

An Oracle Enterprise Architecture Case Study
August 2011

Laying a Foundation for Shared Services at PHH Corporation

"We couldn't have made as clear a business case without the Oracle Consulting teams, including the Oracle Enterprise Architecture development program, Oracle Advanced Customer Services, and the Oracle Insight program. They determined what we had and how to reframe it in our new reference architecture."

Chris Brewer, Vice President of Platform Technologies, PHH

Introduction

Enterprise architecture (EA) is the organizing logic for business processes and IT infrastructure. It provides a long-term view of a company's processes, systems, and technologies, so that individual IT projects can provide general-purpose capabilities—not just fulfill immediate needs.

Market-leading companies such as PHH Corporation use enterprise architecture to guide the evolution of their systems and processes, and then leverage this capability for profitable growth. Using enterprise architecture to build a stable foundation results in greater agility, faster time to market, lower risk, and lower costs. For PHH, it is also the first step on the road to shared services and cloud computing.

PHH Corporation delivers world-class business solutions to its clients through two subsidiaries: PHH Mortgage and PHH Arval. PHH Mortgage provides outsourced, private-label mortgage solutions to clients nationwide who are leaders in their fields of business, including financial institutions, real estate companies, credit unions, corporations and government agencies. The success of its outsourcing model has enabled PHH Mortgage to become one of the top five originators of retail residential mortgages in the United States¹. PHH Mortgage also provides home financing directly to consumers. PHH Arval is a leading fleet management services provider for corporate clients and government agencies throughout the United States and Canada. In conjunction with global fleet management providers operating under the PHH Arval Global Alliance, PHH Arval also provides services throughout the world.

Each of PHH Corporation's two business units has spent years innovating and expanding its information systems, resulting in separate and diverse IT infrastructures. Jeff Bell, CIO at PHH, knew that if the company continued to implement technology in individual silos, neither of these two business units would be able to take advantage of potential cross-functional capabilities or eliminate the operational duplication that drives up costs. He appointed Chris Brewer, Vice President of Platform Technologies at PHH, to spearhead an IT transformation effort, and

¹ *Inside Mortgage Finance*, April 29, 2011.

Nathan, Smith, Director of Enterprise Architecture and Chief Architect for PHH Corporation, to help align the ensuing IT activities with the organization’s high level business strategy.

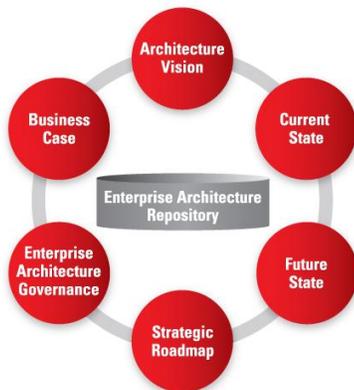
“We are going through transformation on multiple levels: business transformation, IT transformation, and shared services for our two major business units,” explains Smith. “It’s not just about technology. It’s about elevating individual projects, applications, and processes to an enterprise scale.”

“We have two parallel tracks going on,” adds Brewer. “One is taking shape in the form of new infrastructure and ultimately a private cloud, anchored by an Oracle Exadata Database Machine and Oracle Exalogic Elastic Cloud. The other involves using Oracle reference architectures as a blueprint for developing individual business solutions and deploying new applications.”

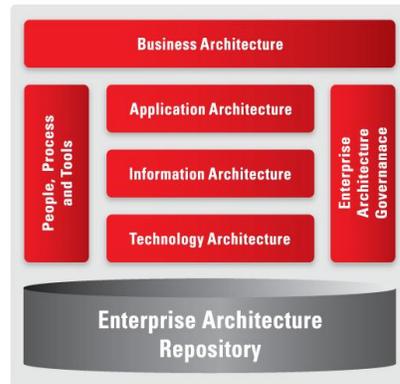
Solidifying the Enterprise Vision

PHH engaged Oracle to solidify the charter of the enterprise architecture effort. This involved an EA assessment to establish the core principles and a governance model for building specific business applications. The Oracle Enterprise Architecture Framework (OEAF) and the Oracle Architecture Development Process (OADP) helped PHH to structure the IT transformation project to meet the business objectives.

