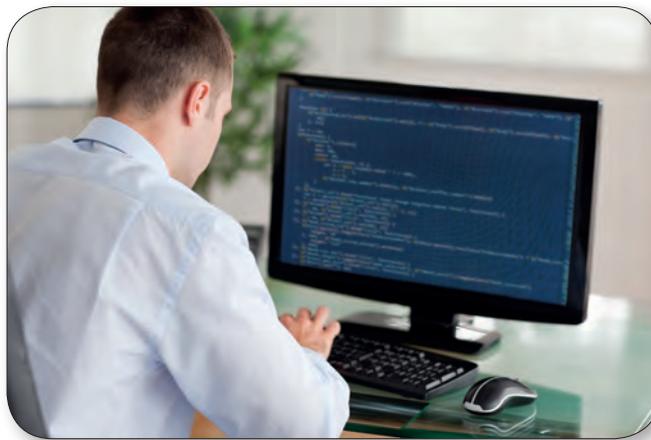


# Getting the right Linux distribution for your embedded application

By Janez Ugovsek, Densitron

*This article looks at how selecting the most appropriate distributions and pre-configured embedded systems have become critical success factors in speeding up new product development and time to market.*



■ Nowadays in digital world, manufacturing and other industries are becoming more complex and increasingly automated. This is being driven by the ever-growing demands of B2B customers looking to achieve maximum output at minimum costs through the optimization of overall production efficiencies and streamlining of processes. One area of enhancement that has seen significant activity in recent years is that of Human Machine Interface (HMI). This platform of communication and information exchange between electromechanical processes and the operator is undergoing considerable evolution, with the introduction of feature-rich graphical displays, monitors and touch screens, already becoming increasingly popular in industrial applications. Whether this is part of a trend towards establishing The Industrial Internet of Things or simply to deliver more effective and user-friendly operator capabilities, the role of the HMI is now more important than ever.

■ This is a trend supported by the findings of a recent report published by Global Industry Analysts, Inc, which forecasts that the global value of the HMI solutions market will exceed \$5 billion by 2020 (Human Machine Interface (HMI) solutions: A Global Strategic Business Report – June 2015 (Global Industry Analysts, Inc)).

While innovation, new product development and delivering what the customer wants in terms of an enhanced Graphical User Interface (GUI) is the lifeblood of future success, so too is the time to market and the speed at which these latest solutions turn from concept into reality. In such a fast-moving society, reducing development time and speeding up time to market will help achieve that all-important product differentiator and maintain competitive advantage. One area of the solutions development cycle that has the potential to reduce time is in selecting the most appropriate Linux distribution that is best suited to the display and graphics technology and their application. While the very nature of these open-source Linux-based distributions make for easier configuration and customization, choosing the right one from the vast selection of distributions available, even for the most discerning software engineers, can be a challenge. Make the wrong selection, and additional development required to configure the distribution with your chosen GUI and it will not only cost time, it will also cost financially. Get it right however, and you will end up saving yourself a lot of time and effort, and enable you to deliver the finished solution a lot quicker to market. When it comes to choosing the right Linux distribution for your chosen GUI, there is rarely a perfect, ready-made solution. However, by working in

close partnership with a specialist technology provider, significant advantages can be gained through tapping in to their own expertise and understanding of which distributions, tools and peripherals provide the best fit in terms of your end-user requirements. In the case of Densitron, our software engineers have already developed fully optimized embedded boards that are pre-loaded with the latest QT cross platform software and pre-configured with the most appropriate distributions. This further streamlines development and customization requirements and accelerates integration by offering an almost instant plug and play solution.

In terms of the GUI, there are a number of Linux distributions that have been identified as being particularly suited to systems integration. Take for example Ubuntu based on the stable, multi-purpose and trusted Debian distribution. Ubuntu has become one of the most popular and best-known distributions. Not only is it well designed and easy to use for NAS and web-servers, it has also advanced the use of Linux as a desktop operating system more than any other distribution. Ubuntu comes as a managed package, with full hardware integration, and ongoing support through the availability of a repository of applications, software and pre-compiled packages for download, all enabling

quick and simple configuration. Adding to its flexibility, there are multiple variations of the distribution, including Xubuntu, Lubuntu, Ubuntu-server and Mythbuntu. Yocto is another distribution that is particularly suited for video and graphics drivers. In the case of Yocto, the package provides the tools and processes to make your own distributions, whereby the distribution administrator can make their own repositories of software. While Yocto requires a greater depth of knowledge and expertise in terms of development and customization, it is well suited for more deeply embedded solutions where for example multi-media drivers are more important than ease of use.

With any software development project, there will never be a miracle one-size-fits-all solution and when time is no object, then selecting a distribution with a familiar architecture will certainly work. However, when time is a critical factor in product delivery, then a fully optimized embedded board, pre-loaded with

the latest drivers, tools, cross-platform QT software and distributions ready for almost instant plug and play customization, will reduce time to market significantly. With software engineering and new product development being such a dynamic, fast-moving area, keeping up with the latest changes, enhancements and innovations is essential to ensure your solutions not only meet the demands of today, but also allow for future requirements. It's important to be open and willing to try, test and explore new opportunities. You only have to consider the potential that the independent Android platform could possibly offer in terms of its GUI. And while Android has been so successful in the mobile consumer environment, although it doesn't have the interface drivers for suitable for industrial applications now, who knows where this might take us in the future? So, while knowledge and expertise of existing software solutions is vital, so too is forward thinking vision where research and testing can explore and deliver future-proof solutions. ■