Progress Report on the UK SLE Prototype

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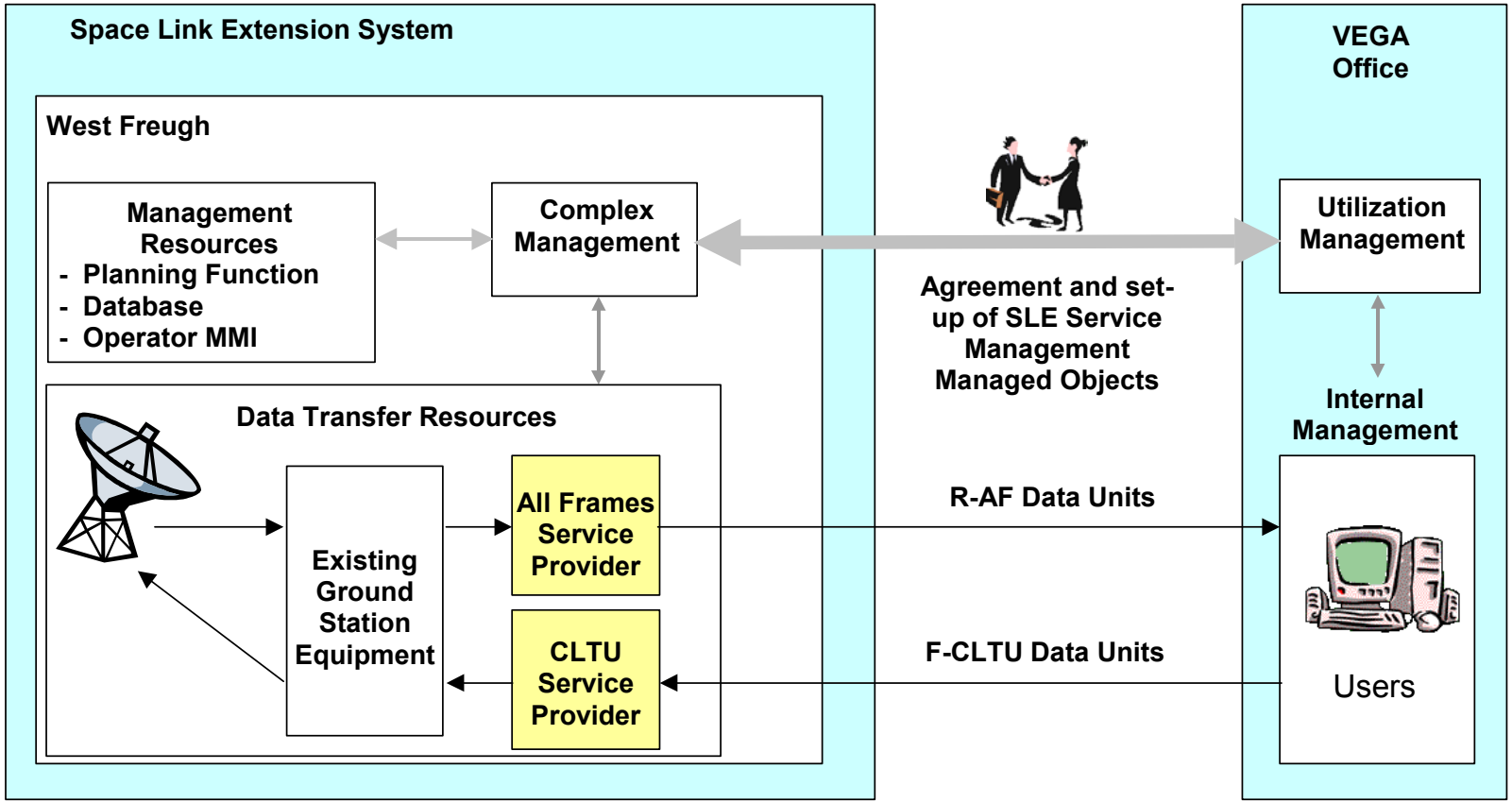
Presentation Overview

- This time last year
- Impact of the CCSDS Panel 3 Redirection
- Current Status
- High Level Architecture
- Future Plans
- Conclusion

This time last year (1 of 2)



SLE Service Management & Data Transfer Interfaces

This time last year (2 of 2)

- The VEGA prototype implementation included both the SLE Service Management and SLE Data Transfer for the on-line F-CLTU and on-line R-AF services.

