UA Quickstart

THE VALUE OF OPEN SOURCE & CONTINUOUS DELIVERY

ABSTRACT

Websites are incredibly important to our university for attracting quality students and faculty, driving fundraising campaigns and engaging with wildcats on campus and around the world.

The University of Arizona strives to have high quality websites that support our reputation as a premier research I university and further our mission as a land-grant institution.

UA Quickstart was developed to meet these goals using an open source model that leverages the strength of our distributed campus and continuously feeds back into itself to stay current and further meet the needs of different departments.

The value of Quickstart is increasing exponentially with each new website that adopts it. As both a product and a process, UA Quickstart is enabling faster delivery of websites that are branded, universally accessible, mobile responsive and cheaper to build, support and maintain.

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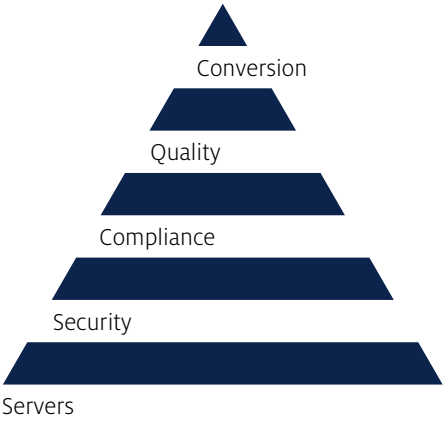
Fall 2018

WHAT GOES IN TO A WEBSITE?



Websites are complex stacks of business requirements and technology that all build off of each other.

There are entire careers dedicated to each layer in this stack. The higher layers add the most value, since they are the reason for your site to exist.

The risk of failure increases as you go down the stack and each layer includes all of the risks above:

Lack of results ->
Embarassment ->
Legal issues ->
Loss of trust ->
System Failure

ONE BRAND, MANY WEBSITES

Universities are highly respected institutions with strong brands, but central marketing does not control the marketing of the individual colleges, schools and departments.

ACCESSIBILITY

State Universities are public institutions that are dedicated to making knowledge as broadly available as possible. This mandate requires that they have a strong focus on accessibility over using the latest javascript frameworks or the most pixel perfect design.

EDITORIAL GOVERNANCE AND WORKFLOW

University departments have high standards of quality and tone, but the work is typically spread around many people from dedicated communications professionals, faculty and student workers. They need to facilitate sharing this workload, while having quality control of the final output.

MANY AUDIENCES

Universities have several very distinct audiences that they want to reach, and often with different objectives. The most common audiences are prospective students, current students, faculty, staff, alumni and donors. These different types of users cover every generation and level of technical ability, and they are all looking for different types of information.

WHAT MAKES *.ARIZONA.EDU?

CONVERSION

Websites are designed to make desired actions easier!
(Enrollment, engagement, donations, use of services, etc.)

Deliver differentiating message.
Show what makes your unit special.

QUALITY

Leverage the unexpected with your voice and tone.
Use photos and videos that are simple, bright and authentic.
Utilize open space in your designs.
Provide a good experience on mobile devices.

COMPLIANCE

Brand guidelines
Accessibility (WCAG AA conformance)
General Data Protection Regulation (GDPR)
Browser compatability

SECURITY

Best practices in development
Incident response procedures
Constant security updates at all levels of the stack
 - OS, Web Server, Database, PHP, Drupal, all modules
Secure user auth - use Webauth for all logins
Enforce https

SERVERS

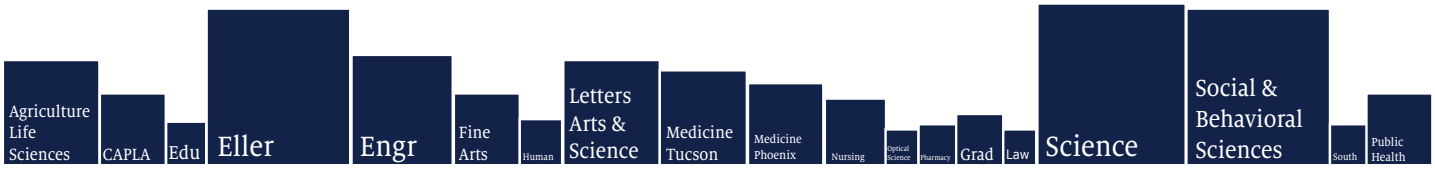
Systems Administrator
Development Environment
Version Control
Git workflow / Deployment strategy
Disaster Recovery
Logging and Monitoring

OUR LANDSCAPE

The University of Arizona is a public, land-grant, research I university.

