

Using the business process management system for developing academic business processes in Social Networks

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ABSTRACT

Context: The use of Social Networks and the continued need for business process management in organizations have resulted in a new management paradigm, the Social Business Process Management (SBPM). **Goal:** This work investigates, defines and analyzes criteria and rules that, when applied to a Social Network, optimize the services and academic planning. **Results:** This work presents an integration between Social Networks and Business Process Management System (BPMS), considering the academic business processes management combined with an efficient academic management, and also presents a guideline for implementation of BPMS with Social Networks. **Conclusion:** This solution promotes better visibility of services in higher education institutions and agility in academic processes.

Keywords

Social BPM; Architecture; Education

1. INTRODUCTION

The business processes can offer competitive advantages to organizations. To be effective, they must be able to define, analyze, improve, measure and control their processes. Through process vision, the organization will be able to understand what needs to be done and how do it, and thus, the tasks will not be defined from a specific department but from the entire company.

One of the increasing approaches in the market with this goal is the Business Process Management (BPM). According to [1], BPM is a key paradigm of enterprise to increase agility in organizations. Processes can be defined as any activity or set of activities that receives an input,

adds value to it, and provides output to a specific customer. According to [2], they use the organization's resources to deliver objective results to their customers. Authors in [3] say that, by BPM nature, process automation is a social activity. The collaboration and communication standards that are now increasingly referred to as social computing were also central to the BPM and workflow models of the early 1990s.

With the increase in the social software usage and continuous user collaboration in the different areas of daily life, the BPM traditional models have been influenced by social characteristics that promise to improve and overcome the BPM traditional approaches limitations. According to [4], the initial investigations in the Social BPM (SBPM) area have occurred, however these researches are still in the early stages.

Many companies have already joined the use of Social Networks as a communication channel between them and their consumers, but according to Magdaleno [5], for every three people who post a complaint on social media, one will be totally ignored. However, 80% of online companies are under the impression that they deliver exceptional social media customer service, while only 8% of their customers say that they agree with this. The companies concentrate services on their business processes and increasingly propose the use of online services to add value to their customers and partners. This new business model is heavily based on Information and Communications Technology (ICT) and has led to the emergence of virtual companies, such as e-marketplaces, and e-services.

The organization development has become an increasingly complex process, not only depending on the technical

problems resolution, or the use of modern technologies, but also highly dependent on the business processes, aiming at the alignment of the organization with the real needs of business and services. Current scenarios show how business processes management applied to Social Networks can help and facilitate the academic processes management. According to [6], the intention to study and apply the business processes management in organizations occurs for its contribution in the orientation of the organizational problems solutions. The new services, such as Facebook Platform, Google Friend Connect and MySpaceID, let third-party sites integrate their applications without having to build their own Social Network. These Social Networks connect to services by increasing access to information and enriching user data on the Social Web, though they also present many security and privacy challenges.

Due to these characteristics, this article concentrates on the academic business processes of the University of Pernambuco (UPE), Caruaru Campus, through the development of a framework for integrating a process-oriented Social Network named Follow Edu. According to [7], the social software provides a platform for collaboration between individuals and groups and encompasses a set of tools and applications that allow group interaction and computer mediated communication. The academic context, which is the scenario proposed in this paper, encompasses several educational demands such as requesting statements, school history, extension courses, diploma request. These services are usually offered manually, often without the possibility of monitoring the processes that involve the actions. Another point that was observed within the same context was the high rates in reproved disciplines that are considered important in courses in the technology areas, such as programming and mathematics. There was no clear contingency planning to mitigate these facts, making it impossible that academic management can act in a systematic way.

Therefore, we propose the Follow Edu¹ with the main objective to provide business process management (which in this case covers the academic context) together with Social Networks in order to extend the benefits of using the information that passes in the Social Network through processes controlled by Business Process Management Systems (BPMS), improving the organizations service delivery

This paper is organized as follows: Section 2 presents some basic concepts useful for this work, such as BPM, BPMS and SBPM. Section 3 describes our proposal and some results from the implementation. Section 4 presents some recommendations with the goal of supporting organizations in the implementation of SBPM. Section 5 presents the related works. Finally, Section 6 presents our conclusions and future works.

