A CASE STUDY

British Council Drupal Multi-site to Containers Based Hosting

130 country multi-site migration to a dedicated Platform.sh PaaS region in 3 months

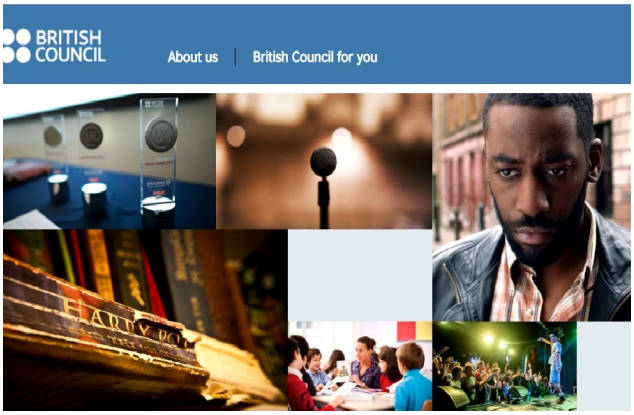
INTRODUCTION

The British Council's Digital team is responsible for the global design, development and operation of more than 120 multilingual sites live across 110 countries, driving and supporting a multi-million pound operation.

'Solas' is The British Council's corporate content management system based on Drupal 7. The CMS has been designed and developed to integrate seamlessly with many other products including internally developed and cloud based services.

"In 2014, we had a problem," says Nick Morgalla, Operations Director, British Council, "Deployment of new features and functionality was painstakingly slow which had the knock on effect of hampering our network of 1000 registered CMS content editors, and more importantly our customers and overall business.

Towards the end of 2014, we made a critical strategic business decision to move our hosting from a traditional data centre model into the cloud using a 'container' based approach, and also take the opportunity to radically update our hosting technology and support model." In 2015, The British Council had an active global network of more than 115

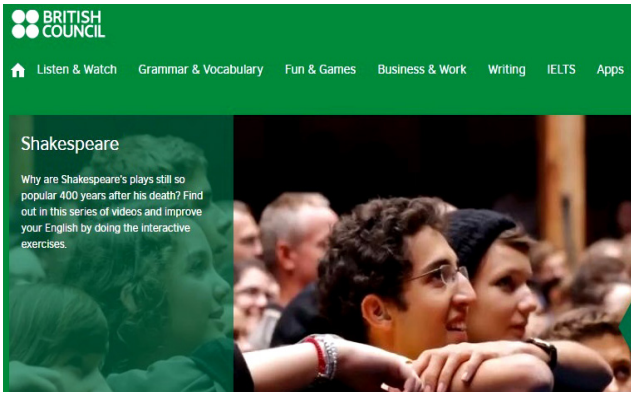


million users of its services and 1000 in-house staff using a state of the art content management system but a hosting arrangement that needed modernising.

A collaborative, agile approach to procurement, migration and service transition led to a new innovative hosting solution to meet business needs with minimum disruption to the customer experience.

There were three major steps in this process - procurement, migration and service transition.

Procurement started in November 2014, was completed in June 2015 and successful migration was in place by 30 September 2015 with no disruption to their staff and customers. They have now transitioned into early life



support and expect full transition to Business as Usual (BAU) operations to be completed by March 2016.

Their key objective was to migrate to a vastly improved hosting solution which would future proof and underpin the needs of the British Council in the digital space.

The new solution means speedier deployment for new features and functionality, faster download times, quicker publishing times and minimal outages for our customers.

The British Council continues to iterate and develop a trusted partnership with its supplier.

ABOUT BRITISH COUNCIL

The British Council creates international opportunities for people from the UK and other countries and builds trust between them worldwide. Working in more than 100 countries around the world, we do this by developing a wider knowledge of the UK and the English language, improving cultural and educational understanding, and changing lives around the world through access to UK education, skills, qualifications, culture and society.

The British Council makes a lasting impact on lives and opportunities in the UK and overseas. This builds long-term understanding, trust and relationships between the UK and the world, between people and institutions. Together this makes an important contribution to the UK's prosperity, security and international influence.

MOTIVATION FOR CHANGE

To punch their weight in a fiercely competitive space, The British Council needed to turn around new sites faster to bring new services and products to market sooner, reduce management overhead and become more efficient by streamlining these processes

"We needed to improve live operational performance as our customers demand reliability and speed (for example, page load times), and most importantly, maintaining and strengthening excellent levels of security", says Nick.

