

Tackling Tough Performance Problems: Part I

Spring's newsletter is the first of two parts on tackling performance problems. Part one lays the foundation for part two which comes out in the next issue. This issue highlights some of the performance problems that arise in businesses and the impact that business and management bottlenecks have on IT. Strategies for working on these problems are reviewed. Part two covers technical performance concerns such as the theory of constraints, performance testing strategies, performance tooling and specific performance tuning considerations for WebSphere products.



Management should make business decision based on sound evidence versus anecdotal information to increase profitability. Evidence suggests companies spend too much money on strategic planning and too little on execution. A combination of consulting services rip-offs, lack of understanding of IT value by executives and the difficulties companies have in judging IT service quality has led to offshoring of IT services – when you can't see a difference in quality, customers choose the lowest price. The caveat is that companies outsourcing IT need to retain the architectural knowledge and testing capacity to verify value. **A new study indicates customers want solution expertise and industrial knowledge early in the buying process while vendors serve up slick people with social and communication skills.** Finally, another study found the conditions for complex project success are: a management and technical star on the team, strong project sponsorship and open communication pattern with low degree of formal reporting.

Let's Define What Quality/Performance Is



There is no such thing as **quality** in itself but rather there are quality attributes – performance, security, availability, reliability, etc. In the auto industry Volvo focuses on safety, BMW concentrates on performance and Toyota primarily thrives on reliability. This is because there are typically trade-offs in various quality attributes. Tight security and high performance usually are at odds – overhead and wait times increase with higher security. **Bottlenecks** primarily impact performance. A bottleneck as defined in operations management is a resource that cannot meet demand. It should be noted that demand represents immediate results and therefore is neither inventory nor any other result that might delay delivery. Also, bad

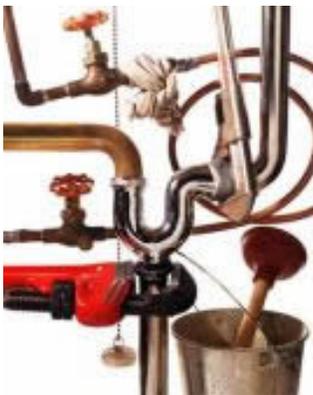
decisions that cause demand not to be met effectively induces bottlenecks in a system. Lastly, what represents demand varies with the context including assembly lines that produce product, people waiting for teller service at a bank or response time for an IT system.

It Starts at the Top and Ends in IT - One Thing Leads to Another

All activities at any given point-in-time are linked to a previous chain of events. For example, assume an application has a performance issue in production. Code is found to be the culprit. This could have occurred because there was insufficient performance testing during the software engineering cycles. In turn, the process was weak because software engineering didn't have the budget or the talent to put it in place. The PMO (a.k.a., Project Management Office) did not understand enough about the software process to budget properly for it. The portfolio project management team that includes at least some senior management, spent a large portion of IT's budgets on strategic planning instead of execution through projects. Management spent the money on strategic planning because they thought that's where the greatest ROI could be achieved. Management thought this because of the training they received 20 years ago and lectures they recently attended given by high powered (priced) strategy consultants. The strategy consultants based their presentation not on solid wide encompassing research, but anecdotal evidence based on a few engagements.



Business Performance Bottlenecks



There tends to be a ripple effect of business related bottlenecks onto IT. The assumption surrounding business performance is:

“The primary goal of an organization is to obtain, satisfy and keep customers that help the company make money”

One pattern of poor performance we see impacting IT is:

