

An order management & provisioning system based on work group computing with Lotus Notes for an international joint venture in the field of telecommunications

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The JV Global One provides international telecommunication services via a world wide sales channel. Due to the geographically diversified business of the joint venture distributed over many locations the information system support for order handling and provisioning becomes a key success factor for a seamless service. This paper describes the development of a Lotus Notes application for product order management to support workgroup computing of the entities.

1 The Business: International Service Provider for Telecommunication Solutions

Global One, a dynamic new competitor in the market for global telecommunications services, opened for business with more than 2,500 employees and 1,200 points of presence in more than 50 countries around the world. A joint venture of Deutsche Telekom, France Telecom and Sprint, Global One provides International Voice/Data Services for Businesses, Carriers and Consumers.

The joint venture combines and extends several businesses of its parent companies. They include Sprint International; eunetcom, a joint venture of Deutsche Telekom and France Telecom specialising in custom networks and outsourcing; the France Telecom and Deutsche Telekom international VSAT services, international end-to-end and global VPN services; and the Datex-P and Transpac data networks of Deutsche Telekom and France Telecom respectively, outside their home countries. The Datex-P and Transpac units in Germany and France will be integrated after January 1, 1998.

The joint venture is dedicated to unifying the world for its customers through state-of-the-art, custom-tailored telecommunications. Offering a comprehensive array of advanced voice and data services to businesses, carriers and consumers. It provides seamless, flexible, cost-efficient solutions for every customer need. Business services will include:

- Voice solutions: *VPN, Phone Card and Call Center.*
- Data solutions: *X.25, Frame Relay, Internet and LAN-to-LAN.*
- Dedicated solutions: *Managed Bandwidth and VSAT.*
- Applications solutions: *Messaging, Enhanced Fax, EDI Services, IPL and Conferencing.*
- Custom network solutions: *Systems, Private Networks, and Outsourcing.*

The business is designed to provide one face to the customer in offering the above services. Locally-based global account managers handle every aspect of a customer's international communications requirements, from designing the service portfolio to billing questions.

One key Success Factor for a seamless service to the customer is the information systems support for order management and provisioning. The geographically diversified business of the joint venture spread over many locations around the world requires a distributed order processing and work group computing. Based on these requirements an interim IT solution developed with Lotus Notes was introduced to the business units.

2 The Process of Order Management and Provisioning

2.1 Service Life Cycle

The service/product life cycle can be basically split up into the main business processes

- presales
- order handling & provisioning
- after sales & customer care

The Lotus Notes development described in this paper is designed to support the order handling & provisioning process. It includes all activities after the customer contract is signed and ends with the acceptance of the implemented service by the customer and the internal advice to Billing to commence invoicing.

The situation in the beginning of the Joint Venture can be characterized by provisioning procedures and systems which are different for different services and different organizations, each partner having company specific organisational procedures and legacy systems. To overcome this problem, it was decided to implement an organisational structure based on Single Point of Contacts (next section) and to develop a Lotus Notes application to support the interworking of the several organisational entities involved in the performance of the service/product life cycle. Lotus Notes was chosen for its work group computing features and for reason of supporting a rapid and flexible systems development, being implemented within short time. It is seen as an interim solution to be adapted to the evolution of organisational procedures and user requirements, which evolve with experiences gained from operating the business.

2.2 Single Point of Contact (SPOC)

In order to ensure efficient overall provisioning processes for all services within Global One, a coordination of the different local and/or service specific processes is required. This coordination as well as handling of orders between Europe and the US and Rest of World (RoW) and between European BUs are the core activities of the Single Point of Contact (SPOC).

Figure 1 gives an overview of the SPOC concept and the principal interfaces for the interworking of the business units.

