrastructure which supports the storage and movement of digital media) has been carried

out for Production Tools usage, but this does not provide certainty on future development potential as a Digital Archive.

In this review we have assessed the current state of various core elements of the DMI solution with a view to analysing their current state (versus their original intent) and areas of potential benefit in light of the evolving high level objectives of the End-to-End Digital Programme (DE2E). These objectives are the further development and completion of the Physical Stock and Loan system and the build-out of the Digital Archive. Detailed analysis of Production Tools was not carried out as part of this review.

Our conclusions take the form of hypotheses, driven from input sources such as interviews with BBC and its contractors, reviews and analysis of available documentation.

At a summary level, the following key hypotheses emerge from our review:

Main and supporting hypotheses		Current Certainty
<i>Governance and management of key elements of the solution over time has proved challenging and created issues in implementation and user perception (though improvements are evident)</i>	1. Overall governance and particularly scope/requirements management lacks robustness	
	2. There is insufficient consensus on the meaning of 'acceptability' (or its variant terms) for PSL	
<i>The changing intent over time of the Archive DB that currently powers the PSL system has led to over-complexity in software architecture and current usage</i>	3. There is a lack of clarity on EM3's purpose as an enterprise-wide data management system versus as an asset management system	
	4. As an archive database, the current software architecture is overly complex for a standalone PSL solution	
<i>Underlying issues with Archive DB set up further complexities for DE2E, particularly around how metadata supports the flow of work</i>	5. There have been challenges for end users in terms of how they work (e.g. how they search for information and receive results) caused by misalignment between PSL business process and available data on user interface. This could create further challenges for Digital Archive implementation	
	6. There are currently limited digital media workflow requirements and insufficient clarity around the related needs and use cases of different user groups	
<i>Key components of DMI have not been sufficiently tested as a Digital Archive</i>	7. There has been insufficient testing to validate the viability of the media infrastructure as the back-bone for a Digital Archive	
	8. The current media infrastructure is highly bespoke given the commoditised nature of asset and file management functionality of a Digital Archive. It was implemented initially to support Production Tools which necessitated more specialisation.	

0	1	2	3	4
Hypothesis neither researched nor validated	Hypotheses partially researched but limited indications of validity	Hypothesis partially researched and good indications of validity	Hypothesis significantly researched and good indications of validity	Hypothesis significantly researched and proven to be valid

**Figure 1: List of Supporting Hypotheses**

More work is required to gain further clarity around DMI’s potential to support a new vision that encompasses PSL and DE2E. This should include:

1. Fully articulate the vision and story of DE2E at the BBC including desired timelines
2. Create associated requirements and use cases for Digital Archive, fully articulating the specific business workflows the Digital Archive is to support across the organisation
3. Align asset metadata governance around DMI with the wider enterprise data story across the BBC – accepting the fact that asset metadata is not used the same way across business user groups. This is needed to determine of further development trajectory of Archive DB (as a standalone PSL system vs. a Digital Archive vs. ability to support wider Enterprise services)
4. Establish stronger journey and change management to support any further implementation work – centred on the vision and encompassing workflows and metadata governance
5. Test existing media infrastructure components of DMI for use as a Digital Archive. In absence of full testing, our current hypotheses on DMI’s potential as a Digital Archive are necessarily early stage
6. Post testing, vision and use case articulation, re-assess gaps existing in current state
7. In parallel, continue to identify and assess alternatives (either components or in entirety), informed by analysis of TCO, speed to operation, benefits and dis-benefits.

The remainder of this document details the context, approach and findings of our review. Appendices include a component inventory, a glossary of terms and details of individuals interviewed and source documentation reviewed.



## 2 Context of Independent Technical Review – Phase 1

### 2.1 Objective

The Accenture team was engaged in January and February 2013 by the BBC to research and propose hypotheses on the potential of DMI technology elements and components to support elements of Pasadena’s DE2E vision.

### 2.2 Scope

The review focused on creating hypotheses on the maturity levels, from a technical delivery standpoint, of the current state of DMI elements. The following four DMI elements, in order of original priority, formed the proposed scope of the review:

1. Archive Database
2. Digital Archive
3. Data Model
4. Production Tools.

We do not include analysis of Production Tools in this document as this area was deprioritised by the BBC and not covered in sufficient standalone detail during this phase of the review.

For each element, the scope of the review (as illustrated in Figure 2 below) covered four areas: (a) requirements, (b) solution design, (c) solution delivery, and (d) operations.

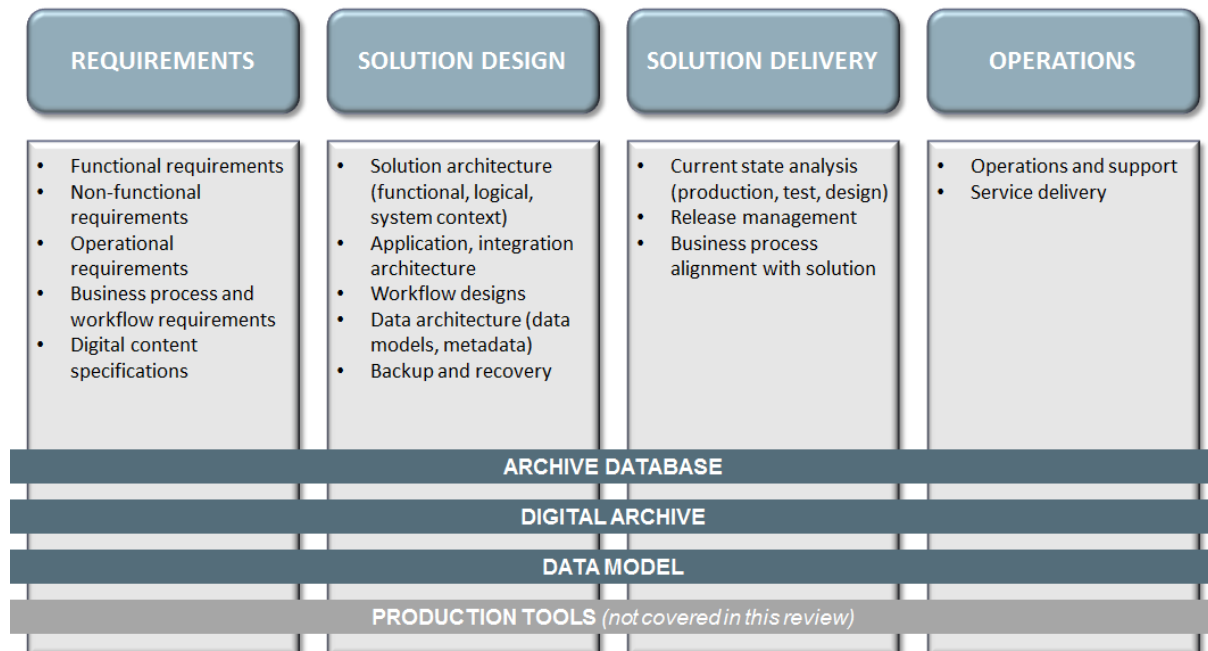


Figure 2: Scope of the External Technical Review

For the avoidance of doubt, the review did not focus on maturity levels assessment and recommendation for DMI elements from a business vision, business case or a financial evaluation standpoint. Neither was any detailed code review carried out (though high level code structures were analysed in places).

## 2.3 Approach

An Accenture team was embedded on BBC premises with the DMI team throughout the course of the project. During this time Accenture reviewed documentation and conducted meetings with almost 50 stakeholders from the DMI team, wider BBC technology team including Enterprise Architects, and the users or ‘customers’ of the solution (see appendix for details) to understand and evaluate the existing DMI solution landscape..

A broad range of activities were covered, including:

- Functional and non-functional requirements review
- System and software design documentation assessment
- High level data model analysis
- Solution/state analysis
- Validation of test approach
- Sample code analysis.

However, the following items remained out of scope of the review:

- Detailed testing of hypotheses
- Detailed code reviews
- System testing
- Detailed audit
- Full infrastructure inventory
- Physical site visits beyond White City and Salford.

A BBC Project Working Group was established to provide guidance and oversight to the Accenture team. Its members were Chris Dolder, Peter O’Kane, Alice Webb, Alan Whiston and Dan Webb. Working closely with the Project Working Group and other stakeholders, the Accenture review team tested and iterated its findings and focus as the project progressed.

We have shaped and prioritised the findings of the review as a source of input into three key questions set by the Project Working Group:

1. What is the current state of DMI compared to what the original vision intended?
2. To what degree are the existing DMI components capable of supporting an acceptable PSL system and what gaps exist?
3. To what degree are the existing DMI components capable of supporting the rest of Pasadena’s DE2E vision and what gaps exist?

The remainder of this document outlines the key hypotheses and supporting findings of the review, including our current comfort levels with the hypotheses. These hypotheses are organised into two main areas which address questions 2 and 3 above – with question 1

covered in relevant places across each area. Further details on the current state of DMI (question 1) can found in the executive summary and appendix.

The review team would like to note the following further points of context for this phase of the review:


- The short duration of the review (5 weeks) made it necessary to prioritise certain areas in terms of information gathering and analysis. We took guidance on priorities from the Project Working Group.
- The information and documentation is stored in a wide variety of places and there is no single or comprehensive point of navigation.
- Many individuals who have played key roles in the development of DMI to date are no longer in the team. One consequence of new teams and individuals has been a difficulty in building a consistent picture of events over time, at least over the period of this review
- There is evident confusion around the usage of key terms such as Archive DB, Digital Archive, EM3 and others. We have provided a glossary in Section 0 to clarify our use and understanding of these and other terms.
- We did not pursue conversations outside of current employees and contractors.

On Friday 22<sup>nd</sup> February, the review team took several stakeholders in the DMI team through our detailed findings (not the hypotheses, rather the evidence) to check validity. The DMI team helped refine our understanding during that meeting and through feedback in subsequent days. Prior to the finalisation of the current report, our core findings (on which our hypotheses are based) were accepted as the basis for our report by the DMI team. The signed off document and names of stakeholders have been submitted alongside this report.

### 3 Hypotheses and Findings

This chapter takes each of our supporting hypotheses in turn (as introduced in Figure 1 above) and provides explanations, detail on certainty levels and the key evidence and findings that have driven each one.

#### 3.1 Hypothesis #1: Governance and Scope/Requirements Management

Overall governance and particularly scope/requirements management lacks robustness		
<p><b>Explanation:</b></p> <p>Governance - and scope / requirements management as a prime example –has been a moving target over time as priorities for DMI have shifted. While there is evidence that the governance and scope/requirements management process is improving, it is not yet fully developed or 'bedded in' enough to provide optimal levels of clarity for the development team or business users.</p>	<p><b>Level of certainty:</b></p> <p>The review team has accessed an extensive set of documentation covering requirements for Archive DB and spent considerable time with the Business Analyst and Information &amp; Archive (I&amp;A) teams, as well as individuals from across the DMI team. We believe the findings outlined below are well evidenced.</p>	

##### 3.1.1 Findings

Requirements are currently perceived to be managed in multiple online repositories.

The two major repositories, JIRA and Confluence, are widely used across the BBC. The former is an issue and project management software package, and the latter is similar to a wiki. JIRA has sections for each programme, and within the DMI programme section there are two subsections to manage requirements for Archive DB (in this context, the physical stock and loan aspect of the Archive DB only. See A.2 Glossary in the appendix for more information): Velvet, which the business has confirmed is in the process of being closed down due to the relatively inconsistent quality, structure and clarity of requirements held within, and Perspex, which will be the main online repository for Archive DB requirements once the transition away from Velvet is complete. There are further repositories, such as Silk, which contain requirements for the Digital Archive.

A number of different 'cuts' of requirements for DMI were presented to us:

- I CANs: a series of high-level statements in an excel document that are a retrospective look at requirements, designed to explain to Pasadena the delivered and expected functionality of PSL and Digital Archive yet are not fully aligned to particular workflow requirements
- Infax Switch Off (ISO): This provides a list of prioritised items that would need to be completed in order to raise PSL to a level of functionality to be able to turn Infax off. This is not to say that Fabric would have replaced Infax functionally but that a point had been reached where the business could live without Infax
- Infax Replacement (IR): The list that defines items necessary to replace Infax i.e. a level where Fabric can perform equivalent tasks to those of Infax. This would be a subsequent set of requirements to ISO involving further development, release cycles etc.

To give a picture of the quantity of requirements, and which are closed as opposed to open across these locations, there are:

- 49% of 1,078 still open in a JIRA project entitled Velvet
- 89% of 270 in a JIRA project entitled Perspex
- 104 Archive DB I Can statements (a highly condensed source of requirements from JIRA created in excel to provide Pasadena with an overview)
- 27 Digital Archive I Can
- 9 Production Tools I Can
- 150 requirements in the latest IR spreadsheet (21st Feb 2013)
- 68 requirements in the latest ISO spreadsheet (21st Feb 2013)
- 14 IBM work packages (requirements pulled from JIRA Velvet and put into word documents)

As shown in Figure 3, multiple entities have fed into the requirements over time, which have then been stored and sometimes duplicated in various locations. JIRA Velvet tickets have fed into Confluence for the IBM work packages, and non-functional requirements for Archive DB release 2.3 and 2.3.1. I CANS, ISO/IR excel documents have fed from JIRA Velvet and JIRA Perspex, and been fed back into JIRA Perspex. Word documents created to outline requirements from other areas of the business that have a dependency on Archive DB and Digital Archive have fed, and will continue to feed into specific projects of the same name in JIRA, marked as Others on the diagram.

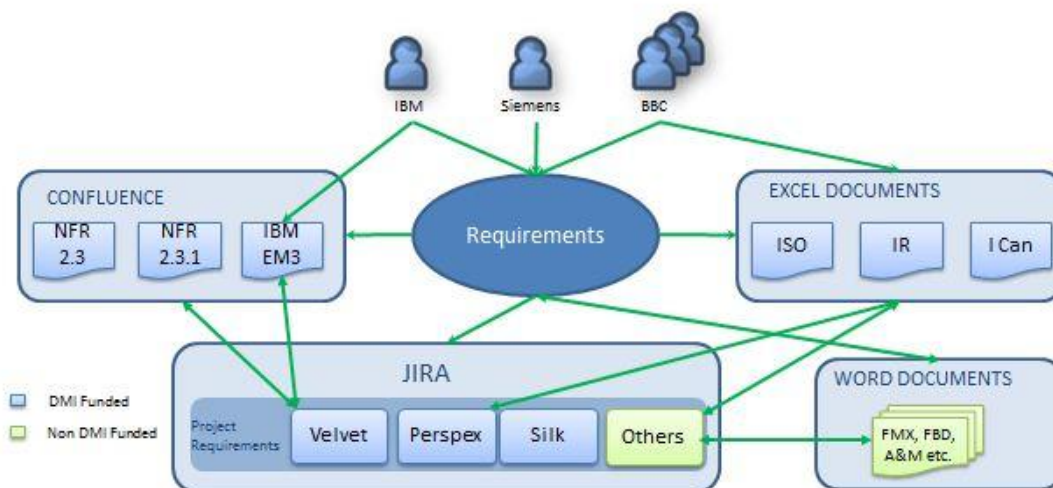


Figure 3: Sample Links between Sources of Requirements

**3.1.1.1 Understanding a clear baseline of requirements is challenging as there have been repeated de-scoping and re-scoping exercises, often with unclear sign off available (See Hypothesis #2 as an example).**

The DMI team has stated that this is due mostly to using a quasi-Agile method in JIRA, which is iterative and does not involve one core document which is then officially signed off. Therefore, it is difficult to find clear records of scope changes as updates are made to individual JIRA tickets.

**3.1.1.2 Traceability of requirements is difficult to establish leading to lack of clarity on some areas of the solution that have actually been developed.**

Traceability is the ability to see clear links from the requirement to development tasks and tests and back again.