1. **Competitive disadvantages through poor knowledge renewal practices** – Fast paced industries such as communications and financial services are particularly at risk. Many corporations do not use enough solid evidence based research produced by the best academic schools and industry information companies. Instead, they use anecdotal information such as other customer success stories which has not been subject to rigorous industry scrutiny. Bottlenecks then arise out of...
2. **Poor management decisions** – Something for nothing syndrome, the price was good but the cost was high and other dysfunctional thinking patterns. For very profitable companies sometimes the prices and cost are both very high relative to competitive alternatives. For example, abdication of project responsibility to offshore IT companies as well as insufficient quality checks on vendor's IT staffs and security capabilities. While a vendor that is CMM rated indicates its ability to document activities, it does not necessarily demonstrate it's know how in designing software. Decision bottlenecks occur when...
3. **Over budgeting for strategic planning and under budgeting for execution** – Evidence suggests that there is little correlation between profitability and high investment in strategic planning. That doesn't mean strategic planning is not important but rather that taking budget from execution to feed strategy formulation may not be the best allocation of scarce resources. The result, implementing strategy on “slim pickings”. Tight budgets are not always bad,

entrepreneurial thinking typically comes to the forefront during these times. Rather, the point is the misallocation of funds for other less relevant activity. The strategy consulting companies don't like to hear this one. A bottleneck in execution budgets leads to...

4. **IT being viewed as a cost center instead of a profit center where strategic competitive advantages are created** - IT invests in custom application development because they see it as a competitive advantage. Custom applications are a differentiator because (hopefully) no competitor has access to it unless it is licensed or obtained illegally. However, it is often managed as though it is a cost center – no due diligence on who is doing the work or at the other end of the spectrum outsourcing based on cost. This cost focus in turn leads to...
5. **Management outsourcing activity that has forgotten that architectural knowledge and testing capacity are prerequisites to confirmation of value** - The architectural knowledge that maps to the required application solution needs to be kept in-house. This means knowledge workers on the customer's side that hold vendors accountable. Popular press indicates the fall of technology subject matter experts and the rise of individuals that "understand the business". This is only a half-truth. Currently, the most spectacular failures come from people who have generalized knowledge but little specifics about the business or expertise in the technology that is critical to the success of the project. The best people are likely the ones that can "walk the line" (kudos to Johnny Cash) between deep expertise in the business and technology – not an easy role (line) to fill (walk). The intermediate building activity can be outsourced provided there is a sufficient pool of vendor with the skill that exceeds in-house capacity and value. To confirm that requirements and the architecture have been achieved, verification of value must be under the control of the customer.

IT Consulting Services Quality Rip-offs - Just Offshore it Instead

If management is not going to or does not have the capacity or time to judge the consultants that they are hiring, **then hire the lowest cost people/resources**. That's how markets work, when there is no differentiation, then people base their decision on price. Essentially, this is what has happened to the North American consulting industry. There were too many rip-offs and not enough results. There are a few good consulting companies but there are a lot of companies that coast on slick marketing which works in the short run to accumulate victims. Many consulting company's brand value deflated when international competition, the internet



and other technologies made it viable to do certain projects anywhere, anytime. With this strategy, the client pays \$50 hour instead of the \$100-\$150 for a typical North American based consulting company worker. Since internal IT centers are billing business units at between \$80 and \$120 per hour, they can't effectively compete either. On the other hand, there are many other risks that should be included in any decision to make, buy or outsource. For example, the political stability of the region, intellectual property rights enforcement and how secure will the algorithms and data be from theft. Here are some examples we have seen of bad practices that have been more the norm than the exception.

1. **A vendor's call center tech support worker instantly becomes an onsite project manager for a critical project** – The customer's management did not understand project management and neither did the tech support worker. Additionally, the person had very limited knowledge of the technology. Customer's cost - \$225/hr. The project failed.

