Jisc Monitor Pilot Project Proposal from Mimas

I. Primary contact name
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II. The Project
For this proposal Mimas brings together a combination of experience and expertise well placed to take forward the development of the Jisc Monitor Service in conjunction with staff and expertise from within Jisc. In line with the Jisc Collections “Jisc Monitor Pilot Project, Summary Document” and the findings from the Jisc APC Project and workshops, the project will build upon the use cases described in the call. Prototypes will be produced taking into account the current landscape, working collaboratively with the user community, and key stakeholders. By listening and applying feedback we will seek to find ways in which a potential Jisc Monitor national shared service may introduce efficiencies, propagate best practise and the development and application of standards facilitating data and system interoperability; assist in coordinating intelligence on institutions OA publications activity including compliance with funder mandates; and embrace the requirement that institutions have to manage and collect information across all their published material, OA and non-OA including the monitoring of spend. The prototypes will be used to assess the feasibility of developing a service, to scope that service if there is a clearly articulated need for one and to identify priorities for the service. The changes to HEFCE policy by 2016 mandating OA and the cascading implications for institutions, authors and publishers is a major factor moving forward this agenda for stakeholders. This one-year project will scope and explore how a Jisc managed shared service might support institutions in meeting this requirement.

The principles and values outlined in the JISC Collections Summary Document are reflected in the methodology and work packages described here. The sprint approach to the development combined with user and other stakeholder engagement applies an agile and user-centred framework to provide the flexibility that we believe this project requires. By working hand-in-hand with Jisc (see section VII) the aim is to support a co-design process that achieves optimum results within the time available. The vision statement from the Jisc collections, Jisc Monitor Service, Requirements Specification picks out succinctly the key elements that we will be addressing throughout the project: “a community-led, user centred, shared national service which will help institutions manage their Open Access publication activity ... provided using a collaborative approach with a focus on open source, open standards, interoperability, and linkages with international initiatives.”

III. Proposed methodology and technical architecture
Methodology
The project will draw on the Co-design approach developed by Jisc in recent partnership projects, and with which the Mimas and Sero team had active involvement. Jisc Monitor commences at the Co-design stage where ideas have been generated by partner organisations, culminating in the recent workshops, so the next step is for the active co-designers (Jisc, institutions, publishers) to undertake an intense period of agile and user-centred practical experimentation to focus and cohere the ideas, leading to options for production solutions.

Based on this approach, in addition to Project Management (WP1), the project contains three blocks of activity - the Articulation and Exemplification strands interact with each other for the first 9 months of the project, with integration and assessment of service options taking place in the final quarter.

- Articulation Strand (Work Packages 2-6) – Iterative documentation and dissemination, including requirements, standards and interfaces, underpinning technical considerations
• **Exemplification Strand (WP 7-10)** – Development of working prototypes for each of the four Use Cases in the ITT; this is what Co-design calls ‘practical experimentation’, using iterative sprints and supporting agile methods to work closely with user / expert focus groups, priority target systems / services and, where possible, real data

• **Implementation Strand (WP 11-14)** – Integration of prototypes where applicable, assessment of service options, including (where applicable) service and onward development planning

**Use Case Focus**

The focus of agile development activity on each of the four Use Case strands (whilst recognising their potential integration in business processes and workflows) will enable the team

• to maximise the expertise in Jisc, institutions and the OA supply chain in each area

• to make timely decisions about fruitful opportunities, dead end streets and blind alleys

• to exploit the established data ecosystem (e.g. CORE, DOAJ, PubMed) and data harvesting and synchronisation approaches (CORE, OAG, GOKb)

Furthermore, the project management and resourcing approach is structured to work with Brian Mitchell and the Jisc Scholarly Communications team to exploit Jisc’s extensive network of contacts and involvement with initiatives across the Requirements, Use Case and Standardisation work.

For each of the use cases, our approach will focus on building momentum and achieving best value for the future by leveraging design and development work already undertaken or demonstrably in progress. Here we present two examples of this type of opportunity, relating to Use Cases 2 and 3.

