Spotlight on technicians and technical services in Higher Education
The significance of the often unrecognised technical workforce in the Higher Education sector, in every discipline from science to the creative arts, can not be overstated. This much-needed work from the TDM project has achieved a great deal in helping the sector understand not only the contribution of professional technicians, but also the challenges the sector faces going forwards and the best way to address these challenges.

The toolkit our team has developed, as outlined in this report, supports universities and research institutions in creating and maintaining a sustainable future for their technical staff and services.

I am delighted that the impressive work of the Technical Development and Modernisation team has yielded such outstanding results.

Terry Croft MBE, FIScT, CSci
Director of Technical Development and Modernisation
Foreword

Technical Development and Modernisation

For the UK to thrive in the future, it is agreed that it will need to excel in science, engineering, the latest technologies and medical research. It will need universities which are world leading and innovations which will help us address numerous challenges in society and our environment. We will need companies and organisations able to translate this research and innovation into new solutions and products. But how will this happen and what skills will the UK need to do so?

Certainly, we will need traditional academic scientists and researchers in universities, government and industry. But the breakthroughs we need will not happen without highly-trained and properly supported technicians who design and build crucial equipment, make possible sophisticated experiments and form a vital part of the specialist teams who make the UK world-leading in research and innovation.

Yet the UK also has a problem. We must educate another 450,000 technicians across all sectors by 2020 to address a massive skills shortage. Our universities and industry are struggling to fill essential gaps in this area. How can we solve this serious challenge to our ambitions to deliver essential work in medicine, science, engineering and the creative arts?

I have been thinking about and working on this issue for much of my professional career, always conscious that my achievements as a scientist were fundamentally linked to the abilities and commitment of the brilliant and dedicated technical staff who made that science possible.

Which is why I am so proud of the work undertaken at The University of Sheffield to develop the highest quality technician career development.

Working with the Higher Education Funding Council for England (HEFCE), we have pioneered career pathways for technicians, which will bring new talent into what is a crucially important profession.

It is a sobering thought that, on average, UK Higher Education institutions will lose between 25–35% of its highly skilled professional technicians in the next three to five years as many reach retirement age. So I have been proud to support the work of Terry Croft and his colleagues to challenge misunderstanding about what the role of technicians actually encompasses and the significant expertise and experience which make an excellent technician such a vital asset to an organisation.

Terry has huge experience in this area and has been dedicated to demonstrating a clear career pathway for technicians, which will allow them to build their experience and skills, and for this to be recognised and supported in better ways.

Getting this right for the UK could not be more important. Not only will it be crucial to our economy as the nation tries to secure its position as a producer of high value products against fierce global competition. It is also fundamental to our ability to find new answers to challenges ranging from developing efficient green energy to treatments for conditions such as cancer and Alzheimer’s.

That this work with vital national importance has been led by colleagues at The University of Sheffield is of course a particular source of pride to me. I would like to thank all those who have shown their commitment to it and wish them every success in ensuring the technicians of the future have thriving careers in which their invaluable contribution is properly recognised.

Professor Sir Keith Burnett FRS
President and Vice-Chancellor, The University of Sheffield
President of the Science Council

Executive Summary

Concerns have been raised for many years about the lack of knowledge and understanding around the role of the professional technician in the UK, particularly in the Higher Education sector. Recognising the challenge facing this sector, the shortage of resources to tackle these issues and the lack of consistency in trying to address the situation, the University of Sheffield and the Higher Education Council for England fully supported a research project to help address these challenges proposed by Terry Croft, the Director of Technical Development and Modernisation at the University of Sheffield.

The ultimate aim of the three-year project was to provide a “toolkit” to the higher education community, which would enhance the sector’s ability to bring about the change that will be necessary to protect, sustain and grow all of those areas, which are underpinning by a high quality, highly skilled, efficient technical workforce. The focus was:

- Clear pathways for succession planning for specialist technical roles
- Workforce planning, based on the Skills Audit Tool, which will enable institutions to plan training and development for existing and new staff.
- Support for the induction and training of new staff/apprentices and up-skilling of current staff through: communication of clear career pathways and options; clear signposting towards training from a range of sources linked to the training plan for the individual; a route to professional registration; and tried and tested frameworks for institutions to access, guide and mentor their technical staff.
- Provision of an agile and flexible workforce – via the emphasis on (and recording of) continuing professional development which supports career planning and the development of transferable skills.

Benefits of these activities include:

- Improved perception of the profession, leading to higher levels of motivation/aspiration, efficiency and effectiveness (from employees) and investment for the longer term (from employers).
- The development and retention of talent through improved induction and faster progression to higher skill levels (via improved training opportunities and better signposting), and better recognition (and reward) of those skills/competencies (via professional career pathways).
- Greater job flexibility and mobility to meet the challenges of the future including: increasing global competition; the need to cross discipline boundaries and increase links with industry; and the need to improve the student experience/meet the needs of graduate employers (particularly through enhanced experimental/project work).

