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## Cloud Oriented Business Process Outsourcing using Business Rule Management

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### **Abstract**

*The development of cloud services is rapidly transforming IT outsourcing. Highly standardized services are offered in elastic ways. Pricing models are shifting away from up front investments, allowing pay per use. In business process outsourcing (BPO), these business models are still less common and BPO services are often still implemented on a per customer basis, often heavily based on customer's existing practices. This paper presents a framework for using the field of business rule management (BRM) to develop BPO offerings that exhibit cloud properties. The framework specifies ways in which business rules can be used to parameterize the different aspects of a BPO service. The framework is applied in three practical scenarios, which are evaluated for their cloud characteristics by interviewing experts from outsourcing customers, outsourcing suppliers and consultants.*

**Keywords:** Business Process Outsourcing, Cloud Computing, Business Rule Management, Declarativity, Governance

### **1 Introduction**

Cloud services are transforming the field of IT Outsourcing. Cloud providers offer highly standardized services that can only be personalized to a limited extent. In return,

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the customer receives highly elastic services that scale with his individual demand and the customer gets to pay based on actual use only (cf. Mell and Grance, 2011). They help shifting cost from capital expenditures (CAPEX) to operational expenditures (OPEX), and even aligning cost with actual demand (Armbrust et al., 2010).

The cloud model is still little used in Business Process Outsourcing (BPO) services. Conventional BPO practices often focus on continuing customer's existing processes and applications, and in the past often also on on-boarding customer's existing employees. Due to the resulting one-of-a-kind nature, supplier's employees are assigned to and trained for a specific customer, and can typically not be transparently reassigned without going through some transition process. As a result, pay-per-use may not be feasible, as the costs incurred for each customer are not flexible and temporary overcapacity for one customer can not dynamically be used to service other customers where there is a (temporary) under capacity.

The field of BRM (Hay et al., 2000; Ross, 2013) seems a promising field to underpin BPO services that do exhibit such cloud properties. The concept of declarativity, where the criteria that have to be met are specified and the procedural way in which to reach that state are inferred, elegantly meets important aspects of the cloud philosophy. In the cloud, a customer similarly has limited or no influence on how the service is delivered, and can only specify some of the properties the service will have.

Therefore, our research question in this paper is: How can concepts, techniques and methods from the field of business rule management be applied to develop business process outsourcing offerings that exhibit cloud properties?

BPO offerings with cloud properties could have further practical applications. Cloud oriented BPO offerings could make BPO accessible to smaller organizations, including SME, that might struggle with upfront investments of conventional BPO. Such services could also be part of dynamic sourcing strategies in larger organizations that deal with volatile demand and that use BPO suppliers dynamically to deal with peak demands.

This research is performed within the methodical framework of Design Research (Hevner, 2004). Based on explorative interviews with experts, a framework is proposed that helps to develop cloud oriented BPO offerings using existing concepts and techniques from business rule management. A number of concrete scenarios that fit within this framework is proposed, and these scenarios are assessed for feasibility and cloud properties by experts from the field of sourcing.

Based on the design science research methodology by Peffers (2007), the remainder of the paper is organized as follows. In the next section, the framework for cloud oriented BPO using BRM is drafted. This framework is exemplified in Section 3 by three potential scenarios. Section 4 reports on an initial evaluation of the feasibility and the exhibition of cloud properties of these scenarios by interviewing experts from the outsourcing community.

## **2 Framework for Cloud Oriented BPO**

In order to develop a framework for cloud oriented BPO, we have held explorative interviews with 8 experts from the field of outsourcing. They represent organizations that outsource, supply outsourcing services and consult organizations on their sourcing strategies.

The interviews were conducted in a lowly structured, explorative way. Topics discussed in every interview include their involvement in outsourcing in general and BPO more specifically, their strategies and practices in governing these sourcing relationships. Also, their appreciation of the cloud trend, and its impact on BPO offerings and governance practices was discussed. Specifically, their perception of possible convergence and/or reduction of the degrees of freedom in service parameterization by the cloud was discussed.