- In addition, it included a web-based user interface for the creation of a Service Agreement and a ground station schedule enquiry tool.

- It did not include some features required for an operational system such as off-line services, multiple resource configuration, security, schedule conflict resolution or billing.

The F-CLTU and R-AF services were successfully tested in the QinetiQ West Freugh ground station and work was about to start on the development of an operational system.

Impact of the CCSDS Panel 3 Redirection

An all agency review concluded that the SLE service management was too complicated and so the work was redirected in April 2002 to focus on an XML specification of the F-CLTU, R-AF and R-CF service interfaces.

Following this redirection …..

- The operational implementation is on hold while the XML version of the interface is defined, agreed and prototyped.
- Compatibility with the existing complex management software is being maintained as far as possible to reduce re-design activity.
- A new MMI will be required to accommodate the introduction of configuration profiles - although there is no significant change in the overall information content, the way it is organised is different.

Current Status (1 of 4)

- Purpose
  - Initially, to demonstrate implementability and features of SLE-SM
  - Now being modified and extended to demonstrate implementability and features of the XML interface
  - Currently provides SLE-SM interface for TT&C and SLE services provided by the QinetiQ ground station in West Freugh, UK
  - Also to be implemented at RAL ground station in Chilton, UK, to provide SLE service management and data transfer interfaces for TT&C services provided by RAL

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Current Status (2 of 4)

- Capabilities and services managed
  - CCSDS F-CLTU and R-AF SLE transfer services (automated)
  - RF transmitter (automated at West Freugh) and receiver (not automated)
  - R-CF data transfer has been implemented at data transfer layer and will be implemented at the management layer