¹ Available at www.upecuaru.com.br/followedu

2. BACKGROUND

This section aims to present the main concepts that justify the solution proposal, describing them briefly.

2.1 Business Process Management

According to [8], BPM is a disciplined approach to identify, design, execute, document, measure, monitor, control, and improve automated or not automated business processes to achieve the intended results consistent and aligned with the strategic goals of an organization. According to [9], BPM is a methodology that involves several concepts from the development of a business plan and follows up to the organization management control. This methodology is based on a set of techniques that unifies Business Management and Information Technology focused on optimizing results through process improvement and integration.

BPM allows to model an existing process, test countless variations, manage improvements and/or innovations that the organization intends to follow, and return the results of these process analysis quickly. The authors in [10] define BPM as a field of knowledge served by Information Technology (IT) and organizational management where the focus includes concepts, methods and techniques to support the conception, administration, configuration, and analysis of business processes.

According to [8], BPM implies a permanent and continuous commitment of the organization to its processes management. This includes a set of activities, such as modeling, analysis, design, performance measurement, and process transformation. It continually engages an endless feedback cycle to ensure that the business processes are aligned with the organizational strategy and to customer focus.

2.2 Business Process Management System

Professionals involved in various BPM activities have increasingly focused attention on computational applications to assist in the analysis, conception, implementation, execution, management and monitoring of business processes. One of the most used business process technologies is the BPMS (Business Process Management Systems), where according to [8], the life cycle of development, implementation, measurement and monitoring processes can involve several complicated activities.

Computer systems to support these activities have matured in sophistication. All studies of successful BPM programs point out that BPMS are important and necessary components of any BPM effort. According to [11], BPMS is a system composed of software resources, where its main function is to support the business process management automation. BPMS systems are primarily responsible for modeling, executing, controlling and monitoring the entire business process life cycle. The authors in [8] define BPMS as a set of tools that links information technology to the

business environment, where all business development occurs within the BPMS, for example, when a person responsible for a particular process starts an activity and logs in to an application, it is ensuring that the models and rules previously defined in BPMS are run. Are still defined as purposes: process modeling, workflow modeling, rules definition, simulation of business operation, process automation, business operation, performance monitoring, monitoring and control of activities.

2.3 Social BPM

According to [12] traditionally, the focus of the Process Management area has been on highly repetitive transactional processes. Thus, BPM initiatives were often limited in environments that require diversity and less predictability in the context of process execution. SBPM is the interaction between social software and BPM to overcome some limitations of traditional BPM systems. According to [13], SBPM is a methodology to bring more and diverse voices into process improvement activities and to describe the processes of collaboration and their interactions. Figure 1 illustrates the interaction of social media with the primary processes of organizations.



Figure 1. External Social Presence Linked to Primary Processes [14]

According to [15], SBPM aims to connect people and processes. A process cannot be modeled without considering the people who will execute it and how they interact and relate with each other. On the other hand, the collaboration integrated into the process context has a clearer objective that facilitates and guides the work group.

The author [14] states that SBPM is already being used by public organizations in some countries, making processes more dynamic at run time and bringing transparency and results to citizens. In the case of Brazilian federal public universities, due to their particularities, the following main benefits were identified through their application:

- **Transparency:** BPM Social is capable of materializing transparency in organizations and can make this an institutional value. In the case of public organizations, more than a value, transparency is considered by the Brazil Constitution of 1988 a constitutional principle and should therefore be incorporated into the public administration. In this way, the transparency of BPM Social in universities can benefit not only the final client (community, students, public servants, and others) with demonstration of the progress of their demands process, but also facilitates the performance of those involved in the processes execution.

