Pilot 2 Definition, Testing and Execution
Work Package Reference 3.2b and 3.2c
Document H

Scope

This document describes the definition of the workflow model for Pilot 2, its testing and execution over the Internet. It relates to the Quality Assurance (QA) strategies and document management needs described in document E, the requirement analysis. The resulting workflow model is given together with an assessment of the monitoring of the Pilot.

Definition and Testing

This was executed in a phased series of workflows, that were designed to train the actors in Pilot 2 in the use of the groupware environment and also to build familiarity with a workflow managed approach to collaboration.
The following is the sequence of tests building in complexity that were defined

Browser connectivity

A simple workflow (Figure 1) that ascertains the functionality and type of the browser on the actor machine. It then launches a secondary flow that assists the user in deleting and managing completed flows in their work area.
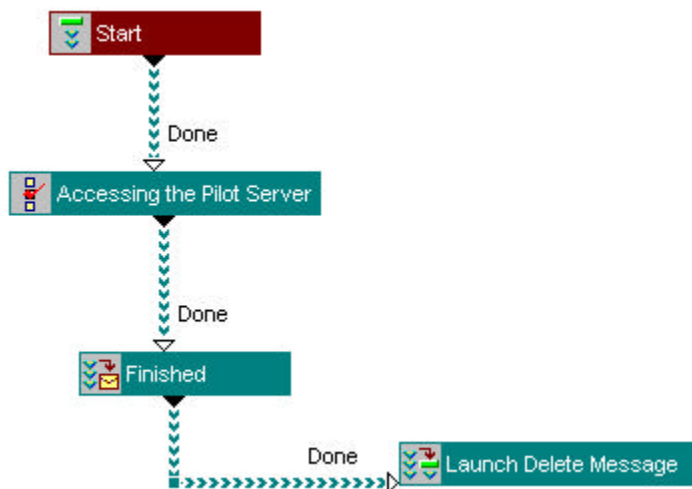

Figure 1 Browser Connectivity Workflow

Viewing Documents

This flow determines that the type of documents that the user is able to read on their machine. The main types tested are HTML, ASCII text and Word. Where a document cannot be viewed a supplementary workflow is initiated to install the necessary viewing

components on their machine. Examples of this for the Microsoft Word document viewing component are shown in Figure 2 and Figure 3.
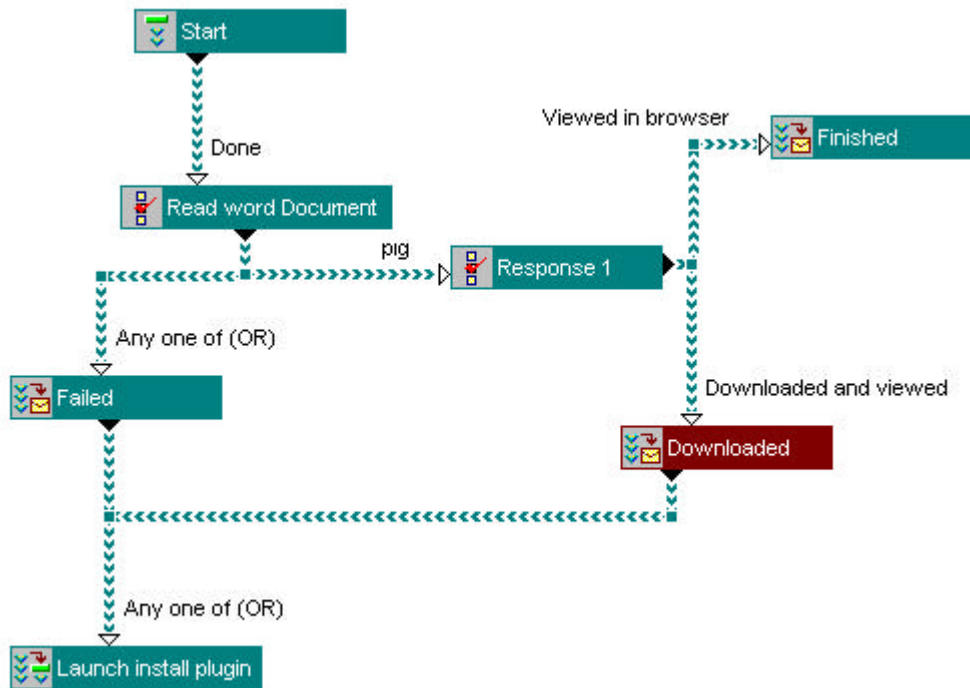