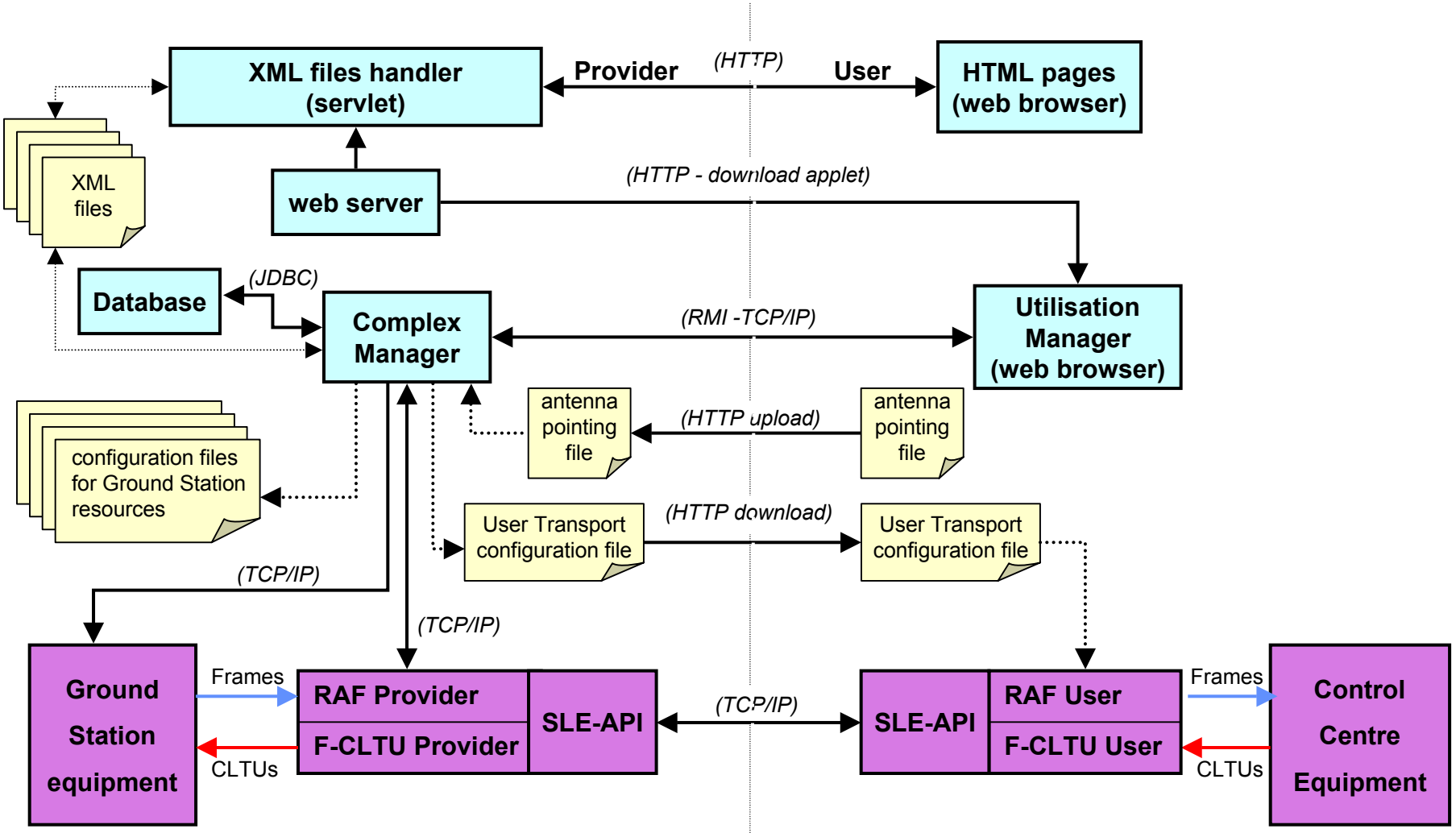
Current Status (3 of 4)

- SLE-SM transactions supported
  - Service agreement development
  - Service package creation (equivalent to combined configuration profile and service request creation)
    - Adheres to earlier CCSDS SLE-SM specification
    - In transition to service request and configuration profile specification
  - Trajectory (acquisition) data exchange

Current Status (4 of 4)

- Status
  - Provider-side system is currently operating at QinetiQ West Freugh ground station; web browser interface makes any computer a potential user workstation
  - British National Space Centre (BNSC) is providing funding to support configuration profile and service request transactions, and XML representation of management information
  - ESOC are funding the revision of the managed objects within the full Service Management specification that are affected by the revised operations concept

High Level Architecture



Future Plans

- Ground Station Planning

  The current implementation assumes a simple ground station planning interface. A standard interface definition (probably in XML) is needed to allow different scheduling systems to communicate with each other.

- Tracking Services

  Missions also require spacecraft tracking services. Again, a standard interface for the interchange of tracking data is required. This will need to accommodate the existing tracking data formats. CCSDS is currently developing the tracking specification.

- Security

  SLE allows for standard security protocols to be used. However, there needs to be agreement on which protocols to use, followed by implementations that support them.

Conclusion

- F-CLTU, R-AF and R-CF services will be re-implemented in the QinetiQ TT&C Ground Segment, using the revised issues of the CCSDS SLE transfer service and service management specifications.

- A web-based interface will be retained to enable users to interact with the QinetiQ and RAL ground stations to book F-CLTU, R-AF and R-CF services. However, the interface will be redesigned to accommodate the new XML interface. Additional interfaces e.g. e-mail, may be added to accommodate some users.

- The SLE software is designed such that the bulk of it can be re-used without modifications in other TT&C ground systems. However, it is recognised that most agencies will wish to implement their own complex managers so we will ensure that the SLE interface functionality has a generic interface with the ground station management functionality.

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