- **Greater agility:** this feature incorporated into the processes management through the use of social media is able to soften the inflexibility that the university bureaucracy provides through the legislative body to which it owes obedience. Another point is the facility to obtain feedbacks faster and the identification of bottlenecks or errors from the beginning of the process execution, in order to make promptly corrections and help in identifying which processes really contribute to add value to the institution.
- **Organizational integration:** the connection of all those involved in the process through corporate social software consequently promotes greater integration between people and improves the organizational climate through spontaneous relationships.
- **Knowledge dissemination:** the bureaucracy inflexibility in public universities has historically contributed to the consolidation of a culture prone to isolation. This individuality, consequently, generates the knowledge retention and makes it difficult to understand the process flows. BPM Social supplements this deficiency by facilitating the change process and preparing the management for future improvement actions, since by knowing how the process works, people tend to accept it more easily

The authors [3] also affirm that SBPM technology aims to integrate the organizational information systems, the BPMS, social technologies (software/social medias) and the organizational communication and collaboration environments (intranets, e-mail, intra-organizational Social Networks) in order to increase collaboration between process executors.

According to [15], the main suppliers of the BPM market have launched products related to SBPM, offering the following functionalities: collaborative process modeling; discussions about the process; news feed for sharing facts about the process; chats, wikis and blogs; integration with email and integration with mobile devices.

3. PROPOSAL

This work uses a methodology of scientific research based on the Hypothetical Deductive. In this method, scientific research aims to build and test a possible response or solution to a problem.

In the increasingly competitive market, organizations seek to improve their internal processes with the objective of adding value to their clients, thus increasing management visibility, customer satisfaction and continuous process improvement. Scenarios such as those described in the previous section show how business process management applied to partner networks can help and facilitate the management of academic processes. According to [6], the intention to study and apply the management of the business processes in organizations occurs for their contribution in the orientation of the solutions of the organizational problems. In fact, it is necessary for

organizations to understand their processes through the initial modeling of their stages, then to perform an analysis of possible bottlenecks and improvement points, and finally, a design of the processes contemplating the necessary adjustments to provide quality services. However, there is a lack of clear and direct rules that guarantee and guide the integration and use of Social Networks with BPMS in the academic field, as well as the standardization of service oriented architecture that supports such integration.

3.1 Hypothesis

Considering SBPM aims to improve services, visibility, strategy and academic management in the university environment, the hypothesis that leads to this work is: If the use of automated business processes in academic Social Networks can help in the management and improvement of services provided by the university, then Follow Edu can serve as a tool for academic support, benefiting teachers, students and administrative staff.

3.2 Follow Edu

Initially, a survey of the art state was made based on a bibliographical review. This was undertaken in books, publications, scientific articles, theses and dissertations on Business Process Management, Social Networks and SBPM.

Once the bibliographic review was done, the problem and the hypothesis were defined and the proposal was elaborated. The research is in the sixth step: continuous improvement. This was initial after the validation stage of the tool with university employees and students. Where this step will be executed indefinitely to improve it. It is important to remember that after completing the research, the improvement phase continues to improve existing applications with the use of the tool.

The main idea of this research is to investigate the benefits of adopting BPM in Social Networks to support academic business processes through integration with SOA, aiming at improving the visibility and academic management of higher education institutions, as well as providing better quality information about the steps of the process for the students. However, business processes have not been defined for use in Social Networks, because although they are close, Social Networks and BPM have specific contextual information, such as phases, system rules, the need to serve their consumers, and others. The need arises to define an architecture and framework for the creation of business process management in social networks.

This work investigates, defines and analyzes criteria and rules that, when applied to a Social Network, optimize the services and academic planning. Thus, the main objective of this proposal is the integration of these concepts in order to allow the creation of diverse academic business processes within the user's web environment, allowing the real-time monitoring, management and the activities

visibility created within the organizational processes. In addition, a process-oriented Social Network, named Follow Edu, will be developed with the purpose of validating the proposed integration architecture. Thus, whenever the text refers to the system, it is understood that it is referring also to the architecture.

3.3 Follow Edu Architecture

Follow Edu is a framework for integration between Social Network and BPMS using an SOA layer. Through this system, all processes created in BPMS can be integrated into a Social Network, as well as providing process data, increasing the academic services visibility and decision making, collectively. The Follow Edu architecture consists of three layers. The Figure 2 illustrates an architecture overview.