Key evidence in this area includes:

- After speaking with the test teams and running our own analysis of test reports, we estimate that less than a third of Defects are directly linked to business requirements. This means it is hard to know exactly which issues have been fixed, within which area, and how this will affect the overall solution.
- 80% of End-to-End tests for new functionality (i.e. tests which confirm that the overall flow of a process works as expected) do not link directly to a business requirement. What this means is that flows are being tested, but there is a lack of visibility of what these flows are relevant to the business for.

**3.1.1.3 The requirements management process is improving.**

After discussions with the business, and evaluating recent documentation, there is evidence of stronger requirement structuring in JIRA, e.g. Perspex-43 compared to Velvet-14). The JIRA instances mentioned above, whilst not on the same topic, are good examples as Velvet-14 deals with Taxonomy, a very large, complex topic on classifying items in the archive, providing limited information. Perspex-43 is for a much less complex issue (how to change the status of an item put into the archive to make it available to search) but has substantially more structure and detail. Improvements can also be seen in the word documents produced for external projects that are non-DMI funded but have a dependency on the Archive DB (e.g. Jupiter News system to store tapes in the Fabric Archive).

Only requirements accepted as being in scope for the Infax Switch Off and Infax Replacement are now being placed into Perspex. The remaining tickets within Velvet will be shut down if not included in Perspex.

Figure 4: Example of a Well-Structured JIRA Record (Perspex 43)

## 1.2 Goals

To provide a secure long term storage facility for archived News content. Transfer to and from the Archive should be automated. The Archive should be easily navigated and searched. To provide the means to copy selected (Jupiter & non-Jupiter) content from the Archive to Jupiter.

Vision statement, showing the overall goal for these requirements to meet.

Date of change	Document version	Details of change	Author
28/07/2011	0.01	Draft document	Mick Ahearn
22/08/2011	0.02	Review with Nick Clark	Mick Ahearn
31/08/2011	0.03	Comments from Nick Marcus	Mick Ahearn
19/09/2011	0.04	Comments from Nick Clark/Nick Marcus	Mick Ahearn
05/10/2011	0.05	Comments from Nick Clark/Nick Marcus	Mick Ahearn
14/11/2011	0.06	Comments from Malcolm Gundry	Mick Ahearn
27/03/2012	1.00	Sign off issue	Mick Ahearn

Clear versioning, showing evolution of the document, with dates of sign-off

## 2.1 Requirements

Ref	Requirement	Notes
R01	Copy Jupiter essence to a maintained and secured archive. Proxy & metadata will be retained in Jupiter.	Following existing tape archive process.
R02	Copy the archived asset's metadata to the Archive	
R03	Retain the archived asset and its metadata in the Archive indefinitely, as per I&A policy	
R04	Retain the archived asset's metadata and proxy in Jupiter indefinitely, as per I&A policy	
R05	Only allow authorised I&A users to alter the archived asset in the Archive	
R06	<i>Prevent the re-archiving of an asset already in the Archive</i>	Removed, not a Journalism requirement

List of requirements. Notes showing items de-scoped/removed. If this was to be put in JIRA, it would be expected to see a requirements link to the reference numbers in this document.

Figure 5: Example of a Well-Structured Waterfall Requirement

### Areas for Further Investigation

Due to the high level of certainty indicated above, there are no urgent areas of investigation to further develop this hypothesis.

## 3.2 Hypothesis #2: ‘Acceptability’ for PSL

### There is insufficient consensus on the meaning of ‘acceptability’ (or its variant terms) for Physical Stock and Loan

#### Explanation:

Physical Stock and Loan (PSL) is still in development with further release cycles planned. However, in an effort to try to accelerate transition to Business-As-Usual (i.e. when there are no more release cycles and it has been transitioned into maintenance and support), there have recently been a series of business workshops to try and define the level of functionality for PSL that would be acceptable to the Information & Archives (I&A, PSL business users) team on an on-going basis. The output of these meetings has been captured in two spreadsheets – one identifying requirements necessary to complete the Infax Switch Off (ISO), and the other doing the same for an Infax Replacement (IR). To date, these workshops have not resulted in an agreement between DMI and I&A as to when the Fabric PSL can be passed into BAU.

#### Level of certainty:

As confirmed through conversations with the business and evidenced through the lack of a final, signed off document for both ISO and IR, no final agreement has yet been reached on the requirements necessary to provide an ‘acceptable’ level of functionality for PSL.

### 3.2.1 Findings

#### 3.2.1.1 The PSL business user group I&A are currently using two systems for Stock & Loan: Infax, and Fabric, with a desire to stop using Infax.

Infax is the legacy system that managed the Stock and Loan process before Fabric was introduced. It is still being used by a small number of users. This is because some highly specific searches are still easier to perform in Infax due to issues with the way search results are being displayed, and the amount of time taken to return search results in Fabric.

Archive DB is the online, searchable database that sits behind Fabric and manages the Physical Stock and Loan process, brought in to eventually to replace Infax but also provide enhanced and evolved functions.

- Key benefits are: the system is more accessible than Infax to untrained users (requiring less specialist training for simple use), it is a more familiar interface (i.e. more like the web/html), users can enter any text they wish to search (free text search) which means the system is more flexible to find what is needed, and there are more data fields to store a wider range of information, which leads to a better separation of data within the database
- Key challenges are: there are no digital images available, it is not necessarily an intuitive interface to use, the system takes more time to search and return search results than Infax, there are more screens to navigate before you reach your ultimate goal, and there



is no radio/audio content available. Some of these challenges (e.g. fewer screens) are planned to be addressed in later releases.

It was decided to start moving users over to Fabric from Infax in June 2012. There are now around 4,700 users registered on the system, with an average of around 340 active users per day (significantly more than Infax – as Fabric is better equipped for self-service). More are planned, with 138 users in Glasgow in March, but the exact numbers for the next phase in Salford are not yet known.

The overall future intent has been to stop using Infax, switching it off and completely replacing it with Fabric.

**3.2.1.2 In terms of replacing Infax, there are several different evolving sources of required/expected functionality for PSL.**

These sources include:

- ISO
- IR
- Other requirement sources (JIRA etc.), though these feed into ISO/IR

Detail on these sources can be found above in section 3.1. Notably, the ISO and IR lists appear to contain different (though related) functional categories which makes interpretation and mapping all the more difficult.

ISO no	Function	Subtask of	Infax used when...	Because...	Actions	Requirement	Velvet	Needs Business Input?
ISO-1	Search	ISO-1	Providing archive access	No access for Indies making BBC programmes	BAs discuss with BEN re certs for Indies on site	CR-122	N/A	NO
ISO-2	Search	ISO-2	Searching the archive	Results are quicker to access in Infax as search terms are highlighted in the web browser	TG - To Raise at PMG 01-Feb-2013.	Perspee-131	Velvet-953	YES
ISO-3	Search	ISO-3	Searching the archive	Difficult to view episodes of a series in transmission order	NO - Delivered as part of P&R7	No - Done		
ISO-4	Search	ISO-4	Searching the archive	No ability to narrow search to Description data only	NO - Planned			

Figure 6: Requirement Extract of 'Infax Switch Off List-20130221'

ID	Area	Sub Task of	Functionality	Cashmere/JIRA	Existing functionality in	Known / Unknown / Clarification	Comment	Workshop
IR-001	Asset management	IR-001	Automatic submission of assets and data on transmission	Cashmere 35	?	Unknown	New requirement to extend into the physical stock process. Known for digital process	13
IR-030	Asset management	IR-030	creation of a asset (AV, Audio) workflow	Cashmere 36 (not relevant) to this line item	n/a	Clarification	Current process inefficient as process is 2 distinct actions, where these should be smoothed into a prompt window in the link spool to a programme process. Known at time of IEM	13
IR-002	Import	IR-002	Bulk import of data		?	Unknown	No programme or business understanding of what this is	4

Figure 7: Requirement Extract of ‘Updated\_Infax\_Replacement\_Steve\_Jupe\_20130221’

The graphs below in Figure 8 show the functional categories that ISO and IR are using to communicate requirements.

ISO is mostly about improving search, but there are also some critical functional areas in data management and stock management that need addressing. IR focuses more on cataloguing and stock. However, it is worth noting that these charts are a count of items on the list and are not indicative of the size of the work involved or criticality.

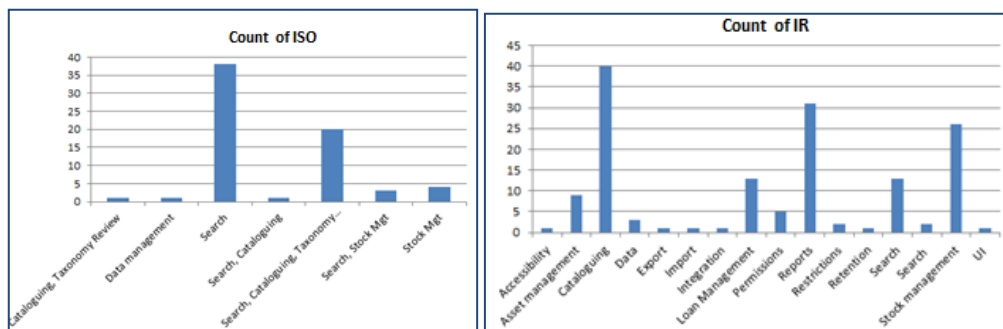


Figure 8: Areas of Highest ISO and IR Requirements as per Current Workshops

**3.2.1.3 At present there is no signed off plan to specify the point at which Fabric for Physical Stock and Loan can move out of development.**

At the moment the results of the ISO/IR are being assimilated by management and estimates drawn up (time, cost etc.). Early indications suggest a lengthy development cycle will be needed (potentially up to 2 years) hence a further initiative to reduce scope more radically has been mooted.

I&A has suggested that Digital Archive is more important than the PSL and they may be prepared to compromise further on levels of PSL functionality if the launch of a Digital Archive could be accelerated.

Areas for Further Investigation

Due to the high level of certainty indicated above, there are no urgent areas of investigation to further develop this hypothesis.

### 3.3 Hypothesis #3: Clarity on EM3’s Purpose

**There is a lack of clarity on EM3’s purpose as an enterprise-wide data management system versus as an asset management system**

**Explanation:**

EM3 (or “Fabric EM3”, “Enterprise Media and Metadata Management”) is a system intended to provide support for processes to manage media assets and their associated metadata (information that describes those assets) that are necessarily common across the enterprise.

Additionally, EM3 is intended to manage broader business information (i.e. a wider number of data domains, such as Contributor, Rights and Production process) and it needs to interact with both Fabric Production capabilities and dependent enterprise systems outside the scope of Fabric.

Given the challenges in EM3’s implementation journey so far and its existing status in live, its purpose going forward is not as universally clear as it needs to be – i.e. to be an asset centric metadata management system vs. the fuller extent of being an enterprise data management system to support business data domains and external non-archive enterprise applications.

**Level of certainty:**

The review team has accessed documentation on Solution Design for EM3 and had conversations with Architects, Lead BA, IBM resources and Development team lead. The findings outlined below are evidenced from these sources. We feel that further conversations are needed to bring the right individuals together to test and confirm the hypothesis and as such have identified three specific areas below for further investigation.



## Findings

### **3.3.1.1 EM3’s current state in live implements a small subset of functionality developed over a long period from the time of the definition of its intent.**

Interviews with BBC Architects and analysis of available documentation (Fabric EM3 Solution Breakdown) confirm the original intent (“EM3 as central capability that provides support for processes to manage media assets and their associated metadata that are necessarily common across the enterprise”). Further conversations with the Architecture group have revealed that EM3’s intent is not *only* to replace Infax or *only* be a stock and loan management solution, but to address a broader purpose as BBC’s Enterprise media and metadata management system.

If we look at the current live state, the PSL management capability utilises a certain part of the live EM3 features (namely stock management (tapes), loan management (tapes), search and reporting). Beyond PSL management, there are no other BBC Enterprise consumers that currently use EM3 features.

Other domain elements (such as Rights-In, Rights-Out) within the EM3 Business Data Model are currently not in use by BBC users. Neither did we see evidence of the Enterprise Service Bus within EM3 being leveraged by other enterprise systems.

This indicates the need for a clear direction for EM3 from an “*enterprise wide*” system standpoint.

### **3.3.1.2 Release priorities have changed significantly over time as a result of changing strategy and vision.**

The following points – as gathered from conversations with Project leads, Architects and other resources – reveal the changes to release scope and priority of different Fabric elements:

- With the exit of the Siemens team in early 2010, a solution outline phase was conducted by IBM followed by the first release (Release A) which focused on delivering core business cases (such as Commissioning, Asset Catalogue management, Adding Assets to EM3, Migration support, Super User as available BBC-EM3-Solution Outline v1.0.1 document) and proving the underlying technical foundations of EM3 in line with its original intent
- Post Release A, the Physical Stock & loan capability was added to the Release B scope
- Getting PSL to live and cutover from Infax (also known as ‘*Infax cutover*’) became the priority with a plan to execute cutover in June 2012. Integration, testing and cutover was BBC-led rather than IBM-led
- Other Fabric elements i.e. Production Tools and Media Infrastructure continued their development journey till around October 2012 when a major decision was taken to put both these capabilities “on hold” status.

### ***3.3.1.3 Focus of development largely around PSL since Infax cutover in June 2012 till date***

The Infax cutover was made after testing only critical functionality flows. This resulted in a stabilisation and defect fix phase of approximately three months post the Infax cutover (according to our conversations with the development team). In the current situation, the existing defects and feature requirements (existing feature changes and Infax Switch Off / Replacement requirements) are focused primarily on getting PSL ready to be moved out of development and into a Business-as-Usual (BaU) state.

During PSL development, there has been some level of focus on developing functionality for Digital Archive features (e.g. Mediation workflow). However, given the major focus of development has been on PSL since Infax cutover, the precise status of the level of Digital Archive functionality nested within EM3 has been difficult to gauge.

### ***3.3.1.4 Data governance challenges continue to exist.***

There appears a lack of shared clarity across key stakeholder groups around rules, policies and governance around master data and referential integrity for domains which could result in data management issues. Conversations with the Architects revealed the consideration of a Master Reference Data Management System (Talend), which has been built, however not implemented in live production.

## Areas for Further Investigation


### ***3.3.1.5 Confirm future purpose of EM3 with pan organisational BBC stakeholders to arrive at a clear and consolidated understanding that confirms the viewpoint at an organisational level.***

### ***3.3.1.6 On confirmation of EM3’s purpose, evaluate BBC’s plans for structuring its EM3 development focus for future releases.***

***3.3.1.7 Investigate details of data and metadata governance improvements, implications for EM3, PSL and Digital Archive, and broader BBC wide data management in terms of time and impact.***

***3.3.1.8 Investigate the readiness of the Talend Master Reference Data Management system for go-live into the existing EM3 platform.***

### 3.4 Hypothesis #4: Complexity of Software Architecture for PSL

As an Archive Database, the current software architecture is overly complex for a standalone Physical Stock and Loan (PSL) solution		
<p><b>Explanation:</b></p> <p>The Fabric EM3 software architecture has been designed and built with a scope that is broader than an Archive Database. Its objectives include supporting production activities and processes to manage media assets and associated metadata that are necessarily common across the enterprise. PSL is one of the processes supported by the EM3 solution and the main one used by end users in the current live environment. However, with only PSL functionality in a large software platform, it becomes highly complex – and costly – to maintain.</p>	<p><b>Level of certainty:</b></p> <p>The review team has accessed documentation on architecture, available PSL solution design and had conversations with the Architects, Development Lead, Technical Analyst, IBM resources and the Development Team. The findings outlined below are evidenced from these sources and we have a reasonably high degree of certainty in them; however we have also identified three specific areas for further investigation.</p>	

#### Findings

##### **3.4.1.1 The solution offers more capability than required just for PSL.**

Metadata management functionality and some Digital Archive features are examples of how the solution supports more than just PSL functionality, although the latter are not fully tested. For example, there are 31 services that cover more than just PSL functionality as per the documentation in the Confluence repository and conversations with the Development Team.

