

Document Name: **USF – Technical Working Group – Data Objects
Summary of Progress**

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Date: **26th January 2004**

Introduction

The USF Technical Working Group was established to develop the suppliers' proposals relating to the management of Data Objects and the Data Objects Registry. However, during early discussions it became clear that there was an urgent requirement to resolve a number of key issues relating to data objects being implemented in the four UTMC Demonstrator Projects to enable these projects to proceed to completion.

Initial discussions (held over two sessions) were therefore held between the suppliers working on the Demonstration Projects to agree the initial baseline for the Data Objects already being implemented and to propose a process through which the development of these initial data objects could be managed.

This baseline and proposed process was then be circulated to all other members of the USF Technical Working Group and a second meeting held to widen the scope of the discussion.

Two further meetings have since taken place, with a further meeting planned in February 2004, of a sub-group of the USF Technical Working Group – the Data Objects Sub-Group. The Data objects Sub-Group is progressing towards the establishment of Version 2 of the UTMC Data Objects Registry for proposal t and discussion with the UDG.

This document details the tasks completed and progress made towards tackling these issues. As requested by UTMC Programme Management it is primarily an ordered collection of the Minutes and Meeting Notes made during the meetings. To reduce work load on individuals as much as possible, the Minutes and Notes are made electronically and publicly during the meeting (the document is displayed via a PC projector so that all attendees can see what is being written). The document is then distributed to all attendees and other interested parties as appropriate. This approach has proven to be very successful and efficient in moving the task forward although it has resulted in a non-formal structure of the documents.

Data Objects Review Meeting 1 - Session 1 – 25th July 2003

Session 1 focussed on a detailed review of all the Data Objects individually to ascertain which suppliers had used each Data Object, had suppliers extended the Data Object in any way and were there any key or critical issues with the Data Object. The aim was to establish a baseline on which future Data Objects development could be safely based. The agenda for the meeting is attached at Annex 1.

The key issues identified were (these issues should be read in conjunction with the document "030725S-Data Objects Status Summary (updated with Peek input 01.10.2003)"):

- (1) The Data Objects Registry needed re-organising to achieve a consistent use of the terminology Data Object and Support Object (low priority - shaded in spreadsheet);
- (2) A major difference in interpretation by different suppliers of the Route and Network Data Objects (critical - red in spreadsheet);

(3) A number of issues relating to the use of and shortcomings in specific data objects (high importance but not critical - yellow in spreadsheet);

(4) A number of issues relating to the necessity of some suppliers to extend specific data objects indicating a shortfall in that data object (high importance but not critical - blue in spreadsheet)

Items 1, 3 and 4 were addressed by a number of actions being placed on meeting attendees – please see Minutes to the meeting at Annex 2.

Item (2) was a critical issue and hinged around the use of the Network and Route Data Objects and the interpretation of the Link Data Object and Link References. Different suppliers had made different interpretations of these Data Objects and had used the Link Data Object and Link References in different and incompatible ways.

It was agreed that this situation could not be allowed to continue since there were clear incompatibilities which would lead to a VHS / Beta-Max syndrome within UTMC. Unfortunately, due to the number of systems that had already been shipped (UTMC demonstrators and other UTMC systems) there was a significant commercial implication to any changes that could be proposed.

It was therefore agreed to hold a second session to Meeting 1 to focus on this critical issue.

The Minutes to Meeting 1-Session 1 are included at Annex 2 and should be read in conjunction with the document "030725S-Data Objects Status Summary (updated with Peek input 01.10.2003)".

Data Objects Review Meeting 1 - Session 2 – 3rd September 2003

Session 2 focused on the critical issues surrounding the Network and Route Data Objects in an attempt to determine and agree a way forward that was "technically sound" and "commercially viable". The agenda for the meeting is attached at Annex 3.

A review of the interpretation made by each supplier was made together with the identification of the number of systems implemented by each supplier.

It was clear that there were quite different interpretations of the Network and Route Data Objects between suppliers - some suppliers had approached from a "geographical" viewpoint while others had approached from a "traffic network" viewpoint. The critical issues hinged around the interpretation of "link".

It was agreed that the different interpretations would lead to severe incompatibilities between UTMC systems if the situation were allowed to continue. It was agreed that a "technically sound" solution needed to be found which it was "commercially viable" to implement.

A number of potential solutions were discussed. The introduction of the Transport Link was agreed as the way forward to provide an acceptable correlation between the "geographical" viewpoint and the "traffic network" viewpoint. Both viewpoints are needed since some customers may purchase a UTMC system purely to control traffic and therefore only need a "traffic network"

foundation, while others will buy a UTMC system to co-ordinate several aspects including traffic and other modes (e.g. bus location and real-time information) requiring a geographical foundation.

The format of the new data objects was discussed and agreed as well as the impact on other data objects (including the retiring and review of a number of related objects).

It was agreed that the findings of the day should be considered by each supplier before final agreement at Meeting 2.

The Minutes from the meeting are included at Annex 4.

Data Objects Review Meeting 2 -

With a technical solution proposed to the critical issues surrounding the Network and Route Data Objects, and actions established for other Data Objects, it was agreed that this would form the "baseline" for wider discussions. The purpose of Meeting 2, therefore, was to open the discussion regarding the development and management of Data Objects to suppliers beyond those participating in the four UTMC Demonstrator Projects. The agenda for this meeting is attached at Annex 5.

Meeting attendees were thoroughly briefed on the progress made in the two sessions of Meeting 1 and a Data Objects baseline was agreed with due note being taken of additional ideas proposed by new attendees.

In principle, all suppliers agreed with the findings of Meeting 1-Session 1 and Meeting 1-Session 2 with all parties reasonably comfortable that the agreed way forward could be achieved. However, it was noted that the introduction of the "Transport Link Data Object" would not be achieved without a significant level of re-development for each supplier.

A review of the outstanding actions from the previous meetings was conducted to form a consolidated baseline from which to move forward. The updates made to the Minutes from Meeting 1-Session 1 and Meeting 1-Session 2 are included in Annex 6 and Annex 7 respectively.

With consensus achieved with the work conducted to date, the meeting continued to discuss the following issues:

Data Objects Review

It was agreed that to progress the Data Objects Review to a point where a baseline could be established (proposed to be called the Data Objects Registry Version 2) an implementation plan and consolidated actions list was needed. A "champion" was nominated for each Data Object including the proposed new additions to resolve the Network and Route Data Object issues.

