mecom-newsPIPE

A New Generation

Satellite and Internet

News Distribution System

Description of the mecom-newsPIPE News Distribution System

Content

Document History			
Revision	**Issue Date**	**Reason for Issue**	**Remarks**
Version 1.0	21st February 2005	Initial publication	
Version 1.1	16th March 2005	Updated in SBS section/ Inserted SatServer section	Figures re-numbered per section

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Description of the News-Distribution System **mecom**-newsPIPE

1   System Overview

The mecom-newsPIPE is a system for distribution of news and data of various media types over several independent communication channels. It is a very modular system which can be widely configured according the requirements of the user.

1.1   Subsystems

The system consists of five integrated subsystems as shown in Figure 1, namely:

- Content Distribution System (CDS), a subsystem with modules for the capturing of the input data, a module for processing including analysis (Filter) of the data received, comparison with profiles stored (Select) with subsequent forwarding to interface modules to the next subsystem.

- Network Delivery System (NDS), a subsystem which receives the data from the CDS with the instructions as how to distribute them via terrestrial networks, i.e. the Internet, ISDN dial-up ore leased lines.

- Satellite Broadcast System (SBS), a subsystem which receives data from the CDS in a SBS server for processing them to the special conditions of satellite communication, moving them to a satellite modem and from there to an Uplink Control Unit.

- Satellite Server (SatServer), a combined satellite receiver and network server located at the customer premises with interfaces to customer systems and to the customer network.

- Customer and Operations Management (COM), a subsystem with a database which manages the entirety of configurable data in the system and determines the way news objects are parsed, processed and output.

Figure 1
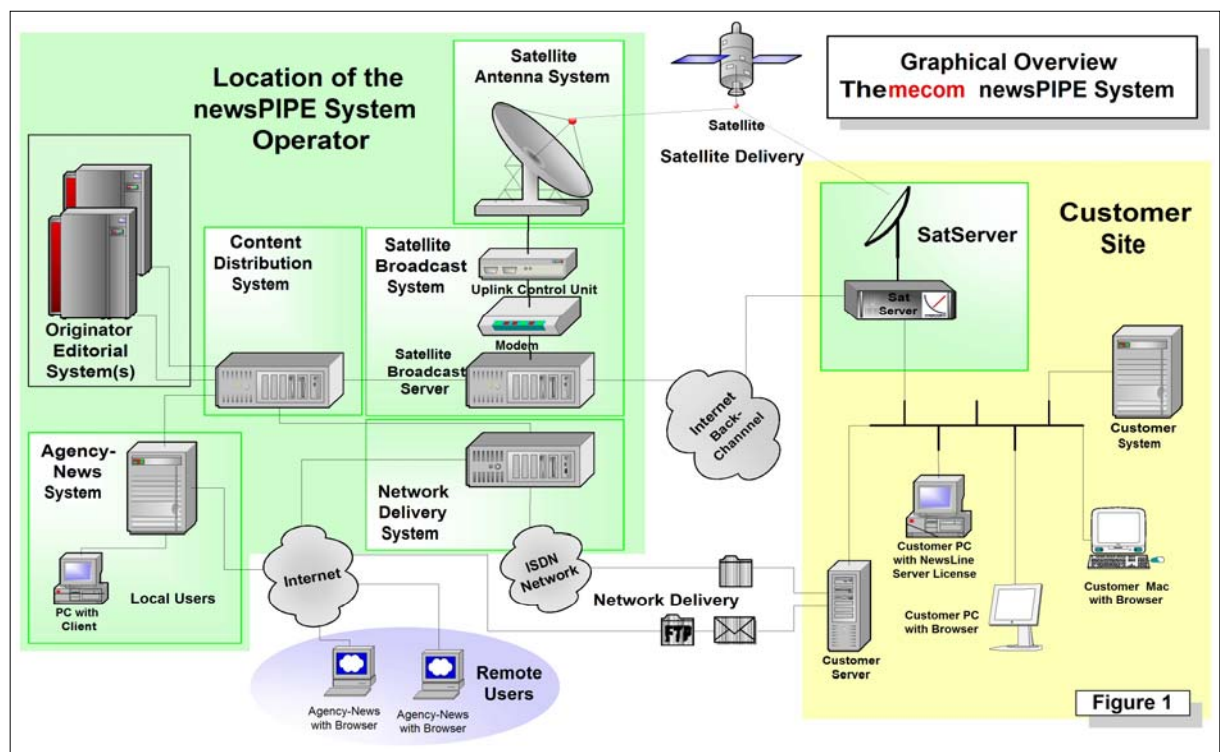
- Agency-News System, a stand-alone system, which stores all news moved through the newsPIPE system for up to two weeks (configurable) for remote users with browsers having access via the Internet.

1.2   System Hardware

System hardware will be chosen by mecom in agreement with and in view of the particular requirements of the customer, who will get a complete and tested system with hard- and software.

1.2.1   Computer Systems

The hardware platform is chosen for world-wide availability and standards as well as price/performance considerations. All server systems are Intel-based computers able to run Linux and MS-Windows™ operating systems. They are off-the shelf from international suppliers such as Dell, HP, Siemens and others.

1.2.2   HF-Equipment

The Uplink Control Unit is designed and manufactured by mecom using high quality but standard HF-parts. The control processor uses heavy duty industrial control gear.

1.2.3   Personal Computers

Standard Intel based PC using the MS-Windows™ operating system.

1.3   System Software

1.3.1   Processing Systems

The open source Linux™ operating systems is used throughout for the Content Distribution-, Satellite Broadcast- and the Network Delivery System.

1.3.2   Agency-News System

This system is based on MS-Windows™ 2003 operating system.

1.3.3   Database

The industry standard Oracle™ RDBMS is used for the database of the system.

1.3.4   SatServer

This is based on a Linux OS especially tailored for real-time operation.

1.3.5   PC Clients

The MS-Windows™ operating system versions Win 2000 or XP Professional.

1.4   Application Software

The application software is developed by mecom specialist drawing from the experience of over ten years of operating the systems described.

1.5   Performance

Because the system is very modular the system can be easily scaled to the respective requirements. The scaling may range from a configuration with one or a few PC-based servers up to several high-end servers for extreme performance requirements. This modularity also ensures that a user can start with a simple configuration and extending it when his data volume and traffic grows.

The dimensioning of the system and the system modules is done by mecom specialist using the data supplied by the customer.

2 Content Distribution System (CDS)

The system was developed over many years based on the experience of mecom with the requirements of a multitude of suppliers, mainly news agencies and their customers. The CDS is administered by the Customer and Operations Management (COM) database, a software providing flexibility with a richness of functionality.

2.1 Modular Architecture

- The system architecture is object oriented and based on a multitude of smaller functional software units called "nodes" (see Figure 2.1)

- Each node provides a particular "service",

- Nodes interoperate efficiently using operating system (Linux) platform messaging

- The handling sequence of a stream of data input into a node may be freely configured. It is therefore easy to adapt to new requirements

- Very good scaling characteristics due to configurable assignment of nodes on distributed machines

- Configuration files for each machine determine the processing and may be activated on any machine, providing rapid recovery in case of hardware failures.

Content Distribution System (CDS)

