



Governance Framework for IT Transformation Projects in Outsourcing

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In the IT Outsourcing industry, a complex transition and transformation process is required for on-boarding large enterprise clients. The process begins after the client signs a contract, and ends when steady-state operation is attained by the service provider. Large outsourcing deals may last several years, involve several hundred million dollars, and are traditionally highly customized to the client. In this paper, we provide recommendations for a governance framework that can manage the on-boarding stage of large, customized deals. There are no existing governance frameworks that work well at the scale and diversity observed in these deals. The framework must standardize a set of processes to direct, control, and measure on-boarding activities and enable a governance organization to create and maintain a single data, process and program management instance for each client. It must also maintain a well-defined and comprehensive view of the key entities in the transition and transformation process, and their relationships. These entities may include projects, people, roles and responsibilities, process metrics, services, and the multiple internal and partner organizations and their operational level agreements (OLAs). Finally, the framework must improve repeatability across service deals, enforce adoption of best practices that are distilled from historical deals, and better avoid known problems and issues.

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Abstract— In the IT Outsourcing industry, a complex transition and transformation process is required for on-boarding large enterprise customers. The process begins after the customer signs a contract, and ends when steady-state operation is attained by the service provider. Large outsourcing deals may last several years, involve several hundred million dollars, and are traditionally highly customized. In this paper, we provide recommendations for a governance framework that can manage the on-boarding stage of large, customized deals. There are no existing governance frameworks that work well from the perspective of the service provider, at the scale and diversity observed in these deals. The framework must standardize a set of processes to direct, control, and measure on-boarding activities and enable a governance organization to create and maintain a single data, process and program management instance for each customer. It must also maintain a well-defined and comprehensive view of the key entities in the transition and transformation process, and their relationships. These entities may include projects, people, roles and responsibilities, process metrics, services, and the multiple internal and partner organizations and their operational level agreements (OLAs). Finally, the framework must improve repeatability across service deals, enforce adoption of best practices that are distilled from historical deals, and better avoid known problems and issues.

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I. INTRODUCTION

In order to improve competitiveness, businesses often outsource many functions, including IT [1] to service providers which maintain skilled staff and large datacenter and other infrastructure components required to efficiently and effectively manage IT. The process of moving the delivery of IT services from the internal IT organization to the provider can be split into three phases: (1) the solution design phase, in which an outsourcing contract is negotiated and signed; (2) the on-boarding phase, in which the customer's IT services are moved from the internally-managed Current Mode of Operation (CMO) to the provider-managed Future Mode of Operation (FMO); and (3) the steady-state operation phase, in which the service provider delivers the customer's required capabilities. For large

complex IT environments, moving from the CMO to the FMO within on-boarding can require a significant effort, and can be further divided into two activities, *transition* and *transformation*.

Transition moves the management of the IT environment from the customer to the service provider. The provider takes over the environment as well as the contractual requirements necessary to facilitate the transfer. It includes the implementation of an operational governance model. Thus transition is the process necessary for the provider to assume operational responsibility for a customer's IT environment.

Transformation is the implementation of contractually defined activities as identified during the solution design phase that enable the service provider to provide service enhancements, cost reductions, and quality, productivity, and technology improvements. Transformation includes activities that move the IT environment from the CMO to the FMO.

It is important to make the on-boarding process as smooth and rapid as possible. First, on-boarding gives the clients their first real experience with the provider's services. A poor experience greatly reduces the chance that clients would purchase additional services from the provider, and may even result in contract cancellation. Second, IT outsourcing contracts are generally becoming shorter in duration, with "mega-deals" being broken into manageable components [2, 3]. Thus, the on-boarding time needs to correspondingly become shorter to ensure acceptable risk levels and profit margins for the provider.

Both clients and providers face many challenges during on-boarding. Clients need to actively participate in the on-boarding process to ensure success. Often, the customer environment lacks standardized processes, tools, staff, and governance capabilities. Additionally, data needed by the service provider may either be missing in the existing IT systems, or may be organized and managed differently from the service provider. The service provider needs to ensure that the IT environment continues to provide business capabilities during on-boarding, even while the system is in constant flux as it is moved from the customer to the service provider. The service provider also frequently has limited understanding of the customer's environment since not all details are captured during the solution design. Finally, staff and capabilities from different organizations need to be

integrated, leading to further complexity in organizational management.

This paper explores these challenges in detail. It focuses on the perspective of the service provider, and offers a set of recommendations, based on published research and best practice guidelines. To implement these recommendations, repeatable processes that form the basis of our governance framework must be configured and managed.

This paper is organized as follows. Section II describes the background information regarding customer on-boarding. After that, we discuss the challenges of on-boarding customers in Section III. In Section IV, we present our recommendations for the on-boarding governance framework. Then we focus on two sub-processes related to on-boarding in Section V to illustrate how the governance framework can be used in practice. We discuss our approach in the context of related work in Section VI. Finally, we conclude in Section VII with our goal of highlighting the need for more research on this topic.