The "champion's" responsibility was defined as follows:

- (1) To review the data object in the light of the discussions to date;
- (2) Propose the Version 2 revisions to the Data Object;
- (3) Enhance the description fields
- (4) Circulate the changes to all other USF Technical Working Group (USF-TWG) members;

- (5) Gain agreement from all USF-TWG;
- (6) Return to the "controlled" Data Objects Registry Version 2 (to be held by Gary Umpleby initially until complete and ready for discussion and final agreement with the UDG).

Data Object Registry Management

A paper tabled by Ian Cornwell (Mott MacDonald), outlining a number of options for the future management of the Data Objects Registry was discussed with a view to agreeing a number of recommendations to be made to the UDG. Reference should be made to the document "USF Technical Note re Data Objects Registry Management".

It was agreed that further work needed to be conducted to identify the most appropriate method of management both at a technical (including tool support) and secretarial level. It was proposed that this review might form a part of a future research programme to be proposed and discussed with the UDG.

Proposals for Research Funding

These were discussed and were reported in an E-Mail "RE: USF - Research Proposals for UDG" to Ben Thancanamootoo (Mouchel – Parkman – UTMC Programme Management Team) dated Wed 08/10/2003 16:31 a copy of which is included at Annex 9.

Gareth Tilley Questions

The issues raised in Gareth Tilley's (Centaur Consulting – UTMC Programme Management Team) E-Mail dated Tuesday, September 30, 2003 2:52 PM were discussed and were reported in an E-Mail to Gareth "UDG / USF - Responses to Standards and Specification Group / Programme Management Questions" dated Thu 02/10/2003 16:28 a copy of which is included in Annex 10.

Way Forward" in terms of the Technical Working Group Management

The way forward was agreed to be based on the programme proposed above to establish Version 2 of the Data Objects Registry.

It was agreed that the Technical Working Group would take on issues outside of the Data Objects Registry as required.

An action was raised on the Chairperson (Gary Umpleby) to determine which companies wish to be represented on the Technical Working Group – this action has been completed and the list of companies is attached at Annex 11.

It was suggested that the Technical Working Group Chairperson co-ordinates the Technical Working Group but other companies take the lead on specific issues (for example, MIBs, Data Objects Registry, Architecture).

The Minutes from Meeting 2 are included at Annex 8.

Data Objects Review Meeting 3 – 27th November 2003

The third meeting of the Technical Working Group was established as a Data Objects Sub-Group discussion to commence the task of building a proposal to the UDG for the Data Objects Registry Version 2.

The aim of the Sub-Group is to introduce the "Transport Link Data Object" and "Transport Route Data Object" and then to review all the existing data objects to ensure consistency with the introductions of the two new data objects and the removal of existing data objects replaced by the new data objects.

During the course of the meeting a number of other issues came to light which it was agreed should be addressed as part of the Data Objects Registry Review.

A procedure was agreed for the review and submission of each data object to form a Version 2 Data Object Registry. Version 2 of the Data Objects Registry would then be proposed to and discussed with the UDG. A target completion date for the review of the Version 2 Data Objects Registry was set for the end of Q1-2004. The release of the Version 2 Data Object Registry could then be co-ordinated with the release of a new UTMC Documentation Portfolio and the formal hand-over of UTMC from the UTMC Programme Team to the UDG.

The Agenda for the Data Objects Review Meeting 3 are included at Annex 12.

The Minutes of the Data Objects Review Meeting 3 are included at Annex 13.

Data Objects Review Meeting 4 – 15th January 2004

The fourth meeting of the Technical Working Group was again established as a Data Objects Sub-Group discussion to continue the task of building a proposal to the UDG for the Data Objects Registry Version 2.

The progress to date was reviewed and continued analysis of the individual data objects continued. Further key issues were uncovered during the day's discussions.

The Agenda for the Data Objects Review Meeting 4 are included at Annex 14.

The Minutes of the Data Objects Review Meeting 4 are included at Annex 15.

The Way Forward

A further meeting (Meeting 5) of the USF Technical Working Group Data Objects Sub-Group is planned for 12.02.2004.

The aim of this meeting will be to conduct a final review of the data objects already agreed to date as well as to conduct a further review of those data objects still to be agreed.

It is hoped that this meeting will establish a final list of actions to be completed with regard to the generation of the Version 2 Data Objects Registry for proposal to and discussion with the UDG.

Other actions have been established during the course of the six meetings to date. For example, the management of the Data Objects Registry, the procedure for proposing and implementing future data objects, and the procedure for updating existing "approved" data data objects. These actions will be taken up once Version 2 of the Data Objects Registry is completed ready for proposal and discussion with the UDG.

A consolidated list of actions from the five meetings to date is included in Annex 16. Many of these actions will be completed as part of the Data Objects Review. Any outstanding actions will be picked-up following the review and generation of Version 2 of the Data Objects Registry

In parallel with the Data Objects Sub-Group, it has been proposed that parallel USF Technical Working Group activity is undertaken, for example in the area of MIBs. It is intended that these parallel activities are started in the near future.

Annex 1

Agenda for the UTMC Suppliers Forum - Data Objects Working Group - Meeting 1- Session 1 – 25th July 2003

UTMC Suppliers Forum - Data Objects Working Group - Meeting 1

25th July 2003 - London

Agenda

10.00 - Introductions

10.05 - Identify aim of Meeting 1 - to achieve a baseline for those data objects being implemented in the UTMC29 Demonstration Projects

10.15 - Identify current data objects proposed and sponsors / those in agreement + Identify extent of use of the existing data objects in "live" systems

10.45 - Identify key issues relating to existing data objects proposed and their future evolution including current versions in existence

12.30 - LUNCH

13.00 - Agree baseline for existing data objects

14.00 - Consolidate agreed list of current data objects (and their versions) and a second list of current data objects requiring adjudication by the UDG Standards Group if agreement really cannot be reached

14.30 - Discuss process for baseline data objects evolution for proposal and discussion with the wider Data Objects Working Group in Meeting 2

15.00 - AOB

15.15 - Summary

15.30 - Close of meeting

Annex 2

Minutes from the UTMC Suppliers Forum - Data Objects Working Group - Meeting 1- Session 1 – 25th July 2003

(Please note that the items in **red** were added as action updates during Meeting 1-Session 2)

(These Minutes should be read in conjunction with the document “030725S-Data Objects Status Summary (updated with Peek input 01.10.2003)“)

Meeting Notes

Subject: UTMC Suppliers Forum – Data Objects Working Group – Meeting 1

Date: 25.07.2003

Attendees:

Bip Radia	(DfT)	UTMC Programme Management	(Part time)
Gary Umpleby	(Mott MacDonald)	UTMC29 Lancashire CC	(Chair)
Jim David	(Mott MacDonald)	UTMC29 Lancashire	
Lawrence Jordan	(Amey-Datel)	UTMC29 Reading BC	
Stephen Corlett	(Thales)	UTMC29 Reading BC	
Brian Robinson	(Peek)	UTMC29 York	
Mark Bodger	(Siemens)	UTMC29 Reading BC / Stratford / Lancashire CC	
Tim Cooper	(PIPS Technology)	UTMC29 Stratford / Lancashire CC	
Brendan Mason	(Tenet)	UTMC29 Stratford / York	
Gareth Tilley	(Centaur Consulting)	Representing UTMC Programme Management	

Action Items:

- **Welcome by Bip Radia (DfT) – Key Points**
- UTMC = Interoperability
- The Data Object Registry underpins UTMC
- A mechanism for the future expansion of objects is required
- Sponsorship sought by the DfT for the UTMC Conference in December (a Minister will be present and Exhibition opportunities will exist – the Real Time Information Group (RTIG) will also be invited) – any supplier ideas to should be proposed to the DfT Programme Management Team
- **Aim of the meeting**
- The aim of the meeting was to visit each Data Object either *Notified* or *Submitted* to determine the level of implementation by each supplier in the UTMC Demonstrator Projects and to assess whether these suppliers had implemented the Data Object as Notified / Submitted (Key = **Green**), or as Notified / Submitted but with extensions (Key= **Blue**), as Notified / Submitted but with issues (Key = **Yellow**), or as Notified / Submitted but with objections (Key = **Red**)
- The results of the review are summarised in the document “UTMC Data Objects Status Summary” dated 25.07.2003.
- The output from the meeting was targeted at an agreed baseline for the adoption of Notified / Submitted Data Objects with a list of actions relating to the establishment of this baseline
- The output from the meeting was agreed to be distributed to all members of the USF Data Objects Working Group as the baseline for the inclusive discussions to be held later in the year in preparation for the UDG / USF meeting proposed at the Suppliers Forum meeting held in Birmingham in May.
- **Data Object Lifecycle Clarification**
- Gareth Tilley confirmed the Data Object Lifecycle as being:
Notified (8) -> Submitted (Rest) -> Validated -> Established -> Retired

Data Objects Review (Please read in conjunction with the document "UTMC Data Objects Status Summary" dated 25.07.2003)

- **Air Quality Data Object**–
 - There is a need to agree whether the data elements should be stored as decimal or integer values – there is a question as to whether the Data Object needs to be changed or whether this is an issue purely for the MIB ?
 - Brendan to pursue this issue and advise the USF by E-Mail a position in preparation for wider discussion at Meeting 2
 - **Action:** Brendan Mason (by end-August) – for wider discussion at Meeting 2
- **Day of Week Type Data Object**
 - Should Day Type be specific to a single Data Object or should there be a generic Day Type ?
 - What about other groups, eg. RTIG – should a generic Day Type reflect the needs of other "standards"
 - This issue is linked to the proposed Calendar Data Object
 - The consensus was that we should have a generic solution for supporting all Data Objects
 - Stephen to lead with existing work started in this area for wider discussion at Meeting 2
 - **Action:** Stephen Corlett (by end-August) – for wider discussion at Meeting 2
- **CCTV Data Object**
 - Technical issue –
 - Data object should be specifying the external view (interface) – in what form can it be put into a CORBA message ?
 - Jim (to lead with details of problem) / Brendan / Stephen to debate and make a proposal
 - Alternative proposal originally was not to put the image through XML at all – transfer image via FTP – this was not done due to issues of keeping messages and images in step
 - **Action:** Jim David / Brendan Mason / Stephen Corlett (by end-August) – for wider discussion at Meeting 2
- **Fault Support Object**
 - Tenet = need an acknowledgement to be fed back –
 - Mott MacDonald = have extended the data object to say that fault is cleared –
 - Siemens = Agree with issues around different fault types
 - Brendan to propose an extension in discussion with all and circulate to USF for agreement at Meeting 2
 - **Action:** Brendan Mason (by end-August) – for wider discussion at Meeting 2
- **Detector Data Object**
 - A number of changes are proposed to this data object following implementation in the Demonstrator Projects.
 - It is proposed to introduce Detector Data Object Version 2
 - Brendan and Jim to propose Version 2 and circulate for agreement at Meeting 2
 - **Action:** Jim David / Brendan Mason (by end-August) – for wider discussion at Meeting 2
- **Link Data Object**
 - There is a nomenclature problem – this is a different use of the term 'link' to that normally associated with a SCOOT Link – we should change the name ?
 - Mott MacDonald = There is a content issue - data in this data object also appears in the Detector Object, eg. speed - the speeds are different - better descriptions needed – there are two different uses - core data content and peripheral - therefore should there be two data objects ?
 - Tenet = Data is mixed-up and needs review - support objects cover some of this data - should we retire and re-issue the core object ?
 - PIPS = as defined the data object may not do what Stratford need
 - The issues arise from the way the data object has developed (from a UTC centric view) and the interpretation that has been made by individual suppliers
 - Stephen to encapsulate the issue and suggest ways forward for discussion (needs co-ordinating with the Route and Network Data Object – including Link and Journey Time - issues)
 - This is a major issue and needs extended debate to resolve due to the commercial implications of refinement.
 - It is intended to hold a second session to Meeting 1 for those suppliers directly involved in the use of these data objects (Siemens / Tenet / Peek / PIPS / Thales / Mott MacDonald) to discuss and agree, from a technical excellence viewpoint, a solution
 - It will then be necessary to assess the commercial impact to individual suppliers of adopting the agreed solution
 - It is proposed that the output from Session 2 to Meeting 1, together with the output from the subsequent commercial discussions, be presented at Meeting 2 for wider discussion and agreement
 - **Action:** Siemens / Peek / Tenet / Thales / PIPS Technology / Mott MacDonald
- **Meteorological**
 - This will be handled by the 'standard' process when agreed

- **Network Structures**
- To be covered in Stephens Briefing Note re Route / Network and Link issues
- **Action:** Stephen Corlett (by end-August) – for wider discussion at Meeting 2

- **Planned & Unplanned Occurrences**
- Jim to circulate proposed extensions to Objects for all to review prior to approval as Version 2 of objects
- **Action:** Jim David (by end-August) – for wider discussion at Meeting 2

- **Prediction Data Objects**
- Mark to provide better detail of the Data Objects – should this become a General Support Object ? Mark to propose way forward
- **Action:** Mark Bodger (by end-August) – for wider discussion at Meeting 2

