

BPM in eGovernment: a Genuine Virtual Counter

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INTRODUCTION

This novel approach, based on BPM combined with RIA Technology, will show how processes are managed across different administration levels without pre-determining the choice of technologies, platforms and tools made by each organization. This will allow them to preserve autonomy while providing task execution integrated from bottom to top of the organization.

The city of Waterloo figures among the pioneers of 'Cyberadministration' clearly illustrated by W@tson, an innovative platform of exchange between administration and population. Agoria, the federation of technology industries, has honored Waterloo and its virtual agent W@tson with the E-Gov Awards 2007.

The agent consists of a robot with a data base coupled to an artificial intelligence engine able to recognize natural language. This agent can be accessed via Windows Live Messenger. It suffices adding watson@waterloo.eu to the contacts in order to be able to interrogate on matters concerning the community. Thereby the communal administration has become accessible during 24 hours a day and seven days a week. It has been a European premiere in eGovernment. After this very positive experience a new strategic goal has been set: to integrate BPM (Business Process Management) at the heart of Waterloo's IT. Recognizing the necessity to manage processes via a very simple interface between administration and users an appropriate BPM tool had to be found. The typical government processes imply a number of different participants as well as different technological environments within the administration. It will be shown how BPM offers the perfect approach to meet integration and flexibility needs. An important objective for Waterloo is the possibility to federate processes between different cities or communities having quite similar needs but requiring the possibility of adaptation to their peculiarities.

The Belgian market seems particularly receptive for BPM within eGovernment after having recently introduced ID cards with an integrated chip. Waterloo has been one of the first cities to provide this card to its population. Therefore, already being able to individually identify each citizen in a secure way, process-based on-line services should help markedly to improve the quality of government services to its citizens.

Key objectives of this new eGovernment are the following:

- Provide for citizens the best quality and responsiveness in services
- Assure high performance of process execution and follow-up of tasks in public administrations
- Realize the needed flexibility to promote decentralization of task execution while securing and keeping a centralized data management.

Public administrations all over the world are built on multiple levels, whether their organization model is centralized or decentralized. The more decentralized the administrations, the more decisive workflow management (BPM) will become to control and optimize their processes.

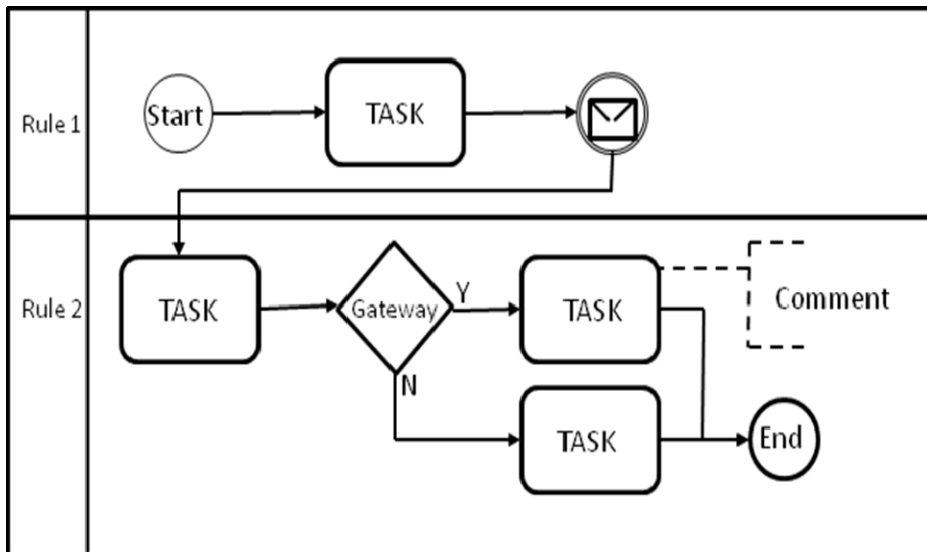
BPM PLATFORM AS A COLLABORATIVE TOOL

The implementation of a BPM platform in the eGov process brings an answer to the problems of services availability with regard to the needs of the population. This technology enables a citizen to initiate a request 24-7 and to ensure its follow-up so that the applicant gets an answer as soon as possible.