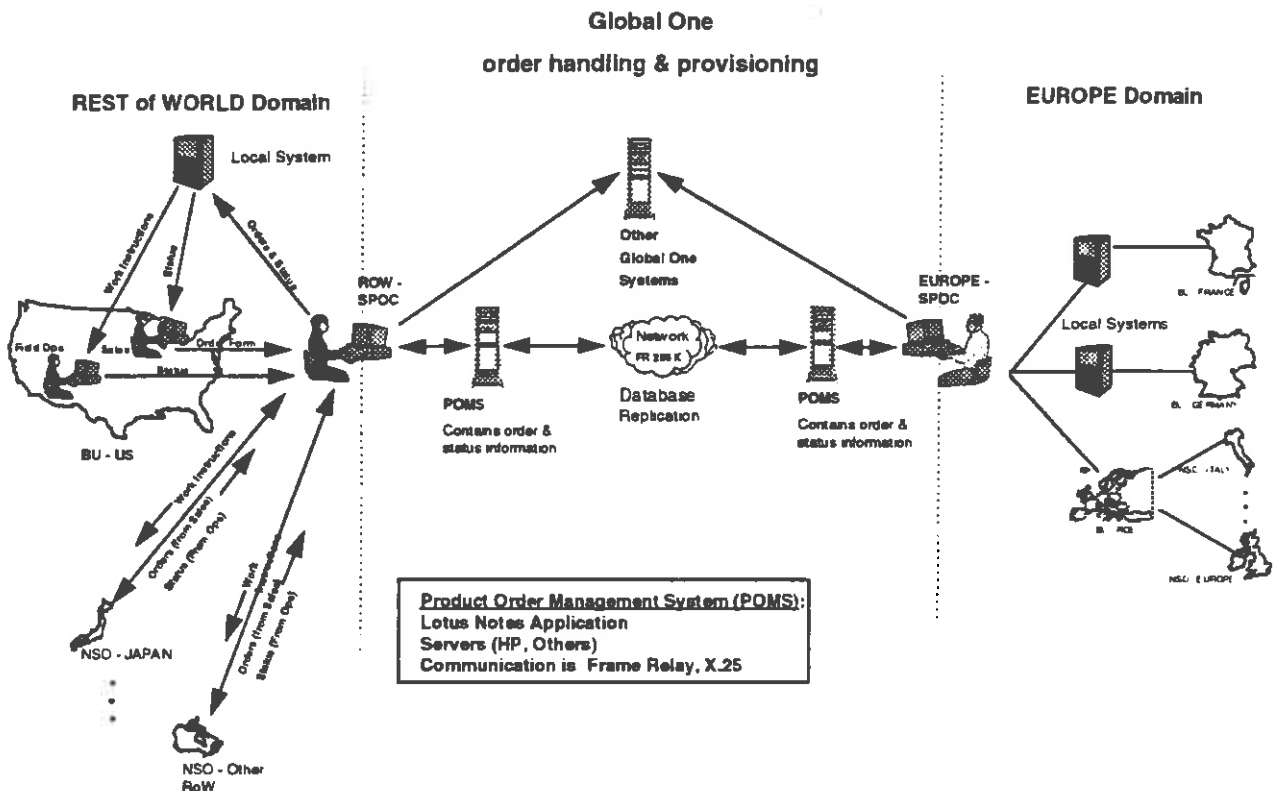


figure 1: overview on the interworking for order handling & provisioning

There are two physical SPOCs implemented one in RoW (Reston) and one in Europe (Paris). These two physical SPOCs are used to exchange all service orders between RoW and Europe. Order exchange between the two SPOCs is via a Product Common Order Form (PCOF). SPOC Europe is the entry point for orders originating outside of Europe and received via SPOC Reston using POMS. Conversely, SPOC Reston is the entry point for provisioning action outside of Europe if the order originates in Europe.

The value added by the SPOC is to facilitate the implementation process and reduce the provisioning time whenever possible, whilst also being able to track the progress of all international orders. The ordering process is divided into a sales part and a technical part.

For order exchange and handling, the SPOC interacts with Sales Administrations (SA) which are responsible for work order exchange with their related Operational Centers (OCs) for ordering and providing local loops, customer premises equipment etc. In addition, the SPOC dispatches in parallel the appropriate work orders to the central technical entity responsible for the particular service. This entity is defined by a technical provisioning team allocated to the SPOC.

3 Work Group Computing based on Lotus Notes

3.1 Overview on the Product Order Management System

The Product Order Management System (POMS) will be used to transmit orders via a Product Common Order Form (PCOF) between Europe and the Rest of World (ROW) entities in Global One. POMS is a Lotus Notes application that allows for order entry, replication between servers, order status tracking, reporting, and query functions. POMS currently supports the services Managed Bandwidth - (MBS), Switched Data Services (SDS), and Virtual Private Network (VPN). Order forms for the other services of Global One (see section 1) are in development.

The Single Point of Contact (SPOC) for order handling receives order information from the business units in Europe and ROW. Orders are replicated between the two servers located at the SPOC's every 2 hours for the time being. The actual replication interval may change based on the performance of the servers and the evolving requirements of the users. Each of the servers include full versions of the POMS software and data, so backups of the data will be continually available. The servers are also be backed up to magnetic tape daily and weekly by operations staff.