From the interviews it is clear that there is a real interest in business process outsourcing models that have low upfront investment, and are elastic in capacity. We have met suppliers that already realize their BPO services in very structured, parameterized ways. Predominantly however, BPO services are implemented on a per customer basis, with their current practices as starting point, realizing little or no elasticity in for example human resource capacity across customers and requiring high initial investments.

## **2.1 Definition of Cloud Oriented BPO**

The association with the cloud metaphor frequently introduces misunderstandings in the explorative interviews. For instance, the relative recent term of Business Process as a Service (Cantara and Lheureux, 2013) used in many cloud descriptions today often refers to highly verticalized IT solutions for generic business functions, rather than the broader service concepts in BPO that typically include human resources. Also, the one-size-fits-all association of cloud services for some still contrasts with the kind of customer specific solutions they see delivered in BPO.

The cloud metaphor is introduced in our research not to make sure the IT aspects of the BPO offerings are implemented using cloud technology, but to develop BPO offerings that themselves exhibit cloud properties such as high elasticity and pay-as-you-go pricing models. To underpin our framework, we therefore use the term cloud oriented BPO rather than cloud based BPO. We have generalized the NIST definition of Cloud Computing, to include the human actors that are often part of BPO:

“Cloud oriented BPO is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of human resources, and potentially supporting computing resources, that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

The five characteristics of cloud services introduced by NIST seem relevant in the BPO domain too. We have generalized them similarly in Table 1.

<b>NIST Characteristic</b>	<b>Interpretation in BPO Context</b>
On Demand Self Service	A BPO service that allows customers to specify and change functionality and capacity themselves, and minimal interaction with supplier is needed to implement those.
Broad Network Access	A BPO service with a high channel independence and location independence, both in terms of customer/supplier interaction as potentially the location of the agents that perform the BPO.
Resource Pooling	A BPO service, where agent capacity is shared across workloads from different customers, by rapid transfer between teams and ultimately by working on different customer's cases transparently.

Rapid Elasticity	A BPO service that scales up and down fast with customer capacity demand, including aligning the human workforce assigned to a customer accordingly.
Measured Service	A BPO service that is priced based on measured usage. This may include direct labor cost per hour for dedicated agents, but typically requires production related pay (number of customer contacts, price per on-boarded employee, etc.) or based on results (generated revenue or cost reductions).

**Table 1:** NIST Cloud Characteristics generalized towards a BPO Context

## 2.2 Mapping BRM Concepts and Techniques to the BPO Domain

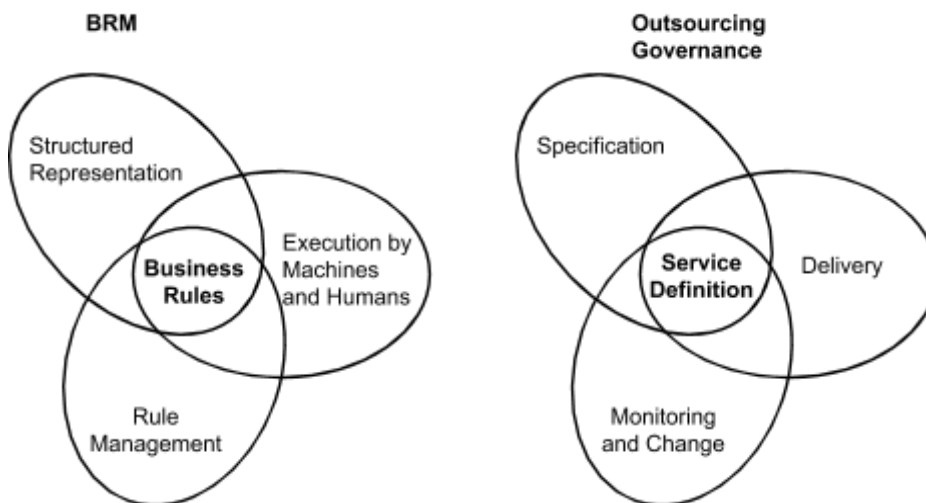
A recurring topic in the interviews and an important challenge when offering cloud oriented BPO services is the parameterization of generic service components into a service that meets the individual requirements and goals of a specific customer.