Figure 2.1
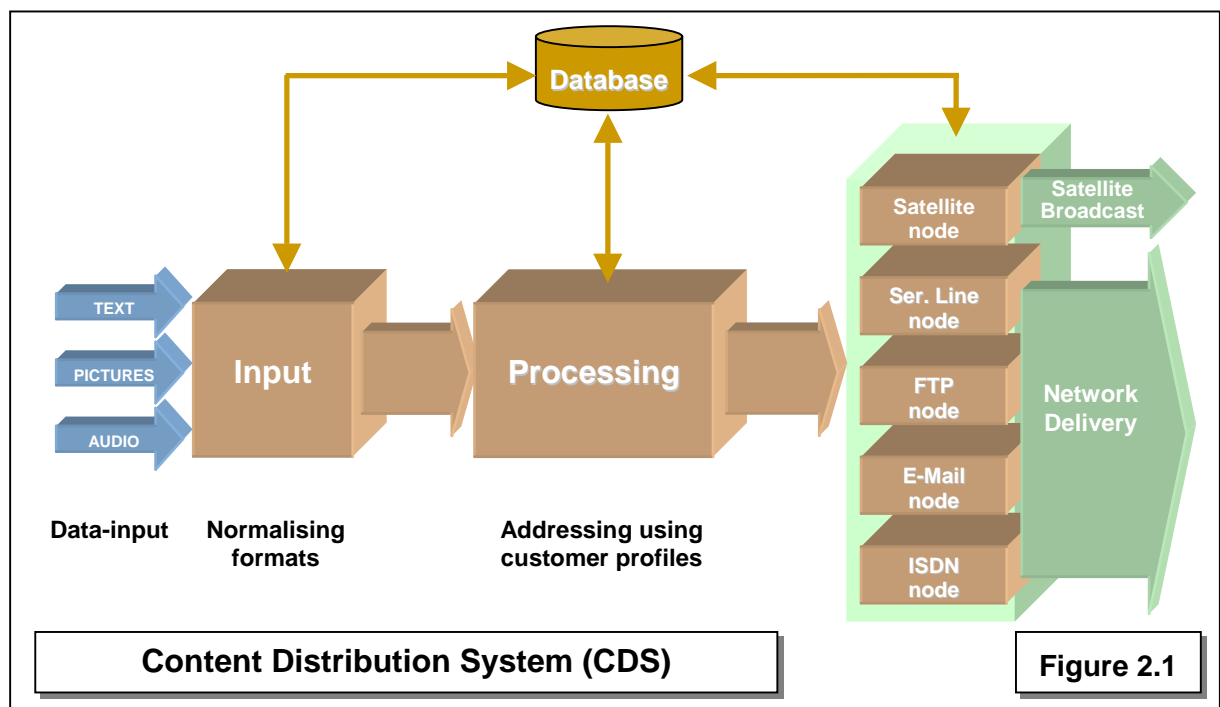
2.2 Input Functions

- All data sent to the CDS is processed by the Input function block

- Parser tool sets support rapid adaptation to a vast range of input formats and delivery protocols

- Parsing data on input normalises the input formats to a proprietary internal file format „mtff" (mecom tagged file format)

- Mtff for all types of media objects enables fast and unified access to their metadata by all software components within the mecom system

- The media object and metadata are forwarded to the next processing stage

- A database keeps track of all media objects ant its processing state.

2.3   Processing Functions

- Immediate Filtering and Selection of media objects by matching the metadata contained in the news objects against all existing profiles
- Originator of the news objects defines the metadata semantics and handling
- Versatile profile syntax defines end users filter and selection criteria
- Generation of delivery requests (from matches with the profiles)
- Forwarding the news object and the delivery request to interface nodes which are specialised for the type of output required (Satellite, Serial Line, FTP, E-Mail, ISDN)
- Interface nodes make the news objects available to the Satellite Broadcast System or the Network Delivery System.
- The database is updated with the data generated by the processing.

2.4   Redundancy / High Availability

The CDS is a fully redundant System with self-checking and recovery functions providing the high availability required. The diagram in Figure 2.2 gives an overview of a duplicated CDS system configuration, named System Line 1 and System Line 2. The system redundancy is based on two identical „Halves", each processing all data in parallel, exchanging data and synchronising its operational status with each other.

Fully duplicated CDS Configuration   **Figure 2.2**
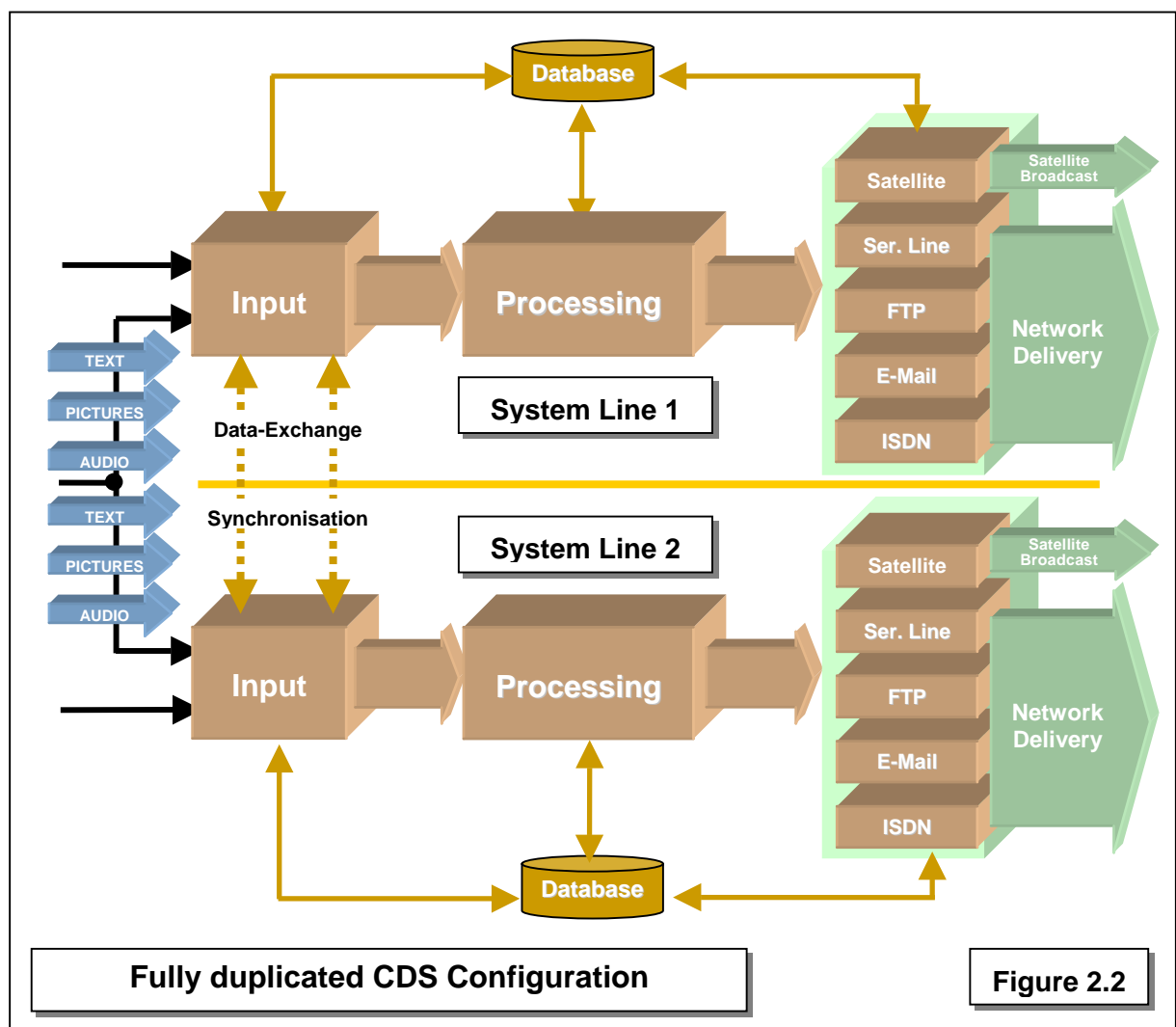
This configuration provides the following advantages:

- Constant operational redundancy at any time for data and for all processes (vs. cold or hot standby)
- Process status and data are kept synchronised all the time, hence, when one or a process in a half has failed there is no loss of data and duplication is kept to a minimum
- Comprehensive monitoring of operations status raise early alerts on any malfunction or when pre-set thresholds are exceeded
- A "heartbeat" function supervises mission critical processes
- "Watchdog" type monitoring of system health detects early problems
- Integrated Operations Management with drill down to customer / device / process objects allows operators to investigate any indication of malfunctioning.

2.5 Duplicated in Input Module

The data input to the system is to be fully duplicated for each of the two halves. In case of network inputs this is parallel FTP data streams. In case of serial interfaces for synchronous or asynchronous data the originator of the data has to provide two parallel feeds, so that input is identical on both input modules.

Both input modules exchange information with each other to ensure that no input is lost in either of the systems and that identical process queues are generated. If data is only received in one system module, it is duplicated to the other half (data exchange). In case of discrepancies self-correcting action is taken (synchronisation) or an alarm message for the operator is output.

2.6 Parallel Processing Modules

Both processing modules in Line 1 and Line 2 continuously and autonomously process the data received from the input modules in parallel. Since it was ensured by the input module that data of the two halves were identical, the processing of data in both systems will result in logging identical output action.

2.7 Duplicated Interface nodes

The two processing modules are constantly forwarding news objects to the interface nodes for later output. At this stage the synchronisation processes between Line 1 and Line 2 ensure, that one instance of the news object is taken for output but not duplicated.