- **Profile Support Objects**
- Mark to provide better detail of the Data Objects – should this become a General Support Object ? Mark to propose way forward
- **Action:** Mark Bodger (by end-August) – for wider discussion at Meeting 2

- **VMS Data Object**
- Siemens have proposed an extension - Strategic VMS Signs using message Ids - suggested Car Parks text is stored in a dynamic - Mott MacDonald = Motorway VMS messages need to be accommodated
- Mark to lead with Jim and Brendan to propose Data Object enhancements to this data object for wider discussion at Meeting 2
- **Action:** Mark Bodger / Jim David / Brendan Mason (by end-August) – for wider discussion at Meeting 2

- **Bus Services Data Object + Public Transport Departure Data Object + Bus Location Object**
- A proposal is tabled to replace this data object with the proposed RTIG Data Objects
- Rail data from Amey Datel – Bus Data from Infocell – neither support CORBA due to proposal to support RTIG XML schemas
- Thales proposing to adopt RTIG XML schemas as UTMC Data Objects
- Tenet have already implemented existing Bus Services Data Object + Public Transport Departure Data Object – some re-work would therefore be needed
- How would we deal with timetable information within UTMC ? Adopt TransXchange XML schema ?
- Richness of bus information data – how much should be transferred to the ‘common database’ ?
- Stephen to notify new Data Objects = the Real Time Bus and Real Time Train Information based on the RTIG draft standard to replace Public Transport Departure Data Object + Bus Location Object – this will impact on Tenet
- The issues arising will be addressed through the current “notification process”
- **Action:** Stephen Corlett (by end-August) – for wider discussion at Meeting 2

- **User Permission Object**
- All to supply Brendan with comments on the “Notified” Data Object by the end-August for discussion at Meeting 2
- **Action:** All Meeting Attendees (by end-August) – for wider discussion at Meeting 2

Other Issues raised (to be further discussed at Meeting 2)

- **UTMC ‘Conformity’**
- During discussions it became clear that inter-operability between suppliers needs to be specified down to data object level so that a customer can see who can talk to who

- **Object Definitions need improving**
- Need to devise a process for better Object Definition – definitions are far too loose as they stand
- Suggestion to use XML Schema for object definition and object inter-relation – this needs further discussion at Meeting 2
- Stephen to enlarge on E-Mail statements circulated – Ian Cornwell (Mott MacDonald) to present views based on further thinking since the issuing of the UTMC 10 Research Project Report
- **Action:** Stephen Corlett / Ian Cornwell (by end-August) – for wider discussion at Meeting 2

- **Extensions to Data Objects**
- Extensions being made – should these be made public for consideration for inclusion in the main data object
- Jim David to lead the discussion to be continued at Meeting 2
- **Action:** Jim David (by end-August) – for wider discussion at Meeting 2

- **Data Object Version Control**
- Each customer's position needs to be known at any one time to enable an assessment to be made as to which suppliers are "compatible" with the customer's existing UTMC system(s)
- **Action:** For wider discussion at Meeting 2
- **Process for Data Object approval (re Derek Renaud proposals)**
- It is proposed that this be reviewed at Meeting 2
- **Action:** For wider discussion at Meeting 2
- **Data Object evolution**
- It is proposed that this be reviewed at Meeting 2
- **Action:** For wider discussion at Meeting 2
- **Version Control**
- It is proposed that this be reviewed at Meeting 2
- **Action:** For wider discussion at Meeting 2
- **Session Management**
- Brendan – consolidation of IDL issues (session management, heart beat, termination) – needs an extension to the IDL which needs to be fed into the documentation – access to data objects eg. bus data between operators
- Joint proposal to be built
- Brendan to draft from existing Technical Note and circulate to USF Management Team for discussion at Meeting 2 –
- **Action:** Brendan Mason (by end-August) – for wider discussion at Meeting 2
- anyone planning any such extensions should advise them now to be included in Brendans note
- **Action:** All meeting attendees (by end-August) – for wider discussion at Meeting 2
- **Subscription Modules**
- Data Objects are encapsulated data
- Originally end user can set up individual views associated with data objects – constructs own data objects at run time
- Does this compromise a data object approach
- Has anyone implemented ?
- Creating own views across the database is agreed as not being a good idea – could severely impact performance
- Brendan to suggest removal in Specifications E-Mail
- **Action:** Brendan Mason (by end-August) – for wider discussion at Meeting 2
- **UTMC 10 Specification**
- There is a proposal to modify the Julian Date – the specification in UTMC 10 may be wrong ? Needs clarification
- Amendments need to be put in to the modified documentation proposed
- Mark to co-ordinate update
- **Action:** Mark Bodger (by end-August) – for wider discussion at Meeting 2
- **Application of Data Filtering**
- This refers to the defining of a generic structure for a filter to be applied to data objects
- Do you apply at source to prevent high-bandwidth transfers
- Do you apply at receiving end so client has the choice
- Generic method being sought – Lancashire Demonstrator due to state how this has been handled ?
- Different levels may be required – established at user session level / transient level / individual user views
- Extend the interface to control the filtering and the user permissions at the table level
- Gareth to take to UDG in liaison with the USF (taking into account what TIH is doing) to be included in the next version of the Technical Specification
- **Action:** Gareth Tilley (by end-August) – for wider discussion at Meeting 2
- **Data Object Registry Updates**
- It was agreed that a number of updates needed to be made to the Data Objects Registry as defined below (row references relate to the document "UTMC Data Objects Status Summary" dated 25.07.2003)
- (1) = Under *Meteorological* – a new tab is needed for Meteorological Support Objects into which the Support Objects in Rows 48 49 50 & 51 should be placed
- (2) = Under *Network Structures* – a new tab is need for Network Structures Support Objects into which the Support Objects in Rows 56 59 62 & 63 should be placed + the Objects in Rows 57 & 58 should be changed to Data Objects
- (3) = Under *Planned & Unplanned Occurrences* – a new tab is needed for Planned and Unplanned Occurrences

- Support Objects in to which the Support Objects in Rows 70 71 72n 73 & 74 should be placed
- (4) = The "Day Type Data Object" should be moved into the *Profile Data Object* tab
- (5) = The "Data Source Support Object" should be moved into the *General Support Objects* tab
- (6) = The "Network Route Support Object" and the "Network Route Type Support Object" should be compared with the corresponding Objects in the *Network Structures* tab and the latest version placed in the *Network Structures Data Objects* tab or the *Network Structures Support Objects* tab as appropriate + the "Network Route Support Object" and the "Network Route Type Support Object" should be removed from the *Route Support Objects* tab
- **Action:** Gareth Tilley (by end-August)