Oracle Enterprise Architecture *Framework & Process*



Oracle Architecture
Development Framework



Oracle Enterprise
Architecture Framework

The guiding principle of the Oracle Architecture Development Process (OADP) is that all activities and process steps should deliver business value quickly. PHH used this methodology to guide the process of creating a new IT infrastructure that supports expanding business operations and fulfills the executive mission and strategy. Oracle reference architectures allow them to enforce best practices and adhere to their stated architectural principles as developers move from one tactical project to another, reflecting the overall needs of the enterprise.

Smith worked with Oracle to create an EA Mission Statement and EA Charter that describes what the EA organization should focus on, distinguishing the roles of enterprise architects from solution architects, application architects, technical architects, and information architects. He says many of their early meetings could have easily digressed into product discussions, but Oracle kept the team focused on the business objectives.

“Initially there was some skepticism about whether Oracle could lead these high level discussions without pushing its technology stack,” Smith notes. “However, I was pleasantly surprised by Oracle’s overall commitment to the engagement. They talked about the process and the artifacts that can be delivered, which had nothing to do with pushing the Oracle products.”

“The Oracle EAs were there whenever I needed them and they had intimate knowledge of the Oracle Enterprise Architecture Framework, Oracle Architecture Development Framework, and Enterprise Architecture best practices in the industry,” Smith continues. “They focused on the process and the technology concepts, which had nothing to do with the underlying products.”

When it came time to discuss specific technology domains, Oracle brought in subject experts, but Smith says that their presence didn’t dominate the larger discussions about strategy, goals and directions. “Oracle understood its products but at the same time understood other products,” he notes. “The consultants were well versed in multiple technologies outside of the Oracle product stack.”

That was important given PHH’s diverse technology environment, which includes Oracle WebLogic Server, IBM WebSphere, Cold Fusion, VM Ware, Novell Identity and Access Management, Microsoft .NET, Java, Informatica, SeeBeyond, Sybase, Oracle Database, Microsoft SQL Server, and PowerBuilder applications. PHH was a heavy user of Oracle Database and Oracle WebLogic Server, dating back to its days as a BEA product, but otherwise did not have a large Oracle footprint.

