

Health Education England
Alpha report

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Produced on behalf of:



Health Education England Learning Solution Alpha Report
Promoting the use of Technology Enhanced Learning (TEL) in
healthcare education

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Contents

1	EXECUTIVE SUMMARY	5
2	BACKGROUND AND OVERVIEW.....	7
2.1	BACKGROUND	7
2.2	ALPHA PROJECT OVERVIEW	7
3	DEFINING THE SERVICE.....	9
3.1	FUNDAMENTAL PROBLEMS	9
3.2	KEY CHALLENGES	10
3.3	SOLUTION.....	11
3.4	FURTHER POTENTIAL DEVELOPMENTS.....	13
3.4.1	<i>FACILITATING COLLABORATION.....</i>	<i>13</i>
3.4.2	<i>DIRECTING LEARNERS TO RESOURCES AND TRACKING PROGRESS.....</i>	<i>14</i>
4	METHODS, ACTIVITIES AND PROJECT PROGRESSION.....	15
5	RESEARCH, DEVELOPMENT AND TESTING OF FEATURES.....	20
5.1	SEARCHING FOR RESOURCES.....	20
5.1.1	<i>IDEATHON ACTIVITY – CATEGORISATION AND WIREFRAMING SEARCH.....</i>	<i>20</i>
5.1.2	<i>IDEATHON ACTIVITY - CLEAN THE PAGE.....</i>	<i>21</i>
5.1.3	<i>DEVELOPMENT AND USABILITY TESTING.....</i>	<i>22</i>
5.2	RESOURCE PAGE INFORMATION.....	24
5.2.1	<i>IDEATHON ACTIVITY- ESTABLISHING TRUST.....</i>	<i>24</i>
5.2.1	<i>DEVELOPMENT AND USABILITY TESTING – RESOURCE PAGE.....</i>	<i>28</i>
5.3	RATINGS, REVIEWS, DISCUSSION AND COLLABORATION	30
5.3.1	<i>IDEATHON ACTIVITY – RATINGS AND REVIEWS</i>	<i>30</i>
5.3.2	<i>IDEATHON ACTIVITY - COLLABORATION AND DISCUSSION</i>	<i>31</i>
5.3.3	<i>IDEATHON ACTIVITY – COLLABORATION SCENARIOS.....</i>	<i>34</i>
5.3.4	<i>DEVELOPMENT AND USABILITY TESTING – RATINGS REVIEWS AND DISCUSSION</i>	<i>37</i>
5.3.5	<i>DEVELOPMENT AND USABILITY TESTING – COLLABORATION SECTION</i>	<i>39</i>
5.4	CONTRIBUTING A RESOURCE.....	42
5.4.1	<i>IDEATHON ACTIVITY- ENGAGING CONTRIBUTORS.....</i>	<i>43</i>
5.4.2	<i>DEVELOPMENT AND USABILITY TESTING - RESOURCE CONTRIBUTION</i>	<i>45</i>
5.5	CONTENT CONTRIBUTION FROM OTHER ORGANISATIONS.....	50
5.6	USER PROFILES AND PERMISSIONS	51
5.6.1	<i>INVESTIGATION INTO USER ACCOUNT INTEGRATION WITH E-LEARNING FOR HEALTHCARE HUB..</i>	<i>51</i>
5.6.2	<i>IDEATHON ACTIVITY (CREATE A PROFILE PAGE) AND USABILITY TESTING.....</i>	<i>52</i>
	<i>KEY INSIGHTS AND FINDINGS</i>	<i>53</i>

5.7	IDEATHON ACTIVITY - ACCESSING FURTHER RESOURCES	53
	<i>KEY INSIGHTS AND FINDINGS</i>	54
6	ACCESSIBILITY AND ASSISTED DIGITAL NEEDS.....	55
6.1	ASSISTED DIGITAL NEEDS AND SUPPORT.....	55
6.1.1	<i>PREVALENCE OF ASSISTED DIGITAL NEEDS IN THE NHS WORKFORCE</i>	55
6.1.2	<i>HOW IS SUPPORT CURRENTLY PROVIDED?</i>	56
6.1.3	<i>HOW MIGHT THE NEW LEARNING SOLUTION BE SUPPORTED?</i>	56
6.2	WEB ACCESSIBILITY	57
7	RECOMMENDATIONS FOR PRIVATE BETA.....	58
7.1	SCOPE BY FUNCTIONAL AREA	58
7.1.1	<i>RESOURCE SEARCH</i>	58
7.1.2	<i>RESOURCE PAGE</i>	58
7.1.3	<i>RESOURCE CREATION</i>	59
7.1.4	<i>RESOURCE MANAGEMENT</i>	61
7.1.5	<i>RATINGS AND REVIEWS</i>	61
7.1.6	<i>RESOURCE DISCUSSIONS</i>	62
7.1.7	<i>PROOF OF CONCEPT FOR COLLABORATION SECTION</i>	62
7.1.8	<i>CONTRIBUTION OF RESOURCES BY ORGANISATIONS</i>	63
7.1.9	<i>NON-ADMINISTRATIVE ACCOUNTS</i>	63
7.1.10	<i>ADMINISTRATIVE ACCOUNTS</i>	63
7.1.11	<i>INTEGRATION OF USER ACCOUNTS WITH THE E-LEARNING FOR HEALTHCARE HUB</i>	63
7.1.12	<i>INTEGRATION OF E-LEARNING FOR HEALTHCARE HUB RESOURCES</i>	64
7.1.13	<i>NHS eLEARNING REPOSITORY CONTENT MIGRATION</i>	64
7.2	IMPROVEMENTS TO ASSISTED DIGITAL SUPPORT	65
7.3	IMPROVEMENTS TO ACCESSIBILITY	65
7.4	DEFERRED ITEMS	66
7.4.1	<i>RESOURCE MANAGEMENT</i>	66
7.4.2	<i>REVIEWS AND RATING</i>	66
7.4.3	<i>RESOURCE DISCUSSIONS</i>	66
7.4.4	<i>COLLABORATION SECTION</i>	66
7.4.5	<i>USER AND ORGANISATION PROFILE PAGES</i>	67
7.4.6	<i>RELATED CONTENT NAVIGATION</i>	67
7.4.7	<i>PERSONALISED CONTENT RECOMMENDATIONS</i>	68
7.4.8	<i>INTEGRATION WITH A LEARNER RECORD STORE (LRS)</i>	68
7.5	INDICATIVE TIMELINE	68
7.6	ROLES REQUIRED FOR PRIVATE BETA.....	70
8	BEYOND PRIVATE BETA	71

Health Education England
Alpha report

8.1	ESTIMATED DURATION OF PUBLIC BETA.....	71
8.2	TRANSITION OF ROLES TO IN-HOUSE TEAM	71
APPENDIX A.	TECHNICAL WORKSHOP NOTES (COMPILED)	72
APPENDIX B.	ALPHA SECURITY AND PRIVACY OVERVIEW	81
APPENDIX C.	ALPHA APPLICATION STRUCTURE AND TECHNICAL ARCHITECTURE	

1 EXECUTIVE SUMMARY

Health Education England (HEE) are interested in exploring the potential of a system that allows tutors, educationalists, commissioners and learners to discuss, share and collaborate around learning resources. Previous user research, over a number of years, has shown a strong case for developing this service. This report presents the results of a project focused on how the service should be developed to meet current needs.

Reading Room set out to understand, from a technical and user experience perspective, the various needs of users and how they could be met. During this Alpha project, the aims were to:

- build a prototype of the service
- test the prototype and wireframes with users
- demonstrate that the proposed service is technically possible.

The project was designed to provide feedback on a functional prototype for knowledge sharing. It also considered a number of key questions, essential for the success of any service:

- How will users establish trust with a resource?
- How can contributors be engaged and encouraged to share learning resources?
- How can the solution meet the needs of learners, without conflicting with the Learning Management System (LMS) within their organisation?
- What reasons would make people want to collaborate around learning resources?

During this process, we engaged a wide range of stakeholders to understand their needs and interactions. We reviewed the results of previous research and the team created a functional prototype. We embedded an agile approach to the project. After each session of user research, the team analysed insights and findings in order to revise wireframes and the prototype, and prioritise key user needs.

This report draws together the learning and insights from the prototyping process and contains a number of recommendations for developing the Alpha further.

Recommendations

On the basis of our research, we conclude that:

1. There is evidence of a large gap in the provision of learning across the healthcare sector which the Learning Solution¹ has the potential to fill.

¹ The system is currently being referred to as the “Learning Solution”. We expect this will change within Beta once a name is selected for the service.

2. The prototype system was very well received by users when tested, indicating that the current build is a strong foundation for a useful service which will help many users.
3. It would be most efficient to build directly upon the Alpha prototype, in order to develop the final tool (progressing to “Beta” phase).
4. User research suggested that the functionality offered by the Learning Solution should be expanded. At a very high level, the key journeys proposed for Beta development are:
 - Accessing a system that contains a wealth of useful learning resources.
 - Searching for and accessing a resource on the system.
 - Contributing a resource to the system.
 - Managing contributed resources.
 - Engaging in reviews and discussions around learning resources.
 - Moderating inappropriate use of the service.
5. There is a need for further prototyping to explore how users could collaborate within the Learning Solution and track their own activity within the site. These requirements should be explored with a proof of concept to understand whether they warrant full development.

2 BACKGROUND AND OVERVIEW

2.1 Background

HEE undertook a detailed research project to understand user's needs and attitudes towards Technology Enhanced Learning (TEL), in two phases. The first was conducted in 2012/13 and the second in 2013/14. The recommendations that the research made were clear: there was value in the development of a single unified online technology solution for the healthcare workforce. However, this research was dated, and there were concerns that it may not best represent the needs of healthcare professionals in 2016 given the rapid advances in technology.

Reading Room were therefore commissioned to undertake an additional research (Discovery) phase in 2016 to reassess the findings of the original report, to see whether needs had changed in the intervening time, and to provide additional intelligence to the existing research outputs. We followed Government Digital Service (GDS) guidelines and best practice in consulting with users directly and working in conjunction with HEE to design the research activities in order to omit any bias towards any explicit results.

2.2 Alpha project overview

Following the success of this Discovery phase, Reading Room were commissioned to complete an "Alpha" project to act on the research findings and develop a functioning prototype proof of concept.

The Alpha project's aim was to explore exactly how this service/system for sharing resources and collaboration should be delivered to ensure its success, and to build and test the fundamental user journeys that would make up the core of the developed system. The service itself is currently being referred to as the "Learning Solution", however it is expected that there will be work done either at the beginning of Beta or as a separate project to define a name and URL for the service.

The prototype developed and tested with users focused on two fundamental journeys:

- 1) Contributing a resource to the system
- 2) Searching for and accessing a resource on the system

The system currently built to support these two journeys sets the foundations for future developments of the service, where the Alpha prototype will be built upon and further developed in the next phase (Beta).

Within this Alpha project, a significant amount of further research was also undertaken to better understand users' expectations and needs of this service. This research was more solution

Health Education England
Alpha report

targeted than that undertaken with the Discovery phase in 2016. As an example, we were keen to understand the answers to questions such as:

- How do users know if a resource is high quality?
- Should learners be able to record their progress when completing a course? And if so how/where? Also, should this include informal learning?
- How would users want to search for resources?

This Alpha report sets out the main findings from the research activities completed within the Alpha phase, and makes recommendations on how the project should continue within the next Beta phase.

A significant aspect of the Alpha project has been to reduce and remove ambiguity over exactly what the Learning Solution is, who it is for, what it should do and how it sits alongside other existing services.

3 DEFINING THE SERVICE

One challenge faced during the course of the Alpha project was that the service has a potentially huge remit and diverse audience. Meeting all of the needs identified by various users could pull the service in multiple different directions.

The primary user journeys identified for Beta (including those covered by the Alpha prototype) can be distilled down to:

- 1) Accessing a system that contains a wealth of useful learning resources.
- 2) Searching for and accessing a resource on the system.
- 3) Contributing a resource to the system.
- 4) Managing contributed resources.
- 5) Engaging in reviews and discussions around learning resources.
- 6) Moderating inappropriate use of the service.

Following the Alpha phase research, we have consolidated our findings and defined the direction that the service should take. This will avoid ambiguity and ensure that the solution delivered within the Beta phase is targeted to solving the fundamental problems and challenges faced by users.

We have expanded on the problems and challenges below, in relation to:

- **Fundamental problems:** Addressing the fundamental issues that should be resolved.
- **Challenges:** Addressing the key obstacles to delivering any solution.
- **Solution:** Outlining how the proposed Beta solution will solve the problems and address the challenges.
- **Further potential developments:** Exploring the complex needs of learners, the potential to track learning activity, and facilitating further collaboration and discussion.

3.1 Fundamental problems

There are currently inefficiencies across the NHS in commissioning, developing, and accessing learning resources. This results in an overall increased cost, and reduction in the quality of learning delivered. Factors include:

- 1) There is currently a large amount of duplication of learning resources within the NHS and the social care system.
 - a. Commissioners may not be able to find existing resources, therefore commissioning the same or similar resource creation again.

- b. Educationalists creating TEL resources often need to start from scratch, rather than building upon existing material.
 - c. Individuals are creating quality resources, but are unable to share them with the wider workforce.
- 2) There is often a large variance in the quality of resources that are used for training NHS and social care staff on the same topic.
- 3) People looking to deliver training or conduct their own informal learning, currently need to scour the internet looking for high quality resources, which is time consuming.
- 4) Physical assets such as simulation manikins go unused, due to a lack of visibility.
- 5) Educationalists and TEL developers have limited access to feedback from outside of their own organisations to assist their resource development.
- 6) There are large numbers of small to medium-sized online discussion groups using Facebook, Yammer and other tools. However expertise, knowledge and insights into developing and delivering learning are not shared further for wider benefit.
- 7) A lot of learning activity currently goes unrecorded. This means that there is no way of capturing the informal learning undertaken by staff, which could contribute towards better tailoring of professional development and staff training.

3.2 Key challenges

There are a number of challenges that were identified that must be overcome in order to deliver a successful solution:

- 1) HEE does not have the capacity required to facilitate the moderation of all TEL resources that are published on any system.
- 2) Resources are not always willingly shared between organisations due to the cost of commissioning them and the potential to sell them on.
- 3) Any solution to allow TEL resources to be searched, requires a critical mass of resources before it will become useful to someone using it and a more attractive offer than Google.
- 4) Any solution cannot be mandated, which means that cultural change may be a barrier to usage.
- 5) Any solution must work within NHS constitutional values.
- 6) Any solution must be protected from misuse, particularly from private organisations looking to sell their content.

- 7) The target audiences often get frustrated at the number of systems they use and separate account details required.
- 8) The target audiences are likely to wish to use the potential solution whilst on the move, via phone or tablet.

3.3 Solution

The following solution statements are intended to be addressed and delivered in the Beta project, creating a service that solves the fundamental problems and addresses the key challenges. This is not an exhaustive list of what will be created or achieved in Beta.

- The Learning Solution will be developed to allow organisations, individual educationalists, learners and tutors to upload TEL resources that have an appropriate licence, and which they have authority to share.
- The Learning Solution can be searched by other tutors, learners, educationalists and commissioners to see what resources are currently available, before they create or commission duplicate resources, or worse, decide not to deliver that level of training at all due to budget constraints. This addresses **problem 1**.
- Resources on the Learning Solution can be rated and reviewed by the users, allowing others to understand whether it is a high-quality resource. This addresses **problem 2** and **challenge 1**.
- The solution will be fully responsive, allowing a seamless user journey on both mobile and tablet devices. This addresses **challenge 8**.
- The ratings and reviews left by users will contribute to the prioritisation of search results displayed to users when looking for resources, ensuring that highly rated content is promoted. This addresses **problem 3** and **challenge 6**.
- The Learning Solution will accommodate all “types” of TEL resources, with the vision of becoming a comprehensive library of resources. This addresses **problem 3**.
- The Learning Solution will allow physical assets to be promoted, giving visibility to underused physical training resources, with appropriate mechanisms to make contact and secure the asset for use. This addresses **problem 4**.
- The Learning Solution will provide feedback mechanisms for discussion and reviews, allowing tutors and commissioners to understand more about how useful it may be and its applications. Also, the creator of the resource will be able to gather feedback and ideas for how they could improve their resource and future resources. This addresses **problems 5 and 2, and challenge 1**.

