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Improving bid success in increasingly competitive environments

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1 Introduction

The lifeblood of all business is orders.

Companies that bid competitively for business face special challenges. The issue is not simply to make better products at lower costs, but to deliver clearly differentiated bids, on time - while controlling bid costs to remain competitive.

To differentiate in increasingly competitive markets requires business and process change. This challenges industry to deliver more 'engineered to order' solutions. In turn, this drives businesses to extend their use of technology to capitalize on product, process, and knowledge assets and to develop more sophisticated approaches to stakeholder interaction. This is particularly true for companies involved in delivering customized and variant product solutions such as those used in electrical component technology and industrial OEMs. Examples of these would be specialist antenna suppliers to telecoms industry, and materials packaging machinery manufacturers.

This paper examines the bid process, and the use of product information to decrease bid costs and improve win rates.

1.1 Increasing the "bid-to-order" ratio

In engineer to order businesses, winning a greater proportion of bids while containing costs dramatically improves profit. However, improving the bid success rate, particularly in times of slowdown requires changes in product portfolio and process.

> *"... If he bids high enough to make a profit he cannot get the job, and if he bids low enough to get the job, he will not make a profit." Park and Chapin*

This "silver bullet" is as ever, elusive. Nevertheless, the consistent message from customers is that price is fundamental to winning.

But product price isn't everything. Process improvement and differentiation can also dramatically increase profit.

To optimize profit companies must avoid the inefficient "price wars" of volume suppliers, and look for new ways of differentiating offers in fixed, and often challenging, bid response timescales. Superior product features are not the only route to success. Delivery, packaging, service, and integration into the customers' products and services can all distinguish offers from the competition.

2 Business drivers

Although sales people may suggest otherwise, the key drivers for bid-led companies are how their customers decide between alternative bids. In reality, the clients' decision is based on the systematic assessment of benefits, risk, and cost.

There is therefore increased demand to reduce price and deliver extended value over the competition, on time. It is no surprise, given the current economic situation, that these factors are seen as the most important factors in winning bids.

Changing requirements from customers have shown that the mass production methodology of the past needs to adapt to enable greater flexibility and responsiveness.

This has been highlighted by recent oversupply in the telecoms industry. Suppliers were surprised by the speed with which significant growth turned into rapid decline in the industry. Now, uptake of new technologies such as UMTS is highly uncertain. Rapid change in demand necessitates production involving more "mass customized manufacture".

Changing customer expectations and the competitive environment have necessitated more custom solutions at commodity prices. For most manufacturers, it has led to management teams reconsidering their role in the value chains within which they operate.

Furthermore, increased competition from developing economies is forcing some companies to re-evaluate their offerings to shift the bid focus from price to value add, and indeed to capitalize on these developing economies to drive the manufacturing cost base down.

The need for suppliers to be more responsive has led to a new approach in customer-supplier relationships often forcing greater distribution of design and manufacture resources. Customers now expect to be supplied at a variety of global locations.

Business trends now necessitate renewed focus on core strengths, using subcontractors to add value as an integral part of the 'new engineering' value chain philosophy. Trends in globalization have increased bid complexities, and yet responses must be developed and delivered in shorter timeframes.

"Without doubt the most critical factor of the bid is price" – Program manager at a medium sized component manufacturer.

Increased demands on companies for reduced prices, shortened timescales and improved quality drives through to their supply chain forcing design and inventory risk onto the subcontractor. Involvement of more parties in the final product impacts the bid response process. Additional input and speculative work from third parties may well be needed before the bid is complete.

Management teams know that any response to these increasing demands requires continuous improvement in products. Consequentially, the design flow and manufacturing process will have to change.

Product lifecycle management (PLM) solutions offer suppliers the opportunity to achieve a step change in their responses to these issues. They provide feasible and profitable mechanisms for product and process improvements, which will be discussed in subsequent sections of this paper.