One identified blocker was the legacy hosting platform, particularly in terms of delivery and operational performance. Despite exploring options to improve the service with existing suppliers, they needed a solution that matched their aspirations for a world-class service. They pulled together a compelling case to consider alternative solutions and in 2015 made a business decision to progress with a new supplier, Platform.sh with delivery and suppot from Ixis.

Delivery

Nick explains their approach to the project delivery. "We used the expertise within our own team as we were totally confident we had the knowledge and experience in-house to define a cutting edge strategy and solution approach.

For procurement we used G-Cloud as it matched our ambition to engage with SME suppliers. We worked very closely with teams and stakeholders within our organisation, and wider government to ensure we followed best procurement practices.

For migration we created a project team of senior leadership, cross-team project managers and a small core team of technical experts. We used a mix of agile and waterfall project management methodologies as appropriate.

For service transition we followed our internally established methodology, establishing a small team from Digital, our suppliers and our internal global IT and service management teams."

Migration Process

"An absolute must for us was minimising impact on our business' services as we had excellent buy in to date of the new solution", says Nick.

They developed a mitigation process where actual downtime for editors was a couple of hours, but more importantly zero hours downtime for external customers.

This required a huge amount of collaboration and synchronisation between The British Council team and their suppliers and was managed through constant online communications.

The platform rollout to over 110 country sites saw us orchestrate a major test event across 300 environments which included deep performance testing. To overcome the many challenges, the team carried out tireless testing and presented evidence of detailed performance to justify any changes required to the underlying configuration.

Of the many benefits their new platform now provides, they can develop and test at a much faster rate and with more control under a branched, parallel development model. "We are able to lower risk amid growing complexity, and test on environments more fully representative of our production sites. We have tighter continuous integration, faster throughput, fewer bugs, a more effective quality process, and evidence of all round better performance from our global teams", reports Nick.

Solas operational support has now been transitioned into Service Management and integrated into their mature ITIL processes, whilst regular service reviews address any operational issues, initiate service improvement initiatives and allow sharing of roadmaps between parties.

"We are constantly reflecting on ways to further improve quality, but ultimately we are now in the strongest position to meet the needs of our Digital strategy", says Nick.

DIGITAL AGILE APPROACH

Digital is a key business enabler, and is becoming increasingly important as their audience engagement is increasingly over digital channels.

The digital landscape is constantly evolving, driven by a combination of technology change, increasing online competition and audience behaviours. The British Council recognised early on that adopting an 'agile' approach to product and feature development and implementation can help them respond to the continuous business demand for change more speedily and effectively.

Their approach can be summarised as follows:

- Start with a Minimal Viable Product (MVP) to establish feasibility and build confidence and joint understanding
- Managed the portfolio through incremental functionality, based on clear business value
- Move to a more functional, integrated and complex product set, which includes more e-commerce and greater integration with other products and services
- Be flexible and able to change direction quickly according to business and customer needs with minimal cost - for example deliver quick (and cheap) proof of concepts to try out new product ideas
- Create a culture of live and die on their ability to deploy frequently, reliably and efficiently

CRITERIA FOR THE NEW INFRASTRUCTURE SOLUTION TO MEET CUSTOMER NEEDS AND BUSINESS OBJECTIVES

Their existing solution was not able to deliver in a number of areas, and therefore the team looked for significant improvements in the following areas:

BAU Operations

- Raw operational performance - page load times, minimising down time etc.
- Less time spent firefighting issues; more time developing new products and features and delivering to the business

Development, Testing and Deployment

- The deploy lifecycle process: reduce end-user down-time and enable more frequent deploys
- Greater capacity via parallel development, while at the same time improving quality of deployed code - branch testing would be a key enabler here
- Ability to do more and better testing, including load and performance testing on non-live environments
- Overall improvement in product and service quality

Service Operation and Management

- Single supplier and one point of contact means less overhead on the operations team
- Smaller organisation who could deliver more responsive, faster response to incidents, improved fix times, better communications etc.
- Much greater focus on service improvement rather than fixing problems

WHAT THEY HAVE ACHIEVED

Web site performance is very important to the British Council, with strong evidence that users (especially in East Asia countries where domestic and mobile bandwidth is high) are now expecting sub-2 second page load times. Load times (measured globally using their CA monitoring tools, and by performing manual tests) have improved significantly, and the team estimates an improvement of 30-40% reduction in page load times.