The project has evidenced that the sector’s concerns were real. Our experience indicated that a growing number of universities were struggling with the issues surrounding talent attraction and retention, succession planning and the ability to deliver the right skills at the right time in the right place. There has been a fundamental realisation that the technical community makes a significant contribution to the business of a university and is a vital component in delivering future strategy and success to their institution.

Over the period of the project evidence shows that collaborating partners and pilot universities now recognise that the technical workforce are an integral part of high quality teaching (where the practical element of programmes is increasingly important) and of world-leading research.

Communication and transparency are vital to drive change and this must be a two way process between the technical community and associated stakeholders, such as: academics in relation to research, the teaching needs of students and the grant awarding bodies who require high quality technicians to aid in the delivery and outputs of research.

This project has delivered the tools and an underpinning pool of expertise to fulfil their need to develop a highly skilled and flexible workforce and address emerging skills gaps.

Further information is available at www.nationaltechniciancentre.ac.uk

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The technical role in higher education in the 21st century has traditionally been neglected and misunderstood by the wider sector.

There is a lack of knowledge and understanding around the role of the technician – they are the ‘unknown’ professionals of HE. They lack recognition, often to the extent that they may not be included in HE strategic plans. Yet the technicians of today are experts in their own right, highly experienced with skills and expertise, and in some cases highly qualified. They also, in many cases, directly contribute to research and teaching.

HEFCE data suggest there are over 33,000 technicians working in English universities alone. This number increases to over 65,000 when Scottish universities and research council institutions are also included. The technical workforce is frequently an untapped and underutilised resource. As a result of this lack of understanding, there is limited opportunity for technicians to formally develop skills and career pathways.

In addition, there is variation in technical job titles as well as a lack of consistency in technical roles and terminology both within and across institutions. This not only adds to problems with workforce planning, but has also led to career stagnation and inequality. These factors, along with the complexity and diversity of the HE environment, have also led to poor succession planning within the technical workforce; the impact of which has been the loss of critical skills. This skills gap has been exacerbated by significant recruitment difficulties due to the specialist nature of technical work.

The Technician Council found that the UK must educate another 450,000 technicians across all sectors by 2020 to address a massive skills shortage. Subsequent reports indicated the number is even higher.

Within England, HEFCE data shows that 40% of all HE technicians are aged 50 or over. Gatsby (2016) reported that “we need around 70,000 newly qualified technicians each year to replace those retiring and to fill the new opportunities opening up” and that the UK will need 700,000 new technicians by 2020. Succession planning and wider development of the technician workforce needs to be in place to ensure a highly skilled professional technician workforce for the future. Whilst there are apprenticeships and traineeships designed to bring on new talent, there is a lack of consistency in approach. This means there is no set framework, even at the entry point, to support individuals in building their technical career.
Spotlight on technicians and technical services in Higher Education

Project Aims
The project aims to address the issues facing the sector by developing a toolkit which, with guidance:

**Enables** institutions to build an understanding of the current situation for technicians to support business continuity and succession planning

**Enables** institutions to identify local skills gaps by analysing current skills data against their strategic need

**Provides** a consistent sector wide technician taxonomy which provides a framework for progression, linked to external accreditation

**Provides** career pathways advice and guidance, including signposted accredited development and training opportunities supported by a personal CPD tool

Methodology
To meet the Project Aims outlined, the toolkit was divided into five sections:

- HE Technical Roles
- Understanding Your Technical Workforce
- Technician Development Framework
- AspireCPD
- Career Development Opportunities

The approach taken specifically within each of these areas can be found within the relevant sections of this report.

The first step was a review of relevant current research and grey literature that focused on the work environment, role and culture of the HE Technical community. This was carried out to ensure the project was informed by previous activity and was cognisant of recent and current work.

The team found very little research activity: much of the available information was found in grey literature. In these cases, where the information was of particular relevance, we also contacted authors to help clarify understanding and to seek any further evidence-based information.

In addition, HESA data relating to technical staff from a small number of partner HEIs was also captured to help understand issues across the sector. However, exploration of this data proved problematic due to issues surrounding the accuracy and completeness of the data. This led to concerns about the value of this as a data source.

The development of the toolkit as a whole was based upon:

- Collaboration and consultation with relevant partners, bodies and institutions
- Collating and analysing best practice
- Using a partnership approach in order to build relationships and secure information in confidence, ensuring access to understand issues and the needs of universities
- Using the above to receive ongoing feedback on the tools as they were developed
- Working collaboratively to ensure the various tools complemented and supported each other

The team also consistently collected and shared information by attending and running workshops at relevant national conferences, as well as by developing a social media presence.

