TBM COUNCIL

SHELL

TBM AWARDS CASE STUDY

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Technology Business Management (TBM) is a methodology, community and category of software for data-driven management of the business of IT.

Shell

TBM Summary	
Reversing its cost trend with a 20% reduction in application run costs, Shell uses TBM to rationalize and optimize applications while promoting accountability for IT data. Shell's "IT4IT" team uses application cost and resource data to standardize its annual review of all 70 of its portfolios spanning more than 5000 applications. It empowers 1100 users, including application service owners, with interactive analysis tailored to accelerate a consistent set of decisions and outcomes. And it drives a data quality program to empower and hold data owners accountable for data quality.	
Program Owner	• IT4IT
Related Initiatives	• IT Services transformation • Applications: Rationalization & optimization • Outsourcing • Cost control
TBM Solutions	• Cost transparency • Infrastructure utilization
Focus of Analysis	• Applications • Infrastructure • Projects • Contracts
Insight	• Detailed costs per business application / service, bringing new clarity to where operational costs are incurred • The significant level of operations spend outside central operations group • The larger than expected impact of current projects on future operations costs • Relative spend on production vs non-production infrastructure. Previously assumed 70% of infrastructure cost was non-production and 30% production; TBM showed it was the reverse
Outcomes	• 20% reduction in application run cost

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Corporate Overview	
Royal Dutch Shell is a multinational oil and gas company headquartered in the Netherlands and incorporated in the United Kingdom.	
Industry	Energy
Region	Multi-national with headquarters in Hague, Netherlands
Revenue	$421B
Employees	94,000

Starting with the End in Mind: Bend the Cost Curve Through Applications

Royal Dutch Shell invests heavily in IT projects to drive business innovation through all aspects of its energy value chain, from discovery to delivery. This investment contributed to a growing IT cost base – a collection of ongoing operational costs to keep its ever-larger portfolio of applications and infrastructure running.

Shell's IT Manager for Functional Excellence Mary Jarrett is responsible for Shell's IT4IT portfolio of programs and technologies for IT management.

"Every IT organization experiences this cycle," Jarrett said. "You build new technology faster than you can retire old technology, which increases the size and complexity of the portfolio you need to maintain, which drives your total run costs higher and higher. You ask for larger budgets until someone at the top says 'enough is enough!' Now you're faced with a flat or declining IT budget and you've got two choices: spend less on projects, which will ultimately be IT's undoing, or you find a way to reverse your run cost trend. You bend the cost curve down."

In many ways, Shell was already a highly efficient IT organization. It had done optimization within towers of resources -- such as application development, compute and storage -- through global renegotiation of vendor contracts, but lacked a detailed view of how those resources served the business.

"We reached a fairly natural point where our unit costs were generally top quartile, but we were still being challenged to see how efficiently we could deliver IT as a whole," said Peter McKay, Shell's IT Business Management Lead.

To bend the cost curve, Shell knew it needed to retire some of its accumulated portfolio of applications and the resources they consumed. For those that remained, an application-centric view of resources and costs would drive reductions in unnecessary use of hardware, software and labor resources, not just initially but as an ongoing continuous improvement program to keep them from rising again.

Jarrett strongly believed that her TBM program needed to be designed from the top down to drive adoption and desired outcomes.

"We started with the end in mind and worked backward from there," Jarrett mentioned. "We knew we wanted to rationalize and optimize applications, so we identified what levers application owners could use to do that, such as changes in support staffing or infrastructure service tiers. Then we identified what questions we would need to answer, what information would answer those questions, and finally what source data was most critical to that."

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Creating a Virtuous Circle for Data Quality

To provide a detailed, trusted and sustainable view of application costs, Jarrett and McKay would need to address three challenges. First was the sheer number of applications: more than 5000. Second, an old industry approach of adding cost centers to coax more granularity out of a general ledger wouldn't work because there were 20 different general ledgers across Shell holding IT costs. Finance was working hard to reduce the number of cost centers, and granularity would not solve the problem of how silos of resources mapped to business applications. Finally, the company had moved from a largely insourced model to a highly outsourced model. Details about costs were now fragmented into many different and incompatible formats and levels of granularity.

"We have two profiles of invoice data that are radically different. Our infrastructure invoices from managed service providers have literally millions and millions of line items every month, giving us very granular data. On the flip side, we have global contracts where we may get one invoice that covers software licenses for the entire company," McKay said.

Jarrett and McKay decided to adopt a Technology Business Management (TBM) approach to model application costs. This included creating new trusted data sources to explicitly capture staff and contract details at the application level. Infrastructure line-item details were fed directly from vendor invoices and allocated based on infrastructure-to-application mappings from Shell's configuration management database (CMDB). Explicit links between projects and the applications they related too were also created in Shell's PPM system to provide a more holistic Total Cost of Ownership picture.

