From "maker" PC to industrial computer

Can the Raspberry Pi, known as a hobbyist PC and widely used as an experimental platform, really score points with its cheap image compared to high-quality standard industrial PCs?

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Raspberry Pi starter kit product photo (Source: Kontron)

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With an Raspberry Pi starter kit, Kontron is laying the cornerstone for industrial and commercial use of the Raspberry Pi platform in companies and organizations. The requirements in industrial use in terms of performance, reliability, and long-term availability are many times higher than those of university labs or hobby rooms. According to the experience of Kontron Electronics (formerly Exceet Electronics from Ebbs in Austria and now part of the Kontron and S&T), the rise of the Raspberry Pi is indeed unstoppable.

This has less to do with the fact that it is technologically unique, but rather with the fact that it is well known and proven among professional newcomers. In this, it is comparable to Microsoft Office or Adobe products: Inexpensive entry-level products are by their very nature popular in schools and universities for teaching purposes. Later, when pursuing a career, this experience makes it expedient for companies from a training perspective.

Thus, they reluctantly settle for the unfamiliar commercial software. This is also the experience Kontron Electronics has had for about five years: designs supplied by customers are increasingly based on Raspberry Pi prototypes. Customer side engineers and developers have been trained on this platform, which gets them results on lowcost platforms such as Raspberry Pi, Arduino, or Beagle Board quickly, with Raspberry Pi accounting for the lion's share. Kontron Electronics itself is not entirely innocent in this development, as Raspberry Pi is often used for bachelor's and master's theses supported by the company.

Customer side users and developers demand Raspberry

Kontron Electronics has many years of experience in selecting the right embedded platform for customer requirements and bringing an existing design draft to series production. This often means that complete designs based on Raspberry Pi needed to be developed from scratch in terms of hardware and software in order to obtain an industrial processor and board platform for series production. The financial and time expenditure for customers was correspondingly high, the product's time-to-market – from first draft to a production-ready platform – correspondingly long.

For Kontron Electronics, this was reason enough to commit itself to establishing Raspberry Pi as an alternative – or rather as a supplement – to standard industrial platforms. Meanwhile, Kontron Electronics has completed the first commercial projects based on Raspberry Pi and can draw first conclusions. Counter to intuition, but not unexpected from a professional standpoint, the platform's low starting price doesn't translate to a low price in volume production for industrial use. It has been shown that for prototypes based on Raspberry Pi, converting them into an industrial product ready for series production requires consultation.

In some cases, the resulting industrial platform is no cheaper than a standardized embedded platform. Kontron Electronics can even point to applications in which, after the consulting phase, it became apparent an industrial standard product was more cost-effective for series production overall.

Price does not always speak in Raspberry's favour

Often, however, the price is not the only decisive argument: What is sometimes more important about Raspberry is the software's ease of use. The Linux-based Raspberry operating system Raspian OS is very easy to use. Software packages can be easily installed subsequently, which saves time. Embedded Linux, for example, is much more difficult to install and administer. Here, too, the reason for its simplicity lies in the fact that the Raspberry was originally only intended for use in research and education.

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