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HE Technical Roles

Purpose

The HE Technician role is frequently described as being misunderstood and complex, with limited career progression pathways. Role titles, duties and levels of seniority differ significantly within and across HEIs, causing confusion for both existing and prospective technicians. The TDM Technician Career Pathways Tools deliver an efficient and effective technical service blueprint that engenders the attraction and retention of technicians by enabling career planning and progression.
Methodology
Early focus groups and evidence-gathering identified three components that would combine to deliver the Career Pathways Tools: 
/ Technical Taxonomy 
/ Technical Competency Framework 
/ Exemplar Technician Role Outlines 
While the Technical Taxonomy sought to define an architecture of incremental technician role levels, the Technical Competency Framework sought to illustrate competency and attainment requirements. These tools were to be completed by a set of exemplar role outlines, bringing all elements together to deliver a unified technician role package.

A cross-section of HEIs, varying in date of establishment, discipline focus, research and teaching intensity and geographical location, contributed to development and refinement. In addition to key technician role-holders, input was sought from figures spanning a number of Professional Services specialisms (Senior Management, HR and Organisational Development) enabling access to a wide expertise and knowledge base. In-depth organisational structure and role description analysis led the project to define a simple, incremental architecture of distinct university technician role levels. This was expanded to determine competency, education and Professional Registration requirements to clearly distinguish the expectations for each level.

Given that some HEIs had implemented learning, gained through working with the project, to improve local structures and role descriptions, a second call for information was made. This approach also ensured that the growing number of contributing HEIs could contribute equally. Analysis of the second dataset acted as a check-and-balance for earlier work and provided the basis for the exemplar role outlines. The final tools represent the amalgamation of best-practice approaches from all partner HEIs.

Significant contributors (in alphabetical order):
/ University of Birmingham 
/ University of Cambridge 
/ Imperial College London 
/ Lancaster University 
/ Manchester Metropolitan University 
/ University of Plymouth 
/ University of Sheffield 
/ Sheffield Hallam University

Outputs
The Technical Taxonomy as shown in the diagram below provides clarity by illustrating career pathways from entry to leadership level. Collaboration with HEadTEd led to the identification and inclusion of relevant in-role development opportunities to support training and progression.

The Technical Competency Framework supports the Taxonomy by providing the competency requirements and related requirements for each role level. The Framework has been mapped against the Higher Education Role Analysis (HERA) and Hay frameworks, in addition to other nationally-recognised standards, e.g. the Science Council’s professional registrations, the Higher Education Academy UK Professional Standards Framework (UKPSF) and the Competency Assessment Toolkit for Technical Staff (CATTS).

Both Tools are complemented by a set of Exemplar Technician Role Outlines. These demonstrate ways of translating the competencies into role-specific duties, illustrating how the Taxonomy and Framework can be used to generate consistent role profiles. Together the three Tools deliver a unified technician role package.

Entry routes

External entry points
eg. application from other sectors, internal or external discipline hopping.
These entry points can also be used as internal progress points.

Learning and Recommendations
In an acknowledgement that full alignment to the Tools may prove problematic for some HEIs (for example where technician roles are embedded into other structures or when significant restructuring may be required), the Project has developed a set of key guiding principles to underpin effective technician structuring and role development. These principles are to develop:
/ A multi-skilled workforce with the ability to adapt to accommodate future needs
/ Work schedules that allow time for development
/ An ability to focus on management, research or teaching, reflecting the sector’s move towards the provision of distinctive facilities (e.g. centralised teaching)
/ A role structure encompassing:
  / A range of viable entry points
  / Defined and consistent levels and aligned roles
  / Inbuilt, visible and attainable career pathways.

Owing to disparity across the sector, the Project did not seek to define the exact correlation to individual HEIs pay structures. While commonality exists via the national pay scale, how HEIs mapped their roles varied widely. HEIs will need to take a view as to how they could adopt the Tools; considerations may include factors linked to local market conditions and internal HR processes.

The Tools will continue to develop as learning from HEIs evolves and technician duties continue to align with ever changing demands.

The following HEIs have been influenced or have implemented elements of the Tools as of October 2017:
/ University of Birmingham
As part of a £42m investment in STEM undergraduate teaching the university of Birmingham has redeveloped teaching technician roles in line with the Technician Career Pathway Tools – Taxonomy and Framework.
/ King’s College London
As part of a technical staff review King’s College London are investigating ways to align to the Technician Career Pathway tools. This has influenced their strategic direction for technical services.
/ University of Bristol
The university used the Technician Career Pathway tools to underpin a new technician role family within the Faculty of Science.
/ Manchester Metropolitan University
Assisted with the development of key technician role descriptions including the role of Head of Technical Service.
Understanding Your Technical Workforce

Purpose

Developing and delivering an effective sustainable future for HEI technical staff and services requires the following:

- the technical workforce to be considered a critical part of each University’s strategic plan
- decision-makers have access to relevant and current detailed management and workforce planning information, to inform this strategic approach

Historically, technical service and staff development has not been effective for the following reasons:

- Lack of recognition about the importance of the role
- Lack of understanding about the value, breadth, complexity and scope of the technician’s role
- Little or no access to accurate relevant and current management information
- Failure to value technical staff and invest in technical staff development
- Strategic planning is applied with significant variation and quality across HEIs, which impacts on the effectiveness of the outcome

To help address these challenges the project developed the following tools and guidance that can help support HEIs to address these challenges:

The Survey Database
An extensive database of survey questions designed to capture the breadth and depth of the roles, responsibilities and skills across all discipline areas.

