PROMISE :
INCREASING PRODUCT VALUE

European Project integrates PLM and Smart Products for more Benefits

Which of the following would you like for your company?

- More of the same - frequent minor product modifications, customers switching to 'me-too' products from competitors in low-cost countries, customers buying services from third parties?
- Or innovative new products so far ahead of competitors' products that they don't really have any competition? And customers asking for additional services to add even more value to the products? And the products telling you how to make things even better?

The latter may look like a dream, but it's the way PROMISE, a €14m EC project is headed. Launched in 2004, it includes industry giants such as Bombardier, Caterpillar, Fiat, Infineon and SAP.

The premise behind PROMISE is simple - information from a smart product in the field (the "Voice of the Product") can be used to support the product in its Middle-Of-Life (MOL) and End-Of-Life (EOL). And it can be used in the preparation of the Beginning-of-Life (BOL) of the next generation of the product.

The idea makes so much sense that you may wonder why everyone isn't already doing it. There are several reasons. For example, it's only recently that two important foundation technologies - Product Lifecycle Management (PLM) and Smart Products – have reached the necessary level of maturity.

Technologies of PROMISE

The main technologies of PROMISE are Product Embedded Information Devices (PEID), Middleware, Product Data Knowledge Management, and applications for Decision Support. Very briefly, the PEIDs sense their environment and the way the product is being used, convert their findings to data, and send this via middleware to a PDKM application, where it is available for use by other applications such as Decision Support Systems.

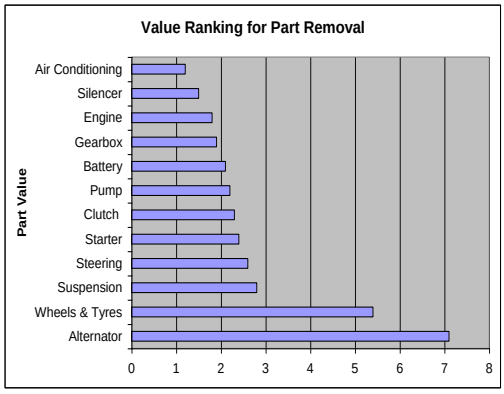
The PEID is a data storage device which identifies a unique product (or sub assembly or component) and which can be read or written to. In some cases, only a simple device is needed. In others, more sophisticated devices are connected to sensors or actuators on the product. The objective is to capture data about lifecycle events or conditions, such as temperature or pressure, which can impact product performance. Technologies such as barcode and RFID transponders can be used. Data can be stored in different locations depending on the product and the intended use of the data from the PEID.

Middleware enables management and communication of data between devices and the database. This ISC layer (Inter System Communication) is a key PROMISE element that allows information to flow between different phases of the product lifecycle and allows the information feedback loops to be closed. It enables controlled and secure access to relevant information for participants throughout the product value chain. A Product Data Knowledge Management application is needed to integrate and manage information from all phases of the product lifecycle. This is more than a basic Product Data Management application. It can locate information for a given unique item via the ISC layer and make this information available to users and Decision Support applications. The business benefits of PROMISE come from the value-adding use of the data from the PEIDs by knowledge workers and applications. Applications will support many tasks, some, for example, providing decision support for predictive maintenance, diagnosis and analysis of use patterns. Some will use up-to-date and accurate lifecycle information to influence residual life decisions about products. Others will support the development of innovative new products.

More details of PROMISE technology are described in the PROMISE White Paper (see below).

Applications of PROMISE

Let's start with an example from the EOL. A car is taken to the breaker's yard. How can the breaker know which parts are worth removing for reuse and refurbishment, which need special treatment to meet environmental regulations, which should go to specialist reprocessors, which should be shredded? How can the manufacturer show it is meeting the EOL targets of the European Union? The answer is PROMISE. This is how it works. A vehicle that has reached its end of life is taken to the breaker's yard. The breaker gets basic information - such as the type of vehicle, its ID, and the assembly date - from a top-level PEID. The breaker also gets mission profile information and statistics about the use of the vehicle and its components, e.g., kilometres driven and environmental conditions such as humidity, external temperature, temperature in the engine area, etc. Based on this information, and the maintenance history - in particular for replacements - parts and assemblies worth reusing or remanufacturing are identified and removed. Some may be immediately reusable as "used spare parts", others may need some remanufacturing or repair. Glass, bumpers, foam and cloth are removed for recycling. Some parts, such as catalysors containing precious metals, are removed for further treatment. Statistics on volumes of material treated are updated for environmental records.