A major hurdle remained: ensuring the data quality in the underlying systems.

"What we had done several times in the past was get a whole central data cleansing team to come in and do a big project to map infrastructure to applications. They would do it, and declare victory. However, six months later the data quality would be rubbish again as the underlying issues had not been addressed," said Jarrett. Based on this past experience Jarrett took a different approach with buy-in from the CIO

"We made people inside Shell who are going to be accountable for this forever do their own data quality cleanup," She said. "This meant application owners first and foremost, and then indirectly on project owners and technical service owners who would feel pressure from application owners to bubble up the correct project and operational data."

This meant application owners are now responsible for the CMDB's application mappings. Also, project managers now include application identifiers in their project data so the TBM system can automatically link software development and other project costs to the appropriate applications.

"We've actually made no changes to any records in any systems ourselves," McKay offered. "All of the remediation was done by the groups that owned the data, as only they know whether the right projects, staff, contracts and infrastructure assets and were attached to their application."

Jarrett and McKay provided strong governance to help data owners be successful, including clear standards, goals, deadlines and tools to support data owners. These tools included detailed reports showing where remaining gaps in data were preventing costs from being attributed to the correct project or application areas.

"The only people who are going to be able to tell if the information is right are people who are directly supporting the projects and operations for an application," said Jarrett. "They're the only ones who can actually look at the total and go, 'Well actually, the infrastructure cost seems too high for this application. Let's look at which servers are connected to it. Oh, I know that server is doing something else.' So that was part of the reasoning that we basically gave pretty wide access to the tool and have it from very senior to relatively junior, as only the relatively junior staff are the ones that can see if the data is right. And then we roll all that detail up to then give senior management their overview."

Jarrett and McKay also published data quality dashboards to focus everyone on clear goals and monitor progress.

"It was actually quite frightening at the time because our data quality dashboard was red, and it remained red for many weeks. This went all the way up to the CIO," remembers Jarrett. "It feels like a high-risk strategy when

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you're going through it, but it pays so many dividends when the people who are always going to own the data quality do it, rather than trying to do it yourself."

One dashboard featured the top 10 areas where data quality would have the most impact on decision-makers, such as server-to-application mapping. Each area features data quality metrics on how complete, correct and current (the "three C's) each area is. This all rolls up to a master data quality dashboard showing six scores -- Three C's each for projects and operations. Today, these six scores comprise the data quality section within the overall IT scorecard

Once data quality passed the threshold of credibility with application owners they took increasing ownership of improving it because they were on the hook to defend or take action on the information. At Shell, TBM generates a virtuous circle on data quality: the more users rely on the data, the more they improve the data, and the more the data improves, the more they want to use the data.

Tying Trusted Data to Levers

Jarrett and McKay worked with application owners to ensure reporting would meet their decision-making needs. "We've had people who have written cost-lever manuals that describe the cost levers an application owner can drive when optimizing an application or portfolio," Jarrett said. Among those levers are:

- Rationalize the application portfolio (including retiring some applications)
- Base project investment decisions based on full application total cost of ownership
- Move to less expensive options for non-production deployments
- Choose service tiers
- Choose support staffing (Shell staff or contractor, onshore/offshore)
- Change software license usage
- Virtualize or eliminate underutilized servers
- Consolidate or eliminate underutilized storage
- Switch to outsourced or SaaS alternatives

Levers such as these drive decisions on where to focus the TBM source data, cost model and report configuration priorities.

"If you're going to show an application owner their infrastructure, well you better tell them exactly which infrastructure their application sits on," said Jarrett. "Don't just give them a dollar value, show them they've got these two development environments, three test environments, one production environment. Show them the names of assets associated with them and how efficiently they're utilized."

"The depth of information we've been able to provide through our TBM solution was critical to our success. By being able to incorporate our project data, our application data, our infrastructure data… it gives the total solution a level of richness, which allows people to really investigate why the costs are what they are, rather than just seeing a dollar figure," said McKay. "It also allows people to get a much better view of what the optimization opportunities are. For example, by being able to see all of the different non-production environments that there are for a particular solution, it really opens up the question of, do we need three environments? Could we survive with two? If we only had a total dollar number, we wouldn't be able to ask those questions."

Depth of information, provided in a consistent way, is also important for driving apples-to-apples cost comparisons of traditional applications versus software-as-a-service (SaaS) alternatives. Because Shell has a total cost of ownership view, they can start to see where certain cost drivers like upgrades would go away in a SaaS scenario, but where others like the cost of configuring the application or integrating data may not.