##### **3.4.1.2 There is high complexity and cost of maintaining the overall solution against its current usage (with only PSL functionality being live).**

The software maintenance and addition of new functionality becomes highly complex given the large scale of the existing solution and the following reasons:

- Existing defects
- Lack of requirements traceability
- Skill gaps within existing team
- Lack of standard documentation (particularly on low level design).

All these factors result in high cost of maintenance and delayed transition to a BAU state.

##### **3.4.1.3 An architecture consolidation and restructuring opportunity may exist, however there is a certain level of difficulty associated with it.**

In the current architecture, multiple vendor products exist for similar purposes (e.g. Tomcat and WebSphere) and these are in live. Consolidation of the software stack from *ease-of-maintenance* and *cost reduction* perspectives could be considered. From our conversations, one reason for having multiple vendor products for similar purposes is misalignment of technology guidelines among teams resulting in some teams using open source software while others using proprietary software for similar purposes. Given these products are now in live, it

is proving technically difficult to consolidate the software stack and requires investment to execute proof-of-concept exercises.

Furthermore, the architecture was designed with a specific original intent that in places may no longer seem applicable. For example, the "UI Replica" database was designed with the intent to support high volume read-only operations (e.g. external users) and may not be required now as understood from our conversations with the Technical delivery and Architect resources. The decision is difficult to make in absence of greater clarity on Digital Archive, however – for example, this database may be required to create different 'windows'/views of the metadata depending on intended business workflow supported by Digital Archive. The simplification process is therefore not straightforward.

**3.4.1.4 There is lack of clear traceability between requirements and solution capability/components.**

Traceability of requirements with solution components has been difficult to establish from the existing documentation (e.g. only 20 traceable requirements have been found since release 2.0.1.3 which happened on 28<sup>th</sup> October 2012).

In the long term, the lack of traceability contributes to complexity in the system architecture for future changes (technology or business) and increased levels of maintenance.

Areas for Further Investigation

**3.4.1.5 Confirm future direction for Archive DB to arrive at a clear understanding of whether any unused existing capability needs to be retired.**

**3.4.1.6 Once the future direction has been confirmed, investigate areas within the existing architecture to identify opportunities for consolidation and standardisation. Further perform a detailed assessment of required effort and cost to expected benefit.**


**3.4.1.7 Confirmation of requirements and functional architecture definition to be followed by detailed analysis of traceability via a top-down approach mapping functional areas/capabilities with their associated software architecture elements.**



### 3.5 Hypothesis #5: Alignment of Business Processes to Data

There have been challenges for end users in terms of how they work (e.g. how they search for information and receive results) caused by misalignment between PSL business process and available data on user interface.

This could create further challenges for Digital Archive implementation

<p><b>Explanation:</b></p> <p>The existing Archive Database user interface and navigation are often inadequately aligned to user intent and business workflows. This misalignment may have stemmed from multiple roots, including the lack of UI-storyboarding with all pertinent user groups, the redirected focus of the system on Stock and Loan functionalities, and, more clearly, the design driven by the entity hierarchy instead of business' preferred ways of navigation to support a particular critical task or activity.</p>	<p><b>Level of certainty:</b></p> <p>The review team has accessed an extensive set of documentation and had conversations with business user groups, development team and the test teams and the below findings are evidenced from these sources and as such, specific areas have been identified below for further investigation</p>	
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#### Findings

##### 3.5.1.1 Current users face challenges in using the system but also see the potential benefits

The main challenges seem to be around the alignment of business process and the data being delivered by the system functionality. From our conversations with users (predominantly I&A), some of the benefits and challenges from their of using the current PSL system have been outlined below:

#### Benefits

- *“More accessible than Infax”*
- *“Shorter training time for new users (a few days compared to 40 days for Infax)”*
- *“Familiar interface (i.e. more like the web / html)”*
- *“Free text search”*
- *“Atomic data fields in data storage creates better separation of data”*

#### Challenges

- *“No digital images”*
- *“Not necessarily an intuitive interface”*
- *“Time it takes to return search results”*
- *“High degree of user interpretation required at the UI layer (data model replicated in UI) – there should be another layer or UI to simplify”*
- *“Lots of screens to see data that Infax can consolidate”*
- *“Data compromised because it sits at different levels, for example no easy way of searching for “contributor on programme” (e.g. David Cameron on Newsnight)”*

- “Some data has not been surfaced in UI (having been migrated) – need them to replace Infax.”
- “Radio / audio not in there. Audio and Music are currently operating a workaround in MS Word.”

Some of these challenges – particularly mostly around search and navigation – are targeted to be addressed through ongoing patch releases, especially in releases 8 and 9 scheduled in the coming months.

### **3.5.1.2 Limited flexibility in the search results structure in the current implementation (fixed by entity hierarchy).**

Compared to industry media asset management systems, current Archive Database search outputs (as observed during an application demo with the I&A team) are fixed by the entity hierarchy, e.g. Brand, Programme, Programme Version and Media Asset. Whilst free search is enabled, the search functionality overall is focused more on enterprise labels and lacks the flexibility to let user and business define their own specific search criteria and the resulting metadata.

Based on our experience in similar industry implementations, achieving effective “self-service” requires close interaction with each of the intended user communities and concentrated efforts in tailoring based on group-level preferences and ways of working. For example, we have seen examples of user experience moving away from traditional enterprise search (as there currently is in Archive DB) to recommendations based on user preferences, asset usage and business prioritisation. The common feedback for traditional enterprise search is that it is acceptable for administrators and power users but difficult to navigate and ineffective for business users’ intent of finding and leveraging media assets.

### **3.5.1.3 Limited test inputs to validate search functionality and its associated user journey.**

A limited variety of inputs have been used to test search and with limited traceability to Business processes or requirements. Therefore, the alignment between Business processes and the data returned by the system has not been confirmed extensively.

### **3.5.1.4 Lack of clear business process definition used for solution development.**

From the available documentation and conversations with the business and test teams we observe that the usage of business process flow for development has been minimal. This has led to a lack of clarity around the understanding of business process and is also evident by the large number of defects that have been reported.

### **3.5.1.5 Lack of clear distinction of different user communities for Archive Database**

An example of the misalignment of the user experience to user and business workflow in the content search functionality: users have to browse through the Programme results list returned from a search and click into each one to hunt for the Media Asset they are looking for.

## Areas for Further Investigation

***3.5.1.6 Detailed investigation of user journey issues in the PSL application and deeper analysis of the user community groups, profiles and workflows involved in the PSL business process.***

***3.5.1.7 Detailed investigation of existing search functionality and its comparison with similar industry implementation in terms of UI and technical implementation.***

***3.5.1.8 Given the challenges in current search capability implementation for PSL and the design intention of this being re-used for Digital Archive (result in more users, processes and hence more sophistication), there needs to be a detailed investigation to confirm the requirements, user flows and detailed design for search to work as per expectations of the users.***

### 3.6 Hypothesis #6: Digital Archive requirements (Workflows, Use Cases)

**There are currently limited digital media workflow requirements and insufficient clarity around the related needs and use cases of different user groups**

**Explanation:**

Requirements for Digital Archive are driven from within DMI (Archive) and areas outside DMI such as Sports, Journalism, Audio & Music (A&M), File Based Delivery (FBD), FMX, Perivale, Production tools and OnAir.  
 For the above mentioned areas we found limited information around workflow requirements or user stories and hence there is not sufficient clarity on completeness of user group needs for Digital Archive.

**Level of certainty:**

The review team has analysed available documentation on Confluence and JIRA and validated the hypothesis through meetings with Business Analysts, Test Managers and Team Leads. There is quite an uncertainty here due to lack of concrete findings and as such areas of investigation have been outlined below.



#### Findings

##### **3.6.1.1 A limited number of specific business process or workflow requirements for Digital Archive have been seen**

Given the Digital Archive’s overall scope covering multiple areas (e.g. Digital functionality in the Archive, support integrations (e.g. Sports) and mechanisms (e.g. FMX)), the requirements are present in different repository areas (JIRA, Confluence and Word) and there is inconsistency in the level of detail and structure within the requirements (e.g. flows for the first release of Digital Archive (DA1) are well detailed as compared to other areas such as FMX). We did not find business processes from a Digital Archive perspective that involves all different integrations and mechanisms.

Digital Archive release 1 (DA1) on Confluence, which was created by the DMI team and had started to be developed before the project was put on hold, has some high level workflows available. Further high level requirement inputs from I&A production users have been agreed in a series of workshops and documented, but these have not yet officially been accepted as in scope requirements and documented in JIRA. Due to this fact, there does not appear to be business process or workflow based requirements associated with these available.

For projects that are not within DMI and non-DMI funded, but have a dependency on a Digital Archive, such as File Based Delivery (FBD) and Fabric Media Exchange (FMX), requirements do exist in the form of Word documents and associated JIRA projects, and some workflows and business processes have been created can be seen in Confluence in the relevant project sections.

#### Areas for Further Investigation

##### **3.6.1.2 Confirm all available sources of Digital Archive business requirements.**

**3.6.1.3 Detailed investigation of requirements to understand business needs, confirm scope, identify gaps in business processes, workflows and use cases/user stories.**

**3.6.1.4 On confirmation of requirements and their scope, investigate in detail which requirements are covered in the limited implementation of Digital Archive that has happened to date. This will give a good view to understand how many of them can be tested and be a starting point for scoping future releases.**

### 3.7 Hypothesis #7: Digital Archive Testing

**There has been insufficient testing to validate the viability of the media infrastructure as the back-bone for a Digital Archive**

**Explanation:**

While there is evidence of a fair amount of testing to validate media infrastructure in the application of Production Tools (PT), we have seen no complete tests that validate DMI for use as a Digital Archive (especially the Media Infrastructure). The PT testing may have lowered the risk of DMI’s use for digital archive, but it cannot be used as a substitute for Digital Archive testing.

Even in PT environments, we have found no evidence to date of comprehensive performance, stress and stability coverage – at least to the level of similar delivery efforts in our experience. (Refer to Glossary for test definitions).

In particular, the lack of Integration and comprehensive Performance testing for Media Store replication and tape library integration (before the project pause) poses a high degree of concern that the viability of the media infrastructure as the back-bone for an DE2E archive has not been confirmed.

**Level of certainty:**

The review team has analysed a range of available materials on Confluence and JIRA and validated the hypothesis through meetings with the Test Managers, Team Leads, Delivery Lead and Enterprise Systems Manager.

In the time available we have not reviewed the Production Tools End-to-End Tests in the Production Tools project held in Quality Center. We have not reviewed Apache JMeter load tests.

The Production Tools Performance tester John Whittaker, is no longer on the project so we were unable to conduct an interview with him.



## Findings

### 3.7.1.1 Digital Archive has not been End-to-End tested

End-to-End tests are used to test that the flow of the fully integrated application is performing as designed from start to finish in real-world scenarios.

From our conversations with the Project team and End-to-End Test team it has been confirmed that the Digital Archive has not been included in a Software Release to be formally tested and therefore was not formally progressed through the project lifecycle to the live (active) production systems.

Figure 9 below shows the major components of the system landscape and the status of End-to-End and Integration testing between those components marked by numbers used by as references by text in this hypothesis.

There has been a pre-recorded demonstration of one limited test case workflow for the first release of Digital Archive (i.e. DA1) demonstrated (pre Infax cutover in June 2012) to senior business stakeholders by the development team and covered functionality areas of Import, Thumbnail, Play, Pause, Stop and Export of Digital Content. (Figure 9, #1). However, this demonstration did not mimic an actual environment in live, given the nature of both the size of data files and the type of supporting infrastructure.

During the testing as part of the Production Tools project EM3 was stubbed which means an actual instance of EM3 was not used for testing, but EM3 responses were instead simulated.

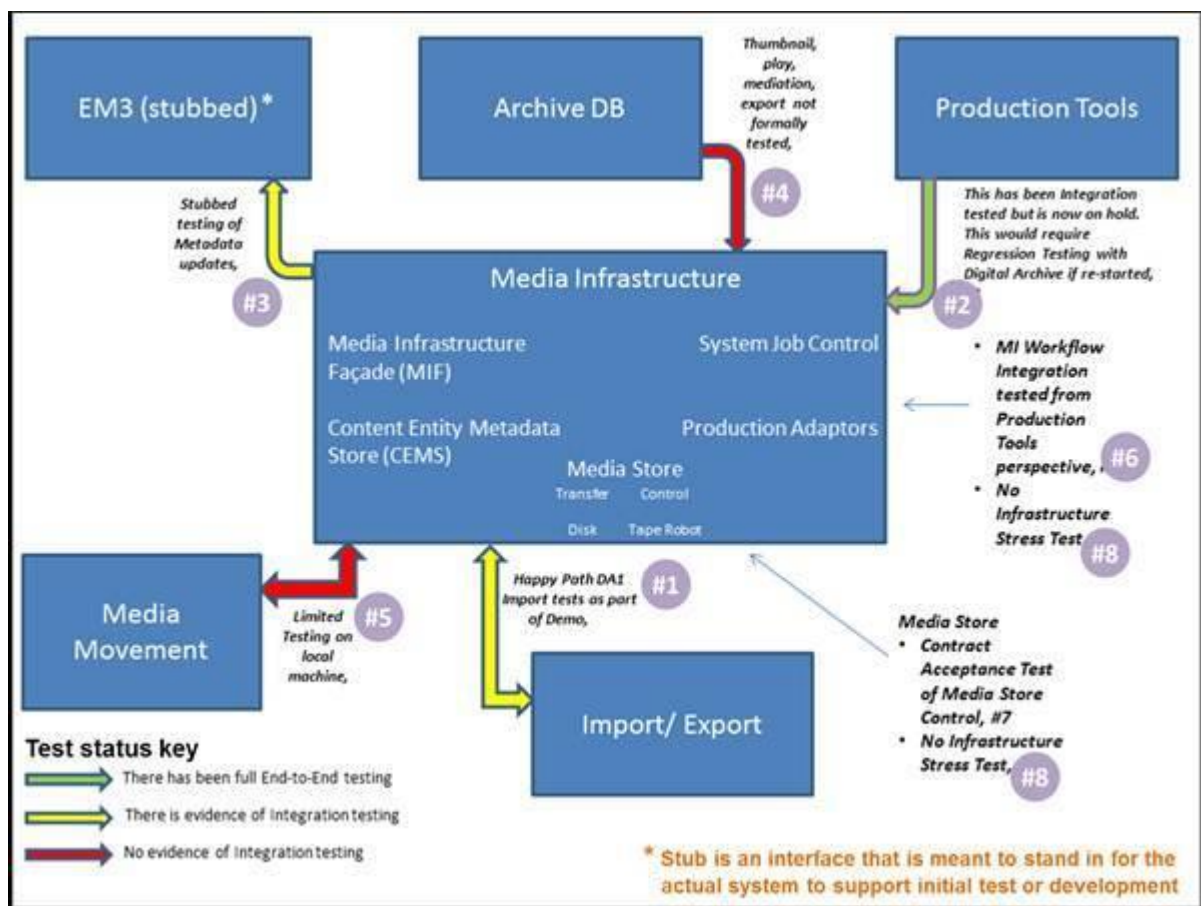


Figure 9: End-to-End Digital Archive Test Status Overview

End-to-End tests for Digital Archive would involve joined up tests for Import of Digital Content in agreed formats and the subsequent Business workflow processing of that same content and its metadata through Search, Thumbnail, Play, Pause, Stop, Mediation, Media Movement and Export. Critically, cross-location replication and integration with lower-cost and/or slower access storage devices such as tape libraries would also be required. The End-to-End test team has informed us that no Digital Archive End-to-End testing took place before the project pause and we have not seen evidence of such testing.