II. BACKGROUND

The customer on-boarding process can be viewed along three dimensions: (i) the technology components involved in transitioning and transforming the customer to the managed IT environment, (ii) the organizational hierarchy, roles and responsibilities of the people in the delivery teams, covering different technical capabilities and functional units, and (iii) the processes followed in several distinct phases that comprise on-boarding. These three dimensions will be examined in detail in the rest of this section. We will conclude with a discussion about governance frameworks.

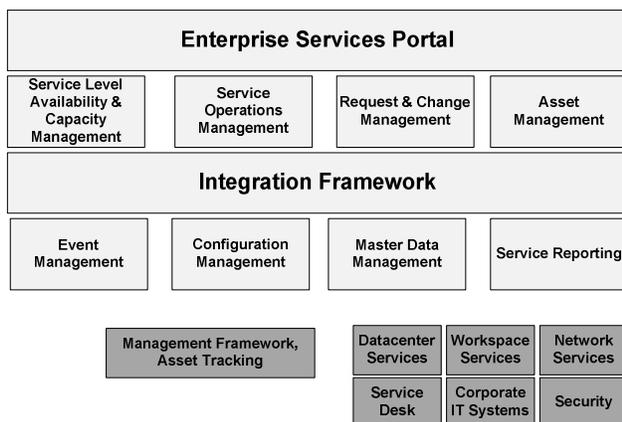


Figure 1: Conceptual architecture of service management platform

A. Technology Dimension

Figure 1 shows the *conceptual architecture* for a service management platform, which follows best practices described in the ITIL standard [4]. It shows the standardized management environments used for delivering the contracted IT services, after the on-boarding process is complete. At the lowest level of this architecture are the managed entities, consisting of datacenters, networks, and workspace services,

among others. Information about the legacy assets and services are collected by the underlying asset tracking frameworks. At the next level, management elements required for continual visibility and control are needed, including configuration management, master data management, event management, and service reporting, backed by a data warehouse. An integration framework enables information to be exchanged between the different management components. For example, a service exchange could be built on top of this integration framework, allowing incident tickets to be routed among multiple providers for network, workplace and data center services. Finally, other services such as operations management, request and change management and asset management are implemented over the integration framework.

B. Organization Dimension

Figure 2 shows a typical organization chart for an IT Outsourcing Provider. Delivery units, specialized by their technical capability areas (corresponding to the managed entities shown in Figure 1), of which only a subset is shown, often have regional organizational subunits for a global IT Outsourcing Provider. The other organizational units (in boxes with dashed lines) have global scope.

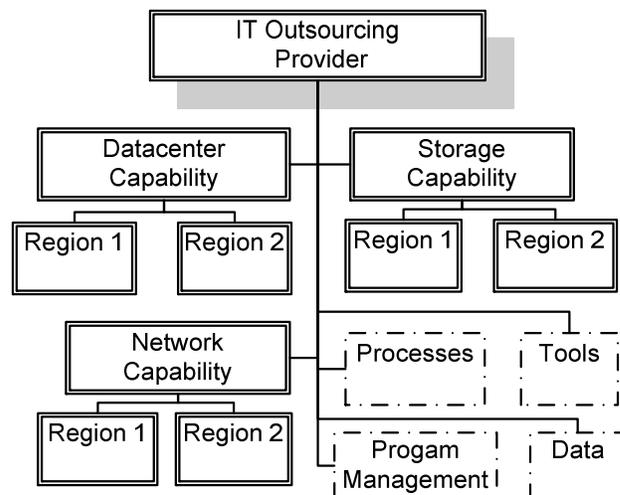


Figure 2: Example Organization Structure for the Provider.

A customer on-boarding team includes people from many or all of the technical capabilities and regions, and comes together for a limited time to on-board the customer. It is often necessary for a staff member in a technical capability area to be participating in different on-boarding teams for different customers at the same time. The on-boarding team has the following roles:

On-boarding manager: This program management role is accountable for the entire on-boarding process and the integrity of the data used in on-boarding, and also acts as the liaison to the overall transformation activities.

Capability lead: This role is accountable for the on-boarding of a specific capability. Responsibilities span the entire gamut from defining the plan for the capability,

testing, addressing issues, to obtaining sign-off for the capability, and finally handover to steady-state phase.

Capability architect: This role identifies gaps between the customer environment and the standard solution, proposes solutions to close the gaps, and submits input on future enhancements of the standard solution.

Subject matter experts (SME): There are separate SME roles for processes, tools and data. Each is responsible for understanding the customer requirements, and refining the processes, tools and master data workflows respectively across all the capabilities.

Operations manager: This per-capability role manages the operations of the capability after handover to steady-state occurs.