"I have a very diverse portfolio, and some of my applications are SaaS applications, and so I'm paying all of that in my base running costs, all in one lump sum. And some of my applications really are old, homegrown and don't have any licenses, barely have any support costs, but I had noticed that I use a lot of projects to keep them alive and keep them well-maintained. And it was really interesting to me which ones came out highest in the total cost of ownership. If you only record base costs versus base costs, homegrown solutions always look cheaper," Jarrett said.

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Application support labor contains detail on the number of people, locations, level of seniority and average fully loaded costs for that level of seniority (it does not include names or salaries).

“Managers across the IT function can see details of how each application is supported,” McKay said. "Are staff in low-cost locations or high-cost locations? Is support provided using staff or outsourced contracts? How are other similar applciations supported?”

Categorizations of the applications themselves help drive portfolio-level analysis to drive rationalization decisions on which applications to eliminate, maintain or invest in.

“We see application costs by business criticality, whether production or test or development environment, SaaS versus in-house supported …, so we've got all sorts of different angles that we can look at our costs from. And because Shell is pretty big and complex, you can basically drill down through our five-tier organization structure to see information on all 5,000 applications, or drill in to see only those for retail operations,” said McKay.

To help inform rationalization decisions as well as minimize operational risk, the TBM system also furnishes and details end-of-life dates from vendors for servers and operating systems.

“We used to have special activities to go and find out what was end-of-life so we could go and do something about it, whereas now the information is all in one place enabling it to be part of a portfolio manager's day-to-day job,” McKay said.

Adoption to Drive Outcomes: Application Rationalization & Optimization

To ensure the TBM program delivered on its intended outcomes of optimizing the application portfolio and bending the cost curve, Jarrett had a strategy to drive broad adoption of the new TBM system.

“The role of my team is not to adopt TBM principles for ourselves, but to guide adoption for the whole Enterprise,” she said.

The strategy was to integrate the review of TBM metrics into the existing initiatives, processes and rhythms of decision-making.

“The most important thing that's driven adoption is teaming up with other people who are trying to reduce costs,” Jarret added. “We have people who are trying to do application rationalization, so we've teamed up with them to make sure they use our cost data to drive that. We've teamed up with people who are looking at organizational costs, and we've teamed up with them to provide costs from our system. We're really delivering critical projects that the CIO is sponsoring.”

To ensure people knew how to use the new TBM information, Jarrett and McKay drove more than 100 engagement programs for the IT executive team and IT leadership, among others. These programs covered the overall TBM approach, how the system worked, what the information means and how to use the information to pull levers, i.e. drive action and outcomes.

Jarrett used the TBM program and data to drive standardization into Shell’s annual portfolio review process. She said they have about 70 different application and service portfolios, all the way from the Upstream process for hydrocarbon discovery to the Downstream processes for sales. Each of those 70 portfolios has now been assessed in exactly the same way. They've looked at all the cost levers they could possibly pull, and assessed whether they've done that well enough, and what additional opportunities exist.

“We challenge people on service tiers. We challenge people on where their people are located. We've challenged them on whether they could do it more cheaply with an outsourced SaaS or outsourced contracts. So all of those are levers that are wrapped up into these portfolio reviews,” she added.

Overall there are now more than 1,100 direct end users of the TBM system itself, and the entire IT organization consumes data from it even if they don’t log in themselves, as does the business. For example, business users do not log into the TBM system but IT’s business interfaces (or, business relationship managers) do and selectively use that information to support good cost and value decisions.

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“We have created a more cost conscious culture. When you are presented with the facts of how much you’re costing day by day, it's very hard to ignore it,” Jarret said.

The net result so far? By doing the portfolio reviews Shell was able to identify cost savings -- the main objective of the portfolio review -- and it's been very successful.

“By using our TBM system to drive consistent analysis in our portfolio reviews across 70 portfolios and 5000 applications, we've achieved a 20% reduction in application run costs,” said Jarrett. ”And that was just within 12 months of our TBM system going live.”

Advice for those Starting Their TBM Journeys

Jarrett offers these words of advice for those who are just beginning, or considering, their own TBM journeys:

Start with end in mind: “Be very clear why you're doing this. What questions do you want to answer? What actions are you going to take as a result of the data that you're going to produce? And then make sure you design your solution to actually give you those answers and enable those actions. Don’t cop out and settle for even spread cost allocations. Work with the cost owner on what drives cost.”

Don’t take ownership of data cleaning: “Look at the data you're going to use, look at the data quality that you want and make sure somebody, not you, is responsible for cleaning that data forevermore, not just for the project. Do the data quality work in parallel to and as part of your TBM program.”

Embed TBM data into existing processes: “You need to embed this into your organization. I always say, "A dog isn't just for Christmas, it's for life." This solution isn't there just for the length of the program. This is going to be your solution for cost transparency forevermore, so make sure you get it embedded into your organization in a sustainable manner.”

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