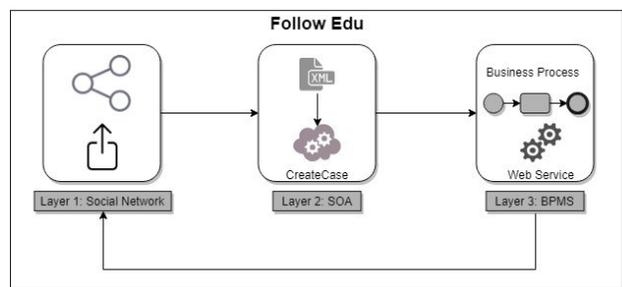


Figure 2. Overview of Follow Edu Architecture

Figure 2 shows the framework integration, the business processes information and parameters will be transferred and thus generating an XML that will be sent to layer 2, where, then, the method *createCase*, available in the SOA architecture will be used and has the function of creating the cases inserted in the Social Network Follow Edu within layer 3 that will be the BPMS.

Considering the components of Figure 2, a brief description of each component will be presented below, informing its responsibilities.

- Follow Edu: Developed through the flexible platform for open source Social Networking customization called HumHub, it has its technology developed in PHP using MySQL database. The Social Network has the following functions: like, follow, users, mention, place tags, dashboard, notifications, user groups, user profile, user approval system, field customization and e-mail sending.
- Integration Framework: In the integration framework the processes parameters and attributes will be inserted into Follow Edu, it is through the integration framework that the connection with the SOA layer will be structured, sending an XML with the necessary information to create a new case within the BPMS. **¡Error! No se encuentra el origen de la referencia.** shows a runtime mounted XML with the parameters of the Extension Course processes to perform social network integration with BPMS.
- SOA layer: To load the XML generated by the integration framework uses the SOA layer of BPMS through the

WorkowEngineSOA method, this method has the function of managing the processes ow through Bizagi BPMN Engine, it aims to start processes, advance activities,

```
string sxml = "<BizagiParams>\n";
sxml += "<domain>domain.com\n";
sxml += "<domain>domain.com\n";
sxml += "<userName>admin/userName\n";
sxml += "<Cases>\n";

if (drProcesso.HasRows)
{
    while (drProcesso.Read())
    {
        sxml += "<Case>\n";
        sxml += "<Process>Extensao_Inscricao_Curso/Process\n";
        sxml += "<Entities>\n";
        sxml += "<App>\n";
        sxml += "<Process>\n";
        sxml += "<NomeDoCurso>" + drProcesso["NomeDoCurso"].ToString() + "</NomeDoCurso>\n";
        sxml += "<ObjetivoCurso>" + drProcesso["ObjetivoCurso"].ToString() + "</ObjetivoCurso>\n";
        sxml += "<Carghorarias>" + drProcesso["Carghorarias"].ToString() + "</Carghorarias>\n";
        sxml += "<DataInicio>" + drProcesso["DataInicio"].ToString() + "</DataInicio>\n";
        sxml += "<DataFim>" + drProcesso["DataFim"].ToString() + "</DataFim>\n";
        sxml += "<Observacao>" + drProcesso["Observacao"].ToString() + "</Observacao>\n";
        sxml += "<NomeCompletoInstructor>" + drProcesso["NomeCompletoInstructor"].ToString() + "</NomeCompletoInstructor>\n";
        sxml += "<CPF>" + drProcesso["CPF"].ToString() + "</CPF>\n";
        sxml += "<EmailInstructor>" + drProcesso["EmailInstructor"].ToString() + "</EmailInstructor>\n";
        sxml += "<TelefoneInstructor>" + drProcesso["TelefoneInstructor"].ToString() + "</TelefoneInstructor>\n";
        sxml += "<FormacaoInstructor>" + drProcesso["FormacaoInstructor"].ToString() + "</FormacaoInstructor>\n";
        sxml += "</Process>\n";
        sxml += "</App>\n";
        sxml += "</Entities>\n";
        sxml += "</Case>\n";
    }
}
sxml += "</Cases>\n";
sxml += "</BizagiParams>\n";
```