C. Process Dimension

The on-boarding process can be divided into the following seven sub-processes in sequence:

Post sales handover: After the contract has been signed, the handover process from the sales to the delivery team starts. Knowledge transfer is the key objective in this phase. All details of the contract, including contract terms, deliverables, risks and known issues must be reviewed. Several artifacts must be handed over by the sales team to the on-boarding manager, including due diligence reports, requirement documents, statement of work documents and a list of important contact persons. Several activities must be initiated during this phase. These include (a) requests sent by the on-boarding team to the client's IT organization for master data extraction and master data enhancement, (b) setting up data collection guidelines, (c) identifying resources that must be committed, and (d) identifying baseline capabilities of the delivered services.

Cross-unit planning: In this phase, a series of meetings are organized across the different delivery units, whose technical capabilities are diverse, e.g. datacenter hosting, storage, networking, systems management, master data management, and multi-supplier management. Using storyboard review of the transition and transformation to be undertaken by the client, the service delivery organization defines the roles and responsibilities across the different delivery units.

Detailed planning: During this phase, the next level of detail is planned. The key deliverables and detailed phases of the transformation are enumerated. Agreements are reached among the different delivery units. Resources are identified and committed to the project.

Delivery model mapping: In this phase, the standard IT service management processes required for the customer's transformation are identified. Often, they have to be enhanced to meet requirements specific to the customer's environment. As roles and responsibilities for different delivery units are defined, role to activity mapping may be done.

Delivery model deployment: The people, processes and tools identified in the delivery model are deployed. As each phase of transformation is completed, user acceptance testing is often done.

Release to production: Handover criteria such as training completion, availability of documentation, and completion of data loading are reviewed. Once they are marked as complete, and the customer has signed off, delivery of the services is handed over to the delivery organization that handles the steady state.

Service stabilization: The services are managed for the agreed delivery period to ensure all acceptance criteria are being satisfied. At the end of this period, the client signs off and the services are deemed to be in the steady state.

D. Governance Framework

Governance in the IT domain has the implication of keeping IT processes under control. The primary goal is to ensure that IT decisions are aligned with business goals, and that risks are managed. A control framework for governance, such as COBIT version 4.1 [34], provides a process model. It consists of 34 IT processes identified across four domains, namely Plan and Organize (PO) for strategy and tactics, Acquire and Implement (AI) for implementation of IT solutions, Deliver and Support (DS) for delivery of IT services, and Monitor and Evaluate (ME) for assessment of service quality and compliance. In Section V, we will illustrate the use of this control framework for our on-boarding process.

III. CHALLENGES IN CUSTOMER ONBOARDING

The challenges during on-boarding can be categorized by the three orthogonal dimensions of technology, organization and process. We will consider challenges in all three dimensions, although our focus will be primarily on the technology dimension.

The challenges may be purely along the organization dimension, if the post-sales handover from sales to the delivery team does not result in clear identification of all the skill sets needed from different delivery units. Poor prediction of the headcount needed in each unit can lead to missed milestones. The challenge may also be organizational in nature, if the cross-unit planning described earlier does not lead to a clear understanding of roles and responsibilities across these units, due to the complexity of the contract. Another organizational challenge is the ability to track the roles and responsibilities of the various delivery units and personnel that are part of the on-boarding team. These assignments are so dynamic that the information must be integrated with the communication and collaboration tool used by the on-boarding team. This allows the team to address the next challenge, which is to communicate all issues that need resolution, in a timely fashion to all stakeholders, and detect when issues are waiting too long for resolution.

The challenges may also be along the process dimension. They may originate during delivery model mapping, if standard IT service management processes are not available. Furthermore, the standard processes must be adapted and configured to meet customer-specific requirements identified from the contract review. Lack of standard processes and adaptation will necessitate ad-hoc activities outside the process model to meet the contractual obligations. These ad-

hoc processes usually cannot be tracked well and can lead to missed milestones and cost-overruns. In [35], we propose a process variant modeling framework that can configure the processes based on the CMO and FMO, and other details captured in documents such as the contract and statement of work.

The challenges along the technology dimension can be fairly specific to the delivery units, and their areas of expertise. These challenges can be found in IT outsourcing contracts for large enterprise customers across industry verticals, irrespective of the technology mix in the contract. As an example, here we explore them in detail for master data management. Master data [5] is foundational data about the customer's enterprise. It includes information on all employees from enterprise directories and databases in the human resources (HR) department and their credentials, so that they can be authenticated. A subset of this information is needed when they request IT services, for example, by calling the helpdesk for support. Master data also includes information on all hardware and software assets, and locations where services will be provided. The customer often has the data spread across disparate IT and HR information systems. Collecting the data is time-consuming and error-prone. For large enterprise customers, the collection and validation of master data involves various challenges, and show the interplay of the technology, organization and process dimensions. These are explored under the following categories.

