

A STEP BY STEP GUIDE FOR BUSINESSES

How to Upgrade Windows® CE Mobile Apps to Android™

NUFFIELD TECHNOLOGIES

INTRODUCTION

Migrating to next-generation platforms is essential, but it can also be a tricky process. In this guide, we outline our tried-and-tested approach for getting the job done on time and on budget – so you can deliver an upgrade that will help give your business an edge for years to come.

There's a strong case for upgrading your business's rugged mobile apps from Windows CE to Android. You'll enjoy stronger security, enhanced features and functionality, and better user experience – things that will all translate into an excellent return on investment in the long run.

However, there's no denying that this upgrade is a significant undertaking. You may need to consolidate a wide range of apps and devices across your business. You may also need to make important strategic decisions about the role of technology in your organisation, for the immediate future and for the years ahead.

IT projects of this kind are notorious for their tendency to overrun, in terms of both time and budget. This makes it all the more important that you work with a partner that has a solid track record and clear methodology for guiding you through a Windows CE to Android upgrade, so your transition is as seamless as possible

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Nuffield Technologies has helped many businesses navigate this tricky process successfully. We do this by:

- Following a clear, step-by-step process that is proven to deliver successful outcomes for our clients.
- Expediting our clients' projects with Nuffield's CoreXam, a modular framework for building apps that helps to deliver quickly and cost-effectively to client specifications.

Here's our methodology. Even if you don't choose to work with us, we strongly recommend you refer to this document as a best-practice roadmap when undertaking your Windows CE to Android migration.

STEP 1:

BUSINESS ANALYSIS CONSULTATION

At this earliest stage of the project, a dedicated business analyst will take stock of your current setup. They'll look at your existing app or apps to discover how many there are and what they do.

This process is fairly short and can be undertaken as a face-to-face visit or a call.

We're aware that there's a lot of jargon and technical talk in our industry. However, we also know that good communication is essential to your getting the product you want. Your dedicated advisor will talk with you in a way that avoids obscure industry terms or overly technical terminology, unless everyone involved is familiar with the jargon.



STEP 2:

REQUIREMENTS ANALYSIS

a) Stating your goals

At the simplest level, you will want your Windows CE app to work on Android. In practice, however, you will probably want more – and you will be right to. Technology has moved on considerably. Now, while you are commissioning a migration, is the time to integrate features that will speed up your operations, offer a better user experience, and deliver greater return on your investment.

This is why we would actively discourage you from considering porting terminal emulation, or 'green screen' apps.

While they can be converted into touch screen apps on Android, they will provide an outdated solution that will offer only limited improvements and possibly much frustration for the employees who will use them.

We will encourage you to ask these questions:

- What problem will the app solve?
- How will it benefit the business?
- What customer or employee feedback can help me locate the 'pain points' that a new app could solve?

We will work with you to determine the scope, timeline and budget for the project. The project will then be formalised in a requirement analysis document.

b) Assessing feasibility

Can the project be completed on budget and on time, while meeting all objectives? Our feasibility study will look at the factors that could hasten or hinder project execution, to help ensure timely delivery.



One important question at this stage will be: what hardware will you need to help you achieve your goals?

It's crucial you are using the right tech, to ensure your new OS is running for optimum performance and remains serviceable for years to come. This is the time to take an inventory of devices that will be compatible with the new OS and decide what functionality is required: for instance, will your OS be working with radio-frequency identification (RFID) or barcode scanners? We can help you make this assessment and also recommend devices based on your business's requirements.

c) Selecting and integrating third-party applications

Before starting your project, it's important to find out if any existing software could meet your requirements. There is a vast library of Android apps and you may find a suitable product without having to build software from scratch. Even if an app doesn't match your needs exactly, it's often the case that commercially available software can fulfil some of your requirements, cutting down the size of the development project and saving time and money.

We will help you assess the market for third-party applications you can use with your software, and advise on choosing the right product in terms of cost, versatility, security, support and integration.

d) Ensuring optimum security

With Microsoft ending all support for Windows CE, there's a good chance security was high in your mind when turning to your migration project. Moving to Android will improve security substantially in itself. However, as your development partner, we will take responsibility for ensuring protocols to prevent unauthorised access to your systems; also, using centralised data management, we will ensure that nobody can access your business data –even if devices are stolen.



e) Designing the user experience (UX)

Never underestimate the importance of UX in app development. Employees who find an app's functionality intuitive and a pleasure to use will be happier and more productive. For this reason, as mentioned above, we strongly advise against simply translating green screen applications onto Android; instead, we encourage you to take seriously the need to streamline and optimise user experience.

We can guide and advise you in this process so that your new app is easy to use and requires minimum training and education.



Following these steps, a specification will formally document the scope of the project in terms of software design and functionality.

It's important to note that this isn't set in stone; as we build your application we will see opportunities for improvements and discover new requirements from feedback sessions. We will work with you to make sure that your final product is exactly suited to your business.

STEP 3:

BUILDING YOUR APP

a) Design
Using the software requirements specification (SRS), software engineers will map out the architecture of your app in a technical document.

This is a critical step. The document communicates the logical design of the system and ensures everyone involved in the project is on the same page during the build.

A considered technical document helps to lower costs and promotes a reliable product.

b) Building your software
During the previous design stage, the technical document is broken down into individual modules. Now a project manager will oversee a team of developers to start building the modules in a logical order. This is traditionally the longest phase of the project.

Nuffield Technologies offers a unique product to significantly speed up this phase of development and reduce costs, while ensuring optimum performance for your software. CoreXam is our modular framework for building applications.