The Strategic Framework
A strategic framework which provides guidance on how to develop and use the survey to support a strategic planning approach.

The Survey Tool
A core survey tool, based on the questions within the database, which allows effective navigation through the survey.

Collectively these make up the “Technician Skills, Roles and Responsibilities Audit.”
**Methodology**

The tools above were developed through sequential pilot projects with 4 HEIs, with each helping to build on the work done previously.

Content of the first version of the Survey Database and the Survey Tool, was informed by previous research (which was found to be limited), HR specialists and input from technical staff and technical operational management across the University of Sheffield. Methods, used to identify roles, responsibilities and skills areas, develop question content and structure the survey, included semi-structured interviews, workshops and focus groups, desk work including capturing and collating and consulting on existing skill lists. Rigorous testing which took place before the survey was piloted with a group of users across disciplines.

During development of the survey questions, the following three key criteria were considered essential:

1. Clear accessible language that worked across different discipline areas.
2. A clear structure for the questions that would enable staff across the institution to highlight skills they currently used, as well as those they had but were not currently using.
3. An online survey that was easy to use, provided simple navigation and allowed people to access and answer only the questions relevant to them.

The survey was developed on a web based survey platform (Qualtrics) which has sufficiently sophisticated navigation options to support the requirements for criteria 3. Feedback questions, focusing on the above three criteria, were included in the survey to help inform further development.

Subsequent versions of the survey were informed by feedback and data analysis from the previous stage, as well as significant input from the pilot institution’s technical managers and staff. This has enabled the project to provide a significant database of survey questions and develop a survey structure that supports simple navigation.

The Strategic Framework contains processes, activities, templates and timelines. This was initially developed by experts within the team, adopting evidence-based good practice and then, taking an iterative approach, refined by experience over the four pilots.

**Outputs**

The pilot work has delivered the following:

**The Strategic Framework**

The framework provides guidance on how to use the survey tool within a process of local strategic workforce planning. It emphasises the importance of a partnership approach between the HEI and their technical community, particularly in terms of ensuring longer term engagement and commitment to the outcomes.

The framework emphasises the different operational and communication processes from the start of strategic workforce planning (including being clear about the purpose of running the Audit, who to involve and how, timetables, communication) right through to the survey launch, reporting, action planning and implementation. It provides templates for key communication activities at the different stages.

**The Survey Tool**

This is in the form of a ‘standard’ survey, which includes the majority of the database questions. It is held on Qualtrics, a well respected, web based survey platform with excellent reporting functions.

To be applicable to each HEI, each survey needs to be ‘customised’ using the database, to ensure that it reflects the information needed for local workforce planning so that, when analysed, it will provide a detailed workforce profile to support strategic planning and staff development.

**Survey Question Areas**

- Where Technicians Work
- Demonstrating Technical Skills
- Teaching Technical Skills
- Teaching Support
- Research Support
- Interpersonal Activities
- Management Responsibilities
- Wider Responsibilities Within The University
- Wider Responsibilities Outside The University
- Personal Development and Professional Registration
- Qualifications
- Career Path to Date
- Future Career Plans
- Technical Knowledge/Skills Used in Current Role
- Unused Technical Knowledge/Skills
- Administrative and Health and Safety Skills
- Desired Development Needs
- Demographics

**Individual Technician CPD reports**

As part of the Audit each participant will also be able to have a copy of the information they shared within the Audit – this can form part of a CPD record to support development and career progression.

Significant contributors:

- University of Sheffield
- Sheffield Hallam University
- University of Exeter
- Imperial College London

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Learning and Recommendations

- This tool is designed to help improve technical staff development and services, which will involve change, however small or large. Staff wellbeing and their level of resilience will impact on their engagement and their ability to engage and deal with any change that comes from the process. It is therefore critical that any workforce planning process places equal weight on people management, communicating with, enabling and supporting staff through change.

- To be effective, workforce planning and the use of this tool need to be done in partnership with technical services and staff rather than driven by a central service.

- This is a research tool, designed to inform the development of technical staff and students. If the relationship and trust are not already there, this will need to be addressed in the early stages if there is to be a successful outcome – it is essential to bring people with the change.