New or modified orders will be marked to indicate that some action may be required on that order. Implementation management will determine the priority of work flow. Workflow views are available in POMS which help the SPOC user to organize and easily retrieve the information stored in the provisioning orders. The workflow views will also serve to indicate the next actions that are required on open orders. POMS includes responsibility tables which drive the workflow views. If responsibility for a particular milestone is assigned to a user in the responsibility table, then the user will be shown that this action is required of them.

POMS includes status tracking for the key milestones involved with order provisioning (see right window in figure 2). Milestones may change depending on the order type and the responsibilities assigned in the service order. When an order is cancelled, activities related to the cancellation are calculated based on the activities already completed for the order. The completion dates for all milestones should be entered by the SPOC as soon as possible to ensure that accurate information is available for viewing at all times. Day to day activities, issues, problems, and escalations will be recorded via a comments section in POMS. All order edits will require a notation in the comments section, and the users ID and the date will be automatically captured below the comments section.

Edits may be done to change information on orders that are not yet installed, however a new order for modification of existing service will be required to change orders that have been installed (see order types in section 3.3). POMS utilizes radio buttons, check boxes, predetermined lists, population from previously completed orders, and verification of data fields to speed order entry and ensure accuracy. Reports will be determined and generated by the user groups in Europe and ROW depending on their needs.

3.2 Systems Architecture

The overall systems architecture corresponds to the selected organisational structure with the SPOC concept as its cernel. Central Servers are with the SPOC in Paris and Reston which are linked via Frame Relay based on TCP/IP. Business Units in ROW and Europe communicate to their respective SPOC and are linked via wide area network (refer to figure 1). The specific design of the network within the region of a business unit depends on how sales administration is organized (e.g. central sales in France, decentral via 6 sales centers in Germany).

3.3 Product Common Order Form

The general order format of the PCOF consists of the following sections:

a) commercial:

- describes contractual terms and conditions
- identifies customer information
- specifies service being ordered

b) billing

- describes price, currency and billing/invoice origin entity

c) technical

- describes contractual terms and conditions
- identifies customer information
- specifies service being ordered

d) after sales/service level

- describes maintenance options etc.

Each order has a unique order number assigned. A POMS order number will consist of two parts: A Customer Order number and a Service Order number. The reason for splitting the order number into two components is to allow for multiple services to be ordered on the same customer order. For example, a Customer Order might be for an X.25 access, a VPN, and three MBS's. The order numbers for this order would look like this:

X.25 Service Order: E00210-25A01
 VPN Service Order: E00210-VPN01
 First MBS Service Order: E00210-MBS01
 Second MBS Service Order: E00210-MBS02
 Third MBS Service Order: E00210-MBS03

Figure 2 gives a snapshot of the POMS system showing the customer order and the assigned service orders in the left window. The right window shows the status form with the milestones for the SDS service order # 1.