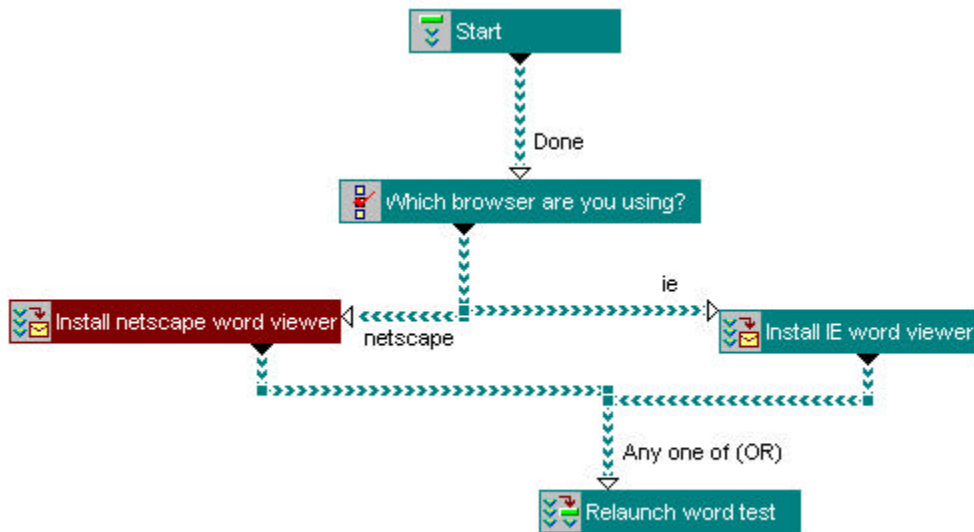**Figure 2 Determine Document Viewing Capabilities Workflow**

Figure 3 Install Word Viewer Component Workflow

Viewing CAD Documents

Five main drawing formats were required to be viewed, the AutoCAD DWG, DXF and WEB based DWF format, the Microstation SVF Format and the TIFF raster format. Separate workflows were created to ensure that each of these could e viewed on the client machines. A typical task in one of these flows is shown in Figure 4.
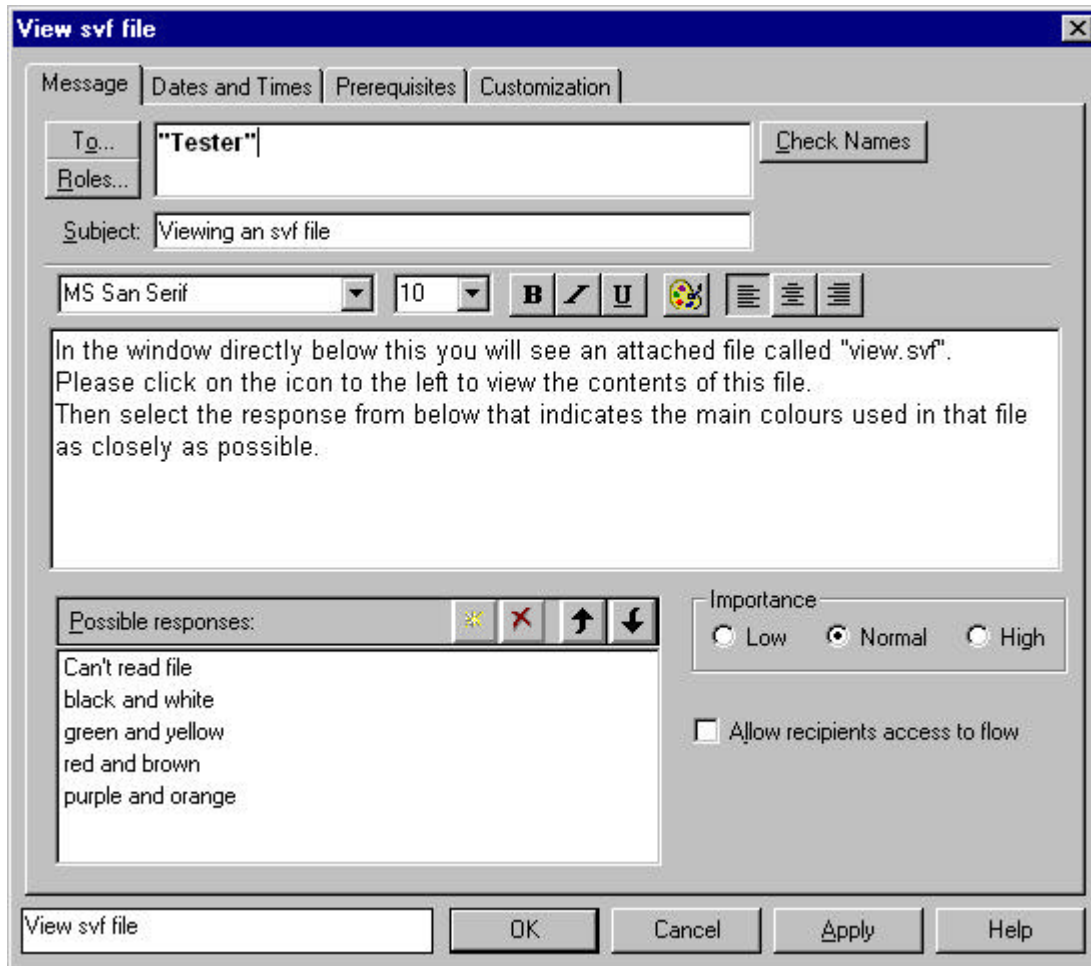

