Trend Wars

Service Management: An Interview with Mark Potts

My name is Dejan Milojicic. I am a research manager at Hewlett-Packard as well as an editorial board member of *IEEE Internet Computing* and *IEEE Distributed Systems Online*. This is another installment of the Trend Wars interview series. *DSO* will host the long version and a podcast of the interview, while *Internet Computing* will publish an excerpt from the interview.

Our topic this time around is service management, the dawn of a new software era. The time when applications ran on a small computer somewhere in the corner is long gone. Today we have services running around the whole Internet. They introduce a lot of opportunities but also a lot of problems in management.

Today I am interviewing Mark Potts, HP fellow and chief technologist of HP’s Business Technology Optimization, which is part of HP Software.

—Dejan Milojicic

Mark, can you tell us a little bit more about service management? Particularly with more and more technology focus on services, management becomes a dominant factor. How is your company—or our company, in this case—addressing management complexity? And what are the key areas you have been focusing on?

Thanks Dejan. And thanks for the opportunity to talk. I think it’s a relevant question today, certainly around service management. I think the first thing I would say is that service management is the right approach. As you’ve stated, complexity in IT is increasing dramatically, because IT is being applied to more and more business concerns.

Because by definition, we break down very complex problems in a modular fashion. And the right unit of modularity to ensure that we can then recompose things together to solve those broader problems is service.

So I think by definition, services are the right approach to be able to address that. But then there certainly are key areas that we need to focus on if we take that approach. I think they break down into three. The first one would be this: In service orientation, we should really think about the way we can integrate management technologies, or certainly management capabilities, in a service-oriented fashion, and integrate those so that we can again decompose that problem, but be able to reconstitute it for the broader issues that we face in IT today.

I think the second issue key to managing the complexity is that we expend a considerable amount of money, time, and effort in IT doing a lot of work around general activities that need to be done and coordinated. I think automation is a key requirement for us to address the complexity, our ability to be able to automate some of these tasks and orchestrate them appropriately.

The last one that I would mention is probably analytics. Traditionally in management, and certainly service management, we generate an awful lot of information, and that information is often raw data, in many cases specific to the infrastructure or elements being managed. When we talk about services, we have to be able to take that data and turn it into information that can be used by IT and more...
importantly by the business as knowledge and insight. It’s something that we’re spending a lot of time on at HP—with our management technologies, trying to automate activities but building analytics as well, and doing that all in a service-oriented fashion.

This was an excellent technology perspective. Now if we take the customer’s perspective: What do you think are the three key customer problems that service management needs to address in the near future? How do you see services evolving? And will they pose new requirements to management in terms of skill, trust, reliability, or maybe other characteristics?

That’s another excellent question. You described what I would call the nonfunctional requirements of IT service delivery. The customer problem, in many cases that we see, is that nonfunctional concerns around IT services are really addressed in the different areas that exist in IT.

So let me be clear and give you an example. If we think about strategy and planning in IT and demand management, we start to look at requirements around reliability and trust, with security and scale as well. And we tend to define those as requirements and try to manage those, and understand our ability to deliver on those, that process being managed in one group.

If you then move from planning to delivery, and you think about applications that are going to be developed for the customer, there’s often a separate group in application delivery and development that try to address those nonfunctional requirements through what they develop and deliver.

Finally, there’s another group in operations trying to manage those nonfunctional requirements on a day-to-day basis and operate, maintain, and deliver on those requirements. But we’ve done a very poor job of managing those requirements across the separate IT groups, and I see many customers trying to understand how they manage those nonfunctional requirements across those groups in IT consistently.

At HP, we’ve taken a life-cycle approach to services, where we can address nonfunctional requirements consistently across the silos in IT, from demand through to supply of those services. I think this is a critical area of concern to most customers today.

Of the three nonfunctional requirements that are certainly driving the customer today, the one that is consistent and always present is cost. A second is risk, because of some of the regulations and changes that have gone on around compliance, and its impact on business. And the last one, of course, is understanding the business value that is actually being delivered from the services that we give. So those seem to be the areas that customers are struggling with the most.

There are a number of technology enablers and differentiators. But there are also some temporary fashionable topics and technologies. Which ones do you think are enablers? And which are just temporary? If we list virtualization, service-oriented architecture, Web services, automation, grid and autonomic computing, which one would you point to as—?