**UC2 Systems Interoperability example:** The Jisc funded UKRISS project made a number of recommendations to the Research Information community on modeling research outputs (including publications – report due imminently). The project used the CERIF [1] standard as the basis for the expression of these data models; CERIF is widely known, and support within vendor CRIS systems is growing, so the Monitor will take it into account when engaging with standards around interchange of publications metadata, to ensure that such information can fit into the broader RIM scope.


**UC3 Funder Compliance & Licensing example** - Open Article Gauge, the PLOS funded initiative developed through Cottage Labs, gathers and exposes detailed license information for open access articles. It extends the BibJSON [1] convention for representing bibliographic information in JSON, to support this license information [2], based on the Open Definition licenses [3]. Representation of bibliographic and license data in this form is emerging, but is not a broadly adopted standard.


**Underpinning Principles**

To be successful, the whole project approach, from data modelling to development and deployment must be based on three key principles:

• **Open** - Mimas is committed to using and contributing back into Open approaches – software tools, Open Source Software (OSS), openly documented APIs using well understood and extensible data formats (such as JSON) and Open Data (where applicable). Mimas and its partners have a considerable track record in this space.

• **Secure** - At the same time, our approach will enforce security where applicable, bearing in mind that the Monitor problem space involves confidential financial data as well as obligations under DPA legislation. This will impact technology choices – for example choice of API security between signed HTTP requests (where a shared secret is used to encrypt a unique value sent
alng with the request) and basic authentication over https (using a standard username/password authentication challenge).

- **Service Based** – The problem being addressed exists in a distributed ecosystem (distributed in terms of business processes, software services and data, as well as organisational roles). The expression of requirements, data modeling, application design and development must each therefore assume distribution, being service-based, capable of disaggregation to low level functions, using persistent IDs for all data objects and deploying APIs for internal as well as external operations.

**Technical Architecture**

Whilst it will be important for selection of technical architecture and tool sets to be based on more detailed evidence of the collaborating components, it is clear from the problem to be addressed and the principles set out above that the architecture will be based on the following elements. The selected team has development and operational experience with all.

- A **cloud-based hardware platform**, which should be scalable on demand; this might be Amazon AWS (though economies available from Digital Ocean are noted); the platform will be provided without additional cost for the duration of this project to March 2015
- Separate development, test and public **platform instances** (as per KB+ and Jisc Historic Books)
- A **database** (MySQL or PostgreSQL) for at least some data (especially transactional), though **linked data** will be a consideration in the publication space (e.g. use Ontotext triple store)
- A **web development framework** (such as GRAILS) and associated libraries and utilities
- A **Micro-Services** approach to maximise service re-usability (as per California Digital Library)
- Use of automated **crawling and harvesting** approaches (notably OAI-PMH)
- Exploit widely used **messaging protocols** for transporting alerts and other message based data
- Mint and deploy **persistent identifiers** for unstable objects to enable co-referencing (as in GOKb)
- **Authentication** based on Shibbolet (but taking account of actors outside the sector) linked to functional **authorization** based on combination of Shib institutional affiliation with business rules in the application (as in KB+)

**IV. Description of work**

Based on the approach set out above, the following tables break down the proposed work packages linked to milestones and deliverables.

- The Mimas consortium ‘Lead Roles’ are detailed in Section VI
- The “Jisc Role” is where it is anticipated WPs will have clear Jisc involvement or liaison with the Mimas team, as proposed in Section VII
- “Days Effort” does not include effort provided by Jisc staff.

