

Open Source Creates Opportunities for European Businesses

Europe's mobile application technology is becoming increasingly sophisticated. NeoSenTec, a small firm from Asturias, Spain, has developed an augmented reality and geopositioning app for the visually impaired. Users of the app, called Lazzus, can simply point their smartphone in any direction to be told what lies ahead, from pedestrian crossings to key landmarks.

The creation of Lazzus was enabled by Android's open source architecture, a publicly available platform with a library of code that anyone can use, and change, to run their applications. "Android has saved us a lot of extra work," says NeoSenTec Chief Executive Officer Pedro Javier. "And it has enabled a small team to create something which is benefiting thousands of people."

For small businesses like NeoSenTec, a key advantage is that the Android system is free. Without third-party licensing fees, developers and device manufacturers can invest more capital into product development. Importantly, they are able to offer those products at lower cost by passing the savings to the consumer.

In 2015, the average Android phone cost €175, less than a third of the average price of smartphones based on closed operating systems. Android smartphones can now be bought for as little as €45.

In addition to contributing to the "democratisation" of the web, freely available source code serves to boost competition among app developers by removing the main barrier to entry. There are now more than one million Android apps competing for users' attention on 24,000

distinct Android devices, including smartphones, TVs and wearables. The operating system powers more than two billion active users.

Android was the brainchild of US computer engineer Andy Rubin. It was founded in 2003 and acquired by Google two years later. In 2007, the company teamed with mobile phone operators to form the Open Handset Alliance. This group set out to provide an operating system that any manufacturer or developer could build on, based on a single source code. The key is that the system can be freely adapted to suit brand needs, so that a Samsung phone can be made to feel different from an LG device, even though the underlying technology is compatible.

Amsterdam-based smartphone maker Fairphone is one example of an innovative company whose product is derived from the Android platform, but which gives consumers the freedom to choose both an alternative operating system and apps. The company aims to reduce the social and environmental impact associated with smartphone manufacturing and to improve longevity by introducing the first modular phone, designed to allow repairs and updates without changing the actual phone. The device comes out-of-the-box with the Android OS system, but customers are free to opt for Fairphone's own open source operating system, which comes without any Google apps.

The creation and adoption of phone applications is having a substantial effect on Europe's economy. Aided by open source architecture, the app ecosystem is among the catalysts for growth as the continent undergoes a sweeping digital transformation. Though scarcely a decade old, the industry is booming. A study sponsored

by the European Commission found that developers took in €17.5 billion in revenue in 2013 and predicts that figure will rise to €63 billion by 2018.

App development has also been a vital source of European job creation. Approximately 1.2 million people work in roles created thanks to Android apps, which account for 73 percent of the region's app economy.



"If there's going to be a healthy ecosystem of device manufacturers, they are going to want to be unique and have their own character; open source enables that. You can use Android for any purpose you want and you don't need to put any Google apps on it."

Hiroshi Lockheimer, Senior Vice President, Platforms and Ecosystems, Google

As sophisticated apps allow us to shift more of our lives onto mobile devices – shopping, paying bills, checking our health, making reservations, playing games and so on – the mobile economy will also grow. Groupe Speciale Mobile Association (GSMA), a UK-based cellphone operator trade group, estimates the global mobile economy generated 4.4 percent of GDP in 2016, or €2.7 trillion. This is forecast to increase to €3.5 trillion by 2020.

In the shorter term, mobile entrepreneurs will seek to benefit from the growth of smartphone subscribers in Europe, which the GSMA projects will reach 75 percent penetration by 2020, climbing nearly 10 percent over 2016 figures. Access to open source platforms ensures a level playing field among all companies seeking to take advantage of this growth.