### 2.2.1 Methods and Techniques from BRM

The field of BRM has developed a number of tools and techniques that make it a candidate to underpin cloud oriented BPO solutions, which is depicted in Figure 1. Structured rule representation techniques like Rulespeak (Ross, 1996) or OMG’s Semantics for Business Vocabulary and Rules (Object Management Group, 2008) can be used to capture the specific requirements of the outsourcing organization, allowing organization to make unique choices within a shared vocabulary chosen upfront.

The executable nature of business rules helps combinations of people and machines to service larger numbers of customers, applying the right combination of rules for each individual case.

BRM’s rule lifecycle management approaches help organizations to capture, validate, assess impact, enact, evaluate and change those rules, often offering tool support across the lifecycle (Boyer and Mili, 2011).



**Figure 1:** Mapping BRM Techniques to BPO Governance Aspects

### **2.2.2 Leveraging Declarativity**

On a more conceptual level, BRM can help change the prescriptive specification practices common to the BPO sector. One of the most important concepts in BRM is that of declarativity: organizations are asked to express their choices and requirements in terms of goals and constraints that must be met in the operation, rather than in terms of procedural recipes *how* those requirements are to be met (Van Grondelle et al., 2013).

This allows the operation leeway when it comes to how to reach goals and stay within constraints at execution time. Rule engines leverage that leeway by automatically computing smart action plans, without sticking to fixed, pre determined procedures. Human experts use that same freedom to really leverage their expertise and deal with exceptional cases (Pesic and Van der Aalst, 2006; Van Grondelle et al., 2013). In BPO, it could allow customers to only express requirements on the aspects that really matter to them. The leeway this introduces could enable suppliers to develop generic services that create economies of scale across customers, while still staying within the individual constraints of its different customers.

## **2.3 Three Aspects of BPO Parameterization**

From coding the explorative interview responses, we have identified three service aspects that were repeatedly mentioned to typically require customer specific choices when specifying a BPO service.

### **2.3.1 Product Characteristics**

Often, the BPO is part of the delivery of the customer's products and service to its end-customers. In those cases, the characteristics of those products typically affect the BPO service. Examples are the rules on eligibility to purchase a product or service or the entitlement to certain service when enrolled. In the interviews, pensions and insurance claims were mentioned as examples of this category.

### **2.3.2 Procedural Aspects**

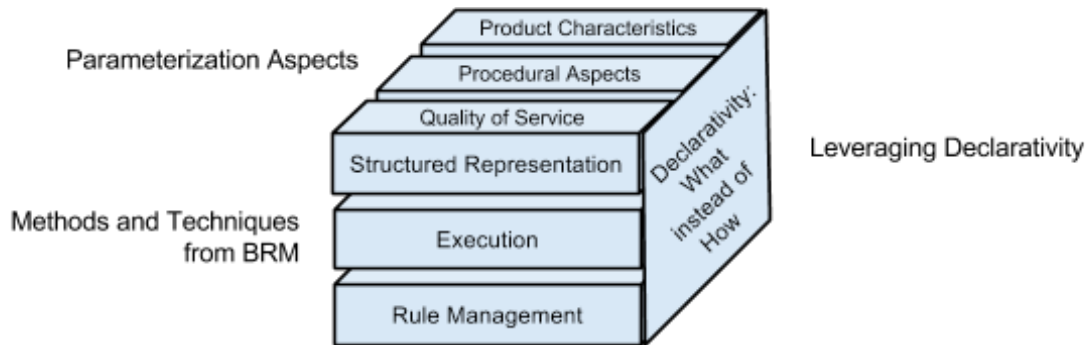
When the former aspect was discussed it was observed in interviews that BPO customers have legitimate needs to influence the procedural aspects themselves too. Policies on for instance quality control, compliance or the treatment of high risk cases may require certain steps to be taken, additionally or at specific moments in the process.

