The josh platform

Strategic scenario of the it Consult software platform

it Consult

0. Summary

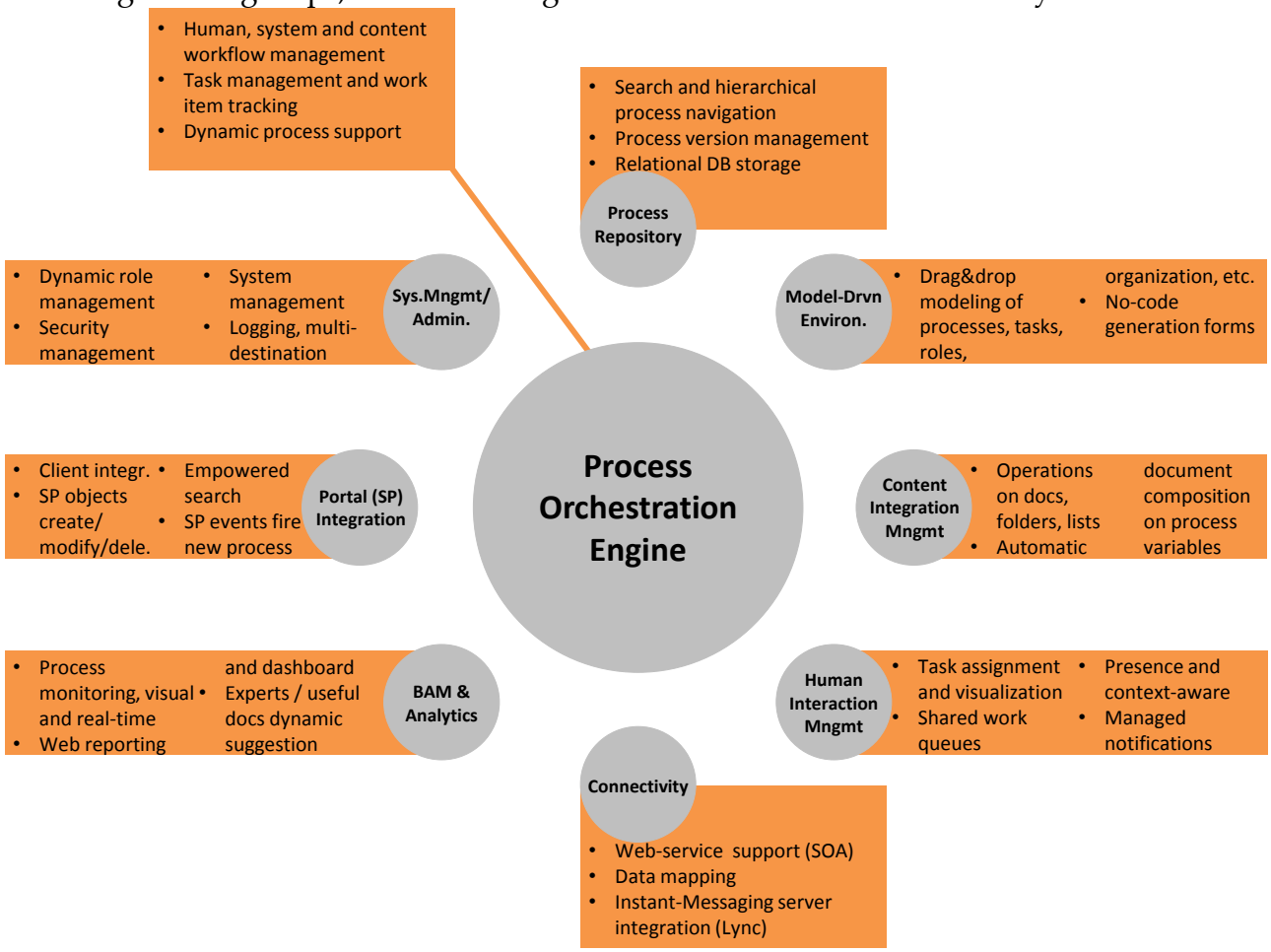
1. Products and Services

The main it Consult product is **josh**, an enterprise software platform for Organization Intelligence, the managerial discipline which is a development and specification of Knowledge Management (KM) that uses Document Management / Enterprise Content Management (ECM) and Business Process Management (BPM) to provide a new response to unstructured data management. It is a complex response, that can meet the individual contingent needs, but by placing them in a strategic design, potentially valid for the entire organisation.

Here is a definition for Organization Intelligence: the methods for capturing, modelling and developing the intelligence from each organisation, using in particular the **processes** that govern it, the individual and collective **competences** necessary for executing the processes and the **content** which constitute the immaterial output of the processes.

1.1 josh

The functions of **josh** are numerous; the diagram below shows a partial list, dividing them in homogeneous groups, based on categories familiar to international analysts.