2. **An international consulting company engages a consultant trained in chemical engineering with no prior experience in object oriented design on multi-year multi-million dollar banking project.** Typically, this role requires a decade of experience. The customer doesn't check the qualifications of team members and pays the \$200/hr for a year. The consulting company knows the client is sloppy and takes advantage of it. The project failed but not until \$22 million was spent.
3. **One manager's trick to make outsourcing and himself look good: outsource cheap via a formal budget, hires top talent via slush fund to fix it up.** Upper management sees the low budget on the delivered project, but they are not aware of the top talent that was hired to fix up the poor software delivered by the original vendor. The initial vendor gets the credit for a job well done, we got the cash.
4. **HOV project, bill big dollars as if the whole team is talented, hire big talent for only 10% of the team** – The idea for the title “HOV project” came from driving in the US where people go to the store and buy a dummy so they can sit in their car and drive as a High Occupancy Vehicle in a high occupancy lane. The dummy helps driver's with no “live” passengers avoid getting a ticket because HOV lanes typically require 2 or more people in the car. Vendor's use this tactic by putting in a team with 1 or 2 good people for every 10 or so. Some are real dummies. The vendor looses on the 2 good people but makes up for it on T&M with the other dummies that are billed at “rip-off” rates. It is amazing how well this worked and likely is still working.

Why it's so Hard to Judge IT Services



Ok, it seems obvious that you would be able to figure out what quality you're getting and determine if the cost is justified. However, service quality is difficult to judge especially when you cannot tell what you are getting until after it is delivered, as is often the case in IT. Product and services quality evaluation can be split into three groups: easy to evaluate before purchase, easy to evaluate after purchase and hard to evaluate even after consumption. Products such as furniture, clothing and to a lesser degree complex purchases such as a house are easier to evaluate before a purchase. On the other hand, some services fall at the other end of the spectrum because they are difficult to judge even after consumption. For example, a haircut once completed, can be evaluated with reasonable accuracy. Conversely, it is difficult for all but the experts to evaluate medical surgery even after it is completed (consumed).

Ok, so how do people evaluate IT quality

There is strong academic research evidence that people use direct, indirect or a combination of the two methods to make judgements.

The **direct method** in its extreme can be highly analytic and time consuming. The typical process for product selection is to score product attributes and compare the results. This approach should be used when there is a lot at stake, as in multi-million dollar projects or in instances where the choice is not obvious. Analytic type people tend to gravitate to this method regardless of the cost/benefit of the approach. Difficulty in judging occurs when there is asymmetric information – one party has more knowledge about the transactions than the other.



Extricating the information is often difficult and time consuming but not impossible and may be very beneficial if a lot is at stake.

The **indirect method** typically comprises judgement heuristics (a.k.a., indicators of quality) such as brand value or price of the product or service. Price as an indicator of quality is often used when the amount of information is low as is typically the case with IT services. In the case of services, vendor personnel and customer support quality actually ranks very high in brand valuation.

Vendor Performance Disconnect – What Vendors Keep Getting Wrong

Customers want contacts early in the buying process that are subject matter experts and have a good understanding of the industry. This according to a major study released in Harvard Business Reviews April 2006 edition. However, often that is not what the vendor either provides or hires as shown in Figure 1. You likely thought it was just you that was experiencing this problem - apparently not. Figure 1 indicates that communication skill and other attributes that are at the bottom of customers expectations are at the top of many vendors' hiring list. Is this a total disconnect?



Complex Project Success – The Conditions for High Performance



Almost all major enterprise IT projects can be classified as complex with risk profiles similar to some R&D projects. For these types of projects Rizova (MIT Sloan, spring 2006) concluded that 4 elements are critical to complex project success and high degrees of innovation:

1. **Management star(s)** – the management star is well connected inside and outside the organization so that critical resources can be mobilized in a timely fashion.
2. **Technical star(s)** – you would think that technical knowledge in itself was critical and sufficient. Contrary to popular believe, technical star's major contribution over other team members is the **facilitation of communication**. People with deep expertise are able to translate technical language with greater ease. The result, dramatic reductions in misunderstandings in the form of reduced duplication of work effort across the entire project including design, construction and testing of deliverables.
3. **Strong and sustained project sponsorship** – top management is involved and willing to make fast decisions to move the project forward.
4. **Open communication patterns and low degree of formal reporting** – successful projects has fast and fluid networks of communication that reduce delays in progress.