The notion of virtual retail or administrative counter replacing the physical shop or office counter takes all its sense within the framework of administrative processes intended for the population. Like placing an online order or making a payment via Internet, it seems henceforth 'normal' to be able to carry out a change of address, to claim an attestation or make a complaint without having to be concerned with the office's location or the administration's schedule.

The procedure itself makes the approach complex; who has never gone to the administration counter in order to make a claim and realise then that his/her personal file is incomplete? The consequence is that the person has to plan a later appointment and is often strongly displeased. Indeed, some administrative or legal procedures can be complex and difficult to understand and the authorities must scrupulously respect this legal framework. More than proposing the notion of the virtual counter, the BPM technology enables the creation of a real time interactivity with the user. The user is guided step by step in the different procedures according to the particular nature of his request. Each person receives in real time a personalized and intuitive answer, without any risk of a mistake.

Some BPM solutions such as Xpert.Ivy allow us to publish the process itself by a BPMN (Business Process Modelling Notation) chart. The requester can also study the flow of the process before initiating it or know its progression, either through the BPMN model or by an email notification.



(Fig 1. BPMN diagram)

Beyond these constraints, the tool also enables to bring an answer to the linguistic problems as the same process can be published in different languages and

therefore satisfy the multiple communities concerned. Whether it is a foreign tourist, an immigrant or a businessman, the process will guide him in his language, whichever it is, and bring a service which is sometimes difficult to produce in a physical counter.

This process management allows us to offer the user at all times an interactive on demand service in his language, but it also mainly enables us to coordinate later the back office processing. Indeed, according to the complexity of the file, multiple internal or external contributors will be involved in the processing. Thanks to the BPM integrating the tasks management, each contributor will be called at the appropriate time with the right information in order to process the request. The progression of the different tasks in the process ensures the continuity of the flow and its processing from start to finish in the respect of rules and without any disruption.

The definition of deadlines and management rules in case these deadlines are not respected ensures a high level quality of services to the population close to the practice of the world of services (SLA; Service Level Agreement). The BPM also brings an answer to the requests of citizens accustomed to quick and precise answers. Xpert.Ivy manages the surplus all the absences and substitutions problems with the same concern of quality and flexibility.

Parallel activities

The originality of the BPM also lies in its capacity to launch independent or parallel sub processes, by the initiation of a main process. The management of a paper file generally runs sequentially to a file transmitted from department to department, but the BPM enables us to allocate the process in parallel to several sectors.

As long as the rules of management allow it, each department is therefore questioned at the same time. The time spent on the whole development of the process is therefore greatly reduced, without altering the performance or the information in any way within the administration. The collaborative environment allows everyone to know the status of the file, its progression level and any comment or remark brought by the different contributors.

This approach is all the more important since the process can concern external contributors such as for example: engineer offices, social organisations or other governmental authorities. This capacity to launch independent but also controlled processes ensures a treatment of quality without disruption.

The BPM enables therefore to optimise the process without any concession to the information, to the rules or to the quality of the service.

Synchronization of the existing applications

The previous chapters showed the contribution of a Business Process Management solution as a 'vehicle' of information in the execution of the process, stage by stage and task by task. The perfect running of the process would, however, not be complete without a total integration of the existing information system. Indeed it is not conceivable, as much from a qualitative perspective as from an operational point of view, to have a disruption in the development; for example with a task calling a department which has to enter information in a third application. The process would thus have no control whether the information has been entered by the user or if it has been entered correctly.

The BPM must therefore be totally integrated to the existing environment, whichever it is and whatever its technology. This is mostly at this level that we will be

able to differentiate a simple project of Workflow from the logic of business process totally integrated to the organisation and to the information system. Thanks to this approach, the user is questioned with a task and he enters his information in a form proposed by the process; then this same process transfers this information in a secure way in the third application. This information can then be checked by the process and disruption in the development is therefore discarded.

These integrations are located at different levels and first at a transactional level. By the integration of SOA (Service Oriented Application) technologies, we guarantee secured and standard exchanges. Moreover they are potentially quite simple to implement and to maintain. The SOA approach thus brings a functional aspect which is adapted and freed from risks for the model of data. Some solutions such as Xpert.Ivy also integrate the WSDL (Web Service Description Languages) which simplifies the configuration of these integration functions with the help of an assistant.