Figure 4 Typical CAD Viewing Task

Exchanging a file

Although this task is apparently simple, problems began to occur in the testing at this point. These problems related directly to the quality of the connection at the Guyana site and continued to cause severe disruption to the project from this point onwards. Figure 5 outlines the simple nature of this task. The difficulties were found to be related to the Internet connectivity in general and are summarised at the end of this document.
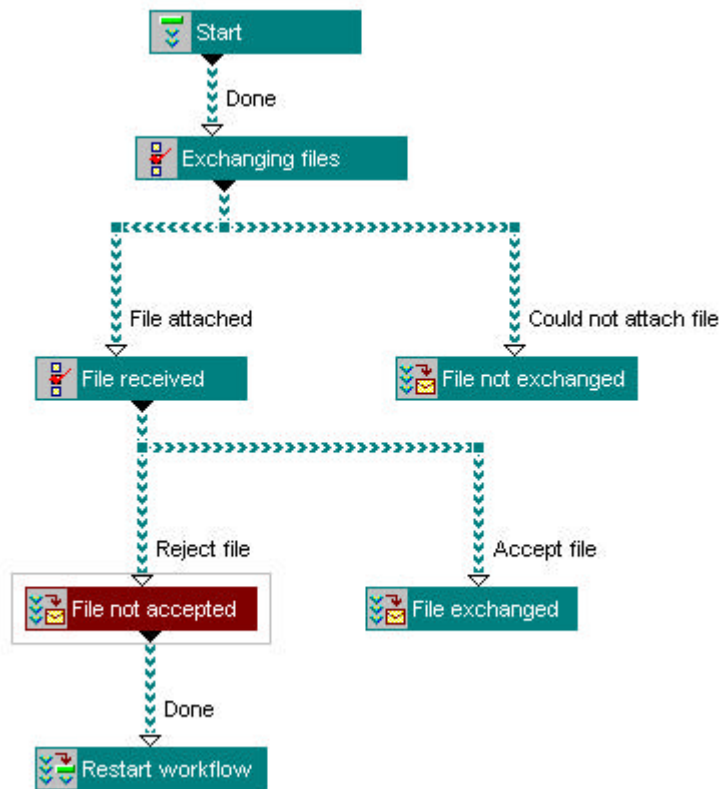
Figure 5 Exchange File Workflow

Viewing Status of a Flow

All the flows to this point deal with the immediate response to actions that arrive on the actor's desktop. This flow introduced the actors to the history or previous actions within a flow, allowing them to see what other participants had done prior to them and to view the overall state of the flow.

Making a Shared Diary Entry

This workflow guided a pair of actors through the process of making an appointment or a shared entry in a project specific diary.