<table>
<thead>
<tr>
<th>WP</th>
<th>Lead Role</th>
<th>Jisc Role</th>
<th>Days Effort</th>
<th>Deliverables (Referenced in project timeline below)</th>
</tr>
</thead>
</table>
| 1  | Project Management | Mimas | JL | 81 | D1 – Project Initiation Document (PID)  
D2a > D2k – Monthly Project Board (PB) meetings and progress reports |
| 2  | Data Model | Sero | BM | 12 | D3a – Initial Logical Data Model  
D3b – Final Data Model |
| 3  | Requirements Catalogue | Sero | BM | 32 | D4a – Initial Requirements Catalogue  
D4b – Final Requirement Catalogue |
| 4  | Service Architecture | K-Int | 8 | | D5a & D5b – Service Architecture documentation |
| 5  | Standardisation & Interfaces | K-Int /CL | Various | 26 | D6a & D6b – Data formats documentation  
D7 – API documentation |
| 6  | Advocacy & Communications | Mimas | JL | 44 | D8 – Project Website (Wordpress)  
D9 – Community/Stakeholder engagement plan |
The timeline highlights when the Work Packages take place, the associated deliverables (as enumerated in the previous section - D1 to D20) and nine Milestones as described below. Whilst the timeline necessitates a number of parallel activity strands, the plan is designed to limit the risks arising from dependencies:

- By organising the developments in sprints tightly linked to user Focus Group inputs
- By allowing for critical reflection on parallel activity in the gaps between sprints
- By breaking down technical integration across the Use Case developments in to a mid-point options assessment (D13) and later development activity (D14).

The timeline milestones are as follows

**M1 (April Wk 4)** - 1st Monthly Project Board (PB) – PID Agreed, Project team and structures in place

**M2 (May Wk 4)** - 2nd PB – Initial Data Model and Requirements Catalogue, Web site in place

**M3 (July Wk 2)** – 1st sprint completed for UC1 and UC3, first public newsletter ready

**M4 (Sept Wk 2)** – 5th PB – 1st sprint completed for UC2 and UC4
M5 (Oct Wk 4) – 2nd sprint completed for UC1 and UC3, integration options appraisal, prototype platform specification

M6 (Dec Wk 2) – 8th PB - 2nd sprint completed for UC2 and UC4, integration options decision point

M7 (Jan Wk 4) – 3rd sprint completed for UC1 and UC3, initial integrated prototype service release, draft Recommendations Report

M8 (Feb Wk4) – 3rd sprint completed for UC2 and UC4, final public technical documents

M9 (March Wk4) – Integrated prototype service release, documented APIs, full Recommendations Report, final newsletter.

V. Relevant Skills and Experience

Mimas has considerable experience of the scholarly publishing lifecycle, the development of OA models, APCs and understands the challenges of introducing accountable and effective open models (see Macintyre CV - working with PLOS, Europe PubMed Central and key Scopus and WOK interactions). The team has played a lead role in sector consultation activity (see Manista CV) and can draw on deep experience of bridging the information gap between publisher systems and institutional systems through advocacy and implementation of standard protocols (notably in the JUSP service, adopted by 95% of UK HEIs – see Meehan CV).

Mimas also has a strong track record of deriving long term shared community services from investigative user led developments – for example, in the Copac family of collection management services, JUSP and the emerging LAMP Analytics service. Furthermore, to ensure optimal coverage of skills and domain knowledge, Mimas has signed a flexible collaboration agreement with Cottage Labs (CL) and Knowledge Integration (K-Int) and Sero Consulting (Sero). The partners work extensively in HE, providing Open Source Software solutions to institutions and funders in areas such as institutional repositories, research information and analytics, publication and bibliographic management, Open Access compliance and research data management.