- The Learning Solution will support priced resources, allowing the resources to be found using search, then providing either contact information or links through to another service where the enquiries or purchases can be made. This addresses **challenge 2**, encouraging a more comprehensive contribution of resource information to the solution.
- The key messaging of the Learning Solution should be tailored towards creating a collaborative community that encourages and helps each other. This is to discourage negative, unconstructive feedback that may restrict people's willingness to contribute a resource. This addresses **challenge 6**.
- The solution will give users the ability to filter out results that have a cost attached, mitigating the situation where private organisations flood the solution with priced resources. This addresses **challenge 6**.
- Mechanisms will be put in place to allow users to flag/report resources that go against the guidelines of the solution. These flags will be reviewed by moderators for potential deletion. This addresses **challenge 6**.
- User accounts will be integrated with Health Education England e-Learning for Healthcare (e-LfH), which covers the majority of the potential audience groups for the system. For these users, they will be granted the benefit of only using one set of login details, addressing **challenge 7**. It is to be confirmed in Beta how other users will be granted access and whether there will be a registration process to help mitigate against **challenge 6**.
- Prior to launch, the Learning Solution will be populated with all the content from the e-LfH Hub and the eLearning Repository. Pre-launch content migration may also be extended to cover other sites however, as migration from these sites would require additional technical research to understand its scope, it is not currently part of private Beta recommendations nor the estimated timeline. Content will subsequently be contributed by other organisations and individuals to populate the system. This addresses **challenge 3**.
 - The eLearning Repository content will be migrated across, and then the system will be de-commissioned (**providing cost savings**).
 - The e-LfH resources will be integrated with the Learning Solution, appearing as resource pages with links back to e-LfH. e-LfH will remain in place to deliver online courses and track learner activity. This integration gives visibility of the resource to commissioners and tutors to avoid duplicates from being created, though does not attempt to replicate existing learning management capabilities of the e-LfH Hub.

3.4 Further potential developments

Throughout the Alpha project, two potential features of the Learning Solution came across very strongly but have not been selected as a priority for full development within Beta. These features are further facilitation of collaboration around topics rather than resources (note that a discussion section is intended for resources in Beta), and allowing learners to be directed to resources and have their activity tracked.

These have been omitted for a number of reasons:

- The proposed Beta solution can be developed and released to users without requiring these features.
- There is further analysis required to define exactly how these features should be implemented, putting them a step behind in the delivery process when compared to the proposed Beta product.
- These concepts should be proven with users through a functioning or clickable prototype before committing to full delivery.
- Addition of these features into the Beta development will extend the Beta phase, leading to a slower delivery of the core Beta product.

By primarily meeting the needs of commissioners, tutors and educationalists, the initial focus of the platform will be on establishing a comprehensive set of resources. This will increase the likelihood that a useful result is returned for users searching for resources, which will in turn encourage more people to use it frequently.

3.4.1 Facilitating collaboration

Whilst we have discussed above that the Learning Solution will have the ability for users to contribute resources, discuss and rate them; the proposed Beta product does not currently facilitate more general communication and collaboration.

By investigating how users wish to communicate and collaborate with each other, we identified the need for a more general and topic-led collaboration section of the site that is separated from conversation around an individual resource. This will allow users to support each other in the creation and delivery of learning. This has the potential to address **problems 5 and 6 and challenge 2**.

As part of the Alpha project, we have produced a conceptual idea for how this could function, which has been discussed with users and been well received. This concept will be discussed later in the report, however the identified next step for this section is to create an initial prototype to prove that this will be used and well received by users.

3.4.2 Directing learners to resources and tracking progress

The solution will be designed to accommodate the needs of learners themselves, who are looking to conduct **informal learning** (as opposed to mandatory training) and find tools that may help them in their studies. As an audience group, learners have particularly complex activity tracking requirements that are outside of the intended remit of the proposed private Beta solution. There are two main requirements:

- 1) Training that learners are mandated, told, or recommended to complete goes beyond “informal learning”. Learners want to know exactly which training package or resource they should access and use.
- 2) Learners want to be able to track their progress and provide proof that they have completed the learning/training that is required of them.

Meeting these needs would help to address **problem 7**, allowing informal learning to be tracked by tutors, and could also have further benefits by allowing tutors to recommend resources for their learners to complete.

A challenge to these needs is that users from NHS organisations with an LMS told us they would prefer that their learners stay within their system to complete learning/training that has been selected for them, as it is recorded in their system. However, in the context of informal learning, they do not have issues with learners using the Learning Solution.

Care needs to be taken to avoid duplication of effort or confusion between existing LMS and the Learning Solution. Initial exploration of options for tracking learners’ activity and results will begin in private Beta, however further work to produce a proof-of-concept and subsequently a working solution is likely to take place in public Beta.

4 METHODS, ACTIVITIES AND PROJECT PROGRESSION

The Alpha project was split between functional developments, utilising an agile delivery process, and further research activities conducted within the sprints. The insights and recommendations in this report draw on the findings from our research activities, combined with further insights gained from testing the functional prototype. Findings from the activities undertaken had a significant impact on the scope of the project, allowing us to make key decisions throughout and react to opportunities. A summary of the main activities is provided below.

Desk research of existing analysis completed by HEE

- Including the submission framework outlining what information is required to submit a resource.
- The initial analysis conducted by HEE gave a starting point to define what information should be captured about a resource, which was then validated and iterated with users.
- Testing with users identified some areas where the information asked for was not clear enough, redundant, or not sufficient.

Four “Ideathon” sessions with 58 participants (outside of the project team) from across healthcare

These adopted a ‘hack-day’ style, bringing together users with designers, developers and business owners to create and explore solutions.

- Exploring a range of topics relating to the successful development of the Learning Solution. Topics explored:
 - Categorisation of resources and search mechanisms
 - Choosing between resources in search results
 - Establishing trust in resources
 - Rating and review systems
 - Collaboration and discussion needs
 - Potential collaboration scenarios
 - Engaging contributors
 - Design of a profile page
 - Accessing further resources
- Each of the two Ideathons were split between a morning and afternoon session with approximately 15 participants in each session. These participants came from a variety of organisations that spanned healthcare and higher education:

Health Education England
Alpha report

- 4 Commissioners
- 18 Educationalists
- 9 Learning and Development representatives
- 6 Technologists
- 8 Tutors or trainers
- 9 Learners
- 4 other
- The Ideathons contributed many requirements that have been incorporated in the Alpha functional prototype and product backlog.
- Exploring user needs exposed significant activity tracking and guided learning requirements for learners, that require further exploration and potential proof of concept developments in Beta.
- Exploring user needs around collaboration identified the requirement for a separate section that allows users to discuss topics and collaborate with each other in a way that isn't targeted towards a specific resource. This led to further exploration and concept development with wireframes.

Two rounds of usability testing with a total of 10 users across the target audience group

- Designed to test and improve the currently developed Alpha prototype and identify future requirements.
- Usability testing identified many usability enhancements required to improve the Alpha product. Priority enhancements were subsequently incorporated, although many remain in the product backlog.
- The Alpha prototype was very well received, with users able to complete the key journeys tested. Users were also very complimentary of the service and expressed a strong interest in using it once launched.
- Wireframe concepts for a rating mechanism and a discussion/collaboration section of the site were tested with users.
 - Sufficient requirements and needs for the rating mechanism were gathered to put it straight into production in Beta. This was seen as crucial functionality.
 - Further investigation and a functional proof of concept is required for the collaboration section to define the specifics of how it should be delivered. The concept shown was very well received.
- Users interviewed represented a number of different roles, with the split as follows:
 - 2 Commissioners
 - 4 Educationalists
 - 2 Tutors
 - 1 Technologist / Learning and Development representative
 - 1 Learner

Exploration into assisted digital support

- Calls with 8 Learning and Development (L&D) representatives from a variety of different organisations, and 2 Library and Knowledge Services representatives.
- Exploring how users with assisted digital needs could be supported when using the Learning Solution.
- The L&D and library and knowledge service representatives we spoke to are generally happy to provide direct support to users, although some may need to refer people to local library services if they don't themselves offer one-to-one support. There is no 'sector wide' model, although in most cases people could be directed to speak to either their L&D team and/or their library and knowledge service.
- Combined with a live chat facility which is planned to be delivered by HEE, we believe that adequate assistance will be available to users, although they may need help in understanding where this support is available.

Call with 10 NHS organisation Learning and Development representatives

- Exploring the relationship between organisational LMS and the Learning Solution.
- Findings from the call indicated that there is a reluctance from within NHS organisations to link through to the Learning Solution from their LMS, since they want staff to complete the content in their own system, where their progression can be tracked.

It was decided that developing mechanics to draw learners in from their LMS to the Learning Solution should be de-prioritised for the Alpha project to focus on other priorities.

Workshop with stakeholder representatives for existing platforms

- Exploring whether any existing systems could or should be utilised for the development of the Learning Solution.
- Findings confirmed an earlier observation from the Discovery phase, that a significant overlap exists between the Learning Solution and two systems: e-Learning for Healthcare Hub and NHS eLearning Repository. Compiled notes from this activity can be found in appendix A.

Platform selection exercise

- Further exploration into the relationship between the Learning Solution, e-Learning for Healthcare Hub and NHS eLearning Repository.
- It was determined that whereas the NHS eLearning Repository will likely be decommissioned and its content moved to the Learning Solution, the e-Learning for Healthcare Hub will remain as it is, due to a large number of existing users and curated content. Thus, the choice was between building the Learning Solution as an extension to the e-Learning for Healthcare Hub, or for the two systems to be closely integrated, allowing for sharing content and elements of functionality.
- Given the difference in the nature of content and required data models between the Learning Solution and the e-Learning for Healthcare Hub, as well as the need to facilitate migration of resources from the NHS eLearning Repository, a decision was made to build the Learning Solution as a standalone system, with potential future integrations to the e-Learning for Healthcare Hub. Drupal 8 and a LAMP technology stack were chosen for the project.

Attendance of the final presentation for the taxonomy project proof-of-concept stage

- Understanding how the work on a common search and classification platform, conducted by another agency, Findwise, could benefit the capabilities of the Learning Solution.
- The technology involved in the taxonomy project's proof-of-concept is Findwise i3 and Smartlogic Semaphore - systems used for search and classification respectively.
- Engagement with Findwise led to the decision to integrate with third party search and classification services. This allows not only for leveraging of their powerful capabilities and reduction of bespoke development, but also for sharing a common classification and search platform with other systems operated by HEE.

Schema mapping for Learning Solution data model

- Work conducted in collaboration with Findwise to map the proposed Learning Solution data model for e-learning resources to a schema based on standards recommended and used by Findwise in their taxonomy project work.
- The mapping informed the initial choice of field types used in the resource creation form of the Learning Solution.
- The mapping can serve as the basis for further work to integrate the Learning Solution with Semaphore to provide enhanced classification of resources.

Technical research for integration with Findwise i3 search service

- Collaboration with Findwise focused on gaining an understanding of the specifics of the Findwise i3 indexing, processing and search mechanisms.
- The knowledge gained enabled us to design a basic connector allowing for sending resource information from the Learning Solution to i3, as well as a search connector for querying the search service.

Technical research for integration with e-Learning for Healthcare Hub

- Collaboration with e-LfH to investigate the possibility and devise a high-level concept of a solution for sharing user accounts between the Learning Solution and e-LfH Hub.
- Collaboration with e-LfH to devise a high-level concept of a solution for sharing information about resources stored on the e-LfH Hub with the Learning Solution.

Consultation regarding security, information governance and privacy

- Consultation with persons responsible for HEE's technical architecture, information governance and policy to understand potential threats, security measures in place, policies for handling data and privacy considerations. Details can be found in appendix B.

Initial application and technical architecture planning

- Documentation of the current application architecture, as well as Alpha and proposed private Beta stage technical architecture. Details can be found in appendix C.

5 RESEARCH, DEVELOPMENT AND TESTING OF FEATURES

Throughout the Alpha project, we used a number of techniques to elicit requirements, as well as test our ideas and concepts. Some of these concepts were built into the Alpha prototype and tested again with users. Others have been included within the recommendations for future developments.

5.1 Searching for resources

Initial exploration into how search should function began with an activity within the Ideathon sessions. This was then built into the functioning Alpha prototype and tested with users.

5.1.1 Ideathon activity – categorisation and wireframing search

Description

We created an activity where we asked participants in groups to look at the 15 descriptions of different resources and come up with different ways of categorising them. They then chose labels within the categories and split the resources between the labels they chose within each of those categories. This categorisation helped to inform what users would want to filter by when searching for resources.

Following on from this initial categorisation, we then helped users to design their own search mechanism using wireframes, to understand exactly how they would like to interact with search filters, sort options, and the journey that they should be taken on.

Key insights

Subject matter is by far the most important piece of information that will determine if a piece of learning is suitable, and is at the forefront of everyone's mind. Because of this, we can assume that users will include the subject within their initial free text search, rather than needing a specific filter for it. It was also identified that users preferred to begin their exploration with a free text search, rather than refining a list of all resources using filters.

- **Scenario example:** A user may search for "Dementia care guide", in which case the subject (dementia) will be covered by their free text search.

Audience and resource format came out as the most sought after and useful filters, therefore these filters were prioritised for Alpha. Another filter that was deemed to be useful within the proof of concept is the cost (paid or free) of the resource. This is because of the need to prove how the

Health Education England Alpha report

Learning Solution will accommodate both types of resources, and understand how people will react to the different types.

Defined filters for Alpha

- Resource format (e.g. document, equipment, video etc.)
- Intended audience
- Cost

+ space designed to allow further filters in the future, such as “intended use”.

5.1.2 Ideathon activity - clean the page

Description

We wanted to understand how users would choose between different resources when browsing a list of search results, and what information would be most important to them. To do this, we gave them a search result item with lots of pieces of information on it, then asked them to strike through the parts of the result that were not important to them, or that they would expect to find once they selected the resource.

Example search result showing lots of information about the resource

Key insights

The activity identified key elements that should be incorporated into the search result items. This included a short description, the author, title of the resource, date published and other elements that can be seen on the Alpha prototype.

Elements that are not yet on the Alpha prototype include a star rating, which is yet to be developed, and information about any organisation which the resource has been developed in partnership with, or that has endorsed the resource.

5.1.3 Development and usability testing

We built a fully functioning search mechanism in Alpha that allows users to search by any information input into the uploaded resource. All searches begin with the input of a free text search, as recommended by users during the Ideathon. The search system that we built integrates with Findwise i3 search service, as mentioned in the technical research in section 0.

The screenshot shows the HEE Learning Solution search interface. At the top, there is a blue header with the NHS Health Education England logo on the left and navigation links for 'Collaborate', 'Contribute a resource', and 'Log in' on the right. Below the header, a blue banner reads 'ALPHA This is a new service - your feedback will help us to improve it.' The main content area is titled 'HEE Learning Solution' and includes a search bar with the placeholder text 'Search for resources by name, subject, author or type' and a red 'Search' button. Below the search bar, there is a link that says 'Want to discuss and collaborate with others?'.

Users then have the ability to refine their search by resource type, intended audiences and cost.

The screenshot shows the NHS Health Education England search interface. At the top, there is a search bar with 'dementia' entered and a search icon. To the right are links for 'Collaborate', 'Contribute a resource', and 'Log in'. Below the search bar, a message reads: 'ALPHA This is a new service - your feedback will help us to improve it.'

The main section is titled 'Search for a resource'. On the left, there are filter sections: 'Resource type' with checkboxes for 'e-Learning Package (4)' and 'Video / Audio (2)'; 'Intended audiences' with checkboxes for 'Health care assistants and other support staff (5)', 'Healthcare science (2)', 'Medical and dental staff (1)', 'Nursing, midwifery and health visiting staff (5)', 'Public health (3)', and 'Scientific, therapeutic and technical staff (1)'; and 'Cost' with a range selector.

On the right, three search results are displayed:

- Early onset dementia** (Last reviewed on: 14 May 2010): Patient Information Resource: John and his wife Shirley describe how they've adapted their lives since John showed early signs of dementia. An expert explains the value of early diagnosis and planning for a future with dementia. Type: Video / Audio, Duration: 10 minutes.
- Dementia - Living with dementia** (Last reviewed on: 21 May 2013): The person with dementia as a unique individual. The importance of knowing their background and life history. Abilities people with a dementia retain in spite of the difficulties they face. How dementia impacts on families, friends and community and... Type: Video / Audio, Duration: 5 minutes.
- Living with Dementia Module 1 - Dementia Awareness Assessment** (First published on: 29 Mar 2012): The programme consists of ten eLearning modules with assessments, which are aligned to the 17 key objectives of the National Dementia Strategy created for all staff involved in health and social care in older people services including primary,...

The information provided within each search result is in line with the priorities described by users during the Ideathon activity “clean the page”, along with further input from users during usability testing. User needs identified within the testing and addressed during Alpha include adding the resource type and duration, where applicable, to each result item and revising the list of intended audiences. Other further usability enhancements are recorded within the product backlog, which include displaying how many resources the search found in total, adding additional filters, and more.

During development we identified two ways of implementing the behaviour of search results:

- 1) Check all the filters by default
 - Clicking a checkbox would remove content tagged with that label, refining the results
- 2) Uncheck all filters by default
 - Clicking a checkbox would refine the results to ensure that any content displayed shows that tag.

