

Four Categories of Workflow

The boundaries for the categories in this section are inspired by James G. Kobiulus as described in his book **Workflow Strategies**.

Workflow applications are generally divided into four broad categories, mainly distinguished by the transport mechanism used to route the work items. These are:

1. Production Workflow Systems
2. Messaging-based Workflow Systems
3. Web-based Workflow Systems
4. Suite-based Workflow Systems

Production Workflow Systems

Introduction

These systems make up the traditional part of the market. They have evolved from the first systems on the market, FileNet and ViewStar. They are sometimes referred to as **filestore-based systems**, **document-image processing systems**, and **forms management systems**. These systems route **folders** consisting of one or more forms or different types of documents through the organization. They typically store documents in a central repository and provide check-in, check-out, and version control for those documents.

Advantages

They generally support more features and functions than messaging-based tools, allow greater customization, and run in a wider range of network and computing environments. Since some of the products in this category have been around for a long time, there usually is expertise available from a number of sources.

Disadvantages

These systems are generally more expensive than other systems. They usually require expensive application development and integration services from an external consultant. They are sometimes not open, and might be dependent on certain machine platforms.

Background and functionality

Workflow systems are similar in their desire and need to reduce the volume of back-office paperwork in daily operations. Systems in this category are based on the idea that an organization should only have to touch a paper document once, when it is received by the organization and scanned into electronic form. Thereafter, it is routed through the work processes needed to finish the treatment of the document (such as making a decision, calculating the tax for a citizen, or any other work-process that the organization focuses operations around).

The core capabilities supported in most of today's production workflow solutions are: image management, database management, document management, forms management, object management, product data management, project management, computer-aided software engineering (CASE), electronic messaging, directory services, Internet/Intranet services, and electronic commerce services.

This category is closely aligned to the Workflow Management Coalition (WfMC's) Reference Model as mentioned in the section on standards.

Messaging-based Workflow Systems

Introduction

This category, sometimes called **administrative workflow systems**, comprises the lower-end segment of the

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market. The products contained herein are stand-alone tools that route documents over existing email systems. This category started with the FormFlow product, and products in this category primarily route electronic forms and file attachments.

Advantages

Because messaging is based on an existing email system, products in this category are usually low-cost. They support rapid definition and activation of simple business processes, usually of a sequential or parallel nature. The implementation and use of the products are designed to work with a minimum of training and customization.

Disadvantages

Systems in this category are not as comprehensive and flexible as systems in the production workflow systems category. Systems in the messaging-based workflow category typically lack document-image processing and management capabilities. Some government organizations do not yet have email systems that can be used with workflow applications.

Background and functionality

Messaging-based workflow systems are designed to support typical ad-hoc business processes: a workflow with minimal preplanning, few participants, and simple routing rules that are being redefined from day-to-day depending on what works.

These systems provide such capabilities as sequential routing, cycle back to originator, and rule-based message management. Messaging-based workflow systems can be split into three parts: electronic messaging technologies, forms management, and database management. Electronic messaging is done via the email system. The people comprising the process use the email system to route forms and messages between each other. The forms are usually created with a standalone tool, and these forms are sent between people, allowing them to change and update fields. When a form has reached its end-point, where the process is done with it, it is written to the database.

Web-based Workflow Systems

Introduction

These systems are on the leading edge of workflow application development. Utilizing the popularity gained by the WWW, these systems utilize this same environment to implement workflow capabilities. Systems in this category utilize Web clients and servers to deliver their functionality.

Advantages

Many organizations already have some of the technology and networking capabilities needed to implement these systems. Thanks to the extent and proliferation of the WWW, these workflow products facilitate telecommuting and other flexible work arrangements. Because there is no need to develop an underlying network structure, it is readily expandable.

Disadvantages

The level of skill needed to develop and deploy the work process is higher than for messaging-based systems, and end-users can not be expected to develop forms or Java applications, necessary elements of Web-based workflow systems. The security of these systems is sometimes more at issue. Especially when the global Internet is used to transport documents and forms. Another disadvantage is that no standards have yet been developed specifically for this workflow category.

Background and functionality

The difference between web-based workflow systems and the two categories already described is the narrowly circumscribed, industry-standard Internet platform on which they operate. Whereas the other three categories of workflow products operate over application infrastructures that incorporate a wide range of protocols and

application services, web-based workflow only requires:

- WWW Internets/Intranets/Extranets
- Web servers (serving the HTML pages and Java applets)
- Web browsers (on the users desktop)
- Workflow engines (determines routing and processing of work items)

Suite-based Workflow Systems

Introduction

Products in this category offer a suite of integrated office applications such as word processor, spreadsheet, presentation, and electronic mail. In suite-based workflow systems, all the applications are somewhat integrated with the electronic mail system. This integration is often accomplished through a **send** or **add routing slip** command in the menu structure of the non-electronic mail applications.

Advantages

Suite-based workflow applications can be bought off the shelf, and some of them require few changes during implementation. In some cases they can be implemented without support from 3rd party consultants.

Disadvantages

Some suite-based workflow applications (such as Lotus Notes) are criticized for being high maintenance driven, requiring a high system administrator to user ratio. The low-end types of these applications might be too unstructured to facilitate the creation of a structured workflow environment.