Why Application Performance Bottlenecks Exists - More Than Ever

Figure 2 shows a typical customer's activity for creating business applications in a time sequence. This is a simplified temporal depiction; there are typically several iterations during these activities. The key is to identify gaps and problems with customers' activities. In this case, they are denoted as hot spots and are highlighted in red. The hot spots tend to develop at key delivery points where clear metrics are available. One occurs during testing of the development deliveries to quality control; the second and more critical occurs when an application is put into production and users begin to exercise it. Prior to these two crucial points, real tangible results that would indicate success or failure do not have to be produced – they are mostly intermediate artefacts such as paper, plans and memos.



To demonstrate progress, functionality is often delivered without the requisite characteristics that were determined through product/service definitions in the business case. Characteristics including scalability, performance and throughput are left to the end. Instead of addressing the high risks at the beginning, the client is convinced to lock-in costs further. The supplier is hoping that sunk cost will convince the client not to “pull the plug” on the project. Suppliers can be internal IT divisions or outsourcing vendors and are under intense pressure to make the deliverable work. It is often like putting the chocolate chips into the cookies after they have been baked.

Kmart looked over their shoulder and said, “Hey, if Wal-Mart can do it we can too”. Kmart went bankrupt.

Kmart made massive investments in IT. As I mentioned in previous articles that just copying **best practices** and not understanding the details of why it worked for a best of breed companies is likely a disaster about to happen. Turns out while Kmart spent a substantial portion of their money on technology, they had few people that could manage and understand it. Kmart did not spend the money hiring and/or training the people to use it effectively. There are many stories like this and we see customers fixated on technology solving a problem when it is the combination of people and technology. In fact, if you have to choose where your company's money is allocated, invest in your people first, technology second.



Customer Expectations Revealed

Vendors not only misunderstand what customers want from salespeople but often recruit for attributes that aren't customers' top priorities.

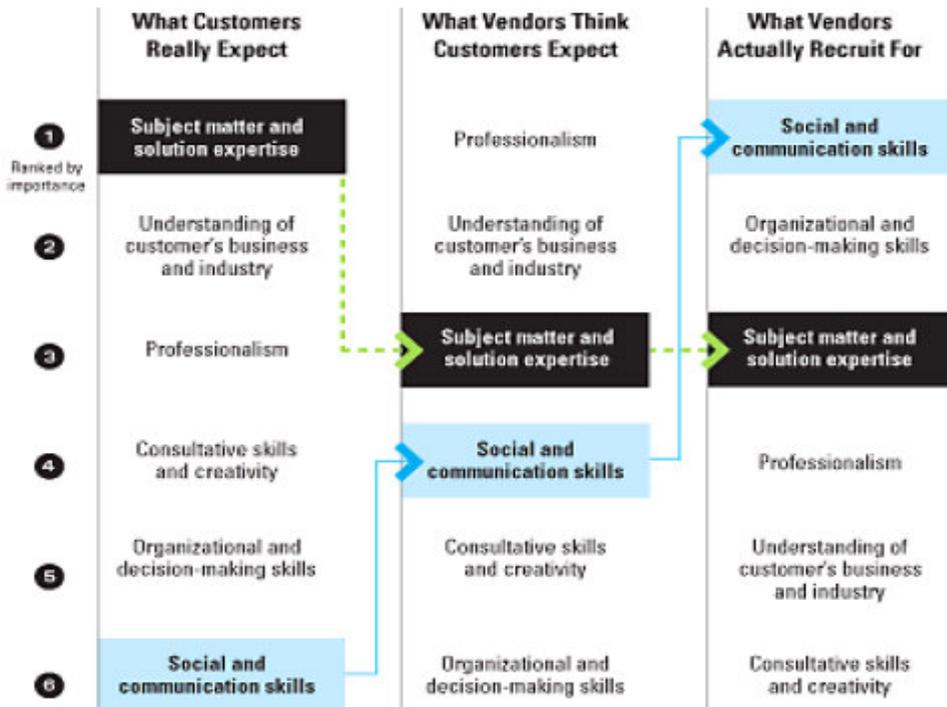


Figure 1 Customer Expectations Revealed (Harvard Business Review, April 2006)