<p>Resource type</p> <p><input type="checkbox"/> e-Learning Package (4)</p> <p><input type="checkbox"/> Video / Audio (2)</p>	<p>Resource type</p> <p><input checked="" type="checkbox"/> e-Learning Package (4)</p> <p><input checked="" type="checkbox"/> Video / Audio (2)</p>
<p>Intended audiences</p> <p><input type="checkbox"/> Health care assistants and other support staff (5)</p> <p><input type="checkbox"/> Healthcare science (2)</p> <p><input type="checkbox"/> Medical and dental staff (1)</p> <p><input type="checkbox"/> Nursing, midwifery and health visiting staff (5)</p> <p><input type="checkbox"/> Public health (3)</p> <p><input type="checkbox"/> Scientific, therapeutic and technical staff (1)</p>	<p>Intended audiences</p> <p><input checked="" type="checkbox"/> Health care assistants and other support staff (5)</p> <p><input checked="" type="checkbox"/> Healthcare science (2)</p> <p><input checked="" type="checkbox"/> Medical and dental staff (1)</p> <p><input checked="" type="checkbox"/> Nursing, midwifery and health visiting staff (5)</p> <p><input checked="" type="checkbox"/> Public health (3)</p> <p><input checked="" type="checkbox"/> Scientific, therapeutic and technical staff (1)</p>

We created a clickable wireframe to test both of these concepts with users in the first usability testing session before full implementation. Option 2, unchecking all the boxes by default, was the stand out option with all users finding this more intuitive. It also allowed them to reach very specific content much quicker than option 1. Option 2 was successfully put into production and tested again with users to confirm they were happy with the final solution.

5.2 Resource Page Information

The success of the Learning Solution relies on users finding and accessing/downloading resources that will be of use to them. It was identified during the Discovery project that establishing trust in resources would be a significant challenge for the Learning Solution, particularly given that there will be limited moderation by HEE on the resources that are contributed.

For this reason, we explored what information could be given to users about a resource that would help them to establish trust with that resource. What would they need to know to be confident in downloading it and using it as part of their own learning, or for others?

5.2.1 Ideathon activity- establishing trust

We initially came up with a number of different pieces of information that may be useful to users, based on the findings throughout Discovery. This information was split into different “types”, playing on different behavioural triggers. These included authority, social proofing and authenticity.

We put together three versions of the same resource and then asked participants in groups to discuss the resources and rate each one on how confident they were that the resource was of a high quality. Each version lacked one of the key behavioural triggers.

Health Education England
Alpha report

Title
Level 1 - Safeguarding for All Staff Working in a Healthcare Setting

Overview
Even thinking about the abuse of children is distressing, so it is important to know what to do if you are concerned that a child or young person might be or has been abused.

This session explains what safeguarding children and young people involves. You will learn about the range of child abuse and how you might be able to recognise abuse in a child or young person. The session goes on to look at what you should do if you are concerned that a child is being abused or neglected. It explains the steps you need to take in order to protect children from further harm. It is important to note that the term 'children' means children and young people from birth to their 18th birthday.

Resource details
6 sources were referenced in this session
Duration : 30 minutes
Reference number - 700-1001
File type: Online course

Keywords
700-1001, safeguarding, policies, children, child, recognition, recognise, young ,people, teenagers, teenager, teen, abuse, mistreatment, mistreated, maltreated, maltreat, neglect, prevent, vulnerable, protection, signs, FGM, female, genital, mutilation, violence, domestic, radicalisation, PREVENT

First published on 30 Apr 2012
Last major update on 27 Feb 2014

Author
Dr Andrea Goddard

Stats
Downloaded 142,245 times
Shared 612 times
All users (4.1) | Within my organisation | Auto (3.8)

★ ★ ★ ★ ☆ (16 reviews) | ★ ★ ★ ★ ☆ (3 reviews) | ★ ★ ★ ★ ☆ (How does it work?)

Critic consensus i auto generated
A short session enabling readers to identify and describe the different forms of child maltreatment.

Comments
I feel able to recognise signs /symptoms of different forms of abuse. Also feel more confident in reporting if I have concerns about a child / patient.

★ ★ ★ ★ ☆ **Dr James F - 13 March** See more comments >

Validation

- ✗ Part of accredited programme of study
- ✓ Valid evidence base
- ✓ Component part of a learning process
- ✓ Comply with level AA

Evaluation



- ✓ Innovation in the learning process
- ✓ Valid evidence base
- ✓ Positively tested by qualified educators

Add value to patient care

- ✗ Involvement of patients
- ✓ Enhance patient care and outcomes
- ✓ Service need

ACCESS E-LEARNING SESSION

Option 1: missing elements of authority such as endorsements, author details and quality review.

Title
Level 1 - Safeguarding for All Staff Working in a Healthcare Setting

Overview

This session is for ALL staff working in a healthcare setting - whether clinical (face to face contact with patients) OR non-clinical: e.g. reception, administrative, catering, transport and maintenance staff. It is basic safeguarding training. All staff who come into contact with children (whether clinical or not) and ALL clinical staff should complete Level 2.

Even thinking about the abuse of children is distressing, so it is important to know what to do if you are concerned that a child or young person might be or has been abused.

This session explains what safeguarding children and young people involves. You will learn about the range of child abuse and how you might be able to recognise abuse in a child or young person. The session goes on to look at what you should do if you are concerned that a child is being abused or neglected. It explains the steps you need to take in order to protect children from further harm. It is important to note that the term 'children' means children and young people from birth to their 18th birthday.


▲ The session does not contain any photos or illustrations of injuries. If the session is very upsetting for you (possibly because of experiences in your own or other's lives) you should seek advice from your manager or occupational health department.

Keywords

700-1001, safeguarding, policies, children, child, recognition, recognise, young ,people, teenagers, teenager, teen, abuse, mistreatment, mistreated, maltreated, maltreat, neglect, prevent, vulnerable, protection, signs, FGM, female, genital, mutilation, violence, domestic, radicalisation, PREVENT

First published on 30 Apr 2012
Last major update on 27 Feb 2014


Information about the author



Dr Andrea Goddard
Consultant Paediatrician
Royal College of Paediatrics and Child Health
3 articles published
4.3 average rating

safeguarding child protection

Endorsements



Royal College of Paediatrics and Child Health - 17,500 members

Resource details

Contributors, Editors: Dr Fiona Straw, Dr Leonie Pereira and Dr Rajiv
Quality assurance: Dr Andrea Goddard and Dr Anne Aukett
6 sources were referenced in this session
Duration : 30 minutes
Level : 1
Reference number - 700-1001
File type: Online course

Validation

- ✗ Part of accredited programme of study
- ✓ Valid evidence base
- ✓ Component part of a learning process
- ✓ Comply with level AA

Evaluation


- ✓ Innovation in the learning process
- ✓ Valid evidence base
- ✓ Positively tested by qualified educators


Add value to patient care

- ✗ Involvement of patients
- ✓ Enhance patient care and outcomes
- ✓ Service need

ACCESS E-LEARNING SESSION

Option 2: missing elements of social proofing such as user comments, downloads and ratings.


Quality-reviewed RCPCH education provision



Title
Level 1 - Safeguarding for All Staff Working in a Healthcare Setting

Overview


This session is for ALL staff working in a healthcare setting - whether clinical (face to face contact with patients) OR non-clinical: e.g. reception, administrative, catering, transport and maintenance staff. It is basic safeguarding training. All staff who come into contact with children (whether clinical or not) and ALL clinical staff should complete Level 2.

Even thinking about the abuse of children is distressing, so it is important to know what to do if you are concerned that a child or young person might be or has been abused.

This session explains what safeguarding children and young people involves. You will learn about the range of child abuse and how you might be able to recognise abuse in a child or young person. The session goes on to look at what you should do if you are concerned that a child is being abused or neglected. It explains the steps you need to take in order to protect children from further harm. It is important to note that the term 'children' means children and young people from birth to their 18th birthday.

Contributors, Editors: Dr Fiona Straw, Dr Leonie Pereira and Dr Rajiv


Information about the author



Dr Andrea Goddard
Consultant Paediatrician
Royal College of Paediatrics and Child Health
3 articles published
4.3 average rating

safeguarding child protection

Endorsements





Royal College of Paediatrics and Child Health - 17,500 members

13 user endorsements

Keywords

700-1001, safeguarding, policies, children, child, recognition, recognise, young ,people, teenagers, teenager, teen, abuse, mistreatment, mistreated, maltreated, maltreat, neglect, prevent, vulnerable, protection, signs, FGM, female, genital, mutilation, violence, domestic, radicalisation, PREVENT

Preview

+ 104 slides

Reviews

All users (4.1) Within my organisation Auto (3.8)

★★★★☆ ★★★★★ ★★★★★

Comments See more comments >

I feel able to recognise signs /symptoms of different forms of abuse. Also feel more confident in reporting if I have concerns about a child / patient.

★★★★☆ Dr James F - 13 March

ACCESS E-LEARNING SESSION

Option 3: Missing elements of authenticity, including publish date, validation, evaluation, added value and resource details.

We discussed the options with each individual group, and then as a wider discussion with all participants. This allowed us to identify which pieces of information were particularly important for them, what was interesting but unnecessary, and what would not work for them.

Key insights

There were mixed feelings towards the different options between groups. Elements of each of the three behavioural triggers were seen to be very important, discussed below:

- Learners in general are less concerned about establishing trust with the resource and understanding how it was created. Instead, they want more practical information such as how long it will take to complete and what it covers.
- Endorsements by organisations were particularly important for all users, though endorsements may not be the correct term to use. The key take away was that users

want to understand which organisations have approved, or contributed to, the resource.

Challenges include:

- “Endorsed for what?” There should be context provided about how it is used by the organisation and for what purpose it’s endorsed. Feedback suggested that apart from “Endorsed by”, options to specify that a resource was “Developed in partnership with” or is “Aligned to” (this could be standards, guidelines, policies, frameworks etc.) should be considered.
- What happens if a user tells us it is endorsed by an organisation but it isn’t?
- Endorsements by individuals are unnecessary; individuals should leave a review instead.
- Author information, including their role and organisation, is very important for tutors and commissioners as they are interested to know if the resource has a reputable source. Information such as the number of articles they have published and their average rating was seen as interesting, though not essential.
- The validation, evaluation and “add value to patient care” were not seen as beneficial in the format presented. Users were interested to know how the resource had been created and evaluated, although presenting a “yes/no” section for particular criteria did not give enough specific information.
- Previews of the resource were not missed when the option was taken away from users.
- For learners, it was important that they could generate a certificate of completion at the end of completing an activity, or that their activity is tracked.
- Reviews and ratings are essential as a form of user moderation, so that HEE does not need to act as a gatekeeper for resources. User ratings and reviews would be the primary way to quickly identify low quality or spam resources. It is also important that there is an option to flag resources as inappropriate.
- Users wanted to see upfront what type of resource it is, for example “e-learning”, “document” etc.

5.2.1 Development and usability testing – resource page

We built a fully functioning resource page within the Alpha prototype that allows users to access particular resources from their search results. This also combines with the resource contribution section of the site, meaning that users who contribute resources will be able to see the page that is generated.

What we delivered was based on the priorities discovered during the Ideathons. A few pieces of information were “hard coded”, which means they are there as an example and not yet fully functional. This was for the purpose of usability testing as we wanted to understand how users would react to them, and whether they should be planned into the Beta development. This

includes the “Reviews” section, “endorsements”, and a “Discussion” section that will be discussed further in the next section.

The screenshot shows the top navigation bar with the NHS Health Education England logo, a search bar, and links for 'Collaborate', 'Contribute a resource', and 'Log in'. Below the navigation bar is a blue 'ALPHA' banner with the text 'This is a new service – your feedback will help us to improve it.' The breadcrumb trail shows 'Home > Node'. The main heading is 'e-ELCA 5.3 Integrating Learning: Condition-Specific Case Studies (ESR)'. There are three tabs: 'Details', 'Reviews ★★★★★ (4.5/5)', and 'Discussion'. The 'Reviews' tab is active. The 'Resource overview' section contains a description of the course and a 'Read more +' link. The 'Access this resource' section has a 'Go to' button. The 'Key details' sidebar on the right lists the author 'Fatima Almeda', publication date '10/06/2013', type 'e-Learning Package', duration '30 minutes', and 'Is paid: No'. It also mentions endorsement by the University of Bradford School of Dementia Studies.

View of a final resource page in the Alpha prototype

During usability testing, the full description on the resource page was seen as excessive information for people who may not be interested in seeing everything. It also pushed the access and download section down the page, making it less clear how to access the resource. This section was condensed, with an option to expand it for those interested in seeing more information.

Users were very happy with the presentation of the page and layout, though in some cases commented that they could handle more information and it was quite spaced out.

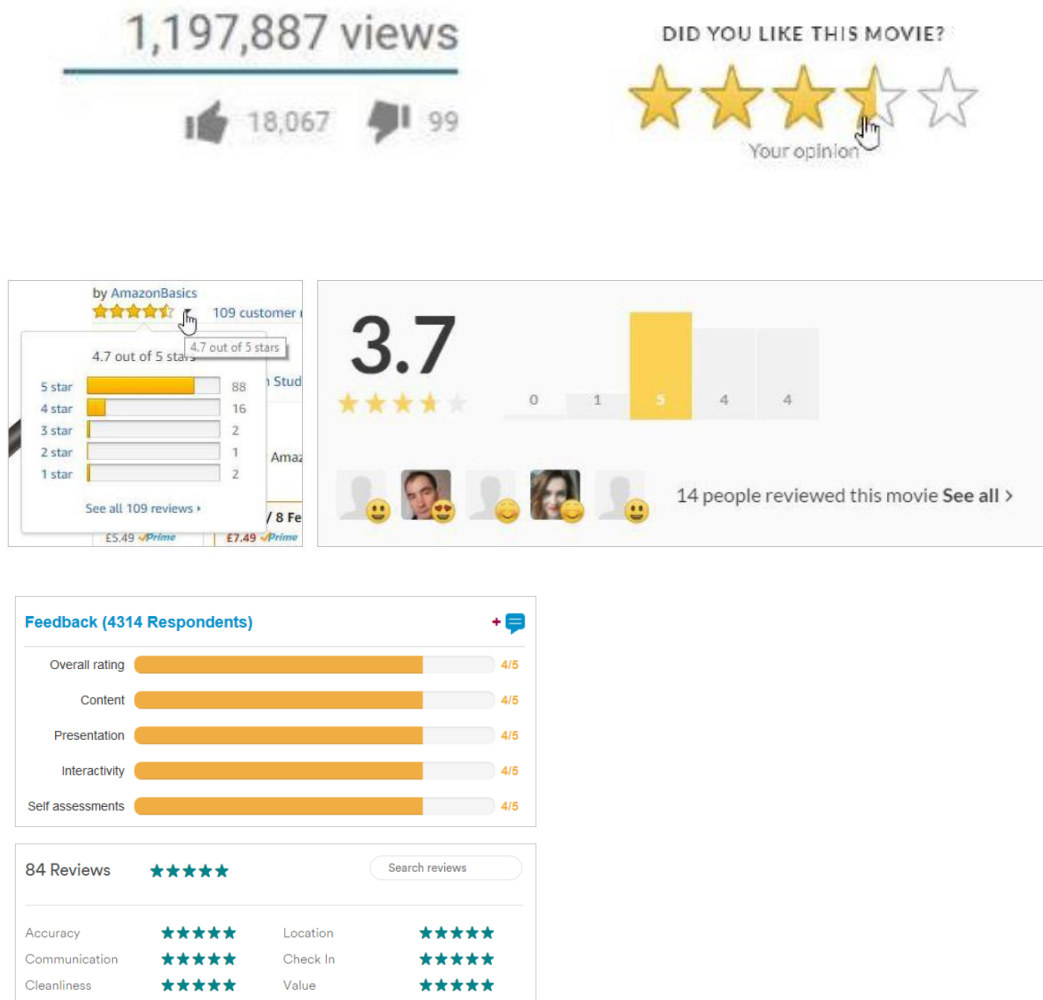
Users responded very well to the idea of having reviews, and understood what information would be within a “Discussion” section. This prompted further exploration into the reviews section.

5.3 Ratings, reviews, discussion and collaboration

One of the areas that we looked into was how to facilitate communication and user-generated feedback on resources. We had found that ratings were particularly important to users, so we wanted to explore exactly how we could create a rating mechanism that would be useful for them.

5.3.1 Ideathon activity – ratings and reviews

To understand user needs and attitudes towards rating mechanisms, we ran a group activity with Ideathon participants to explore what mechanism would be best for the Learning Solution. This involved first showing participants a number of examples from existing websites, and discussing how it could potentially be implemented on the Learning Solution. A few examples are shown below:



We then invited participants to try creating their own rating system, based on our previous discussions. Participants found the rating systems quite challenging to create as they are mechanically quite challenging, although they were able to articulate the factors that were important to them.

Key insights

- Users would want to know the sector and job of the person leaving a review, to understand whether they should trust the review. If users don't know who the comment is from, it is considered of little value, "almost worthless", as described by one of the participants. However, there were also concerns that making people's name appear next to a review would potentially limit the number of reviews given.
- If a piece of training is mandatory, feedback indicated that there is no reason for it to have a review.
- Users indicated that they would like an "Amazon style" rating system, where content can be rated by a number of categories to produce an overall rating. However, users were unsure what these categories should be.
- Users expressed an interest in filtering ratings by their total score so that they could see negative feedback and assess if there was a valid concern with the resource.
- Ratings should be connected to reviews and not separated. Giving constructive written feedback along with a rating was seen as a better way of capturing user information than allowing users to simply rate it and leave, since this could lead to a situation of 100 ratings and only 2 reviews. The option not to leave a full review should be available, though a written review should be encouraged.
- Star ratings (out of 5) were viewed as the most favourable by users.