Redlining on Drawings

This workflow built upon the CAD viewing support to introduce actors to the shared redlining facilities implemented by Work Package 2. This allowed several actors to exchange drawings for approval/ acceptance and as part of that exchange pass their graphically related comments directly on the drawing concerned. Redline and drawings were kept separately and an audit trail of who did what and when was maintained on the server.
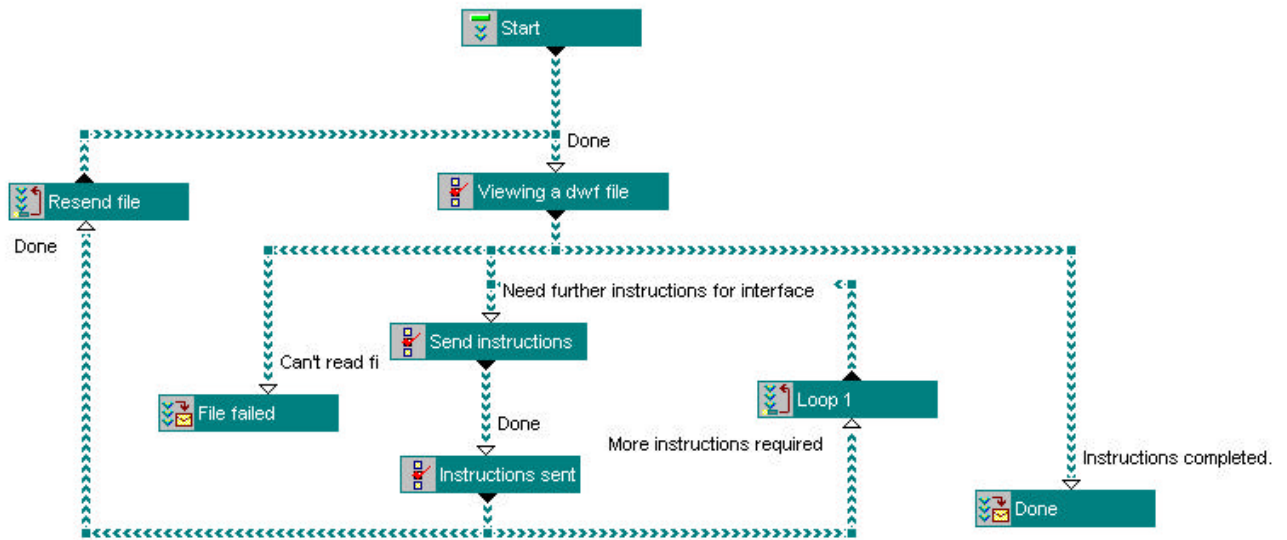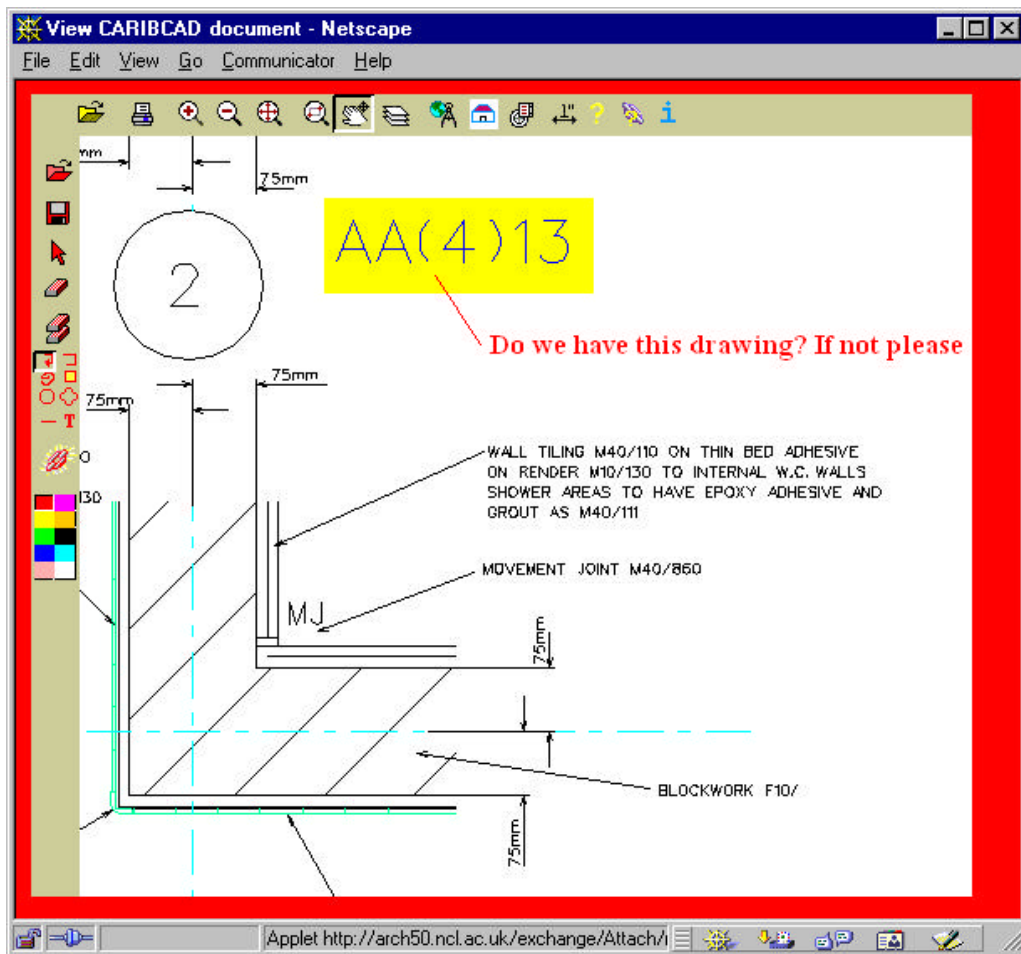
Figure 6 Redlining workflow