Annex 3

Agenda for the UTMC Suppliers Forum - Data Objects Working Group - Meeting 1- Session 2 – 3rd September 2003

USF Data Objects Meeting – Meeting 1 – Session 2

- (1) Introductions
- (2) Review current position with regard to the development and use of the Link and Route Data Objects
- (3) Identify the key issues relating to the Link and Route Data Objects
- (4) Discuss and agree a "technically correct" solution (ignoring commercial implications)
- (5) Discuss and agree the commercial implications for companies to move to the agreed "technically correct" solution
- (6) Discuss and agree a position and way forward acceptable to all companies.
- (7) Summary
- (8) Close

Annex 4

Minutes from the UTMC Suppliers Forum - Data Objects Working Group - Meeting 1- Session 2 – 3rd September 2003

Meeting Notes

Subject: [UTMC Suppliers Forum – Data Objects Working Group – Meeting 1 – Session 2](#)

Date: 03.09.2003

Attendees:

Gary Umpleby	(Mott MacDonald)	UTMC29 Lancashire CC	(Chair)
Jim David	(Mott MacDonald)	UTMC29 Lancashire	
Brian Robinson	(Peek)	UTMC29 York	
Denis Tate	(Peek)	UTMC29 York	
[Tim Cooper	(PIPS Technology)	UTMC29 Stratford and Lancashire CC] (Written Comment)	
Mark Bodger	(Siemens)	UTMC29 Reading BC / Stratford / Lancashire CC	
Janet Ansell	(Siemens)	UTMC29 Reading BC / Stratford / Lancashire CC	
Brendan Mason	(Tenet)	UTMC29 Stratford / York	
Stephen Corlett	(Thales)	UTMC29 Reading BC	
Gareth Tilley	(Centaur Consulting)	Representing UTMC Programme Management	

Notes:

Aims of Meeting

The aims of the meeting were to:

- (1) Establish the different interpretations and number of 'commercial' implementations of the Network and UTC Data Object made by six suppliers playing a major role in the delivery of the 4 UTMC29 Demonstrator Projects;
- (2) To identify an agreed set of Data Objects (wherever possible based on existing Data Objects) to resolve the identified inconsistencies that have developed in the implementation of Common Databases (CDBs);
- (3) To conduct an 'off-line' analysis of the commercial implication of moving to the agreed set of Data Objects
- (4) To present the findings, together with the output from Meeting 1-Session 1, as a baseline to the USF Technical Working Group for review at Meeting 2 of the Technical Working Group on the 1st October 2003.

Key Issues identified

A number of 'key issues' have developed through the different interpretations made by each supplier:

- (1) Ambiguity now exists when "link references" are made within data objects;
- (2) Does a "Link Reference" refer to a UTC Data Object or to a Network Data Object ?
- (3) The term "Link" in each case means different things to different suppliers;
- (4) New suppliers will not know how other suppliers have interpreted a particular "Link Reference". This will lead to inevitable incompatibility in systems and therefore severely detract from the benefits of implementing a UTMC solution.

Key Points considered

The following key points needed to be considered:

- (1) The importance of the "Network Link" is that it is needed not just for visualisation but also for analysis – for example, "I am at X,Y and therefore associated with Network Link Z which has the following attributes for speed, flow, pollution";
- (2) However, if a customer does not want a geographical approach (for example he wishes only to implement a SCOOT-based UTC system with no geographical referencing which in the past has often been the starting point for many Local Authorities) then enforcing Network Objects may result in a lot of unnecessary work;
- (3) But ... there is a growing need in new "systems" for a method to relate non-traffic data (eg. bus data) with traffic data (for example journey times);
- (4) Ordnance Survey have introduced the ITN Data Network based on their Master Map initiative – this includes waterways and may in the future include rail networks – this may become a foundation on which Local Authorities will wish to build future solutions.

Individual Supplier Views and 'Commercial' Implementations

The individual views of each of the six suppliers were reviewed, including the 'commercial' implementations made.
In alphabetical order:

(1) Mott MacDonald

- OSCAR approach adopted – using shape file to hold geometry
- The decision taken was that the 'Link definition' in the CDB would be OSCAR – this is used, for example, in the Incident Management System;
- Problems were met with the SCOOT Link
- To overcome these problems a separate table was created to convert the SCOOT Link to an OSCAR Link – this enabled congestion to be pinpointed on a map, for example;
- The same problem was encountered in the Lancashire Demonstrator – again a SCOOT to OSCAR mapping was used;
- In the Lancashire Demonstrator, SCOOT data was needed for CORDEN. However, at the moment there is no need for a tie-up between the SCOOT and OSCAR data;
- Only the UTC Link Data Object has been used;
- The Route Data Object has been used for the PIPS Journey Time System;
- Everything is linked to OSCAR Links;
- Systems implemented or being implemented = 5.

(2) Peek

- The UTC Link Data Object, Detector Data Object, and Traffic Signals Data Object have been implemented;
- The Link references made are to Network Links;
- The nomenclature used for Links is as for the UTC Data Objects, but the Link References made are to the underlying Network;
- A point was raised that the cost of a UTMC solution must not be more than that for a traditional UTC system approach (in principle);
- Systems implemented or being implemented = 1.

(3) PIPS

- The PIPS Journey Time Systems need 'Location' and 'Validity';
- Should there be a separate ANPR Object ?
- Do we need to see all the raw data ?
- Systems implemented or being implemented = 2.

(4) Siemens

- Siemens common databases are implemented with UTC Objects;
- Limited support is provided for some of the Network Objects in the Stratford system – a cross-reference has been made between the UTC Route Object and the Network Route Object;
- The Siemens primary requirement is that it must be easy to implement a UTC system with a CDB;
- It was noted that Local Authorities will need an easy (cost effective) path to take up UTMC – therefore there must be a strong correlation between UTC and the CDB;
- Within the UTC Link Data Object, Siemens have used the Link Travel Time attributes for both SCOOT and ANPR links;
- Systems implemented or being implemented = 15 + all UK Siemens UTC systems implement the UTMC Data Objects to enable future connection to a UTMC CDB & Parking Guidance System.

(5) Tenet

- Tenet hold the view that UTC is one part of a whole system – on its own a UTC system does not support sufficiently the rest of the network and its possible functions;
- Objects can be easily associated with a network link;
- UTC Links are associated with the underlying network even if this is not implemented in SCOOT-based system;
- In Tenets view, the UTC Link is a topological unit;
- Tenet reference UTC links to the underlying network;
- The Traffic Signal Object is used – there are no issues with this specific Data Object;
- Tenet hold the view that the UTC Link is both a dynamic real source of information but is also trying to be topological at the same time;
- The Traffic Signal Object is a valid object but should it be used as a Node ?
- Tenet hold the view that the Route Data Object is attempting to do too much – should it really be a Journey Time Object ? Is it wrongly named ? To define a Journey Time you need a Route;
- Systems implemented or being implemented = 4.

