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# **SPECIFICATION FOR THE HARTREE CENTRE NATIONAL CENTRE FOR DIGITAL INNOVATION - EXPLAIN - LEARNING MANAGEMENT SYSTEM**

## Annex A Specification Document – Services

<b>Title of Request:</b>	DDaT21046 - Hartree Centre NCDI - EXPLAIN - Learning Management System
<b>Duration of Contract including options for extension:</b>	3+1+1 years
<b>Required Commencement Date:</b>	30th June 2021

### 1. Introduction

The Hartree Centre is looking to procure a Learning Management System (LMS) software platform for the National Centre for Digital Innovation (HNCDI) program and in particular the Explain workstream.

The purpose of HNCDI is to provide the support needed to enable UK companies, large and small, to understand the potential of Artificial Intelligence (AI) for their business. It will also provide the highly specialist expertise and High-Performance Computing (HPC) capability to help them tackle directly the highly complex tasks many businesses face as they strive to gain competitive advantage.

It builds upon the UK's strengths in AI research and the unique depth of expertise already based at the Hartree Centre which extends across engineering, life science, chemistry, materials and computational methods. The HNCDI will help forge links and pathways between cutting edge research and innovation adoption. The programme to be delivered through HNCDI will consist of four inter-related work streams, EXPLAIN, EXCELERATE, EMERGING TECHNOLOGY and EXPLAIN, to which EXPLAIN will focus on learning and skills development.

EXPLAIN is to provide practical skills development and awareness-raising, comprising a focussed programme with regional delivery partners to engage with industry to help companies embark on their digital transformation journey.

It is envisaged that EXPLAIN will reach a wide range of organisations assisting them in their understanding of AI, Machine Learning, Hybrid and Future Technologies. To do this, we are looking to procure a new learning platform to assist in the delivery of training.

The Explain workstream objectives are to:

- Reduce the knowledge gap between Industry/Government increasing Digital Innovation readiness.
- Train 5,000 mid-career staff via online learning assuming no prior knowledge and any mathematics/computing working background.
- Engage with 500 organisations through attending workshops/webinars etc.
- Support UK's position as world leaders in R&D and Digital Innovation (DI) solutions.
- Maximise visibility and outreach of the EXPLAIN DI training programme at national / regional level.

The Learning Management System (LMS) will be the prime vehicle for the training delivery, with which the HNCDI will provide learning across 4 levels:

- **Introductory:** for trainees from non-related background and very little knowledge on the topic.
- **Learner:** for trainees with some theoretical or practical knowledge.
- **Independent User:** for trainees who are able to work independently but would require guidance for solving complex problems.
- **Practitioner:** for trainees working in the specific field, to be presented with the state-of-the-art developments and collaborative multidisciplinary applications with higher levels of complexity.

We would like to be able to deliver courses in the following manner:

- **Self-Learning (Intro):** Always available, no engagement.
- **On-line, Hybrid or Presential (Learner, Independent User):** Lecturer lead, practical & feedback sessions, certification.
- **Presential only (Practitioner):**
  - Lecturer lead, practical & feedback sessions, certification.
  - Poster/lightning talks sessions, invited speakers, networking opportunities.

The LMS should be able to incorporate these requirements enabling a single, joined up learning pathway for all our customers.

**Scenario:** A typical Practitioner learner training course held by HNCDI would be as per below:

- Three days held between 09:00 and 17:00 each day.
- 20-30 delegates. All delegates must pre-register.
- Live Webinar sessions held 3 times per day.
- After each webinar, breakout rooms are available for delegates which are free to join.
- Networking capability is also available throughout the day with 1 to 1 and 1 to many networking available.
- Delegates are able to ask questions through chat at any time, and delegate polls are available should a speaker require it.

The Hartree Centre is looking to procure a forward-thinking solution to meet the needs of the HNCDI and our customers throughout the duration of the program.

## 2. Aims & Objectives

We envisage the LMS to be a cost effective, scalable, cloud-based solution to meet the needs of our long-term solution.

The LMS must be available 24/7/365 to ensure learners are able to engage and learn 24/7/365.

Technologies offered will be futureproofed, ensuring continual development which in turn will benefit the learner.

The objective of the LMS is for it to support and become the delivery vehicle for the HNCDI training program. The LMS will be adaptable to meet the ongoing needs of the program, intuitive to provide customers with learning pathways from introductory to practitioner level.

The LMS will have a full reporting suite as standard to allow HNCDI to monitor use and customer progress to United Kingdom Research and Innovation (UKRI). There will be a feedback mechanism built into to allow HNCDI to obtain real time response to course structure, content etc.