I would probably point to two that are related: virtualization and service-oriented architecture. They share some of the common facets that are required to break down this complexity in IT that we talked about earlier. Virtualization is really a technology approach that abstracts away the physical nature of infrastructure, whether it be storage in terms of storage area networks, or network-attached storage. Storage in this sense is offered as a service where assets can be pooled.

That abstraction away from the physical allows us to make changes and adjust configurations without disrupting the consumers of that service. And that’s very important when we want to understand the relationships between infrastructure and applications and business processes, the separate concerns those services address, their dependencies, and how to address the disparate semantics they employ.
Organizations in IT are structured to manage those very differently. So understanding the right abstraction and the use of virtualization is a key enabler. It’s certainly not anything that is a panacea or a—it’s not going to solve the service management problems we face. But I think it’s certainly an important enabler.

Service-oriented architecture is the other technology that gives IT an opportunity to improve the value it delivers to business, although it’s actually an architecture, not a technology. I prefer just to talk about this as service orientation. I think then it’s applicable to virtualization of the infrastructure, the application, and the way that we compose those applications into business processes. So certainly service orientation is absolutely key, and an architecture that supports that. So SOA is important.

I think I mentioned automation earlier. That certainly is key, because it’s going to be the way that we really drive down the operational costs that exist in IT. And operation is the predominant allocation in IT budgets today. Grid and autonomic computing probably really are extensions of the technologies that you mentioned and discussed earlier.

**Is there any new way that software is developed beyond service-oriented architecture and Web services-based that can dramatically help improve productivity and service management? Either Web 2.0, software as a service, or something else?**

Yes. We’ve talked a lot for a long time in this space about manageable being built in, whether it is delivered in the platform, as we discussed, or whether it is really instrumentation or control points being built into the application as it’s developed. That’s certainly important, I think. But it’s not going to solve the problem that we face.

The two that you mentioned specifically—the ability to offer software as a service and even management as a service—I think that’s a trend that we’ll probably see more of. Certainly it’s been one in application management that we’ve seen where we synthetically test applications for availability and performance remotely to simulate the user experience. So I think that trend will continue.

In terms of what we want to do that’s going to really change the way that applications are developed, I think some of that can really be addressed in the methodology that we use. So we’ve things like agile and other methodologies, where we literally test the modules based on the requirements as we go through. I think being able to leverage that into operations, and being able to test against the functional and nonfunctional requirements on a continuous basis as the requirements change over the life cycle of a service, will help greatly. This means leveraging the investment and assets generated in the application delivery and QA in operations, and vice versa. If we can close that loop, that will bring great benefits to service delivery and management in IT.

This is something we have seen in the industry and are addressing aggressively at HP, certainly the linkage between application development and operations, the ability to use quality assurance and testing from what we do in QA, but leverage that continuously in production, to look at performance and availability, or just manage service delivery to the requirements defined by the business.

**What is the role of people and processes in deploying these new management technologies in the enterprise? How will management solutions from different vendors coexist? How can they cooperate? Where is the human in this automation control that we’ve been talking about?**

I think you’ve hit on probably the biggest issue. We tend in this industry—and I’m as guilty as most—to talk most about the technology. If we really are to solve some of the problems and complexity and break down some of the silos that exist in IT today, it is going to be through organizational change, process, and the people that are involved as much as a technological approach.
In many ways, the barriers to delivery, cost reduction, and improved performance and availability of services have been curtailed by the fact that many of those relationships in IT, between the groups that I mentioned, are cultural at best—not even informal.

And as we start to push toward formalizing those processes and the relationships between those groups, I think we stand a much better chance. But that is quite a daunting task in IT. I think the best adoption I’ve seen, or certainly the best way forward, has been ITIL [Information Technology Infrastructure Library], but that’s only one aspect of this that’s more operationally focused. Certainly the ITSM [Information Technology Service Management] approach in defining some of those processes and getting them adopted across those groups is a form of integration that doesn’t get addressed as often as it needs to. This is why HP has put so much effort and time in ITIL v3, to broaden its scope beyond just operations to strategy and planning and applications delivery. V3 offers us integration on the people and process side, which is critically important but on a broader IT agenda. It is as important, if not more, than the technology integration that we talked about.

From a technology integration and coexistence perspective, we’ve talked about this for a long time in the industry. And we’ve had many efforts, whether it’s standards, protocols, and so on, to understand the exchange and interoperability between management technologies. But there is only so much that protocol standards can do.