Divide and conquer strategy: The data collection process has to be divided and conquered across different functional units within the customer's organization, scattered in different geographical regions where different HR and IT practices are followed. This has implications both from the technology and people perspectives. From a technology perspective, there are often more regional variations of the data than anticipated. The primary data collection is at times in languages not supported by the service provider toolset. Due to language barriers and proliferation of process instances, data architects must track multiple versions of the data. Often, references required for data validation are either missing or invalid due to the existence of multiple versions of the data. From a people perspective, roles of individuals in a large organization are always changing. Frequently, data collection processes can be significantly impacted if the expert on some data within the customer's organization moves to another job during on-boarding.

Data consistency across applications: The master data should be consistent across all applications from which it is extracted, but the different applications have differing local caches of the data. The users of these applications have different needs in different geographies, such as different data values for the same concept. Sometimes these differences in master data are intentional. An example might be the 'master data server' (MDS) of a financial application, where the value extracted for MDS from the local cache in each region may be the replica server for master data in the same region. Often, however, these differences cause problems that are flagged when inconsistent data is found during validation of business rules. The experts on the

customer's staff must navigate their organization's internal hierarchy and get the consistent data needed for validation. Many delays are due to this factor.

Data collection efforts across multiple IT services: Since large enterprise customers may sign up for multiple IT services from the provider, it becomes the job of the on-boarding manager to maintain oversight of data collection across different services provided. Otherwise, different on-boarding teams may collect, cleanse and load the same data multiple times, once for each IT service.

Data collection efforts across multiple providers: Often the customer's IT is outsourced to multiple providers [6], each responsible for a subset of IT services. In a large customer organization, there could be over 10 such providers involved. A service exchange enables bi-directional, near real-time service case routing between the customer and the providers, as well as between providers. Master data must be collected and validated across the providers to ensure that employee identities are correctly mapped, and authentication and authorization can be supported at all providers who get service requests directly from the customer.

Data quality: Data quality significantly impacts the service delivery quality, for example, to meet the service level agreements (SLAs), after the customer is brought on-board. In some cases, it may take the service delivery teams several months to see the effects of any data with poor quality introduced during on-boarding. However, ensuring data quality is time consuming and can also delay the on-boarding process. The staff experts on the customer side often become the bottleneck if they are unable to dedicate sufficient time for resolution of the issues raised by the on-boarding team.

IV. ON-BOARDING GOVERNANCE FRAMEWORK

The challenges illustrated in the previous section emphasize the need for standard processes which can be adapted for different customers, and the need for addressing the organization and technology challenges. In this section, we describe our recommendations for the on-boarding governance framework.

We must create an on-boarding governance framework [7] that works well at the scale and diversity of global clients. It must standardize a set of processes to direct, control, and measure on-boarding activities and enable a governance organization to create and maintain a single data, process and program management instance for each client. A standard set of on-boarding processes can improve repeatability across service deals, enforce adoption of best practices that are distilled from historical deals, and better avoid known problems and issues.

Possible approaches to creating such a framework may include establishing a common repository to host and easily navigate the authoritative business processes for customer on-boarding. In practice, APQC [8] has provided such a repository for best practices for verticals such as supply chain management and customer relationship management. A set of measurable metrics, from the technology, organization and process dimensions, can then be included in the framework. The framework can be further developed to

support other related activities, such as recommending the business process, suggesting improvement of the business process, standardizing the business process, and facilitating continual improvement of the business process.

Continual process improvement must be facilitated, so that initiatives have a high chance of success. In some cases, new tools and processes have to be tested thoroughly prior to an on-boarding engagement deploying them. These improvement measures can be facilitated with an integrated on-boarding process model across all phases of on-boarding.

A. Visibility of Roles, Responsibilities and Processes

The governance framework must provide a well-defined and comprehensive view of the key aspects of an on-boarding project including people, roles and responsibilities, operational level agreements (OLAs) among multiple internal organizations that are involved in customer on-boarding, process metrics, services, process instances, and the relationships between these resources.

The overall business outcome desired is to provide visibility and transparency [9] of the current state of on-boarding process to various stakeholders and decision makers, and thus reduce on-boarding cost and time. Furthermore, such a framework also can provide feedback to support continual process improvement [4] based on the measurable outcomes collected from the process. It may be possible to extend business process modeling tools with the additional modeling notations that are required to support people, roles and responsibilities, OLAs, and services.

Process tracking tools [10] may be integrated into the governance framework to measure individual activities, and automatically present business-level KPIs based on progress to create a framework so that different customer on-boarding engagements can be tracked against the authoritative business processes. This would allow the defined metrics to be measured and exposed to relevant people. Predictive analysis tools [11] integrated into the framework can capture monitoring data to identify which process instances are at risk of missing milestones or going over budget, so that key stakeholders have visibility into the project status. All tracking, monitoring, and prediction capabilities can present real-time information and help provide visibility and transparency for a customer on-boarding engagement. Business intelligence tools [12] will be useful for this purpose.