The architecture of the **josh** platform is logically built a three fundamental modules:

- The first is a document management sub system, **josh.Doc**, for the recording and retrieval of knowledge expressed in documents or other multimedia files (explicit knowledge). It incorporates and extends the Microsoft SharePoint Server, of which it uses a series of features, including versioning of the documents, availability of metadata associated with the documents and a powerful search engine that supports various file formats.
- The second module, **josh.Flow,** is an engine for the description of corporate processes, in order to: handle *embedded knowledge* (BPMS[1], with WFMS[2]), suggest other people who perform the same activity to the executors, thus allowing immediate contact via instant-messaging, to correlate the use of the documents to the individual specific activities performed and, in particular, to provide information on the utility of the single documents for the various activities that each user is called upon to perform. Therefore, it is also a module for the management of *creatable knowledge* (these correlations are new knowledge), in addition to embedded knowledge.
- The third module, **josh.KMap**, is a knowledge map which matches the single individuals that make up an organization with the knowledge that each of them possesses. This module has a dual role: it identifies the depositories of the knowledge (*tacit knowledge*) and it creates an organization model, in turn necessary

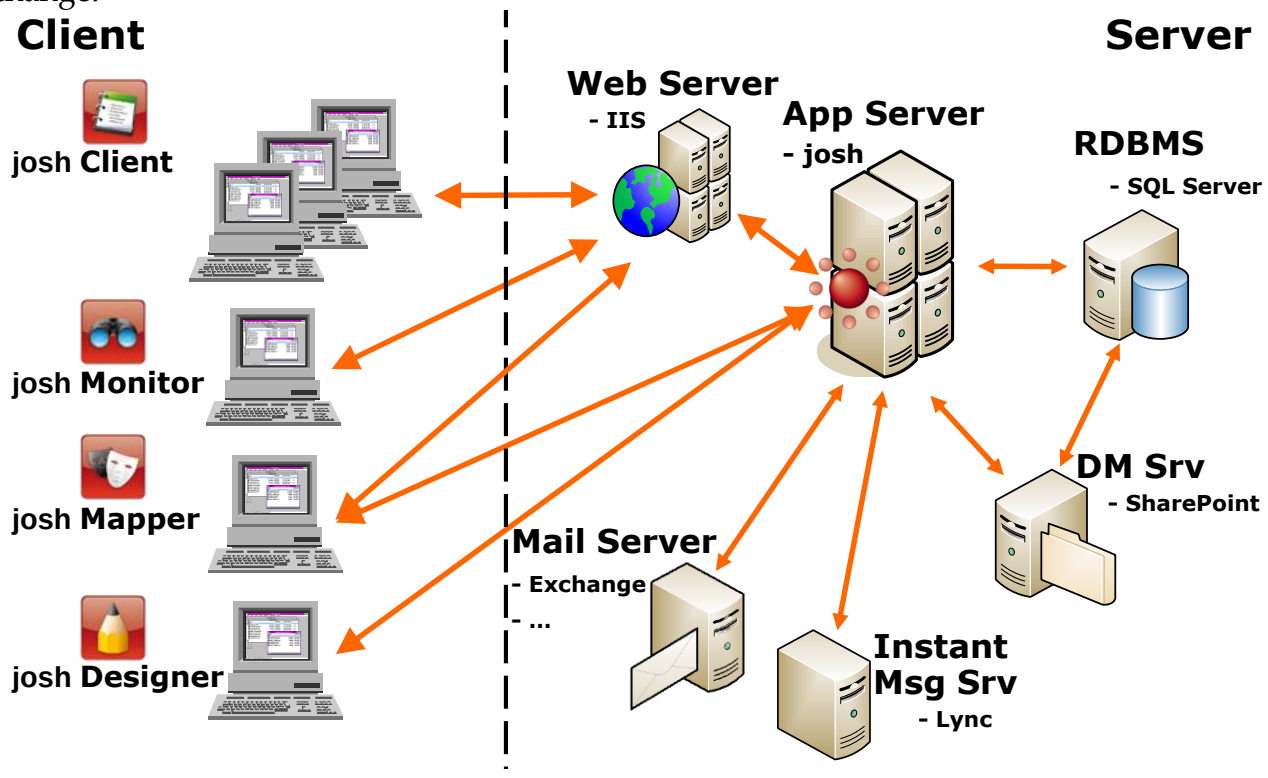
Integration between josh and SharePoint: not a simple plug-in.
*The **josh** platform was natively designed to work in symbiosis with SharePoint. However, rather than a plug-in, **josh** is a separate software platform, because if it can use SharePoint as document and collaboration server, completely masking its functions when necessary and making them useable from a web page, it also has a plethora of additional functions and can be run on distinct servers. Ultimately, through **josh** the user can take advantage of all of the SharePoint functions without necessitating specific training. But, in addition to this, access to the SharePoint functions starting from the **josh** task activities, makes it possible to use the SharePoint object model in automatic mode (wizards are available in the task-activity editor that guide the user in the generation of advanced automatic procedures like the creation or copying of document libraries, calling up scanners, modifying access authorizations, etc., which would otherwise be the prerogative of system administrators or highly specialized users). Moreover, **josh** integrates SharePoint (in reality the entire Microsoft stack) with a real BPM system, complete with tools for graphic modelling, management of assigned task parameters, process monitoring in real time or after the fact.*

[1] Business Process Management System, business process management software system.
[2] WorkFlow Management System, in reality a BPMS subset.

for the process modelling module in assigning each of the single tasks that make up a process to the most suitable executor, on a moment by moment basis.

josh It is an integrated approach based on web technologies that allow integrating the platform with a series of additional optional components. These optional components include several vertical applications also developed by **it Consult** and presented in the course of this paper.

