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Title & Abstract Pages

A Study on Modeling Efficient Business Process Framework: Mapping Business process Layer and Data Layer

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Abstract

To reduce development time and cost with mapping CBD(Component based development) and BPM(Business process modeling), we mentioned BPF(Business process framework), that is, six layers based on a closed architecture. In this paper, we define BPSQL(Business Process Structured Query Language) to retrieve information between each layer, and shows to migrate and access information between each one layer and right under the layer with the simple associated query statements of BPSQL.

Keywords: Business Process Modeling, A Closed Architecture

1. Introduction

To adapt very quickly changing or new business, an enterpise needs to be provided with a business integrated system. Most enterprises have a computer system to efficiently operate a sysmatic information, and also to appropriately preserve/manage it, which consists of a closed layer archtecture[2]. The closed architecture is based on the layer mechanism, and dircetly access right under the layer. Seo and Kim[4] suggested and defined five layer structure based on the closed archtecture. Seo[6] also suggested to reuse the exsitng software component for reducing development time and cost with mapping CBD(component based development) and BPM(Business process modeling)[2]. On the previous proposed business process framwork based on closed architecture, we define BPSQL(Business Process Structured Query Language), and show to retrieve and access information between each layer with the simple associated query statements.

This paper describes as follows: it mentions related work in section 2, shows bussiness process framework(BPF) based on a closed 5-layer architecture in section 3, describes a part of BPSQL(Business Process Structured Query Language) with a case study in section 4, and finally conclusion.

2. Related Work

In this paper, the layer structure may be improved on ITA/EA(ITArchitecture/Enterprise Architecture).

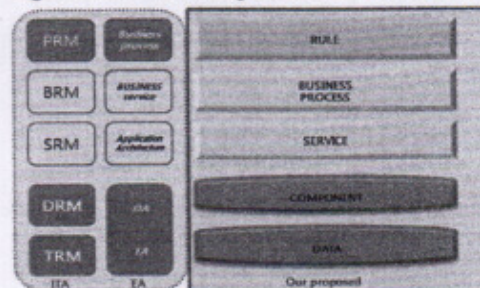Figure 1 shows the comparision of different ITA/EAs.

Fig. 1. Comparision of ITA/EA architectures

ITA/EA involves a system to work integrated managemant to effciently support tasks of enterprise or organization with information techique information. The top layer of ITA consists of PRM(Perfomance referece model), which provides standard evaluation measure for the optimumal business evalution.The next layer involves BRM(Busimess reference model), describes functional cooperation between associated organizations, which identifies common business from each own independent organization.

DRM(Data reference model)is Data Referenc Model.

Each agency, customers, and exchange of information between companies and is a model that identifies the type of exchange.SRM is Service Reference Model. To identify and reuse of business services is a reference model. TRM is Technical Reference Model. Information services necessary for business activities will be identified and described, and provides an abstraction of the concept of the platform to define the interface between the components.

3. Business Process Framework on a closed 5-Layer Architecture

This chapter presents a proposed closed architecture of 5-layers. Fig. 2. is 5-layer based on closed architecture. Business rule layer is constraints before running process[8].
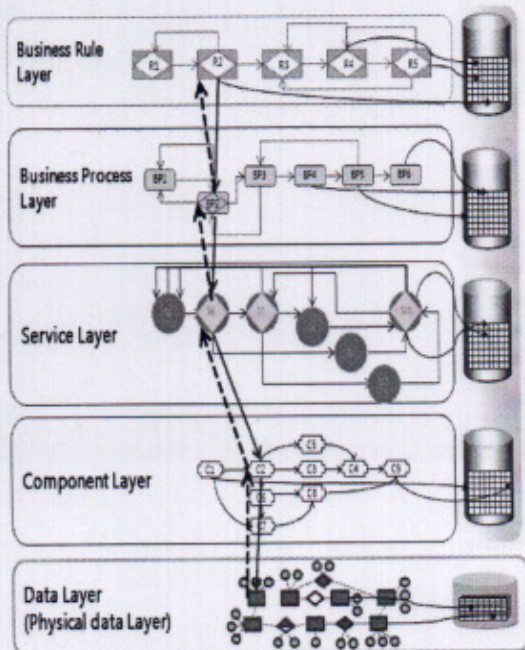

Fig. 2. A Closed architecture framework 5-layer

Business process layer is a step for a certain goal and a

concrete activity procedure[10]. Service layer can combine services for easily replacing about business requirement changes. A service may become running of an appplication[7]. Component layer is a dynamic workflow for developing a service [1]. Components consist of multiple workflow components[11].