B. Master Data Management

The governance framework must lead to continual improvements in the process and tools that support master data management. More specifically, there is opportunity to speed up the process of collecting master data by enforcing cross-organizational responsibility and accountability, which is captured in the previous sub-section. Furthermore, the tools can be more automated, and can systematically validate the collected master data, checking for correctness, completeness, consistency, versioning and other specified dimensions of data quality.

The challenge of automation may be addressed by applying tools developed in the database community for data

quality assessment and improvement [13, 14, 15] to master data. These tools may need adaptation to flag data values that appear acceptable during data loading, but that create problems during the steady-state phase. Ideally, the tools should also predict the impact of the collected master data on the level of services delivered, and indicate whether the data quality is fit for purpose. After the tools have been identified, they must be incorporated into master data management workflows that can adapt the work needed depending on the output of the tools. The workflows should also incorporate the cross-organizational responsibilities needed for governance.

Data mining and machine learning techniques [16, 17] may be useful to automatically validate, correct and reconcile input data based on the observations of how technical people fix the data. In addition, rule-based and pattern-matching tools [18, 19] may help correct and reconcile input data, and allow data cleansing knowledge to be accumulated over time.

Finally, collaborative environments could be used to streamline master data management processes. These environments will allow the on-boarding team and the customer's IT organization to work together on the data collected, mapping it to the required data schema, based on the standard service offerings.

C. Collaboration and Communication

The governance framework must also improve collaboration and communication across programs within the service provider organization that collectively comprise an on-boarding engagement. This involves capturing knowledge for reuse across the organization to ensure that communicated data is transformed into knowledge and shared.

This challenge can be addressed by ensuring that the governance framework allows different teams responsible for on-boarding a particular customer can communicate the issues, the planning, the opinions, the suggestions and the solutions with one another. Communication must be effective among teams and sub-teams, and with the customer's organization. More specifically, to build such a capability for collaboration into the governance framework, we can:

- Leverage current enterprise social networking techniques such as Salesforce Chatter [20] and HP WaterCooler [21].
- Identify new features that can be incorporated into the communication framework to facilitate communicating the issues, the planning, the opinions, the suggestions and the solutions.
- Capture the responsibility assignment (one possible representation is a RACI chart that captures the assignments of Responsible, Accountable, Consulted and Informed) within the customer on-boarding team and the organizational structure around the on-boarding team. Note that such responsibility assignment and organizational structure can dynamically change over a customer on-boarding engagement and thus be time-dependent.

- Allow the materials regarding the communicated issues, planning, opinions, suggestions and solutions to be easily searchable, based on the different needs and views of the involved people. For example, we can categorize the data following the managed service entities of workplace, networking, data center hosting, security, etc. (shown in Figure 1). Rather than general text-based searching, we can introduce to this environment a standard set of vocabularies for service on-boarding [22] to enable rich semantics based information searching and discovery.
- Enable meta-data capture in this collaborative environment (such as organizational structure and RACI of the on-boarding team members) such that knowledge finding and searching can become much more intelligent.
- Populate the initial collaborative environment (or workspace) based on templates designed from the best practices. For example, process workflow instances, task checklists, report templates and views defined for individual roles can all be populated for a team that is assigned for datacenter on-boarding. A different workspace can be populated for a team that is assigned for network on-boarding.
- Once the customer on-boarding is finished, all information captured in the collaborative environment during the engagement can be archived, along with all the external documents referenced. Future customer on-boarding engagements can benefit from historical instances of customer on-boarding, especially for the same IT management services delivered to the same industry vertical.

D. Platform Architecture

The governance framework could be implemented using the platform architecture shown in Figure 3. Note that the architecture is specifically targeted to the on-boarding phase, and does not cover all aspects of governance for IT service delivery.

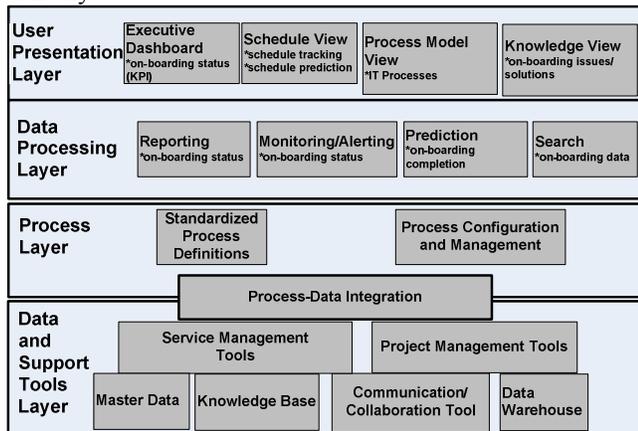


Figure 3: Platform Architecture for implementation of the Governance Framework

This multi-layer platform consists of the data and support tools layer, process layer, data processing layer and user presentation layer. In the data and support tools layer, the

recommendations for governance of master data management can be absorbed inside the Service Management Tools such as HP's Service Manager 7 [23]. However, as we proposed earlier, master data management will benefit from tracking responsibility and accountability across the on-boarding teams from the service provider and customer organizations. The tool for communication and collaboration across the on-boarding teams can be positioned in this layer as well. The Data Warehouse can be exploited to capture all the on-boarding related raw data that supports the upper-layer's analysis, searching, and reporting. For example, all on-boarding process related data can be hosted in the Data Warehouse. The Knowledge Base captures for example, all the documents shared across the Communication and Collaboration Tool. Certain Project Management Tools, such as HP Project and Portfolio Management Center [24], can be included in this layer as well.