(6) Thales

- The Reading CDB is implemented using only the UTC Objects – the network is defined by Traffic Signal Objects and the UTC Links between them – the network is mapped to the UTC database;

- No Geographical Network Data Objects are used;
- At present in the Reading UTMC System there is no requirement for a geographic front-end;
- There is, however, now a requirement to incorporate bus and train information into the CDB – in particular the bus routes do not map onto the SCOOT network easily. A requirement has been identified to map onto the geographic network both bus and traffic information for correlation (eg. to enable bus running times to influence traffic management measures);
- Thales therefore see the benefit of having an underlying topographical network defined;
- Thales link references are to UTC Links;
- Systems implemented or being implemented = 4.

Decision

It was agreed that a way forward needed to be sought based on the following key facts:

- We cannot leave the situation as it is – there is too much ambiguity in the Data Objects as currently defined which will lead to growing confusion between existing and new suppliers with inevitable and growing incompatibility existing between systems;
- We cannot drop either the UTC Link Data Object or the Network Link Data Object – both Object types are needed;

Proposed solution for discussion

It was agreed that we are therefore faced with “merging” the two “Link Types”.

This could be achieved through the introduction of a new “Functional Link” (to be called the “Transport Link”). This would be used, for example, to define ANPR-based Journey Time Networks and Public Transport networks.

Agreed Definitions

To aid discussions the following definitions and changes were established (the coloured text indicates “equivalencies” between the UTC and Geographic Network Object types – (Purple) (Red) (Green)):

(1) UTC Objects consist of:

- UTC Link is defined as = The Link in the CDB that has UTC as the source (may or may not be SCOOT enabled) – **this will be replaced by the Transport Link; (P)**
- Traffic Signals Data Object = Node Object (R)
- Route Data Object = Route Object – **this will be replaced by the Transport Route Object; (G)**
- Link Type Object (Support Object) – **this will be replaced by the Transport Link; (P)**

(2) Geographic Network Objects consist of:

- Network Node Object = Node Object (R)
- Network Link Object = Topological units that can be used to define a network (eg. transport network, road network) (P)
- Geometry Object
- Network Junction Object
- Network Road Element Object
- Network Turn Object
- Network Zone Support Object
- Network Junction Type Support Object
- Network Road Support Object
- Network Route Support Object (= Route Object) - **to be replaced with the Network Path Object (G)**
- **Network Path Object** – is made up from an ordered list of n Network Links (P) (a path between 2 co-ordinates) in a sequence (G)

(3) Transport Objects (see “The Agreed Solution) consist of:

- Transport Link (P)
- Transport Route (G)

The Agreed Solution

Overview

It was agreed that the way forward was to:

- Introduce a new ‘Link Type’ called the *Transport Link* as defined above;
- The Transport Link has a 1:1 mapping to a (Geographic) *Network Path* (see below);
- The Transport Link replaces the (UTC) *Link Data Object*;
- The *Transport Link* will retain the existing ‘geographic data’ fields of the (UTC) *Link Data Object* but ...

- ... if there are (Geographic) *Network Path* references (new fields that will be added to the redefined object) then these references will be used in preference to any data held in the 'geographic data' fields (this allows for those systems that have (UTC) *Link Data Objects* already populated with geographic data because they have no underlying network reference or for systems where the customer does not wish to have an underlying network defined);
- (Generic) *Link Types* will now be defined in the *Transport Link* and will therefore be removed from the *Network Path Object* (which replaces the (Geographic) *Network Route Support Object*) and the (UTC) *Link Type Support Object* (which will be 'retired').

Generic Link Object discussion and decision

The introduction of a *Transport Link* provides the opportunity for several different 'types' of link to be established for each of the different transport modes (for example, bus, road (including SCOOT), Journey Time ...). The question arises – "Do we have a generic *Transport Link Object* that supports all transport modes or separate *Transport Link Objects* for each mode of transport?". The options are:

- (1) One 'generic' data object is used for all transport modes;
 - This would require the whole data object to be updated if one mode needed to change – this is creating unnecessary baggage;
- (2) Have a 'generic' data object + support objects for each mode type;
 - This may have a performance implication in terms of database implementation since it would be necessary to make 2 'database writes' when submitting data to or changing data in the database;
- (3) Define a *Transport Link Object* for each type of mode (for example, *Transport Link-Journey Time*, *Transport Link-SCOOT ...*);
 - This would lead to a multitude of *Transport Link <type>* data objects that would need to be understood and maintained – undesirable;
- (4) A combination of (2) and (3) based on a *Transport Link* definition, which would include a *Link Type* reference which would point to a separate Configuration Table and Dynamic Table for the *Link Type*.

It was agreed that Option (4) would be adopted.

Revised existing Data Object definitions based on the introduction of the Transport Data Objects

The following redefinitions of existing data objects were agreed:

- (1) *Transport Link Object*:
 - Replaces the *UTC Link Data Object*;
 - A *Transport Link* is a path between two transport measurement points;
 - A *Transport Link* has a 1:1 mapping to a (Geographic) *Network Path*;
 - Is defined by a *Network Path Object* reference, or 'internal' geographic references;
 - Consists of a 'Link Definition' which contains a 'Link Type' which in turn points to a 'Link Configuration' Table and a 'Link Dynamic' Table;
- (2) *Transport Route Object*:
 - Replaces the *Route Data Object*;
 - Defined by a collection of unidirectional *Transport Links* ;
 - Consists of a 'Definition', a 'Type' and a list of associated *Transport Links* (the list may contain different *Transport Link* 'types');
- (3) *Network Path Object*:
 - Replaces the *Network Route Object*;
 - Some fields will need to be redefined / removed.

Identified 'knock-on' consequences of agreed changes

The following consequences of the agreed introduction of the Transport Data Objects were identified as needing action:

- (1) *Transport Route* – what will the introduction of this data object mean in terms of the *Route Journey Time* and the impact on the *Journey Time Object*? Should the *Journey Time Object* be killed? Should the *Journey Time Object* become an optional part of the *Transport Route Object*?
- (2) Consideration needs to be given to 'normalising' the *Transport Route Object* and *Transport Link Object* with the *Network Path Object* and the *Network Link Object*;
- (3) 'Link References' in other Data Objects will now need to have two references
 - Network Link Reference;
 - Transport Link Reference.
 The current 'Link Reference' will need to be 'killed';
- (4) For naming convention consistency, the *Geometry Object* should be renamed *Network Geometry Object*;
- (5) For naming convention consistency, the *Network Zone Support Object* should be renamed the *Network Zone Object*.