Depending on which output option is chosen, news objects are either to be transmitted by the satellite broadcast system, all other types of delivery are transmitted by the Network Delivery system.

These two systems have their own inherent redundancy, described in the respective sections.

3   Customer and Operations Management (COM)

3.1   General

The COM is a subsystem common to four other subsystems of newsPIPE:

- Content Distribution System CDS
- Satellite Broadcast System SBS
- Satellite Server SatServer
- Network Delivery System NDS

COM manages the entirety of all configurable data in newsPIPE and determines the way data are parsed, processed and output. Figure 3.1 shows the COM in relation to the other modules.

COM in the newsPIPE System

Figure 3.1
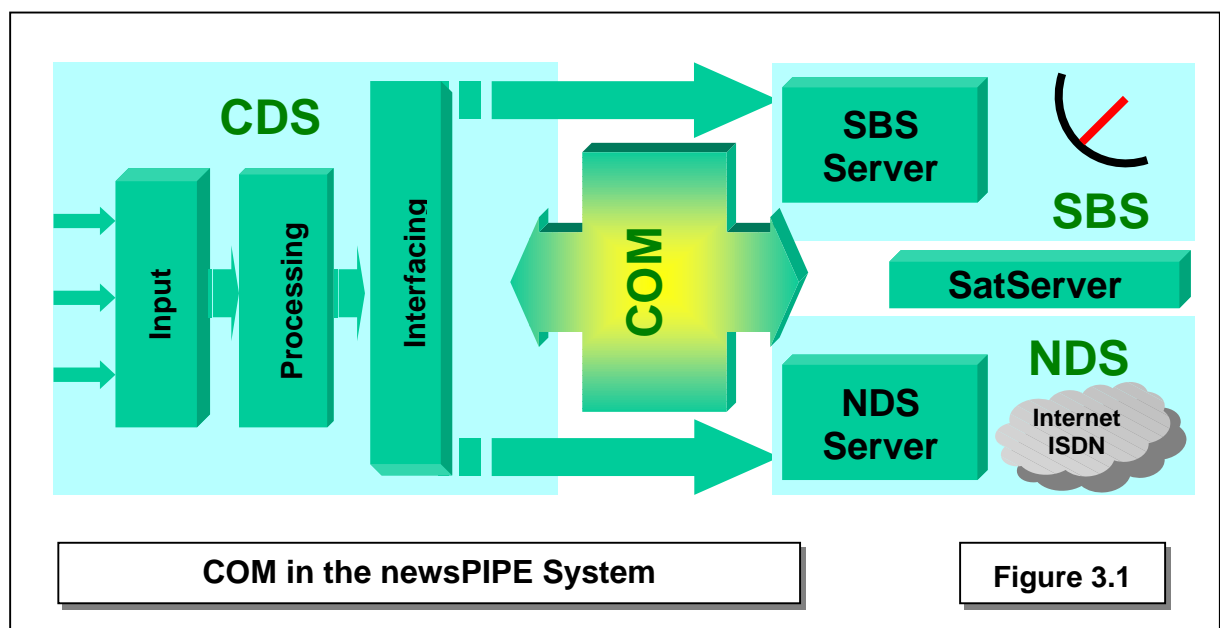
3.2   Elementary entities represented within the database

- Customer (Originator of news objects and recipients/end-customers)
- Equipment related to end-customers (including a hierarchy of sub-components)
- Message / Media Object
- Profile related to Delivery to the end-customer
- Template related to Profile
- Delivery related to Message and to Customer
- Account Log related to delivery and date/time
- Entities also relate to a number of master / type entities

3.3   Customer management

- Data of all customers (suppliers and end-customers) are stored in a database
- Easy access to a particular record via search functions
- Drill down from customer to equipment or delivery
- Drill down from message via delivery to customer
- Full accounting and reporting support

3.4 Operations management

- All media objects and deliveries are recorded
- Meaningful overviews available with sort and filter capabilities
- Rapid and detailed reports point the operator to delivery problems
- "Drill down" from message to delivery to customer to equipment
- Functionality/tools to assist in troubleshooting

3.5 Archive / Log

- Each delivery is recorded separately for a given period of time
- Simple procedures to repeat deliveries lost at the customer's side
- All modifications to database records are logged in a history file
- Archived delivery records form the base for a comprehensive set of reporting and accounting / invoicing features
- Various views to archived delivery data assist in troubleshooting end-customer problems

3.6 Accounting

- All information relevant to accounting concerning supplier and customers is stored in the database
- Multiple views on the data in the database are available
- Reporting and listing of deliveries are supported for several formats and may be output on a range of media to assist customer in accounting or invoicing.

GUI of Customer and Operations Management (COM) **Figure 3.2**
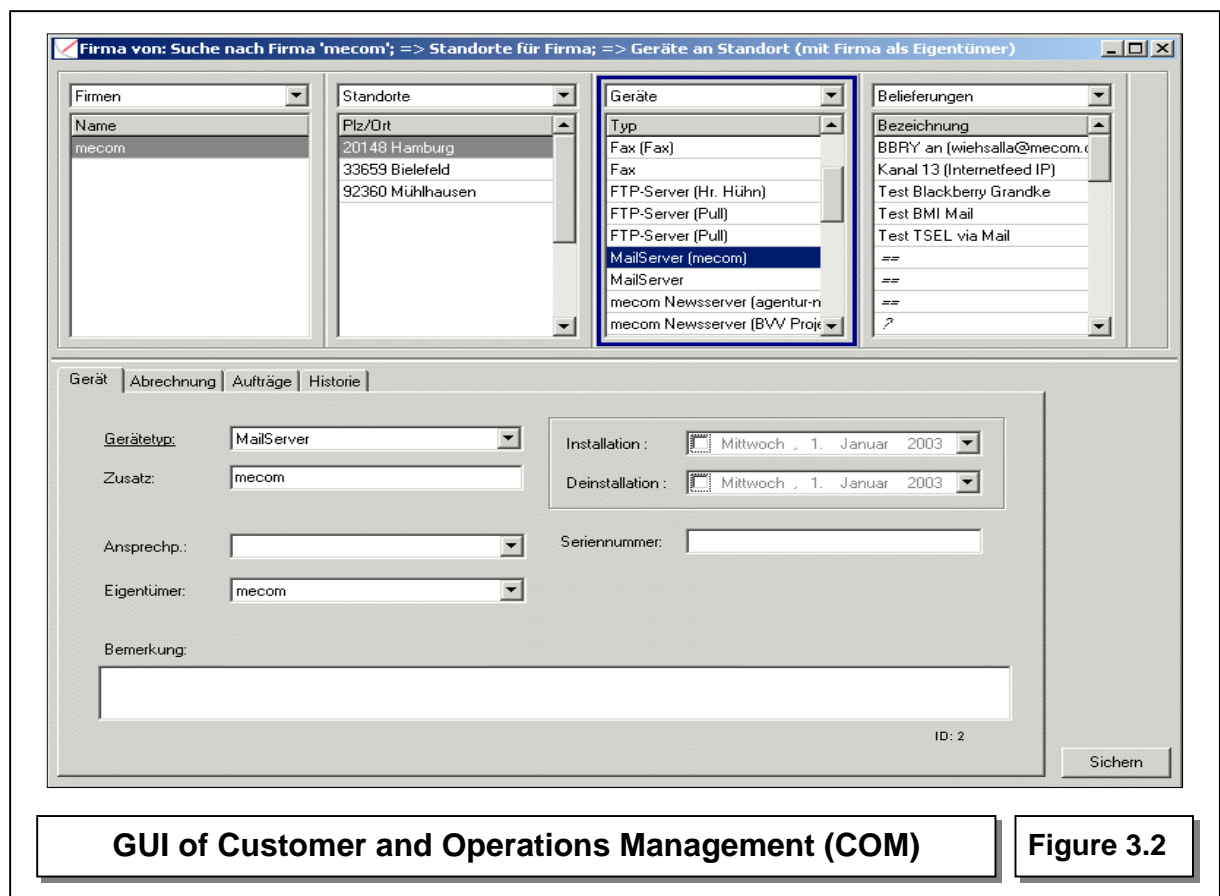
3.7   Graphics User Interface

Access to the configuration data is by a versatile graphics user interface (GUI), based on MS-Windows™ standard. Through the GUI the operators to set-up, modify an delete entities in the COM (see Figure 3.2).