Other transactional methods are also conceivable according to the level of opening offered by the applications to integrate. For example; JavaBeans, API (Application Program Interface), XML files or even possibly a JDBC access (Java Data Base Connectivity). This latest method should be privileged for some accesses in reading only, unless you master totally the data model; the risk of integrity for the database is indeed particularly high with damaging consequences.

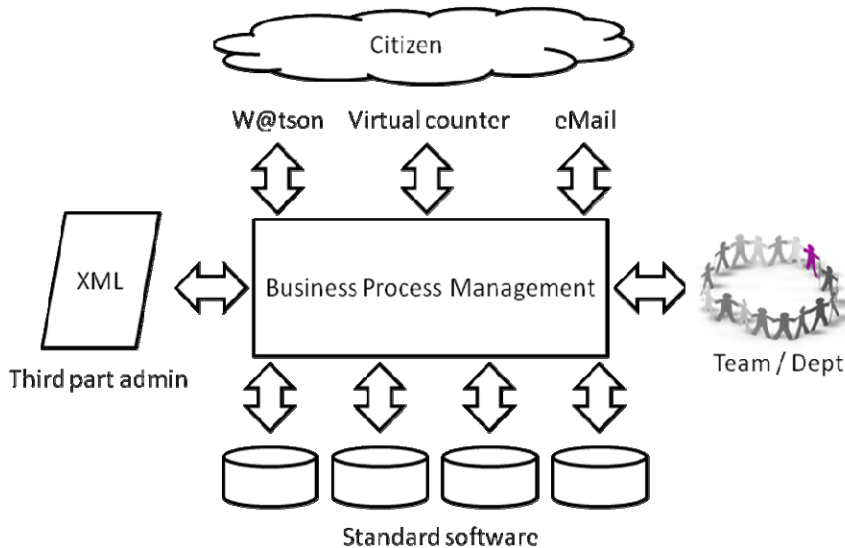
Beyond the transactional aspects which are obviously the most important, the BPM must also satisfy to the needs of communication and to be interfaced with SMTP messaging services. This integration allows first to solve the questions of notifications; for example to notify the incoming of a new task to process, a prospective delay or yet an information on the progression of the file processing. The e-mail can furthermore launch a process by entering a form in the virtual counter but it can also be launched by the reception of an e-mail (or a fax, as the technologies are henceforth similar). Finally an answer to a question or an agreement can also be requested or processed by the exchange of e-mails and totally managed by the process.

The last level of integration concerns the security with the advantage of leaning on the LDAP (Lightweight Directory Access Protocol) for the authentication of the users and potentially the management of their role. This approach supplies the user with the single sign-on and simplifies management for the organisation's security administrator.

Finally there are still other interesting possibilities of integration such as the synchronisation of agendas or in another topic, the flow of the BI (Business Intelligence) with data of the process in order to feed the control panels.

POPULATION; ADMINISTRATION INTERACTIVITY

Beyond the availability and the level of service, the keys of approval by the users go through an interface which is efficient, attractive, comfortable and reliable. The City of Waterloo in Belgium brings an innovative answer with its service W@tson.



(Fig 2. BPM interactivity)

By coupling an MSN-type interface in the virtual counter with the process management, Waterloo has acquired a playful tool accessible to everyone, inviting the population to use it and to master it. The solution runs on a concept of ‘chat’ on which the customer can ask a question or surf through the menus. This interactive exchange depends on a database (knowledge base) which brings real time answers to the requester according to context. If the answer is not available, the robot launches the appropriate process so that the department can then process the request. This approach meets the concepts of the Web 2.0 which aims at processing the information in a rich interface, functionally more user-friendly than the traditional HTML displays.

BPM and Rich Internet Application

This level of interactivity and acceptance is important for the end-user, but it is just as important for the departments implicated in the processing of the file during the course of the process. It is in this spirit that Xpert.Ivy associates the technologies of RIA (Rich Internet Application) to the BPM.

For their ease of use, the departments need to gather multiple information emanating from different sources, for example; simultaneous display of several files in different tabs, parallel information coming from various applications, display of documents, etc. The RIA enables us to fulfil this need by compiling the components of screens which are assembled to offer the user a complete and totally integrated working environment. The advanced features allow us then to play with tabs, shutters or drop-down menus to adapt the screen to our needs. The user thus benefits from an application as complete as currently possible in client/server environments with the interactivity and the flexibility of today’s web applications. All the functions familiar to the user in the Windows world, for example the personalisation of the working environment, drag and drop, etc. are also available.