This provides access to highly experienced practitioners in the focal areas for the Monitor service – especially (1) ‘Monitoring publication activity’, (2) ‘Collaboration in standards development and interoperability’ notably with publishers and other supply chain actors and (3) Compliance with funder mandates. Whilst our work in Area 4 is embryonic, the institutional IT and CRIS background of the team provides a strong baseline for innovation in ‘Monitoring publication charges’. Relevant projects that the partners have worked on include (listed alphabetically):

**CORE service** – Owen Stephens has been a member of the OU COnnecting REpositories project, which facilitates free access to content stored across Open Access repositories. CORE is a large aggregator of content - several million publications from hundreds of Open Access Repositories. A range of value added services are provided, including API and Portal to search and navigate scientific publications aggregated from a wide range of Open Access Repositories (OARs). [http://core-project.kmi.open.ac.uk](http://core-project.kmi.open.ac.uk)

**Directory of Open Access Journals service** - The DOAJ is a key piece of Open Access infrastructure, run by IS4OA. Cottage Labs has recently taken over development and hosting, rebuilding it as a modern bibliographic management and discovery system for OA publishers. [http://doaj.org](http://doaj.org)

**G4HE project** – This uses Gateway to Research data from RCUK to provide aggregate analytics over the whole dataset for various HEI use cases. This demonstrates ability to work with large and complex datasets and to provide novel views for specific requirements. [http://g4he.cottagelabs.com](http://g4he.cottagelabs.com)

**GOKb service** – Funded by the Mellon Foundation and led by Jisc and a consortium of US universities (NCSU, Chicago, Duke, Penn), GOKb has been designed and developed by K-Int and Sero. It provides a technical and operational model for collection and validation of title data, tracked over time to cover Title, Publisher, OA status changes. With the complementary KB+ service, this has generated considerable engagement with a broad supply chain, providing data that is consumed by global
services from EBSCO, ExLibris, OCLC, and Serials Solutions. Phase 2 (2014-15) integration targets include DOAB, DOAJ and a co-referencing API for publisher systems. [http://gokb.org]

**KBplus service** – K-int and Sero have been working with Jisc Collections, SCONUL and the HE library community to design and develop the Jisc service that enables institutions to track availability and licensing terms for scholarly journal titles. This started with tracking Jisc Collections journals deals (NESLi2) and is now extending to cover e-books and to track data on OA and hybrid OA titles. Working with Mimas, it is integrated with JUSP usage statistics. [http://www.kbplus.ac.uk/kbplus/]

**Open Article Gauge service (OAG)** - Working with PLOS, Cottage Labs developed an application which analyses article web pages to determine Open Access compliance the licence conditions of the content. The objective is to provide a tool to which a funder can pass a list of identifiers (e.g. DOIs) for publications resulting from their funding and receive a report on the open access status of that content, and thus the level of OA mandate compliance. [http://oag.cottagelabs.com]

**Open Biblio projects** – Cottage Labs undertook three projects to investigate how to gather and provide access to a large quantity of Open Access materials via their bibliography, in particular focused around the PubMed Open Access subset. A key output of this project was the BibServer software, which is currently used by OKF. [http://cottagelabs.com/projects/bibserver]

**UKRISS study** - Feasibility study into the opportunities for national shared services in research information, in which the team carried out a large survey of the sector and developed data models in CERIF for information interchange. This demonstrates work with standards development and information modelling as well as in prototyping technology components to demonstrate the value of further work. [http://ukriss.cerch.kcl.ac.uk/]

### VI. Management and Team

The Mimas Service Manager will lead the Mimas Project Team and report to the Jisc Project Manager (Further details of involvement of Jisc is given in Section VII, as directed.) A dedicated Mimas Project Manager will manage the staff working on the proposed Work Packages including: the technical oversight from specialist Mimas Service staff, the development activities in support of the use cases and the involvement of the community via the Mimas User Liaison. The diagram shows the proposed management structure.

![Diagram](image)

The team combines the domain expertise and technical strengths of Mimas, Sero Consulting, Knowledge Integration and Cottage Labs. As set out above, Mimas has a commercial Agreement with Sero, which has back-to-back agreements with CL and K-Int. They share a common delivery ethos and have successfully worked together on a number of projects and services. Directly employing
around 30 individuals, they bring a breadth of hands on technical and domain experience that will provide the flexibility of resourcing and direction required in this assignment. They also support the running of relevant services with sector partners (notably DOAB, DOAJ, GOKb, KB+, OAG, as above).

