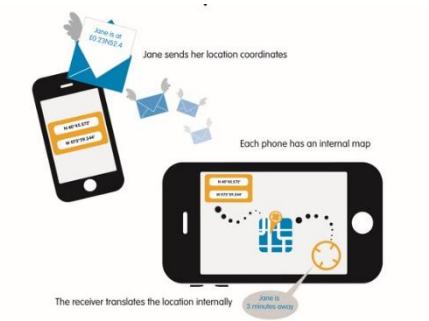
Software Architecture with the Squawk System

A guide to delivery



Introduction

This project introduces students to the work of a software architect, as she works her way through the planning of a new social media application.

The Squawk System is a mobile phone app that allows the user to know where friends are, in terms of personal points of interest. The user receives messages telling them that friends are 'five minutes away' or are 'just arriving at the Bistro'. The app makes use of GPS coordinates, translated into recognisable locations, a way of assessing progress of friends, and text-to-speech conversion – the messages arrive through a Bluetooth headset rather than being read as texts or tweets.

Along the way students learn about breaking down a problem into smaller tasks, in order to find a solution, and how to carry out a SWOT analysis and backlog. They also learn more about GPS, text-to-speech software and social media applications.

Earning Open Badges for work on this project

The Tech Partnership Badge Academy is directly aligned to the TechFuture Classroom. You can find the Badge Academy by clicking on the Badges link at the top of the Learning Hub window.

Within each TechFuture Classroom project, badges are available for students to earn for the work they complete within the projects. In this project, there are one available badge, the **Squawk Software Architect** for completion of the e-learning module. This is automatically awarded by the platform when the student reaches the end of the e-learning and completes the final quiz.

Resources provided

On the course page, there is a bank of resources underneath the e-learning modules that scroll using the arrows at each end of the row. You are provided with the following resources:

- The e-learning module which students can work through individually in the classroom or at home
- Student Log for completion either electronically (MS Word version) or by hand (PDF)
- Zipped folders of illustrations of possible Squawk system solutions and their relative pros and cons

There is a completed exemplar Student Log available free to teachers, which includes model responses to the activities and the backlog order suggested by Dominic. For a copy of this log, email helpdesk@techfuture.com **using your school email address.**

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Steps in the e-learning content

The following table shows the steps through which students are guided to understand the Squawk system and make decisions about its architecture.

Steps in the e-learning content	Resources
Video demonstration of the Squawk system in action	
Knowledge check of the system – drag and drop the function against the technology that facilitates it	
Kirsty – software architect – explains how software is built upon existing software rather than starting from scratch	Student Log: Thinking about existing social media applications
Knowledge check of social media – drag and drop the icon to its main function	
Kirsty explains how Squawk is not quite the same as other social media applications	Student Log: What is different about Squawk
Knowledge check of the differences – yes/no choice of social media features present in Squawk	
Kirsty introduces the text-to-speech functionality of Squawk	
Further explanation of articulatory, concatenative and formant text-to-speech systems – hotspot exploration	
Knowledge check – understanding text-to-speech multiple choice	
Kirsty introduces the Squawk functionality of identifying friends' locations and transmitting them to the user	
Exploring GPS and how it works	
Kirsty explains how GPS coordinates are a string of letters and numbers and the difficulties this causes for translation to a place a user recognizes	
Four different solutions to the problem of translating coordinates into a recognizable point of interest – hotspot activity for each to help students understand them	Student Log has all four proposals. They are also available in a zip file as separate documents to allow student groups to discuss them.
Kirsty summarises the proposals and introduces an activity where the pros and cons of each are considered	Student Log has boxes for this to be considered. Zipped folder in the Resources area has the pros and cons of each as separate document.
Knowledge check – assigning each statement as a pro or a con in a selection activity	
Understanding caching – explanation of how websites can be cached and stored	
Kirsty explains how the best solution may incorporate features of different proposals	The Final Proposal is downloadable from the Resources page

Steps in the e-learning content	Resources
Explore the final proposal with a set of hotspots	
Kirsty explains the next problem – how the messages are triggered – and encourages students to think about a solution	Student Log: Activity to consider how messages are triggered
Knowledge check – order the list of ways in which messages can be sent and compare with model	
Kirsty reviews the architectural process	Student Log: Complete the architectural process activity
Kirsty decides, do we build Squawk, using a SWOT analysis	SWOT analysis examples and a template in the Student Log. Template is also downloadable from the Resources area.
An example SWOT analysis with hotspots to explore	
Kirsty explains how the SWOT analysis should be completed for Squawk	Student Log: SWOT analysis. Downloadable template from Resources area also available.
Exploring Kirsty's SWOT analysis with hotspots	
Meet Dominic, the lead software developer, explains how a new project requires a backlog	Student Log: examples of backlog for a theatre production and a painting
Exploring backlogs with a hotspot activity	
Dominic asks students to create the backlog for Squawk	Student Log has eight tasks that can be put into order in a backlog. The correct answers for this are available in the exemplar Student Log as explained above.
Shortened version of the backlog activity (8 tasks reduced to five) for ordering	
Dominic says well done and goodbye before the students complete a final quiz	

Timings for delivery

TechFuture Classroom projects are built for flexibility and different ways of use.

Students can work through the e-learning, completing the activities in groups in the Student Log as they progress. Zipped folders of the system designs and solutions are available for small groups to use and discuss. If the project is used this way, it is likely to take three 45 minute sessions.

Students just using the e-learning module, without completing the Student Log, could complete this within one lesson and homework. The regular knowledge checks throughout the e-learning assess students' understanding. Students completing the e-learning will automatically receive the **Squawk Software Architect open badge.**

Note, for individual award of badges students must be logged into their own account.

Flipped classroom delivery

It is possible to use TechFuture Classroom projects for flipped classroom delivery. When students have their login details, they can access the platform at any time from home and school. Students could complete the e-learning at home, and come to class with a clearer idea of Squawk, ready to discuss this in groups or as a class.

If you have questions or queries about this project, contact helpdesk@techfuture.com and we will do our best to respond within 48 hours.