### **2.3.3 Quality of Service**

Like in IT outsourcing, quality of service (QoS) is an important aspect of a BPO service. In the explorative interviews experts observed that concepts such as availability and responsivity translate into the business process domain well, in the form of for instance activity completion times and success rates.

## **2.4 Resulting Framework**

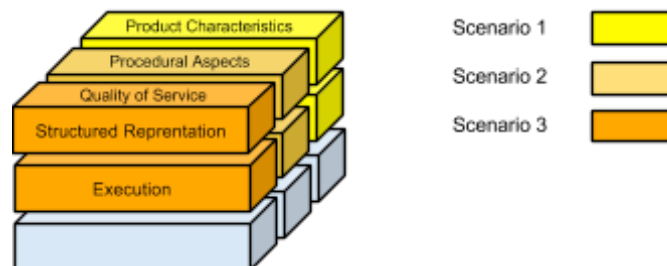
This results in a three dimensional framework that guides how BRM can be applied to develop BPO offerings that exhibit cloud properties. A graphical representation is presented in Figure 2. This framework is operationalized into concrete scenarios in the next section.



**Figure 2:** Three dimensions to applying BRM to develop Cloud oriented BPO Offerings

### 3 Three Scenarios for Cloud oriented BPO using BRM

To be able to evaluate our framework, we have developed three concrete scenarios of BPO using BRM based on our framework. They each are based on existing research and/or actual applications of business rules, although mostly outside the field of BPO. For each scenario, we outline the role distribution between BPO supplier and customer, provide an example, provide background existing practices this scenario is based on, and summarize the analysis how the scenario realizes the NIST cloud properties.



**Figure 3:** Evaluation Coverage of the Framework by the Scenarios

The scenarios each illustrate one of the aspects of BPO parameterization of the framework, as is shown in Figure 3. Although mixed scenarios are certainly anticipated within the framework, such scenarios are not included in this study for the sake of clarity when presenting them to BPO experts in evaluation. Also, the current scenarios do not explicitly address how BRM’s lifecycle management concepts can be applied to manage the rules introduced in the scenarios.

#### 3.1 Scenario 1: Parameterization of Product Characteristics using Decisions

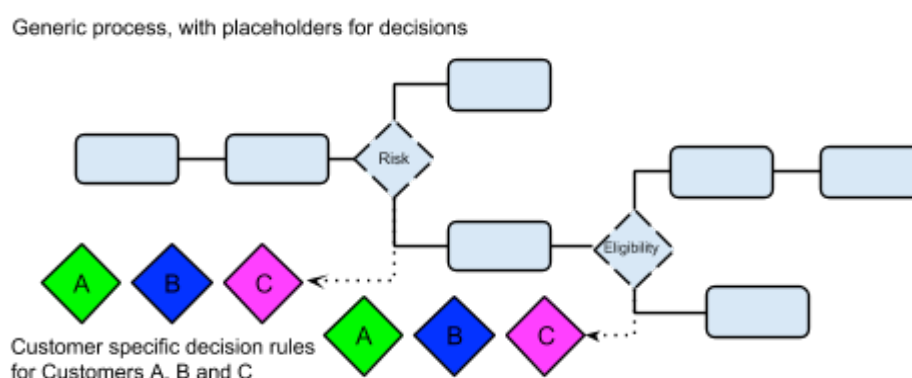
Often, product related decisions guide to a large degree the operational processes in an organization. For instance, when processing insurance claims, or HR or grant applications, the decision who is entitled to what is a key aspect of the different operational processes. They prescribe much of the processing of the applications themselves, but also highly influence online self services or the answering of customer

questions in a call centre. Many sales or marketing processes are guided by best next action type of decisions related to these products too.