The **it Consult** approach is twofold: on the one hand, it integrates the various components of the Microsoft stack (which, perhaps, taken individually may also correspond to similar products of other manufacturers), and on the other it places particular emphasis on the description of business processes using a graphic language. This means that, starting from the drawing of a workflow and from the various professional figures in the company, it is possible to automatically manage the assignment of the tasks to the various corporate functions, indicating which documents to use and how certain operations must be carried out. But, most importantly, **josh** is a tool that primarily targets business people, not necessarily programmers or other IT experts (who, however, will find great expressive possibilities for daring customization and integration). This is why **josh** offers a structural response to support the management of processes that frequently change and to deal with and work out the problem of the IT response times to the business when the processes change.

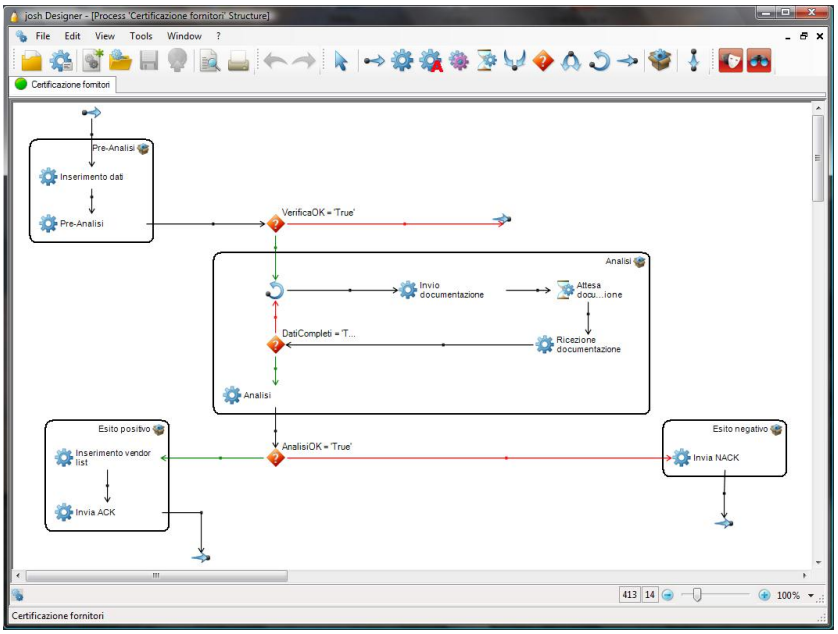


As shown in the above block diagram, **josh** has server components and client tools. Server side integrates with the Microsoft servers, to which it delegates authentication (Active Directory), the web server and the portal with the document system - SharePoint, the database server – SQL Server, instant messaging and presence detection – Lync Server, e-mail – Exchange Server.
User side, the main tools are:

- **josh Client**
  (web)
- **josh Designer**
  (rich client)
- **josh Mapper**
  (web + rich client)
- **josh Monitor**
  (web)

Presentation and Execution of the assigned tasks
josh Client is the web component, typically presented within a SharePoint portal (but also on other portals, as well) in which the user receives the tasks to be performed from the system. In addition to the description of the tasks assigned to the user and the completion of the forms, the display of the single task also offers contextual suggestions as to which documents have been used most frequently by the people who performed the same task. Access is also available to an additional feature for classifying documents (clustering) through the examination of their content, using innovative text-mining technologies, and presented with a hierarchy of significant documents. There is an expert search function integrated with the Microsoft Lync Server and relative client which makes it possible to see who the experts are (automatically detected by the system), verify that they are on-line and contact them directly via instant messaging. It also allows the detailed graphic display of the process (workflow) and of its state of advancement, as well as the process variables.
Like all of the **josh** tools, the user interface is localized in various languages, with settings that can be made by the individual user. However, there is also another qualifying feature: the fact that **josh Client** supports multilingual tasks, i.e. it allows the description of the activities in different languages for different users of the same process, in the same language that the single user has chosen for the user interface. This, for example, meets the needs of the multinational companies, but also those of a bilingual context (for example Alto-Adige in Italy or Montreal and surrounding area in Canada).