- Two-way communication is critical. Be timely, clear and transparent. Get the messages out there, communicating for the audience, not the messenger. Test out messages before sending, as it is harder to come back from wrong information than to get the information correct in the first place. Listen to feedback and take it seriously. It is important people know their views have been heard, and that this is demonstrated through providing feedback on any outcomes and explaining the reasons behind the decisions.

- Be transparent about purpose. Build engagement by involving staff from different grades at all stages of the process.

- Don’t underestimate the time needed to build an understanding of the tool and its purpose before launch. Allowing sufficient time gives an opportunity to identify and address wrong assumptions and barriers to engagement. Doing this well will increase engagement and completion rates.

- The project found that not all HEIs have a comprehensive list of technicians. Before you launch, check central lists with those who manage technicians to get an up to date and correct list. People who get in touch because they have seen a colleague doing a survey they have not been invited to complete, sends a very negative message and means they are unlikely to engage positively.

- Don’t underestimate the impact of previous experience with surveys. Poorly managed surveys, where reports are not shared / hidden and action is not seen to be taken, will impact on willingness to participate regardless of how strong the arguments for involvement are.

Feedback on survey usability from a pilot university

- The language used within the survey was clear
- The survey was straightforward to complete

Graph showing an example of data captured and combined from across four pilot universities

Age Range of Technical Workforce Across 4 Pilots

<table>
<thead>
<tr>
<th>Under 20</th>
<th>21-25</th>
<th>26-30</th>
<th>31-35</th>
<th>36-40</th>
<th>41-45</th>
<th>46-50</th>
<th>51-55</th>
<th>56-60</th>
<th>61-65</th>
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<td>0.3%</td>
<td>3.7%</td>
<td>9.0%</td>
<td>12.8%</td>
<td>13.9%</td>
<td>14.6%</td>
<td>13.0%</td>
<td>10.5%</td>
<td>9.1%</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

Graph showing feedback on the survey collected from a pilot university
Purpose

Career pathways need clear developmental entry points to enable individual development as well as clear indicators of how to move to the next level and to support workforce and succession planning. Training and development needs to be at a relevant standard and of consistent quality for entry level and above. Apprenticeships, traineeships and internships have been used to a limited extent to bring in a new generation of technicians, however, until recently these have been operating without ‘regulation’. Whilst some schemes have reportedly achieved their intention many schemes have been developed and delivered on an ad-hoc basis. This led to a lack of consistency within and between HEIs. Managers and supervisors need greater role clarity, support and resources to deliver this.

Technician Development Framework

The purpose of this workstream was to capture good practice and to develop a framework - The Technician Development Framework - and accompanying guidance to support strategic scheme development and delivery of entry point schemes. During this development the Government introduced the changes to the Apprenticeship scheme, to promote more effective staff development across the workforce, and introduced the Apprenticeship Levy.

The guidance and framework was adapted to incorporate these changes. Whilst Apprenticeships are now more effectively governed and regulated, other schemes are not, therefore we recommend that the quality principles for apprenticeships also apply to traineeships and internships.
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Methodology
A semi structured questionnaire was designed to capture good practice, reasons for less effective practice, as well as evidence of evaluation. This was used in discussion with Sheffield and multiple partner HEIs.

Once collated, the data informed the development of version one of a process framework, designed to set out a process for strategic development and delivery of entry point schemes. This was then circulated to partner Universities for comment.

The announcement of the government’s intention to change Apprenticeships resulted in version two and was based on government guidance as well as feedback from version one. The framework and guidance was used to help inform the development of Sheffield’s strategic approach to an all-staff apprenticeship programme. The experience gained through that development process was then used to inform the final version of the framework. Additional collaboration with partner HEIs, which involved sharing of good practice and experience, also informed the final version. Government and related guidance has been constantly changing and therefore it is likely that this guidance will need regular updating.

Outputs
From this work, the project developed a How to Guide for Technician Development. This focuses on using discussions around the levy spend and apprenticeships, to help ensure an effective local technician development strategy, including apprenticeships, as one delivery option. It emphasises the value of a cross-university run scheme, rather than local delivery, or a programme delivered through one professional service e.g. HR. The project team believes this approach will provide greater opportunity to embed the levy across the HEI, as part of a strategic approach to technician development.

The project team defined a set of questions contained within a framework, which outlines what to consider at every stage of the process. Guidance is provided based on the outcome of the pilot work and an understanding of the requirements of the ESFA. As the scheme is in its infancy, this will be revised as further experience and detail becomes available.

Learning and Recommendations
To enable the levy to support an HEI strategic approach to technician development the following is recommended:

- Whilst the new approach to apprenticeships is in its infancy, project experience, alongside wider discussions with HEIs at different stages, lead us to place an emphasis on a scheme which brings together all university departments, at a senior level, to endorse and support delivery, e.g. a HR driven scheme. It is important to acknowledge University Executive Board priorities within the business case, for example: maintaining university reputation for delivering excellent training, encouraging social mobility and valuing staff development.