### 3. Background to the Requirement

The LMS is a new procurement and the Hartree Centre has not previously looked to implement a platform of this kind, we are looking at simultaneous internal and external industry engagement where the LMS will assist with a range of training needs.

The Hartree Centre is a High-Performance Computing, data analytics and artificial intelligence research facility focused on industry led challenges and was formed in 2012 at Daresbury Laboratory on the Sci Tech Daresbury science and innovation campus in Cheshire, UK.

The Hartree Centre is part of the Science and Technology Facilities Council (STFC) which itself is part of United Kingdom Research and Innovation (UKRI).

Our mission is to transform UK industry by accelerating the adoption of High-Performance Computing, big data and AI technologies.

The Hartree Centre provides the following services to customers:

- **Collaborative R&D** - Deliver solutions to meet business challenges.
- **Platform as a Service** - Provide Pay as you go access to our High-Performance Computing Infrastructure.
- **Create Digital Assets** - License new industry led software applications created in conjunction with strategic partners.
- **Training and Skills** - Provide a comprehensive programme of specialist training courses and events.

The HNCDI will drive the Digital Transformation of the Economy Comprising and will consist of 4 Work Streams.

- **EXPLORE** - developing techniques and tools that address the identified AI needs of industry and government.
- **EXCELERATE** - build on outputs from EXPLORE activity, working with industry partners and government organisations to apply them widely.
- **EMERGING TECHNOLOGIES** - provide industry and government with insights into the future of computing.
- **EXPLAIN** - will focus on the education and training of people working across industry.

EXPLAIN will provide practical skills development and awareness raising, comprising a focussed programme with regional delivery partners to engage with industry to help companies embark on their digital transformation journey. EXPLAIN will reach a wide range of organisations assisting them in their understanding of AI and other advanced technologies.

EXPLAIN Objectives:

- Reduce the knowledge gap between Industry/Government increasing Digital Innovation (DI) readiness.
- Train 5,000 mid-career staff via online learning assuming no prior knowledge and any working knowledge in mathematics/computing.
- Engage with 500 organisations through attending workshops/webinars etc.
- Support UK's position as world leaders in R&D and Digital Innovation (DI) solutions.
- Maximise visibility and outreach of the EXPLAIN DI training programme at national / regional level.

The EXPLAIN staffing structure will consist of:

- Workstream Lead
- Training (Content Delivery) across each of the 4 subject areas
- Training (Content Development)
- Train the Trainer Lead
- Workshop Co-Ordinator
- Virtual Content Designer
- Virtual Content Delivery

## **Learners Needs**

### **Accessibility**

- Relevant Tooltip, Screen readers and assistive technologies to provide an inclusive environment for learning.
- **Usability:**
  - LMS must be available on PC/MAC/Linux/Android/iOS as well as full range of mobile devices.

### **Ease of Use**

- **Learning Pace:**
  - Self-Assisted Learning, Self-Learning, Small Cohort and Classroom Learning.
- **Personalised Help:**
  - Chatbot assistant, ML/AI driven so knows the individual learning path, their interaction times etc.
- **Engagement Aspect:**
  - Immersive environment.
- **Social Media / New Approach VR & AR delivery:**
  - Link to Social Media to demonstrate learning benefits and be able to use AR/VR.

### **Structure**

- **Delivery Methods:**
  - Self-learn immersive platform with ability to offer classroom/breakout areas for bespoke challenge led solution discussion.
- **Content Structure:**
  - Structured pathways for individual/group learning from introductory to practitioner level.

### **Learning Styles**

- **Aligns with Customer Goals:**
- **Ability to Work on Own Problems:**
  - Breakout rooms to bring in real word work related problems.

### **(Self) Personalised Development**

#### **Personalised Rewards**

#### **Gamification/Badge progress**

### **Journey Tracking**

- **Progression**
  - Fully tracked progression from 1<sup>st</sup> interaction to course completion, offer further advanced learning.

### **Community**

- **Interactions with others:**
  - Community chat function to engage with peers.

## Social Impact

### Theme 1

- **COVID-19 recovery:**
  - Help local communities to manage and recover from the impact of COVID-19.

### Theme 2

- **Tackling economic inequality:**
  - Create new businesses, new jobs and new skills.
  - Increase supply chain resilience and capacity.

### Theme 3

- **Fighting climate change:**
  - Effective stewardship of the environment.

### Theme 4

- **Equal opportunity:**
  - Reduce the disability employment gap.
  - Tackle workforce inequality Theme.

### Theme 5

- **Wellbeing:**
  - Improve health and wellbeing.
  - Improve community cohesion.