Full End-to-End tests would have also involved Regression testing of Production Tools (if the Production Tools project is re-started) and Physical Stock and Loan functionality to check that changes to the code-base done to complete the Digital Archive did not affect Production Tools and PSL functionality adversely (Figure 9, #2).

### 3.7.1.2 Media Infrastructure has not been formally tested from a Digital Archive perspective

The testing for Media Infrastructure has been done mainly from a Production Tools perspective, though not comprehensively.

- The Media Infrastructure is the architecture to support the management of media content and its metadata. From meetings and also inspections of FitNesse results, it is clear that the Media Infrastructure has been tested primarily from a Production Tools standpoint.
- Whilst there is some overlap between Production Tools and Digital Archive’s use of the Media Infrastructure (e.g. file import), there are aspects of Digital Archive use of the Media Infrastructure that have not been tested formally. Particularly cross-location replication and integration with lower-cost and/or slower access storage devices such as tape libraries, which are generally required for large media archives to be cost effective. Also functions such as Thumbnail display, Play and Export. Additionally we would expect that the Media Infrastructure would be tested with a wider set of content formats to support a Digital Archive.
- There was testing of a stubbed version of EM3 with the Media Infrastructure (MI) as part of Production Tools. This tested that metadata could be uploaded from MI to EM3 (Figure 7, #3). Calls from EM3 to the MI to Play Content for example were not formally tested (Figure 7, #4).
- Media Movement or replication of files to different locations for back up purposes for example, was not Integration tested as part of Production Tools. There were some Media Movement tests performed on a local machine (Figure 7, #5).

Based on our experience and methodologies, we would expect to have seen a comprehensive set of repeatable tests that include data and media file validation for the Digital Archive capability of the Media Infrastructure.

- From meetings and inspections of FitNesse tests and results, there does not appear to be evidence of use of a wide variety of media files and associated metadata used in testing (Figure 7, #6). There is evidence of Contract Acceptance Testing of the Mediasmiths Media Storage Control component, for example (Figure 7, #7). We would expect a comprehensive and repeatable test bed to be used during the Development and Test cycles of the project, in order to confirm that the Media Infrastructure supports the data-driven Digital Archive system at the earliest opportunity in the project Development lifecycle (rather than at the Operational Acceptance Test stage before Go Live).

Based on our experience and methodologies, we would expect to see a comprehensive set of repeatable business-as-usual tests for stress and stability across all acceptable media file formats and throughout the architecture for the Digital Archive capability of the Media Infrastructure.

- From meetings and inspections of FitNesse tests and results, there does not appear to be evidence of a comprehensive set of Media Infrastructure business-as-usual stress and stability tests (Figure 7, #8). We would expect a set of such tests to use a wide variety of file formats and metadata with stress and stability tests being applied at the component level to the integrated system level and at stages in between. For example, we cannot see that the Mediasmiths Media Store Control component has been stress tested alongside the other Media Store components and subsequently the rest of the Media Infrastructure up to EM3 in a repeatable systematic fashion.
- Performance testing was conducted from the Production Tools UI perspective (as seen on Confluence and confirmed in interviews) and there was some Apache JMeter testing. We were unable to review all the results of these tests in the time available.



Both Media Movement and Tape Library Integration were not Integration tested as part of the Production Tools project before close down.

- Media Movement and Tape Library Integration are highly complex tasks critical to the success of a robust Digital Archive. The movement of high volume, large media files across the network/storage and the contention of Tape Library tape drives for import and export requests will likely introduce instability to the system and the need to rework and optimize existing implementation. Issues and bottlenecks in these two areas can quickly ripple through the entire system causing service interruptions and outages.

Areas for Further Investigation

**3.7.1.3 The detailed inspection of the re-enabled Production Tools FitNesse results relevant to Digital Archive, such as import and export workflow and media movement.**

**3.7.1.4 Inspection of the SIT/Regression test suite for Production Tools held in Quality Center.**

**3.7.1.5 Perform a repetition of Production Tools Media Infrastructure tests for critical Business flows.**

**3.7.1.6 Inspection of Apache JMeter and LoadRunner Performance Test results (the latter is stored under Quality Center).**

### 3.8 Hypothesis #8: Bespoke Nature of Media Infrastructure

**The current media infrastructure is highly bespoke given the commoditised nature of asset and file management functionality of a Digital Archive. It was implemented initially to support Production Tools which necessitated more specialisation but it no longer the priority for DMI**

**Explanation:**

The Media Infrastructure and its key components – System Job Controller, CEMS, Adaptors and Media Store – are custom designed and implemented by the former Production Tools development team. Some components such as Media Store were built by and have been transitioned to a third party (Mediasmiths) for rework and enhancement.

While some of the actual work, such as transcoding and transwrapping, are performed by third party software, the “brain” of the media infrastructure engine (job scheduling and media movement) and integration with third party software are highly custom developed.

It is worth noting the highly bespoke nature of these components given the existence of commercially available products in the market that perform similar functions, however at this point in time this will remain an observation and not a confirmation that commercial products are the fit-for-purpose elements for the Media Infrastructure solution.

**Level of certainty:**

The review team has accessed documentation, sample code and spent considerable time with the Architecture, Project delivery team from across the DMI team. We believe the findings outlined below are evidenced from these sources and lead to the point of requiring further investigation to test the hypothesis.



## Findings

### 3.8.1.1 Key components within Media Infrastructure are custom developed.

A sample code review showed that components such as System Job Controller (SJC), Adaptors and Media Store were developed using Java, Spring framework, Restlet framework and open source libraries, located in BBC development source repository.

Sample code review showed that to receive requests, handle internal thread management and comply with a heartbeat call back to SJC, each SJC adaptor needs to implement a custom-defined RESTful interface. Interviews with the BBC team revealed that before Media Store was transitioned to Mediasmiths to rework the internal replication logic, the original implementation using open source Drools rules engine faced memory leak instability and was eventually deemed too difficult to resolve.

Performance testing uncovered inefficiencies (observed from JIRA defects) in the custom implemented job scheduling logic within System Job Controller. The inefficiencies and the needed optimisation recommendations were provided to Mediasmiths to apply to Media Store because System Job Controller design and implementation followed the same pattern as Media Store.

**3.8.1.2 The intent of the Media Infrastructure capability is to support both the Production Tools and Digital Archive.**

Media Infrastructure was designed by considering both Production Tools (significantly) and Digital Archive requirements. This uniqueness of business requirements is one of the reasons for creating a bespoke solution.

**3.8.1.3 Some degree of duplicate responsibility has been observed between SJC and Media Store.**

An example of duplicate responsibility is that Media Store handles multi-step workflow for sub-clips. This might have been the result of Media Store being designed prior to SJC. The functionality would have worked, however it would make a better design if there was a common re-usable component used by both the SJC and Media Store, unless there is some specific limitation.

Areas for Further Investigation

**3.8.1.4 The degree to which non-specialist individuals / teams would be able to maintain and augment the Media Infrastructure.**

**3.8.1.5 A detailed investigation is needed to understand the Media Infrastructure component viability as a “stable platform element”. For example, areas to be covered during this investigation would be isolated architecture component testing, solution stability tests, ability to meet future business needs, BBC IT standards alignment and cost of maintenance.**

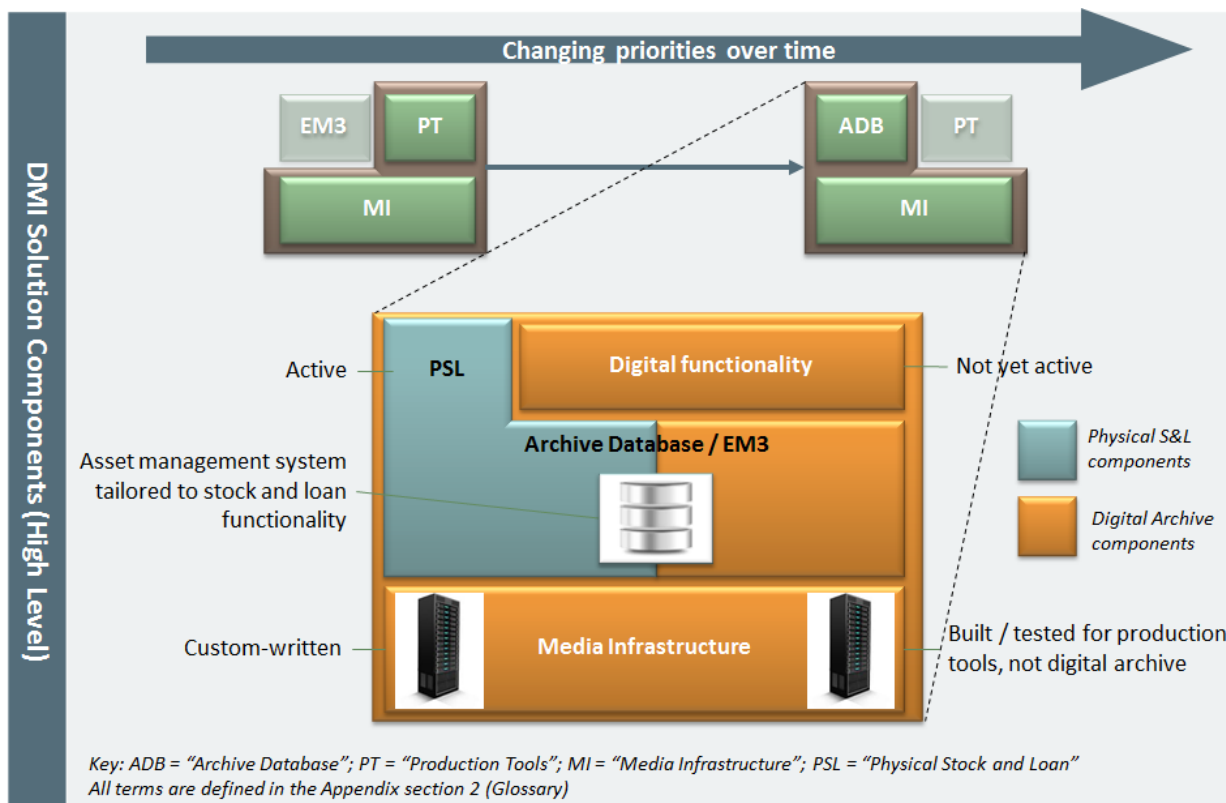
**3.8.1.6 Further it will be useful to keep in mind some of the commercially available product packages in the market that align closely to Media Infrastructure requirements that may be considered as alternate options if detailed investigations indicate critical issue areas.**

**3.8.1.7 Detailed investigation to validate Digital Archive user workflow alignment with Media Infrastructure capability is required.**

## Appendices

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### A.1 Component Inventory (work in progress)



The table below provides a high level view of the components within each area of DMI and their current status of implementation as understood from our conversations and available documentation.

#	Review Area	Domain area	Component	High level description	Current status of implementation
1	Archive DB	Fabric User Interface (UI)	User Interface (Archive, Stock & Loan-Physical)	User interface that includes archive management and Stock and Loan functionality	-UI is implemented and deployed in production with on-going development and support
2	Archive DB	Enterprise and Archive Services	Services Layer	Services responsible to execute workflows and provide data to the User interface requests	-Live in production along with on-going development (new features, defect fixes) and support
3	Archive DB	Enterprise and Archive Services	Metadata Management	Functionality to deal with asset metadata in terms of storage and access via services	-Live in production along with on-going development (new features, defect fixes) and support
4	Archive DB	Enterprise and Archive Services	Reporting	Reports detail asset carrier statuses, loan statuses, locations, restrictions and quality, for example.	-Live in production along with on-going development (new features, defect fixes) and support

#	Review Area	Domain area	Component	High level description	Current status of implementation
5	Archive DB	Enterprise and Archive Services	Search	Manages the access a user has to each area of Archive DB	-Live in production along with on-going development (new features, defect fixes) and support
6	Archive DB	Enterprise and Archive Services	Security	Manages the access a user has to each area of Archive DB/Digital Archive	-Live in production along with on-going development (new features, defect fixes) and support
7	Archive DB, Digital Archive	Enterprise and Archive Services	Taxonomy Management	This controls the structure of the classification system. It manages the relationships between metadata items and their hierarchy.	-Not live in production -Undergoing development. Planned for future Archive releases
8	Digital Archive	Fabric User Interface (UI)	User Interface (Digital Archive)	User interface for Digital Archive features	To be implemented (Majority of the implementation likely to be updates /changes to existing Archive DB user interface)
9	Digital Archive	Enterprise and Archive Services	Services Layer	Services responsible to execute workflows and provide data to the User interface requests	-Not live in production. -Some features developed in the past
10	Digital Archive	Enterprise and Archive Services	Search	Manages the access a user has to each area of Digital Archive.	-Not live in production
11	Digital Archive	Enterprise and Archive Services	Reporting	Reports detail asset carrier statuses, loan statuses, locations, restrictions and quality, for example.	-Not live in production
12	Digital Archive, Production tools	Media Infrastructure	Media Infrastructure Façade	The Media Infrastructure Facade Specification describes entry points used by EM3, Production and in future other BBC systems to access and process media content held by fabric	-Not live in production -Development put on-hold
13	Digital Archive, Production tools	Media Infrastructure	System Job Control	The System Job Control specification describes the subsystem within the Media Infrastructure that is responsible for maintaining knowledge of long running jobs for automated execution by other systems, and for scheduling that execution appropriately.	-Not live in production -Development put on-hold
14	Digital Archive, Production tools	Media Infrastructure	Content Entity Metadata Store (CEMS)	CEMS is the data store for all content entity metadata that (1) is not contained in EM3, and/or (2) is in use in an active production project. Content entities include clips, rough cuts and edit decision lists (EDLs). CEMS also knows about projects and folder structures that are used to organize content entities.	-Not live in production -Development put on-hold

#	Review Area	Domain area	Component	High level description	Current status of implementation
15	Digital Archive, Production tools	Media Infrastructure	Content processing	This has components for processing of Digital Media content such as Content Protection, Integration (e.g. FCP integration, AVID integration), Quality check, Speech-to-text, Transcode as some of them. An exhaustive list is available on the Confluence	-Not live in production -Development put on-hold
16	Digital Archive, Production tools	Media Infrastructure	Media Store	Media store is responsible for the storage of digital media files for the Media Infrastructure	-Not live in production - Development put on-hold
17	Production Tools	Production Services	Production Services	These include services to support production process such as Ingest, Organise, Logging, Assemble, Desktop Edit, Craft, Archive	-Not live in production and development put on-hold -It is understood that certain capability has been developed and tested -Out of scope with regards to this review document
18	Production Tools	Production Services	Search	Capability for content search for Production users	-Not live in production and development put on-hold -It is understood that certain capability has been developed and tested -Out of scope with regards to this review document
19	Production Tools	Production Services	Reporting	Capability to deliver Reports for production processes	-Not live in production and development put on-hold -It is understood that certain capability has been developed and tested -Out of scope with regards to this review document
20	Production Tools	Production Services	Security	Capability to manage User access and authorisation	-Not live in production and development put on-hold -It is understood that certain capability has been developed and tested -Out of scope with regards to this review document

## A.2 Glossary

Figure 10 provides a glossary of terms – used in this document and / or closely associated with DMI – developed by the review team.