Background and functionality

Suite-based workflow products are designed to allow users to route individual desktop application files instead of folders of documents and forms. Products in this category are characterized by their support for unplanned actions, one-time actions, and ad-hoc processes. Products in this category can be split into two sub-categories; office application suites and groupware application environments. Suite-based workflow products are very similar to the messaging-based workflow products in their use of electronic mail as the routing vehicle.

Endnote on Categories

There is no single best category of workflow systems. The right system depends on the nature of the processes to be supported with a workflow tool. Different tools support varying levels of structure. Whereas suite-based workflow systems might support ad-hoc interpersonal data sharing, production workflow systems are better at supporting rigid and well-defined work processes. The other categories can be represented as somewhere in between these two on the scale of structure.

The State of the Market

This section outlines the names of vendors and their products sorted by the four categories. In some cases a “##” is inserted in the “product name” column. This means that the vendor's products can be classified as belonging in more than one category. The vendor names and products are from James G. Kobiulus' **Workflow Strategies**.(14)

Leading Vendors in Production Workflow Systems

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Vendor Name	Product Name(s)	Background
ActionTechnologies Inc.	#Action WorkflowSystem	One of the first vendors on the market.
Autodesk Inc.	AutodeskWorkCenter	Focuses on a niche of production workflow called product data management . Some of their products are CAD (Computer Assisted Design) products with workflow capabilities.
BanTec Inc.	Flexus FloWare	Flexus FloWare is one of the top productsbased on revenue measures.
FileNet Corp.	#WorkFlo Business SystemFileNet: WorkGroup FileNet VisualWorkFlo	The pioneer, and undisputed market leader.
IA Corp.	Object-orientedWorkflow	Leading vendor of enterprise-widemultimedia workflow solutions.
IBM/LotusDevelopmentCorp.	#ImagePlusFlowMarkLotus Notes:Document Imaging	Only NY-headquartered company.
InConcert, Inc.	InConcert	Have broad range of products, formerlyKnown as Xsoft.
Keyfile Corp.	#Keyfile EnterprisesEdition	
ViewStar Corp.	ViewStar	Runs on broad range of platforms
WangLaboratories Inc.	Open/ImageOpen/Workflow	

Leading Vendors in the Messaging-based Workflow Market

Vendor Name	Product Name(s)	Background
Banyan SystemsInc.	#BeyondMail	
Filenet Corp.	#	
IBM/LotusDevelopmentCorp.	#Lotus FormsFormTalk	
JetForm Corp.	#Jetform DesignJetform Filler	Canadian headquartered company
Keyfile Corp.	#Keyflow	
Microsoft Corp.	#Electronic FormsDesigner	
Novell Inc.	#InFormsInForms DesignerInForms Filler	

Leading Vendors in the Web-based Workflow Market

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Vendor Name	Product Name(s)	Background
ActionTechnologies Inc.	#Action WorkflowMetro	
Banyan SystemsInc.	#	Listed here because they have announced plans to move into this category
Documentum, Inc.	Enterprise DocumentManagement System(EDMS)	
JetForm Corp.	#Web ConnectivityPak	
Novell Inc.	#GroupWise WebAccess	
Open Text Corp.	Livelink Intranet	
Ultimus Inc.	Ultimus	

Leading Vendors in the Suite-based Workflow Market

Vendor Name	Product Name(s)	Background
Digital EquipmentCorp.	Link WorksTeamLinks	
IBM/LotusDevelopmentCorp.	#NotesNotesFlowSmartSuite	
Microsoft Corp.	#Microsoft OfficeExchange	Already in use in many agencies
Novell Inc.	#GroupWiseEnsemble	

The Future

All the vendors featured in this section are considered leaders in the field for some reason or other. There are a number of other vendors that might be better suited for specific application needs. The vendors named in this section should not be used as a short-list for selection, but rather as a starting point for exploration. A list of additional Workflow products can be found at <http://www.is.cs.utwente.nl:8080/~joosten/workflow.sites.html>. It is to be expected that many of the vendors in the market will not survive the next decade of competition, and the selection of a vendor and partner for development is therefore very important.

Emerging Standards

Workflow Management Coalition

The Workflow Management Coalition (WfMC's) Reference Model defines a generalized target architecture driving the development of most production workflow solutions, whether or not their vendors plan to implement all the WfMC's standard technical interfaces. The goal of the model is to provide a standard for interoperability among the major workflow subsystems. It is hoped that over time, commercial products will include APIs which adhere to these standards.

Figure 4. The Workflow Management Coalition Reference Model

More in-depth information about this model can be found at <http://www.aiai.ed.ac.uk/project/wfmc/DOCS/refmodel/rmv1-16.html>. The model focuses on the five interfaces between the workflow enactment service and the tools.

Microsoft and MAPI Microsoft's MAPI Workflow Framework is largely complementary to WfMC's model. It was created in consultation with the WfMC and other vendors. It defines APIs, message classes, and conversational dynamics needed for client applications to request and track workflow-engine services in the MAPI messaging

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environment.

(14) 14 James G. Kobiellus, **Workflow Strategies**, Ch. 7, 8, 9, and 10.