3 Best bidder wins – industry in change

3.1 The bid process

Sustained interaction with multiple contacts in client operations

Once engagement has been made with a potential customer the bid needs to focus on:

- Responsiveness to the customer
- Establishing clear offer differentiation through a quality solution that is tailored to meet specific functional and performance requirements
- Delivering a quality proposal at a profitable and competitive price, on time

There is an opportunity to improve the trade-off between these objectives. This is discussed in more detail in the following sections.

3.2 Collaboration

Among the most significant changes in recent times is the dramatic escalation in the dispersed nature of sales/bid/design/manufacturing networks.

The model where a team from engineering, sales, and operations was co-located is now outmoded. Although this created a responsive bid, due to the close physical proximity and therefore interaction of those involved, this group now has insufficient visibility into the subcontract supply chain.

There are a number of problems that drive companies to become more disparate which makes this option less viable:

"…we are looking to extend our manufacturing and assembly operations to take advantage of emerging economies and to be closer to our customers" – Engineering manager at a large electrical component manufacturer.

- It's increasingly difficult to excel in all business areas.
- There is a need to make better use of distributed, expensive specialist human resource
- Changing global demand may shift the need for final assembly and integration closer to new markets
- Moving design and manufacturing to lower cost economies drives down costs

This isn't to say that bringing people together isn't a good thing. Indeed one of the foundations of product and process improvement is close collaboration between all stakeholders. It is imperative to find new mechanisms to create a more collaborative organization without co-location.

Not only is the network of players involved in the bid more complex, but also the nature of the interaction that customers expect with the bid team, and the team that will fulfill the bid. It is vital to support this interaction, because closer collaboration helps to ensure the final offering is fit for purpose and best matches initial requirements. This makes the process of bidding even more complicated.

In addition, customers often insist on electronic data interface (EDI) links to subcontractors before engagement to provide their operations with greater agility and responsiveness. EDI provides them with greater levels of inter-business transparency to accommodate their own moves to a more virtual enterprise.

3.3 Changing product and process philosophy

To improve product and bid strategies companies have to change pre-order engineering processes. They have to face the challenges of consolidating information and reuse it effectively to improve bid offers and to meet response deadlines. The results must be easier to communicate to prospect customers.

Asset re-use is one of the principal factors that improves both responsiveness and bottom line profitability. It encapsulates physical assets, such as existing engineered parts, as well as tacit and explicit knowledge. When companies re-use assets they reduce the potential risk premium that is applied to many offers, but, perhaps more critically, enhance return on design and engineering effort over extended periods. Risk premium can best be described as the price uplift that is applied to bids to cover costs that are not clear at bid stage.

"…we have a bid application that gets updated every three months from data entered by our manufacturing organization. This isn't efficient, and it's certainly a process that we'd like to change" – Engineering manager of a large electromechanical component manufacturer.

Re-use starts at the bid stage, and depends on availability of accurate, up-to-date, useable information. Relevant data have to be consolidated, maintained, and made available to the sales/bid organization for use and re-use in future bids.

In practice, many companies have accumulated numerous disparate systems to bid, design, and

manufacture products. Sales process complexity is compounded by use of bidding tools that are not part of the design and manufacture process. Often these tools are based on spreadsheet models that use data which is re-input manually from design and procurement systems' data.

The challenge facing organizations is how to consolidate and integrate these disparate systems to provide on-demand corporate differentiators.

3.4 Achieving improvements in bidding processes

Most management teams would plan on the assumption that continuous improvement programs will deliver improvements in underlying processes such as purchasing, assembly, distribution, and service.

In this paper the following bid issues have been identified in the typical bidding process:

- Complex network of players
- The need for more intimate communication with customer
- Market demand for improved responsiveness
- Complexity of global-supply bids to global customers
- Need vs. capability to present differentiators
- Value and re-use of assets
- Time pressure on bid preparation
- Reduction in the cost of the bid process
- The critical importance of bidding at the lowest price consistent with acceptable margins

The last one is the central issue for most companies. In practice other factors directly impact this. For example, consider the usual response to any element of uncertainty - if the quantity is uncertain, add a bit; if the delivery date is uncertain for a component, set a later date just in case; if the cost is uncertain, increase the price to cover the worst case scenario. If the uncertainty extends across supply tiers, additions will occur cumulatively, and result in an uncompetitive bid. Worse still, when the reasons for the high price are investigated, it will be very hard to detect, because it is made up of a myriad of small increments.