Figure 3. XML with parameters of the extension

trigger events, abort process instances, and more. After the *WorkowEngineSOA* instance is performed the *createCases* method use, this method is used to create any number of cases within the BPMS Bizagi Studio, initiating process through external applications. Figure 4 shows a code part as an example of using the *WorkowEngineSOA* and *createCases* methods.

```
public static void EfetuarCarga()
{
    //Instanciar Webservices do Bizagi
    WebReference.WorkflowEngineSOA ws = new WebReference.WorkflowEngineSOA();
    ServiceReferenceBizagi.EntityManagerSOA wsEnt = new ServiceReferenceBizagi.EntityManagerSOA();

    ///Instanciar classe que retorna o XML para o createCase
    CriarXML cXML = new CriarXML();
    string sxml = cXML.criarXML();

    XmlDocument xDoc = new XmlDocument();
    xDoc.LoadXml(sxml);

    // Criação do XML que mostra quais registros foram criados
    criaArqLog("../XML-Envio/createCase XmlEnvio.xml", sxml);

    // Evento do createCase
    XmlNode xn = ws.createCases(xDoc);
}
```

Figure 4. Using the *WorkowEngineSOA* and *createCase* methods

3.4 Current status

The Follow Edu Social Network has already been authorized by UPE Caruaru’s academic management and approved at a collegiate meeting, thus becoming an institutional tool for academic services. Presently the Follow Edu is in operation in the UPE Caruaru official domain², with a total of 43 users.

Some university services are being used. Currently, the user can select the course that wants to participate, the administrator can open or close the enrollment of the courses within the Social Network itself, thus facilitating the insertion of students in extracurricular activities offered by the educational institution.

As shown in Figure 5, the inscriptions in this type of activity resorted to archaic processes, where the registers

² <http://upecaruaru.com.br/followedu>

were realized in work-sheets. Thus, with the use of the tool, it became clear that the integration of the Social Network with the academic system gave agility to various processes within the institution. It is worth mentioning that the students themselves mention the current ease of enrolling in the activities, as well as having access to information about events in the institution, practically in real time.

Figure 5. List with available activities for student to enroll

4. GUIDELINES FOR THE IMPLEMENTATION OF BPM IN SOCIAL NETWORKS

This section intends to present some recommendations with the purpose of supporting organizations in the creation of their services through business processes in Social Networks, aiming to ensure a better follow-up of the services rendered. The Figure 6 presents an overview of how the guidelines were mapped and their relationships with the subjects covered in this work. These relationships are described below:

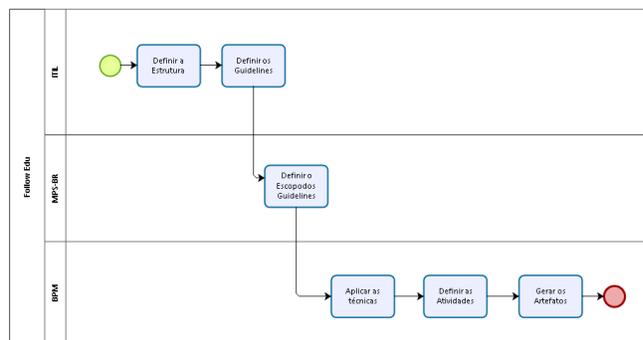


Figure 6. Relationship between the subjects discussed

- Define the structure: This activity is based on the ITIL service design sections (Information Technology Infrastructure Library), based on the OGC Service Design, where the structures of this management were adapted to better meet the needs of the guidelines proposed in this work;
- Define the guidelines: The definition of guidelines follows the premises established in defined structures, i.e.

the ITIL service management points were identified and adapted in the context of business process;

- Define the scope of the guidelines: This activity was adapted from General Services Guide to MPS-BR, with the purpose of supporting the identification of business goals, the impact on the processes and the intended results of the processes of each proposed guideline in this work;
- Apply the techniques: This activity was based on the Body of Knowledge [8], to support how the recommendations of use of each guideline should be realized;
- Define the activities: In the context of business process management in Social Networks, this activity is based on SBPM for better divide the guidelines interaction phases, respecting the proposed framework, aiming to align the traditional process management activities with Social Networking services activities; and
- Generate artifacts: Following BPM management practices described in [8] and cited in the Section (Business Process Management), this activity has the purpose of generating control artifacts to support the Follow Edu implementation, respecting the existing cycles in the SBPM;