Term	Description
A&M	Audio and Music department of the BBC.
Actor	A person or other entity external to the software system being specified who interacts with the system and performs use cases to accomplish tasks. Different actors often correspond to different user classes, or roles, identified from the customer community that will use the product.
Adaptors	Adaptors are software components that participate in larger media workflow facilitated by SJC to complete end-to-end tasks like submit-to-archive, export-to-Red Bee and send-to-craft. Each adaptor handles specific functionality and must follow a standard adaptor interface and pattern in order to communicate with SJC. Most adaptors are built for long-running tasks like transcoding and Signiant copy, though they can also accomplish short-running tasks like metadata updates as well.
Agile	Agile software development is a group of software development methods based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organising, cross-functional teams.
API	A system to system interface that allows software components to communicate with each other.
Archive Database (Archive DB)	Archive DB is a database system, with the EM3 system developed by IBM at the heart of it, designed to support the management of / be the front end for the BBC's Archive - both physical and digital media assets. There is currently one main area of functionality: physical content management. For the avoidance of doubt, Archive DB supported functionality does not include the movement or storage of digital assets. See <i>Media Infrastructure</i> .
Asset	A combination of content and its associated metadata.
BPEL	Business Process Execution Language, short for Web Services Business Process Execution Language (WS-BPEL) is an OASIS standard executable language for specifying actions within business processes with web services.
Business Process	A collection of related, structured activities or tasks that produce a specific service or product (serve a particular goal) for a particular operational result.
Cashmere	A project in JIRA that is maintained by the business users and not by the DMI team. As a resource it feeds into the Fabric Archive Product Management Group (PMG) and is used to drive discussions about future requirements and possible Roadmap items.
CEMS	The data store for all content entity metadata that (1) is not contained in EM3, and/or (2) is in use in an active production project. Content entities are defined in the Fabric Canonical Containers document. They include clips, rough cuts and edit decision lists (EDLs). CEMS also knows about projects and folder structures that are used to organise content entities.
Corporate ESB	The corporation-wide software architecture model used for designing and implementing the interaction and communication between mutually interacting software applications in the service-oriented architecture (SOA).



Term	Description
CRUD	Create, Read, Update, Delete, the four basic functions of persistent storage.
Digital Archive	<p>A concept for digital asset management of the BBC’s archive – supporting the access of digital assets and the ingestion of new digital assets. As per the definition for Archive DB, we have split the Digital Archive out from the physical to enable more targeted analysis.</p> <p>Certain components of the current DMI technology system may or may not be developed and deployed to support aspects of the Digital Archive including importing, searching, viewing, mediation, export, storage, replication and movement of digital assets.</p>
EM3	Enterprise Media Metadata Management, also known as Fabric EM3, is a software system designed with the purpose of replacing some of the current and legacy systems around the archive and production process (e.g. Infax and P4A), supporting business processes around the archive (e.g. digital production processes, PSL management) and allowing all BBC users to find and use material from the archive. EM3 lies at the heart of what is now referred to as the Archive Database.
End-to-End Tests	Used to test that the flow of the fully integrated application is performing as designed from start to finish using real-world scenarios.
EVS	Broadcast system for slow motion, logging and transmission used in Sport.
Fabric	<p>The user-facing brand name for DMI. Its original vision was as follows:  <i>An initiative that to transform the way the BBC creates, uses, and stores the material it produces for its programmes. It connects a distributed network of production environments - where users can access integrated tools to import, create, share, manage, and edit digital assets - to a centralised archive and enterprise media asset management repository. This repository provides the underlying capabilities for reporting on asset use, managing metadata about media assets, and facilitating the archiving of retained media assets that have been tagged and catalogued, allowing creative teams to research, search for, find, and re-use content. Fabric is designed to support key capabilities that will drive improvement throughout the associated business processes, from commissioning and production all the way through to archiving, whilst integrating with the BBC's key enterprise systems and the core business processes. (Source: Fabric Service Definitions, section 2)</i></p> <p>Currently Fabric is only live as “Fabric Archive”, based around a UI supporting the PSL process.</p>
Fabric Media Exchange (FMX)	A mechanism to facilitate the import and export of digital files from the Fabric Archive; allowing parties who do not have a specific integration (e.g. WIP, EVS, JArchive, or A&M) to deliver content to and to retrieve content from the Fabric Archive. The core concept of the FMX is that it provides a specific environment whereby files can be uploaded from an external source and then associated with the appropriate metadata entity in the Fabric Archive.
File Based Delivery (FBD)	An externally (i.e. non-DMI) funded project. Enables the delivery of file based content to the BBC and on to the Play Out provider (e.g. RedBee). Composed of a number of components; Auto QC, Access Services, iPlayer delivery, Automation, Dashboard and the technology to facilitate media delivery
FitNesse	An automated tool that allows non-technical users to specify and run acceptance tests for software systems. It is based on Ward Cunningham's Framework for Integrated Test.

Term	Description
Functional Requirement	A function of a software system or its component, where a function is described as a set of inputs, the behaviour, and outputs. Functional requirements may be calculations, technical details, data manipulation and processing and other specific functionality that define what a system is supposed to accomplish. Functional requirements drive the application architecture of a system.
Genealogy	The relationships between media assets or business data entities linked to media assets in an archive, e.g. a series>an episode>a rush that trace parent/child relationships between assets.
Happy Path	Happy Path testing is where only the simple positive type of testing of functional testing is conducted. Negative or boundary conditions are not exercised as part of Happy Path testing.
I&A	Information and Archive department of the BBC.
Infax Replacement (IR)	The process of defining the high level, current requirements needed to be able to replace Infax. Details are currently to be found in an Excel document that describes the IR scope of requirements for Fabric Archive, produced for the Pasadena programme.
Infax Switch-Off (ISO)	The process of defining the high level, primary issues identified by I&A and Production that need resolving in order to decommission Infax. Details are currently to be found in an Excel document that describes the ISO scope of requirements for Fabric Archive, produced for the Pasadena programme.
Ingest	The process of registering new content and its associated metadata into a common digital storage system such as DMI's Media Store.
Integration Testing	The process of combining and testing multiple technical components together.
JArchive	An interface that will be used in future to export and retrieve content from Fabric as part of the Jupiter project.
JIRA	An issue and project tracking software used by the BBC as part of Agile methodologies. There are numerous programmes in the system, with projects underneath each one, e.g. DMI>Perspex.
Jupiter	A project for Journalism designed to migrate Journalism video content and World Service audio content into Fabric. The Jupiter News system packages are archived to tape. These tapes are stored in TVC basement. They will be moved to a temporary digital shelf in W1 by Journalism and then migrated to Fabric via an interface with Jupiter. The same interface will be used to migrate ongoing Journalism video assets and to retrieve them from Fabric too.
LoadRunner	An automated performance and test automation product from Hewlett-Packard for examining system behaviour and performance, while generating actual load.
Logical Data Model	A model that represents an organisation's data, organised by entities and relationships, without reference to a particular database technology.

Term	Description
Media Asset	<p>A term to describe a piece of media (be it physical or digital) associated with descriptive metadata, including but not limited to:</p> <ul style="list-style-type: none"> <li>• AV essence, as either Broadcast Master or proxy quality.</li> <li>• Access service files, of type subtitle or audio description.</li> <li>• Audio Description scripts.</li> <li>• Other documents stored in the Fabric Archive.</li> </ul> <p>A Media Asset can be a document (e.g. subtitles), still (e.g. photograph), graphic (e.g. on-screen logo), audio video asset (e.g. TV programme), or audio asset (e.g. radio programme).</p>
Media Infrastructure	<p>The platform within the DMI architecture that supports media content and metadata storage and retrieval, and media movement.. It includes the MIF, CEMS, Media Store, SJC and Adaptors.</p>
Media Infrastructure Façade (MIF)	<p>The integration point used by EM3 and, in future, planned for use by other BBC systems to access and process media content held by Fabric in the Media Infrastructure layer.</p>
Media Store	<p>The primary storage service for the enterprise and production workspaces. It maintains temporary local copies of assets to fulfil service requests and migrates assets to lower cost storage. The Media Store applies a number of business rules and asset attributes to copy, move and delete files to intelligently select the most suitable storage locations, maintain the appropriate number and location of copies and 'clean up' content that is no longer required locally.</p>
Metadata	<p>Data that serves to provide context or additional information about other data, e.g. information about series, programme content, genre, location, etc. When combined with video, audio, stills, and/or graphics it is then considered to be a Media Asset.</p>
Non Functional Requirement (NFR)	<p>A criterion that can be used to judge the operation of a system, rather than specific behaviours, which should be contrasted with functional requirements that define specific behaviour or functions. Non-functional requirements define how a system is supposed to be and are often called qualities of a system. They may cover:</p> <ul style="list-style-type: none"> <li>• Flexibility. How easy it is to understand, fix, test, maintain, enhance, and port/migrate the application. These are also called scalability requirements.</li> <li>• Performance. The ability of the application to process all the business events within a certain time frame. These requirements specify measurable objectives that describe the speed of a system. These typically also include capacity (e.g. 20,000 concurrent users may use the system) and availability (e.g. 24x7) requirements.</li> <li>• Reliability. The application's ability to function correctly under both normal and abnormal operating conditions.</li> <li>• Usability. The ease and efficiency for someone to learn, interact with, and continuously use the application</li> </ul>

Term	Description
OAIS	Open Archival Information System, a pattern for archives, consisting of an organisation of people and systems, which has accepted the responsibility to preserve information and make it available for a designated community. The OAIS Reference Model is a basic framework for the responsibilities that an OAIS archive must abide by.
On-Air	The system for commissioning, scheduling and the recording of transmission of BBC content. Currently this only handles linear TV transmissions, but will develop to cover other platforms. NB: Sports programmes are not currently commissioned using OnAir.
Operational Acceptance Testing (OAT)	The type of software testing used to conduct operational readiness prior to the release of a product.
P4A	<p>Pre and Post Production Paperwork Automation, which is the system and database used to complete a programme's post production paperwork, namely the:</p> <ul style="list-style-type: none"> <li>• Billing form – to ensure programme listings are correct.</li> <li>• Transmission form – to ensure Presentation have all the necessary information to take the programme successfully to air.</li> <li>• Music reporting form – giving details of all the music contained in the programme.</li> <li>• PasC, or Programme as Completed, form – giving details of all the contractual and rights information.</li> </ul>
Pasadena	<p>A business programme established to revise and rearticulate the vision for end to end digital at the BBC. Pasadena has the following overarching principles:</p> <p>Establish a clear, collectively understood end-to-end digital story</p> <p>Inform and be informed by strategic BBC priorities</p> <p>Incrementally build from a 'bare minimum' towards the end-game in bite-size chunks, delivering smaller steps faster... no big bang</p> <p>Consider the creative needs of the organisation in an appropriate balance with the functional needs</p> <p>Optimise value from what the BBC has already built and procured, achieving a balance between consistency and flexibility</p> <p>Own, drive and deliver change via the business, recognising that change will require strong business support and investment, and happen at different paces in different places.</p>
Performance Testing	Testing to determine whether the system meets its performance (e.g. response time) requirements.
Perivale	A location in London where physical assets are stored. In this document, Perivale is also the name of a project not within DMI, but that has dependencies on DMI. This project is focussed on the import of encoded or transcoded content presented on the network, and sharing into Fabric WIP and Fabric Archive.
Perspex	A JIRA project. This is where all business functional and non-functional requirements and improvements for Fabric Archive are currently stored. Perspex replaces Velvet, and is where new requirements accepted as in scope for Fabric Archive are created.

Term	Description
Physical Data Model	A representation of a data design which takes into account the facilities and constraints of a given database management system. This usually follows on from a Logical Data Model.
Physical Stock and Loan (PSL)	Stock management and Loan management process for physical assets e.g. tapes.
PMG	Product Management Group.
Production Tools	Production Tools, part of the original intent of Fabric and previously active in WIP environments, enables users to ingest, organise, edit and send content to craft or archive using through a single interface during the production process.
Quality Center	Hewlett Packard's Requirements, Test and Defect Management tool.
Redux	Redux is an experimental service provided by BBC Research & Development. It has been running since summer 2007 and records Radio & Television programmes off air. Access to the content is via web browser, available to BBC staff and contractors only.
Redux Project	This project imports AV files from Redux and inserts them into the Fabric Media Store. These would be used to provide programme researchers with a low quality proxy view of the content from within the Fabric Archive.
Services Gateway	A (Web) Services Gateway is a run-time component that provides configurable mapping based on Web Service Definition Language documents.
Silk	A project in JIRA for Production Tools and Digital Archive high level requirements.
Soak Test	Test involving a higher workload that the system is expected to handle. This can show breakpoints and can help with future capacity planning. The load can be achieved by either increasing users (preferable) or reducing/removing think times.
SOAP	Simple Object Access Protocol.
Stress Tests	Testing to identify peak load conditions at which the programme will fail to handle required processing loads within required or expanded timespans.
System Job Control (SJC)	This controls the jobs between components of the Media Infrastructure, for example, the Media Store and the MIF.
Technical Debt	The uncompleted software development work, generally foundational and/or architectural, that should be performed to the design or code base before a particular job can be considered complete.
Tomcat	Apache Tomcat (or simply Tomcat, formerly also Jakarta Tomcat) is an open source web server and servlet container developed by the Apache Software Foundation.
Use Cases	A use case is a list of steps, typically defining interactions between a role (or an actor) and a system, to achieve a goal. The actor can be a human or an external system.
User Interface (UI)	The system by which people (users) interact with a machine.

Term	Description
User Role	A defined role within DMI specific to creation or use of assets (e.g. camera operator, media manager). User roles may be linked to particular genres, individual assets or asset structures and Use Cases. They include a definition of the access permissions for that role.
UUID	Universally Unique Identifier.
Velvet	A project in JIRA. This is a repository for Fabric Archive requirements that is in the process of being shut down, and replaced by Perspex.
Versioning	The editing and re-publication of an asset.
Waterfall	The waterfall model is a sequential design process, often used in software development, in which progress is seen as flowing steadily downwards through the phases of Conception, Initiation, Analysis, Design, Construction, Testing and Maintenance.
WebSphere	An umbrella product brand of IBM in the genre of enterprise software. These software products are used by end-users to create applications and integrate applications with other applications.
WebSphere Process Server (WPS)	A component of DMI which provides process choreography and automation over the Enterprise Service Bus.
Wireframe	A stripped down visual representation or 'page blueprint' of a website or software application.
Work In Progress (WIP)	Work in Progress area. Holds material that is currently being viewed, logged, organised, edited and manipulated.
Workflow	Progression of steps (tasks, events, interactions) that comprise a work process.
XML	Extensible Mark-up Language. A system that enables the transfer and storage of data.

Figure 10: Glossary

### **A.3 DMI Review Findings Session**

Session date: 22 February 2013

BBC attendees: Emma Couling, Keith Edwards, Alastair Ford, Rajan Sayal, David Stephenson, Dan Webb, Oliver Gardiner (by phone), Malcolm Gundry (by phone)

<See DMI Review Findings document>

## A.4 People Involved

Figure 11 lists all the BBC staff (and contractors) consulted and/or interviewed by the review team.