Defining the Processes



josh also has another client tool, **josh Designer**, for defining business processes and assigning the tasks that make up these processes to the potential executors. **josh** is based on WIDE (Workflow on Intelligent Database Environment), a powerful and flexible graphic language created in the context of an European research project developed by academic partners from the Politecnico di Milano and the University of Twente (NL), and supports the Microsoft Windows Workflow Foundation (WF). The execution of this tool is twofold:

- Within a distinct SharePoint server in support of the integration with the **josh** document sub system;
- Within the **josh** server, now complete with a Finj module (workflow Foundation IN Josh) which acts as host, checks the server side execution and offers all of those user management characteristics which are indispensible in a real WFMS.

It is also possible to import into josh process diagrams expressed in the standard BPMN (Business Process Model and Notation) protocol.

Knowledge Mapping

josh Mapper maps corporate knowledge using a "skills tree" which is dynamically updated during process execution. This also ensures the possibility of the real time analysis of the training gaps in the company human resources and of obtaining an updated model of the organization in terms of Actors and Roles. The Actors, i.e. the users, are defined in Active Directory (with automatic synchronization, if necessary) and can be placed in relation one to the other through the management of the organization charts (multiple). The web version of the tool may also be used as an advanced people-finder on the portal.

Process Monitoring

josh Monitor monitors the system in terms of Processes, Tasks, Actors. It provides statistical data for both real time and post assessment of the work performed by the people who make up the company and for making efficiency calculations. Among other

things, it allows the management of any type of exception to the normal process execution flow and this is a great guarantee of process management applicability in even more dynamic and complicated contexts (or in those cases in which modelling has still not succeeded in capturing all of the real cases. In the context of these BAMA (Business Activity Monitoring & Analytics) functions, the availability of a report system is particularly significant; a report system accessible via web (based on the Microsoft SQL Reporting Services) and easy to edit, customize and create ex-novo making it easy to use the objective data needed to measure the performance of the processes (KPI - Key Performance Indicator) and which represent a step up in quality for the correctness and timeliness of the decisions that management must make.

Other client (or complementary) tools

The **josh** platform includes a series of special tools, some of which are available only in combination with the **josh Archive!** and **josh Protocol!** verticals, discussed elsewhere in this paper:

- **josh InfoJam** for the management of the Legal substitutive conservation operations
- **josh InfoSign** for digital signature and time stamping of task activities and directly on SharePoint (or on file-system
- **j.LogViewer** for consultation of the server logs and support to troubleshooting operations, also with dispatch of technical support
- **j.P7M iFilter** server side filter for the SharePoint search engine that allows full-text indexing of the digitally signed files
- **josh Scanner**  client tool for piloting ISIS and TWAIN scanner activities, barcode recognition, upload of scans with metadata on SharePoint, label printing

1.2 Technical characteristics for enterprise environments

The most articulated organizations need several features related to scalability, reliability and governance which are all present in the **josh** platform and make fully suitable, also from a technical standpoint, for complex installations, even with thousands of users.

Scalability, Multi-Tenancy, Staging environments

josh is a highly scalable software platform which, on standard hardware, supports an elevated number of concurrent users and running processes thanks to:

- optimized code, even x64, with multi-threading features (parallel running)
- Service decoupling and database server (SQL Server) use

In addition to this, the **josh** Enterprise edition (and, gradually, those of the verticals) is multi-instance, i.e. it allows the installation, on the same server (physical or virtual), of multiple instances of **josh,** totally separate both in terms of the processes running and the databases, with the maximum level of isolation and therefore of guarantee in terms of security and reliability, also in the efficient use of the available computing resources. This superbly responds to both the need to support several organizations with the same server license (multi-tenancy, useful for cloud services suppliers, but also for groups of companies with centralised IT) and the convenience of having test and staging environments distinct from the production environments.

Highly reliable architectures

Reference architectures are available for creating high availability configurations for josh (and, consequently, for the vertical applications **josh Archive!** and **josh Protocol!** presented later on in this paper).

In addition to those directly installed within SharePoint (webpart, solutions, etc), the following fundamental server side components for josh are identified:

1. **JoshServer** the **josh** server components, and chiefly joshService
2. **JoshServerWeb** the **josh** web components with the exception of point 3
3. **JoshSPSWebService** the web service that **josh** uses to interact with SharePoint

In short, **josh** permits maximum flexibility, as demonstrated by the table below, where CLUST indicates a failover clustering architecture, and NLB indicates a network load balancing structure, as configured in Windows Server:

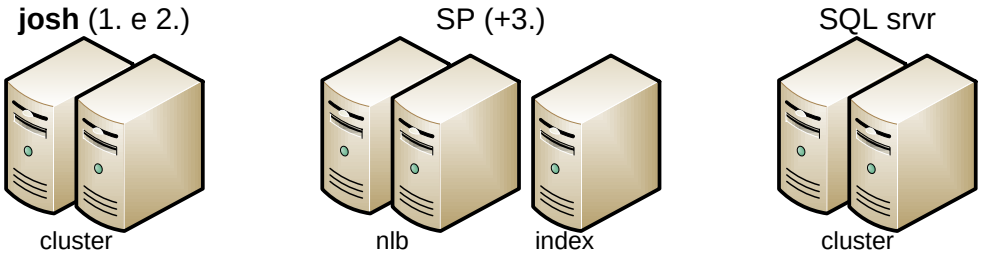
Components	*CLUST*	*NLB*	*Notes*
1. JoshServerWeb	YES	YES*	*if file share is available
2. JoshServer	YES	YES	
3. JoshServerWeb	NO	YES°	°on the same SharePoint servers

However, given the type of each of the components, the preferable solution, as the best compromise between reliability and performance, is that of placing 1 in CLUST and 2 in NLB (there is no choice for 3: NLB as well as SharePoint). The choice *is not* influenced by the presence of vertical applications because the latter are typically installed on the same SharePoint machines and therefore in NLB.