Total Enrollment	**44,831**
Total Revenue	**$2,054,628,000**
US News Ranking	**46th Best Public Institution**

19 COLLEGES: ALL DIFFERENT SIZES



*Colleges by number of enrolled students

8 FUNDING SOURCES: ALL DISTRIBUTED DIFFERENTLY

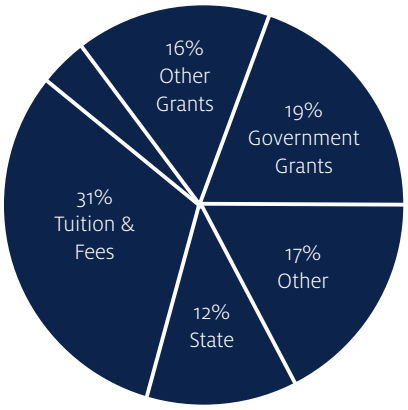
12% from State Appropriations
This amount can be directed by the central administration of the university.

31% from Tuition & Fees
Tuition is typically distributed to colleges by enrollment. Fees are earmarked for specific purposes.

35% from Grants
This amount goes directly to individual colleges or departments.

4% from Donations
This amount is mostly Restricted for specific purposes by the donors.

17% from Other
This is made up of auxiliary income (earned through cost recovery), investment income, state sales tax and other revenue. All cost recovery income goes directly to department budgets.



1 RESULT: DECENTRALIZED RESOURCES

Top-down mandates won't work in a decentralized environment. The role of Central IT and Central Marketing is to provide guidance and the tools needed to be successful.

The vast majority of funds are directed by individual colleges and departments instead of being directed centrally. This funding model results in a very decentralized university with colleges and departments that are financially independent from central administration.

Each college and department has vastly different resources. Some have entire IT departments with server infrastructure, and Marketing Departments with teams of Web Developers. Some don't have any dedicated personnel for the web.

SURVEYING THE *.ARIZONA.EDU DOMAIN

More than $5 Million spent annually on Web personnel.
$100s of Thousands spent on outside agencies each year.
Sites are typically redesigned and rebuilt every 3 - 5 years.

There are currently over two thousand websites on the arizona.edu domain.

1% of sites make up 35% of traffic
These are our Flagship sites, such as www.arizona.edu.

10% of sites make up 35% of traffic
These are our College, School and Department websites.

89% of sites make up 30% of traffic
These sites individually have a small audience, but in aggregate they tell the real story of our university.

Every individual that visits our websites will have a different pattern, but most will include visits to our Flagship sites, the websites of their college or department and many smaller sites that are specifically relevant to them.

The design, user experience and level of quality varies greatly across the *.arizona.edu sites that faculty, staff, students and prospective students visit on any given day.

FLAGSHIP SITES

Current Strategy
Usually have enough resources behind them to be beautiful and functional.

Challenges
The more time and resources spent on these sites, the bigger the disparity between them and the rest of the sites on campus making it harder to have a cohesive brand.

They set the example for the rest of campus. If the flagship websites do their own thing, so will everyone else.

LARGE SITES

Current Strategy
Built by either an agency or in house technical personnel as one part of their job.

Challenges
All of these sites have unique codebases that are difficult to maintain at scale.

They don't present a cohesive brand or experience to end users.

Many groups on campus are devoting resources to solving the same problems.

LONG TAIL SITES

Current Strategy
Built by non-technical personnel, grad student or low cost vendor.