Reliability and zero deployment

The technology used is based on Java, ensuring thus a high level of reliability in its features while solving the problem of deployment. By adopting the RIA concepts no application requires installation on the client stations. The richness of

the interface can be used via the Web like a traditional HTML application can be used through the Internet browser.

Efficiency

Each component contains the information required to exchange with other components. The advantage of these features in a BPM tool also relates to the integration with third party systems.

For example, Belgium is already equipped with ID cards integrating a chip following the example of other countries which are still only at the project stage. All city of Waterloo inhabitants are holders of these smart cards. The administration can therefore authenticate the interlocutor in the flow of the process similar to electronic signature transactions; the BPM integrates the data coming from the chip in its components, guaranteeing the protection of the data and the traceability of the file.

Finally, each component is re-usable with no need to re-enter the information, as the process propagates the information through the various third party systems. A component which displays an official document in a naturalisation procedure can be used again to display a plan in a structural procedure. The Return on Investment from the implementation of new processes and the efficiency as a result are significant.

Flexibility

The axis of flexibility is henceforth essential for all the organisations. The time of the applications with hundred of parameters to which the structures must adapt is definitely gone. Today the BPM brings a process to which everyone can adapt.

The BPM is not approached by a vertical functional philosophy but indeed in a business and transversal logic, whether the roles impacted by the process, the processing order or yet the management rules, each administration can adapt the processes to its real functioning. The appeal of this personalisation also reflects in the constant improvement or the adaptation of the processes according to the legislative or organisational evolutions. Beyond the flexibility of the BPM processes typically used by business analysts, the modularity of RIA technology allows users to adapt visual display to his needs, create or assemble new components.

BPM as a complement to ERP has been noted by leading analysts such as Gartner Group, Butler Group, CXP etc.

INTERACTIVITY AMONG DIFFERENT ADMINISTRATIONS

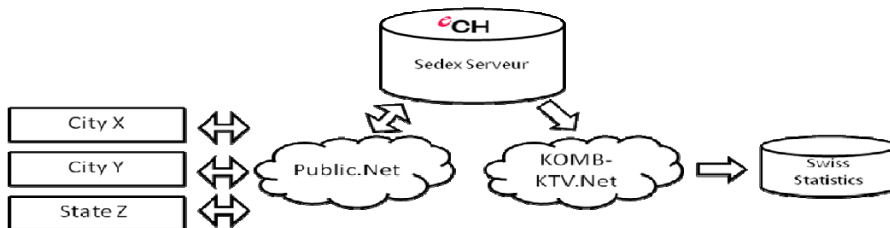
Public administrations worldwide are built on multiple levels, whether the organization model is centralized or decentralized. The more decentralized the administrations, the more decisive workflow management (BPM) will become to control and optimize their processes. In Switzerland the federal system is based on three levels: "Community", "Canton" and "Confederation". In these organizations, we have horizontal processes inside each administration as well as vertical processes within these three levels.

Each interaction between a citizen and his administration as well as between administrations themselves implies managing information flow and executing task in an efficient and well coordinated way. In order to work properly, BPM in public administration requires that process owners take defined responsibility for the processes across participating administrations.

As an example, Switzerland replaced its social welfare number (with 11 numbers and not anonymous) by a new number with 13 digits which is anonymous and

used more generally than for the social welfare only. Moreover the former number was only allocated to the income-producing citizens; the new number is allocated to the whole population. This project required gathering of information from multiple sources in the country, namely from the cantons, the social insurances, the private insurances but also from the communes, before the new number could be allocated to a person. Switzerland created a national working group in order to determine the standard of electronic exchanges which could then be applied to all the levels of Cyber administration. This group called eCH (www.ech.ch), not only integrates representatives from the administration but also specialists of the market and software editors.

One of the first tangible signs concerns the SEDEX project which aims at the harmonisation of the population data, the homes and accommodations. The first objective is to automate the official census of the Confederation in 2010. Beyond the specification of the data, the methods of exchange via XML have not only been defined to feed SEDEX for the census but also to use SEDEX to feed the processes in the communities. When managing the process of arrival of a new inhabitant or in case of a building construction, it is henceforth possible to integrate the centralized data (from the Confederation) in a decentralized process of the commune.