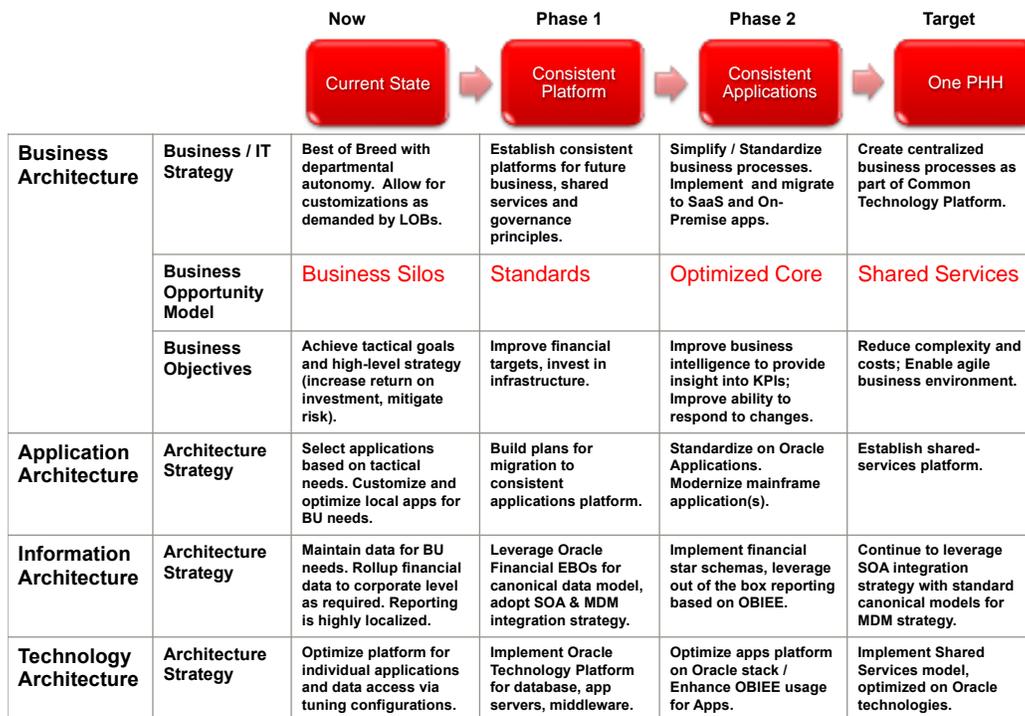
Creating a Roadmap

The Oracle EA team performed an Impact Analysis to study the following technology areas: security, database, application servers, business process management (BPM), business intelligence (BI), data integration, Enterprise 2.0, data warehouse, and hardware infrastructure. Based on their analysis, they went on to define a Common Technology Platform that could be developed over time according to ten different workstreams: Exadata/Exalogic, Database, BI, Data Warehouse,

SOA, Systems Management, Security, Enterprise 2.0, Sybase Migration, and Mainframe Modernization.

Oracle subject matter experts helped to devise a current state and future state roadmap for each of these ten areas. The roadmap follows a logical progression from today’s disparate business silos to tomorrow’s unified, shared services architecture. During Phase 1, the architects are defining the new platform, including the hardware and storage infrastructure, database architecture and application server environment. During phase two they will tackle individual application domains, beginning with HR and finance. The basic progression is shown in the following diagram.

Strategic IT Roadmap



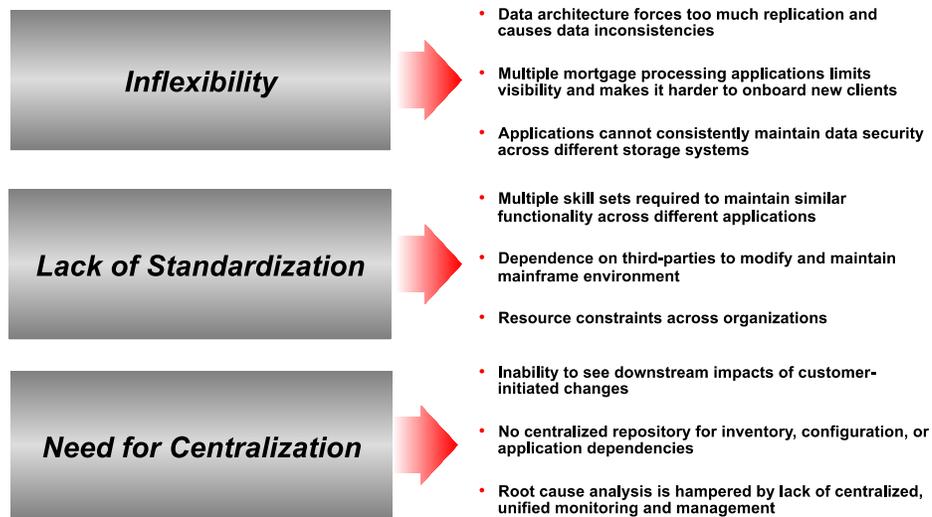
The Strategic IT Roadmap was just one of the OADP Artifacts. The EA team also helped create or define the following:

- Enterprise Architecture Principles
- Architecture Vision
- Platform Reference Architecture
- Current State Architecture
- Future State Architecture

“Oracle helped us build multiple artifacts to align IT with the strategic goals and direction of the business,” Smith says. “The engagement model was key for making sure that enterprise architecture was engaged during the business discussions. It helped us understand what the business was asking for and to make sure that IT was aligned with that vision and also to ask some probing questions to make sure the business fully vetted that process through.”

The EA team broke down their recommendations into three categories—inflexibility, lack of standardization and the need for centralization—as depicted in the following diagram.

High-Level Findings of EA Team



Technology Rationalization

The biggest challenge facing the enterprise architects was to figure out how to bring PHH’s two organizations together, which involved a consolidation and rationalization of each of their technology stacks. In some cases the differences between the two divisions were marked. Smith explains: “For application servers, one division used Oracle WebLogic Server, the other one used IBM WebSphere. For integration, one had standardized on SeeBeyond [Sun Java Composite Application Platform Suite], and the other on TIBCO. We had multiple Sybase databases in one business unit, and a mix of Sybase and Oracle databases in the other business unit, with multiple stand-alone servers to run these databases. It was like night and day—two different product stacks altogether.”