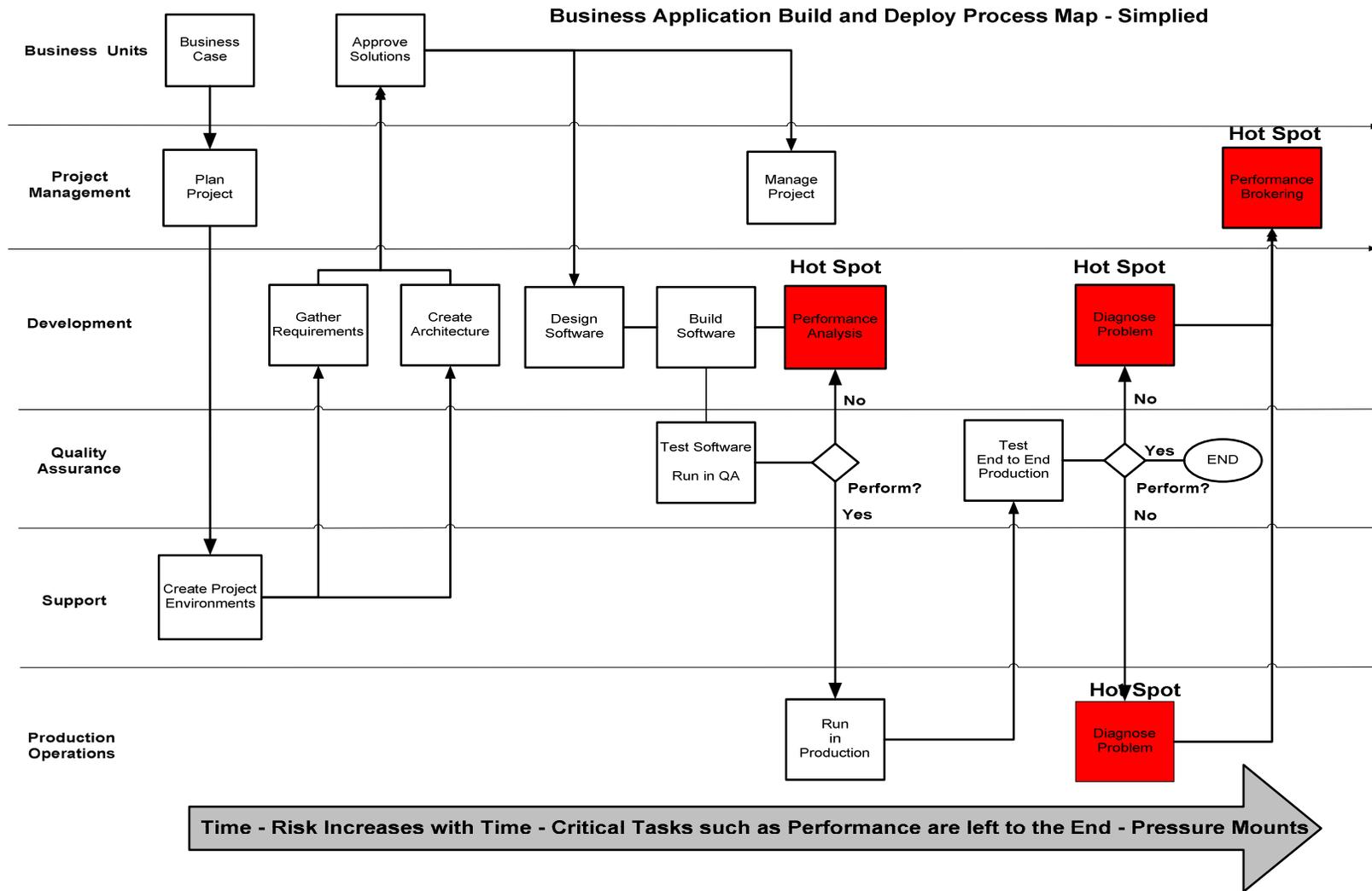


Figure 2 – Business Application Build and Deploy Process Map