The description form of the recommendations is through guidelines, whose format follows the standard listed below, which was adapted in the MPS-BR General Services Guide [16] activities:

- Business objectives: describes the objectives to be achieved with the activity accomplishment and provides general orientations;
- Required tasks: identifies and describes the required tasks to achieve the objectives and the expected results for the process; and
- Expected results of processes: lists the inputs required to perform each task provided in the activity, as well as the products generated from the provided tasks in the activity.

The guidelines definition was held from two steps: the first was through the bibliographical research and the second was based on the research instrument called observation or exploratory study, performed at the University of Pernambuco - UPE, Caruaru campus. The observed organization is a public University that uses a variety of processes and academic services in the traditional way, where most of it is accomplished through physical requests on paper.

In this context, interviews were realized with the following roles: coordinators of different courses, teachers, students and administrative technicians.

The initial objective was to identify which are the main services and processes performed by the University and which of them can be offered in Social Networks. The

guidelines were proposed on the basis of this survey and bibliographical review about the subject.

To better guide the organizations in implementing SBPM, the guidelines have been divided into two classifications, described below: type and phase. Possibly, not all guidelines can be applied to all the processes of the University, since each one has its priorities and objectives. The Table 1 shows the first classification form: type. The main criterion for classifying a guideline in basic, intermediate or advanced type is related to the adoption order.

Guidelines Types	Description
Basic	Guidelines with greater importance for the implementation of business process management in Social Networks. Usually, they should be used first, in order to ensure the implementation of the basic SBPM requirements.
Intermediate	Guidelines with secondary importance in SBPM implementation. They are important for implementing the process, but on a smaller scale than the basic guidelines.
Advanced	Guidelines that can be adopted depending on the business process management strategy in Social Networks

Table 1. Guidelines types

The guideline classification regarding the phase is used to identify the moment of the life cycle for the business processes implementation in Social Networks. The phases were defined through the Service System Development Process (DSS), where according to the MPS-BR General Service Guide [16], the DSS intends to analyze, design, develop, integrate, verify and validate the services system, including the components, to meet existing or planned agreements.

According to [16], the Service System Development process is a combination of five processes practices: Requirements Development (DRE), Product Integration (ITP), Product Design and Construction (PCP), Validation (VAL) and Verification (VER) of the MR-MPS-SW [16] and aims to meet the practices for developing a new service or modify an existing service. This process can be applied only in organizations that need to develop new services or modify existing services.

The Table 2 presents the DDS used in this work, following the Service System Development Process, according to [16]. Some DDS were excluded because they are incompatible with the Follow Edu proposal.

The Table 3 shows the list of the proposed guidelines and their respective classifications, regarding the topics addressed in the research, type and phase.

In order to select the proposed guidelines, it was considered the mapping of the most relevant items for a SBPM implementation, where the needs were observed and the six guidelines were suggested. It was also observed the correlation of business process management with the services in Social Networks, so that once the guidelines are adopted, they will not interfere in the internal process of the organization and also will not bureaucratize the academic processes of the University.

5. RELATED WORK

Several papers have been published about the integration of BPM with Social Networks. In this context, the literature presents some proposals to combine SBPM functionalities, such as integration of collaborative information repositories, with BPMS. For example, the development of a workflow based in wiki system with the focus on executing processes. Most of the found proposals in the literature review has a specifically focus on BPMN to capture social requirements or workflow-integrated collaborative process projects (for example, [4], [13] and [17]).

The main difference between the related works and this proposed work is the focus, because the proposal here is not to implement workflow in collaborative environments but rather a set of good practices through guidelines for the implementation of BPM in Social Networks. Thus, in this approach, we consider a perspective of good practices, in particular the integration of technologies to provide SBPM, and we apply this to the project of tools that support academic business processes.

