

A bright idea

HP Labs research delivers advanced modeling tools for improving IT service contracts.



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Richard Taylor, HP Labs

Huge government outsourcing projects no longer are a novelty. Indeed, they’re growing ever more creative and complex as state and local agencies fashion partnerships designed to reduce IT costs and improve services.

A glance at the headlines shows jurisdictions contracting out data center operations, social services eligibility systems, even entire human resources and public welfare programs to private service providers. These initiatives relieve agencies from the demands of building and maintaining complex IT infrastructures, but they also increase contracting risk—both for government agencies and IT service providers.

“You don’t have to look very far to see massive amounts of public- and private-sector money being put into projects that never deliver the value they promise,” said Richard Taylor, part of an HP Labs research team in Bristol, UK, that uses sophisticated mathematical models and scenario planning to produce better IT services contracts.

The consequences of project failures can be severe for government officials who deal with intense public scrutiny when high-profile IT outsourcing initiatives falter. The situation isn’t any better for IT service providers, which can take a big financial hit because their revenue from these projects often is tied to meeting strict performance targets.

Taylor said project difficulties usually stem from poor understanding among the diverse stakeholders in large technology undertakings. Agency managers, operations staff, system engineers, policy-makers, budget experts and others may think they’re communicating their requirements—but often they are not.

“When push comes to shove and the system goes live, they find that none of them quite understood what the other was talking about,” Taylor said. His team developed a concept called Open Analytics to address the shortcomings of the contract design process.

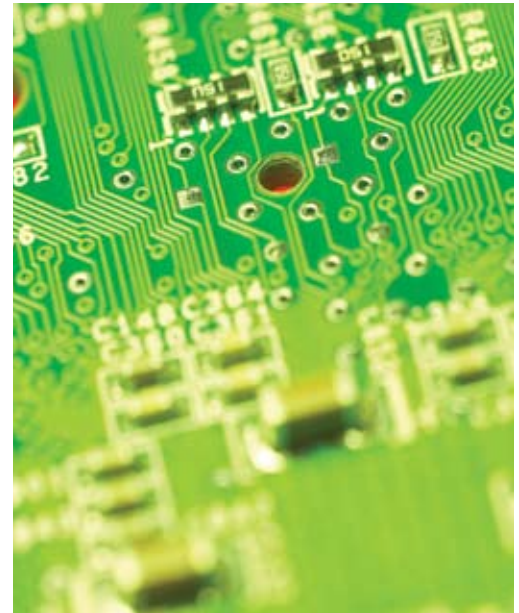
Open Analytics integrates input given by all stakeholders in a project and uses mathematical modeling techniques to create a clear picture of what the system will do and what the values and costs of those functions will be. These tools help agencies understand the relationships between system performance levels, system capacity, flexibility and cost. “Better still,” said Chris Tofts, who architected and led the development of the tools that enable much of this work, “we can establish a clear linkage between the value of the processes that are being supported by the information systems and the costs incurred with different solutions.”

Then, through a process known as Rapid Scenario Planning (RaSP), models are shared among stakeholders to solve design, implementation and management challenges—reducing the communication problems that can doom a project. With RaSP, stakeholders plan their needs into the larger system rather than focusing only on aspects of the project that affect their area.

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Powerful combination

Open Analytics remains a work in progress, but HP has used it to craft IT services



What are the benefits of Rapid Scenario Planning?

- Brings together key stakeholders (user groups, finance, operations, R&D)
- Develops analytic models that can be shared among stakeholder groups to enable joint exploration of design, implementation and management issues
- Refines design and specification details to enable global, not local optimization
- Identifies key bottlenecks, risk, cost and agility cusps
- Generates models that can be used for technical scenario planning to determine the impact of changes over the system’s lifetime

contracts for more than a dozen projects in the past several years.

The process identifies key bottlenecks, risks and costs. It also generates models that can be used to understand the impact of changes over the system's lifetime. For example, Open Analytics accurately predicts the requirements and costs of designing a solution that meets everyday processing demands and yet flexibly responds to spikes caused by seasonal deadlines.

The process also enables agencies to realistically project system capacity and performance demands based on real business requirements. In practical terms, this helps an agency determine if it really needs 99.99 percent availability for a particular business function or if 99.95 percent availability will satisfy the agency's requirements at a more appropriate cost—and it's surprising what the difference really is.

This information is vital for creating service-level agreements (SLAs) that form the heart of contracts between government agencies and IT service providers. Historically SLAs have been set somewhat arbitrarily, often because IT benefits such as customer satisfaction and service improvement are hard to quantify. Therefore, SLAs tend to focus on easily measurable factors such as system availability or capacity, regardless of their significance to the customer's real needs. This can prompt a vicious scenario that strains or destroys outsourcing relationships: Poorly designed SLAs lead to a service that doesn't deliver the value a customer wants; therefore, the customer tightens the SLAs even further, which drives up costs to little real effect.

Open Analytics lets HP work with government agencies to develop SLAs that reflect real-world requirements and deliver measurable business benefits.

"We're quite happy to perform this modeling activity through what we call rational negotiation of SLAs to develop a solution that is successful for customers and HP," said

Mike Yearworth, another HP Labs researcher involved in the development of Open Analytics. "There is a fine balancing act that's necessary here to make sure we don't overprovision and come up with an unprofitable solution, or underprovision and end up with a solution that doesn't deliver value to our customers."

Open solution

Open Analytics derives its name from the fact that the modeling process is exposed to everyone involved in a project, which is key to building confidence in the results.

"One of the issues you run up against when you're using mathematics is the fact that people don't necessarily understand it, so they don't necessarily trust what you've done," Tofts said. "You can't simply say, 'I've got the most fantastic model in the world that will predict everything. Trust me.'"

Instead, Open Analytics produces recommendations based on a better, more comprehensive understanding of customer requirements—and it clearly explains how HP arrived at those conclusions.

"We're presenting the customer with how HP is going to solve the problem, and why HP believes this is the appropriate route to a solution," said Yearworth. "We describe the availability and reliability of the infrastructure, and the service organization we'll put in place. We give customers the models so they can have third parties validate them."

A new approach

The IT industry has been slow to exploit the power of modeling to improve results, said Taylor. And the modeling techniques that do exist tend to focus on narrow aspects of system performance or reliability.



What does open analytics offer?

- Provides tools, technologies and processes that enable informed control of whole systems risk, cost and performability
- Helps decision-makers understand the impact of information systems investment and structure on business objectives
- Allows negotiation of rational and meaningful service-level agreements
- Enables planners to measure and manage service-level agreements
- Helps stakeholders track and control capabilities over the system lifetime
- Answers the inevitable question: "Is it just my information system, or does something else have to change at the same time?"
- Provides training and analytic capabilities that integrate with existing operations models and standards

“What we’ve done is different because we’ve used a highly intuitive approach,” he said. “We recognize that understanding reliability in isolation from performance, service structures and customer requirements isn’t terribly useful.”

Open Analytics allows HP to capture the human expectations and business requirements involved in IT services contracts, as well as the technology capabilities needed to support them. What’s more, the technique is

designed to translate these requirements into terms that make sense to a diverse group of stakeholders.

“We’ve developed a comprehensive framework,” Taylor explained. “At one end of the spectrum, we have the sorts of models you might see if you went into a social sciences laboratory. And at the other end, we’ve got the hard mathematical facts about availability and reliability of a super-computing system. We’re integrating across that range.”

As governments explore innovative outsourcing arrangements, Open Analytics techniques created by HP Labs help ensure services contracts deliver the value and results agencies need and citizens demand. ■

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