The general characteristics are:

- Application forms are largely based on variable master- or type entities within the database, allowing accurate modelling of an existing environment
- Database records may be made accessible only to certain users, e.g. suppliers
- Suppliers may directly update parts of the database.
- All changes to information stored in the database are logged, providing an audit trail.

3.8   Hierarchy of the COM databases

The database is designed for easy use but also for entering new, obtaining used and modifying the existing data efficiently. The Administrator of the COM always works with the actual data avoiding any ambiguity about the validity of the data. Also, great care has been taken to ensure that operations are safe when production data are changed. These are entered always in a master database (ORA Master) and after checking they can be replicated to the production databases of the life systems (ORA Prod). The master database is not required for the running of the system (it may be taken off-line at any time) but used only as a safe administrator tool.

Therefore, there are three instances of the COM in a two-tier structure:

One Master (ORA Master) and two production databases (ORA Prod 1 and 2) running on the production servers. Figure 3.3 shows the 3 instances of the COM.

Structure of COM database instances   **Figure 3.3**
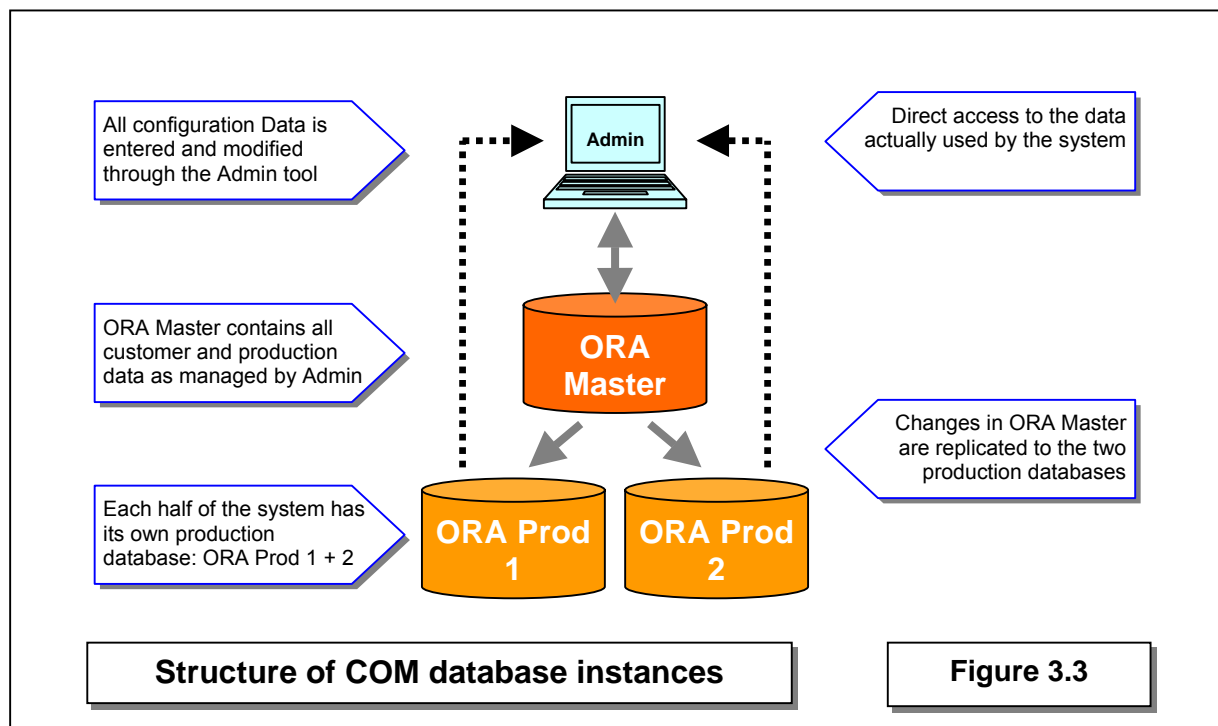
4 Satellite Broadcast System (SBS)

4.1 Overview

The Satellite Broadcast System SBS consists of four major modules, which are designed for seamless inter-operation ensuring the highest quality of satellite transmission.

- The SBS Server
- Uplink Control Unit (UCU) and Modem
- Back Channel Server
- SatServer

Overview Satellite Broadcast System (SBS)   **Figure 4.1**
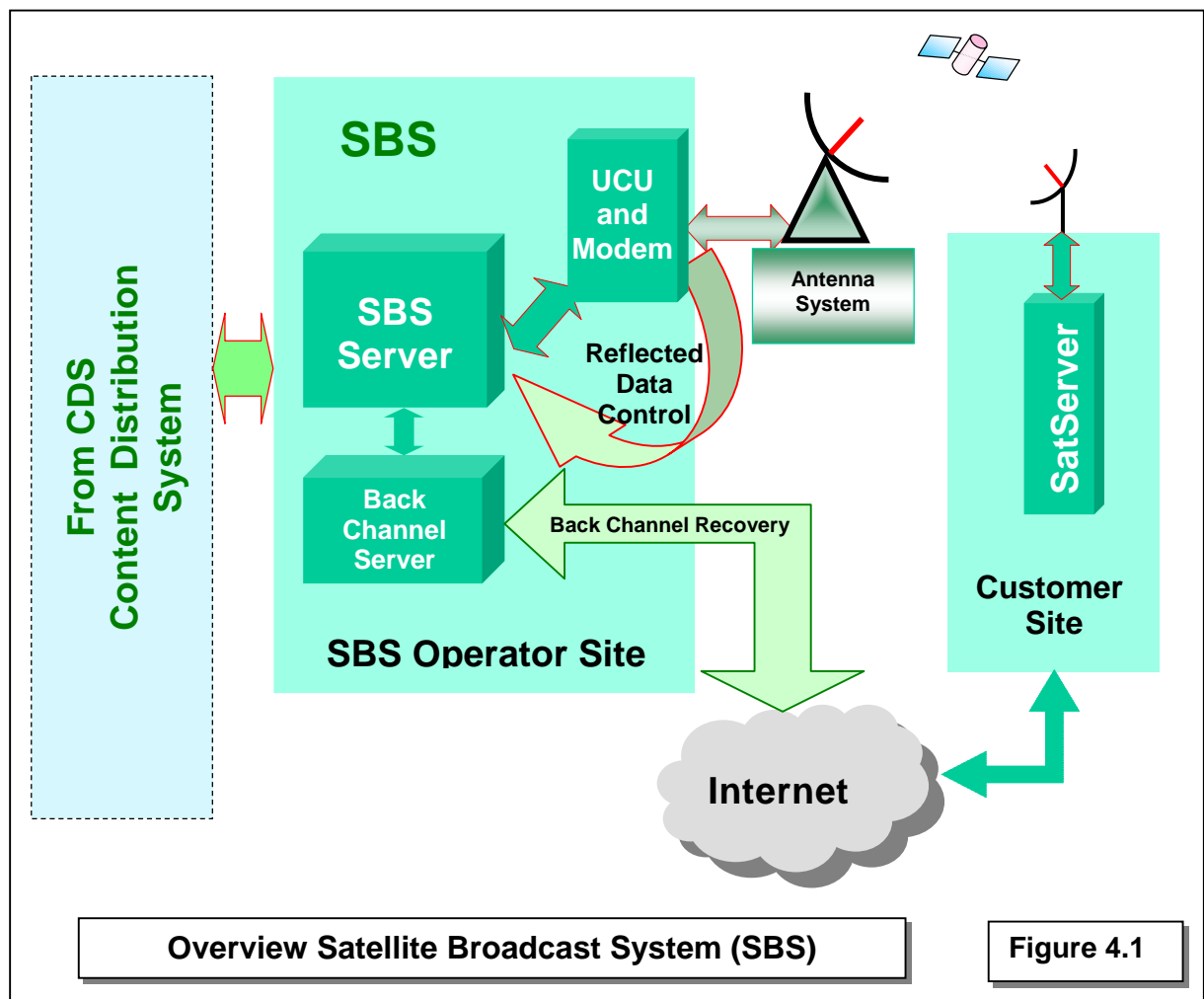
In the Satellite Broadcast System the quality and integrity of the data is given the utmost priority. Two independent but complementary functions ensure this (see Figure 4.1), in which the transmission site and each individual reception site form a closed loop making it a unique feature of the newsPIPE system.

The configuration options of the uplink and the RF systems follow the design principle of high availability and allows redundant systems on both, the same physical site as well as remote sites. In any case, this part of the overall system is always engineered to the particular requirements of the customer.