In situations where the customer wants to minimize the dispersion of the **it Consult** components in the various servers, the solution is to place 1. and 2. in the failover cluster (CLUST), however component 3 must be installed on the servers that host SharePoint.

Therefore, the following configurations are supported:

1)



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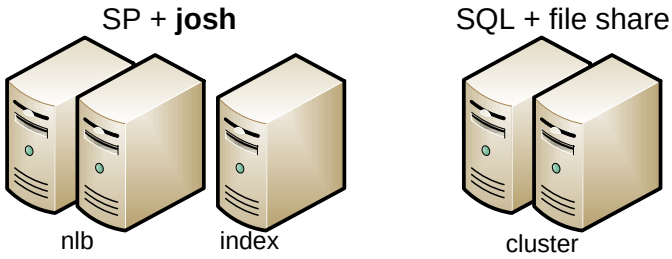

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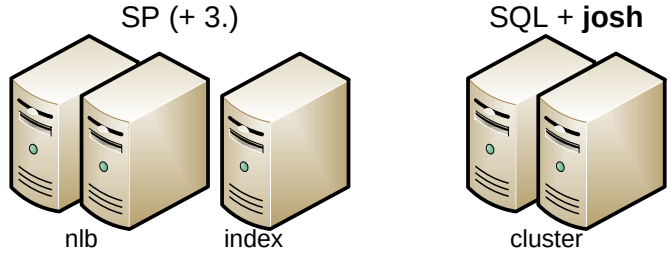

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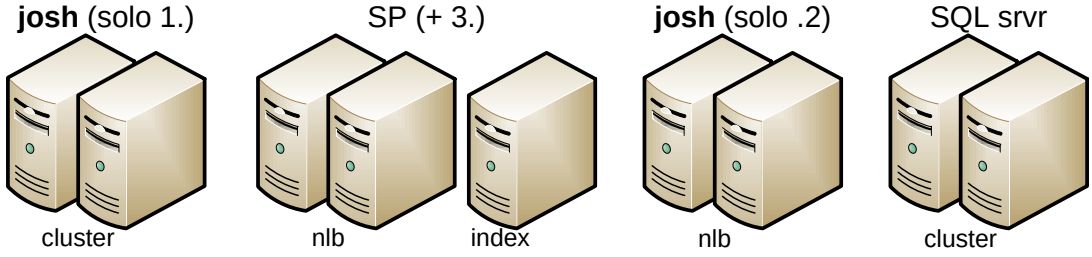

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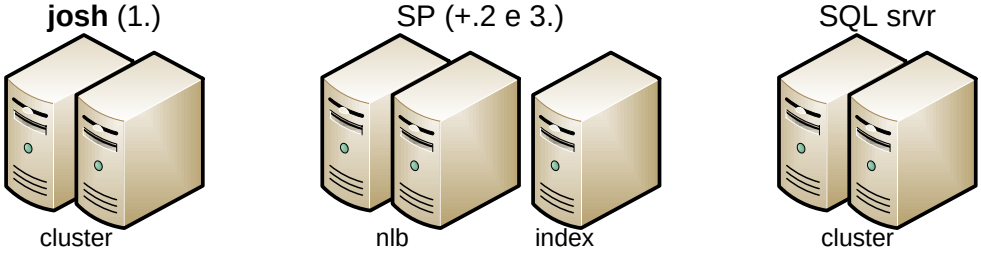


The order in which the architectures are presented does not express a preference.

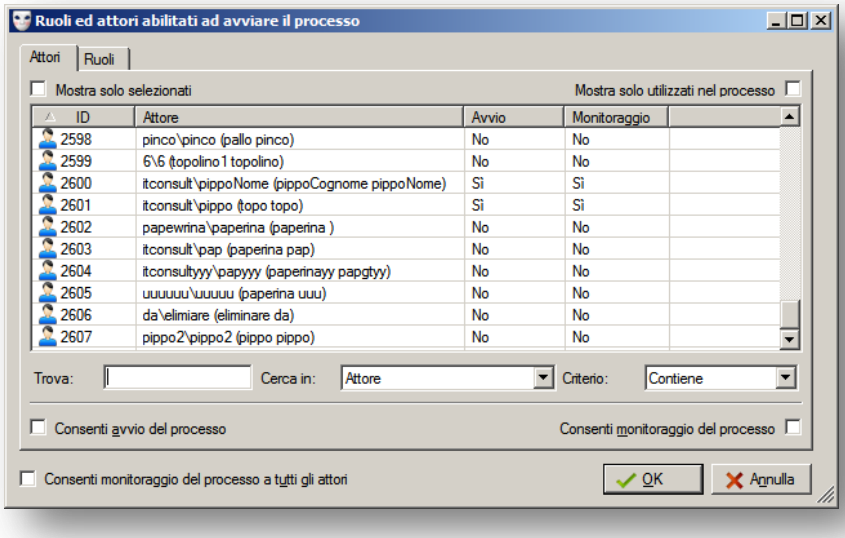
In case 2), if particular break-down tolerance characteristics are not required and the presence of a single point of failure is acceptable, the file share hypothesized on the cluster that hosts the SQL Server, may be anywhere, even on a common NAS.