The process layer of the platform enforces the governance framework. It can hold the standardized process definitions. The framework provides the ability to configure the processes needed in a specific outsourcing deal based on its context, as captured in documents such as the contract and the statement of work. The details of our approach for process configuration and management are described in [35]. There is a link between the process layer and the data and support tools layer, which is called the process-data integration layer. It links the defined business process and the data produced from the support tools layer. For example, it may link project management data to the standardized business process activities defined in the governance framework. Similarly, it may capture the sender and the receiver with roles and responsibilities during communications.

The data processing layer is to provide various tools to process the data captured in the data and support tools layer. It can involve data reporting, process monitoring, status prediction, and knowledge searching.

Finally, the user presentation layer provides meaningful information to the stakeholders at the right moment. In terms of visibility and transparency into on-boarding processes, we can provide an executive dashboard to show on-boarding status in the KPI format, and provide the managers a schedule view to track on-boarding status and predict completion time. The business process owner can input, view or update the process models. The engineers can search and view the communicated on-boarding issues, solutions and lessons learned.

E. Cost-Benefit Analysis

Deploying such a governance framework will require the active participation of all the delivery units within the service provider. These teams must be willing to adopt the common set of tools supported by the governance framework. For example, project management shown in the lowest layer of Figure 3 might be done by different teams using different methods such as online tools or Microsoft Project files exchanged through Sharepoint. However, the framework might adopt the HP Project and Portfolio Management

Center (PPMC). The cost of migrating teams of different sizes to the installation of shared tools such as PPMC must be evaluated. Assistance must be provided for the migration. The benefits of adopting the standard set of tools should be clearly articulated to the teams undergoing the migration. These benefits include the higher level of automation in master data management, increased visibility and transparency of the current state of the on-boarding process and improved collaboration and communication across the delivery units.

The benefits of adopting the shared tools, knowledge base and data warehouse can also be detected in the process layer and data processing layers in Figure 3. First, we focus on the process layer. The IT processes that are part of transition and transformation are determined during the ‘Detailed Planning’ sub-process of on-boarding. The overhead of this sub-process increases if these IT processes must be customized for every contract. In [35], we present our process variant modeling framework to reduce the manual work that process owners must do to configure these processes. This framework is part of the process layer. It benefits from the shared tools and data warehouse significantly, since it must report accurately the cost for different process variants. Next, we consider the data processing layer. Here the benefit of adoption of the shared tools and data warehouse is primarily the accurate prediction of completion time of various sub-processes. This allows dashboards to provide early warning when a delivery team is in risk of missing important milestones.

V. APPLICATION OF THE GOVERNANCE FRAMEWORK

In this section we explain how the integrated framework for on-boarding governance can be used from the organization, technology and process perspectives. Our focus is on applying this framework to master data management. In Section III, we explored the interplay of the technology, organization and process dimensions, while discussing the various challenges involved in collection and validation of master data.

For the technology perspective, we focus on the challenge of implementing the divide and conquer strategy for master data collection. There are often more regional variations of the data than anticipated. We have explained in Section III that this can lead to the unanticipated overhead of collecting and tracking multiple versions of the same data, which can introduce delays. By following the guidelines in the ‘Plan and Organize (PO)’ domain of COBIT, the master data management (MDM) lead will set up IT processes that force the data architects in the different regions to periodically merge the data they collected into a globally consistent snapshot. By validating the collected data against business rules, tracking metrics and providing incentives to the data architects to merge data regularly, the MDM lead ensures that problems arising from multiple versions are surfaced early and addressed in a way that minimizes future problems.

From the organization perspective, the tool for communication and collaboration will be invaluable. The challenges that are addressed are that data collection efforts

should work effectively across IT services and across multiple service providers. The IT processes set up by the MDM lead should ensure that there is no overlap in master data collection and validation efforts between the different IT services. Furthermore, these processes should work seamlessly across the many service providers to whom the customer has outsourced different IT services. These goals can be accomplished only if the project management tools work seamlessly with the communication and collaboration tool, and get a consistent view of the roles and responsibilities across the different IT services and the different service providers.

For the process perspective, we focus on two of the seven sub-processes of the on-boarding process, described in Section II. First, we focus on the third sub-process, namely ‘Detailed Planning’. All the IT processes that are part of transition and transformation are designed during this sub-process. Then we focus on the fifth sub-process, namely ‘Delivery Model Deployment’. Since the people, processes and tools are deployed in this sub-process, our primary concern is the work environment which allows the transition and transformation projects to be completed without the processes getting in the way of the delivery teams. Hence, governance of the people, processes and tools in this sub-process is done with the primary goal of creating an efficient work environment.