6. CONCLUSION AND FUTURE WORKS

The external social presence linked to primary processes changes the relationship with the consumer, extends the process end, increases external collaboration and forces operational transparency. With the in-creasing use of BPMS by organizations and a significant increase in the use of Social Networks in corporate environments, it is increasingly necessary to understand the combination of these contexts. However, the rules for using these technologies are still not well defined, often creating doubts about the implementation of SBPM.

Follow Edu proposes an integration solution between Social Networks and BPMS, considering the academic business processes management combined with a more efficient academic management, by monitoring the phases and activities of the business processes in an academic Social Network. The validation of this idea was clear, after the constant use to access academic information, both the administrative sector, as far as coordination, as the teachers and students reported that the tool brought agility to the academic processes.

The architecture and integration framework will be refined and updated, considering the set of good practices of adopting BPM in Social Networks. In view of the consolidated architectural details, the framework for integrating business processes in Social Networks developed was in accordance with the objective of validating the proposed architecture. Finally, in order to enrich the platform more and more, new tests will be carried out performed in order to obtain greater validations according to the hypothesis. We must keep in mind, that the educational and social context are constantly evolving, requiring more and more resources to keep up with this progress.

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Phase	Description
DDS 1	The needs, expectations and constraints of the interested parties in the service are identified;
DDS 2	A defined set of requirements is specified and prioritized from the needs, expectations and constraints identified;
DDS 3	The requirements are validated;
DDS 4	A set of requirements is defined from the approved requirements;
DDS 5	Solution alternatives and selection criteria are developed to meet the defined requirements;
DDS 6	Solutions are selected for the service system;
DDS 7	The infrastructure and components required to operate the service are specified;
DDS 8	The service system and its components are designed and documented;
DDS 9	The internal and external interfaces between the services system components are managed to ensure compatibility;
DDS 10	The service system is implemented according to what was designed;
DDS 11	An integration strategy of service components is developed;
DDS 12	The service system components are integrated, according to the defined strategy and following the procedures and criteria for integration;
DDS 13	A strategy and an environment for verification are developed and implemented, establishing schedule, involved reviewers, methods of verification and any material to be used in the verification;
DDS 14	Verification activities, including peer reviews, are performed on selected components of the service, defects are identified and recorded, and the verification results are analyzed and available to interested parties;
DDS 15	A strategy and an environment for validation are developed and implemented, establishing schedule, participants involved, methods of validation and any material to be used in the validation;
DDS 16	Validation activities are performed to ensure that the service system is suitable for use in the intended environment and meets the expectations of the interested parties;
DDS 17	The requirements for the service transition to the operational environment are identified and agreed, including the Service Level Agreements (SLA);
DSS 18	Transition activities to be performed by the service provider or the customer are identified and agreed;
DSS 19	As appropriate, changes in the availability plans, service continuity, capacity and information security are identified and implemented;
DSS 20	Resources for service release are identified and provided;
DSS 21	The new or modified service is implemented and tested according to the service specification;
DSS 22	The new or modified service is accepted according to the service acceptance criteria;
DSS 23	The information about the resulting products of the transition from new or modified service to production environment is communicated to interested parties.

Table 2. Phases of guidelines

No.	Guideline	Topics	Type	Phase
4.1	Definition of the process and service scope	ITIL/BPM/MPS.BR	Basic	DDS 1, DDS 2 e DDS 3
4.2	Definition of requirements in SBPM	MPS.BR	Basic	DDS 2, DDS 3 e DDS 4
4.3	Definition of the solution for the implementation of system and services in SBPM	BPM /MPS.BR	Basic	DDS 6, DDS 7, DDS 8, DDS 9, DDS 10, DDS 11 e DDS 12
4.4	Definition of ANS in SBPM	ITIL/ MPS.BR	Intermediate	DDS 17, DDS 18 e DDS 19
4.5	Definition of performance indicators in SBPM	BPM/MPS.BR	Advanced	DSS 21 and DSS 22
4.6	Information Management	BPM	Advanced	DSS 23

Table 3. Guidelines and their classification