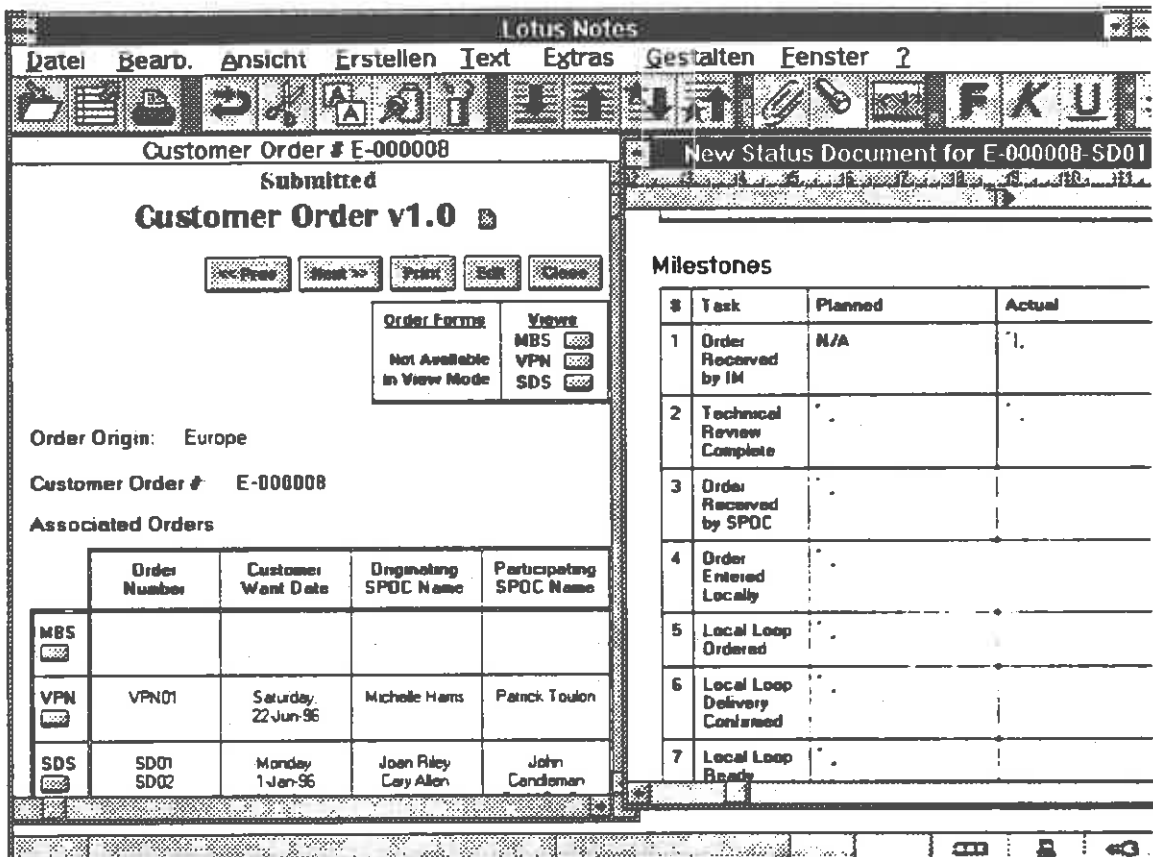


figure 2: snapshot of the POMS system

There are different order types to be distinguished. The PCOF supports these types

- new order: customer orders a new service
- modification: customer wants to modify an existing service or an order during provisioning phase
- cancellation: customer wants to interrupt the provisioning process before handover
- disconnect: customer wants to release an existing service after handover

3.4 Database design

A common order format is currently available for the services Managed Bandwidth, Switched Data Services, and Virtual Private Network. The link to these services is by the customer order (figure 3). The customer order is derived from the contract which can contain a variety of services. Order information is entered via a common order format.

The POMS Lotus Notes Database is composed of four forms:

- The *customer order* (left window in figure 2) contains information on the account team, the contracting party, summary provisioning information, and the customer account number.
- The *service order* identifies administrative details for a service. It contains information on the SPOC, contact, billing/invoicing information, and a pricing table.
- *Technical details* includes the configuration of the service to be installed. It contains the customer site information, customer premise equipment (CPE), technical parameters, and service levels.
- *Status* (right window in figure 2) is used to identify installation jeopardies and to guide status workflow views. It contains the key implementation milestones, the planned and actual dates, running record of the life cycle of an order, and the current state of an order (in progress, complete, cancelled).

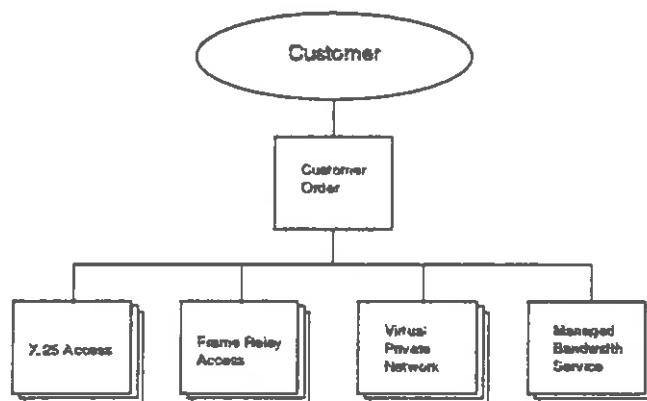


figure 3: POMS ordering method

4 Future Developments

The POMS system is implemented and in use for the SPOCs with interfaces to local systems in the business units. A replacement of local systems and progressive introduction of Lotus Notes to Business units is done by a case by case basis, considering the organisational environment and local requirements. Future enhancements for POMS include rollout to the field sales staff for remote order input directly into POMS and rollout to field operations for direct status reporting and update.