

FACT SHEET



Embedded Software Development: Industry Statistics

It may be amazing but only 2% of all micro-processors produced are destined for PCs; 98% reside in embedded products.

This means the vast majority of software is not in PCs but in the huge array of embedded devices that surround and impact our everyday lives, from mobile phones, MP3 players and automobiles, to domestic appliances and even toys.

However, it's no longer about having the best silicon. Product manufacturers are constantly battling to extend the lifetime of their products, by updating their features, while also working on the next generation product. With new product introductions as frequent as every six months, the challenge is to use the same silicon and

The software embedded in the chip is key to achieving a competitive advantage

(Gartner Dataquest, May 2005)

increase the features and capability of the product through application software.

Customers are demanding bigger, more robust systems with more features, functions and capabilities. And they want them quicker and cheaper. They also have the misconception that the more features that are software driven, the cheaper they are.

In recent years the amount and complexity of the software working on embedded devices - or 'device software' - has grown and continues to grow, exponentially. Device software needs to be a positive differentiator for a product, but the costs and complexity are putting a huge strain on OEMs, who have shrinking development budgets and tighter windows of opportunity.

The result is, embedded software now represents one of the biggest costs and risks to product

introduction. The cost of not developing good software can be enormous. Gartner research shows software development slips are the leading cause of missed market windows and feature deficiencies. Many manufacturers don't know how much they are spending on software development, let alone have it under control.

The average device now has one million lines of code, a figure which is doubling every two years. A modern mobile phone can have upwards of 5 million lines of C/C++ code.

Hardware is now the commodity element of an embedded system. Software is the value add; the differentiator, and

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(EMF2002)

with it carries the highest cost, risk and reason for lateness to market or even failure to launch. Companies are being forced to step outside their core competencies to develop more intelligent and connected embedded software.

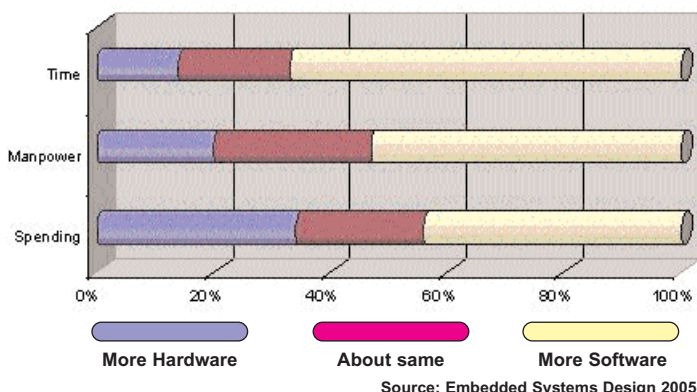
With the increased complexity comes an increase in defects. A recent USA survey estimated that to correct each code error costs on average:

- \$40 at the coding stage;
- \$180-\$450 during unit and functional tests;
- \$2000 at the production stage;
- \$25,000 at the post release stage.

For every hardware engineer, most companies now have two, three, or more software engineers. A recent (2005) survey by Embedded Systems Programming magazine found that two thirds of development teams spend more time developing software than creating hardware. The majority of development teams has more soft-

ware engineers than hardware and spends more time and money on software development than hardware.

For the software-dominated teams, 90% of their time is spent on software development. For the (20%) hardware-dominated teams, 50% of their time is spent on software development. Hence software appears to govern the overall project schedule.



According to market watcher VDC; embedded code is growing at a 26% compound average growth rate (CAGR) yet, at only 8% a year, the rate of growth of device software developers is failing to keep pace with the growth of device software. In other words, a worldwide developer shortage is fast approaching.

Software is the key to cost-effective products but in-house development is too slow, costly and complex. Embedded engineers need to focus on developing differentiating application software and can only do this by licensing as much of the software below the application layer as possible.

We're spending too much time reinventing the wheel; why develop enabling code such as device drivers and protocol stacks, which do nothing to differentiate a product, when such functions have already been developed and deployed by others?

Here are some statistics from leading industry analysts:

- 54% of device software designs are late. The average overrun is four months
- 24% of projects are cancelled due to unrecoverable slips in schedules.
- 33% fail to meet performance expectations.
- 68% of R&D budget is software development.
- 66% come in over budget.
- 34% of total production cost of a device is software.

Proven Software Solutions can source such proven software on your behalf, saving cost, risk and development time.

Proven Software Solutions estimates that in Europe alone there are around 5 Billion lines of enabling code, that could be prepared for reuse.

Software that you have in-house can and should be ported to new products and platforms. Proven Software Solutions offers a software auditing and productising service to enable you to do just that.

In addition, proprietary embedded software that has been Audited and Productised by Proven Software Solutions may then be Brokered by Proven Software Solutions for reuse by Third Parties. Each Licence sold by Proven Software Solutions generates revenue for the software Owner. After as little as ten licences, the Owner could recoup all of their R&D costs expended in developing the software.

Software reuse in the embedded industry holds the potential to help developers address the mounting pressure and complexity of product development. Proven Software Solutions has created the framework to enable software reuse to reach that potential.

Contact Proven Software Solutions today to find out how you could benefit from our services.

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