- Progress requires champions at a very senior level to engage with senior colleagues and to gain their active commitment.

- It is important to ensure that all groups that will be involved in delivery are represented in decision making in some way.

- Ensure that people seconded to help are passionate about apprenticeship development and are able to be active participants.

- Think creatively about internal apprenticeships and work closely with potential internal providers and academic partners.

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Aspire CPD Software

Purpose
A vital part of an institution’s ability to develop new talent is a robust and usable framework to record skills and training. AspireCPD, a free open source software, is designed to meet this need and to support the implementation of career pathways work through the capture of training and Continuing Professional Development (CPD) information.
Methodology

The methodology for delivery of the CPD software included 3 distinct phases:

/ Specification of the software & selection of developers
/ Software development
/ Software testing

Having decided that a CPD tool was required, specification of the suitable tool was undertaken, with advice being sought from a range of stakeholders including: institution training managers, licensed bodies responsible for evaluating CPD, professional registration authorities, trainers and other potential users of the tool. Once a detailed specification was agreed, functionality available in existing software packages was reviewed to determine whether an existing package could be used/modified or whether bespoke software needed to be developed, and the judgement was that a new package was required. The decision was taken to develop a framework based in Wordpress and specialists in this open source platform were selected.

Each functionality component was detailed and built on a test platform with collaborative sessions taking place on a periodic basis to review progress and to test out new functionality. Once a suitably stable version of the test environment was available a copy was installed on the University of Sheffield servers to allow in-house testing and debugging. Build issues and debugging were tracked through GitHub – GitHub is a version control and source code management system widely used by web/internet developers.

Testing of the CPD platform was undertaken initially on the University of Sheffield servers but it became clear quite early in the test phase that firewall access restrictions on the in-house servers were not ideal for the end-user. The decision was then taken to use external hosting on which testing could continue and post-development installations could reside. Hosting was provided by the Institute of Science & Technology (IST), who worked closely with the development team.

Outs

The AspireCPD software package comprises a plugin/theme combination that can be used to transform a WordPress Multisite install into a CPD management platform. It is a modular expandable system that provides an out-of-box system via which institutions can record training and professional development activities and personal profiles. All source code, guidance wiki, issue log and training videos have been passed to the TDM project following completion of the AspireCPD build and testing.

Installation of the software is straightforward, once a WordPress Multisite (WPMS) instance has been established, the basic requirements for which are:

/ PHP version 5.6 or greater
/ MySQL version 5.6 or greater
/ Mod_rewrite Apache module

The software aims to provide individual user webfolios which can include the following types of content:

/ Pages: generic web pages which can contain any narrative material that end-users wish to use e.g. personal profile, background etc. This would make an ideal space, for example, for a continually evolving CV
/ Journal Entries: ongoing narrative of tasks undertaken, development work carried out i.e. a work logbook
/ Assessments: this type of content allows for online training via a series of assignments which can be set as appropriate for each user-group. Supervisors can be assigned to each trainee and these supervisors/trainers can interact directly with trainees by providing feedback and scores on the assessments undertaken.
/ Activities: a log of all CPD activities undertaken can be maintained including detail of events, dates, types of activity, reflection on the value of the event both to the attendee and those interacting with them within their work environment, plus a value score for the CPD activity. This data can be reported on using the tabular format available to participants, and could be used to support annual review activities and professional registration renewals.

Learning and Recommendations

A framework for logging and managing training and CPD has been developed that can be rolled out to HEIs as part of the TDM Toolkit. Whilst this software is based in Wordpress Multisite and should be usable out-of-the-box, consideration needs to be given to where the software will be installed, how it will be managed and how the software can best be utilised in order to get full end-user engagement.

Institutions need to consider carefully whether they wish to host the software on their own servers or on external ones. Many end-users need to be able to update their webfolios out of normal working hours and off-campus and this may mean that in some institutions the use of in-house servers is not appropriate.

Whilst technical trainers can carry out much of what is needed to run/manage the system, there does need to be some IT support available from staff familiar with Wordpress (and Multisite in particular). In addition, as Wordpress is a platform that is continually evolving with upgrades being released to take advantage of advances in coding, improve security and provide enhanced functionality, the AspireCPD software will need to continue to evolve/develop to remain compatible.

As staff groups have wide-ranging and differing needs in terms of CPD/development logging, HEIs will need to consider carefully whether the software best suits their needs, and if so how to roll-out and support the software.
Purpose
Technicians are a vital sector of staff that, traditionally, are in isolation. This can have a negative effect on their ability to share knowledge and expertise, which can ultimately impact on the organisation as a whole, as staff morale and productivity are often low as a result.