BBC Staff	Role	Total Hours	Total Interactions
Aadil Qureshi	Former EM3 Delivery Lead	2	1
Akmal Hussain	DMI Development	1	1
Alan Whiston	Technology Controller, Vision	5	5
Alexandra Bocker	Archive Services Manager	1	1
Alice Webb	DMI, Pasadena Programme Director	13	9
Alistair Ford (PA Consulting)	Former Production Tools Project Manager	1	1
Andy Frazer	I&A	1	1
Bejul Shah	DMI Tester	1	1
Charles Sibbald	DMI Operation	1	1
Chris Dolder	Pasadena Programme Manager	11	7
Claire Newson	DMI Infrastructure PM	Exchanged emails only	
Dan Webb (IBM)	DMI Technical Director	10.5	12
David Stephenson	DMI Lead Architect	9.5	7
Dirk Willem Van Gulik	Former DMI Lead Architect	1	1
Dominic Coles	BBC Director of Operation	2	2
Gonzalo Rodriguez	DMI WPS Developer	1.5	1
Harry Stover	BBC Enterprise Architect	1	1
Helen Pritchard	I&A	2	2
James McKeown	DMI Testing	1.25	1
Jamie Royan	Archive Database Project Manager	1	1
Julia Weaver	I&A	1	1
Karl Nicholls	DMI Data Architect	1	1
Keith Edwards	DMI Programme Manager	1.5	1
Lynne Hunt	Metadata Architect, I&A	1.5	2
Maggie Lydon	BBC Metadata lead	1	1
Malcolm Gundry	Head of Production Systems	6.5	5
Marina Kalkanis	Head of Media Services	1	1
Mark Harrison	Controller Production BBC North	0.5	1
Mick Ahearn	DMI Business Analyst	7	7



BBC Staff	Role	Total Hours	Total Interactions
Mike Jennings	DMI Test Manager	4.5	3
Nirav Upadhayaya	DMI Non-Functional Tester	1	1
Oliver Gardiner	BBC Enterprise Architect	2	2
Peter O'Kane	BBC Director of Supplier Management & Service Assurance	6	6
Rajan Syal	BBC Head of Enterprise Systems	11.5	8
Ray Neave	DMI Deployment Lead	2	2
Richard Foster	News	1	1
Richard Moore	DMI Operations Lead	3	2
Ryan Gribbin	DMI Infrastructure Architect	Exchanged emails only	
Ryan Williamson	DMI Tester	1	1
Sandeep Mestry	DMI Development (search)	1	1
Sarah Hayes	Head of I&A	1	1
Sencan Sengul (IBM)	EM3 Technical Architect	2	1
Stephen Tjasink	DMI Development Lead	2	2
Steve Daly	Head of Technology, I&A	1	1
Steve Jupe	Head of Archive Policy, I&A	2	2
Tim Garbett	DMI Archive Database Product Manager	Exchanged emails only	
Tim Sargeant	Head of Technology, North	1.5	2
Waqar Hussain	DMI Test Lead	7.25	4
<b>Total</b>		<b>137.5</b>	<b>116</b>

Figure 11: BBC Staff Involved

## A.5 Reviewed Documentation

### Overview

The review team received documentation from DMI resources and business stakeholders via email and access to Confluence and JIRA repositories. The JIRA repository for DMI has 49 projects while the Confluence repository is a large repository of documentation with 12 key areas. The documentation in some cases is quite old having had its last update back in 2010. As part of the review, once the team identified a document and believed it to be relevant, it was recorded in the list in one of the four relevant tables below.

### Requirements

Figure 12 lists all documentation received by the review team that is relevant to the requirements analysis.

Document Name	Description and/or URL	Version & Last Update
Copy of Digital Archive Landscape v0 0 17 - 03-Aug-2012 (2).xls	Provides the following: 1. High level Architecture view 2. List of Epic requirements	Version 0.17 03/08/2010
DMI Archive Requirements Matrix v09 Digital Archive Requirements Matrix v9 - infax switch off mapping.xlsx	List of "I CAN" requirements for Archive	Version 9 04/02/13  Version 9 12/02/2013
JIRA dashboard	<a href="https://jira.dev.bbc.co.uk/secure/Dashboard.jspa">https://jira.dev.bbc.co.uk/secure/Dashboard.jspa</a>	
	For more recent releases of the Archive Database, there are summaries of releases on confluence at:  <a href="https://confluence.dev.bbc.co.uk/display/DMI/Full+Archive+03+Archive+Database+%28Phase+1%29">https://confluence.dev.bbc.co.uk/display/DMI/Full+Archive+03+Archive+Database+%28Phase+1%29</a>	
Non-functional requirements	1. Non-functional requirements for Release 2.3 / 2.3.1 which will be deployed in the WIPs for Childrens, Factual, Bristol and Oxford Rd.	Release 2.3/2.3.1 03-Apr-12
	<a href="https://confluence.dev.bbc.co.uk/pages/viewpage.action?pageId=23379733">https://confluence.dev.bbc.co.uk/pages/viewpage.action?pageId=23379733</a>	Production tools NFR – 09-Nov-12
	2. Production Tools - <a href="https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+Non-Functional+Requirements#ProductionToolsNon-FunctionalRequirements-ProductionProject">https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+Non-Functional+Requirements#ProductionToolsNon-FunctionalRequirements-ProductionProject</a>	Production Tools NFR v04.xls – April-12
Digital archive requirements	Functional, non-functional requirements for Digital Archive 1 (DA1) and Digital Archive 2 (DA2), plus JIRA link	31/10/2012
	Confluence URL <a href="https://confluence.dev.bbc.co.uk/display/DMI/DA1+-+Play+AV+Content">https://confluence.dev.bbc.co.uk/display/DMI/DA1+-+Play+AV+Content</a>	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/DA2+-+Basic+Submit+from+WIP+to+Archive+and+Export+from+Archive+to+WIP">https://confluence.dev.bbc.co.uk/display/DMI/DA2+-+Basic+Submit+from+WIP+to+Archive+and+Export+from+Archive+to+WIP</a>	
	<a href="https://jira.dev.bbc.co.uk/browse/DIGARCH-12">https://jira.dev.bbc.co.uk/browse/DIGARCH-12</a>	02/11/2012
Business continuity	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Business+Continuity+Requireme">https://confluence.dev.bbc.co.uk/display/DMI/Business+Continuity+Requireme</a>	01/10/2010

Document Name	Description and/or URL	Version & Last Update
requirements	<a href="#">nts</a>	
Test environment requirements	Document outlining the requirements for Test, UAT, integration environments  <a href="https://confluence.dev.bbc.co.uk/download/attachments/55149123/Environment+v1.0final.docx">Confluence URL - https://confluence.dev.bbc.co.uk/download/attachments/55149123/Environment+v1.0final.docx</a>	15/08/2012
IBM Work Packages	The table on the page has the final deliverables provided to IBM for the EM3 and related work packages that make up the Archive & Metadata workstreams. Numerous documents are embedded into this table.  <a href="https://confluence.dev.bbc.co.uk/display/DMI/IBM+Work+Packages">https://confluence.dev.bbc.co.uk/display/DMI/IBM+Work+Packages</a>	10/08/2011
DMI Programme Scope v020	The DMI scope document has been created to reflect the high levels requirements that DMI has agreed to deliver through the business case, which was approved by the BBC's Finance Committee in March 2010.  <a href="https://confluence.dev.bbc.co.uk/display/DMI/Scope">https://confluence.dev.bbc.co.uk/display/DMI/Scope</a>	version 020 10/09/2010
Permissions	Permission mapping to roles  <a href="https://confluence.dev.bbc.co.uk/display/DMI/Permissions">https://confluence.dev.bbc.co.uk/display/DMI/Permissions</a>	EM3 Permissions 06/02/12
User Roles	As part of the requirements work for Fabric, the functional user roles need to be defined and documented. The requirements team have carried out analysis on the users and have mapped them into Fabric roles. Permissions based on functional areas will be assigned to roles.  <a href="https://confluence.dev.bbc.co.uk/display/DMI/User+Roles">https://confluence.dev.bbc.co.uk/display/DMI/User+Roles</a>	16/02/2012
New Requirements	Samples of business requirements recently approved by the business  <a href="#">Access Services</a>  <a href="#">AutoQC</a>	
Stock Management Requirements.doc	This file dates back to the work completed under the Siemens phase of the DMI Project. It Gives an idea of the scope of the Stock & Loan part of the Infax Replacement system envisaged at the time	Version 1.0 03/05/2007
FabricLandscape.pdf	FBD Dashboard Mindmap	07/02/2013
MaturityxDaxP4A.pptx	Powerpoint detailing the maturity of archive requirements (excluding Digital Archive and Production Reporting), maturity of Digital Content Requirements and 9 P4A requirements	07/02/2013
DMI Scope Documentation	DMI Scope document: <a href="https://confluence.dev.bbc.co.uk/display/DMI/Scope">https://confluence.dev.bbc.co.uk/display/DMI/Scope</a>  High level requirements from the second iteration of DMI: <a href="https://confluence.dev.bbc.co.uk/display/DMI/High+level+requirements">https://confluence.dev.bbc.co.uk/display/DMI/High+level+requirements</a>  Workflow Diagrams : <a href="https://confluence.dev.bbc.co.uk/display/DMI/Fabric+Workflows">https://confluence.dev.bbc.co.uk/display/DMI/Fabric+Workflows</a>	
DMI Requirements Matrix V4 WithoutArchiveRequirements.xlsx DMI Requirements Matrix V8.xlsx	DMI Maturity Spreadsheets relating to Pasadena	Version 4 (includes high level views Version 8 (High levels views removed) 25/02/2013
Digital Archive WBS Estimates v2_6.xlsx	Estimations of time and cost for future Digital Archive items	Version2_6

Document Name	Description and/or URL	Version & Last Update
Archive I CAN statements.xlsx	Draft of Archive Database I CAN statements. This is not the most recent version. But was received earlier in the project.	22/01/2013
DMI Digital Archive DA1 Play AV content.pdf	This release of the Digital Archive focuses on the ability to play AV content within the Archive. There will be a limited set of digital content for this release; 20 files will be imported. These will all be finished programmes.	15/01/2013
DMI Digital Archive DA2.pdf	The Release of DA2 focuses on the basic integration between the WIP and the Archive to enable the exchange of AV digital content. This release builds on the DA1 release.	16/01/2013
DMI HLReqs from 11.02.11.pdf	DMI will be delivering a collection of tools and application all under the name Fabric. This document provides an overview of the High Level Requirements with links to each section that describes the functionality in broad terms. It also includes additional information that informs and supports these requirements.	15/01/2013
DMI NFR Tracker (Release2.3).xls	Non-functional requirements for Archive Database release 2.3	<b>29/01/2013</b>
DMI-BusinessContinuityRequirements-300113-1739-266.pdf	For each system, we identify key/typical failure scenario and what mitigation strategies are available to the business. Where there is no good mitigation strategy or the strategy is expensive to implement, this leads to significant non-functional requirements. Where mitigation is readily available, lower-specced system infrastructure is possible which is a lot cheaper.	30/01/2013
Environments v1.0final.docx	Requirements Specification Overview	30/01/2013
Perspex JIRA Tickets.xlsx	Export of all JIRA tickets in Perspex valid on 30 <sup>th</sup> January 2013	30/01/2013
Velvet JIRA Tickets.xlsx	Export of all JIRA tickets in Velvet valid on 30 <sup>th</sup> January 2013	30/01/2013
Copy of EM3 permission - 160212.xlsx	User role and permission matrix for EM3	16/02/2012
JournArchRequirementsV1_00.doc	Waterfall word document created for Jupiter (journalism) that documents, amongst other things, scope, vision FR and NFR	18/02/2013
20120228_Programme+Handbook.pdf	It describes the organisation, policies, processes, procedures, tools and systems that are used to manage the DMI programme	28/02/2012
DMI Archive Requirements v4.9_agreed view w escalations.xlsx	Details on the latest position with regard to functional requirements for the digital archive	19/02/2013
DMI Archive Requirements v4.9_agreed view w escalations.xlsx	I CAN statements for Archive Database	20/02/2013
DMI Archive Requirements v4.9_agreed view w escalations.xlsx	Functional Requirements for a Digital Archive	21/02/2013
Digital Archive Platform v6 20130125_cd NFR ONLY.pptx	NFR subset extracted from I&A's generic DA requirements document	22/02/2013

**Figure 12: Solution Design Documentation**

## Solution Design

Figure 13 lists all documentation received by the review team that is relevant to the solution design analysis.

Document Name	Description and/or URL	Version & Last Update
BBC DMI - EM3 - Architecture Blueprint v0.9.doc	This is a Solution outline document for the Archive (formerly EM3) component of the DMI Landscape. Also covers aspects of Search and service integrations.	0.2-09 23/02/2010
Fabric+Technical+Architecture+Overview.doc	Architecture document providing details on the System context, logical architecture, components within areas of the logical architecture  <a href="https://confluence.dev.bbc.co.uk/display/DMI/Fabric+Technical+Architecture">Confluence link - https://confluence.dev.bbc.co.uk/display/DMI/Fabric+Technical+Architecture</a>	0.01 28/06/2012
Copy of Digital Archive Landscape v0 0 17 - 03-Aug-2012 (2).xls	Provides the following: 1. High level Architecture view 2. List of Epic requirements	0.17 03/08/2010
DMI Requirements Matrix v4 4 - D2-ds.xls	-Document intended to provide a link between the business requirements and the solution components. -The sheet "Indicative Status" provides development/deployment status for architectural components broken down by Archive Dataase, Stock and Loan, Digital Archive and MRS. -The Glossary section provides component definitions	
Fabric EM3 Solution Breakdown.doc	Enterprise Media and Metadata Management (EM3) System - Solution Breakdown document.	0.5 10/12/2009
Platform structure	Provides a generic structural decomposition to help you understand some of the relationships between the different views.  <a href="https://confluence.dev.bbc.co.uk/display/DMI/Platform+structure">Confluence URL https://confluence.dev.bbc.co.uk/display/DMI/Platform+structure</a>	02/10/2010
Data Centres, Networking & Storage	Provides high level overview of the data storage volumes, principle of storage and storage layout  <a href="https://confluence.dev.bbc.co.uk/display/DMI/Data+centres%2C+networking+and+storage">Confluence URL https://confluence.dev.bbc.co.uk/display/DMI/Data+centres%2C+networking+and+storage</a>	15/02/2010
DMI Test environments design	Environment design for testing. Confluence URL -  <a href="https://confluence.dev.bbc.co.uk/display/DMI/Test+and+Dev+Environments+Design">https://confluence.dev.bbc.co.uk/display/DMI/Test+and+Dev+Environments+Design</a>	22/07/2012
Fabric Core Model	<a href="https://confluence.dev.bbc.co.uk/display/DMI/EM3+Diagrams">https://confluence.dev.bbc.co.uk/display/DMI/EM3+Diagrams</a>	08/11/2011
Stock Management Model	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Stock+Management+Data+Model">https://confluence.dev.bbc.co.uk/display/DMI/Stock+Management+Data+Model</a>	20/11/2012
EM3 Workflow Diagrams	The diagrams represent the Work flows for each Work Package  <a href="https://confluence.dev.bbc.co.uk/display/DMI/EM3+Work+Flow+Diagrams">https://confluence.dev.bbc.co.uk/display/DMI/EM3+Work+Flow+Diagrams</a>	31/08/2011
Logical Data Model	  <a href="https://confluence.dev.bbc.co.uk/display/DMI/EM3+Diagrams">https://confluence.dev.bbc.co.uk/display/DMI/EM3+Diagrams</a>	08/11/2011
EM3 SOAP Services Endpoint Specifications	  <a href="https://confluence.dev.bbc.co.uk/display/DMI/EM3+Services+Layer">https://confluence.dev.bbc.co.uk/display/DMI/EM3+Services+Layer</a>	12/10/2012
Production tools and Media	Video/ Audio Formats supported, and proxies:	