5.3.2 Ideathon activity - collaboration and discussion

In addition to the rating and review mechanisms that we explored, we also wanted to know how else users would want to collaborate around resources. We found from the Discovery project that classroom style discussion was very important to learners, though a typical review wouldn't necessarily facilitate this kind of communication. If a user wanted to ask a question about the information in a resource, ask for advice on how to use or implement it, etc. then a review would not be the format for this.

Health Education England
Alpha report

To explore this, we created an activity that began with the creation of user stories, allowing users to tell us about the situations in which they may want to collaborate and discuss with other users. For example:

As a: Tutor
I want to:
Let other people know
how I used a resource
So I can: Help others
to make the best use
of the resource

As a: Commissioner
I want to:
contact the owner of a
resource privately
So I can: Ask
questions about the
resource and find out
if I can use part/all of it

An example user needs scenario given to help participants understand the activity.

Based on the user needs that we generated, we then discussed as a group whether a solution that we had already created as a wireframe would work to facilitate these needs.

The screenshot shows a web interface for a discussion forum. At the top, there's a search bar with 'safeguarding' and 'e-learning' filters. Below that, the main heading is 'Social networking for patients'. There are tabs for 'RESOURCE', 'AUTHOR', 'REVIEWS', 'DISCUSSION', and 'SIMILAR'. A 'FILTER QUESTIONS AND RESPONSES' section allows users to filter by keywords and show only questions with responses or only those with author responses. The main content area displays several discussion posts:

- No reference to peer reviewed research** (436 votes): A post by Mervin Senter (GP and Associate Professor of Primary Care Research, University of Southampton, UK) discussing the lack of references to peer-reviewed research in a topic.
- Can Act As A Double Edged Weapon** (450 votes): A post by M A Aboon (Neurologist at the ABC Hospital of Aizawl, India) discussing health information in social media.
- Physicians using social media to talk to patients**: A post by Amr KH Gohar (Consultant in Dermatology and Geriatric Medicine, Egypt) discussing the expectations of patients and the public's trust in the profession.
- It is undoubtable that social media is the strongest means of communicating information nowadays**: A post by Mostafa Hassan Ibrahim Ali (Medical Practitioner at Urocare Hospital of Abu Dhabi, United Arab Emirates) discussing the benefits and risks of social media in healthcare.

High level wireframe demonstrated to users, showing discussion around a particular resource on the Learning Solution

Key findings and insights

The biggest finding from this exercise was that users wish to collaborate with each other in different ways that do not necessarily centre around a particular resource. In the example discussion area we provided, conversation would be about the use of a resource, however users had more general questions that they would like to put out to the community.

Insights and findings for collaboration around a resource:

- User needs indicated that a discussion section, allowing users to discuss a particular resource, is required which is separate from reviews and ratings.

- Users would want to ask questions about the background of the resource, technical capabilities or issues, etc.
- Users liked the layout of the discussion section demonstrated to them, likening it to “stack overflow” which is used by developers. Whilst functional, this may need to be simplified for users of the Learning Solution who are new to the site.
- Users want to be able to subscribe to discussions around a resource.
- Some resource contributors would not, “under any circumstances” want to be contacted.

Insights and findings for collaboration, not centred around a specific resource

- Educationalists / resource creators are keen to get peer review and feedback on their resources, although they may not yet be in a position to contribute to the Learning Solution as a completed resource.
- There is no current visibility of the work being undertaken by other resource creators, and a lack of connection or community. There is a desire to break down these barriers and open up collaboration.
- There are regional networks and many existing discussion groups using third party tools such as Facebook, Yammer etc. However, this does not join up the skills available across the NHS and social care and allow more niche or specialist groups of conversation to be formed.
- Users would want to ask general questions about certain topics “How do you do <x> in <x>”. This could be around software used for creating resources, the use of equipment, and more.
- Users were keen to subscribe to discussions around topics, allowing them to be notified of further posts.

5.3.3 Ideathon activity – collaboration scenarios

The findings of the first Ideathon suggested that collaboration outside of a specific resource should be further explored to understand whether there is a genuine interest or need for a separate section. Also, how well used would this section be and how should it function?

Using insights from the first session, we created example scenarios detailing how some people may wish to collaborate. We tested these scenarios with participants of the second Ideathon to understand whether they saw them as being realistic, if they had experienced anything similar and in which other scenarios people would want to collaborate.

These scenarios included:

1. A health/social care professional from another organisation posts an invitation for people with specific experience to join a new project.
2. A healthcare professional from another NHS Trust posts an idea for a new TEL resource and is looking for someone to help create the learning resource.
3. A public health professional posts a partially completed resource, looking for feedback and contributions to help finish it.
4. A member of an Ambulance Service posts a fully complete resource that they don't have time to catalogue or tag.
5. A GP who has a resource that they feel may have wider applications, looking for someone from an A&E department to answer some questions.

Following a discussion about each scenario, we then demonstrated existing examples of collaboration tools to understand how such a system could be created and applied to resources.

Examples shown included:

- Stack Exchange
- Quora
- Monzo forum
- Slack

The examples were chosen to represent different styles of collaboration, including streams of conversation or “chat” based functionality, categorised traditional forums and taxonomy driven personalisation.

Key findings and insights

Scenarios for collaboration:

- There were mixed opinions throughout the group as to which scenarios, or types of post, they would respond to or post themselves. This highlighted the vast range of collaboration possibilities that may be applicable to some users but not others, and the challenges ahead to define or categorise these conversations.
- Participants saw it as unlikely, that users would be willing to spend significant amounts of time contributing, if they do not gain anything in return. Smaller, quick responses would be more likely, to help direct someone to the right place or an existing resource. This may vary from person to person.
- The only scenario that received a negative response from all participants was scenario 4, where someone is looking for another person to upload the resource for them. The

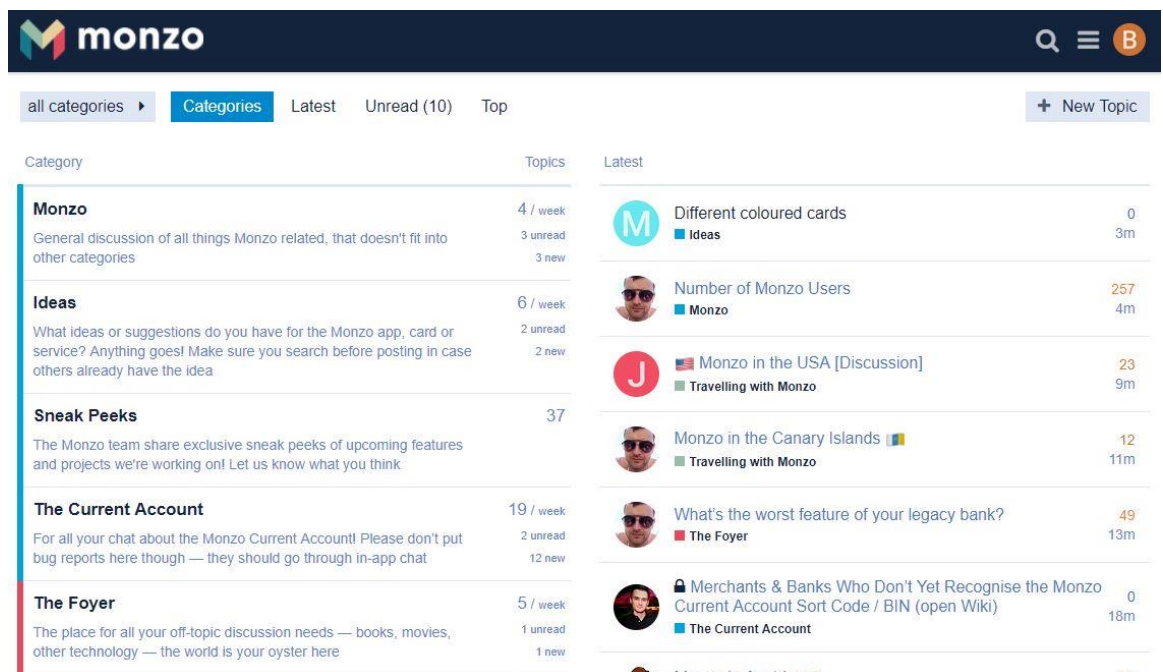
Health Education England
Alpha report

contribution process should be simple enough that this is not a concern, and users would be reluctant to do someone else's work.

- It was evident that the scenarios discussed were by no means exhaustive; participants saw the Learning Solution as an opportunity to host many other forms of communication and collaboration. This may include conversations around the capabilities of a particular LMS, discussion around the provision of training for a particular subject matter, or collaboration around a particular type of learning such as simulation, which may further promote sharing of currently unused equipment.
- Users were keen to receive curated emails on resources or topics of conversation that may be of interest to them.

Collaboration mechanisms:

- Categorisation of conversations was the most difficult challenge, with participants struggling to see how collaborative posts could be organised.
- Participants required a starting point to allow them to drill down into the subjects or categories that they are interested in. Monzo's forum was commented as a good example of this, where it is clear which category to select for what you are looking for.



- The typical forum example presented problems, as it relies on a specific categorisation to be chosen. Participants wanted more than one categorisation, or different categorisations were more important to them, which does not fit within the rigidity of a forum.

Categorisations included:

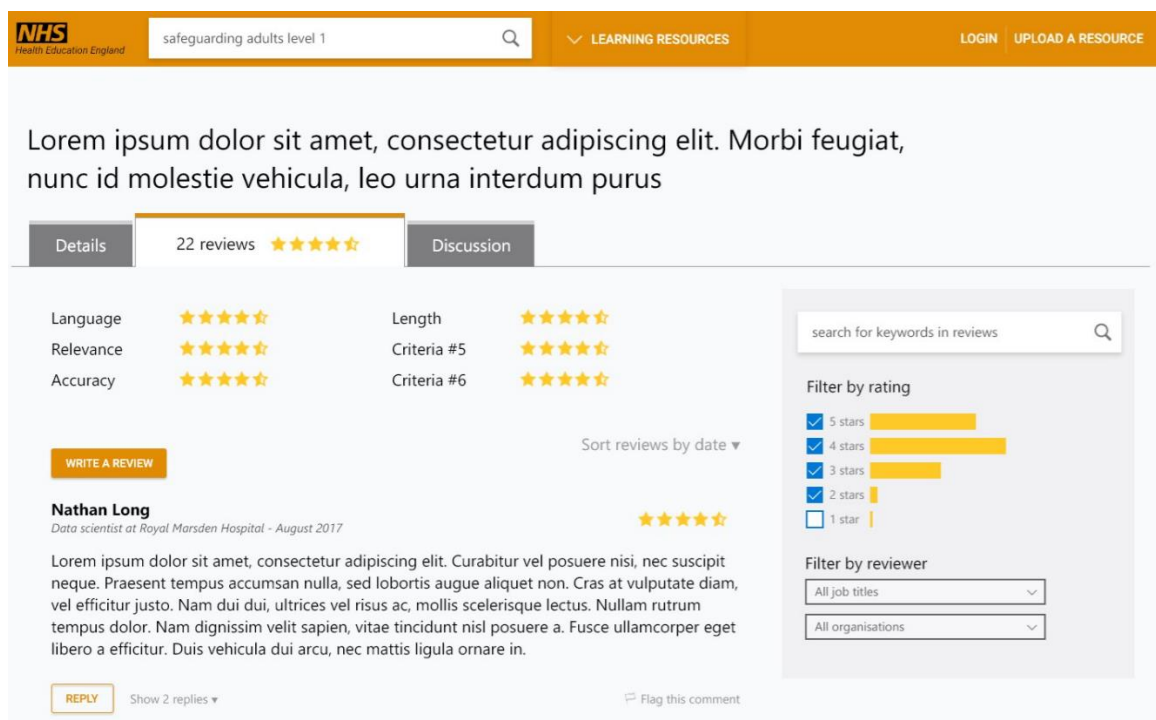
- Region/area
- Area of the NHS

- Topic/subject matter
- The “Quora” example displayed was of interest to participants, though they had some difficulty in understanding how it would work or be applied to the Learning Solution. This did allow content to be presented using a large range of categories, and users were very receptive to the idea of personalisation.
- It is likely that a combination of these approaches would be most successful.
 - Guiding people towards content through selecting particular categories.
 - Allowing users to tag content with a range of categories that can then be searched and defined within user’s preferences.

5.3.4 Development and usability testing – ratings reviews and discussion

We did not build any discussion, ratings, review or collaboration sections within the Alpha prototype due to time and project scope. However, we were keen to explore these important concepts further with users in order to be able to make recommendations for the Beta phase.

We produced a wireframe for reviews that represents how we would meet the needs identified during the Ideathon sessions. This involved creating a section for “reviews” which is connected to the rating that users give. The wireframe used dummy content and was used for demonstrating the mechanism to users during usability testing sessions.



Wireframe showing the review section of a resource

Health Education England Alpha report

The wireframe we produced showed a number of mechanics to help users understand the quality of the resource, including rating categories, filters for the resource by star rating and reviewer type, and the potential to post a reply to a rating.

Wireframe showing how users would leave their review

During usability testing, we identified that there is minimal benefit to rating a resource by different categories:

- Users struggled to think of categories that would be applicable or useful.
- Categories will apply for some resource types but may not be valid on others.
- Users were put off by the idea of needing to provide so many ratings and commented that they “probably wouldn’t bother”.
- Rating by categories complicates the overall rating that any given user is giving the resource. For example, the average value given by one user across 4 categories could be 3.5, in which case their rating would need to be rounded to comply with a rating filter.

It was however discussed that there are primarily 2 categories by which a resource could be rated:

- 1) Quality of the resource content
- 2) Quality of the resource learning delivery

This could potentially be explored further in Beta, although if a single rating were used, users can still write reviews to comment on the quality of content or delivery.

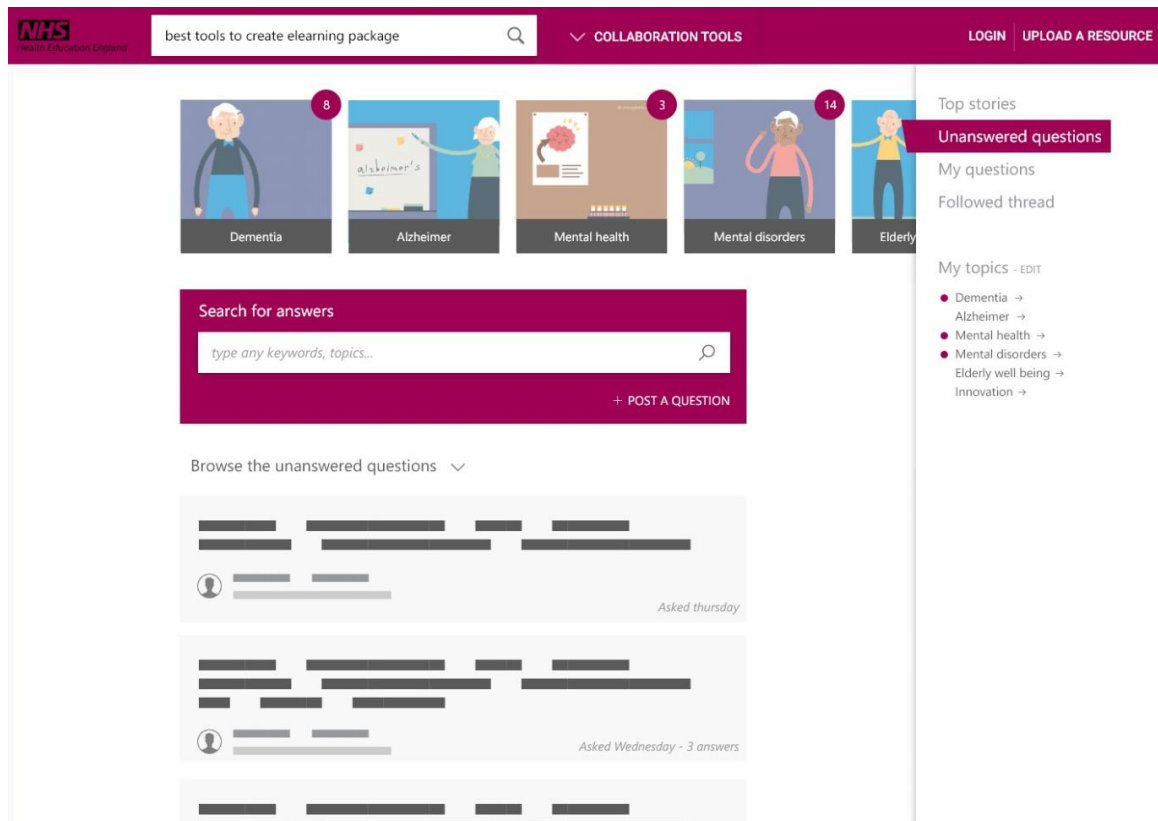
Users liked the review search and filter mechanics and thought that they could be useful if there are lots of reviews.

There was an overall negative reaction towards anonymising reviews, users felt that in a professional environment, people should be prepared to disclose their name and job title or at the very least their role and organisation.

Users found that adding the ability to reply to a review confused the purpose of the review. Given the separate discussion section proposed, where people can hold conversations, reviews should not be used to ask questions. Also, users should not have the ability to argue against someone else's review, as this may discourage reviewers from posting. However, it was discussed that allowing only the author or contributor to reply to the review would be beneficial, and more in line with users' expectations set by other services.