The UCU of the SBS connects to the Satellite Antenna System which may be integrated into the control functions of the SBS or work as an autonomous or separate system.

4.2   Integrity and Quality of Data

4.2.1   Design Goal

The system is designed for 100 percent correct data – anything below that level will lead to a deletion of any corrupt data and a report to the users / operators.

4.2.2   Central SBS Site

Data received from the CDS is input to the SBS server for further processing for satellite broadcast communication. The SBS Server packs the data into frames for onward transmission over the satellite. At the same time, the frames are stored for checking with the frames received back from the satellite over the transceiver of the antenna ("reflected") for possible retransmission over the satellite link. The stored frames may also be used for data recovery over the Back Channel. Figure 4.2 provides an view on the data quality assurance features.

4.2.3   Reflected Data Control (RDC)

In case the SBS Server detects discrepancies in the data between the frames transmitted to the satellite and received back, the frames determined corrupt are immediately re-transmitted (with the good data) over the satellite. The Satellite Server at the customer site also detects bad frames and deletes them, awaiting the retransmission. This unique feature ensures high immunity against occasional data corruption caused by spurious adverse radio conditions.

4.2.4   Back Channel Recovery (BCR)

If the SatServer does not receive from the satellite, after a certain period of time, a retransmission of detected corrupt frames, it will open a connection (Back Channel) over the Internet (if an Internet connection is configured) to the Back Channel Server at the SBS in the DMZ of the SBS operator site and fetch the missing frame(s) from there. This feature ensures 100 percent data integrity at any receive site for any transmission error.

Data Quality and Recovery Functions in the SBS   Figure 4.2
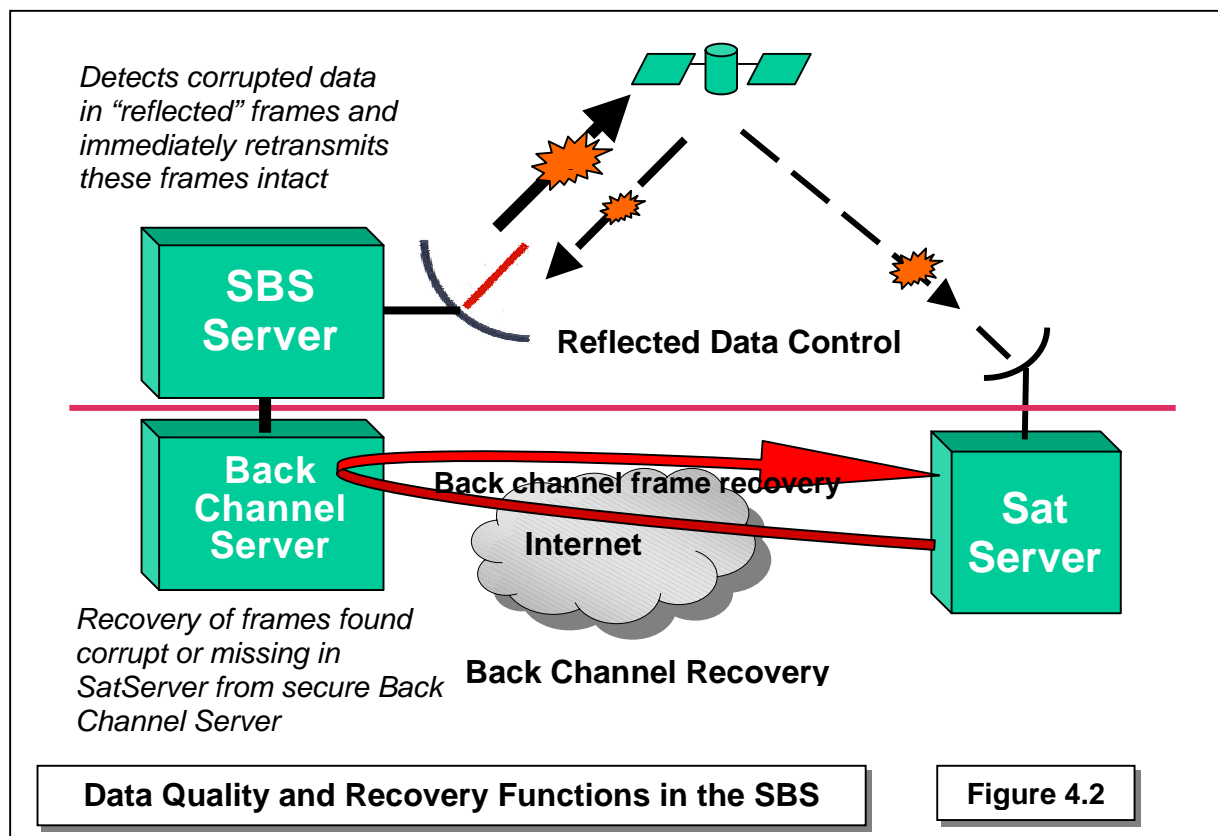
4.3 Dynamic Bandwidth Management

4.3.1 General

The bandwidth of the space segment is managed by the newsPIPE system in an operationally and economically efficient way by a Dynamic Bandwidth Multiplexing (DBM).

Usually the cost for the space segment are a substantial part of the running cost of a satellite broadcast system. For this reason, the space segment in the mecom-newsPIPE system is managed very efficiently using a "common channel" approach but guaranteeing bandwidth to an individual logical channel. This results in lower space segment cost and/or higher throughput for a given bandwidth. Several common channels may be configured on the total space bandwidth (bw).

4.3.2 Dynamic Bandwidth Management

The way newsPIPE allocates the available bandwidth to transmission requirements is best demonstrated by the Figure 4.3 below.
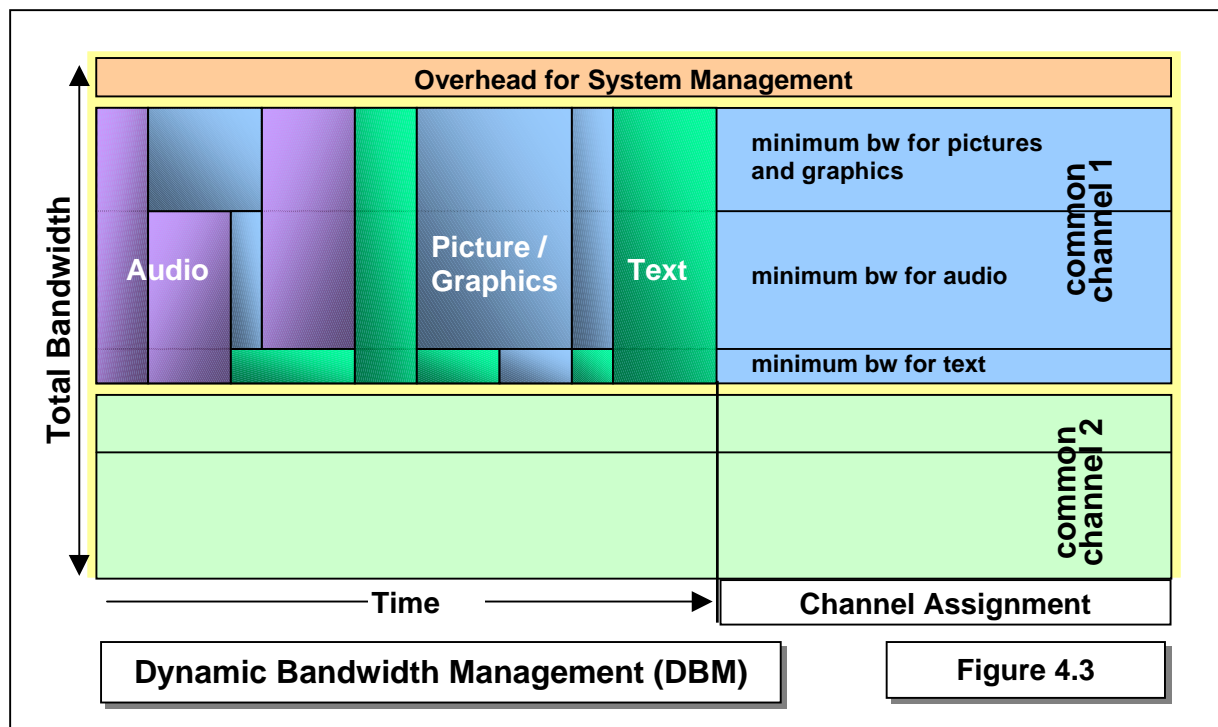
4.3.3 Functionality

In the newsPIPE system the data transmission rates of the satellite space segment may vary from 64 kbps to 8 Mbps. In any case, the available bandwidth is not partitioned statically but managed dynamically by the SBS Server, with the goal of always exploiting the available bandwidth to it's maximum, featuring

- Total available bandwidth "partitioned" to channels
- Guaranteed bandwidth to assigned channels
- Allocation of unused bandwidth of channels on demand to other channels.