Career Development Opportunities

Through the HE system, and together with industry, the technician of today has the ability to contribute substantially and have an impact on the UK economy. These highly skilled and often highly qualified (with a significant amount of technicians having a degree, MSc or PhD) technicians are frequently undervalued and overlooked, their work is unrecognised and others (colleagues, senior staff, public) are unaware of the contribution they make to society or the valuable skills they possess. Similarly, they are often siloed – unaware of the roles of other technicians within their workplace, lacking a career structure, and subsequently have difficulty progressing and struggle to find development opportunities. This lack of recognition is exacerbated by increasing workloads and responsibilities, which do not permit technicians time to engage with the rest of the institution.

The project intended to solve these problems by developing a Career Development Opportunities package to:

- Raise the profile of the technical community, by increasing the visibility of the technician as a highly skilled individual
- Aid in professionalising and promoting technical careers as a sustainable career pathway
- Deliver a package of tools to help facilitate Networking (physical and virtual – which can increase technicians’ visibility by working outside of their siloed environments), Mentoring, Secondments and Work Shadowing.

This can allow for professional development within the technical pool and utilisation of home-grown talent to provide training to others. For example, showcasing technical expertise at networking events highlights the important role technicians play in today’s HE research and teaching institutions, which is often overlooked by academics. Bringing together technical expertise at networking events can provide collaborative opportunities for cross-department/faculty working. It can also provide a more efficient and effective way of working, by sharing of equipment or expertise, which avoids unnecessary duplication of processes and work.
The final Tools represent the amalgamation of best-practice approaches from all our partner HEIs. The TechNet model is a constantly evolving model which uses both physical and virtual networking. TechNet was originally independently established at the University of Sheffield in 2013 but has since grown and been further developed under the TDM project, with quarterly networking events regularly attracting an average of 80 technicians university wide. Learning outcomes and best practice from TechNet have been disseminated to other HEIs as part of this project, with quarterly networking events regularly running a technical network. As a result, many of these workstream, with the project team visiting nine other institutions technical services strategy. The guidance on networking is there to support HE institutions in finding solutions to the issues common to technical services and technicians across the sector. Using the exemplar physical TechNet model, institutions have the option to replicate this in its entirety or select specific elements to fit their individual organisations technical services strategy. The virtual model is available for institutions to opt into as part of the TechNet package, it sits alongside and compliments the physical network. Alternatively, any suitable platform can be used to create a virtual network based on the TechNet model. Institutions can opt to be part of the wider virtual network or they can decide to have a closed area specific to their HEI, alternatively, they can take advantage of both options. There is also the potential for a closed area to be used independently, if desired. The mentoring guidance is designed to be used in parallel with the networking model and complement the support of career development for technicians. The guidance material contains information gathered from examples of good practice together with appropriate templates and checklists. These aid in the creation of a mentoring programme and can be adapted to fit the needs of the individual institution. Similarly, there is guidance around secondments and work shadowing which can be adapted as appropriate to fit the needs of the individual institutions technical strategy.

Below: TechNet event at the University of Sheffield

Learning and Recommendations

The Career Development Opportunities framework aligns with the majority of HEIs strategies – to ensure that the technical support it offers is one which is fit for the future, agile and adaptable. In order to deliver such support, it requires the engagement of the technical community and senior leaders and managers. The creation and development of a technician network which seeks to promote and support technical career pathways plays a major contribution in aiding a technical workforce fit for the future. The support for clear career pathways includes programmes to support mentoring, secondments and work shadowing. This allows technicians of today to take ownership of their roles and to have a say in shaping their future, as well as the future of the institutions, providing the support for research and teaching in today’s competitive climate. The project has worked with 14 HEIs that have created and developed their own networks, several of which have gone onto become a part of the online networking platform. This network continues to be promoted nationally and is constantly evolving and growing, which will help to continue the ongoing process of ensuring the following positive changes:

- Changes to policies and procedures
- A better understanding of teaching and research needs and how these align with technical services
- Promotion of professional registration as a way to demonstrate competency
- A more engaged and motivated technical community
- Increased efficiency across the technical sector due to sharing of knowledge and skills
- Increased value for money as technicians are encouraged to use underutilized skills to fill skills and service gaps
- Inclusion of technicians on internal and external committees
- Inclusion of technicians in outreach activities as a means to promote technical careers to the next generation

This aspect of the toolkit is designed to aid in increasing morale and recognition of technical staff in HE. Positive attitudes towards technicians and technical services as well as the attitudes of the technicians themselves is vital to an engaged and influential technical service that will deliver today’s research and teaching needs within HE.

This tool is fundamental in gaining engagement of the technical community and allowing a transition to a more fluid and adaptable workforce. As the guidance is focused primarily on the drive to make change by technical services and the technicians themselves there is a higher degree of success as networks are seen to be driven by the technicians for the benefit of this sector of the workforce. This approach leads to a greater recognition of technical services and associated staff. It provides a springboard to a more diverse range of technical careers as technical staff use the network as a means to identify potential career pathways through mentoring and secondment programmes and a greater understanding of transferable skills to other areas such as academia or industry.