A. Detailed Planning

The outcome of the planning work in this sub-process is a complete set of IT processes and data and support tools that will be followed during the transition and transformation phases. Hence this sub-process impacts all the blocks in the two lower layers of Figure 3. The planning activity builds on the experience gained from previous outsourcing engagements. Based on the lessons learned, the process owner for some domain such as master data management may propose a new process or a change to an existing process in his domain. We will illustrate this by considering only the interactions of the on-boarding manager with the person in the lead role for master data management (MDM). Figure 4 shows the process followed by these two stakeholders to finalize the process and tools used in the transformation phase for master data management. During the detailed planning work, let us assume that the MDM lead decides to accept some of the recommendations from Section IV.B.

The first block in Figure 4 focuses on the planning phase. Governance of this step is provided by the COBIT framework. Since we are concerned with the planning phase, we focus on how COBIT can help with the detailed planning. It is assumed that the planning team members have read the contract, and have a deep understanding of the current and future modes of operation, and have drilled down into the work items from the statement of work. Furthermore, it is assumed that they have an understanding of the relationship between business goals and IT requirements in the client’s organization. Using COBIT, they are able to prioritize the work items and articulate to the client how the latter will

perceive their business goals being served better as transition and transformation are completed.

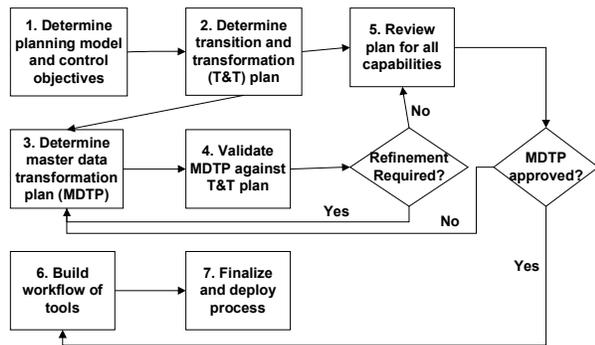


Figure 4: Coordination Process for On-boarding Manager and Master Data Management Lead

The on-boarding manager uses the guidelines provided by COBIT, in its ‘Plan and Organize (PO)’ domain, to define the IT processes followed by the on-boarding team. The on-boarding manager will work with his capability leads to define how the team is organized. The processes and the organizational structure will be created with agility as a goal, since the client’s organization often has changing business priorities which must be tracked as on-boarding progresses. The assignment of process owners, roles and responsibilities will take this dynamic state of the client’s organization into account. The IT processes will be defined within a process framework, such as ITIL for service management processes.

The on-boarding manager will also select metrics, following the guidelines in the ‘Plan and Organize (PO)’ domain of COBIT. These metrics will track how well the entire on-boarding process is progressing. Following COBIT guidelines, he will report periodically to a committee consisting of business leaders from both the outsourcing delivery organization and the client’s organizations. Metrics that track the progress of the transformation projects will show how successfully resource conflicts are being resolved, and the success with which the roles and responsibilities have been implemented.

The MDM lead starts at block 3 in Figure 4. He will use the guidelines, also from the ‘Plan and Organize (PO)’ domain of COBIT, on defining the information architecture. He will start with the client’s business processes and then step down to the process of defining his data model. At the activity level, he will work on agreement with different parts of the client’s organization on the classification scheme and assignment of data owners or data champions who will ensure their part of the organization embrace the changes brought out by the transformation. He will define IT processes so that the same data is not collected in overlapping efforts for different IT services to be provided to the client. He will also define IT processes so that multiple providers, to whom the client has outsourced different IT services, work together from the beginning on collecting and validating master data. This will ensure a timely implementation of the service exchange for routing tickets.

The MDM lead will also select metrics, following the same guidelines, to track how well his transformation

activities are progressing. For example, the fraction of applications conforming to the new information architecture will increase as transformation progresses, while the frequency with which duplicate data elements requiring manual reconciliation are found, will keep decreasing. As new data elements are created by the business users, a smaller percentage will be incompatible data elements, demonstrating the increase in adoption of the enterprise data dictionary.

The first block in Figure 4 also requires the on-boarding manager to create a program management framework. He will use the same guidelines in the ‘Plan and Organize (PO)’ domain of COBIT to manage projects. Driven by the business goal of delivering results within deadlines, the program management framework will be created to monitor the projects and risks. The on-boarding manager will also select metrics, following these guidelines, to track the fraction of projects that are on time, budget and following recommended best practices. He will also track what percent of projects are meeting their stakeholders’ expectations. To minimize risk of failing to meet expectations, he will identify events and trends that might lead to failures, record them, and adopt remedial measures.