**Jisc Roles assumed:** Project Manager – Jo Lambert; Requirements Manager – Brian Mitchell; Scholarly Communications Team – led by Neil Jacobs.

<table>
<thead>
<tr>
<th>Key Staff Descriptions</th>
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<tbody>
<tr>
<td><strong>Mimas Service Manager</strong></td>
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<tr>
<td><strong>Ross MacIntyre</strong>, Mimas Senior Manager and Service Manager for the ‘Web of Knowledge Service for UK Education’, ‘JUSP’ (JISC’s Journal Usage Statistics Portal), ‘Europe PMC+’ (including the manuscript submission system and grant data reporting, etc.) and ‘Zetoc’. He is responsible for Digital Library-related R&amp;D services and had formal involvement with Dublin Core and OpenURL standards development. Recent projects for JISC include PIRUS2 (extending COUNTER to Article-level) and IRUS-UK (applying PIRUS2 findings to UK institutional repositories). Ross is Chair of UKSG and a member of the Technical Advisory Boards of COUNTER and the UK Access Management Federation. Expertise includes: IT Project Management, Service Management, Application Development, Online Publishing, Analytics and Usage Statistics.</td>
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</table>

| **Mimas Project Manager** |
| **Dr Ian Chowcat** (Sero) – Ian has over 20 years in learning, research and library technology. He has experience as an OU Associate Lecturer at undergraduate and postgraduate levels, leading a training programme for tutors in online resources, and as Director of a £40m e-Learning Programme. Since joining Sero in 2008, he has undertaken projects for Jisc, RIN, universities and local authorities including a national review of bibliographic services, and evaluation of reference management, analytics initiatives and repository text mining. He recently led requirements capture for research data management (Nottingham) and the user behaviour literature review for Spotlight on the Digital (Jisc). [http://www.serohe.co.uk/key-support-staff/](http://www.serohe.co.uk/key-support-staff/) |

| **Mimas User Liaison & Evaluation** |
| **Dr Frank Manista** as the Community Engagement Officer for Jisc APC (Article Processing Charges), engages with institutions and funders to raise awareness of Jisc APC and ensure that the project responds to emerging requirements within the Open Access landscape. Frank is an academic researcher and has been a lecturer for Higher Education in both the US and the UK, supervising MA dissertations in English Literature. He has written on modes of teaching using Enquiry-Based Learning (EBL), as well as issues centered on open-access publication. Expertise includes: research methods, composition and editing, module design, teaching, pedagogy and EBL. |

| **David Kay** (Sero) – David Kay has over 20 years of experience as a data architect for large scale and distributed service developments, including Ufi learndirect e-learning platform (with Logica), the US National Archive web platform (with PTFS) and the Family Search web service. He has recently worked with Jisc and a considerable number of UK universities on repository services (White Rose), research data management (Nottingham), open licensing (Discovery, Spotlight), shared knowledge bases (KB+, GOKb) and service analytics (LAMP). [http://www.serohe.co.uk/team/david-kay/](http://www.serohe.co.uk/team/david-kay/) |

| **Owen Stephens** – Owen has 15 years experience in UK HE library services (RHUL, Imperial, OU) and a strong reputation as a domain expert in the UK and the US. He has been a key player in the introduction of CRIS (Symplectic), repository platforms (ePrints, Dspace) and distributed publication services (ranging from early adoption of SfX to the OU CORE development). Over the past two years he has acted as Design Authority for the combined KB+/GOKb development, linking with JUSP and Keepers, as well as working with a variety of HEIs. [http://www.serohe.co.uk/team/owen/](http://www.serohe.co.uk/team/owen/) |

| **Helen Harrop** (Sero) – Helen has 12 years background in software testing and User Experience (UX) assessment. She developed her career with the Prudential and the HE Academy before joining Sero in 2009 and has experience of a range of requirements validation and testing methodologies. She has recently been involved in testing and evaluating library, repository, reference management, |


knowledge base and analytics systems. [http://www.serohe.co.uk/key-support-staff/](http://www.serohe.co.uk/key-support-staff/)