5.3.5 Development and usability testing – collaboration section

Whilst the collaboration section was not developed within the Alpha project, we were keen to explore exactly how it could be successful in the future. We created a simple wireframe that displays a concept of how this section could function.

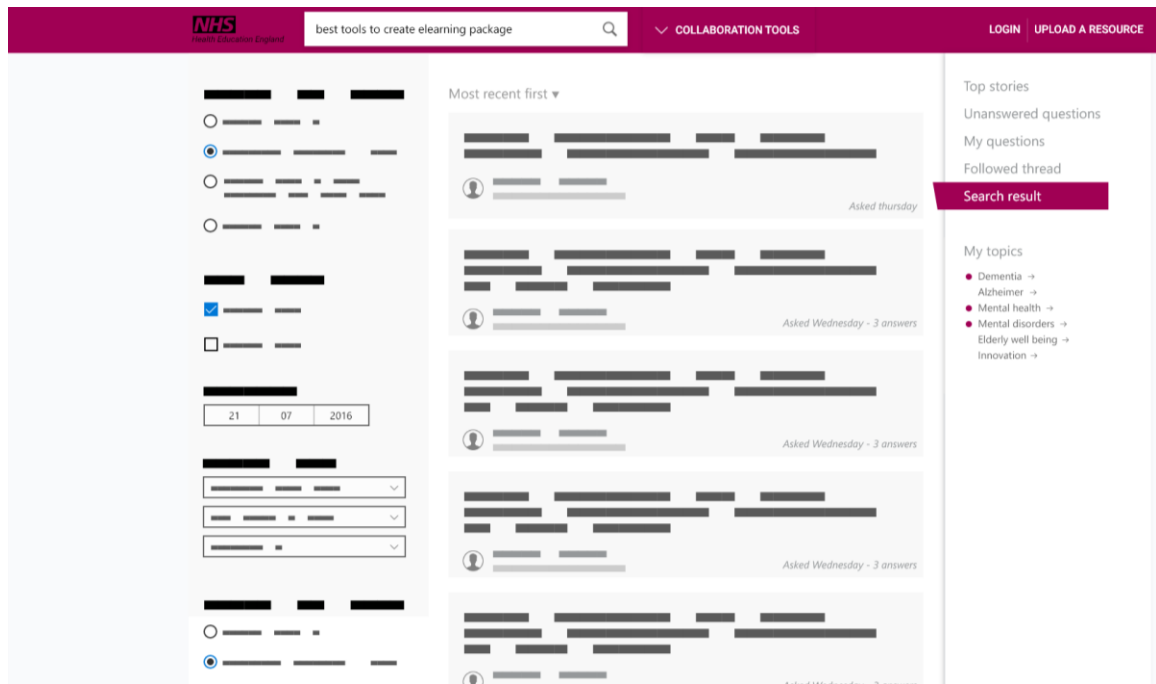


Wireframe demonstrating the concept of a collaboration section.

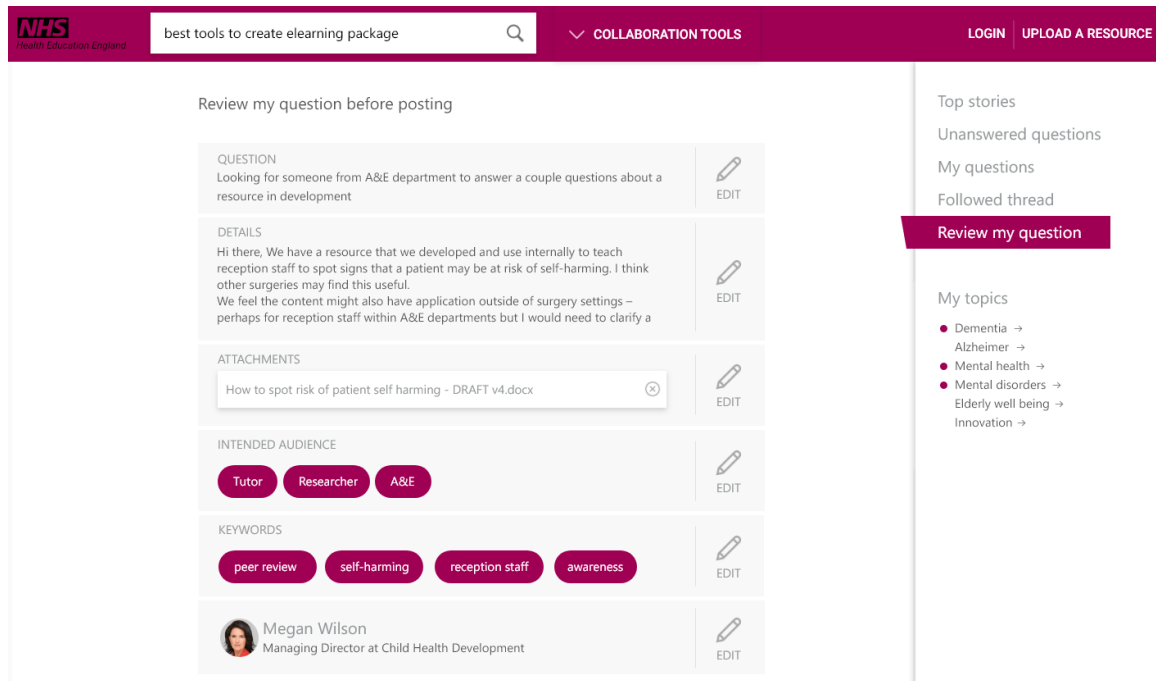
The concept combines the guidance offered by traditional forums to go straight to certain key topics (as illustrated by the topics at the top of the page which could be clicked) with the more taxonomy-driven mechanisms of Quora. This allows users an easy route in to browse questions/posts, and also allows us to display which topics have unanswered questions and posts.

The primary way of navigation to find posts that users are interested in would be through search, which would behave in a similar way to the resource searches on the site. This will allow users to check whether similar posts have been added and responded to, before making theirs.

Another critical element to the success of collaboration is that posts get seen by the right people, who can then respond to them. Because the range of topics and categories is so broad, taxonomies will be used to surface content to the right people. Users of the collaboration section will be asked to indicate their preferences (as seen by the “my topics” area), and posts will require tags to be added to them. Posts that match to a user’s interest will be displayed on the user’s dashboard of the collaboration section, where they can review whether it is of interest to them and if they can offer assistance.



Wireframe demonstrating a search results page in the collaboration section



There is the ability to upload attachments when adding a post which gives it a wide range of applications and allows users to upload draft versions of their resources to collaborate on.

Key insights

We tested this collaboration concept with users in the usability session, talking them through the intentions of the section to understand whether it would be of use to them.

The feedback was very positive, with users indicating that they could see a number of applications for this offering. They felt that clicking into topical areas and searching for posts was clear, and liked that they could select preferences of which posts to be shown. They would also like to be sent email alerts to posts that may be of interest to them so that they can respond.

It was commented that this section should provide a community for health and social care professionals to collaborate with each other in a professional manner. There was reluctance shown towards making this area publicly available, as it may deter some potential users from posting if their posts could be viewed by service users.

The topical areas displayed were seen to be insufficient for user's potential interests, as some may be looking for "simulation", or "Virtual Reality". This reinforced the feedback from the Ideathon session that there will need to be multiple categories of interest.

5.4 Contributing a resource

The success of the Learning Solution relies on the contribution of learning resources from a community of active users. Without a wealth of up-to-date and relevant content, users will not find useful resources and will not come to the Learning Solution. Because of this, the process of contributing a resource is extremely important. Users will not continue to contribute resources if the process is too time consuming, complicated, confusing or frustrating.

For the upload process, we already have a starting point:

- Government Digital Services (GDS) guidelines give a wealth of useful information on best practice form design.
- We (Reading Room) have experience in creating and testing multi-step forms with users.
- Analysis was previously completed by HEE to understand what kind of information would be required to submit a resource.
- Resources held on existing services such as the e-Learning for Healthcare Hub and the eLearning Repository will be integrated and migrated, respectively, onto the Learning Solution. Therefore, there is benefit to using a similar data structure.

Given this starting point, we could commence straight into the development of the upload process. We instead investigated users' motivations behind contributing a resource to understand potential barriers outside of the system itself, with the intention of testing later to see if the process we have created is usable.

5.4.1 Ideathon activity- engaging contributors

We wanted to understand what motivates the different audience groups to contribute learning resources, and what the potential barriers are that would stop them from doing this.

To stimulate this discussion, we created cards describing and representing different possible motivations to contribute, and discussed them in small, mixed audience groups within the Ideathon. Below are the motivations we discussed:

Competition and awards



Entry into a regular competition or award scheme for the best original resource, or the best application of an existing tool, could motivate people to contribute.

Altruism



People might be motivated by an altruistic desire to improve training and learning outcomes across the health and care sector and to help their peers and colleagues.

Rewards and incentives



People might contribute content in exchange for some sort of reward which is worth something to them – credit they can cash in at a later date, for example CPD points.

Building organisational reputation



People might be motivated by the opportunity to build the reputation of the organisation they work for, and to position it as a leading provider of training materials and high quality teaching and learning.

Building personal reputation



People might be motivated by the potential to build their own personal reputation, to be recognised by their colleagues as someone who is contributing high quality content and thinking to the user community.

Peer review and feedback



People working in specialist disciplines may appreciate having feedback from their peers on content or tools that they have created, including from people outside of their own organisation, and that might in itself be a motivation to contribute.

Collaboration with peers



People may want to use the community to share ideas for resources, or partially complete work, where they are looking for people to help them work this up into a completed resource.

Gamification



Certain activities around collaboration, contribution and sharing could earn you badges that in some way enhance your experience, perhaps unlocking 'premium' content or site features.

Key insights and findings

Motivations

- **Altruism** is the primary motivation for users to share resources with each other. There was a genuine interest and emotional investment displayed by participants in delivering better learning throughout the health and care system. This came across both in participants' willingness to share their own resources, and to review those created by others to "make it better".
 - Educationalists or Tutors who have spent time and effort creating a resource want them to be used by as many people as possible.
- "Some of the top contributors are really into their gamification" although it was not seen to be important to everyone. Gamification on the Learning Solution may be limited to receiving positive reviews and high resource downloads to satisfy users.
- Contribution towards CPD points may drive some users if they can present their activity on the Learning Solution as part of their portfolio for CPD. Users were unable to define other meaningful rewards or incentives that would motivate them.
- Competition and rewards were not seen as a strong motivator.
- Peer review, feedback and collaboration with others was highly sought after. Creators of resources were keen to get involved within a community of peers.
- Organisational and personal reputation were seen to be strongly linked. Whilst there may be an element of this within their motivations, it did not come across strongly.

Potential barriers to uploading

- Making the contribution process easy is the main factor that will influence a user's decision to contribute. They are ready and willing to do it, although could be put off by a convoluted or unclear process.
- Contributors want to know if they are going to be held personally responsible for the resources that are on there. For instance, "am I legally responsible for inaccurate content?". Similarly, copyright issues may deter them from posting if they don't understand what can or cannot be used.
 - This may restrict the contributions that users make, as they may only feel comfortable uploading resources that have been 100% reviewed, validated and approved. This "may" be okay, as it would help to ensure high standards and quality in the Learning Solution resources, although it may also prevent a significant number of contributions.
- Many NHS organisations commission their own learning resources with the intention of selling them on to other organisations. It was commented that often this does not happen due to poor visibility of the resource. There are a number of potential issues with this:

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- Organisations may not be willing to freely share resources that they have commissioned, where there is an opportunity to sell them on. In this case, organisations may not have a mechanism to facilitate paying for these resources.
- Contributors may be unsure whether their organisation is happy for them to share the resources that they have created themselves, and what licence their resources are covered by. However, it was discussed that individuals across the health and social care sector will be pushing their organisations to allow free sharing of their resources to the rest of the health and social care workforce.
- The fear of getting negative feedback may cause users to spend too long trying to perfect their resource or not post it.

5.4.2 Development and usability testing - resource contribution

For the functional Alpha product, we developed the ability for users to contribute resources to the Learning Solution. To contribute a resource, users need to have an account on the system. As there is an intention to integrate with the e-Learning for Healthcare Hub within private Beta and utilise their user accounts, we did not build a registration mechanism for the service. Instead, we created test accounts within the system using administrator privileges.

Health Education England **NHS** Search for resources Collaborate Contribute a resource Log in

ALPHA This is a new service - your feedback will help us to improve it.

Home

Log in

Username
Enter your HEE TEL Learning Solution username.

Password
Enter the password that accompanies your username.

Log in

Log in page on the functional Alpha product

The system is set up to direct users to the login page when trying to contribute a resource and block access to anyone without the adequate permissions.

Resource contribution currently covers 4 types of resource:

- 1) e-Learning
- 2) Audio/video

Health Education England
Alpha report

- 3) Equipment
- 4) Document

These 4 resource types were selected because they give useful and immediate information about what the resource is to users, which will be used when filtering for resources. There will likely be further resource types that are introduced within Beta that do not naturally fall into these categories.

When designing the contribution process, we identified that many of the questions asked within the form would be redundant, based on the resource type selected. This means that there is an opportunity to streamline the process by making questions appear, conditional on the resource type selected.

Because of this, it is important to ask the question of “what type of resource would you like to contribute?” first. This formed the first page of our contribution process below:

Health Education England **NHS** Search for resources Collaborate Contribute a resource Log out

ALPHA This is a new service – your feedback will help us to improve it.

Home

Contribute a resource

Upload and share learning resources you have created, so that everyone can benefit from them.

Follow the simple steps below to add your resources.

[▶ Help choosing a resource type](#)

What type of resource would you like to contribute?
Select a type that best matches your resource

- Select a resource format -

Continue

First page of the contribution process

From this page, users are taken to the main part of the form, where they can begin the 10-step process to completing their resource contribution:

Health Education England Collaborate | [Contribute a resource](#) | [Log out](#)

ALPHA This is a new service – your feedback will help us to improve it.

[Home](#)

✓ You have pending drafts for this webform. [View your pending drafts.](#)

Contribute a resource

- 1. Overview
- 2. Authors
- 3. Reviewers
- 4. Materials
- 5. Classification
- 6. Life cycle
- 7. Licensing and access
- 8. Pricing
- 9. Terms and conditions
- 10. Preview

1. Overview

Resource name

This will be the title of your resource

Resource description

This may include an overview of the resource, the purpose, learning outcomes and any other useful information

Duration (Optional)

Learning duration in minutes, if applicable

 minutes

We began with 10 steps, with each step asking only a few questions each. The number of steps were seen by many users to be too many and they indicated that certain questions could be consolidated into other sections. This is recommended for Beta.

The first round of usability testing highlighted a number of points of confusion:

- Users did not immediately understand the section that they were on, or the ones which they had completed.
- Users thought that the sections at the top were radio button selections.
- Users did not understand the titles of the sections and what information they would be asking for.

Improvements were made to the presentation and highlighting of sections, as seen above. A title was also added to the form elements below the section list to illustrate the connection between the two elements. Small changes were made to the section names and some fields to make them more understandable.



[Collaborate](#) | [Contribute a resource](#) | [Log out](#)

ALPHA This is a new service – your feedback will help us to improve it.

Home

Contribute a resource

- | | | | |
|--|--|--|--|
| <input checked="" type="checkbox"/> 1. Overview | <input checked="" type="checkbox"/> 2. Authors | <input checked="" type="checkbox"/> 3. Reviewers | <input checked="" type="checkbox"/> 4. Materials |
| <input checked="" type="checkbox"/> 5. Classification | <input type="checkbox"/> 6. Life cycle | <input type="checkbox"/> 7. Licensing and access | <input type="checkbox"/> 8. Pricing |
| <input type="checkbox"/> 9. Terms and conditions | <input type="checkbox"/> 10. Preview | | |

5. Classification

Health and care settings (Optional)

This is the health/care setting of your intended audience

- Ambulance Services
- Commissioning Groups and Arms Length Bodies
- Community Care
- Community Dentistry
- Community Pharmacy
- Home Care, Care Homes and Hospices
- Hospital Care
- Mental Health Care
- Primary Care
- Public Health
- Social Care

Example of the classification page of the form

Users told us that some questions did not provide a comprehensive list of all of the options. We revised these options for the second round of usability testing. An example is shown above for “Health and care settings”.

A mechanic of the form to track progress is currently demonstrated above, using ticks on each section passed. This feature in Beta will validate whether the full set of mandatory information provided within the section has been completed. For Alpha, there is currently no validation, and the tick appears simply on the sections before the current one.

Health Education England Collaborate | Contribute a resource | Log out

ALPHA This is a new service – your feedback will help us to improve it.

Home

⚠ Please review your submission. Your submission is not complete until you press the "Submit" button!

Contribute a resource

Your submission contains the following errors:

- Resource name field is required.
- Resource description field is required.
- Authors field is required.
- Published on field is required.
- Legal owner name field is required.
- Licenses field is required.
- I have read and accept terms and conditions field is required.