An emerging practice in the field of business process management (BPM) is the identification of decisions within business processes, and instead of modeling them within the business process itself using process metaphors, isolating them from the business process and using some rule formalism to model them instead. This has led to the rise of the field of Enterprise or Operational Decision Management (Taylor, 2011). A number of tools for specification and execution of decision models is available commercially. A number of (open) standards like the decision model (Von Halle, 2009) and OMG's Decision Modeling Notation (Object Management Group, 2014) have been developed. Standardization of how to integrate decision models into business process models modeled in Business Process Management Notation (Object Management Group, 2008) is underway.

### 3.1.1 BPO Scenario

In this scenario, the BPO provider develops a generic business process, in which a number of decisions is taken that reflect the characteristics of the product. The BPO customer gets to specify the rules based on which these decisions are taken for the service delivered to his end-customers.



**Figure 4:** A Generic Process, parameterized with Decision Rules

### 3.1.2 Example

A white label pension provider may have the agents and systems in place to administer the pension claims of the members of multiple funds. He may have the processes in place for enrolling in the fund, dealing with changing employment and reaching pension age. Pension funds that delegate their administration to this provider get to specify the rules based on which membership to the fund is granted, contributions are calculated and entitlements are established.

### 3.1.3 Mapping to the NIST properties

This model potentially exhibits a number of the NIST properties of cloud services. As the business process itself is essentially left unchanged, and only some guiding



decisions within the process are redefined on a per-customer basis, it enables a high degree of self-provisioning.

Also, sharing agents across customer cases is quite feasible, resulting in rapid elasticity, as the agents essentially act in familiar roles within a familiar process. It is important to have the customers specify the decisions in a formalism that communicates well for people too. In case of questions, or when handling exceptions, the agents will need to understand the specific decision rules used in this instance and be able to explain them to customers.

Finally, in terms of offering a measured service, the variable decisions often represent classes of cases that affect handling costs, but of which the mix can be part of the specification and pricing. In the example in Figure 4, a BPO provider could for instance offer different prices for high risk and low risk cases, or offer a single price, under the condition that no more than 5% of cases qualify as high risk.

### 3.2 Scenario 2: Specify Procedural Aspects using Declarative Rules

Within the field of BPM, there is a class of declarative process modeling formalisms that focus on capturing the constraints a process flow must meet, rather than prescribing the flow itself (Pesic and Van Der Aalst, 2006; Goedertier et al., 2007; Van Grondelle and Gülpers, 2011). They typically provide rule-oriented formalisms that express criteria when activities may and/or must be performed. Typically, the resulting execution flows are only inferred at execution time.

#### 3.2.1 BPO Scenario

In this scenario, the BPO supplier offers his process offering in terms of a set of generically useful activities or tasks he can provide for his customer's end-customers as is shown in Figure 5. The BPO customer get to specify the rules that determine which activity is performed in which end-customer case, and potentially in which order.

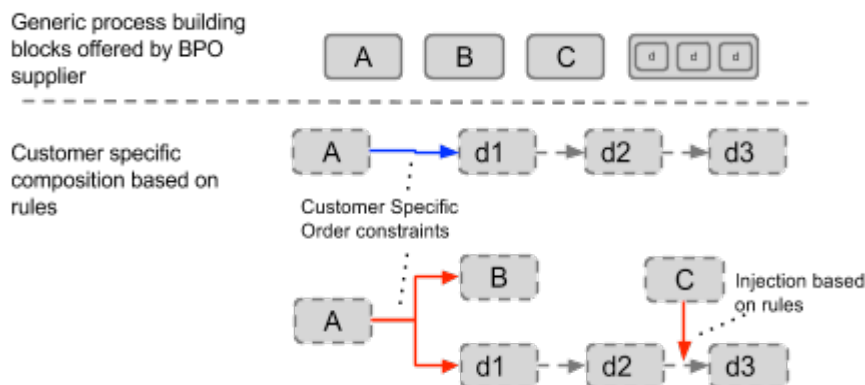


Figure 5: Composing a Customer-specific Business Process

#### 3.2.2 Example

A medical supplier may have all activities (process fragments) in place to support the application for and delivery of medical aid material for customers on behalf of insurers or public agencies. His customers may specify the rules in which cases a complete,

formal eligibility check needs to be performed and in which cases medical aids are supplied on request and the formal paperwork is processed afterwards. Additionally, he may provide rules for different regimes of checking applications depending on the value and fraud risk of specific cases.