Figure 7 Typical Redlining Operation

Reaching Agreement

A key requirement of Pilot 2 was to negotiate and reach agreement about actions that needed to be done collaboratively. This flow managed the exchanges required to reach agreement. The action to be agreed was defined in a document attached to the flow as the negotiation proceeded supporting documents could be added to further define or bound the problem and the result. Figure 8 illustrates the flow outline and Figure 10 gives an example of a typical task in this flow.
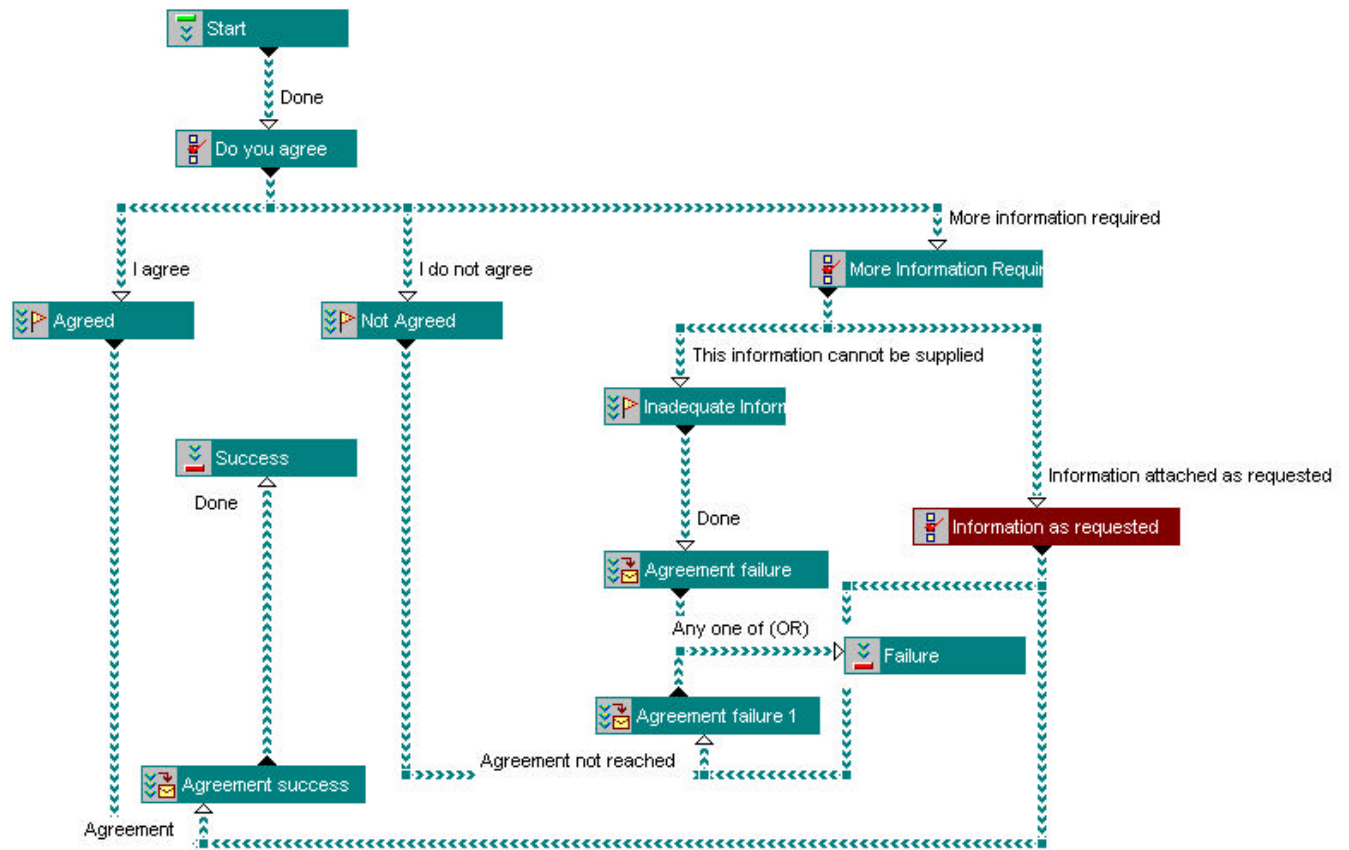