Challenges
These sites tend to be lower quality and don't follow web best practices.

There is rarely consideration for long term maintenance and support.

They all look vastly different.

High turnover makes this extremely risky.

OUR PAST SOLUTIONS

THE VENDOR MODEL

There are clear up front benefits to having an outside agency build your website. Even choosing a high end agency once every three to five years will be much cheaper than hiring dedicated web personnel and you get the benefit of having a talented team that is experienced in all of the separate aspects of building a website for a one time cost.

However, most web development agencies prefer to finish projects and hand them over to their clients so that they can move on to the next project. Ongoing maintenance is rarely included in the contract and must be handled separately. As new features are inevitably needed, they are subject to new contracts which are less lucrative to agencies than large projects and can take much longer to complete as a result.

Compounding these problems is that outside vendors primarily focus on speed of delivery instead of maintainability. The clever hacks that are used to deliver a feature on time can often cause years of headaches when trying to apply security updates, make small fixes or add new functionality.

THE IN-HOUSE MODEL

For those that can afford it, having in house web development personnel is a clear advantage. The team that builds the website is usually responsible for the ongoing maintenance and development work. They are incentivized to make decisions that will make their own jobs easier in the long term.

Having a permanent team enables faster delivery of new features and regular updates as the general web landscape or branding and accessibility standards change. Having developers on staff also opens up a much broader array of what can be accomplished by a team that expands beyond the web. There is never a shortage of work for developers.

The main downside of the in-house model comes at the institutional scale of the University. A lot of talent and time is being wasted on solving the same problems at all levels of the stack over and over again. Most colleges and departments have the same or very similar needs. Once these needs are met once, everyone should be able to move on to the next problem.

THE SITE-IN-A-BOX MODEL

Site-in-a-Box was intended to be used as a starting point for new site development to save time and resources. It was a Drupal distribution that was built by an agency with the intention of being reused by any campus units that needed a website.

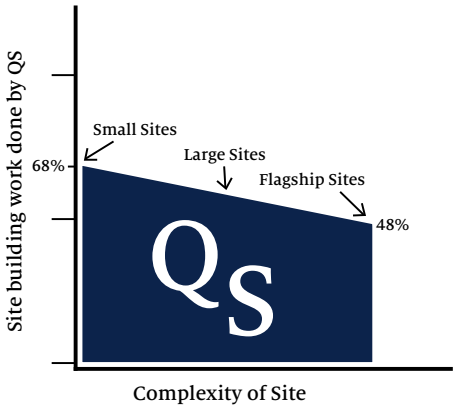
SIAB initially delivered on this promise for a number of smaller websites with relatively simple needs. Larger units typically found the platform lacking key features that were important to their units, but the architecture didn't allow very much customization. It was also limited to being a starting point which quickly showed its age as web design standards evolved.

The utility and scalability of Site-in-a-Box plateaued fairly quickly, but the shortcomings of this platform informed the development of the Quickstart workflow. In order for this platform to effectively meet the needs of campus, it would need to be more than just a site in a box. It would need to be flexible enough to handle serious customization. It would also need a completely new workflow in order to keep the start state current, but also allow all sites built with it to stay current as well.

THE VALUE OF QUICKSTART

SAVINGS ON NEW SITE BUILDS

When using Quickstart as the base for a new site build, much of the work has already been done and that translates to significant savings. The more complex a site is, the more work needs to be done on top of Quickstart, so the percent savings goes down. However, because the typical cost of a complex site is so large, the savings is still significant.



The University of Arizona has over 2000 websites, and each of these is typically rebuilt every 3-5 years. Consider the cost savings of building every Arizona website.