Other Identified issues for consideration

- (1) It was agreed that the following data objects would remain unchanged:

- Network Junction Object + Network Junction Type Support Object;
- Network Road Element Object + Network Road Support Object;
- Network Turn Object;

although ... the following data objects in this list may be superseded by the *Transport Link* in due course:

- Network Junction Object;
- Network Road Element Object;
- Network Turn Object.

Actions

The following actions were agreed:

- (1) *Network Node* and *Network Link* data objects to be reviewed against the agreed re-structuring **A: Mark Bodger, Siemens**
- (2) *Network Path* and *Network Geometry* data objects to be reviewed against the agreed re-structuring **A: Brendan Mason, Tenet**
- (3) All data objects to be reviewed to ensure no unforeseen consequences of the agreed changes are missed **A: All**
- (4) The *Traffic Signal Data* object to be reviewed against the agreed re-structuring **A: Mark Bodger, Siemens**
- (5) Siemens to consider the implications of the 'splitting into two' the UTC Link Data Object **A: Mark Bodger, Siemens**
- (6) Rationalise the description of *Transport Route* objects as a collection of *Traffic Links* in a similar way to how *Network Routes* are described by a collection of *Network Links* **A: Mark Bodger, Siemens**
- (7) Conduct a review of how the new fields will be used **A: Mark Bodger, Siemens**
- (8) Consider making the *Journey Time* object a separate dynamic as for the *Traffic Link* object **A: Mark Bodger, Siemens**
- (9) **COMMERCIAL IMPLICATIONS OF AGREED CHANGES TO BE REVIEWED BY EACH COMPANY A: ALL**

Agreed Way Forward

The following 'Way Forward' was agreed:

- (1) Each company to consider the 'commercial implications' of the agreed changes to be made;
- (2) Any objections to the agreed changes following the consideration of the 'commercial implications' to be raised as soon as possible to the other suppliers represented in Meeting 1-Session 2;
- (3) Subject to full agreement to proceed – the agreed changes to be published to the wider USF Technical Working Group (at Meeting 2) as the baseline for future Data Object development;
- (4) Subject to full agreement to proceed – the agreed changes to be proposed to the UDG as the baseline for the Data Objects Registry – Version 2 on which all future systems enhancements and new systems will be based

Annex 5

**Agenda for the UTMC Suppliers Forum - Data Objects Working Group - Meeting 1-
Session 2 – 1st October 2003**

**Technical Working Group
(Data Objects Working Group)
Meeting 2**

**Wednesday 1st October 2003
DfT - Conference Room S3, Great Minster House, London
10.30am - 5pm**

Agenda

- 10.30am - Coffee and Introductions
- 10.35am - Agree target deliverables from meeting – Data Objects Baseline + Registry Management Proposals + Agree Way Forward
- 10.45am - Review of Data Objects Working Group (Demonstrator Suppliers) Meeting 1 - Sessions 1 and 2
- 12.00noon - Agree Data Objects Baseline for proposal to the UDG Management Group 09.10.2003
- 12.30pm - Lunch
- 01.00pm - Proposals for Research Funding - see GU E-Mail "USF – Research Ideas" dated Thu 25/09/2003
- 01.30pm - Data Objects Registry Management – see "USF Technical Note re Data Objects Registry Management"
- 02.30pm - Tea
- 02.45pm - Agree proposal to be made to the UDG re Data Object Registry Management
- 03.15pm - Discuss and agree the "Way Forward" in terms of the Technical Working Group Management
- 03.45pm - A.O.B
- 04.00pm - Progress specific Data Object development issues (eg. Fault Support and Air Quality Data Objects) as required
- 05.00pm - Close

Annex 6

Minutes (1 of 3) from the UTMC Suppliers Forum - Data Objects Working Group - Meeting 2 – 1st October 2003

The following illustrates the updates made during Meeting 2 to the Minutes from Meeting 1-Session1.

Meeting Notes

Subject: UTMC Suppliers Forum – Data Objects Working Group – Meeting 1

Date: 25.07.2003

Attendees:

Bip Radia	(DfT)	UTMC Programme Management	(Part time)
Gary Umpleby	(Mott MacDonald)	UTMC29 Lancashire CC	(Chair)
Jim David	(Mott MacDonald)	UTMC29 Lancashire	
Lawrence Jordan	(Amey-Datel)	UTMC29 Reading BC	
Stephen Corlett	(Thales)	UTMC29 Reading BC	
Brian Robinson	(Peek)	UTMC29 York	
Mark Bodger	(Siemens)	UTMC29 Reading BC / Stratford / Lancashire CC	
Tim Cooper	(PIPS Technology)	UTMC29 Stratford / Lancashire CC	
Brendan Mason	(Tenet)	UTMC29 Stratford / York	
Gareth Tilley	(Centaur Consulting)	Representing UTMC Programme Management	

Action Items:

- **Welcome by Bip Radia (DfT) – Key Points**
- UTMC = Interoperability
- The Data Object Registry underpins UTMC
- A mechanism for the future expansion of objects is required
- Sponsorship sought by the DfT for the UTMC Conference in December (a Minister will be present and Exhibition opportunities will exist – the Real Time Information Group (RTIG) will also be invited) – any supplier ideas to should be proposed to the DfT Programme Management Team

- **Aim of the meeting**
- The aim of the meeting was to visit each Data Object either *Notified* or *Submitted* to determine the level of implementation by each supplier in the UTMC Demonstrator Projects and to assess whether these suppliers had implemented the Data Object as Notified / Submitted (Key = **Green**), or as Notified / Submitted but with extensions (Key= **Blue**), as Notified / Submitted but with issues (Key = **Yellow**), or as Notified / Submitted but with objections (Key = **Red**)
- The results of the review are summarised in the document “UTMC Data Objects Status Summary” dated 25.07.2003.
- The output from the meeting was targeted at an agreed baseline for the adoption of Notified / Submitted Data Objects with a list of actions relating to the establishment of this baseline
- The output from the meeting was agreed to be distributed to all members of the USF Data Objects Working Group as the baseline for the inclusive discussions to be held later in the year in preparation for the UDG / USF meeting proposed at the Suppliers Forum meeting held in Birmingham in May.