Figure 8 Reaching Agreement Flow

The testing of this more complex flow was less successful, it required to execute over several days and persistent Internet based failures were experienced together with limited availability of the actors involved.

Request Action and Agree Time scale

The complexity of the workflow and the related tasks were now increasing, few actors succeeded in performing this task successfully.

Figure 9 Review Action and Agree Timescale flow

Figure 10 Typical Agreement Task

Final Pilot 2 Workflow

For the European Partners in Pilot 2, Quality Assurance was a major issue. A review of their procedures was carried out. The major component of these procedures centred on the distribution, issue and approval status of the documents produced by all parties working on a project. The essence of this distribution process was that each party submitted documents to the other for either, acceptance of a task, interim or final approval. This is illustrated in the Figure 11.
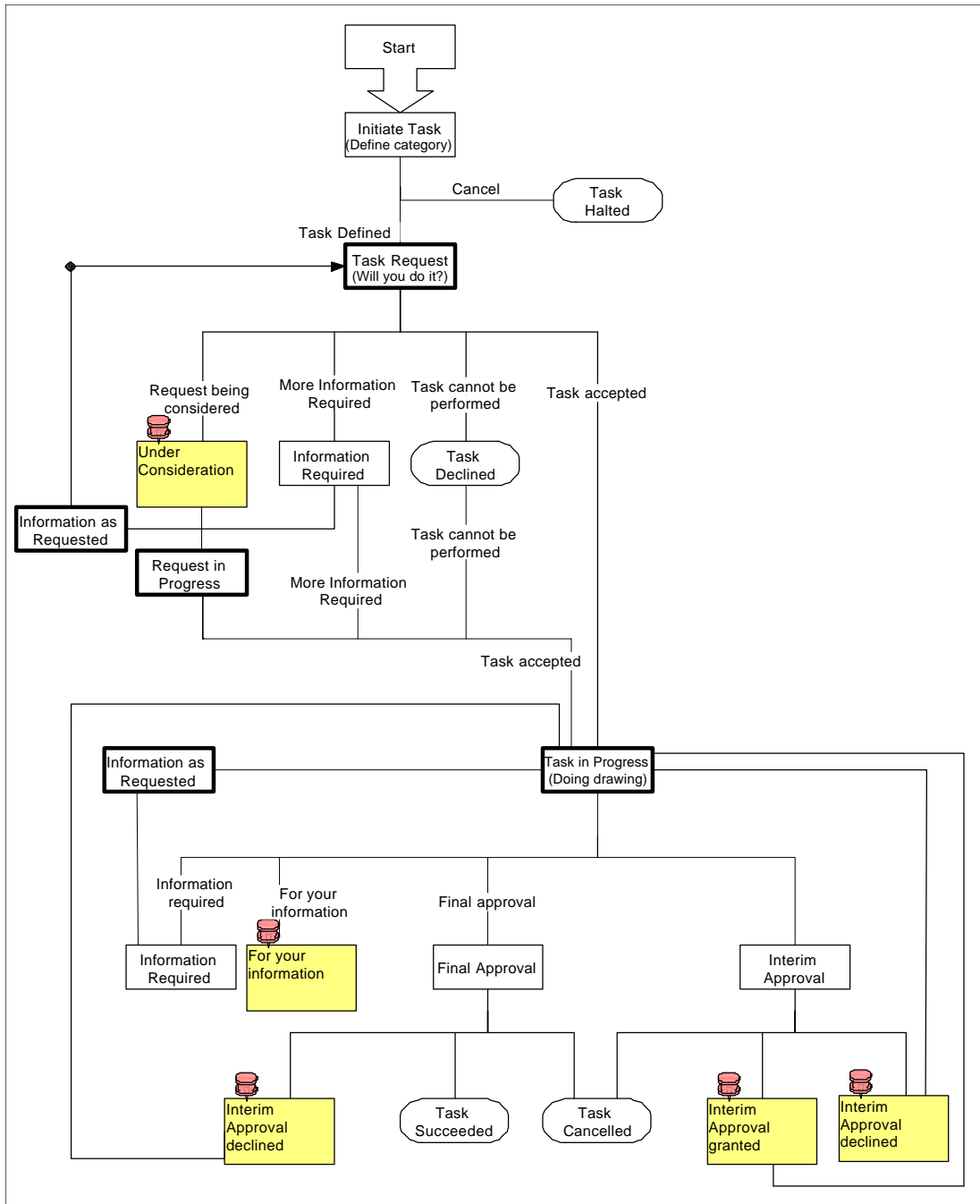
Figure 11 Pilot 2Generic Workflow

Based upon this generic workflow a formal and executable workflow model was created in the Keyflow paradigm. This is shown in Figure 12
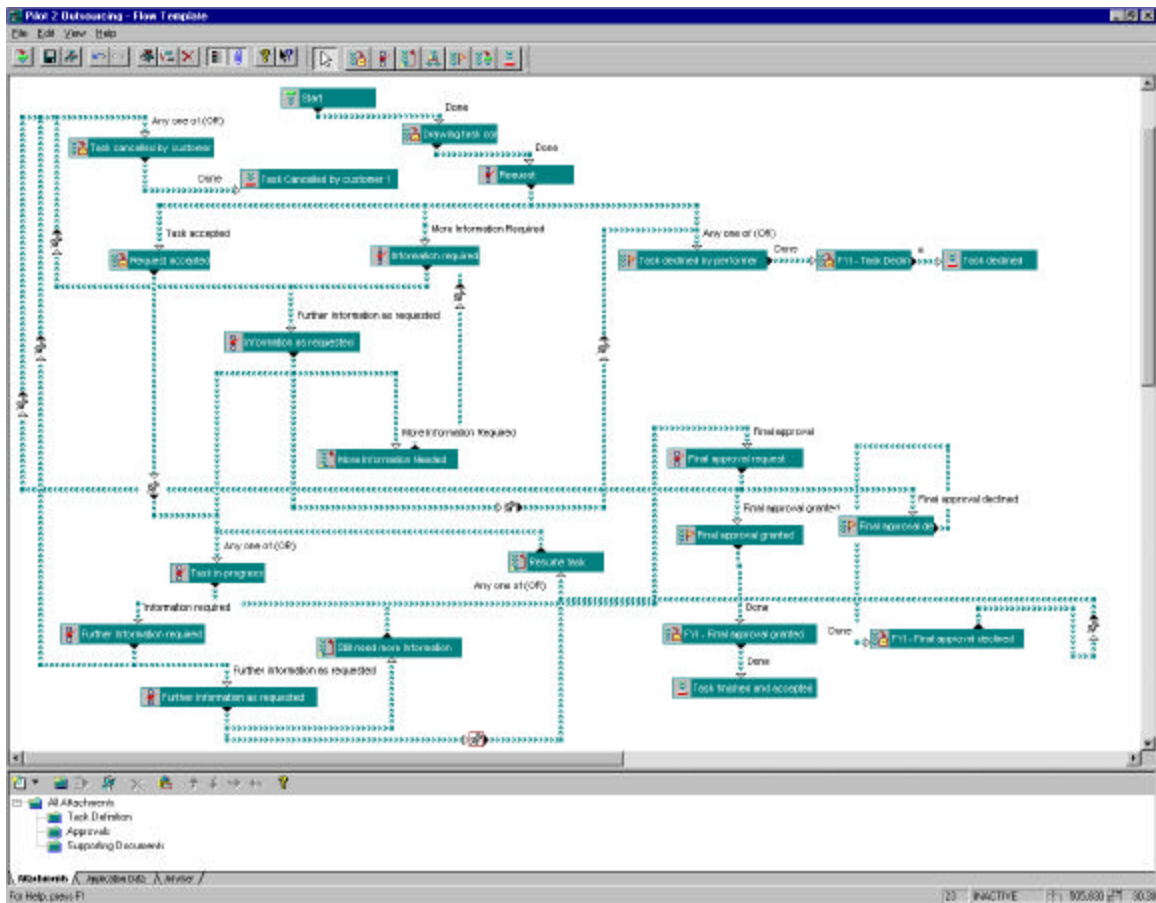
Figure 12 Overview of Pilot 2 Workflow Model