Document Name	Description and/or URL	Version & Last Update
Infrastructure		
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Formats+and+Codecs#Formats+and+Codecs-ProxyFormats">https://confluence.dev.bbc.co.uk/display/DMI/Formats+and+Codecs#Formats+and+Codecs-ProxyFormats</a>	–
	Production Tools (Media Infrastructure stack) non-functional requirements and testing:	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+Non-Functional+Requirements">https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+Non-Functional+Requirements</a>	09/11/2012
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Production+tools+performance+testing+results">https://confluence.dev.bbc.co.uk/display/DMI/Production+tools+performance+testing+results</a>	20/10/2012
	Production Tools stack (made by Production Systems Team)	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Suspending+Production+Tools+and+Digital+Archive">https://confluence.dev.bbc.co.uk/display/DMI/Suspending+Production+Tools+and+Digital+Archive</a>	14/02/2013
2013-10-31 DMI Architecture v0.16.pptx	Fabric Architecture slides detailing: - Current state of Fabric Architecture - Proposed Architecture for 2013 - Solution Diversity - Target Architecture	14/02/2013
Data Model Overview v0.2.docx	The purpose of this document is to describe the structure of the model in business terms so that it is easier to understand the way the model works and the approach that has been taken to the various design decisions implicit within the modelling process.	–
Stock Management Model	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Stock+Management+Data+Model">Stock Management Model:</a> <a href="https://confluence.dev.bbc.co.uk/display/DMI/Stock+Management+Data+Model">https://confluence.dev.bbc.co.uk/display/DMI/Stock+Management+Data+Model</a>	20/11/2012
High Level Archive Features	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Full+Archive">https://confluence.dev.bbc.co.uk/display/DMI/Full+Archive</a>	17/10/2012
Top Level Workflows	General Import:	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/26611607/Fabric-ImportDesignV0.8.pdf">https://confluence.dev.bbc.co.uk/download/attachments/26611607/Fabric-ImportDesignV0.8.pdf</a>	04/10/2012
	Top Level Export:	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/26611607/Fabric-ExportDesignV1.0D1.pdf">https://confluence.dev.bbc.co.uk/download/attachments/26611607/Fabric-ExportDesignV1.0D1.pdf</a>	03/12/2011
	Sports- DMI Requirements:	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Sports-DMI+Requirements">https://confluence.dev.bbc.co.uk/display/DMI/Sports-DMI+Requirements</a>	03/03/2011
	(Import and Export) Requirements and Design documents:	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/39695737/SPS-Fabric-Interface+Design+1.1.2.pdf">https://confluence.dev.bbc.co.uk/download/attachments/39695737/SPS-Fabric-Interface+Design+1.1.2.pdf</a>	14/09/2011
	Workflow Walkthrough:	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/EVS+Sports+Import+and+Export">https://confluence.dev.bbc.co.uk/display/DMI/EVS+Sports+Import+and+Export</a>	02/01/2012
	Journalism Archive:	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Journalism+Archive+in+Fabric">https://confluence.dev.bbc.co.uk/display/DMI/Journalism+Archive+in+Fabric</a>	29/10/2012
	Import and Export Workflow Design:	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/38077705/JarchiveWorkflowV0_04.pdf?version=1&amp;modificationDate=1336754995000">https://confluence.dev.bbc.co.uk/download/attachments/38077705/JarchiveWorkflowV0_04.pdf?version=1&amp;modificationDate=1336754995000</a>	–
	Production Tools to Archive integration:	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/DA2+-">https://confluence.dev.bbc.co.uk/display/DMI/DA2+-</a>	28/09/2012

Document Name	Description and/or URL	Version & Last Update
	<a href="#">+Basic+Submit+from+WIP+to+Archive+and+Export+from+Archive+to+WIP</a>	
Fabric WIP Connector Design	<a href="https://confluence.dev.bbc.co.uk/download/attachments/46071353/WIP-Fabric-Interface+Design+0.4.pdf">https://confluence.dev.bbc.co.uk/download/attachments/46071353/WIP-Fabric-Interface+Design+0.4.pdf</a>	20/12/2011
File Based Delivery Architecture	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Fabric+File+Based+Delivery+Architecture">https://confluence.dev.bbc.co.uk/display/DMI/Fabric+File+Based+Delivery+Architecture</a>	25/01/2013
Media Infrastructure Façade (MIF)	<a href="https://confluence.dev.bbc.co.uk/download/attachments/26611607/MediaInfrastructureFacade-1.3.0D6.pdf">https://confluence.dev.bbc.co.uk/download/attachments/26611607/MediaInfrastructureFacade-1.3.0D6.pdf</a>	08/03/2012
System Job Control (Wiki and Specification)	<a href="https://confluence.dev.bbc.co.uk/download/attachments/17468205/fabric-system-job-control-specification1.2.pdf">https://confluence.dev.bbc.co.uk/download/attachments/17468205/fabric-system-job-control-specification1.2.pdf</a>	–
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/System+Job+Control">https://confluence.dev.bbc.co.uk/display/DMI/System+Job+Control</a>	22/03/2011
Media Store (Wiki and Spec)	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Media+Store">https://confluence.dev.bbc.co.uk/display/DMI/Media+Store</a>	01/11/2011
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/16175261/fabric-media-store-specification1.2.2.pdf">https://confluence.dev.bbc.co.uk/download/attachments/16175261/fabric-media-store-specification1.2.2.pdf</a>	
Fabric Canonical Container-CEMS Specification and Solution Design	<a href="https://confluence.dev.bbc.co.uk/download/attachments/13693858/Fabric_Co ntainer_1_1_20101220.pdf">https://confluence.dev.bbc.co.uk/download/attachments/13693858/Fabric_Co ntainer_1_1_20101220.pdf</a>	–
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/CEMS+Solution+Design">https://confluence.dev.bbc.co.uk/display/DMI/CEMS+Solution+Design</a>	16/09/2010
Canonical Technical CEMS Data Model	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Canonical+XML">https://confluence.dev.bbc.co.uk/display/DMI/Canonical+XML</a>	27/03/2012
Overview of Production tools	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+%28PT%29">https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+%28PT%29</a>	05/12/2012
Lower level detail of Media Workflow Adaptors and Media Infrastructure Service	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Suspending+Production+Tools+and+Digital+Archive">https://confluence.dev.bbc.co.uk/display/DMI/Suspending+Production+Tools+and+Digital+Archive</a>	14/02/2013
Production adaptors integration into MediaStore	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Production+Services+Integration+with+the+Media+Store">https://confluence.dev.bbc.co.uk/display/DMI/Production+Services+Integration+with+the+Media+Store</a>	09/10/2010
Production tools return from craft workflow (showing use of SJC and CEMS)	CEMS <a href="https://confluence.dev.bbc.co.uk/display/DMI/Return+from+Craft+Solution+Design">https://confluence.dev.bbc.co.uk/display/DMI/Return+from+Craft+Solution+Design</a>	22/03/2011
Production tools Copy to Desktop Solution Design, wiki	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Copy+to+Desktop+Solution+Design">https://confluence.dev.bbc.co.uk/display/DMI/Copy+to+Desktop+Solution+Design</a>	23/05/2011
Early diagrams showing SJC workflow examples	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Production+System+Job+Controller+Integration">https://confluence.dev.bbc.co.uk/display/DMI/Production+System+Job+Controller+Integration</a>	09/12/2010
DA2_Overview.pdf	Outline of how synchronous calls work between Archive and Media Infrastructure in the Digital Archive	–
Infax switchoff and MPP Stuff	Discussions about the materials that are WIP around describing the outstanding roadmap to switch off infax and complete the 'Minimum Practical Product' (MPP) of Archive Database.	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Minimum+Practical+Product+Planning+%28MPP%29+-+includes+INFAX+Switch+off">https://confluence.dev.bbc.co.uk/display/DMI/Minimum+Practical+Product+Planning+%28MPP%29+-+includes+INFAX+Switch+off</a>	–

Figure 13: Solution Design Documentation

## Solution Delivery

Figure 14 lists all documentation received by the review team that is relevant to the solution delivery analysis.

Document Name	Description and/or URL	Version & Last Update
EM3 Non-functional test results	Non-functional test results	21/12/2011
MRS Non-functional test results -	Non-functional test results for MRS.	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/MRS+Non-Functional+Test+Results">Confluence URL - https://confluence.dev.bbc.co.uk/display/DMI/MRS+Non-Functional+Test+Results</a>	03/06/2011
Digital Archive releases	For more recent releases of the Archive Database, there are summaries of releases on confluence at:	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Full+Archive+03_Archive+Database+%28Phase+1%29">https://confluence.dev.bbc.co.uk/display/DMI/Full+Archive+03_Archive+Database+%28Phase+1%29</a>	27/01/2013
1 - DMI Test Approach to get us LIVE	Provided by Waqar Hussain 30/01/13 DMI Test Approach to get us LIVE	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/64727270/1+-+DMI+Test+Approach+to+get+us+LIVE_.doc?version=1&amp;modificationDate=1359495396000">https://confluence.dev.bbc.co.uk/download/attachments/64727270/1+-+DMI+Test+Approach+to+get+us+LIVE_.doc?version=1&amp;modificationDate=1359495396000</a>	01-Mar-12
2 - Fabric Achieve High Level Test Approach v2.pptx	Provided by Waqar Hussain 30/01/13 DMI Test Approach (After Go LIVE)	
	<a href="#">Fabric Achieve High Level Test Approach v2.pptx</a>	–
3 -Defect management (Acceptance and In-life) v2	Provided by Waqar Hussain 30/01/13 Defects Management Process	
	<a href="#">Defect management (Acceptance and In-life) v2.pptx</a>	–
4 - Example Test Estimates & R3 Planning	Provided by Waqar Hussain 30/01/13 Early test planning: Test Estimates and low level planning in release 3	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/59616248/4+-+Example+Test+Estimates+and+R3+Planning.xlsx?version=1&amp;modificationDate=1359495490304">https://confluence.dev.bbc.co.uk/download/attachments/59616248/4+-+Example+Test+Estimates+and+R3+Planning.xlsx?version=1&amp;modificationDate=1359495490304</a>	–
5 - R6 Planning Master as at 29012013 Ver 0 8	Provided by Waqar Hussain 30/01/13 Low Level Test Planning	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Task+Tracking+-+Release+6">https://confluence.dev.bbc.co.uk/display/DMI/Task+Tracking+-+Release+6</a>	29/01/2013
6 - DMI Testing Review Oct 2012	Provided by Waqar Hussain 30/01/13	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/64727270/6+-+DMI+Testing+Review+Oct+2012.pptx?version=1&amp;modificationDate=1359495396000">https://confluence.dev.bbc.co.uk/download/attachments/64727270/6+-+DMI+Testing+Review+Oct+2012.pptx?version=1&amp;modificationDate=1359495396000</a>	02/10/2012
7 -R2 01 Test Audit WH-RS v5	Provided by Waqar Hussain 30/01/13 a 'deep dive' into the testing activities on the DMI programme	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/64727270/7+-+R2+01+Test+Audit+WH-RS+v5.pptx?version=1&amp;modificationDate=1359495396000">https://confluence.dev.bbc.co.uk/download/attachments/64727270/7+-+R2+01+Test+Audit+WH-RS+v5.pptx?version=1&amp;modificationDate=1359495396000</a>	–
8 - R5 Test Audit v1	Provided by Waqar Hussain 30/01/13 reflection on the status of how testing looks now compared to March 2012	



Document Name	Description and/or URL	Version & Last Update
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/64727270/8+-+R5+Test+Audit+v1.pptx?version=1&amp;modificationDate=1359495396000">https://confluence.dev.bbc.co.uk/download/attachments/64727270/8+-+R5+Test+Audit+v1.pptx?version=1&amp;modificationDate=1359495396000</a>	30/01/2013
9 - Lessons Learnt from 2012 mj	Provided by Waqar Hussain 30/01/13 an example of a lessons learnt session we did at the end of release 2012	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/64727270/9+-+Lessons+Learnt+from+2012+mj.docx?version=1&amp;modificationDate=1359495396000">https://confluence.dev.bbc.co.uk/download/attachments/64727270/9+-+Lessons+Learnt+from+2012+mj.docx?version=1&amp;modificationDate=1359495396000</a>	-
10 - Archive test review Jan 2013 20130129a	Provided by Waqar Hussain 30/01/13 an internal test review as part of the continuous improvement programme	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/64727270/10+-+Archive+test+review+Jan+2013+20130129a.pptx?version=1&amp;modificationDate=1359496655670">https://confluence.dev.bbc.co.uk/download/attachments/64727270/10+-+Archive+test+review+Jan+2013+20130129a.pptx?version=1&amp;modificationDate=1359496655670</a>	30/01/2013
11 - Defects review R4 0 20130123a	Provided by Waqar Hussain 30/01/13 a new process in each release where the team will look to target key defects found in a release (found in E2E, OPS, BAT and LIVE) and work out why these were not captured earlier and what could have been done to prevent the issue. Including what could have done upstream to capture the issue earlier etc	
	<a href="https://confluence.dev.bbc.co.uk/download/attachments/64727270/11+-+Defects+review+R4+0+20130123a.pptx?version=1&amp;modificationDate=1359496661993">https://confluence.dev.bbc.co.uk/download/attachments/64727270/11+-+Defects+review+R4+0+20130123a.pptx?version=1&amp;modificationDate=1359496661993</a>	30/01/2013
[DMIAD-1747] Mark as Pending Wipe from scratchpad	Provided by Waqar Hussain 30/01/13	30/01/2013
Architecture NFRs	<a href="https://confluence.dev.bbc.co.uk/download/attachments/29294994/EM3+Usage+Model+0.7.xlsm">https://confluence.dev.bbc.co.uk/download/attachments/29294994/EM3+Usage+Model+0.7.xlsm</a>	-
Media Movement	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Media+Movement">https://confluence.dev.bbc.co.uk/display/DMI/Media+Movement</a>	11/10/2012
Closedown Activities Media Movement	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Closeddown+activities+Media">https://confluence.dev.bbc.co.uk/display/DMI/Closeddown+activities+Media</a>	-
Stock_Management_PDM_V1 1.pdf	Stock Management Physical Data Model	06/02/2011
em3_pdm_v50.pdf	EM Physical Data Model	06/02/2011
master.v51.ddl	SQL Data Definition Language file (Data Structures) for the EM3 and STM schemas	14/02/2011
RACT_1.8.pdf	EM3 Schema extract including Contract	14/02/2011
IBM Deliverables Documentation	<a href="https://repo.dev.bbc.co.uk/dmi/em3/requirements/Release%20B/">https://repo.dev.bbc.co.uk/dmi/em3/requirements/Release%20B/</a>	-
	<a href="https://repo.dev.bbc.co.uk/dmi/em3/requirements/Release%20B/Overview/">https://repo.dev.bbc.co.uk/dmi/em3/requirements/Release%20B/Overview/</a>	-
	<a href="https://repo.dev.bbc.co.uk/dmi/em3/requirements/Release%20B/2%20Deliverables/Entity%20State/">https://repo.dev.bbc.co.uk/dmi/em3/requirements/Release%20B/2%20Deliverables/Entity%20State/</a>	-
Media Movement Testing	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Media+Movement">https://confluence.dev.bbc.co.uk/display/DMI/Media+Movement</a>	11/10/2012
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Closeddown+activities+Media+Movement">https://confluence.dev.bbc.co.uk/display/DMI/Closeddown+activities+Media+Movement</a>	07/02/2013

Document Name	Description and/or URL	Version & Last Update
Production Tools Performance Testing: - ingest_report_2012-07-02-master.xlsx - 2012-02-12- Craft Interface Ops Proving Plan v1.16.xls - Fabric Send to Craft 3.4 Metrics v1.1 dan.xlsx - Salford Ingest Ops Proving DMI Analysis 0.2.ppt - Salford RFS Ops Proving - DMI Analysis 0.1.pptx	Both active and completed testing is included in these documents regarding Production Tools Performance Testing: <a href="https://confluence.dev.bbc.co.uk/display/DMI/North+Testing">https://confluence.dev.bbc.co.uk/display/DMI/North+Testing</a>	22/02/2012
Production Tools: Non-Functional Requirements	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+Non-Functional+Requirements">https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+Non-Functional+Requirements</a>	09/11/2012
Salford/ North Ops Testing	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+Non-Functional+Requirements">https://confluence.dev.bbc.co.uk/display/DMI/Production+Tools+Non-Functional+Requirements</a>	09/11/2012
Salford/North Ingest testing:	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Import+Station+NFT">https://confluence.dev.bbc.co.uk/display/DMI/Import+Station+NFT</a>	22/02/2012
A physical view of the ingest workflow	<a href="https://confluence.dev.bbc.co.uk/download/attachments/32445712/Complete+Import+Station+Workflow+--+with+4+slides.pdf">https://confluence.dev.bbc.co.uk/download/attachments/32445712/Complete+Import+Station+Workflow+--+with+4+slides.pdf</a>	–
Media Store improvements	These Media Store Improvements were identifies as a result of SJC Enhancements:	
	<a href="#">MS-1030- Media store task pickup could be improved</a>	23/03/2012
	<a href="#">MS-1097- High numbers of reads on db (also slow listener callbacks)</a>	13/09/2012
DEL004 - 1 - DMI Test Approach to get us LIVE.doc	The QA and test approach for DMI release 2.0.1	29/01/2013
DEL005 - 2 - Fabric Achieve High Level Test Approach v2.pptx	High Level Test Approach with Test Phases and Entry and Exit Criteria	30/01/2013
DEL006 - 3 -Defect management (Acceptance and In-life) v2.pptx	Defect management process applied to acceptance for INFAX cutover release 2.0.1	30/01/2013
DEL007 - 4 - Example Test Estimates & R3 Planning.xlsx	Top-down test estimates and planning calendar	29/01/2013
DEL008 - 5 - R6 Planning Master as at 29012013 Ver 0 8.xls	Release 6 low-level test plan for BAT, End-to-End and Non-functional Testing	29/01/2013
DEL009 - 6 - DMI Testing Review Oct 2012.pptx	End-to-End and Performance Test Review presentation up to and including Release 3	28/01/2013
DEL010 - 7 -R2 01 Test Audit WH-RS v5.pptx	Archive Release 2.0.1 Testing Approach	29/01/2013
DEL011 - 8 - R5 Test Audit v1.pptx	Archive Release 5 Testing Approach	29/01/2013
DEL012 - 9 - Lessons Learnt from 2012 mj.docx	Test team lessons learnt document	02/10/2013
DEL013 - 10 - Archive test review Jan 2013 20130129a.pptx	Review of approach for end to end testing to identify modifications to implement in quarter 1 of 2013	29/01/2013
DEL014 - 11 - Defects review R4 0 20130123a.pptx	A review of defects raised in end to end test, business acceptance test and in live in order to guide continual improvement in Fabric Archive programme	29/01/2013