There is also a valid argument that companies can accept higher costs within the bidding process if their win rate or overall business profit margins increase as a result of this investment. For example, if a company can increase its win rate from one in four to one in three, and bidding represents ten percent of overall operating costs, the gross margin amortized over the business increases by 3.3%.

There are two principal areas which deliver bidding cost reductions:

1) Reducing bid uplift by managing uncertainty in roughly estimated, unforeseen, or variable costs. This is generally referred to as reducing the risk cost or risk factor. This can be improved by:

- Improving knowledge re-use from engineering and manufacturing
- Improving configuration and workflow management
- Early bill of materials (BOM) costing
- In-time bid delivery with minimum resources
- Early validation of costs of bought out parts
- Validation and communication of offer with the customer and field resource

2) Reducing overall business costs by improving product and process by:

- Reducing project bid and bid process costs
- Reducing re-design and re-tooling costs
- Reducing engineering and manufacturing costs
- Reducing test and prototype costs
- Improving collaboration with subcontractors
- Using more standard, bought out parts

The basic premise for reducing costs in these areas is improved use and re-use of information, human resources, partners, process, parts, and manufacturing.

Appropriate use of information technology plays a fundamental role in this area – in particular product lifecycle management solutions (PLM).

Capitalizing on existing assets

"…we'd like to move the cost of bidding out of the organization by enabling our sales people to better deliver the bid without involving engineering – this is our next area for improvement" - Engineering manager for a major electromechanical component manufacturer.

The bid process often consumes much resource, not least in time from scarce and expensive areas such as design and engineering.

Creating and validating a solution is one of the processes that can re-use knowledge from past projects. The question is whether the information can be found and reused effectively to deliver improved bids within fixed bid response timescales.

People tend to take the easiest route to solutions when they're under pressure, and efficiency and profitability suffer as a result.

The solution is to turn this tacit engineering knowledge into easily accessible explicit rules and procedures.

Re-use of knowledge inherent in people, processes and products delivered in the past, is one of the key attributes of a successful PLM implementation.

Information from past projects exists in many formats including tacit knowledge, drawings, models,

specifications, data sheets, test results, supplier details, manufacturing information, documents, service information, and spreadsheets. It may encompass many areas of the business from specification through product design, test, manufacturing, service, and obsolescence

Historically, companies have used project logs and file system structures to manage bids and the documentation behind them. Categorization and ease of retrieving information are crucial to the effective re-use of past knowledge.

One well-known supplier of interconnect and networking component technology acknowledges that they may have up to three million documents managed by filing system. Finding existing product information was perceived to be more costly than re-development. Re-design added cost to new bid offerings and wasted valuable design resource. By employing product lifecycle management tools from IBM, product and document management and retrieval are now pretty much instantaneous. Searching for information by free text or component attribute allows them to be flexible in their research. The benefits of this speak for themselves by providing rapid and accurate delivery of information required for new proposals directly to the bid teams. This immediately impacts profitability and sales responsiveness.

To leverage existing designs relies on the ability of others to take advantage of the initial developments. This often necessitates a change in design philosophy towards more modular product definition. Implementing PLM solutions to address these issues generally requires revaluation of the attributes and processes that are important to the business. This can prove enlightening, and often results in re-prioritization of processes and the information that's generated.

The benefits of re-use

Re-use of stored product information refers to the ability to 'make from' or 'design from'. This delivers benefits in a number of principal areas:

- New project risk factor is reduced due to re-use of proven elements – and quality increases.
- Reduction in costs involved in re-design – and therefore engineering manufacturing test etc - extending returns from past investments
- Decreasing bid and new product introduction cycles
- Opportunity to create non-specialist bid tools for the sales team.