Because PROMISE "closes the product information loops", there are many beneficiaries in this example. The breaker minimises

disassembly time and effort, yet increases earnings from sales of parts. Regulators get precise information about compliance with the End Of Life Vehicle Directive (EU/2000/53). Detailed data about the BOM, materials, and disassembly operations can be fed back to Marketing, Engineering and Manufacturing, providing important information about the vehicle at its end-of-life, helping to identify, for example, over-designed and/or under-used components and subsystems.

The next example is from the MOL. Your company needs to get a truck with a high-value load to Minsk by tomorrow. You have a choice of two options. You could choose a truck equipped with PROMISE technology including preventive maintenance. Its PEIDs are continually monitoring parts and performance, and sending data back to the Fleet Management Centre where they are automatically analysed. If any potential problems are seen, the truck driver can be guided to the nearest garage to fix the problem before the truck breaks down. Your other choice is a truck that isn't equipped with PROMISE technology. Last month, it suddenly broke down at 3am between Kiev and Moscow. The load was stolen. The truck was towed 50 km and was out of use for 4 days. The owner of the load got angry and you lost their business. It's your choice.

Many other applications of PROMISE, in BOL, MOL and EOL, in the automotive, railway, heavy vehicle, electronics and white goods sectors, are described in the PROMISE White Paper (see below).

Benefits of PROMISE

PROMISE increases business value and product revenues by enabling the development and support of innovative products that are clearly differentiated from those of competitors, and allow you to define and create new market segments. PROMISE-based products add value for your customers, yet continue to increase your revenues and earnings. They provide a clear competitive advantage over basic products and services proposed by companies in lower-cost countries. They maintain the loyalty of existing customers who see the benefits of the company's products and services relative to those of competitors. Their added value stimulates customers of competitors to switch away from the competitor product to the PROMISE-based product.

PROMISE helps reduce product costs and operating costs. Information received from products in the field about their use helps eliminate unnecessary features and costs, and reduce product cost. With more experience and better information available about real product needs, manufacturing and support costs can also be reduced. For example, the length and cost of service visits can be reduced due to knowledge of the exact status of the product

Other benefits of PROMISE – in areas such as compliance, customer relationship and marketing – are described in the PROMISE White Paper.

PROMISE Benefits in BOL, MOL and EOL

Beginning of Life	Middle of Life	End of Life
• develop products fast, on time • develop innovative, high-value products clearly differentiated from those of competitors • understand better how products will behave over the lifecycle • get more input from downstream players in early stages of product life • prevent future product failures through knowledge of past failures • learn from field experience of existing products • develop new versions and generations of products that correspond ever closer to customer needs and desires	• provide superb product support • reduce response time to customer complaints • close information loops • provide version control and history. Manage configurations • schedule maintenance based on actual product use. Provide up-to-date information on line • reduce spares needs by better knowledge of spares use • give mobile service workers access to all required data • analyse and resolve issues that arise during the lifecycle • monitor product progress during the lifecycle • upgrade products in the field • minimise product recalls • replace components before they fail - not after	• manage product retirement • disassemble the product quickly and at low cost • recycle and dispose of products most effectively • recycle and dispose of products in an environmentally-sensitive manner • provide accurate information about the value of parts and materials for reuse/recycling decisions at the end of life • comply with EOL regulations • eliminate product data effectively at the end of a product's life

Getting started – and staying ahead - with PROMISE

To find out more about PROMISE technology, applications, and benefits – and to find out how PROMISE can create competitive advantage for your company - download the PROMISE White Paper from the PROMISE website.
http://www.promise-plm.com/