Synchronization with Active Directory

The **josh** platform users must be defined in Active Directory (AD), the standard Microsoft Windows Server LDAP authentication system, and may also participate in AD topologies divided as they like with domains, sub-domains, trust relations. To encourage effectiveness, a specific service is supplied with all editions, **josh AD Synchronizer,** which can keep the organisational roles aligned with one or more Active Directory groups, expanding them recursively in the N people in them.

Hierarchies, granularity of permissions and operations on SharePoint

Several **josh** functions are significant in enterprise environments, even though they are not system features. In fact, they allow the use of the same **josh** server even in the presence of many users who may belong to different departments or have different access authorisations to processes or other information. In particular, the processes can be placed in a hierarchy of folders that allows the users to "browse" through them, even if very numerous, through a metaphor well known to them, dividing them by scope, office or other criteria, but always in a centralized manner (the users may have the permission to create new folders, but the structure of the folders is the same for all users). As for the permissions, in addition to the global settings for access to the designing or monitoring functions, with **josh** the possibility for single users (actors in the **josh** terminology or roles (organisational roles that contain actors) to run a process through **josh Client** and/or to monitor it, based on the single process. The flexibility for permissions is also extended to the operations that are possible to complete on SharePoint from **josh.** In fact, beyond the permissions assigned to the different users on SharePoint, **josh** makes it possible to "temporarily" assign permissions on objects (documents, lists, etc.) so that, for example, a document can be written in a specific document library only during the execution of a specific task of a determinate process.



1.3 The josh vertical applications

In order to meet specific vertical needs, in particular relative to the dematerialization of paper, **it Consult** has created complementary applications for **josh**, which are at times perceived as more "necessary" when compared to an ambitious Organization Intelligence or Business Process Management solution, but which can be well-integrated with the latter, because they are based on the same technology.

josh Archive!

A solution for optical filing and for Legal Substitutive Conservation based on josh technology, **josh Archive!** can be integrated with the various management software systems (ERP); it is a simple, yet sophisticated system which uses and enhances the functions of Microsoft SharePoint; and it can also be integrated with **josh** for the automation of dematerialization processes. Among its strong points is the possibility of managing dossiers that group administratively correlated documents (for example an order, with all shipping documents and invoices), or simply added by users (for example a descriptive Word document) and the possibility of conveniently managing the metadata correlated to each document.

josh Protocol!

A Case Management system for Italian Public Administration based on **josh** and fully compliant with the CNIPA (now DigitPA, an Italian government agency that sets the standards for public administrations) standards, also thanks to the collaboration with the University of Calabria, for which it covers all levels (Minimum Nucleus, Document Management, Document WorkFlow, BPR - "Business Process Reengineering"). Natively integrated with Microsoft SharePoint, among other things it has a "secure" web viewer that securely shows the documents one page at a time and allows the negation of specific rights on the single documents, for example printing or downloading, and the monitoring of the single actions made on the documents themselves. It also manages the registration of mail and supports PEC (Certified Electronic Mail).

1.4 Customization and extendibility

josh is a software platform which, for its very nature, has tools for process modelling and automatic form creation which application domain experts can use directly, without the aid of developers. Within **josh Designer** there are many very easy to use automatic options for performing common operations. This gives the more expert users a productivity level which is about ten times greater with respect to the construction of custom applications; this advantage is further increased when the applications are subject to frequent modifications. On the other hand, the expressivity and ease of the modelling

language makes it a tool that many users can easily manage - all those who have discreet computer skills, but are not necessarily specialists - and all the other users can at least understand. It is truly a new way of working, in which those directly involved - in the processes as deciders or as operators - no longer need to be intermediated by programmers or other IT personnel, even in those rare cases in which some customization remains necessary. In short, **josh** resubmits their processes directly to the business areas, which become the real process "handlers", as it should be but in a way that other software have difficulty in achieving. However, a wide range of operations is available for customizing task-activities: development of ad hoc applications integrated with **josh**, calling up other applications from **josh**, and other ways of integration or cooperation. In particular, these are the main available options:

- Graphic customization of the task-activities through style sheets
- Development, directly within the task-activities, of real ASP.NET applications using the **josh** object model - josh BusinessLogic (in reality, the task-activities presented in the browser are dynamic web pages built by **josh**). It is also possible to write code that call up their own components and DLLs. These latter modes are supported by a code editor within josh Designer which does not need the use of distinct development environments (like Microsoft VisualStudio) and has support mechanisms for spelling and interactive lists, with automatic completion, for the available methods.
- Calling up a Windows Workflow Foundation (WF) from a **josh** process and running it on SharePoint or in **josh**, for example to use third party custom activities
- In terms of SOA (Service Oriented Architecture), calling up web services published by **josh** from any other application which allow automating all of the most significant operations and using, for example, other software for running a process
- Export of the process variables or other significant information in XML format

It is also possible to access process data hosted on an SQL Server relational database.

josh: what does the near future hold for us.
*The development of the **josh** platform is continuous, both in terms of functions and of support to the new infrastructure components (operating systems, database servers, SharePoint, etc.) which gradually become available. However, at the moment this document goes to press (October 2012), there are several innovations are in the works, of particular importance for their influence on deployment methods:*

- *the support, for client components, for mobile "touch" devices*
- *a Software-as-a-Service type offer (Cloud)*

1.5 Differentiated elements

We have already demonstrated the uniqueness of the **it Consult** approach and, among other things, our approach has convinced may important clients to use **josh.** The unique

quality of our approach is not only derived from strictly technological factors and it is mainly based on three elements: the *BPM engine*, the *verticals*, our partnership with *Microsoft*.

The first great differentiator lies in the characteristics of the workflow/BPM engine: first of all, it can be also governed by staff in the organizational area as well as in IT, with very high levels of productivity, autonomy and therefore efficiency, amplified by the synergy with the document management system and with the skills mapping function. And then, the use of **josh**, as compared to vaguely similar products, adds those "knowledge" features that facilitate the individual in his/her ordinary work, without asking for an additional effort to "record" his/her activities or to follow the defined best-practices, making it easier and quicker to find useful documents and colleagues to work with.

The second distinctive element is the availability of the verticals, since they constitute solutions to well-defined problems, but are placed in the more general context of an Organization Intelligence platform. In substance, they are the synthesis of the response to contingent needs and the choice of a broader strategy.

The third characteristic element is josh's close bond with Microsoft technologies and products. This is a choice made back in 2001, when what would become SharePoint Portal Server 2001 was about to be released. A product which integrated well with the technical choices made up to that moment and which, above all, promised to become the standard in an area still somewhat neglected by the enterprise market, characterized by many products which were frequently expensive: that of document management systems. This choice made **it Consult** the reference partner for Microsoft on projects which involve SharePoint, contributing significantly to its affirmation in Italy. From the outset **josh** has accompanied and supported all of the new versions of the Microsoft product. And, in short, **it Consult** has succeeded in completing and making the Microsoft offer more specific.

2. it Consult

it Consult was founded in 2001 as a software producer, with the specific mission to "create a technological infrastructure for knowledge organization" through the use of Knowledge Management (KM) technology and methods.
The company is a leader in Italy in the Organization Intelligence market and pursues Knowledge Management, Enterprise Content Management (ECM) and Business Process Management (BPM) technologies. Several of the contributing factors which continue to have an impact on the company's success are explained in the following paragraphs.

2.1 it Consult and Organization Intelligence

Over the years **it Consult** has developed and refined a methodology based on Knowledge Management, but which evolves in the direction of organizational activities structuring. The core of this approach is identified in process formalization, management and monitoring, but it assumes additional value because it is integrated with the efficeint management of non-structured data and with organization skills mapping: in short, Organization Intelligence. Thus, maximum capitalization, and therefore reutilization of the Organization's Knowledge is achieved, all of which finds full application in **josh,** the software platform that carries out the exact dictates of the approach.

2.2 Strategic Partnerships

Over the years, **it Consult** has established important strategic and technologic partnerships, including the far reaching collaboration with Microsoft as Microsoft Gold Certified Partner. In particular **it Consult** is Microsoft's Italian reference partner for Knowledge, Workflow and Document Management projects.