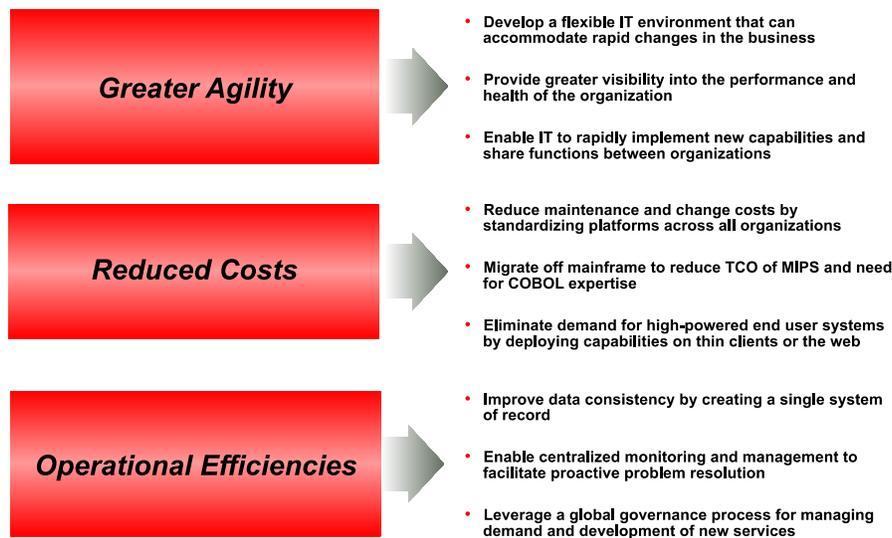
To rationalize these disparate product stacks, the team broke down the shared services project into the ten workstreams mentioned previously: Exa-platform, database, BI, data warehouse,

SOA, systems management, Security, Enterprise 2.0, Sybase migration, and mainframe modernization. For each workstream, they defined the business architecture, application architecture, information architecture, and technology architecture. Each workstream provides a fundamental piece of the Common Technology Platform, enabling PHH to migrate towards a single set of IT standards throughout the organization.

For example, rather than maintaining more than a dozen Oracle and Sybase databases on stand-alone database servers, PHH is migrating and consolidating all of them into one logical Oracle database on the Exadata platform. Smith says this will simplify IT management tasks by enabling database administrators to utilize a common skill set and devise repeatable administrative processes.

The enterprise architects repeated this process for the other nine workstreams. As of this writing, they have identified the current state architecture and are currently defining the future state architecture, with attention to how to combine the various components according to the enterprise architecture guidelines. Some of their primary goals and objectives are summarized in the diagram below.

Technical Goals and Objectives



“We are systematically addressing each domain and developing a detailed roadmap to govern whether or not to keep the various legacy technologies, how long to keep them, and precisely how to replace or upgrade existing applications,” says Smith. “It doesn’t make sense to preserve everything. We would rather transform some legacy assets and replace others with new assets on the Exalogic platform.”

For example, the Mainframe Migration workstream entails identifying a roadmap for nearly a dozen core mainframe functions. Some of them will be replaced. Others will be re-hosted on the Exalogic platform under JOBOL (a Java derivative of COBOL), with data migrated from DB2 to Oracle on the Exadata platform. Still others will be re-architected and developed into Java applications. “Our long term goal is to unplug the mainframe entirely,” says Smith.

Guiding Principles and Business Drivers

Throughout the IT transformation project, one of PHH’s guiding principles has been to avoid customization and apply the “80/20 rule”: If a technology satisfies the requirements 80 percent of the time, then they will leverage it and develop the remaining 20 percent of their needs in-house, rather than trying to develop everything from scratch.

The architects use many other standard principles to determine which technologies should survive. Some business drivers are cost-based and accompanied by a compelling business case, such as the decision to consolidate multiple stand-alone database servers into one unified Exadata platform. “The database consolidation workstream aligns with the overall shared services model,” Smith explains. “Oracle helped to build a business case, including detailed cost justification studies to compare the differences in datacenter space, energy costs, licenses, and other factors between the distributed and consolidated environments.”