The implementation of the LMS is expected be completed by 30th June 2021.

Breakdown of courses and means for delivery are as follows:

- **[S1] HPC & AI enhanced modelling and simulation and decision support**  
11 Offered Courses: 1 self–learning on-line on introductory level, 5 on learner level, instructor led on-line or presential, 3 on Independent user level, instructor led on-line or presential and 2 on Practitioner level instructor led presential.
- **[S2] HPC & AI enhanced data analysis**  
5 Offered courses: 2 self –learning on-line on introductory level, 2 on learner level, instructor led on-line or presential and one on Independent user level, instructor led on-line or presential.
- **[S3] Exascale and scalable AI**  
11 Offered courses: 5 self –learning on-line on introductory level, 4 instructor-led on-line or presential on Independent user level, and 2 on Practitioner level, instructor led presential courses.
- **[S4] Hybrid Computing & Computing Continuum**  
11 Offered courses: 4 self –learning on-line on introductory level, 3 on learner level, instructor led on-line or presential, and 4 instructor-led on-line or presential on Independent user level.

## 4. Scope

The HNCDI has a target of reaching 5000 customers/interactions over the duration of the 5-year program. It is anticipated that customer uptake will be staged throughout progression of their learning journeys.

- Introductory Y1-Y5
- Learner Y1-Y5
- Independent User Y2-Y5
- Practitioner Y3-Y5

To support learning journeys the Learning Platform will be able to offer Self-Assisted Learning, Self-Learning, Small Cohort and Classroom Learning methods for delivery.

The Learning Platform will incorporate ChatBot assistant, ML/AI driven to understand an individual's learning path, including, progress, their interaction times etc

The Learning Platform will be Immersive environment which is fully engaging and informative.

There will undoubtedly be a requirement to add new courses to keep up with the pace of technology, the LMS must be adaptable and easy to administer in this regard.

Government GDPR legislation compliance must be in place for the duration of the contract and the supplier must be able to meet and demonstrate requirements.

The period of the contract will be 5 years (3+1+1).

## 5. Requirement

### Mandatory

- The LMS must be accessible across Windows, Linux, Mac, Android and iOS devices and be able to offer downloadable content so customers can progress with learning while offline.
- Usage metrics will be available through real-time dashboards, regular reports and reports on request.
- Data must be encrypted in transit.
- Data must be encrypted at rest.
- Data storage and processing locations within the United Kingdom.
- Authentication will be managed via 2-factor authentication and have the ability to integrate with Hartree Centre single sign on authentication protocols.
- Vendor to be accredited with ISO/IEC 27001 and for the LMS application to be included in the current and ongoing scope.
- Conforms to GDPR / and the Equality Act requirements.
- Conforms to UK Government compliance for Public Sector websites  
(<https://www.gov.uk/guidance/accessibility-requirements-for-public-sector-websites-and-apps>)
- The Vendor will assist in generating the Data Privacy Impact Assessment (DPIA).
- The LMS will incorporate various elements of Event Management as learning will incorporate 2-way communication, the ability to work on shared problems in a collaborative way including providing admin override control of Speakers and Delegates, so that the host can;
  - a) rename / anonymise delegates.
  - b) add or remove chat / audio / video.
  - c) promote a delegate to speaker.
  - d) play a video, music or present a holding slide whilst waiting for delegates to join the event.
- The capability for Questions and Answers and Polling to be able to be submitted during an

Event, within the Platform and within Video transmission.

- The availability within the Platform of delegate collaboration, including delegate to delegate event driven networking.
- Provides the capability for 'chat' interaction and be available in the Platform and in the Video, Webinar / Collaboration area.
- The availability of Additional Collaboration Tool Management and the capability for Whiteboarding and 'Post-It' note type tools to be integrated and displayed.
- The capability to record and provide Digital Transcripts of an Event through the capture of all Video, Chat, Delegate Collaboration and Poster Sessions.
- The provision of analysis and information relating to who is attending the workshop/session, which agenda sessions they attended, whom each delegate collaborated with.

### **Desirable**

- The Platform has the capability to send a post event survey to all delegates via email.
- Where any Digital Transcripts have been captured, these are able to be accessed for at least three months after the lesson has completed.
- To provide the capability for delegates to share 'posters'. For example, for a PDF, JPEG or PowerPoint to be viewable in a common space by all attendees, with question and answer capability with the author functioning throughout the event and video collaboration available at set times.
- To provide for Video transmission
  - a) an 'on air' indicator
  - b) a timer or lockdown clock

### **Timetable**

Completion of implementation before 30 June 2021 is fundamental to the success of the project.