The user may create up to a maximum of 32 channels per common channel and 255 channels on the total bandwidth and set the values according to his particular requirements.

4.4 Redundancy / High Availability

4.4.1 Design Principle

The design philosophy behind the structure of the SBS is to create a system, which is relatively simple to operate but at the same time offers high availability at reasonable cost. Therefore, redundancy of the system is arranged in two processing lines, being treated in terms of being up or down as one function. The total system is in itself autonomous and only dependent from data input.

4.4.2 Antenna System

In most applications it is also necessary to adapt to the various requirements of the antenna system, which may consist of duplicated antennae or a single reflector with two redundant transceiver subsystems, or just a single antenna with no redundancy. Therefore, the antenna subsystem is to be regarded in as a separate or autonomous system with its own functions. The SBS offers functions such as crossover switching from one SBS Line to the available transceiver.

4.4.3 SBS Redundant System Design

These basic requirements have resulted in a system design with the following major features:

- High availability is created trough fully duplicating the three modules Server, Modem and UCU arranged in two lines which in themselves form an autonomous system. The lines work in a "Master" and "Slave" Mode,
- Only the Master receives data from the CDS and duplicates them to the Slave (gateway function)

Configuration of SBS System with Modem and UCU — Figure 4.4
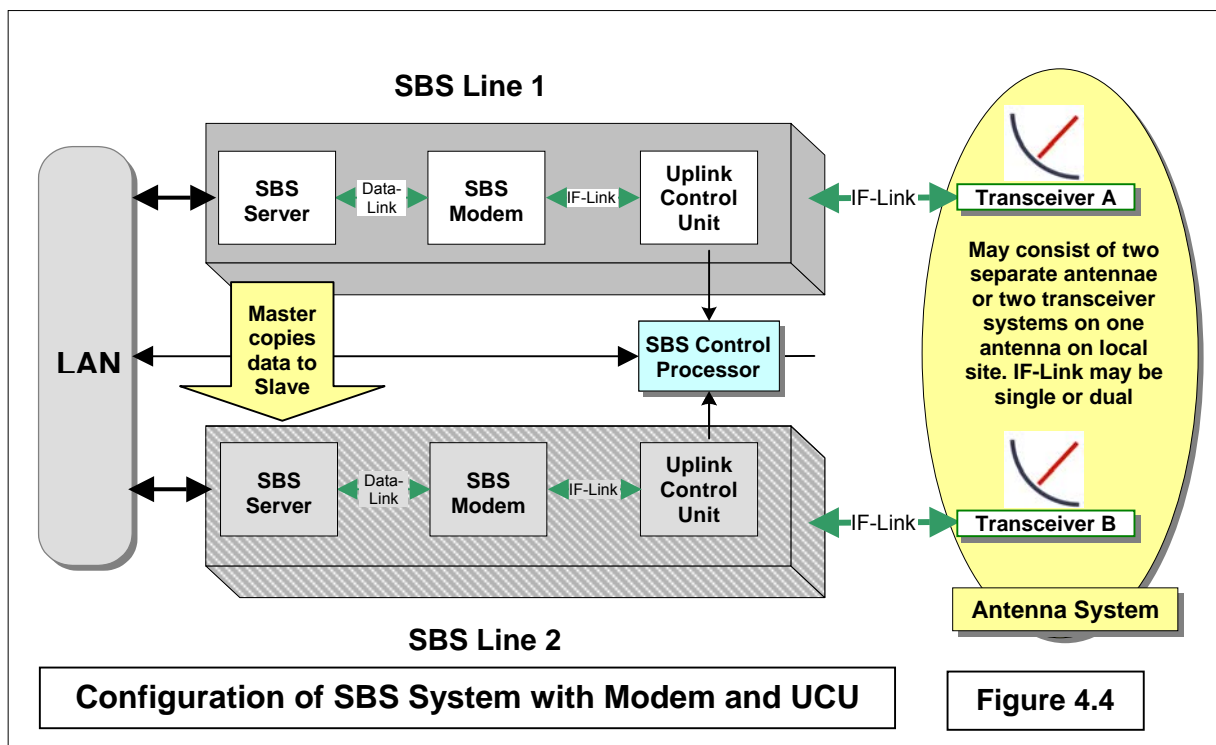
- An independent unit, the SBS Control Processor, monitors all parameters and synchronises all functions of the total SBS subsystem (SBS Line 1 and SBS Line 2) and initiates a changeover (making the old Slave the new Master) when necessary
- Both SBS servers always receive data back from the UCU. This is either the data received back from the satellite (reflected data) or the data looped back by the "Slave" UCU

- The data frames reflected from the satellite are used by the master system for checking the integrity of the data transmitted, causing possible repeats or other action
- The data frames looped-back from UCU of the slave system are checked in an identical manner as for the master so it is always known that the standby is available
- The UCU can switch the IF from either SBS Line 1 or SBS Line 2 to any of the two antennae/transceivers (crossover switching).

The system design is shown in Figure 4.4 above.

4.5   Modem

The output of the SBS server is transmitted to a high quality satellite modem (Comstream) over a data cable (Data Link). The modem output as Intermediate Frequency (IF) is directly connected to the Uplink Control Unit (IF Link).

4.6   Uplink Control Unit (UCU)

The Uplink Control Unit (UCU) is specifically designed by mecom to support the data quality and high availability features of the newsPIPE system. All status data from the SBS server, the modem and the UCU itself (if available also from the antenna) are routed through the UCU to the SBS Control Processor

The UCU contains high quality HF-relays to switch IF signals as input from the modem to either the output to the antenna or to loop it back to the modem (see Figure 4.5). The switching is controlled and monitored by the SBS Control Processor.

Uplink Control Unit Dual Configuration   Figure 4.5
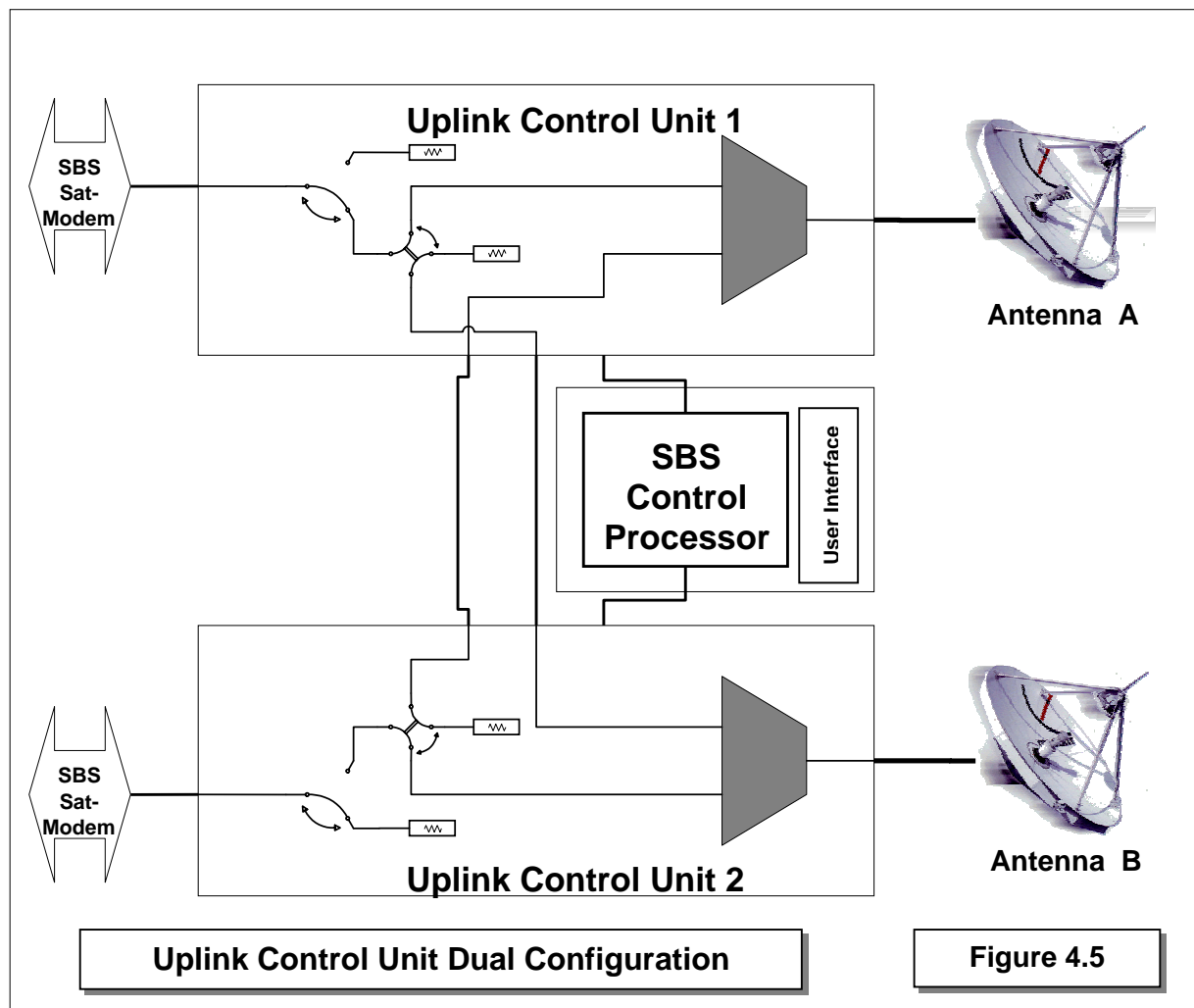
The "<u>Master</u>" SBS-line transmitting to the antenna subsystem has the UCU input switched to the output of the UCU, which is connected via coaxial cable to the transceiver of the respective antenna subsystem.