CoreXam consists of pre-built modules of code that can be deployed to your project quickly and efficiently, and adapted and tailored to your unique needs. It is a much quicker way to move your project forward than writing code from scratch, and the code is proven in real-world scenarios.

CoreXam has been used to build major logistics applications for Android and can use a shared code base between Android, IOS and Windows. It integrates directly with device hardware to enable features such as barcode scanners and RFID readers, and currently supports Zebra devices. Also, as CoreXam is based on Microsoft Xamarin, we can sometimes reuse significant portions of code from existing Windows CE applications, which will reduce development time and therefore cost.

During the development phase we will regularly ask for feedback from you and the end users of the system. Getting something into the users' hands as soon as possible helps to discover which features are really important for helping them to do their jobs - maybe we can speed up their work by moving a button, or perhaps there's a feature we thought was essential that is never used in practice. By working closely with the users, we ensure that the software is entirely fit for purpose.

c) Testing

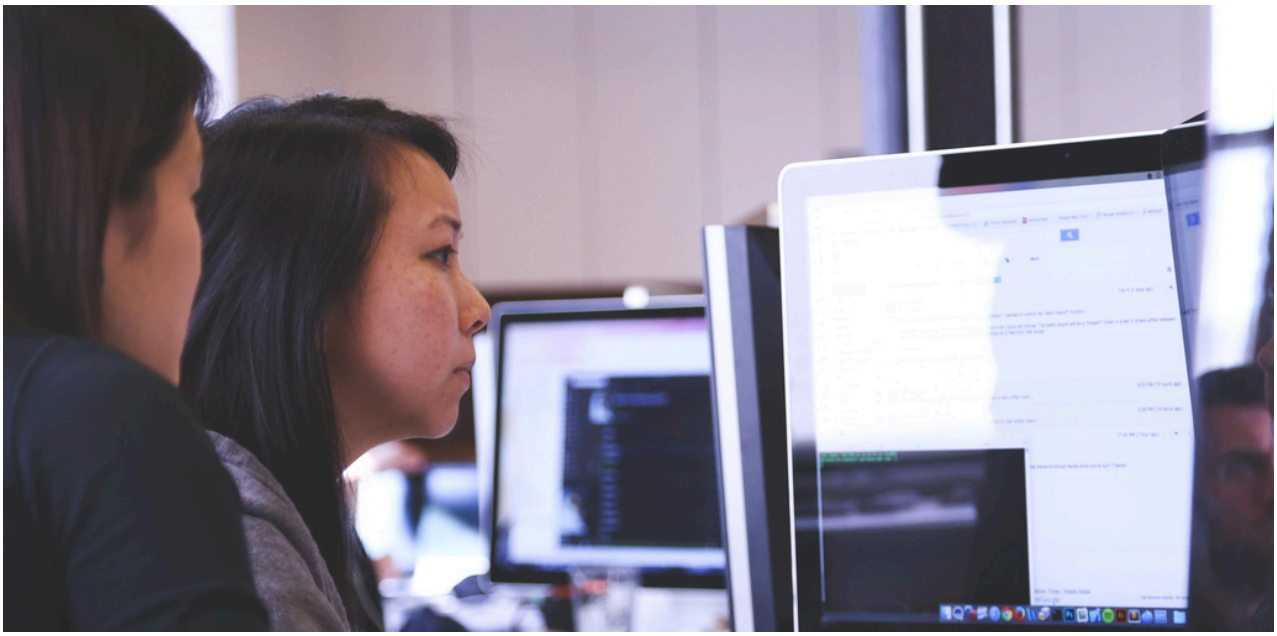
Throughout the development process, our team performs a wide range of tests and checks to ensure we deliver high-performing software to you.

During the build, our development team peer reviews their code with a senior developer. This ensures code is maintainable, so any future developer can get to grips with it quickly. Automated tests are written to check each part of the system works as intended.

Following the build, our dedicated quality assurance engineers put your software through a rigorous testing process.

- Manual testing: The software is checked by hand to ensure everything works as planned and your users get the best experience.
- Integration testing: We'll check your software works perfectly with your new device and integrates with third-party software.
- Performance: Software speed tests and 'stress testing' help to scrutinise any performance issues.
- Security: Can we find any way to circumvent the security measures that are put in place? We actively test to see whether there are any vulnerabilities in the system.

We then provide a separate testing environment for you, so you can independently check your software, log bugs and offer feedback.



d) Deployment

Once all tests are complete and the app is performing optimally, the project manager will green light your project and deploy your software.

e) Support and maintenance

Good software is well-maintained software. Over time, you may find that you want to add new features to the system. Also, although we rigorously test everything we produce, no software is bug-free. Therefore, to keep your system running as smoothly as possible, we will regularly test your software and deploy periodic updates and security patches.

This maintenance will form part of our service to you, to ensure your software stays efficient and improves over time.



This is Nuffield Technologies' tried-and-tested method for upgrading your applications from Windows CE to Android. It has proven successful for many clients, and our proprietary CoreXam product has helped cut costs and project timescales.

Use this guide as a reference point when consulting on your upgrade with us, or as a best-practice walkthrough when working with any other developer.

Want to talk more? Email us on info@nuffieldtechnologies.com, call 01202 665 885 or visit our website to find out more.

ABOUT NUFFIELD TECHNOLOGIES

Nuffield Technologies specialise in mobile computing and data capture for enterprise and public sector organisations.

Our end-to-end services cover mobile device procurement, development and security. We can help your business with:

- Procuring Enterprise and Rugged mobile hardware
- Developing mobile, web and desktop applications
- Implementing data capture solutions
- Deploying Android technology in security critical environments
- Service, repair and support

We keep businesses on the go with flexible mobile solutions that are perfectly tailored to your environment.



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