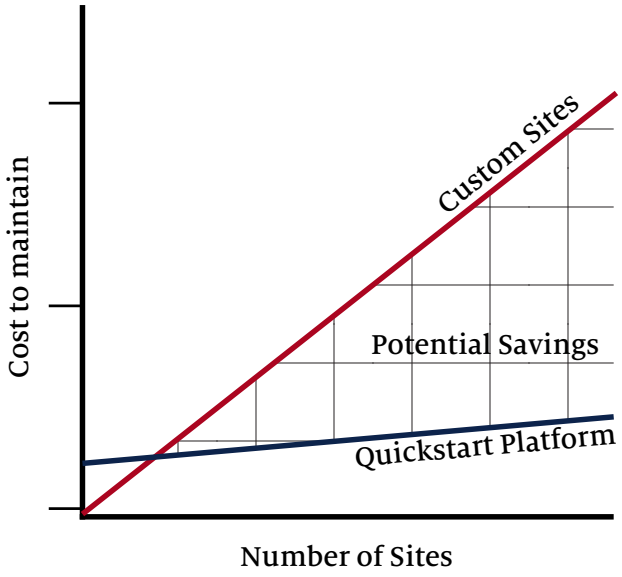
	# of sites	Typical cost	Savings	Total Savings
Flagship Sites	20	$100,000	48%	$960,000
Large Sites	240	$30,000	58%	$4,176,000
Long Tail Sites	1740	$5,000	68%	$5,916,000
				$11,052,000

TOTAL SAVINGS ON NEW SITE BUILDS: $11 MILLION OVER FIVE YEARS

SAVINGS ON MAINTENANCE

A typical Drupal website will take approximately 50 hours per year to maintain. When every site is unique, you don't save very much maintenance time as you scale, so each additional site that a team manages will take approximately 50 hours per year to maintain. This work time can not be evenly distributed throughout the year, since security updates will typically be needed for many of your sites simultaneously, the work for updating all sites happens at the same time which requires a larger staff to deal with capacity.

Operating a scalable platform of sites that share a common codebase is more expensive on the front end, but the marginal cost to add more sites is very small. Once you cross a threshold of about 130 sites (6500 hours), it becomes cheaper to operate the scalable platform and the cost savings will continue to grow with each additional site added.



HOW QUICKSTART WORKS

COMPLIANCE & QUALITY

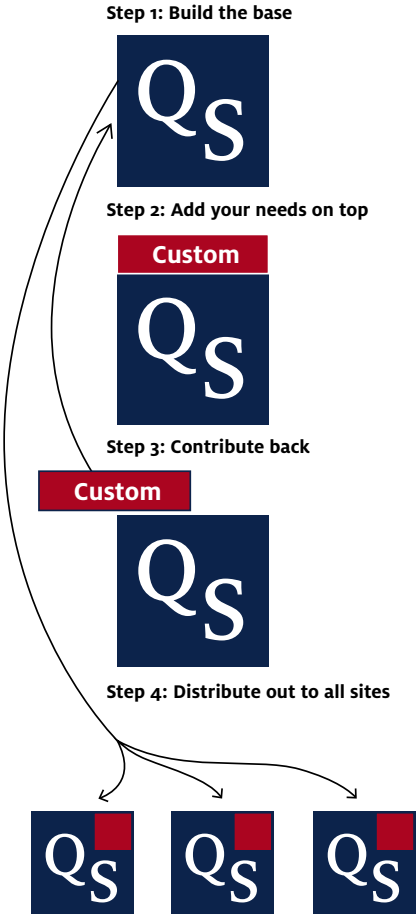
Quickstart is built using an open source model. At any time, the latest version can be downloaded and used as a starting point for a new website. The community that contibutes to Quickstart, called UA Digital, is made up of developers, designers and analysts from across campus. There are representatives from IT, Marketing, Student Affairs, the Disability Resource Center and other colleges and departments. Every new feature added gets reviewed for code quality, brand compliance, accessibility and design.

Out of the box it is designed to be in compliance with all branding, accessibility and compatability standards.

There is also a certain level of quality built in. The style framework provides mobile responsiveness, spacing, typography and layout. The built in features provide an easy way to add pages, content and views. The most commonly needed customizations are already there and it's easy to add more if needed.

Using Quickstart as the base of a new website project can allow you to focus all of your time and budget on the top tiers: creating quality content and driving conversions.