- 1. Overview
- 2. Authors
- 3. Reviewers
- 4. Materials
- 5. Classification
- 6. Life cycle
- 7. Licensing and access
- 8. Pricing
- 9. Terms and conditions
- 10. **Preview**

▼ Overview

Resource name	{Empty}
Resource description	{Empty}
Duration	{Empty}

▼ Authors

Final preview page of a resource upload form

The final form of the page displays any errors or missing information throughout the form. Users currently have to click back through the form to navigate to the section with an error. This was found to be a frustration within the usability testing and is planned for improvement in Beta, where users will instead click on the error message to be taken to the field. They should also be able to click on the section title displayed to navigate between sections.

On submitting a resource, users will be taken to their resource page, where they can view how it will be seen by other users.

Key insights

- In general, users found the process of uploading a resource to be very straightforward, although there were opportunities identified to improve the usability of the form and condense it, as documented in the product backlog.
- Licences were a tricky field for users to understand; they commented that most people would have no idea which licence applied to their resource and would need to find out. Additional guidance is needed in this section.

5.5 Content contribution from other organisations

The choice of Drupal 8 as technology platform was partially influenced by the need to simplify the import content from the NHS eLearning Repository, which is built on Drupal 7. Although some work will still be required to map custom resource properties and move user-uploaded files, the effort required to move content will be considerably smaller compared to importing content from another system. Given this fact, the current approach to populating the Learning Solution for its first public release relies significantly on content from the NHS eLearning Repository.

As part of technical research in Alpha phase, we have also looked at opportunities for utilising content from the e-Learning for Healthcare Hub. Consultation with the e-LfH team produced a concept for developing an API built into the Learning Solution, which would allow for receiving information about newly created or updated resources.

- The e-LfH Hub would be extended to send this information, in mutually agreed format, whenever a change is made to the resource.
- Upon receiving resource information, the Learning Solution would create a resource page.
- The newly created resource page would be sent for indexing to the search service.
- The indexed page would be made available for searching. As search index can be made accessible to other services, including e-LfH, they could display the extended information added in the Learning Solution (e.g. rating) in their search listings.

As the format for data exchange between the Learning Solution and e-LfH can be used by other systems as well, this solution can be a blueprint for subsequent integrations of content from other sources.

5.6 User profiles and permissions

Contributing resources to the system naturally requires a user account. This is so that anyone who uploads a resource can edit or delete their contributions at a later date. Additionally, having an account will allow us to later facilitate conversation between users, such as reviewing a resource, or commenting within the discussion section. As discussed earlier, there is a basic account currently created to ensure that any contribution can only be made if a user is logged in.

5.6.1 Investigation into user account integration with e-Learning for Healthcare Hub

Early in the Alpha phase we identified a concern raised by internal stakeholders about increasing the complexity for users of HEE's services, due to introducing a separate user and login system for the Learning Solution. Based on findings from the technical workshop with owners and managers of different HEE and associated systems, a decision was made to explore a potential integration of user systems with the closest related system, the e-Learning for Healthcare Hub. Two potential approaches to integration were identified during consultations with the e-LfH team.

The first of these would involve mirroring user accounts on both systems. Each system would have its own login form and authentication mechanism. A bi-directional single sign-on (SSO) mechanism would allow users to automatically create and access accounts on the other system. To facilitate easy account management, any changes to user information, including login detail changes, would need to be replicated in near real-time. Additionally, any user role information would also need to be replicated. Given the risks associated with errors in replication or the two accounts being out of sync even temporarily, this approach has been deemed not suitable for the integration.

The second approach would involve designating one of the systems as the source of truth about user accounts. Given that the e-Learning for Healthcare Hub is an established system with a large user base, it was the clear choice for this role. The basic principle of this approach is for the users to always authenticate against their account held by the e-LfH Hub, and be subsequently signed-in to the Learning Solution using an SSO mechanism. Any account management functionality, including password change and reset would be handled by e-LfH. Centralising account information management and storage removes synchronisation risks, making this the preferred approach to integration. However, consideration should be given to the aspect of keeping the user journey consistent, as users logging in from the Learning Solution would be interacting with elements of both systems.

An implementation of this solution should meet the following criteria:

- Non-administrative users should log in solely with an e-LfH Hub-provided mechanism. The level to which the login form should be disguised as part of the Learning Solution is to be considered, taking into account the perception of the Learning Solution and e-LfH Hub as two parts of a larger HEE platform and technical aspects of implementation.
- Authentication with the Learning Solution for non-administrative users should happen only using a SSO mechanism. If a user has already authenticated with the e-LfH Hub, they will be automatically signed in to the Learning Solution.
- Shadow accounts for non-administrative users need to be present on the Learning Solution to allow identification of users contributing resources, rating, reviewing and taking part in discussions. Users should not hold credentials for these shadow accounts.
- A role mapping is developed between e-LfH and the Learning Solution to allow assigning user roles via the e-LfH Hub. This will require collaboration from the e-LfH Hub team.
- Identity claims (including role claims are passed to the Learning Solution upon authentication).
- Whereas the roles will be assigned on the e-LfH Hub, their capabilities with regards to Learning Solution operations will be defined within Learning Solution.
- Forgotten password and password change functionality for non-administrative users is provided by the e-LfH Hub. The level of visual integration into the Learning Solution is to be considered, as with login functionality.
- Logging out of the Learning Solution terminates a session on the e-LfH Hub and vice-versa.
- Administrative users (administrators, content editors, moderators etc.) should be allowed direct access to the Learning Solution.

5.6.2 Ideathon activity (create a profile page) and usability testing

As we know that users will require their own account, we wanted to further understand what users would expect of their accounts.

We created an activity within the ideathon that allowed participants, in collaboration with our team, to design an ideal account dashboard. This allowed us to understand the type of information that would be important for them to manage their account, and what additional information they would like to see to benefit their interactions with the system.

Within the Alpha product, we did not build further upon the findings of this activity as it was not required to prove the concept. However, during usability testing, further insights were generated.

Key insights and findings

The majority of requirements identified for the profile area were “nice to have”, rather than essential for the success of the Learning Solution. There were no requirements other than resource management functionality that indicated users would not use the system if they were not there.

- Users would like to be able to access resources that they have previously found to be interesting.
 - This could be in the form of adding resources to their “favourites”. Further to this, it was discussed that creating a playlist of resources for a particular purpose would be very useful. This could be similar to a playlist on Spotify, or saving a hotel/activity to a particular trip you’re planning on TripAdvisor.
 - Playlists could potentially be shared with others, facilitating guided learning between tutors and learners.
 - Users would like to be able to add their own personal notes to resources that they have saved, to look at later.
- Users would like to be presented with content that they have identified as being of interest to them. This could be a discussion within the collaboration section of the site, or new resources that have been posted that they may be interested in.
- Users like the idea of having a profile image, although this could be a graphic rather than a picture of themselves.
- Users would like the system to remember them so that they do not have to sign in again.

5.7 Ideathon activity - accessing further resources

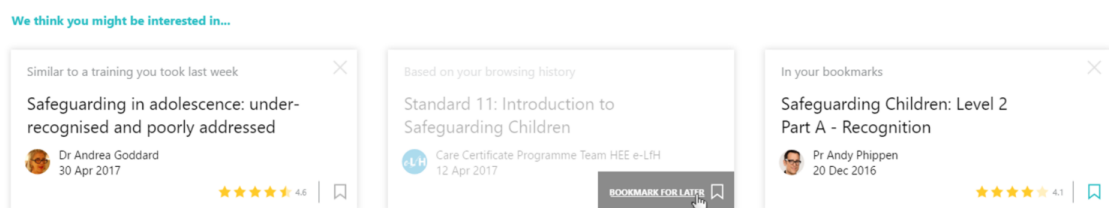
Within the Alpha prototype, we built a service that allows users to enter in keywords to find a resource, then filter down further to refine the list. However, once a user gets to a resource, the only way to carry on their journey is to go back to their search results or conduct a fresh search. Because of this we wanted to explore how else we could allow them to continue on their journey.

We created wireframes demonstrating how other resources could be presented to users once on a resource page, each displaying different potential mechanisms. These included:

- “Display more content matching with...”
 - Clicking the tag takes the user to a search filtered by the tag selected.
- “People who took this session also took...”
 - Displaying other content that users have looked at and accessed along with this one.
- “We think you might be interested in...”

Health Education England Alpha report

- Displaying content based on the activity of the user through the system and their recorded preferences.
- “Related resources...”
 - Displaying resources that match to the categorisations and keyword tags of the current resource.
- “Want to go further? Find resources with matching...”
 - Allows users to select the particular tags present on this resource that they would want to search further by.



Example of a navigation section, displaying “we think you might be interested in...” resources.

Key insights and findings

- Users will look at the section of content at the bottom of a page to see if there is another resource that is interesting to them. If there is nothing of interest, they will go back to their previous search and continue to look at other results or refine their search. Users were not keen on interacting with any complex mechanic that involves conducting a new search.
 - This discounted displaying a list of tags for users to interact with and refine content by an individual tag.
 - This also discounted the new search that allows users to select a number of tags to search by.
- Users were very keen on the ability to have content tailored to them, taking into account their preferences and what was relevant to them.
- Users would not want to see what everyone else was looking at; they would be more interested to see what people like them were looking at too.
- Related content was seen as a good way of navigating the content.

6 ACCESSIBILITY AND ASSISTED DIGITAL NEEDS

It is extremely important that the Learning Solution service takes into account the needs of people living with disabilities, or who have assisted digital needs. By assisted digital needs, we mean people who would struggle or refuse to use an online service without assistance from another human. By accessible, we mean that the site is designed to sufficient standards to be usable by those living with disabilities.

6.1 Assisted digital needs and support

As part of our research into assisted digital needs and support, we spoke to:

- Two NHS Library and Knowledge Services (LKS) representatives, who provide services to any healthcare providers within a given region; one of whom had also been involved in Discovery research for our project.
- A group of six Learning and Development (L&D) staff within NHS Trusts of various types and sizes.

The following sections detail our findings, combined with other research conducted during the Discovery phase.

6.1.1 Prevalence of assisted digital needs in the NHS workforce

The anticipated service user for the Learning Solution are people who work as Tutors, Educationalists and Trainers within the health service and care sector. It is also anticipated that learners will use the system as well for their own informal learning².

We have data from The Guardian Healthcare Professionals Network Survey 2016 which stated that 7% of the workforce lack skills to access online training and 6% lack confidence. This compared with 16% who said that access to the internet in their place of work, or rather lack of it, was a barrier, and 68% who said that lack of time was an issue.

Anecdotal accounts from the various people we spoke to back-up that there are problems:

“We received over 100 calls from people when we launched the Electronic Staff Record”.

² Note that learners’ needs surrounding prescribed training are still being explored for future phases of development.

“We have everyone from technical wizards to people who literally don’t know how to switch on a computer when they start”.

Our Discovery research found that 4% don’t use online learning, and 40% don’t look outside the network of their own Trust for learning content (although the latter is by no means just an assisted digital issue).

This data refers to the general health and social care workforce; we asked if participants have data on the target audience (i.e. tutors, educationalists and trainers) and this information is not currently available.

6.1.2 How is support currently provided?

Within the health and social care workforce, the type and level of assisted digital support varies depending on the organisation.

Most large Trusts have a learning and development team who provide IT skills training and support. Some provide one-to-one support when requested, either face-to-face or remote via telephone or remote ‘ghost’ connection to the user’s computer. Other Trusts focus on generic IT skills training only and refer one-to-one support requests to library staff.

A high proportion of NHS organisations, and certainly most Trusts, have access to library and knowledge services, although only staff who work in Trusts are likely to have convenient walk-in access to physical libraries to use IT facilities and get face-to-face support. Library staff can and do provide one-to-one assistance to people with accessing and using technology enhanced learning, remotely by telephone where appropriate.

In addition, regional TEL support networks provide further ad hoc support via their network of experts. These groups use email and social media for sharing information and asking questions.

Most Trusts also provide numeracy and literacy courses for those who need them.

6.1.3 How might the new Learning Solution be supported?

One-to-one assisted digital support could include help with accessing the Learning Solution, help with searching for appropriate content and help with uploading and cataloguing content.

The HEE team intends to provide a web-chat based support service to help people to access and use the Learning Solution, and this is one route to support.

The L&D teams and library services we spoke to are also generally happy to provide direct support to users. Some L&D staff pointed out that they may need to refer people to local library services if they don’t themselves offer one-to-one support. There is no ‘sector wide’ model,

although in most cases people could be directed to speak to either their L&D team and/or their library service.

One issue to address is that not everyone will know that they have access to a library service or TEL support network if their own L&D team cannot help.

6.2 Web accessibility

Web accessibility has been considered within the Alpha prototype, however ensuring that the website is truly accessible and user friendly to those experiencing disabilities has some way to go. Given approval to proceed to Beta, the final service will be built and tested to WCAG 2.0 AA standards, ensuring that best endeavours are made to improve the experience of the site for those with disabilities.

The current Alpha prototype has implemented some of the fundamental components required to meet the WCAG 2.0 AA standards, including:

- Appropriate colour contrast and font sizes
- Skip links to avoid tabbing through the navigation
- Visible and clear active states on buttons
- Site can be tabbed through and key journeys completed by tabbing through it.

There are known accessibility issues with the Alpha prototype that will be resolved within Beta. These include:

- Writing appropriate, informative text to inform screen reader users of what they are looking at, or the section that they have arrived at.
- Displaying active states on search result items when tabbed over.
- Changing the behaviour of buttons to allow users to press them using 'enter' as well as 'space'.

7 RECOMMENDATIONS FOR PRIVATE BETA

7.1 Scope by functional area

7.1.1 Resource search

The following functionality is recommended for the resource search:

- Query autocompletion – When a user starts typing a phrase in the search form input, a list of suggestions should appear for matching keywords. This should be powered by keyword lookup functionality provided by integration with Semaphore.
- Query correction suggestions – The search mechanism should be able to detect a potential spelling mistake and suggest a correction. As an initial implementation, the correction can be shown to the user alongside the result of the query in form of “Did you mean...?”.
- Handling synonyms – The search mechanism should return results where content matches the search keyword or its synonyms.
- Relevance sorting – At least one iteration of adjustments to weighting of resource properties, which influences how relevant the resource is deemed to be for a particular search query, should be included in private Beta.
- Sorting options – Users should be able to choose from additional sorting options e.g. by rating, alphabetical, or by last review date (or where review date is not available, published date).
- Additional filters – Additional filters should be created, such as healthcare settings. We recommend that geographic filters, which would require integration of a third party geocoding service, are not included at this stage.
- Usability testing with larger volume of content – The mechanisms for search have been tested and works well with users. However, the final solution will have 1000s of resources, and the real test is whether a user can use the search mechanism to accurately filter these resources down to one that they are looking for. During this project we engaged with many people who expressed a strong interest in contributing content. We recommend inviting them to enter a sample of their resources into the Learning Solution during private Beta, to check how the system will cope with real-life resources.

7.1.2 Resource page

The following functionality is recommended for the resource page:

- Author information – The author information block should be improved to correctly display the name, job title and affiliation of the main author (assumed first author), as well as

names of additional authors. At this stage links to pages with information about authors and organisations should be removed, as inclusion of these pages is not recommended for private Beta.

- Contributor information – Information about the person contributing (submitting the resource to the Learning Solution) the resource should be displayed on the resource page. This is needed for:
 - Identifying the contributor in case of a resource being submitted without consent of the author(s).
 - Identifying users with the power to make modifications to the resource, should changes be recommended as part of a discussion about the resource or a review posted against the resource.
- Partnerships information – Instead of showing endorsements from organisations, the resource page should present information about which organisations the resource has been developed in partnership with. The purpose for which the resource was developed could also be given for each of the listed partnerships.
- Information requested in the resource creation form currently not present on the resource page – With exception of fields explicitly excluded from the resource page, users should be shown all information collected in the resource creation form. This should include new fields, as specified in section 6.1.3.

7.1.3 Resource creation

The following functionality is recommended for the resource creation process:

- Additional resource types – Explore and implement more resource types that do not sit under the current options. Conditional logic can be employed to show / hide fields based on resource type. Any mechanical changes to the form should be evaluated against the importance and expected volume of the particular resource type for which they are made.
- Modifications to conditional logic for existing resource types – If applicable, modify conditional logic for showing / hiding fields based on resource type.
- Additional fields – User feedback in Alpha highlighted several areas, such as information about the process applied to production and evaluation of a given resource, where users would like to see more information presented about a resource. This raises a potential need for new fields to be created. Feedback should be reviewed to prioritise these requirements, and the chosen fields should be implemented.
- Reorganisation of questions – User feedback in Alpha identified a significant need to simplify the structure of the form and potentially reduce the number of steps. This work will involve revising the existing form steps, testing the new structure with users and implementing it.