Initial testing and evaluation of the model was carried out between Faulkner Brown and UNINEW to determine technical problems, these were identified and resolved. However, a full test of the Pilot 2 model has yet to be performed due to problems beyond the scope of the research project, these are described in the following section.

Pilot 2 Execution

The definition, development and execution of the Pilot 2 prototype has not been completed successfully. The main reasons for this were,

- The business process re-engineering required
- Technical problems with the Internet
- Availability of CAD bureau resources.

Business Process Re-engineering

The completion of the Pilot 2 workflows was seriously delayed by the amount of time and resources required in the early phases of the workflow model definition. These problems were caused by the confusions and misunderstandings of all actors in Pilot 2

about the processes involved in remote collaborative working. These were finally resolved and the results are reflected in the final workflows. A key issue was the need for negotiation and the poor support we were able to offer for the preferred method of "face to face" meetings on a regular basis. Tests were carried out to determine the feasibility of using online conferencing facilities but the general poor performance of the Internet made these unworkable. Furthermore the time differences made this process of communication quite extended.

Technical Problems with the Internet

During the course of this project the Guyana team have experienced a catalogue of Internet related problems. A large number of these related to the

- Quality of the services provided by the Internet Service Provider.
- Sudden increase in demand for Internet connectivity in Guyana overloading the countries infra-structure
- The apparent reluctance of the government permit high levels of uncontrolled communication out of the country
- The poor quality, reliability and failure due to flooding of the countries telecoms.
- Local machine failures due to virus attack and hardware failure in the Klautky office.

Availability of CAD Bureau Resources

Both Klautky and FaulknerBrown have had difficulty providing the levels of resources at the time required to complete the execution of the pilots. The main problem has been the tidal nature of the workloads in their offices and an inability to provide short term responses to solve problems. This problem has been compounded by the Guyana problems, essential it has not been possible to find a window when both parties were able to work concurrently.

Conclusion

The ability to work collaboratively using remote techniques has large potential for European and Developing countries. Workflow managed groupware centric environments provide a good framework for this type of collaboration. The basic infrastructure of the Internet is not at present widely robust enough to support the more sophisticated remote working tools such as on-line video conferencing and whiteboarding. Whilst these techniques work in an EU context consideration needs to be given to infrastructure of the developing countries, both managerially and hardware. For example the addition of a satellite connection to Guyana improved their connectivity near the end of the project but the mail address of the University partner was incorrectly changed, resulting in total loss of communication.

The change in mindset and working practices required to work collaboratively and remotely is a prerequisite for both European and DC partners. This change is independent of distance.