Tools of the Trade

Web Development at Fairfax Media
Who am I?

George Wright
Solution Lead - Intelligent Systems
Fairfax Media

A Solution Lead is a senior developer that is responsible for the delivery of a business function (called the solution).
I apologise in advance

This presentation has a lot of:

Acronyms, Buzzwords & Brands

● Software architecture is evolving rapidly and is extremely diverse.
● There are no right answers!
The CRAFT of software

- part engineering - accuracy and efficiency
- part designing - elegance
- part project managing - accountable
- part poetry - expressive
Web is Client/Server

It’s actually more like Client/Service(s).
- Engineering for interoperability is key.
- No longer a monoculture approach.
- No one technology is the silver bullet.
the “Stack”

All of the systems and services that fulfil a request (end-to-end) - in this case a request from a web client.

The stack is the largest box you can draw around the things you can control/influence.
Stack basics

Understand the usage patterns

“THEM”

- Browsers
- Services
- Bots

“US”

- Web servers
- DNS
- Queues
- Cache
- Databases
- Load Balancers
- Operating Systems
- Deployers
- **Applications**
- Analytics
- Source Control
- Quality Assurance / Automated testing
The “Corporate” stack

- **Proxies & Cache** (MS Forefront, Java Caching System, Squid)
- **DNS & Load Balancing** (Windows Server NLB, Apache Camel)
- **Web Server** (IIS, Apache)
- **Application Server** (Tomcat, JBoss, GlassFish, IIS .Net)
- **Application** (Java, .Net)
- **Database** (SQLServer, Oracle)

Corba, WSDL, RPC, SOAP
The LAMP stack

**Web cache**
- Squid
- Polipo
- Traffic server

**Web server**
- Apache
- Cherokee
- Lighttpd
- Nginx

**CGI scripting**
- Perl
- PHP
- Python

**Database**
- MariaDB
- MySQL
- Drizzle

**Linux kernel**
- AppArmor
- SELinux
- Smack
- TOMOYO
- Process Scheduler
- Netfilter
- Linux network stack
- Network scheduler

**Hardware**
- CPU & RAM
- Networking hardware
- Storage
  - SATA
  - SAS
  - RAID
  - iSCSI
  - NAS

**Environment: CCC**

- Crackers
  - Botnets
  - DDoS attacks
  - Cracking attempts

- Competitors
  - Compete for customers

- Customers
  - Want attendance

- Botnets
  - IOT attacks

*“LAMP software bundle” by ScotXW - Own work This image includes elements that have been taken or adapted from this: Tux-shaded.svg .. Licensed under Creative Commons Attribution-Share Alike 3.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:LAMP_software_bundle.svg#mediaviewer/File:LAMP_software_bundle.svg*
New wave stack - Ruby on Rails

Excellent presentation on RoR Enterprise Arch.: www.slideshare.net/kigster/enterprise-architectures-with-ruby-and-rails

Redis, Solr, Capistrano, Unicorn, Puppet, Postgres, ActiveRecord, nginx, NewRelic
The “hipster” stack

MEAN stands for:

MongoDB is the leading NoSQL database, empowering businesses to be more agile and scalable.

Express is a minimal and flexible node.js web application framework, providing a robust set of features for building single and multi-page, and hybrid web applications.

AngularJS lets you extend HTML vocabulary for your application. The resulting environment is extraordinarily expressive, readable, and quick to develop.

Node.js is a platform built on Chrome's JavaScript runtime for easily building fast, scalable network applications.

http://mean.io/#!
Where is the rest?

In The Cloud
Amazon AWS ftw

Rethinking the architecture at scale:

- Compute (EC2) - processing
- Elastic Load Balancer
- Storage (S3/Glacier)
- Database (DynamoDB/RDS/Redshift)
- In Mem. Cache (Elasticache)
- DNS (Amazon Route53)
- Web Cache (CloudFront)
- Queues (SQS)

- Notification (SNS, SES)
- Analytics (EMR)
- Applications (ElasticBeanStalk)

+ Many, many more.
Alternatives

Application Hosting - Heroku, EngineYard, OpenShift, Google AppEngine, Microsoft Azure, Joyent + new entrants every day.

Check out DigitalOcean tutorials

https://www.digitalocean.com/community/tutorial_series
The Browser “Basics”

- HTML5
- CSS3
- Javascript - JQuery(?), Modernizr
- Debugging - FireBug, Chrome Dev Tools
- JSON - CORS and JSONP
- REST
Frontend Stack provides:

- Package Management
- Templating
- Testing framework
- Common widgets
- Databinding
- Server communication
But wait there’s more..

Frontend JS frameworks (just a sample)

Yeoman:  Package manager: yeoman, Module system: RequireJS, AMD, Build system: Grunt, Widgets: Bootstrap

Angular/Closure:  Module system: Closure Library modules, Build system: ClosureBuilder, Templates: AngularJS, Data binding: AngularJS, Sync: AngularJS services, Widgets: Closure Library, Test framework: Closure Library testing

Foundation:  Package manager: Component, Module system: CommonJS, Build system: Component, Data binding: Reactive or Rivets or Knockout or Backbone, Sync: component/model, Test framework: test/assert, Mocha
Every developer should have their own personal productivity stack including:

- **Editor** - Notepad++, Atom, Sublime, vim etc.
- **IDE** - Visual Studio, JetBrain, Netbeans, Eclipse
- **Version Control** - git, mercurial, bzr, cvs
- **Repository** - gitorious, github, bitbucket, launchpad, googleCode
- **Issue tracking** - JIRA, Redmine, Bugzilla
- **Agile/SCRUM** - Greenhopper, Trello
Quality assurance stack

- Automated testing eg. Mocha, Jasmine, Selenium etc.
- User acceptance testing tools
- Production monitoring
- Disaster recovery plan
- Peer reviewed documentation
- Stakeholder management
- Legal signoff(?)
Thank you UNSW