### Technical Oversight & Development

**Dr Paul Meehan** is a Senior Development Officer at Mimas, working on a range of projects and services, including: JUSP, IRUS-UK and formerly Intute. He will lead on planning transition to service. Roles include database administration and data handling, software creation, user support and training. As well as the JUSP service, Paul also works with Arthritis Research UK and the eTekkatho project, designed to help students discover (OA) learning and teaching resources. With a very strong scientific background (Chemistry PhD), Paul has a professional interest in the use of scientific data in teaching and research. Previous roles were with the CrossFire chemical database, and then as technical lead on the PSIgate and GESource RDN gateways, leading to a senior role with Intute. Development expertise includes: PHP, Perl, MySQL.

**Ian Ibbotson** (K-Int) – Ian will be the project Technical Authority. In 18 years of libraries and information services development he has played a leading UK and international role in standards implementation, metadata crosswalks, vocabulary management and transformations. He has been technical lead for evolving Jisc services such as KB+ and GOKb, and has worked in complex distributed service chains (such as Culture Grid > Europeana). He is also a guest lecturer and tutor in software methods and web architecture at Sheffield Hallam University.

**Richard Jones** (Cottage Labs) – Richard has been working in Open Source and in/around Higher Education for over a decade. He has worked for large HE institutions, including the University of Edinburgh, the University of Bergen and Imperial College London, before co-founding Cottage Labs in 2010. He is a long term contributor to open source software, and in particular the DSpace repository platform. He is also an advocate of Open Access, and has written numerous articles on the subject, as well as co-authoring a book on institutional repositories. [http://cottagelabs.com/people/richard](http://cottagelabs.com/people/richard)

**Mark MacGillivray** (Cottage Labs) - Mark is a co-founder of Cottage Labs. He has MSc eScience, specialises in distributed computing and advanced databases and is a committed open knowledge advocate linked to OKF. He has ten years development experience underpinned by professional qualifications in database and systems administration and in programming. He has worked with universities and colleges on a variety of systems maintenance and development and projects as well as on above-campus and shared services. [http://cottagelabs.com/people/mark](http://cottagelabs.com/people/mark)

**Chas Woodfield** (K-Int) – Chas is a senior developer with 25 years experience of commercial software development in Higher Education and information services, delivering products for FDI and OCLC and project development for university consortia in Europe, US and Australia

**Other developers** – To be drawn on from the Mimas and partner teams as required

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VII. **Jisc and lead and project management interface**

The project should continue to be managed by Jisc Project Manager (JPM), Jo Lambert. Reporting to JPM will be the Mimas Service Manager (MSM), Ross MacIntyre. The JPM will chair the Project Board and be responsible for the Stakeholder Management Plan, to keep senior stakeholders informed throughout.

The comprehensive Jisc Monitor ‘Requirements Specification’ and supporting documentation should continue to be maintained and developed by Jisc’s Head of Web Services, Brian Mitchell, who is herein referred to as Jisc Requirements Manager (JRM). It is recommended that the JRM also has primary responsibility for interfacing with other Jisc groups, notably Scholarly Communications and the many relevant external bodies. JRM would contribute to the Community Engagement & Communications Plan to be developed by Mimas User Liaison.

A monthly Project Board is proposed, chaired by JPM, with permanent members:

- from Jisc: Project Manager and Requirements Manager


- **from Mimas**: Service Manager, Project Manager and User Liaison
- Other representatives from Jisc and relevant groups will attend when necessary.