### **3.2.3 Mapping to the NIST properties**

Often, the standardized activities can be executed by either machines or agents in ways that exhibit some of the NIST properties. Generic application services can be developed to support certain activities, irrespective of the fact that they are performed only in some cases and in different orders. Generic human tasks, similarly, can often be assigned to agents by task type, without the reason why it needs to be performed being relevant to the agent.

Delivering such a variable process as a measured service benefits from a set of generic activities and tasks that is used across customers. Billing per activity performed is possible, but does not lead to predictable costs. Integrated pricing can be based on historical averages, and also on simulations on the rules as they are drafted by/for a new customer.

## **3.3 Scenario 3: Delivering “the Same” Service at Different QoS**

In IT clouds, the field of scheduling is applied to match supply and demand and deal with mismatches. A well studied problem is scheduling the order in which a sequence of jobs need to be processed by a machine to minimize the number of late jobs or the total tardiness based on a due time per job. In a weighted variant of this problem, a weight is assigned to each job encoding the priority of the job. The scheduling problem then tries to minimize the total weighted tardiness across the jobs, favoring the high priority jobs to some extent to prevent their high contribution to the average tardiness.

The parameterization of SLA's into job due times and priority weights is a strong oversimplification of the types of constructs agreed upon in SLA's. An approach to manage SLA's based on knowledge representation has been developed by Paschke and Bichler. They are able to encode large sets of real worlds SLA's and monitor whether they are met at runtime.

A technique that encodes SLA of intermediate complexity, but that does at runtime maximize revenue by (re) assigning jobs to resources based on SLA reasoning is developed by Macias et al..

### **3.3.1 BPO Scenario**

The final scenario, it is not the functionality (product characteristics) or behavior (procedural aspects) of the service provided, but the quality of service it is delivered at. The BPO provider may offer a generic (or otherwise parameterized) service, and offer it at different qualities of service. The BPO consumer may subscribe to this service and express the quality of service he requires.

The performance criteria agreed on could for instance include response times, numbers of transactions delivered or success rate, and these criteria could or could not have financial consequences in terms of bonus/malus or performance related pay. In cases of capacity shortage in delivering the service to its different customers, the BPO supplier

will typically weigh the consequences of the different ways to assign his resources to the cross customer workload.

### **3.3.2 Example**

A call center may perform outbound calls to customer who have made a purchase on the fifth day after the sale was made. One customer may demand that the call is made on that precise day and pay accordingly. Another customer may agree on calling between day 4 and 7, and negotiate a lower price in return.

### **3.3.3 Mapping to the NIST properties**

This scenario exhibits a number of the NIST properties. As the planning occurs across customers, and the service itself is not very variable across customers, a high elasticity in terms of agents can be reached. This is combined with a very individual regime for the QoS on a per customer basis.

## **4 Evaluation**

In the initial evaluation, the framework and its operationalization into the scenarios have been presented to 6 experts in the field of sourcing, and in semi-structured interviews they were questioned about both relevance and rigor aspects of the results.

### **4.1 Setup**

In all interviews, the framework and the scenarios and examples were presented using the definition, the example and visual explanation present in this paper. Depending on the background of the expert, the business rule management concepts were explained in more depth interactively where needed. After that, a number of questions were asked based on an interview guide prepared upfront.

Each expert was interviewed about four aspects: 1) what their professional role is in BPO sourcing situations, 2) to what extent they agree with the challenges identified earlier in the research, 3) what their first response is on the presented mapping between the field of BRM and the field of sourcing governance, and 4) whether the scenarios seem realistic and feasible, and would address the challenges by exhibiting cloud properties.