To be successful a technician network must have strong leadership from individuals who are passionate about making change for the technical sector. Leadership must be supported by a like minded steering team who are able to dedicate the necessary time and work into supporting the network by creating relevant events, championing the need (with demonstration of change benefits) for the network to higher level HE management, by disseminating information to the wider technical community in the form of newsletters, forums and external events.
Spotlight on technicians and technical services in Higher Education

Conclusions and Recommendations

This project secured funding under HEFCE’s Efficiency and Value for Money initiative. HEFCE identified that all universities, either currently or in the near-future, will have to target the issues facing technical communities and technical services. HEFCE saw the importance of creating a consistent approach to alleviate the need for each institution to reinvent the wheel (at a greater cost and with potentially less efficacy and efficiency).

Throughout the duration of the project, the vital nature of this work has become more and more apparent. In fact, as institutions have been brought in to offer their input into the research, their desire for this work has only grown (as evidenced in View from Stakeholders). Therefore it is very clear that this is work that the sector not only wants to continue, but needs to continue.

The creation of these tools, without future availability and application within the sector, would ultimately undermine HEFCE’s original intention for the project. It is vital that this work, including the tools created and the expertise of the team involved, are utilised and built upon to help develop a sustainable future for technical staff and services. The sector needs a one-stop-shop, a National Centre that will house this research, these tools, and the team’s expertise, in order to offer support to the sector as a whole, and to continue to develop these tools and findings to ensure that they continue to meet the ever-changing needs of the technical workforce and the HE environment.

View From Stakeholders

“The Toolkit’ will enable us to benchmark our existing job descriptions against the Technical Taxonomy and Competency Framework; support the development of our technical apprenticeship scheme; establish staff development initiatives to increase the professionally accredited status of our technical workforce; and embed a culture of continuous professional development within the service.

The importance of technicians in supporting research and teaching is well understood across the sector. At Manchester Metropolitan University, we recognise that we need to have first class technical support to help us to realise our ambitions in relation to teaching, research and knowledge exchange.”

Professor Malcolm Press
Vice Chancellor
Manchester Metropolitan University

“Our technical staff truly see the value that this project brings to the sector. Furthermore, our technical services transformation project uses many of the concepts that the TDM project tools and guidance is due to cover, such as: structures; generic competency based job descriptions; promotion of professional registration.”

Professor Sir Steve Smith FACSS
Vice-Chancellor and Chief Executive
University of Exeter

“The continued expertise, guidance and toolkit resources of the TDM project team are essential in enabling us to achieve our goals in an effective and timely manner. Being able to use the TDM assets that are now in place rather than having to reinvent the wheel is a critical element of our strategy.”

Karen Henderson PhD
Director of Technical Services
University of Reading

“Having attended a presentation at a HEaTED Regional meeting where we heard about Technicians Networking (TechNet) at Sheffield, we invited Natalie Kennerly to Newcastle University with a view to helping us establish an organisation wide networking event, NU TechNet. Our first NU TechNet event was in June 2016 which was attended by just over 100 technicians (20% of the Technical workforce). Since then we have committed to holding three NU TechNet events per year which have been consistently well attended. The impact of this has been evident on a number of levels, from creating a platform for cross fertilization of ideas, to technician’s openly sharing skills and equipment with one another in order to support teaching and research.”

Mel Leitch MPhil, CSci, FIScT
Technical Manager
University of Newcastle

“The Project’s ideas on analysis of technicians’ skills have informed our approach to workforce planning, identifying important issues for success planning. In a competitive employment environment, the development of generic role profiles is informing the redefinition of career pathways and associated reward mechanisms.”

David Peet
Head, Technician Development and Apprenticeship Project University of Cambridge

“The development of the toolkit for the HEI sector will provide the necessary technical expertise required to maintain excellence and expertise in teaching and international research and development. UNISON feels it will also help address the skill shortage and succession planning issues facing the sector.”

Jon Richards
National Secretary
Education and Children’s Services, Unison
Spotlight on technicians and technical services in Higher Education

About The Team

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Bibliography

HEFCE, (2016). Staff employed at HEFCE-funded HEIs: Trends and profiles. [Online] Available at: www.hefce.ac.uk/analysis/staff/job
[Accessed 25th February 2018]


Thanks to

Particular thanks go to HEFCE and the Office for Students, the University of Sheffield and partners for funding the project. Thanks also go to the Catalyst project team at HEFCE and to Dr Tony Strike and the Sheffield team for their valued support and advice. Thanks also go to Professor Sir Keith Burnett FRS for his support and commitment to the project.

The TDM team would also like to thank all the technical staff for their invaluable contributions throughout the project, without whom this work would not have been able to happen.

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Please note contributor’s roles and job titles may have changed post project (2014 - 2017).
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