The concept of 'make from' applies to manufacturers over many industries. Compare the needs of two sample companies, a mobile phone antenna manufacturer, and a production line equipment manufacturer. In some respects, the bid processes within these companies are dramatically different in nature. The antenna manufacturer would be bidding for volume supply of a product that at face value has an assembly structure of less than 20 parts, many of which are made in-house. The production line manufacturer, on the other hand, has low volume

products consisting of hundreds if not thousands of parts with a high reliance on subcontractor supply. Both companies can, however, capitalize on 'make from' principles.

The antenna supplier may respond to a bid which requires a change in the plastic material used in the housing. In order to capitalize on the 'make from' capabilities within competent PLM systems, the bid would be based on copying or creating a variant of an existing part with all necessary procedures managed automatically or within a pre-defined workflow. All documentation and data sheets related to the product would be updated to ensure that they were consistent with the new material specifications. Manufacturing would be alerted so that they could validate re-use of existing tooling, subcontractors and work processes, and workflows instantiated to update sales on new costs. The bid process for this company would be quicker, lower cost, and to a higher quality than one without PLM.

"…most of our offers are of variants or configurations of previously developed products." – Manager of a large US switching systems manufacturer.

The production line equipment manufacturer, for example a packaging machinery supplier, would more likely 'make from' constituent assemblies or past similar machines. It's better to start with a 50% advantage than no advantage at all. Development of a new production line to accommodate a new package shape and fill material would re-use much of an existing product's structure and assemblies. As with the component supplier, benefits of re-use come in many guises, but it's imperative that the process and administration of all relevant bid and product information be managed automatically to improve quality and reduce re-engineering costs. Again, the result is a significant reduction in re-design and manufacturing overhead, and ultimately higher quality deliverables.

Delivering useful information earlier in the bid process.

Availability of product information within current PLM applications enables bidders to integrate directly with applications internal and external to the bidding and engineering process. One such example would be ERP. Developing rapid and early bills of materials (BOM) costing delivers information re-use, cost savings, and improves bid quality. As organizations develop their products within PLM infrastructures, the 'as designed' BOM for products and assemblies become intrinsic deliverables of the PLM system.

Benefits also exist downstream. If the bid is successful, the BOM's can be passed directly to engineering or manufacturing, further improving business efficiency.

The right information at the right time to the right people

Poor bid management can reduce quality and increase bottom line costs.

Configuration and workflow management are basic constituents of current leading PLM solutions where benefits are immediate and highly visible.

Configuration management covers the following topics:

- Requirements management
- Change management
- Release management
- Data management
- Records management
- Document control
- Library management

"…organizations that act in corrective action mode spend a significant proportion of their resources rescuing quality and schedule." - The Institute of Configuration Management

Clearly it's important to find the right information. Just as important are the processes of workflow, modification, approval, and release control. Improving the bidding process means not only re-using existing information, but also capitalizing on business and innovation workflows. This also provides confidence that the bid offer is right.

At bid stage, as in product development, poor configuration management costs time, quality, money - and by inference - business. In practice, poor configuration management can also stifle innovation.

Integration of configuration management and workflow solutions is not limited to the bid process, but is integral to the product development process as a whole. It provides traceability and integrity, which are the basics of improving quality and validity within bid process and in the design through obsolescence lifecycle.

The customers' definition of quality is the only one that counts

Delivering value to all stakeholders.

In the past, it was quicker to have a generalist engineer in-house to do a task than take the time to explain the problem to an external expert and wait for their response. The advent of the internet and modern networks has changed this. It is now possible to create virtual teams from disparate organizations to deliver best resources for each job in reduced timescales.

"The importance of becoming easy to do business with is captured by the principles that product price is only part of the customer cost." – Michael Hammer

Bid teams need to ensure that responses are validated throughout the bid process by both internal and external participants. This helps to ensure that errors are captured at an early stage, thus reducing the chance of delivering inappropriate bids. Misunderstandings can be avoided, which minimizes costly re-design or late manufacturing changes.