“Previously, our weekly deploys were taking several hours, of which a significant portion was the ‘technical’ deploy, i.e. the time taken to actually deploy the code and data changes. During this time, editors were not able to use the system. Since we migrated to the new solution, we have been consistently seeing technical deploy times of around half an hour, and the overall deploy, including testing taking around 1 1/2 hours. This is a huge improvement.” explains Nick who is pleased with the results.

#1923 Deploy Project Site	CHANGELOGMESSAGE: Release 132 SITES: all ENVIRONMENT: MASTER	1/18/16 10:37 AM in 36m	by you	1 ok
#1900 Deploy Project Site	CHANGELOGMESSAGE: R132 - Stage - Shakey fix SITES: vk2pfkwvbgsum ENVIRONMENT: STAGE	1/15/16 6:06 PM in 1m58s	by vrusso	1 ok
#1857 Deploy Project Site	CHANGELOGMESSAGE: R132 - Stage SITES: all ENVIRONMENT: STAGE	1/14/16 9:20 AM in 32m	by vrusso	1 ok
#1856 Deploy Project Site	CHANGELOGMESSAGE: R131 - Live SITES: all ENVIRONMENT: MASTER	1/11/16 10:35 AM in 34m	by vrusso	1 ok
#1822 Deploy Project Site	CHANGELOGMESSAGE: R131 SITES: all ENVIRONMENT: STAGE	1/7/16 11:07 AM in 33m	by vrusso	1 ok
#1736 Deploy Project Site	CHANGELOGMESSAGE: Shakespeare fix SITES: vk2pfkwvbgsum ENVIRONMENT: MASTER	12/29/15 1:35 PM in 1m46s	by you	1 ok
#1693 Deploy Project Site	CHANGELOGMESSAGE: Fixing the menus SITES: vk2pfkwvbgsum ENVIRONMENT: STAGE	12/24/15 1:04 PM in 1m55s	by you	1 ok
#1682 Deploy Project Site	CHANGELOGMESSAGE: Product finder language fix. SITES: lnjnmqjlfjply 6qeu3hdzxgsbo ENVIRONMENT: MASTER	12/23/15 10:03 AM in 2m16s	by you	1 ok
#1672 Deploy Project Site	CHANGELOGMESSAGE: Product finder language fix SITES: lnjnmqjlfjply 6qeu3hdzxgsbo ENVIRONMENT: STAGE	12/22/15 2:27 PM in 2m10s	by you	1 ok
#1671 Deploy Project Site	CHANGELOGMESSAGE: Product Finder language fix SITES: ze4huc4dslbeq urenhbgcdyzy2 ofcte7lzz27qw ENVIRONMENT: MASTER	12/22/15 11:08 AM in 2m28s	by you	1 ok
#1660 Deploy Project Site	CHANGELOGMESSAGE: Product Finder Language fix SITES: ze4huc4dslbeq urenhbgcdyzy2 ofcte7lzz27qw ENVIRONMENT: STAGE	12/21/15 3:23 PM in 2m26s	by you	1 ok
#1659 Deploy Project Site	CHANGELOGMESSAGE: Release 130 SITES: all ENVIRONMENT: MASTER	12/21/15 10:33 AM in 33m	by you	1 ok
#1622 Deploy Project Site	CHANGELOGMESSAGE: R130 - Stage SITES: all ENVIRONMENT: STAGE	12/17/15 9:40 AM in 32m	by vrusso	1 ok
#1582 Deploy Project Site	CHANGELOGMESSAGE: R129 - Live SITES: all ENVIRONMENT: MASTER	12/14/15 10:31 AM in 31m	by vrusso	1 ok
#1544 Deploy Project Site	CHANGELOGMESSAGE: R129 - Stage SITES: all ENVIRONMENT: STAGE	12/10/15 8:26 AM in 30m	by vrusso	1 ok
#1533 Deploy Project Site	CHANGELOGMESSAGE: Deploying ssl auth file SITES: 7d6o4ddhkydlq ENVIRONMENT: MASTER	12/9/15 2:54 PM in 2m9s	by admin	1 ok
#1532 Deploy Project Site	CHANGELOGMESSAGE: Deploying ssl auth file SITES: 7d6o4ddhkydlq ENVIRONMENT: MASTER	12/9/15 2:39 PM in 10s	by admin	1 ok
#1531 Deploy Project Site	CHANGELOGMESSAGE: Deploying ssl auth file SITES: 7d6o4ddhkydlq ENVIRONMENT: MASTER	12/9/15 2:15 PM in 2m5s	by you	1 ok

The highlighted examples above show typical times for the deployment of weekly changes to approximately 120 web sites. (Note that the number of sites has already grown beyond what they had at migration time and the team will continue to add more sites as requirements evolve.). They now also have the capability to stage schedule deploys around the clock and further minimise the impact on business users, although the team has not felt the need to do that so far.