Topics 1 and 2 were discussed using structured questions, except for their role, for which no limitative list was used in this stage of the research. Their agreement with the challenges for BPO was asked using a 5-point Likert scale. On topic 3, the mapping between BRM and sourcing governance, the experts were asked for a brief reflection, of which the interviewer took notes. Topic 4 was discussed using a fixed set of questions, asked for each of the three scenarios. These were mainly Likert scale type of questions, apart for the open questions what the most important impact on governance of the sourcing relation might be if the scenarios were to be adopted.

The questions on agreement with the challenges were asked to validate relevance of the research, in the practical sense used in the design science framework introduced by Hevner (2004). The feasibility and extent to which the challenges were addressed in the scenarios were asked to validate whether the developed artifact and its operationalization answered our research question.

## 4.2 Observations

In this phase of the evaluation, the one to one and a half hour interviews were conducted with 1 outsourcing customer, 4 outsourcing suppliers and 1 consultant. Although the number of interviewed experts is far too low to draw any firm, quantitative conclusions, a number of interesting observations can be made from the interviews.

### 4.2.1 Relevance of Cloud for the BPO market

The participants were asked their agreement with the statements in Table 2, with their agreement expressed using a 5-point Likert scale.

	Completely Agree	Partly Agree	Neutral	Partly Disagree	Completely Disagree
1. Bespoke BPO is challenged by Cloud/Utility trends	3	3			
2. Bespoke BPO only feasible for large organizations	2	4			
3. A market for highly standardized BPO is emerging to support SME and independent professionals	2	3	1		
4. In many outsourcing situations over-specification by the customer leads to under-leveraging the expertise of the supplier	1	5			
5. When outsourcing multiple services to different cloud providers, governance can become unmanageable <sup>2</sup>	2	2		1	

**Table 2:** Participant’s Agreement with the Statements on Cloud and BPO

The participants agreed, in part or completely, with all five statements. One participant indicated that the SME sector was unknown to him and scored the associated statement neutral. Another participant has concrete ideas and experiences how agile methods can work when integrating cloud services, and scored disagreement in part to statement 5. On that same statement, two respondents mentioned the increasing importance and effect of open standards in reducing the impact of integration. One also mentioned that the governance challenge may be lower for BPO cloud services, as their verticalized scope will typically lead to reduced number of “touch points” and less horizontal, technical integration.

### 4.2.2 Mapping of BRM to Outsourcing Governance

In the midsection of the interview, our conceptual framework for developing BPO with cloud properties using BRM was presented to the respondents. The feature mapping of BRM and outsourcing governance, as depicted in Figure 1 in this paper, was discussed. It was met with recognition, yet at different levels, mainly due to different levels of familiarity with the field of BRM. Most respondents representing suppliers could mention similar parameterization aspects in their respective application stacks. One respondent made a link to the concept of cognitive computing, which for him was a linking pin to enabling automated agents.

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<sup>2</sup> Only answered by 5 out of 6 participants

The second concept presented was that of declarativity. The notion that customers only express the requirements and goals that need to be met, and not the procedural steps how to meet them triggered a lot of response. Most suppliers expressed in some form the experience that only after complying with the initial, overspecified specification they increasingly gained the trust to propose improvements or alternative approaches. One respondent saw a distinction between outsourcing for cost reduction purposes and outsourcing to leave current practices altogether. His example involved banks that to some degree have to reinvent themselves. In the process, they outsource big aspects of their work to reduce legacy in business processes and technology, and are inclined to steer on results and award autonomy to the supplier in reaching that goal.

### 4.2.3 Assessment of the Scenarios

Finally, the operationalization of the artifact was presented in the form of the three scenarios in this paper.

	<b>Already Done</b>	<b>Unseen, but Feasible</b>	<b>Hard to Imagine</b>
Parameterization of Product Characteristics using Decisions	6		
Specify Procedural Aspects using Declarative Rules	2	1	3
Delivering “the Same” Service at Different QoS	4	2	

**Table 3:** Participant’s Assessment of the Scenarios

As is seen in Table 3, Scenario 1 was recognized by all participants, and often implemented in rather structured ways using for instance service templates. Scenario 2 was rather abstract, according to 3 participants, and as such it was hard to imagine what such a scenario in their field of business would look like. On the other hand, authorization rules were mentioned by two participants as a means to in- or exclude certain steps for certain customers or cases.