- Labels and guidance - Review and re-write field labels and guidance where there is an opportunity to make the question clearer.
- Error message text – Review the error messages to make the tone of voice more user-friendly.
- Progressive display guidance – Make progressive display guidance sections, such as guidance on licences, CMS-editable.
- Licensing – Consider what licence types are currently available, and whether NHS organisations can be encouraged to create resources under a licence that allows resources to be shared within the NHS.
- Progress bar navigation – Allow users to click the section titles to skip ahead and back.
- Error message navigation – Allow users to navigate to a specific field by clicking on an error message. This will be available both from the page that the field is on, and from the preview page.
- Validation – Implement validation covering both required fields validation and syntax checking. Validation status of each page should be indicated on the progress bar, while error messages should be displayed on form pages respective to the fields concerned and on the preview page.
- Preview page presentation – Review the visual presentation of the preview page. Ensure correct display of information from the different form fields.
- Resource creation process introduction – Improve the introduction to the resource creation process. Provide users with more detailed information about different resource types and a list of information essential to complete the process, so they can prepare ahead of starting the resource creation process.
- Verification of authors and reviewer information – Currently there is no verification of whether someone specified as an author or reviewer is a real person. Ways to add such verification should be explored in private Beta.
- Confirmation of the right to contribute the resource – Currently, no verification or explicit confirmation of the right to contribute the resource is required. A verification mechanism, which would require significant development effort, is unadvisable for private Beta. Instead, a confirmation field, where users are required to declare that they have the right to upload the resource, should be added to the resource creation form.
- Testing with examples of real learning resources - Invite potential contributors to the system to contribute their own resources, then review a sample of their contributions to assess whether there are any issues.
 - Ascertain whether the contributor did have permission or authority to contribute the resources they did. This will help to spot potential future issues if there is unlicensed sharing.

- Identify retrospective issues that they faced in uploading their resources independently. For instance, did they have any issues in understanding the licences information or were there any healthcare settings missing.

7.1.4 Resource management

The following functionality is recommended for resource management:

- Dashboard of my resources – A page should be created where users can view all their draft and submitted resources, and manage these resources.
- Handling multiple drafts – Users should be able to have multiple draft resources at the same time, with the ability to easily access a chosen draft from the dashboard.
- Deleting resources – Users should have the ability to delete draft and submitted resources. The process should involve a confirmation page.
- Editing resources – Users should be able to edit a previously submitted resource. At this point, we recommend that the resource creation form is used for editing resources, with all fields available as they would be for a new resource of the given type. Changing the resource type should be disabled, as this can influence the structure of the form presented to users. Further needs and ideas about modification of the form for editing of existing resources should be explored as part of user testing.

7.1.5 Ratings and reviews

The following functionality is recommended for rating and reviews:

- Ability for users to give a resource a single, overall rating. Separate rating of different aspects of the resource should be deferred to public Beta, as more research would be required to decide which aspect-specific ratings give users most valuable information.
- Only logged-in users should be able to rate or review a resource. Job title and organisation affiliation, where applicable, should be displayed against a rating or review.
- At this point, only the resource contributor should be able to reply to reviews. Granting this ability to authors will require resolving the question around verification of author's identity raised in section 7.1.3, thus implementation of relevant functionality should be deferred to public Beta.

7.1.6 Resource discussions

The following functionality is recommended for resource discussions:

- A “Discussion” section should be built that is separate to “Reviews”, where users who are logged in with appropriate permissions can post comments or questions relating to the resource. Note that this is separate to a “review” as there will be no rating attached to this post.
- Users should be able to reply directly to someone’s comment, or create a new comment. This function should not be overcomplicated by features such as replying to a reply, however third party modules should be reviewed to see what intuitive discussion functionalities can be efficiently implemented.
- Posts and comments should display the job title and organisation affiliation, where applicable, of their author.

7.1.7 Proof of concept for collaboration section

The collaboration section tested very well as a concept and has significant applications across health and social care to bring people together to collaborate around learning resources. Producing such a service would help to join up currently fragmented discussion groups and give people access to find and share specialist knowledge.

Whilst all the responses were positive, the concept itself is in its infancy stage and not yet ready for full production. Further analysis and testing is required before building a fully functioning collaboration tool to release to the public. For this reason, we would recommend developing a proof of concept first. The proof of concept should aim to prove the core components:

- Users can create a post/question.
- Users can search for existing posts/questions.
- Users can specify topics which are of interest to them.
- Users are notified when a new post/question tagged with one of their selected topics has been created. The simplest possible mechanism for notifications should be chosen at this stage.
- Users can respond to posts.

This should be to a similar level of fidelity as the current functional aspects of the Alpha prototype, which proves the need for the service and successful user interaction, yet does not provide all of the user content management functionality required for release.

7.1.8 Contribution of resources by organisations

The following research is recommended to explore the needs around contributing resources as an organisation:

- NHS or social care organisations may wish to contribute resources on behalf of their organisation rather than from an individual within their organisation. This may be applicable as well for organisations looking to sell their resources. This would protect against a situation where the individual leaves the organisation and takes the management of the content with them. Aspects of ownership and intellectual property rights should also be considered as part of this research.

If this is taken forward, a mechanism allowing an organisation to be set up and managed will need to be developed in a subsequent phase.

7.1.9 Non-administrative accounts

The following functionality is recommended for non-administrative accounts:

- Different levels of resource access should be implemented, based on the type of user. This should mimic the e-LfH Hub's user types.
- Additional permissions for commenting on and reviewing resources should be created and assigned to user accounts. By default, commenting and reviewing should be open to all logged in users.

7.1.10 Administrative accounts

The following development is recommended for administrative accounts:

- Create moderator accounts for HEE administrators, so that they can review comments or reviews, then take action to remove it. This administrator account should have the power to block individual user accounts.

7.1.11 Integration of user accounts with the e-Learning for Healthcare Hub

Following the approach proposed in Alpha (see section 5.6.1), the user system should be integrated with the e-Learning for Healthcare Hub's user system. The implementation should satisfy the following requirements:

- Non-administrative users should log in solely with an e-LfH Hub-provided mechanism. The level to which the login form should be disguised as part of the Learning Solution is

to be considered, taking into account the perception of the Learning Solution and e-LfH Hub as two parts of a larger HEE platform and technical aspects of implementation.

- Authentication with the Learning Solution for non-administrative users should happen only using a SSO mechanism. If a user has already authenticated with the e-LfH Hub, they will be automatically signed in to the Learning Solution.
- Shadow accounts for non-administrative users need to be present on the Learning Solution to allow identification of users contributing resources, rating, reviewing and taking part in discussions. Users should not hold credentials for these shadow accounts.
- A role mapping is developed between e-LfH and the Learning Solution to allow assigning user roles via the e-LfH Hub. This will require collaboration from the e-LfH Hub team.
- Identity claims (including role claims are passed to the Learning Solution upon authentication).
- Whereas the roles will be assigned on the e-LfH Hub, their capabilities with regards to the Learning Solution operations will be defined within the Learning Solution.
- Forgotten password and password change functionality for non-administrative users is provided by the e-LfH Hub. The level of visual integration into the Learning Solution is to be considered, as with log in functionality.
- Logging out of the Learning Solution terminates a session on the e-LfH Hub and vice-versa.
- Administrative users (administrators, content editors, moderators etc.) should be allowed direct access to the Learning Solution.

7.1.12 Integration of e-Learning for Healthcare Hub resources

Following the approach proposed in Alpha (see section 5.5), an API should be developed within the Learning Solution platform, which will enable receiving information about newly created and updated resources on the e-Learning for Healthcare Hub. The e-LfH team will be responsible for creating a mechanism for sending this information, using a mutually agreed data format.

7.1.13 NHS eLearning Repository content migration

Prior to the first public release of the Learning Solution, content from the NHS eLearning Repository should be migrated to the Learning Solution. This work has to cover mapping of all resource properties that have equivalents on the two systems and include user-uploaded resource files (e.g. SCORM packages, PDFs).

7.2 Improvements to assisted digital support

The following activities should be included as part of work to improve assisted digital support:

- It may be necessary for HEE to liaise with organisations to ensure Library, L&D and IT staff regard the Learning Solution as a supported system.
- HEE also operates a white list of safe sites, that are recommended to be allowed through local firewalls. The Learning Solution itself, and the top content providers listed on the solution, should be added to this list.
- Sessions to familiarise Library, L&D and TEL staff with the Learning Solution will help them champion the solution as well as support its use.
- HEE should clarify to L&D teams and Library staff how they can report recurring user experience and usability issues that are leading to regular assisted digital support requests.
- Work with a learning and development team to test the assisted digital needs processes.
 - Work with the team to understand their usual call handling procedures
 - Prepare the team with information about the service that will be required to handle the call.
 - Identify users with assisted digital needs, to whom the learning and development team will be their route to receiving support.
 - Test the process to see what happens when a user requests assisted digital support.

7.3 Improvements to accessibility

The following activities should be included as part of work to improve accessibility:

- Review and resolve all known accessibility issues throughout the site.
- Engage with a third party accessibility testing specialist to work throughout Beta to ensure that the service achieves WCAG 2.0 AA accreditation. Activities conducted by the specialists should include:
 - Initial review of current designs and prototype, giving accessibility recommendations and considerations for future developments.
 - Ongoing consultancy/support throughout the project.
 - Accessibility audit of the final site to confirm “compliance” to WCAG 2.0 AA standards.
 - Usability testing of the site with users with a range of disabilities.
 - Checks to ensure that recommendations have been followed, granting a WCAG 2.0 AA “accreditation”.

- Implement all accessibility recommendations (where possible) to achieve both WCAG 2.0 AA compliance and accreditation from a recognised accessibility specialist.
- Ensure that users with disabilities are included within all other usability tests carried out in addition to those of an accessibility specialist.

7.4 Deferred items

7.4.1 Resource management

The following items are recommended for consideration after completion of private Beta:

- Ability for users to view previous versions of a resource.

7.4.2 Reviews and rating

The following items are recommended for consideration after completion of private Beta:

- Ability for users to add separate ratings for different aspects of the resource.
- Ability for authors who are not resource contributors (i.e. have not uploaded the resource) to reply to reviews.

7.4.3 Resource discussions

The following items are recommended for consideration after completion of private Beta:

- Flagging comments or post as inappropriate.
- Searching the discussion section to help users find more specific information.
- Downvoting and upvoting posts to help streamline conversations.

7.4.4 Collaboration section

It is recommended to release the collaboration section to the public after the main release of the resource sharing site. This will allow the Learning Solution to build up a community of active users and gather users' interests. When the collaboration section becomes available, posts that users make will have a much higher chance of being seen and responded to.

The following items are recommended for consideration after completion of private Beta:

- Saving draft posts.

- Seeing a list of all my posts.
- Editing my post once published.
- Deleting my post.
- Reporting a post.
- Seeing a list of posts that I have contributed to.
- Editing and deleting my comments.
- Adding attachments to comments.
- Email alerts to promote relevant posts.
- Following posts to receive updates on the conversation (notifications).
- Upvoting or downvoting comments on posts.
- Additional categories.
- Allowing a user to follow conversation or discussion threads that they identified as interesting to them, or they have contributed to.
 - Notifications based on other user interaction, such as if your comment has been replied to (applicable to the discussion section of resources too).

7.4.5 User and organisation profile pages

The following items are recommended for consideration after completion of private Beta:

- Profile pages for authors, reviewers and contributors displaying their basic details, profile picture, as well as list of publications.
- Profile pages for organisations displaying their basic details, logo, as well as list of publications.

7.4.6 Related content navigation

Accessing further resources is not a priority for private Beta. Users expressed an interest in the ability to do this, however they were happy to go back to their previous search to continue looking for resources and refining further. This type of related content navigation may be welcomed in later phases.

The following items are recommended for consideration after completion of private Beta:

- The exact title of a related content section may be debated, although the section should display a number of resources that we believe the user would be interested in, rather than another search mechanism.
 - The tags and keywords of the resource currently viewed should be taken into account. If the resource keywords were not taken into account, recommendations

of what to view may be similar to those for personalised content (see section 7.4.7).

- The prioritisation of resources shown could be supplemented by the preferences and personal details that the user has given.

7.4.7 Personalised content recommendations

The following items are recommended for consideration after completion of private Beta:

- Using information about topics that users are interested in to suggest learning resources in addition to suggesting discussion posts/questions (see section 7.4.4). This may involve:
 - Promoting targeted, high quality resources to users.
 - Presenting users with a list of recommended resources based on their preferences, top resources accessed by their peers, or other criteria.
- Personalised content recommendations can be displayed on the homepage, as already explored with Alpha wireframes. Displaying these on other pages can be a subject of further research.

7.4.8 Integration with a Learner Record Store (LRS)

Integration with a Learner Record Store (LRS) may allow users of the Learning Solution to capture and access information about their formal and informal learning undertaken with different providers in one, central location. This can help to present a more comprehensive picture of one's learning. It may also reduce the need for organisations relying on Learning Solution content to have their own Learning Management Systems (LMS), allowing them to reduce costs, both with the system itself and of managing the learning content within it.

7.5 Indicative timeline

The following timeline gives an indication of what activities should be undertaken in Beta, and when within the project we would expect these activities to take place. Based on the previous pace of work, it was identified that 3 week sprints were more manageable and productive for the combined HEE and Reading Room teams. We have recommended 3 week sprints in the timeline below.

Note: Duration in the timeline below is not an estimation of effort.

Health Education England
Alpha report

Activity	Sprint 1	Sprint 2	Sprint 3	Sprint 4	Sprint 5	Sprint 6	Sprint 7	Sprint 8	Sprint 9	Wrap up	Wrap up
3rd party accessibility review	Green					Green		Green			
Disabled user testing							Green				
Initial browser testing	Blue										
Design and branding (optional)	Yellow	Yellow									
Beta functional development	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue		
Resource contribution testing					Brown	Brown	Brown	Brown			
Usability testing (2 rounds)				Orange			Orange				
Assisted digital testing							Light Green				
GDS assessment prep										Purple	
GDS assessment											Purple
Penetration testing										Pink	
Security and privacy review									Dark Blue		
Deployment										Pink	

Indicative timeline for the Beta phase of the Learning Solution

Third party accessibility review - As described in Beta recommendations, there should be accessibility testing upfront, then a formal review at the end of the project.

Disabled User testing – Required as part of the review process to gain accessibility accreditation from an accessibility specialist.

Initial browser testing – The current Alpha prototype has not been browser tested. To reduce technical debt going forwards, this should be conducted as one of the first activities.

Design and branding (optional) – HEE may wish to further explore the brand of the site. This would include enhanced design treatment across the site to better portray the brand.

Beta functional development – Includes the implementation of all functional recommendations made for Beta within this report. This also includes further browser testing, user enhancements and bug fixing within Beta sprints.

Resource contribution testing – This is the testing exercise planned to allow future contributors to upload their own content, in their own time and report back on any issues. Insights will be used to inform developments of the contribution process.

Usability testing (2 rounds) – 2 rounds of usability testing are recommended for the Beta phase to inform product development. Each round should include between 10 and 15 participants to cover the required variety of users.

Assisted digital testing – Testing the full process to identify if a selected user can gain assisted digital support to use the Learning Solution.

GDS assessment preparation – Planning for the assessment and ensuring that all points have been considered.

GDS assessment – Conducted at the end of the project, for approval to progress to public Beta.

Penetration testing – Used to uncover vulnerabilities of the service, conducted against the private Beta release build of the website on production environment.

Security and privacy review – Consultation with persons responsible for security, governance and privacy to ensure that the new service meets security policies and correctly handles and protects any sensitive data. The review will also include a Privacy Impact Assessment and Equality Impact Assessment conducted by HEE.

Deployment – Deployment of the private Beta release build onto the production environment.

7.6 Roles required for private Beta

We expect to require the following roles in delivery of private Beta:

- Service manager
- Product manager
- Delivery manager
- User researcher
- Assisted digital lead
- Accessibility lead
- Content designer
- Designer
- Technical lead
- Developer (user interface)
- Developer (back-end)
- Technical architect
- Web operations engineer

8 BEYOND PRIVATE BETA

8.1 Estimated duration of public Beta

It is recommended that in terms of scope, public Beta is similar to the size of private Beta. However, as development in public Beta can be stretched out to allow for more data and feedback gathering, public Beta is likely to require a longer timeline. At present we estimate that public Beta will take 10-12 months.

8.2 Transition of roles to in-house team

We expect the transition of roles to an in-house team to begin towards the end of private Beta. Working closely with the in-house technical architecture team on preparing and managing the production environment and collaborating with in-house developers on integrations, including the e-LfH Hub and the search and taxonomy service, will allow the delivery team to begin transferring its knowledge and hand over at least some responsibilities. However, we expect that active development will still require the involvement of the delivery team throughout a significant part of public Beta.

Given the specialist subject matter of the service, we anticipate a collaboration between the HEE staff and supplier's team on content design for the public release of the service following private Beta. This will also be an opportunity to begin transferring this role in-house.

As public Beta will have a significant focus on feedback-driven enhancements, it will be beneficial to involve HEE staff in gathering and analysing user feedback at this stage, which will also help in transitioning research and usability-focused roles to the in-house team.

APPENDIX A. TECHNICAL WORKSHOP NOTES (COMPILED)

West Midlands Learning Platform (learning.wm.hee.nhs.uk)

Overview

Website providing learning resources and information about events. Primary focus is on healthcare staff in the West Midlands, although content may be applicable also in other geographical areas.

Primary audience

Healthcare staff in the West Midlands.

Main functionality

Functionality is focused on content publishing. Learning resources can be structured into programmes, with multiple materials collected under a programme. This content organisation is viewed as an important part of effectively delivering learning materials to users, and there is a desire to preserve this kind of structure in the event of a move to a different platform.

Links to other systems

None.

How is it managed?

One person responsible for management of the website. At launch there was a promotion and case study team gathering new content but this resource is no longer available.