The "<u>Slave</u>" SBS-line NOT transmitting to the antenna subsystem but has the UCU switched to loop-back the IF to the modem.

Figure 4.5 above shows the configuration of a dual UCU array.

4.7   SBS Control Processor

An independent SBS Control Processor, designed and made by mecom from a rugged industry control device, monitors and synchronises all functions of the total SBS subsystem (SBS Local 1 and SBS Local 2) and initiates changeovers whenever necessary

If available from the antenna and required by the user, the SBS Control Processor Unit may also monitor the status data from the antenna subsystem in its control mechanism and include it in the logic for switching functions.

An override function is provided by manual switches on the UCU rack.

4.8   Antenna Subsystem

The antenna subsystem can be delivered by mecom or partners of mecom. In any case, special engineering for such a system, is needed because of the conditions set by the local site and the satellite system used.

4.9   DVB Mode / Modulation and Forward Error Correction

The system makes use of the DVB technology but works from data rates as low as 64 kbps and up to 8 Mbps. "Normal" DVB systems only work with a minimum of T1 bandwidth of 1,5 or 2 Mbps. When an application (e.g. text transmission) would only need data rates much lower than T1, the advantages of DVB technology would not be affordable because of the cost for the space segment. In the newsPIPE system, high quality components and high quality filters on the reception card are used, engineered for professional systems (not the consumer market).

Preferably Quadrature Phase Shift Keying (QPSK) modulation is used on the on the Digital Video Broadcast-Satellite (DVB-S) carrier frequency for higher efficiency.

Forward Error Correction (FEC) features two levels, an inherent protection using Viterbi Coding 1/2 and an external level using Reed-Solomon-Coding. By the application of these two levels, bit errors up to a very high rated can be eradicated.

Backed by measurements in the field, the system yields bit error rates (BER) of 10^{-11} at $EB/N_0 \geq 4,2$ dB levels at the receiver. This compares to "normal systems with" figures of $EB/N_0 \geq$ ca. 10-12 dB and results in a unique performance of the newsPIPE system.

The above features all taken together result in the lowest possible cost for the space segment, which are running cost to be paid over the life cycle of the satellite transmission system.

5 Satellite Server (SatServer)

5.1 General

The Satellite Server or SatServer is an integral part of the overall Satellite System and some of the features are described in some paragraphs of section 4. There is also a separate document, the SatServer manual, providing details for operation and installation.

5.2 Design

The mecom SatServer combines the capabilities of receiving the signals from the satellite with some data-processing functions and the formatting of data output, normally found in a separate server.

There are three basic modules

- Satellite Receiver, a module mainly consisting of a specialised DVB-PC-card combined with the receiver software
- Data Processing, a software module processing the data received for consistency checks and filtering. If corrupt or missing data are detected, this module would also recover these over the back channel
- Data Output, a module that outputs data over serial interfaces or sends them via FTP over an Ethernet network.

5.3 Hardware

5.3.1 Casing

The SatServer is designed as a "black box" which, while located at customer premises, it should only be touched by the authorised service personnel. It is a standard PC hardware for rack mounting with 4 units height. The front door can be opened showing the air grill and LED indicators for power and HDD (on the left) and an LCD display with touch buttons (right side) for entering and displaying configuration data.

Figure 5.1 Front View

Figure 5.2 Rear View

At the rear of the server are the connectors for power, Com1, VGA Network, satellite coaxial cable. The case has room for an additional network card and a multiple serial output card.

5.3.2   Power Supply

The server has a well dimensioned power supply of 350 W. The fan for the supply is speed controlled allowing an adaptation to the particular environment and load and minimum noise.

5.3.3   Main CPU Board

The main CPU board is based on a standard Intel D865GBF board with an Intel Celeron processor with 2 GHz or better. The SatServer has no Hard Disk Drive (HDD) but instead a flash disk for the program and configuration data and 512 MB of RAM for processing the data and executing the program. The only movable part on the board is the fan on top of the processor.

The main CPU board carries or includes the graphics card and the network connector No. 1.

5.3.4   DVB Receiver Card

The mecom-SatServer uses a state-of-the art professional-use DVB receiver card from a Canadian manufacturer. The card can be configured using a standard hyper terminal. Other options are set by jumpers on the board.

For configuration purposes, the card may be directly connected via a "M&C port" by cable to a PC to have access to all configurable data. Also, access through a browser via the LAN network is possible.

5.3.5   IDE Flash Disk

Instead of a HDD an IDE Flash Disk is used as memory for the software. The flash disk carries a specialised (real-time) version of the Linux operating system and the SatServer application software.

Normally the flash disk works in a read-only mode because only when booted the flash disk is used to load the software into RAM. The Write modus is used for software updates or when configuration data is used.

5.3.6   LCD-Display Display

On the front panel an USB-connected LCD displays some configuration data and the actual status of the SatServer as follows :

- Receive Signal Strength in dB (display)
- Speed of Power Supply fan in RPM (display and changeable)
- TCP/IP Parameters of the SatServer (display and changeable)
- Ping Configuration for servicing (display and changeable)
- Identification Number (display).

5.3.7   Network Interface

One 10/100 Mbps Ethernet interface in on board the main CPU board (network connector No. 1). When an additional network interface is required, the CPU board has space for a network card to be plugged in (network connector No. 2).

5.3.8   Serial Interfaces

For serial connections a specialised Multiport card is plugged into the main CPU board, providing 4 RS 232 interfaces. These can be connected to lines through RJ 45 jacks. All basic control signals can be configured on each interface for flow control.

5.3.9   Satellite Alignment Port

COM 1 on the main CPU board is used for a special tool to align the receive antenna with the particular satellite used by the SBS system. mecom provides a pair of boxes inserted at the SatServer connector and at the LNB connector of the receive antenna with a Sat-Finder function. The software running in the SatServer will activate indicators on the boxes when the "right" satellite is aligned

5.4   mecom-Back-Channel

As an integral part of the mecom-newsPIPE system, the SatServer offers special features when connected to the Internet. This is done via port 80 or 443, only the server opening the session, never accepting one. The connection with the central back-channel-server is secure using server- and client certificates.

When connected to the Internet,

- the SatServer notifies the central COM of the newsPIPE system periodically about its state at intervals that can be configured
- recovers corrupt or missing files from the central Satellite Broadcast Server
- sends its configuration data into the COM database, ensuring the configuration data are always available and up-to-date when a replacement of the SatServer is needed.

5.5   Output Options

The SatServer offers a variety of output formats and protocols for Text, Pictures, Graphics and Audio. The output formats are controlled through templates which can be downloaded to the server.

Available from a mecom library is a set of various formats and conversion from formats which are standard in the industry like IPTC 7901 or IIM or XML based formats.