And as I mentioned earlier, the semantic mismatch between management technologies that are looking at different domains, information, applications, business processes, or infrastructures is very disparate. And integration becomes extremely difficult. So I think we have to do a much better job on the semantics of integration, beyond just protocol, to be able to support that. And also ensure that we are integrating based on true separation of concerns.

**Related to this question is the semantic gap in the way business people specify requirements, and the way IT configures and deploys these solutions. How will management systems overcome this semantic gap?**

This has been a huge issue for a long time. We’ve been looking at this for a long time at HP. And it’s become very obvious that this semantic gap has been a barrier to alignment for a long time. I think we’ve come at this problem in the wrong way. In many ways, what we’ve done is to take IT-speak and the semantics that we use in IT, that are well understood, and almost inflict them on the business.

At HP, rather than a design-to-order approach to IT services, we talk about taking a configuration-to-order approach.

So if you think about services offered by IT, rather than designing those every single time and engaging with the business, we would prefer to see a set of services that are well known, with the business requirements associated with them. So if I would like an application-hosting environment, the business should be able to specify requirements in terms they understand—the number of users, the likely transaction load, weekday and weekend availability—not the traditional IT language used in asking them to specify requirements.

And then we need to understand the models or the configurations that will help us deliver against those requirements. So it’s very goal oriented, or certainly more of a configuration approach than a design approach to IT services. I think that is a way we can start to have a much better dialogue, and one aspect of becoming better aligned with business, defining, standardizing, with variants, on the services offered by IT and consumed by the business, such that the dialogue is based on those services when we talk about the requirements you mentioned earlier—scale, security, etc., not lower-level technologies.

**Can you predict any future technology enablers that you see impacting service management? Are there any disruptive technologies that you could talk about, that can**
change the way we manage services and computer systems in general today? What are the
technology trends today?

I think there are a couple that are very interesting. At HP we’ve been doing, as I mentioned earlier,
quite a bit of work on the semantics side of things. Management integration is key. And certainly a
standards-based approach to management integration is one that we have been pushing for a long
time, with our efforts around WSDM [Web Services Distributed Management] and WS Management,
work in the DMTF [Distributed Management Task Force], and certainly the CMDBF [Configuration
Management Database Federation] effort now underway. But part of that integration is very difficult.
And we’ve mentioned this a few times. But the semantic integration, whether it be from IT to business
or between the different groups in IT, is critical to IT service management. We have been looking at
and leveraging technologies like OWL and RDF for this, and we have seen some real promise in the
value it can bring.

Analytics is the other aspect where we think there can be much better leverage from the information
we collect. You can see this in new offerings we have brought to the market, like Decision Centre,
where analytics are applied to model scenarios and optimize IT resource allocations to maximize the
business benefits and value delivered from IT.

Where do you see standards going in the management space? There seems to be a
prevalent consolidation in the standards. For example, the appearance of WS management,
SML. What other standards are still required to make better management products?

We’ve probably been quite laggard in the standards arena as an industry—certainly management
software. I think we have made great strides in the last year or two, with the work that IBM and HP
did around WSDM, and, of course, the reconciliation with Microsoft and others around WS
Management. So that’s certainly a step in the right direction.

We would, of course, like to see faster adoption. But I think progress has been made that is to the
good of the customers. The missing pieces in this, I certainly think, are being addressed somewhat
through SML.

But a model-based approach, which we talked about earlier for management vendors and platforms, is
critical for us to be able to expose and discover configuration models and the associated policy with
those, so that we can actually integrate and understand management capabilities without having to
have a priori knowledge. That’s going to be critical as we go forward. And again, that touches on the
idea of semantics as well and how RDF can play a role around those models.

And finally, I would like to solicit your advice to academia. What do you expect from
academia? Which are the hard research questions that you expect academics to explore in
the next decade? And what are the experiences you can offer to them?

Well, there are many things for academia to work on. Obviously you know well the relationship that
HP Labs, and therefore HP, has with academia, and how we collaborate and leverage the research that
goes on with the universities. We actually have an OpenView University that had programs that
collaborated with academia around the world.

I think there are certain parts of research that you just cannot achieve when you’re building
commercial software. We can certainly look out 12 to 18 months, and even two to three years. But
looking at things that are beyond that and doing true research is something that we need to engage
with academia on.

We definitely need help in some areas. We’ve done some work with the universities around things like
the business models that would be appropriate, and how to manage in new business models for IT
service delivery. We’ve developed technology and approaches like Tycoon and other projects through HP Labs that have been based on different business models to manage service delivery, costing, and chargeback.

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