B. Delivery Model Deployment

In this sub-process of the on-boarding process, as stated earlier, the people, process and tools are deployed. After they are deployed, the transformation gets done in phases. In each phase, user acceptance testing is done as the transformation is completed, and the new IT services can be deployed to the employees of the client’s organization in manageable units. For example, a service may be rolled out to employees in one country initially, and other countries can be added gradually over several weeks.

Our focus here is, however, on the governance of the people, process, data and tools during this sub-process. The previous section was focused on how the governance framework influences the detailed planning sub-process. However, governance implies exerting control on the people, process, data and tools during execution also. In practice, this can be accomplished when all activities are tracked well, and the time spent together by the delivery teams in meetings is spent productively. We recommend the use of project and portfolio management software that is integrated with an intra-enterprise social networking platform used by the delivery teams. This is possible using the platform of Figure 3, where the bottom layer provides such integration. The social networking and knowledge management aspects of such an enterprise work environment were explained earlier in Section IV.C. Since the work here is focused on transition and transformation, the environment should be configurable with best practices from COBIT and ITIL adopted in the detailed planning sub-process (Section 0). After the process layer in Figure 3 has been updated with the desired configurations, based on the client’s contract, the data processing layer starts reporting on the status and generating alerts as the on-boarding processes are rolled out. The executive dashboards of the user presentation layer will be updated with current status and comments from team

members before the meetings. The meeting time will be used productively to focus on the problems that need the participants' collective attention.

VI. RELATED WORK

Cloud computing has been a promising paradigm to offer IT cost reductions and business agility improvements. Often, a compute or storage service, such as the EC2 and S3 that are part of the Amazon service offerings [25], is consumed via a well-defined functional interface. It is straightforward to on-board customers to such services. A user subscribes to the service from a self-service web portal. Once the user account is created and the credit card payment information is submitted, the service is ready for the user almost instantaneously. IT management services considered in this paper have far more complex on-boarding problems because they rely heavily on people and people processes.

The risks associated with outsourcing IT [26] have led to the study of risk mitigation strategies. Measures for the three major risk factors in IT outsourcing, namely the transaction, customer and supplier, are analyzed in [27]. Governance frameworks are often used to mitigate risk. A unified framework for IT outsourcing governance has been presented in [7], while recommendations for successful governance are available in [28]. In [7], the Balanced Scorecard methodology has been applied to measure the effectiveness of outsourcing from multiple perspectives, including operational excellence, customer orientation and business value. The focus of our work, on the other hand, has been on identifying areas where further research is necessary. Specifically, the governance framework identified by us is focused on standardized processes based on ITIL and COBIT, their customizations in different environments, tracking of process instances, and facilitating continual process improvement. In [36], the outsourcing governance framework focuses on joint processes and relationship management, while the focus of this work on the processes within the service provider organization, with visibility into this organization and its processes offered to various stakeholders through dashboards.

The impact of hosting multiple customers in a shared environment on data segregation, process definition and security has been studied in [29, 30], while the risk of SLA violations based on past distributions of execution time has been analyzed in [31]. We are interested in a different aspect, namely the ability of the customer and provider to collaborate and create instantiations of templates from the shared environment, and refine them for the customizations needed.

Some aspects of the governance framework have received attention in contexts different from ours. In [32], situation-oriented directories are used to obtain a compact representation of responsibilities of stakeholders. Our focus is different. For example, with respect to organizational structure, our research is on capturing the dynamic state of the organization, so that responsibilities are clear in spite of frequent job rotations of the on-boarding team members. In [37], an engineering service bus has been proposed to integrate and configure workflow engines, software

development tools, communication and collaboration tools and project management tools. This is adequate for a software development team, and addresses only a part of the process and data integration we show between the lower two layers in Figure 3. The challenges we face in dealing with roles and responsibilities in large service delivery organizations, and the process variations in different customer contexts go well beyond what these software engineering platforms address.

VII. CONCLUSIONS

The on-boarding process of an IT Outsourcing Provider defines the steps required to transform a customer's IT environment into one that is run by the provider, and which conforms to best practices. It is important to make the on-boarding process as smooth and rapid as possible. The first major research challenge is to create an on-boarding governance framework that works well at the scale and diversity of the largest customers. The framework must ensure that the on-boarding process meets the customer's expectations. Another research challenge is to provide a well-defined and comprehensive view of the key aspects of an on-boarding project including people, roles, responsibilities, and operational-level agreements (OLAs) among multiple internal organizations that are involved. The third research challenge is to improve the process and tools that support master data management. The fourth research challenge identified is to improve collaboration and communication during on-boarding, while capturing knowledge for re-use. We provide recommendations on how to create a governance framework for the on-boarding process in large, customized IT outsourcing deals. Finally, we have outlined an architecture that can be used to integrate our recommendations. We show how this integrated framework can be applied to the on-boarding process. Our goal is to highlight the need for further research on this topic to the services research community.

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