5.6   Configuration through a WEB-Interface

The SatServer configuration and monitoring can be accessed from the customer network using port 80 and a standard browser.

When accessed, a graphic page opens with two windows. The left-side window provides links to the status data of the SatServer. The right-side window has links to the configuration data including the output parameters.

For more information see the SatServer manual.

6   Network Delivery System (NDS)

6.1   General

The NDS is a suite of modular software running either on the same machines as the CDS or, depending on the output load and performance required, on separate and specialised servers.

When outputting to ISDN and serial lines, special hardware interfacing with these types of lines is required in the servers of the output modules or may run in a server dedicated to this task.

6.2   Input from CDS

The NDS has the interface to the CDS as its only source of input for data. Depending on the type of interface node, the NDS will route the news object forwarded by the CDS to an output module handling the specific type of transmission i.e.,

- E-Mail over the Internet
- FTP over the internet
- File transfer over ISDN
- Serial transmission over lines

6.3   Output Functions

All news objects received from the CDS may use the generic functions for the output processes available in the output module. These include following features.

- Output profiles contain instructions for output processes for formatting and delivery to the recipient
- Output processes use templates which follow a "class inheritance" pattern to reduce the need to create and maintain a large variety of similar templates by allowing multilevel "default" templates
- Templates provide highly versatile formatting options
  (IPTC 7901, NITF, NewsML, html, proprietary formats text only and XML based; JPEG/JFIF with embedded IIM records for pictures; Freehand and /or JPEG/JFIF preview for graphics; MPEG layer 2 or 3 for audio objects)
- Metadata elements missing in original material may be inserted with pre-set default values to deliver richer metadata (as in NITF, NewsML) vs. thin metadata (as in IPTC-7901)
- Delivery may be deferred / timed on output
- A wide range of delivery parameters are available for destinations, protocols, transmission channels and delivery time schedules.

## 6.4   Redundancy / High Availability

6.4.1   General

The NDS uses the same principles and philosophy as the CDS modules and in fact the NDS may be run on the same machines as the CDS, see Figure 6.1.

6.4.2   Dual System Configuration

For high availability two output modules are in service all the time. The two output modules are constantly active in serving the outputs. When serial outputs are to be served, a manual

changeover switch makes sure that data from one system only is transmitted to line. Network based output such as ISDN and IP-Traffic is handled by both systems sharing the load.

A protocol between the two output modules (synchronisation) ensures that the data object is sent to the recipient only one time.
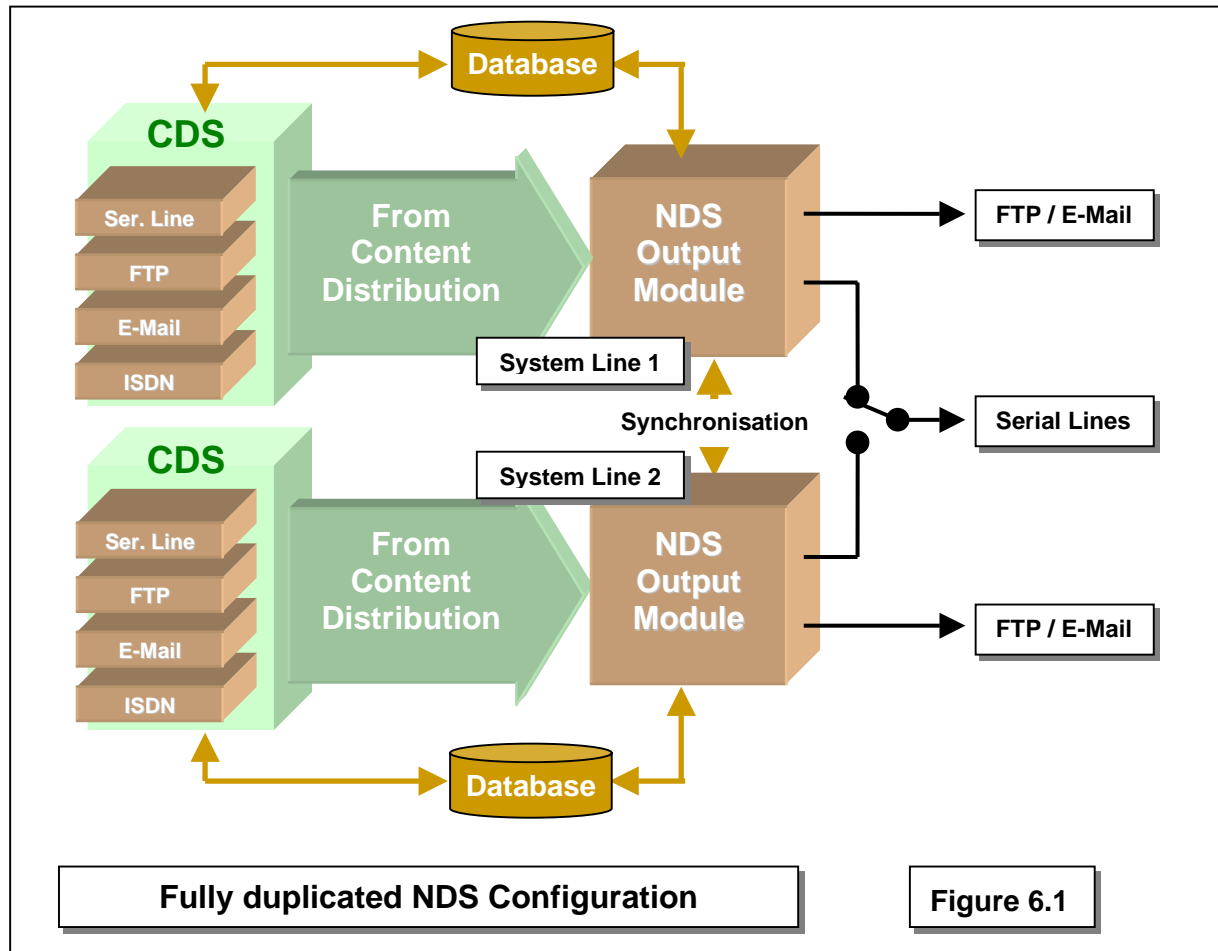
6.4.3   Changeover for Serial lines

When serial lines are served by the NDS, a manual switch is required. In case the module actively outputting to these lines fails, the operator has to manually switch over to the other module.

7   Agency-News / Agentur-News

7.1   Purpose

mecom Agency-News is a news portal for the search and download of news objects such as Text, Pictures, Graphics and Audio. Its typical purpose is to make available all the news provided by the news originators for transmission over satellite or other networks also over the Internet to authenticated users.

7.2   Users

Agency-News may be used as a back-up source for news in case of delivery problems over the primary path or just as a an additional way for obtaining news from elsewhere in the world. A standard browser such as MS.IE or Netscape Navigator and some internet access is all that is need to log on to the Agency-News portal. Thus, user may be

- Mobile customers of news originators
- Customers of news agency who only occasionally need to read the news
- Customers who do not want to afford more expensive ways for news access
- As a back-up for the primary delivery
- News originators wanting to present their news at sales sessions or business fairs.

7.3   Graphics User Interface

Figure 7.1

The GUI in Figure 7.1 above shows the standard working page of the system, including

- Top: Current (today's) pool followed by a field for pre-selected profiles
- Main: Columns for Time, Source, Thumbnail (pictures), Headline of the story (text)
- Other: Display original, List of news, Print.

7.4   Function

All news objects provided by the news originators are stored in real-time in the database of the news-portal for a limited period of time, typically for one, two or three weeks.

7.5   Access

A number of security functions are built into the software to ensure that only legitimate users get access to the Agency-News portal.

- The legitimate user will get an user account with user-ID and a password to access and log-on to the portal over the Internet
- The Administrator of the Agency-News system will manage the users accounts
- Users can be permitted only to the news objects for which they have access rights
- The duration of a session is limited to 480 minutes, after that a new log-on is required
- Per user account only one session is permitted
- When logging-on, the user will information when he used the system last time

7.6   Languages:

Agency-News is available with GUI in German, English, Spanish, French; Italian and Polish, which can be set for each user.

7.7   Technical Requirements for Users

Agency-News is a software based on the Newsline@web software of the company Innotel.

The software supports most of the standard browsers such as MS-IE 5.5 upwards, Netscape Navigator 4 upwards, Opera and others.

Users need Internet access with a speed supporting their type of usage, for pictures at least 64 kbps is recommended.