Collaborative bid data environment

Often, bids require resource external to the bidder, primarily sub-contractors and the customer. The ability to share securely information developed for the bid in a managed environment provides benefit to both customer and subcontractors, while reducing business and communication overheads.

A major concern is protection of intellectual property – this can be achieved by making available a subset of information to selected external organizations at specific times. Often this capability is integrated within the workflow of the bid, and PLM systems such as SMARTEAM manage this process as part of their optional offerings. It provides customers with the ability to assess and validate offerings at the earliest possible opportunity. Subcontractors can bid for sub-elements of the bid, and field sales can update specifications following a customer visit.

Portal access to PLM systems generally exists as secure and restricted views on the primary knowledge base. It is often bi-directional, allowing for customers, field based employees and sub-contractors to extract, and potentially input information as necessary.

One mid-sized component manufacturer provides a portal facility to their subcontractor which enables them to respond to the subcontract bids within 24 hours. As the manufacturers' bids are processed, they deliver a subset of the offering to relevant subcontractors on a secure portal. The subcontractors then assess the information, and respond within a day on elements they wish to provide. Once an assessment of the subcontract bids has been made, the winning offering is integrated into the bid process as a whole. By automating the process of bid collaboration, communication costs are reduced, timescales are shortened, errors are avoided, and both customer and subcontractors see improved service from the manufacturer. The same organization allows sales personnel to access product and bid information directly from the SMARTEAM repository. Too much information is often worse than no information at all, so they have set up different templates for access and view, which provide only the required subset of functionality to field personnel. As an extension of this template capability, they have extended their system to generate automatically data sheets for

developed products, based on defined criteria within their PLM database. These data sheets are automatically updated and delivered to their on-line product catalog, ensuring that product sales information is always current.

4 Delivering differentiation and improved responsiveness

Successful bids involve more than the ability to deliver the lowest cost offering.

Differentiating the offer in terms of deliverables and service adds unique value. It makes the bid more competitive without sacrificing profit

Differentiation can exist in many guises, encompassing product, process, and relationship. Responsiveness focuses on the ability to react efficiently to customer demands and changes in the bid process. Improvements in both areas should be gained without sacrificing quality, customer satisfaction, or profit.

> *"We'd like to move to a more customized solutions-led business to allow us to offer differentiation in more than just price" – Manager of a global electrical components manufacturer*

PLM systems enable businesses to deliver improved bids in time by reducing the overheads involved in managing processes, resources, and product information. This encourages more focus on bid response quality and improved product innovation. Improving the product increases the chance of success.

Organizations can respond faster to changing demands without sacrificing quality by automating process within PLM systems. This delivers better information and process management, throughout the bid chain. PLM provides an infrastructure which encourages all parties to participate in the bid process, providing more useful, timely bid information to the customer. This in-turn increases the value proposition of the offer.

> *"A competitive advantage exists when the firm is able to deliver the same benefits as competitors but at a lower cost (cost advantage), or deliver benefits that exceed those of competing products (differentiation advantage). Thus, a competitive advantage enables the firm to create superior value for its customers and superior profits for itself" Michael Porter*

Reuse within PLM systems provides greater flexibility to adapt bid deliverables when changes are required during the bid process. Changes can be accommodated efficiently while maintaining offer quality. This results in improved customer satisfaction without impacting profit.

5 Conclusion

Business cannot improve without change.

Competitive price and differentiation, the prerequisites of successful bids, drives change in the products and processes that are employed in bid-led businesses.

By coordinated application of leading product lifecycle management solutions from trusted suppliers such as IBM PLM, businesses can address these challenges head-on to deliver:

- Greater responsiveness and flexibility
- More appropriate proposals
- More competitive and profitable bids
- Differentiated products and services
- Quality improvement in both products and process
- Higher levels of business efficiency and performance