Other decisions are driven by assessing the required skill-set of IT professionals. The Mainframe Modernization workstream falls into this category. PHH would like to reduce its dependency on a dwindling pool of COBOL programmers and other mainframe experts, and instead standardize on a common Java-based application server environment, which represents a much larger pool of available talent. Still other decisions are risk-based and enterprise architects must often respond to these areas by implementing specific systems to mitigate perceived risks.

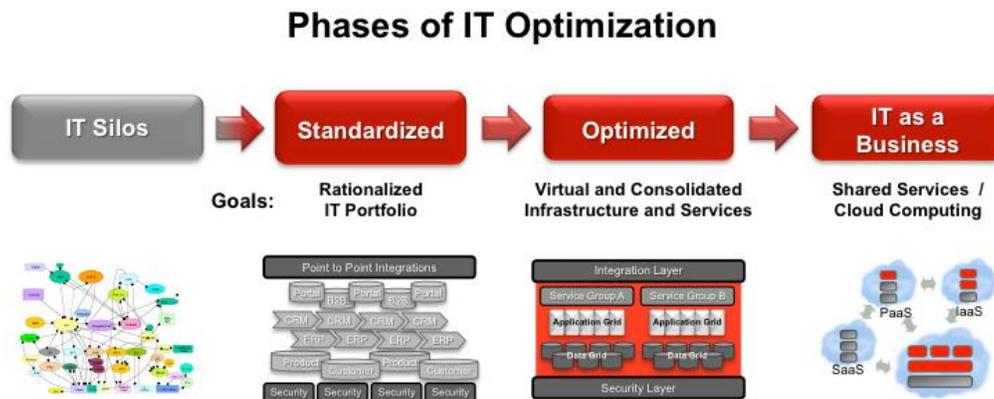
According to CIO Jeff Bell, the most important business decisions are driven by customers, such as a request from financial advisors to be able to process mortgages more quickly and to streamline the multi-step loan review and approval process. During 2010, PHH Mortgage closed nearly \$49 billion in mortgage financing for more than 205,000 homes, with adherence to increasingly stringent documentation and auditing procedures. As the volume of business continues to escalate, it will become progressively more difficult to support this time-sensitive business process.

The EA team examined the mortgage processing applications and infrastructure to identify performance bottlenecks, and has redesigned the architecture to meet the burgeoning workload going forward. Their work has been one of the primary motivators for the IT consolidation effort, embodied in the new Exadata and Exalogic systems. This team also had to consider the impact of a new mobile computing interface that will let financial advisors access the mortgage processing application from remote locations, which is predicted to add even more traffic to the network.

“Customers select PHH because we provide end-to-end solutions,” explains Bell. “When it comes to communicating with current and prospective customers, it will be easier to demonstrate, deploy and support these end-to-end solutions when they reside on a standard platform, and possibly even in a single instance.”

The Path to Shared Services and Cloud Computing

The new shared IT environment will ultimately take the form of a private cloud. To achieve this optimal state, enterprise architects are guiding the company down a proven path, from IT silos to standardized IT portfolios to consolidated infrastructure to shared services and cloud computing. This progression is illustrated in the diagram below.



“The goal is to capture all the metrics related to the use of these IT services so we can run the IT organization more transparently,” Smith explains. “Internal customers will know why they are being allocated a certain amount of money and how IT costs are determined.”

“The enterprise architecture effort gives us the framework to acquire the product mix that we need—whether its databases, BI tools, middle tier apps, security architecture, CRM, and many other technologies,” adds Brewer. “The EA effort continues to show value by making sure the projects really do meet business and IT objectives, and also by making sure that standard repeatable processes are put in place so that we can guarantee consistent results. As we have progressed, Oracle has helped us to correct our course as needed and has kept us marching in the right direction. Oracle has become a trusted advisor.”

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For additional information about PHH and its Exadata/Exalogic product implementation, please read the [Oracle Magazine feature story](http://www.oracle.com/technetwork/issue-archive/2011/11-jul/o41exalogic-400784.html) (<http://www.oracle.com/technetwork/issue-archive/2011/11-jul/o41exalogic-400784.html>).



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