

## Electronic devices and 'Embedded technologies'

### **The market**

As with many markets, when one peers 'below-the-surface', one observes a fragmented mosaic of *supplier/consumer* relationships with several layers of complexity.

### **Consumers**

At the far end of the food-chain are the *consumers* or users of electronic systems or devices. These may fall anywhere between the two poles:-

- private individuals,
  - eg. a young person wishing to acquire a mobile phone
- major corporations
  - eg. a large airport looking to acquire and integrate a new air-traffic control system.

In both instances, the primary users do not wish to focus on the internal complexity of the products they have acquired. Rather they do wish to master the interface provided for their use. This *masking of complexity* is one important factor common to the relationships that exist in this market.

### **Primary Suppliers**

Further up the food-chain are the varying layers of *suppliers*. The creators of electronic solutions or products are referred to as:

- OEM/ODM's (Original Equipment/Device Manufacturers)
- System integrators.

These *suppliers* are masters of the various technologies; it is their ability to deliver timely and relatively simple-to-use solutions to the *consumers* that enable them to compete effectively.

*OEM's/ODM* and system integrators are increasingly relying on commercially available hardware and software combinations in the design and deployment of their own product solutions. These combinations are referred to as commercial-of-the-shelf (COTS) components and are obtained from *Secondary Suppliers*.

## **Secondary Suppliers**

The COTS components or elements that these players provide may be classified as :-

1. The processing engine which ranges from relatively basic CISC based microprocessors and supporting chipsets, to more complex RISC based processors and multi-core architectures, with support for a variety of interconnection technologies.

Increasingly suppliers are proposing optional solutions in the form of programmable logic devices eg. FPGA's and digital signal processors DSP's.

2. The hardware development tools. One of the most challenging steps for project managers is in obtaining a stable hardware platform. A variety of conception, design and debug/board-bring-up tools & probes are available to help meet this challenge, depending upon processor engine options.
3. The software development platform combines software tools and interconnected hardware as part of an integrated development environment (IDE). The objective is to help accelerate software application development times by providing access to a rich set of tools that function on a commercially stable platform that closely resembles the end-product.

Engineering staff often describe the development process in terms of a 'V-cycle'. It is helpful to understand how these iterative stages map onto real-world practices.

*(See: Market → electronic devices at [www.market-potential.com](http://www.market-potential.com))*

In almost all cases where commercial hardware is deployed, commercially available embedded operating systems (OS), networking stacks and management suites are provided.

In recent years there has been a trend toward the use of Linux as the basic operating system due to perceived low-cost of ownership LCO, it's code excellence and broad industry support. In spite of predications to the contrary, this has not been at the demise of existing proprietary operating systems.

### ***Innovation amongst suppliers***

Many factors combine to drive changes in a marketplace. However in the electronic devices domain, constant innovation is the principal factor enabling suppliers to maintain their prices and thus profitability. Leaders in the sector have tried to position their company (and maintain profits) by developing 'corporate partnership programs' with their clients, with mixed results. The simple fact remains that as long as consumers have options, the pressure to drive *supplier* prices downwards is strong. Thus suppliers will continue to differentiate their products and services, more than all else by means of innovation.

### ***Trends amongst buyers***

It has been understood for some time that competition could be maintained by demanding that suppliers provide *open-standard interfaces* to their products. As suppliers wanted to reduce costs, standards were perceived as being one major contributing factor in this battle. Thus the industry is not lacking in *defacto* and committee defined standards.

However, to ensure cost-controls and overall risk-reduction *buyers* (OEM/ODM's and system integrators) are looking more to leading *secondary suppliers* to help them implement best-business practices and not just best development practices.

At **Market Potential** we provide the industry with assistance in identifying, evaluating and implementing these best-business practices. We do this by providing highly detailed:-

- ✓ Market insight
- ✓ Competitive intelligence