(Fig 3. Sedex concept)

This concept is important as the centralization of the data through non-redundancy of the information. By contrast, the processes of proximity are generally more efficient as they are related to the local specificities and to the linguistic or cultural questions. The parallel implementation of standards which cover all the administrative and business process management layers, ensuring flexibility, brings the advantages of both the centralization and the decentralization.

This is our vision of an extended public administration integrating citizens, politicians, multiple administrations, partners and external suppliers. In such an environment, support is needed for the execution of asynchronous processes exchanging data in a standardized way.

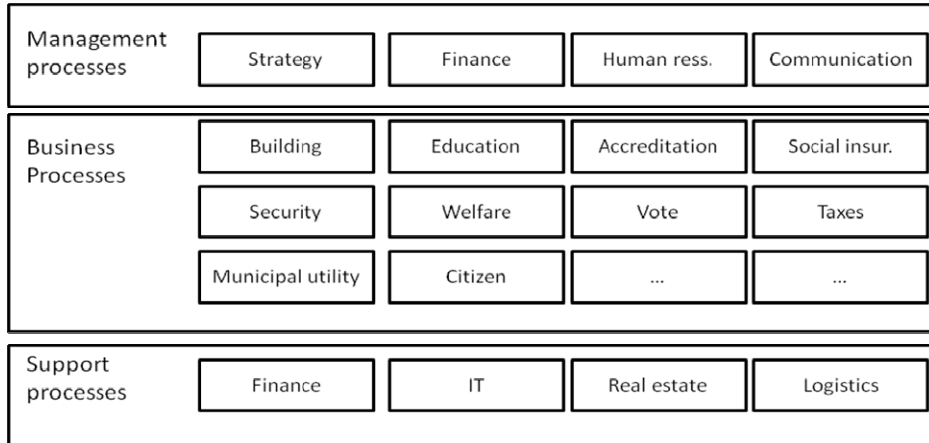
FROM BUSINESS PROCESS ANALYSIS TO BUSINESS PROCESS MANAGEMENT

Aware of the stakes of the mastery of processes at all levels of the administration, eCH, beyond developing standards of the Cyber administration, has the ambition to encourage the modelling of the processes of all the communes of the country.

The first stage consisted in determining the rules and the standards which would be applied nationally. The working group appointed for this BPM Starter Kit project and driven by ISB (Information Strategy Bund) and entrusted to the HESSO (University of Applied Sciences Western Switzerland) first validated the BPMN¹ concepts as a basic standard for the realisation of the project.

¹ More information on this OMG standard can be found at BPMN.org

A working group composed of the BPM Starter kit team and the pilot communes has the objective to model the basic processes as certified BPMN. All the processes (in the end the totality of the communes processes) will be integrated in an exhaustive portal called 'Landkarte' (Process landscape). Each commune has then the possibility to take the 'Landkarte' on its account in order to select the processes which concern it and adapt these to their own functioning.



(Fig. 4 Landkarte – Process tree inventory)

BPM Starter Kit plans in parallel the creation of a web community on which every structure will be able to share its experiences or good practices with all the other participants. Whether it is for processes, comments, suggestions or communications, this community will doubtless have a determining impact on the development of the BPM concepts at all levels of the Swiss administration. Training is also planned for BPM and BPMN.

This approach of promotion of the BPMN in the administration represents an important step towards the generalization of the Cyber administration in Switzerland. Indeed, from the moment the processes will be mastered, participants will be able to the use of BPM solutions allowing their execution.

The big winners of this initiative will first be the inhabitants of the country who will benefit from this virtual government administrative, or retail, counter adapted to their needs and from on-line services which are up to their expectations. As for the administrations, they will benefit from the flexibility and the optimization of their processes; this will allow them to step back from daunting tasks and to concentrate on the added value they bring to the society.

CONCLUSION

Behind the genius of a virtual counter such as it is understood in the concepts of Cyber administration, clearly hides a technology of Business Process Management not only destined to rule the exchanges between the inhabitant and the administration, but also for the administrations among themselves. The needs of flexibility, reliability, integration of the data or relationships among the processes, are only for us some examples of the necessity to promote the BPM.

The process has already been initiated by some pioneers but the success lies in the political will to pursue the normalization of the exchanges and to demonstrate the benefits by the example. The technologies are henceforth available and the competences exist.