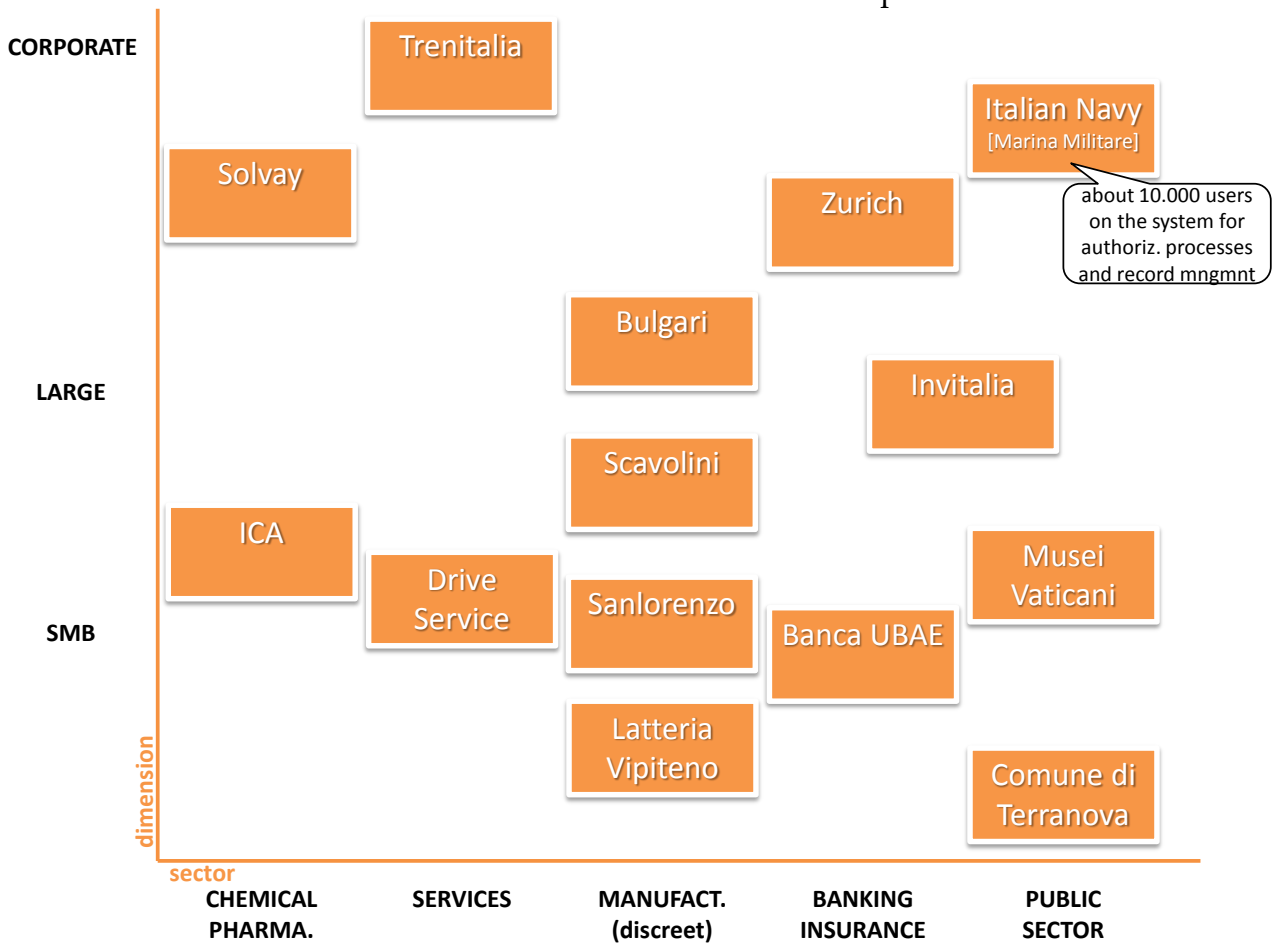
2.3 Academic activities and Knowledge Sharing

The theoretic value of the **it Consult** approach has been strengthened through numerous conventions, courses and seminars in which the it Consult executives or experts all called upon to participate as speakers. In addition to this, numerous scientific works have been published on Knowledge Management and national conventions on Organization Intelligence periodically organized: the most recent edition, Knowledge Box Autumn 2012, will be held in Milan at the Microsoft Headquarters. In the academic world, **it Consult** has close partnership agreements with the Politecnico di Milano, the Università Politecnica delle Marche and the Università della Calabria. **it Consult** participated in the Enterprise 2.0 Observatory with the Politecnico di Milano - Department of Management, Economics and Industrial Engineering; with the Università Politecnica delle Marche, Department of IT and Automation Engineering (Ancona) **it Consult** co-financed a doctorate (PhD) and has commissioned the department with the development of certain

semantic technologies; with the Università della Calabria – Documentation Laboratory (Cosenza), a Center of Excellence in Knowledge Economy and Management and the scientific point of reference in Italy in the archival and documentary field – **it Consult** has a collaboration based on an in depth exchange of information and experience.

2.4 References and experience

it Consult has a wide variety of experiences in all areas of the market, which range from state and public institutions to public administrations, from large multinational enterprises to primary insurance institutions, Among we these note: ALLIANZ RAS (Bank Insurance Group, Allianz Group), ARCA SGR (Savings management), BANCA UBAE (Business bank), BENI STABILI (Real Estate sector), CENTOSTAZIONI (State Railway Group), IMAB GROUP (Wood/furniture industry), MARINA MILITARE (The Italian Navy: Armed Forces, public sector), SWEDEN&MARTINA (Electro-medical industry), ZURICH (Insurance Bank Group) and many more that we cannot list here, because of limited space. The following diagram shows the wide distribution in the most diverse sectors and corporate realities.



3. Index of Names

The names of the **it Consult** products are in boldface characters, the names of companies or institutes and products are in normal face characters.