Scenario 3 was recognized by 4 respondents, in the sense that they had quality of service related agreements with their customers, and that these agreements reflected on the service fulfillment. The examples they provided could well be supported by scenario 3, but were typically at this time not part of an integral, dynamic parameterization of their service. One of the participants described a practice where an external team monitors performance with respect to SLA’s from the different teams, and gives the team leads queues to reconfigure when KPI’s are at risk. That process resonates very well with scenario 3. Reconfiguration was however done within the customer specific team, for instance by switching team members from email team to the telephone team.

Two respondents mentioned with respect to scenario 3 the risk that also occurs in for instance ITIL prioritization of tickets: Prio’s 1 and 2 are processed, but tickets of lower priority end up in a reservoir of unprocessed requests. One participant outlined how scenario 3 could be used for temporary dealing with under capacity, but would lead to similar unprocessed work in case of structural under capacity. Another participant described how this scenario would support mixed workloads, where low margin work with flexible QoS constraints could create volume to support the high margin work with high QoS constraints.

#### **4.2.4 Additional Observations**

A number of interesting observations were made by the respondents, independent of the direct interview topics.

First, it was observed that in those cases where BPO offerings are in fact based on generic templates or reference models, that genericity is typically kept under the hood. Customers are still asked for their unique requirements, which are then internally fit to the generic models and templates. This genericity is not used to qualify as an expert or as a means to guarantee predictable results or economies of scale.

Also, many respondents mentioned initiatives to reach elasticity of different kinds, but almost without exception that elasticity is limited to single accounts when human agents are involved. Training agents for specific accounts is still mentioned often as the main reason for this. In one interview, a direct reference was made to the previous observation: As the genericity is under the hood, agents could in principle be expected to work across accounts, but the local terminology and implicitness of the underlying models prevents fast transfer of agents between accounts.

Finally, a more cultural dimension was mentioned repeatedly in both explorative and evaluation interviews. Outsourcing a process, especially for the first time, was said to require a degree of 'letting go'. Contracts based on results and performance left some customers with a sense of a lack of control. Not much input is needed of them in daily operations, as the BPO supplier acts autonomously within the agreed parameters. One respondent shared anecdotes on how as a service level manager he would detect this happening when customers requested extra site visits or additional bespoke reporting.

## **5 Conclusions and Future Work**

Our research question in this paper is how concepts, techniques and methods from the field of business rule management can be applied to develop business process outsourcing offerings that exhibit cloud properties.

Based on the challenges identified in the explorative interviews, and the measured agreement with those challenges in the evaluative interviews, we believe that there is a real interest in the development of such cloud oriented BPO offerings.

BRM's techniques and methods map well to the different aspects of BPO governance of specifying a service definition, monitoring and reporting on it at execution time, and having a methodical framework how to deal with improvements and external change. Furthermore, BRM's foundation in the concept of declarativity could help establish practices where BPO customers only express their requirements and goal, and that way leave freedom to their BPO suppliers to leverage their expertise in meeting those. This concept resonated extremely well with the interviewed experts in evaluation.

The three parameterization aspects of BPO identified, map well to concrete applications of business rules in other sectors. The BPO scenarios in which we translated those use cases to the field of BPO have been evaluated by initial, qualitative interviews. The first is widely recognized by the experts, although currently often not methodically founded in a comprehensive field such as BRM. The other two are either deemed imaginable, or recognized as the conceptualization of small, local initiatives already applied.

We are in the process of conducting wider, more thorough evaluation amongst the outsourcing community in the Netherlands. In addition, we are interested whether governance challenges observed in cloud IT, such as the emergence of shadow IT and increased coordination and integration efforts between individually purchased cloud offerings, may transpose to cloud oriented BPO as well. If so, additional research is needed to establish whether the declarative approach used in our study might help mitigate these.

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