Document Name	Description and/or URL	Version & Last Update
DEL015 - [DMIAD-1747] Mark as Pending Wipe from scratchpad.pdf	Sample User Story from JIRA	17/01/2013
Farm BBC Operational Compliance Verification and Test Scripts v1.9[1].docx	Operational Compliance Verification And Test Scripts by the Farm Operational Work Group	12/02/2013
RE Status of testing as at close of business24th January 2013 - Release 5 of Fabric Archive (Inc. SP072 updates).msgbusiness	Email status update for Release 5 of Fabric Archive E2E Testing	30/01/2013
Ref Status of testing as at close of business16th January 2013 - Release 5 of Fabric Archive (Inc. SP071 updates).msgbusiness	Email status update for Release 5 of Fabric Archive E2E Testing	30/01/2013
Tests Results[1].zip	Results of Operational and BusinessAcceptance Tests for Production Tools by BBC North in Salford and the Farm	12/02/2013
Fabric Service Definitions FINAL.pdf	User Journeys, Service Definitions and the Technology to support Fabric	03/02/2012
Technical debt - 28 Jan 2013.xlsx	Spreadsheet containing current list of Technical debt valid as of 28 <sup>th</sup> January	14/02/2013
DMI Assessment- Taffeta	TAFETTA is the development project for Production Tools UI functionality. The high level requirements are recorded in the SILK project. TAFETTA's are then raised to break down SILK's into the development pieces of work for the SILK's. TAFETTA's should have a link to the SILK that they are part of.	
	There are other projects that deal with the Media Infrastructure developments and adaptors for other digital content integrations other than Production Tools.	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Archive+Integrated+Production+Tools">https://confluence.dev.bbc.co.uk/display/DMI/Archive+Integrated+Production+Tools</a>	-
Unit Test Projects.bmp	Maintained Test Projects in order to cover the whole functionalities.	22/02/2013
Reports Request	BusinessAcceptance tests: <a href="https://bbcdmi.atlassian.net/issues/?filter=12400">https://bbcdmi.atlassian.net/issues/?filter=12400</a>	25/02/2013
Defect analysis v2.4 20130221T1803.xlsm	Defect Component chart indicating Showstoppers in	21/02/2013
Scenario analysis v1.0 20130221T1746.xlsm	Services R5 <a href="https://bbcdmi.atlassian.net/secure/Dashboard.jspa?selectPageId=11301">https://bbcdmi.atlassian.net/secure/Dashboard.jspa?selectPageId=11301</a>	-
	Services R6 <a href="https://bbcdmi.atlassian.net/secure/Dashboard.jspa?selectPageId=11101">https://bbcdmi.atlassian.net/secure/Dashboard.jspa?selectPageId=11101</a>	
	2.0.1.3 scenarios <a href="https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%202013%20end%20to%20end%20test%22%20and%20issuetype%20%3D%20Test">https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%202013%20end%20to%20end%20test%22%20and%20issuetype%20%3D%20Test</a>	
	R3 scenarios <a href="https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%20">https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%20</a>	

Document Name	Description and/or URL	Version & Last Update
	<a href="#">R3.0%22%20and%20issuetype%20%3D%20Test</a>	
	R4 scenarios	
	<a href="https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%20R4.0%22%20and%20issuetype%20%3D%20Test">https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%20R4.0%22%20and%20issuetype%20%3D%20Test</a>	
	R5 scenarios	
	<a href="https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%20R5.0%22%20and%20issuetype%20%3D%20Test">https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%20R5.0%22%20and%20issuetype%20%3D%20Test</a>	
	R6 Scenarios	
	<a href="https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%20R6.0%22%20and%20issuetype%20%3D%20Test">https://bbcdmi.atlassian.net/issues/?jql=project%20%3D%20%22Archive%20R6.0%22%20and%20issuetype%20%3D%20Test</a>	
Defect analysis v2.4 20130221T1419.xlsm	Defect Analysis which includes a table showing defects raised with a direct link to a requirement.	20/02/2013
Accenture meeting 25022013.docx	Additional supporting information regarding test for Production Tools and the media infrastructure stack.	
DMI Fabric Tests	Closedown notes:	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Closedown+activities+Automation+and+Systems+Integration#ClosedownactivitiesAutomationandSystemsIntegration-ContractualAcceptanceTests">https://confluence.dev.bbc.co.uk/display/DMI/Closedown+activities+Automation+and+Systems+Integration#ClosedownactivitiesAutomationandSystemsIntegration-ContractualAcceptanceTests</a>	
	FabricQa – CA (ContractualAcceptance Tests)	
	FabricQa – BE (BackEnd Tests)	
	FabricQa – FBD (FileBasedDelivery)	
	FabricQa – MM (MediaMovement)	
	FabricQa – FE (FrontEndTests)	
	<a href="https://ci.dmidev.net/view/deployment/">https://ci.dmidev.net/view/deployment/</a>	
	FIT reports and subsequent results can be seen on the following link:	
	<a href="https://ci.dmidev.net/view/FabricQA%20-%20FBD/job/AIMI%20%28Metro%29%20happy%20path%20end-to-end%20Product%20Version%20test%20DA-1/">https://ci.dmidev.net/view/FabricQA%20-%20FBD/job/AIMI%20%28Metro%29%20happy%20path%20end-to-end%20Product%20Version%20test%20DA-1/</a>	
A0 Fabric Architecture Outline 25_02_13.png	A0 Fabric Architecture Outline drawing	25/02/2013
Defects vs new functionality	Defect vs new functionality effort pie chart slides: R5 Charts 1.pptx R6 Charts 1.pptx R7 Charts.pptx	26/02/2013
Dev/ QA lifecycle and automation	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Software+development+process">https://confluence.dev.bbc.co.uk/display/DMI/Software+development+process</a>	
	<a href="https://confluence.dev.bbc.co.uk/display/DMI/Testing">https://confluence.dev.bbc.co.uk/display/DMI/Testing</a>	
Interface Adaptor.xls	Very old- James McKeown's JIRA is now used to map tests	-
surefire-reports.zip	Reports from the Integration test suite as well as a sample Solr document	27/02/2013
Archive Release 5 Non Functional Test Exit Report - v1 0 (1).doc	Performance Test Exit Reports	25/01/2013
Archive Release 4 Non Functional Test Exit Report M- v1 0 (1).doc		02/01/2013

Document Name	Description and/or URL	Version & Last Update
Cataloguing.ppt Restriction and mediation early draft.pdf Restriction and mediation.pdf	Slides detailing Cataloging Restriction and Mediation hand Drawings	19/02/2013
Meeting Minutes - Test Assessment meeting with Waqar - 20130131 Meeting Minutes - Test Assessment meeting with Waqar Mike Rajan - 20130131 mj.docx	Waqar's comments on DMI Test Discussion Minutes	19/02/2013
EM3 UAT scripts	<a href="https://confluence.dev.bbc.co.uk/display/DMI/UAT+Test+Script">https://confluence.dev.bbc.co.uk/display/DMI/UAT+Test+Script</a>	18/02/2013
Fabric Test Report 18-02-2013v1.ppt	Info on Release 6 of Fabric Archive	18/02/2013
ArchR6 test report Status 18022013.xlsx		18/02/2013
Post Go-Live Data Quality and Integration Validation	<a href="https://jira.dev.bbc.co.uk/browse/DMIEM3REL-234?page=com.atlassian.jira.plugin.system.issuetabpanels:all-tabpanel">https://jira.dev.bbc.co.uk/browse/DMIEM3REL-234?page=com.atlassian.jira.plugin.system.issuetabpanels:all-tabpanel</a>	01/02/2013
Playout script in JIRA	<a href="https://bbcdmi.atlassian.net/browse/ARBRF-2">https://bbcdmi.atlassian.net/browse/ARBRF-2</a>	01/02/2013
Fabric Release 5 0 - Data Fixes.doc Archive Release 5 Non Functional Test Exit Report - v1 0 (1).doc	E2E Scenarios- NFT Text Exit Report and Data Fix Test Exit Report	31/01/2013
	<a href="#">1. Release 5</a>	-
	<a href="#">2. Release 4</a>	
	<a href="#">3. Release 3</a>	
	<a href="#">4. Release 2.0.1.3</a>	
	<a href="#">5. Release 2.0.1.2</a>	
3 x 3 Risk charts for R6 (Demonstrates how we plan our tests by prioritising)	<a href="https://bbcdmi.atlassian.net/secure/Dashboard.jspa?selectPageId=10901">https://bbcdmi.atlassian.net/secure/Dashboard.jspa?selectPageId=10901</a>	-
Services/Feature list for R6	<a href="https://bbcdmi.atlassian.net/secure/Dashboard.jspa?selectPageId=11101">https://bbcdmi.atlassian.net/secure/Dashboard.jspa?selectPageId=11101</a>	
Copy of g-comp_R5_D_R6_D_20130227 T123503 ARBRI-267_20130227T122416	This is the R6-R5 comparison for a freetext search on "Decimal*". The G-metric is in the g-comp file, on the "stats" worksheet.	28/02/2013

Figure 14: Solution Delivery Documentation

## Operations

Figure 15 lists all documentation received by the review team that is relevant to the operations analysis.

Document Name	Description and/or URL	Version & Last Update
Fabric operations site	<a href="https://confluence.dev.bbc.co.uk/display/fabops/Fabric+Operations">URL On Confluence https://confluence.dev.bbc.co.uk/display/fabops/Fabric+Operations</a>	--
Backup schedules	Provides back-up schedule  <a href="https://confluence.dev.bbc.co.uk/display/fabops/Backup+Schedules">URL On confluence https://confluence.dev.bbc.co.uk/display/fabops/Backup+Schedules</a>	27-Jun-12
Service Management	Day to day operating of Fabric's technical & infrastructure services  <a href="https://confluence.dev.bbc.co.uk/display/fabops/Service+Management">URL on Confluence https://confluence.dev.bbc.co.uk/display/fabops/Service+Management</a>	--
Service management-Service catalogue	<a href="https://confluence.dev.bbc.co.uk/display/fabops/Fabric+-+Service+Catalogue">URL on Confluence https://confluence.dev.bbc.co.uk/display/fabops/Fabric+-+Service+Catalogue</a>	10/12/2012
Minimum practical Product Planning (includes INFAX Switch Off)	Materials that are WIP around describing the outstanding roadmap to Infax Switch Off and complete the 'Minimum Practical Product' (MPP) of Archive Database.  <a href="https://confluence.dev.bbc.co.uk/display/DMI/Minimum+Practical+Product+Planning+%28MPP%29+-+includes+INFAX+Switch+off">https://confluence.dev.bbc.co.uk/display/DMI/Minimum+Practical+Product+Planning+%28MPP%29+-+includes+INFAX+Switch+off</a>	
DMI Operations:  Fabric Operations Service Summaries v2.pps	The named files contain supporting information on: 1) Fabric Operations Service Summaries Profiles 2) Major Incident Summary since Go-Live 3) OAT Requirements	06/02/2013
Major Incident Summary- June 2012 to February 2013.pdf	<a href="https://confluence.dev.bbc.co.uk/display/dmiops/Operational+Acceptance+Test">https://confluence.dev.bbc.co.uk/display/dmiops/Operational+Acceptance+Test</a>	
Fabric Operations v2.pptx	4) Fabric Operations Summary of Team Accountabilities	
Oerations Team-Roles.pdf	5) Fabric Operations- Roles  6) NFR's Latest Data	
Fabrix Service Definitions Final.pdf	The purpose of this document is to provide the reader with a broader overview of the BBC's Fabric platform, and in particular: the context, use and underlying technologies of the platform.	03/02/2012
Farm BBC Operational Compliance Verification and Test Scripts v1.9.docx	Details a testing procedure designed to prove and refine operational processes in the provision of post-production operational effort to the BBC.	Version 1.9 17/05/2012
Phase 01- System Load Test File Path- Tests Results\Phase 01 - 2011 July - Pre Go-Live\System Load Test\	Ops Stress Testing log 04.10.2011.xlsx Ops Stress Testing log 21.09.2011.xlsx Ops Stress Testing log 22.09.2011.xlsx STRESS TESTS OBSERVATIONS_220911.docx	05/10/2011 21/09/2011 22/09/2011 23/09/2011

Document Name	Description and/or URL	Version & Last Update
Phase 01- Test File Path- ests Results\Phase 01 - 2011 July - Pre Go-Live\Tests In Progress\	BH01-01A-08.xls BH01-E14.xls BH01-E15.xls BH02-02A-01.xls BH02-02A-02.xls BH02-02A-03.xls BH02-02A-04.xls BH02-E26.xls BH02-E27.xls BH02-E38.xls BH02-E39.xls BH02-E44.xls BH02-E45.xls BH02-E46.xls BH02-E47.xls BH02-E47_withmxf_only.xls BH02-E55.xls BH02-E56.xls BH02-E57.xls BH1-EB-01.xls BH1-EB-02.xls BH1-EB-04.xls BH1-EB-05-new.xls DH01-E17.xls DH01-E18.xls DH01-E19.xls EDIT 1 - Studio Block.xls EDIT 2 - Studio Block.xls EDIT 3 - Studio Block.xls EDIT 4 - Studio.xls EDIT 5 - Studio Block.xls EDIT 6 - Studio Block.xls EDIT 7 - Studio Block.xls EDIT 8 - Studio Block.xls EDIT 9 - Studio Block.xls newEDIT 10 - Studio Block.xls QH05-E51.xls QH05-E52.xls QH05-E53.xls	
ENG Test Scripts for MXF Server - v1_7.docx	Performance Test Scripts for the MXFServer and Omneon Media Grid System supporting Vision & Children's	06/09/2011
Op Proving V&C_Discrete Systems Tests_v3_2.docx	Operational Acceptance tests for the Vision and Children's system, including retrieval and pass through of content and metadata to BBC DMI and Archive	16/09/2011
MPI 4_6 plugin Tests with MP.xls	Fabric / Omneon MG Non Functional Performance Test Plan - Feb 2012	07/03/2012
MPI_MXF_Test_Results_for_April_Reports	Operational Acceptance Tests results for MXF from April 2012	18/04/2012
MXF 4_6 Technical Upgrade Acceptance Tests v1_6.docx	Operational Acceptance tests for MXFServer v4.6, including Clean-up Tool & DMI plugin v1.12	12/03/2012