THE OPEN SOURCE MODEL



The open source model works really well in a decentralized environment. The individual contributors are all people that are using Quickstart to meet the needs of their own department or unit.

Having a broad base of contributors that are all close to the problems that are trying to be solved with Quickstart allows it to organically solve the problems that are most in need of being solved.

Here's the way it works in practice:

Quickstart itself has been undergoing active development since 2016. The base has been built.

When a department needs a new website they start by downloading Quickstart and spinning up a bare bones site. They can start adding pages and content immediately.

They discover that there is some custom functionality that they need but Quickstart doesn't yet have, so they build it right on top and quickly finish their website.

That change is then proposed to UA Digital as a feature that would also be useful to other departments. If agreed, a Pull Request is made to the Master Branch of the Quickstart repository to add that feature to Quickstart.

When that code is merged, the new feature will be available to anyone that pulls the latest copy of the Quickstart codebase.

HOW QUICKSTART WORKS

SERVERS & SECURITY

The major challenge for security is that things are always changing. Just because your site or application is considered secure today does not mean that it will be tomorrow. Drupal 7 core has had 59 versions released since 2011, which is an average of 8 updates per year. In addition, a typical Drupal site will have between 80 and 100 contributed modules installed, each of which will require regular security updates. Every other layer in your technology stack must also be maintained, including the operating system, database, web server and programming languages.

Every layer of a website is built on the layers beneath and every update has the potential to impact the front end functionality of the website, so it is important to have a test environment for applying updates and the time and availability to both apply the updates and complete the testing before pushing to production.

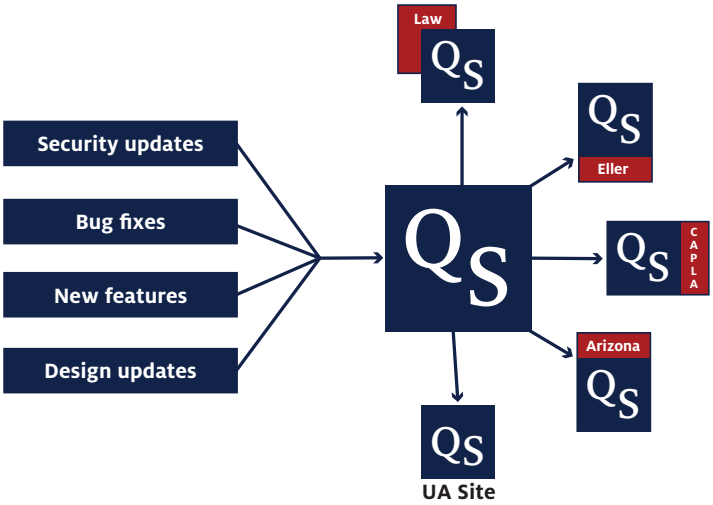
The Server level contains all of the infrastructure that your website runs on. This includes your application, database and file servers, load balancers, caching layers and the configuration and connections between all of these pieces.

CONTINUOUS DELIVERY: THE QUICKSTART UPSTREAM ON PANTHEON

“With Pantheon Upstreams, you package your core CMS, custom code, theme, and open source components into a desired start-state to use over and over again. Spin up new sites in seconds, with the ability to release improvements to the shared upstream code at scale. No more starting from scratch or needing senior talent to set up a new project, no more headaches over updates.”

- Pantheon.io

Our partnership with Pantheon means that they take care of the servers and provide the means for us to continuously deliver all of the necessary security updates at scale. Once a site is on the Quickstart Upstream, it is easy to ensure that it has not only security updates, but all of the latest features and branding standards as well. Since all of the sites share the same codebase, we can thoroughly test the updates once and apply them to all of our sites with confidence.



We still need to test that none of a site’s custom features have been negatively affected by an update, but that is a much smaller footprint than an entirely custom site. Pantheon provides Dev and Test environments that are identical to the Live environment to make testing all of the updates easy.

Taken together, the Open Source development and Continuous Delivery of Quickstart allows site owners to dedicate their time and resources to the quality of their content and reaching their goals.