“Our new container-based solution Platform.sh and the tools built around it enable multiple development branches in parallel through the use of effective branch testing and merging, which was not previously possible. Because we can run up and down infrastructure to support those branches only when needed this has proven to be both efficient and cost effective.” says Nick.

FEEDBACK FROM THE TECHNICAL TEAM

Vincenzo Russo (Solutions Architect) and Nick Morgalla (Operations Director) share their views on how they have vastly improved their testing and deployment since migrating their hosting to Platform.sh:

“Development is feature branch based in Github, and we already had live-like environments in Local using Vagrant & VM’s, so testing and sign-off was good because we had Product Owners in the same room as the development teams. However, we weren’t able to do proper functional testing before getting to QA (which was a copy of Live), which meant that we had to merge all changes to QA and delay all testing to the last minute.

This created a lot of tickets for bugs in the QA environment, and then also in Live. This has been solved by Platform.sh because we now have a test branch for every feature branch and we can now functional test the whole story. Now once the change is successfully tested it gets merged to the main development branch and then to QA with no problems. This has reduced tickets in QA to zero. It’s a very clean process now. We no longer do functional and regression testing in QA, only in Local.

We make changes to all 130 sites on a weekly basis, and it takes just 30 minutes. Whereas before it would take 2 hours and everybody around the world had to be off the system. Now we ask everybody to be off just as a

precaution in case of reverting features and clearing cache, but it's not an issue if they are still on.

Also, we can do a small subset of sites together at one time, with specific features, which takes seconds to test and re-deploy. We've done this a few times now where we deploy site specific features without affecting the other sites. Before Platform.sh this was impossible. Before we were running full-on Drupal multi-site, whereas now we run each site in its own container, which pulls in a copy of the central distribution.

We are also starting to see the impact of improved testing on the overall quality of the Solas solution, with fewer bugs appearing into the production environment. Bug fixes and emergency changes used to cause a lot of disruption. They used to happen the same day or the day after we had completed a release into Live (which would take 2.5-3 hours to deploy in the old multi-site environment), and then we'd have to do it all again. It would take a whole day to arrange for all the 1,300 editors to be off the system during the update, or there would be problems.

It used to be very painful making changes to the stack to test a different version of the software. Now we just update the YAML file and launch a new container with an existing copy of the site to see how it all behaves. We're just about to update the PHP version, and this will make it so much easier. This would be impossible on any other vendor's hosting.

In summary, we are getting 20% more development work done at the same time now, from 2 teams consisting of 4-5 developers each team + 2 testers + architect. That's 7 per team delivering 7-8 stories per sprint per team. UAT is a lot easier too especially if the approvers are away from the office. We used to do Skype with screen sharing but we can just email URL's now.

The development team love the new system, it's better for everybody, they really enjoy working with Platform.sh. We're also looking forward to the arrival of the Platform.sh Local Development environment, and then we can lose the remaining DevOps with Vagrant to automatically match local environments with live."

Regarding working with Platform.sh, Nick Morgalla says, "Previously our supplier service review meetings were occupied discussing issues and trying to find ways to resolve ongoing problems. One clear indication of the improved level of service is that for the past two service reviews, we have focused almost entirely on service improvements - this is a very welcome change.

Our service management processes are now greatly simplified and improved, and we only have to deal with a single supplier for all incident, problem and change management processes. This has significantly reduced the effort required within our own organisation and allowed us to focus on more productive activities, such as service improvement and developing new capabilities.

Our users are reporting significant improvements in performance, and especially the time taken to publish content changes."

Minimising any risks was critical for The British Council's internal global network of more than 1000 digital content editors and staff as it was for the end customer. Any downtime in the production, editing and publishing process would have lost faith and confidence in the project and future work of the team. With Platform.sh, The British Council is achieving their digital transformation and delivering a better customer experience to their millions of users across the globe every day.