Data layer is physical data storage. Entire data is stored as a table.

As devloped like this, the closed architecture has following these advantages[9]:

-Easily access to information.

-Available to search information.

-Easily manage a system.

- Maintain a system easily.

- Reduce development time.

For a developer side, although customer requirements are frequency change, it modify a process, a service, a component, data with mapping customer's requiremtent.

-Change business requirement easily[6].

After developing the system, it is easy to manage when business requirement is changed, we modify a service, a component, data with mapping changed business.
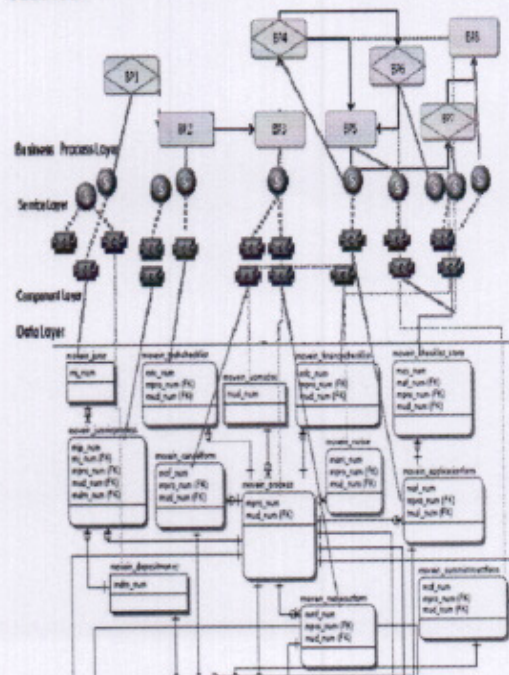

Fig. 3. 5-Layer architecture for Information Integrated Management System

Fig. 3. is a information system structure based on 5-layers. Fig 3 shows mapping on business process layer and data layer. Business rule is placed in top of 5-layers[5]. There are services for a business process or business processes. Component layer is consisted of

variable components for generating a service. Data layer is a physical data storage.

4. Business Process Structured Query Language (BPSQL)

Table 1. BPSQL

```
<query expression>:= <retrieval specification
clause><object reference clause>|<search condition
clause>|
<retrieval specification clause>:=SELECT<retrieval
spec>
<retrieval spec>:=*//All relevant information//
|<function>|<attributes>
|<keyword descriptors>
<keyword descriptors>:= DESCRIPTION
...
<object reference clause>:=
FROM<data object references>
|FROM<process id>(data object id)
...
|FROM<data object reference>IN ...<data object
reference>
<data object reference>:=[<instance variable>:]<data
object                          id><searchcondition
clause>:=WHERE<search-constraint>
|IF<search constrain>
|LIKE<text-pattern>
<search-constraint>:=...
|<non_temporal constraint>
<non_temporal constraint>:=<function>
|<condition predicates>
...
```

Table1 shows to define a query language of 5-layers. We name a query language for Business Process Query Language (BPSQL) based on nested query structure. BPSQL in Table1 is available to access data tables to map a process layer.

Following query language shows migration for searching from a layer right to next layer.

```
SELECT *
FROM moving-in(moving-in_request)
WHERE moving-in_request.pr# = 5112
```

Business process is consists of various process. Above query language describes that it searches the number 5112 in MOVING-IN process. So it searches a MOVIN-IN process. Fig. 4 shows a BPSQL explanation. Line is a related with internal model. Doted-line linked with sub objects. Line and doted-line describes a linking a super model and a sub model. As soon as it requests a moving-in event to MOVING-IN process, it will trace the related entities.

BPSQL solves some problems of join statements in database with nested SQL structure.
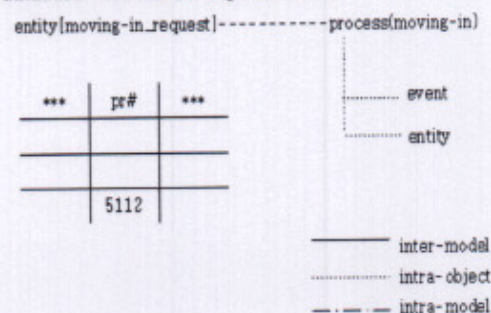

Fig. 4. Migration with BPSQL

5. Conclusions

Business process framework based on closed architecture, we define BPSQL(Business Process Structured Query Language), and shows to retrieve and access information between each layer with the simple associated query statements of BPSQL. Information integrated management system is developed on our closed architecture.

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