### VIII. Risk Assessment

<table>
<thead>
<tr>
<th>Risk</th>
<th>Likelihood</th>
<th>Impact</th>
<th>RAG</th>
<th>Action to Prevent/Manage Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stakeholders</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. The expectations of the project across the sector may be difficult to reconcile with the limitations of the project.</td>
<td>Low (2)</td>
<td>Very High (5)</td>
<td>Red</td>
<td>Stakeholder management and raising awareness and outreach addressed in the projects communications plan.</td>
</tr>
<tr>
<td><strong>Staffing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Key staff leaving or unavailable in the time that the project is live.</td>
<td>Low (1)</td>
<td>High (4)</td>
<td>Yellow</td>
<td>All staff listed have confirmed availability for April 2014 start. Redeploy existing staff; Use existing networks for formal and informal advice.</td>
</tr>
<tr>
<td><strong>Organisational</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Partners are geographically dispersed and so physical meetings may be difficult to organise</td>
<td>Low (2)</td>
<td>Low (2)</td>
<td>Green</td>
<td>The partners and their staff are used to working in virtual teams and have strong histories of working together. Advance scheduling of all meetings; Use telephone conferencing &amp; e-collaboration; Keep in regular phone and e-mail contact.</td>
</tr>
<tr>
<td>4. That the activity across partners gets out of sync.</td>
<td>Low (1)</td>
<td>Medium (3)</td>
<td>Yellow</td>
<td>Project Team ensure they are fully briefed and resolve issues with the Project Manager. Involvement of Jisc Collections PM and technical staff. Regular reporting against the project plan with any possible difficulties identified early.</td>
</tr>
<tr>
<td>5. Partner communications breakdown and partner involvement wanes</td>
<td>Low (1)</td>
<td>High (4)</td>
<td>Red</td>
<td>Heads of Agreement from the start. Each organisation is experienced in Jisc service development. Scheduling regular updates and meetings, encouragement of active engagement.</td>
</tr>
<tr>
<td><strong>Technical</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6. Phased development may not be delivered to schedule thus impacting on testing timetable.</td>
<td>Low (2)</td>
<td>Medium (3)</td>
<td>Yellow</td>
<td>Regular progress reports. Ensure all in project are aware of progress mapped against schedule. Build in some contingency into planning.</td>
</tr>
<tr>
<td>7. Not all stakeholder requirements may be technically possible within the bounds of the project.</td>
<td>Medium (3)</td>
<td>Medium (3)</td>
<td>Green</td>
<td>Ensure good communications and prioritise development in full consultation with stakeholders. Keep Jisc Collections fully briefed at all times.</td>
</tr>
<tr>
<td>8. Development in the four key use case strands does not result in software sufficient to deliver the 'pilot service'</td>
<td>Low (1)</td>
<td>Low (1)</td>
<td>Red</td>
<td>Adopt an agile iterative approach to development with ongoing feedback from key stakeholders. Make software available for review by stakeholders as it is developed.</td>
</tr>
<tr>
<td>9. Availability of data for effective demonstrators including interoperability / standardisation issues.</td>
<td>High (4)</td>
<td>Medium (3)</td>
<td>Red</td>
<td>Prioritise key data sets early in the project and work with relevant Jisc services, projects and external organisations to ensure their availability.</td>
</tr>
<tr>
<td>10. Outputs from other Jisc services or projects are not available in time for Monitors prototypes</td>
<td>Low (2)</td>
<td>Medium (3)</td>
<td>Yellow</td>
<td>Establish what key dependencies there may early on and liaise with relevant Jisc services and projects. Put in place contingencies where appropriate.</td>
</tr>
<tr>
<td>11. Early data modelling may fail to account for all requirements later identified in later sprints</td>
<td>Low (2)</td>
<td>Medium (3)</td>
<td>Yellow</td>
<td>Continued checking and iteration of the data model throughout the project. Selecting technology approaches that allow the ongoing adaptation of the underlying data model with minimum disruption to ongoing development.</td>
</tr>
<tr>
<td><strong>Legal</strong></td>
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<tr>
<td>Exposed data may not comply fully with existing agreements and obligations.</td>
<td>Low (2)</td>
<td>Medium (4)</td>
<td>Yellow</td>
<td>Be fully aware of existing agreements and obligations of data owners and their implications.</td>
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</tbody>
</table>