Information security and privacy

No user information or sensitive data stored.

Platform

Drupal 7 CMS.

Life cycle and maintenance

System could be retired and content migrated to the new Learning Solution. Ad hoc support provided when required but no ongoing support.

e-LfH Hub (portal.elfh.org.uk)

Overview

Repository of e-learning content, with content accessible through e-LfH Hub portal, ESR and LMS integrations (using AICC).

Primary audience

Anyone working in NHS, via NHS OpenAthens. Includes charities, patient care, primary care, some social care, etc. Approx. 450k users of portal with 3.3m sessions in 2016, and 1m users through all delivery channels.

Main features

Providing playable content and tracking of learner progress. Provision of content playable within LMS that can be automatically updated using AICC packages. Currently no content search. Integration with NHS OpenAthens for authentication. Several user types with different access.

Links to other systems

Delivery of playable content to LMS (using AICC); SCORM packages used for playable content between portal and content server; content service to ESR using SCORM; no API content search; integration with Athens; Single Sign on into Hub, currently from Royal Colleges (incl. iRefer, GMC, DMC); retrieving data from ODS for list of companies that are places of work for portal's users or can access e-LfH content; links to Horus and NES ePortfolio systems.

How is it managed?

Managed by Jane and Simon. Team consisting of content managers and content authors supported by developers.

Information security and privacy

Identifiable staff data of users held; no patient data held within the system or content; application pen tested; communication happening over https with exception of some SCORM result reporting, which is being worked on.

Platform

Bespoke .NET MVC application; Hosted on AWS; Load balanced; uses Bootstrap; extensive testing on browsers incl. IE 8+ (IE8 is still widely used by the portal's audience).

Life cycle and maintenance

Continuous improvement with releases approx. every 5 weeks.

Health Education England Alpha report

Oriel

Overview

Portal for recruitment to medical training programmes allowing for tracking application progress and offering help resources for the application process.

Primary audience

Training programme applicants and assessors; ~100k applications per year; overseas applicants constitute a large part of the audience.

Main features

Application tracking; links to external learning systems (Oriel is not a learning solution in itself).

Links to other systems

Integration with Pearson view exam developer software and other exam APIs; reporting integration with Pearson, GDC, GMC.

How is it managed?

Management provided as part of contract with Deloitte.

Information security and privacy

Sensitive applicant information, requiring N3-compliant hosting.

Platform

Bespoke .NET application hosted on UKCloud for N3 compatibility.

Life cycle and maintenance

Up to 5 releases a year; contract with Deloitte until 2020.

Horus

Overview

System for tracking learner progress through training programme curriculum.

Primary audience

Learners on training programmes. England and Cyprus only.

Main functionality

Learning progress tracking.

Health Education England Alpha report

Links to other systems

Links to e-LfH and eventually to TIS.

How is it managed?

N/A - currently in development for August 2017

Information security and privacy

Doctors and staff data held.

Platform

Bespoke PHP application.

Life cycle

Fits within TIS strategy, although TIS does not cover all ePortfolio functionality, which contains progress info that is provided in Horus; convergence with TIS over 2-3 years.

Trainee Information System (TIS)

Overview

System for managing assessments, placements, finance, post management, absence management.

Primary audience

Trainee doctors within medical and non-medical public health, some pharmacists, dental staff; ~60k trainees and ~60k trainers.

Main functionality

A suite of tools for handling tasks such as assessments, placements, finance, post management, absence management.

Links to other systems

Integrates with Intrepid which will be retired shortly - TIS will become the core system; exchange data with Oriol; integration with GMC; push information to ESR and vice versa; uses NHS' DN tables; Active Directory integration; developing Open API to allow third parties to integrate data; aiming to develop a single sign-on mechanism.

How is it managed?

Products still in development; current team consists of developers, business analysts and researchers.

Health Education England

Alpha report

Information security and privacy

Holds sensitive data and reputationally sensitive data in content; KeyCloak used for identity security; 2-factor authentication considered for some areas.

Platform

Bespoke Java applications with Angular used for front-end, hosted on Azure.

Life cycle

2/3 of products released by the end of the year; no support arrangement at this point.

Health Careers Website

Overview

Information website for people who are interested in working in health.

Primary audience

Anyone interested in working in health. 1m users per year with 25k registered accounts.

Main functions

Users can register and personalise content shown to them based on their interests; course comparison tool; content search with Solr.

Links to other systems

Integration with Mailchimp, Twitter, Cascade API.

How is it managed?

Team of 4 content managers.

Information security and privacy

User accounts using Drupal's user system. Email addresses are the only identifiable piece of information.

Platform

Drupal 7 CMS, Apache Solr. AWS hosting, moving to Azure.

Life cycle and maintenance

Originally developed by Reading Room (Zoe as lead dev). Continuous improvement.

Health Education England Alpha report

HEE Wire

Overview

Site for sharing good practice in HEE. Holds case studies for innovation, research and evaluation.

Primary audience

HEE staff are main audience.

Main functionality

Case study repository with search; template provided to users for sharing content.

Links to other systems

Office 365 login.

How is it managed?

Content management team supported by 4 developers based in Leeds. Content received from users is curated and uploaded by content managers.

Information security and privacy

Access restricted to HEE users, access controlled via Office 365 system.

Platform

SharePoint.

Life cycle and maintenance

Launched in April 2016, developed by an in-house team in London. Ad-hoc improvements.

Deanery Websites

Overview

Group of 12 regional websites serving informational and recruitment purposes.

Primary audience

Regional audiences of different health professions; 5-70k users depending on whether the website content is focused on internal users or aiming to engage the public e.g. for recruitment.

Main features

Sites focused on content, with some having restricted content areas for logged-in users.

Health Education England Alpha report

Links to other systems

No integrations; signposting to resources on other systems.

Information security and privacy

User account details stored on some systems.

Platform

CMS' include: Drupal, Plone, Alterion, DNN, Umbraco, SilverStripe. Websites are currently being migrated to Azure.

Life cycle and maintenance

Maintenance varies between sites. In addition to 12 regional websites, 35 other sites which need rationalising have been identified.

eWIN (www.ewin.nhs.uk)

Overview

Central place for staff info, knowledge resources and benchmarking. Currently an interim solution.

Primary audience

HR Community - e.g. HR director benchmarking their organisation with other similar organisations.

Main functionality

Interim solution is focused primarily on content (knowledge resources and case studies). Basic search available for knowledge resources. Previous solution offered user accounts and personalisation of content based on Trust, as well as discussion boards.

Links to other systems

No links within the system. Information about benchmarks provided to other systems through a manual back-office process.

How is it managed?

Management is focused on curating and uploading case studies.

Information security and privacy

No sensitive information handled through the website. Benchmarking data handled through a back-office process contain Trust sensitive data.

Health Education England Alpha report

Platform

Drupal 7 CMS hosted on Azure.

Life cycle and maintenance

The system is likely to be incorporated into the new Learning Solution.

NHS eLearning Repository (www.elearningrepository.nhs.uk)

Overview

A repository of learning resources for tutors and learners.

Primary audience

Tutors and learners; Approx. 50k users incl. access through ESR.

Main functionality

Repository of learning resources (~2000 items); Resources include SCORM files, which can be installed and played on other systems; Basic search; User accounts with registration limited to NHS emails; Ability for registered users to contribute resources.

Links to other systems

Repository's content used for taxonomy project's proof of content. Connector exists for exposing content to the taxonomy project applications.

How is it managed?

No curation of contributed content; some content added by the team managing the repository.

Information security and privacy

No sensitive data held except information within user accounts. User accounts based on Drupal's user system.

Platform

Drupal 7

Life cycle and maintenance

Ongoing maintenance; Repository contents may be incorporated into the new Learning Solution.

Academy of Public Health

Set up in April 2016 to help socialise public health across the wider workforce (police, childminders, social care, health visitors, etc. = 15 million people)

e.g. Making Every Contact Count

e.g. London - Healthy Early Years Care

Avoiding duplication of effort, sharing and collaboration of information and resources with greater ease.

Supporting improving access to tools and resources relating to public health.

Some resources available and in the process of being developed - these resources (CPD, etc.) could sit on this Learning Solution.

eICE (www.eiceresources.org/online-learning/online-learning)

Potential source of learning resources for Learning Solution.

APPENDIX B. ALPHA SECURITY AND PRIVACY OVERVIEW

Security

As part of our work on ensuring application and technical architecture security for the Learning Solution we have engaged with Ray Hill, who is overseeing technical architecture for HEE.

At present, HEE is in the process of consolidating their technical architecture, with applications being deployed on Azure environments. Hosting is managed through a central team, who are responsible for maintaining hosting security. Thus, it is recommended that any hosting arrangement for the Learning Solution is coordinated with that team, as this will help bring in the management of security updates for the Learning Solution environment in line with other systems.

We understand that a number of larger projects have been given separate subscriptions, providing clear isolation between environments. A similar approach for the Learning Solution should be evaluated as part of private Beta work.

It is understood that HEE is not as visible as many other NHS services, which decreases its potential priority as target. With regard to potential threats, the following types of attempted intrusions and attacks have been identified as the most prevalent:

- Open port sniffing
- Distributed denial of service – for wider NHS, HEE has not been a target so far

Mitigation of these two threat types, as well as attacks attempting to exploit server software vulnerabilities should be aided by inclusion of the Learning Solution in the wider HEE Azure architecture, with its shared security management and policies. Additionally, penetration testing should be employed to verify the security measures in place.

At application level, the Alpha prototype has been developed with OWASP guidance on prevalent security risks, which covers topics such as SQL injections and cross-site scripting. Additionally, development was conducted keeping to Drupal's recommendations on development practices, and utilising its core APIs, which provide built in security mechanisms for areas such as SQL injections and the user system. Similar to the technical architecture, it is recommended that application security is verified by conducting a penetration test.

Information governance and privacy

To help us understand the governance and privacy considerations for the Learning Solution we have approached Andrew Todd, Information Governance Lead at HEE.

The current concept of the Learning Solution does not assume processing or storing of patient, medical or employment data, limiting the sensitive information to registered user, resource author and reviewer details. The choice to include specific pieces of information is driven by user needs around identifying people contributing to a resource or taking part in review and discussion, therefore limiting collection of unnecessary information. At this point no specific advice has been given on data retention, but that should be a subject of further exploration in private Beta.

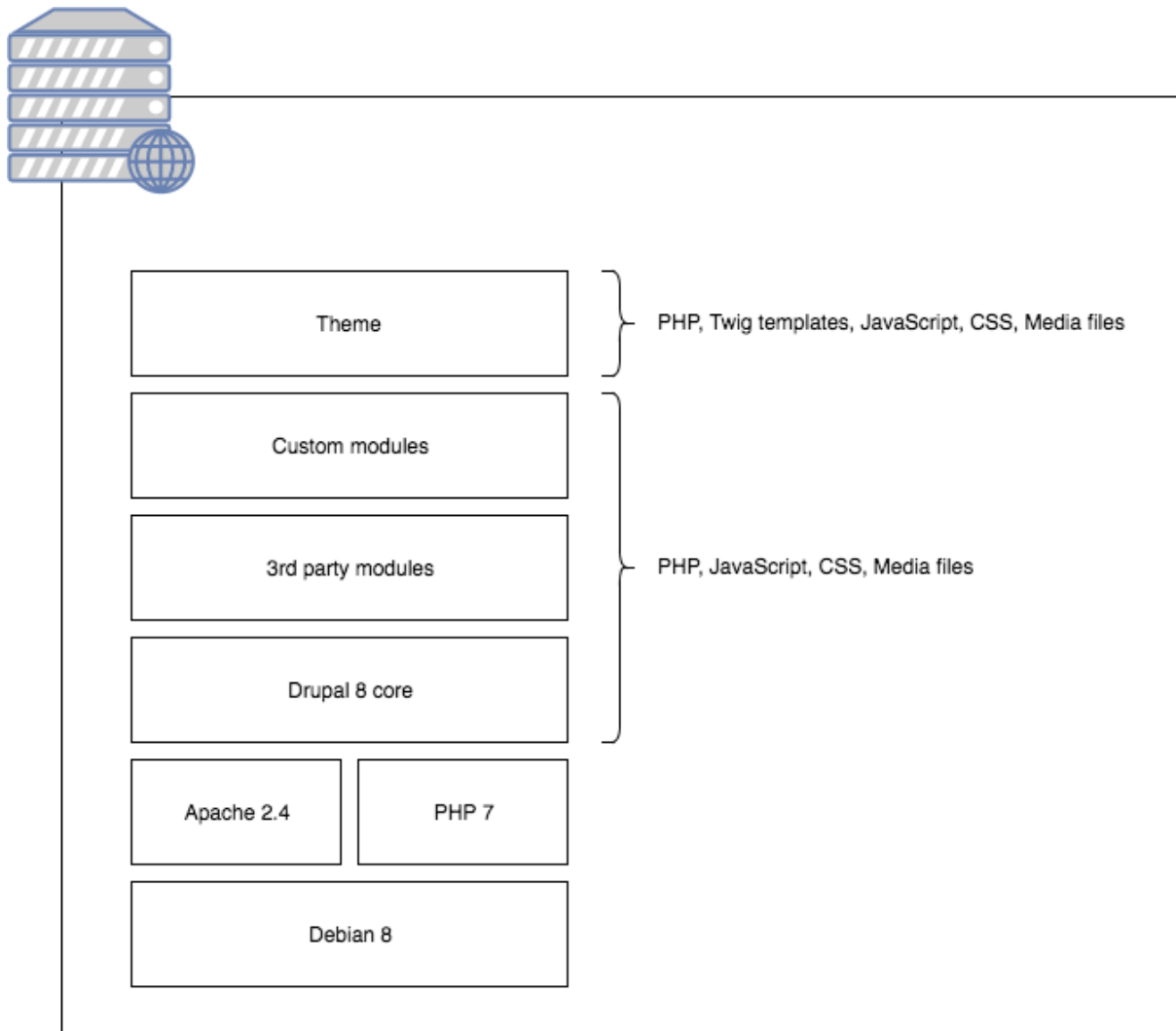
Services operating within HEE are subject to a Privacy Impact Assessment. We currently understand that the Learning Solution should have this assessment conducted as part of preparation for the first public release at the end of private Beta phase.

We have been advised by Andrew Todd to follow ISO 27001 rules on password policy development.

APPENDIX C. ALPHA APPLICATION STRUCTURE AND TECHNICAL ARCHITECTURE

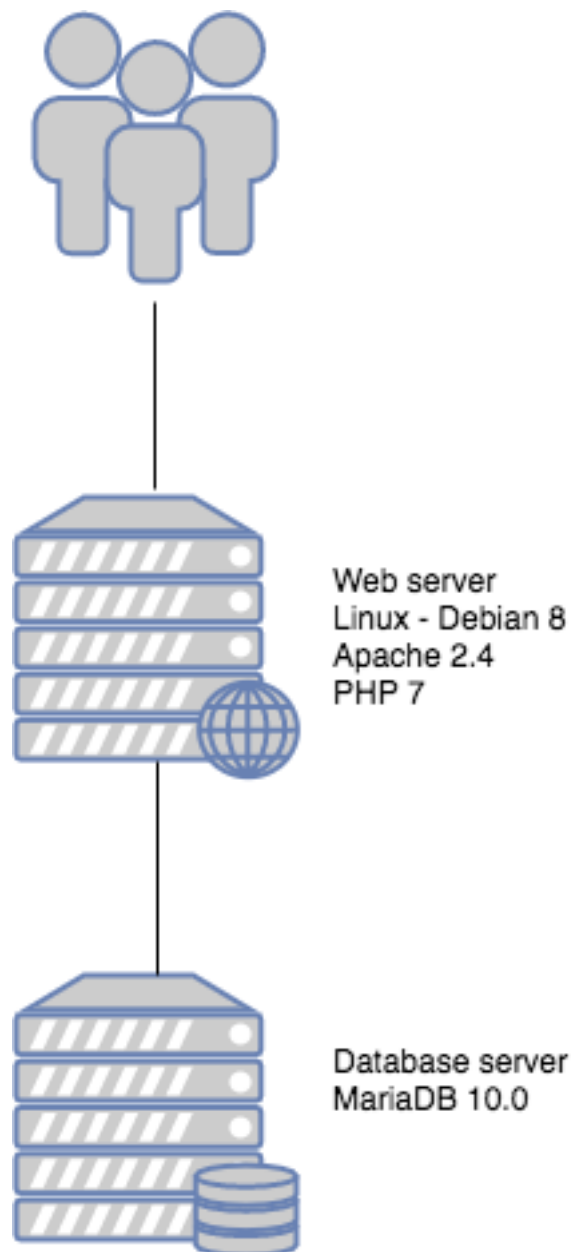
Application structure and web server software

The application is built using Drupal 8, with Debian 8, Apache 2.4 and PHP 7 as underlying software. Third party and custom modules, as well as a custom theme, have been added to the standard Drupal 8 installation.



Alpha phase technical architecture

In Alpha phase we have used an architecture comprised of a single web server and a single database server, as illustrated below:



Beta phase technical architecture

In Beta phase, we recommend using an architecture comprised of two load balanced web servers, as well as file storage and database services, offering scalability and replication necessary in the event of failure. This recommendation will be further refined in Beta.

