Build a Bluemix app in less than a week

Discover the benefits of building with Bluemix

Joshua Carr (Joshua.Carr@uk.ibm.com)
Technical Liaison
IBM

IBM Emerging Technology Specialist Ben Miller describes how he created an app on IBM® Bluemix™ that enables users to identify where they might want to live in London – and he did it in four days! He uses the app to illustrate the benefits of using Bluemix and show how it combats everyday challenges for app developers.

Application requirements

Analysing and processing unstructured data, deciding where to host your data (to be sure that it is both accessible and secure), configuring a workflow of mixed data sets, managing requirement changes, and creating new documentation are all important stages of the app development process. And all of them take time ... time that you might not have.

IBM Emerging Technology Specialist Ben Miller was asked to design and build an app to help users determine in which area of London they should live. The outcome was based on their own personal preferences combined with real-time information from outside sources. His project deadline was four days.

Ben opted to use Bluemix because of its speed, analytical insights, support of seven languages, and collaborative capabilities. Stating that he "only scratched the surface" of the platform, he used four of the Bluemix services to create his app: Node-RED, Cloudant, Watson Trade-Off Analytics, and Watson Alchemy API.

• **Node-RED** is a quick-start boilerplate. This tool provides a browser-based flow editor that makes it easy to wire together devices, APIs, and online services by using the wide range of nodes in the palette. Flows can be then deployed to the Node.js runtime with a single click.

• **Cloudant** is a NoSQL Database as a Service (DBaaS) that is built from the ground up to scale globally, run non-stop, and handle a wide variety of data types like JSON, full-text, and geo spatial. Cloudant is an operational data store that's optimized to handle concurrent reads and writes, and provide high availability and data durability.

• **Watson Tradeoff Analytics** helps users make better choices to best meet multiple conflicting goals, combining smart visualisation and recommendations for tradeoff exploration. The Tradeoff Analytics service helps people optimize their decisions while striking a balance between multiple, often conflicting, objectives. Tradeoff Analytics uses Pareto filtering techniques to identify the optimal alternatives across multiple criteria. It then uses various analytical and visual approaches to help the decision maker explore the pros and cons of their alternatives.

• **Watson Alchemy API** is a cloud platform that makes it easy to create smart apps that deeply understand the world's conversations, reports, and photos so that you can align your business with customer preferences and intent.

> "Streamline all the dull tasks, freeing up your time to focus on the fun ones"

Benjamin Miller

The app consisted of two main components:

• **Front end display of the mobile app.** Due to the functionality required in the app, Ben opted for a hybrid app that is built on the ionic framework.

• **Back end to both store and support data analysis.** Data was stored using JSON in DBaaS Cloudant.

On the first screen of the app, users are provided with five parameters: house prices, grades from nearby schools, crime rate, green space, and transport links. Once their preference information is submitted, the app sends a query that creates an HTTP get request. This query sends a chain of events to Bluemix that pulls in relevant data sets from the database that are formatted within Node-RED and sent to the Watson Trade-Off Analytics API. At the back end, Trade-Off Analytics compares user data with the borough options and cross-checks it with the unstructured external sources that are fed through and analysed by the Watson Alchemy API. The response is sent back and pushed down to the app to display the outcome screen of the HTTP get request. All of this is under-pinned in a workflow set up in Node-RED.

In addition to the ionic framework, Ben used JavaScript libraries such as chart.js to create the radar charts and Ion RangeSlider shown on the results screen to enhance the visualisation of the app. Both are integrated seamlessly with Watson Trade-Off Analytics.
App results

Bromley

The radar chart summarises some key metrics calculated on Bluemix.

Activity Facility: 66%
Outdoors: 65%
Vehicle: 64%

We asked Watson to analyse this stock image.

Some relevant recent headlines found by Watson:

- A Masked Vigilante Dubbed Bromley Batman Is Saving London’s Streets
- Become the Bromley Batman: The Gear and Gadgets You Need to Fight Crime
- Transport for London launches consultation into Bromley Sunday bus routes 352 and 354

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Challenge? What challenge?

The challenges

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Even the best developers encounter barriers to success. Ben outlines how he overcame his barriers when building the app.

1. **Connecting a wide range of nodes together.** The Node-RED boilerplate enabled Ben to quickly and easily graphically hook all of his nodes together. That enabled him to apply logic to create a flow of inputs and outputs that placed the data where he needed it to go.

2. **Analysing structured and unstructured data.** Watson APIs can analyse both at the same time while integrating with everything else behind the scenes. In Ben's case, he used Watson Trade-Off Analytics for the structured data and the Alchemy API for analysing unstructured data necessary for the app, such as websites, news, images, and social media. Ben claims that building and implementing his own code and algorithms would have required weeks if not months of extra work.

3. **Accessibility across teams.** Having a live data feed available on the cloud meant that Ben and his team could work remotely and collaboratively in a secure environment.

4. **Storing data sets.** Having several mixed data sets meant that traditional databases were not an appropriate option. Ben opted for Cloudant, a NoSQL database that's robust and flexible and can manage multiple requirement changes from the client.

Build apps your way

Why IBM Bluemix?

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Bluemix enables you to use all the tools you prefer in one interface. The open source cloud platform includes a powerful combination of IBM and third-party technologies, with the option to securely connect existing infrastructures or APIs to further enhance your apps.

Ben listed some of the benefits of using Bluemix:

- One interface is used for all the tools
- IBM and third-party, open source compute technologies are instantly available
- App development is supported in seven languages
- Secure connection is used for existing infrastructure and APIs
- Latest technologies are neatly packaged and documented in a catalogue
- Navigation is easy

How does the app work?

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Get started for free

Top tips

To view this video Build an app in four days using IBM Bluemix: Top tips please access the online version of the article.

Want to see for yourself how much time and effort you can save building apps with Bluemix? As Ben says, treat it as a toy box: Play with it, explore it, and see what you can do with it. To get started, create an account on Bluemix and receive a 30-day free trial.

Quick tip: Head straight to the catalogue and check out the ever-growing, one-stop shop of runtimes, services, and boilerplates to get started.

Ben's top tips for using Bluemix:

1. Use the documentation to get up to speed quickly with tools you're not familiar with.
2. Try Node-RED, a powerful, easy-to-use tool, particularly for creating prototypes.
3. Explore the Bluemix platform to understand the services and tools available that can help generate ideas for future builds.
About the author

Joshua Carr

With what he calls the "coolest job in tech," Joshua shows up, showcases, and shows off the technical capabilities of IBM. Speaking almost exclusively to developers, Joshua bypasses marketing nonsense, having open and honest conversations with the people who he thinks matter most: the people who develop with IBM's technology daily. Always energized, Joshua can be found head-in-laptop at a hackathon or talking to developers on a show floor.

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