- **Data Object Lifecycle Clarification**
- Gareth Tilley confirmed the Data Object Lifecycle as being:
Notified (8) -> Submitted (Rest) -> Validated -> Established -> Retired

Data Objects Review (Please read in conjunction with the document “UTMC Data Objects Status Summary” dated 25.07.2003)

- **Air Quality Data Object–**

- There is a need to agree whether the data elements should be stored as decimal or integer values – there is a question as to whether the Data Object needs to be changed or whether this is an issue purely for the MIB ?
- Brendan to pursue this issue and advise the USF by E-Mail a position in preparation for wider discussion at Meeting 2
- **Action:** Brendan Mason (by end-August) – for wider discussion at Meeting 2
- Underway – replacement of measurement units and number type needs further discussion
- **Day of Week Type Data Object**
- Should Day Type be specific to a single Data Object or should there be a generic Day Type ?
- What about other groups, eg. RTIG – should a generic Day Type reflect the needs of other “standards”
- This issue is linked to the proposed Calendar Data Object
- The consensus was that we should have a generic solution for supporting all Data Objects
- Stephen to lead with existing work started in this area for wider discussion at Meeting 2
- **Action:** Stephen Corlett (by end-August) – for wider discussion at Meeting 2
- Action pending – the Cal function has not yet been implemented – this will be addressed when the Cal function is registered – not high priority
- **CCTV Data Object**
- Technical issue –
- Data object should be specifying the external view (interface) – in what form can it be put into a CORBA message ?
- Jim (to lead with details of problem) / Brendan / Stephen to debate and make a proposal
- Alternative proposal originally was not to put the image through XML at all – transfer image via FTP – this was not done due to issues of keeping messages and images in step
- **Action:** Jim David / Brendan Mason / **Stephen Corlett** (by end-August) – for wider discussion at Meeting 2
- Under discussion – additional function needed for binary objects which affects a wider number of objects – needs early resolution
- **Fault Support Object**
- Tenet = need an acknowledgement to be fed back –
- Mott MacDonald = have extended the data object to say that fault is cleared –
- Siemens = Agree with issues around different fault types
- Brendan to propose an extension in discussion with all and circulate to USF for agreement at Meeting 2
- **Action:** Brendan Mason (by end-August) – for wider discussion at Meeting 2
- Discussion has widened from adding a few additional fields – data source ... but issues has widened to other fault related issues – managing faults, analysis – set of fault codes needs to be agreed – do we need unique fault codes – do we want UTMC to manage fault of use just as a reporting system – faults managed elsewhere
- **Detector Data Object**
- A number of changes are proposed to this data object following implementation in the Demonstrator Projects.
- It is proposed to introduce Detector Data Object Version 2
- Brendan and Jim to propose Version 2 and circulate for agreement at Meeting 2
- **Action:** Jim David / **Brendan Mason** (by end-August) – for wider discussion at Meeting 2
- Under discussion – needs to be finalised -
- **Link Data Object**
- There is a nomenclature problem – this is a different use of the term ‘link’ to that normally associated with a SCOOT Link – we should change the name ?
- Mott MacDonald = There is a content issue - data in this data object also appears in the Detector Object, eg. speed - the speeds are different - better descriptions needed – there are two different uses - core data content and peripheral - therefore should there be two data objects ?
- Tenet = Data is mixed-up and needs review - support objects cover some of this data - should we retire and re-issue the core object ?
- PIPS = as defined the data object may not do what Stratford need
- The issues arise from the way the data object has developed (from a UTC centric view) and the interpretation that has been made by individual suppliers
- Stephen to encapsulate the issue and suggest ways forward for discussion (needs co-ordinating with the Route and Network Data Object – including Link and Journey Time - issues)
- This is a major issue and needs extended debate to resolve due to the commercial implications of refinement.
- It is intended to hold a second session to Meeting 1 for those suppliers directly involved in the use of these data objects (Siemens / Tenet / Peek / PIPS / Thales / Mott MacDonald) to discuss and agree, from a technical excellence viewpoint, a solution
- It will then be necessary to assess the commercial impact to individual suppliers of adopting the agreed solution
- It is proposed that the output from Session 2 to Meeting 1, together with the output from the subsequent

- commercial discussions, be presented at Meeting 2 for wider discussion and agreement
- **Action:** Siemens / Peek / Tenet / Thales / PIPS Technology / Mott MacDonald
- **Meteorological**
- This will be handled by the 'standard' process when agreed
- **Network Structures**
- To be covered in Stephens Briefing Note re Route / Network and Link issues
- **Action:** Stephen Corlett (by end-August) – for wider discussion at Meeting 2
- **Planned & Unplanned Occurrences**
- Jim to circulate proposed extensions to Objects for all to review prior to approval as Version 2 of objects
- **Action:** Jim David (by end-August) – for wider discussion at Meeting 2
- Underway - JD
- **Prediction Data Objects**
- Mark to provide better detail of the Data Objects – should this become a General Support Object ? Mark to propose way forward
- **Action:** Mark Bodger (by end-August) – for wider discussion at Meeting 2
- Underway – MB leading
- **Profile Support Objects**
- Mark to provide better detail of the Data Objects – should this become a General Support Object ? Mark to propose way forward
- **Action:** Mark Bodger (by end-August) – for wider discussion at Meeting 2
- Underway – MB leading
- **VMS Data Object**
- Siemens have proposed an extension - Strategic VMS Signs using message Ids - suggested Car Parks text is stored in a dynamic - Mott MacDonald = Motorway VMS messages need to be accommodated
- Mark to lead with Jim and Brendan to propose Data Object enhancements to this data object for wider discussion at Meeting 2
- **Action:** Mark Bodger / Jim David / **Brendan Mason** (by end-August) – for wider discussion at Meeting 2
- Text field agreed – co-ordination of resubmission needed – suggest this is done as Baseline Version 2
- Potential need for a de-limiter to be agreed
- **Bus Services Data Object + Public Transport Departure Data Object + Bus Location Object**
- A proposal is tabled to replace this data object with the proposed RTIG Data Objects
- Rail data from Amey Datel – Bus Data from Infocell – neither support CORBA due to proposal to support RTIG XML schemas
- Thales proposing to adopt RTIG XML schemas as UTMC Data Objects
- Tenet have already implemented existing Bus Services Data Object + Public Transport Departure Data Object – some re-work would therefore be needed
- How would we deal with timetable information within UTMC ? Adopt TransXchange XML schema ?
- Richness of bus information data – how much should be transferred to the 'common database' ?
- Stephen to notify new Data Objects = the Real Time Bus and Real Time Train Information based on the RTIG draft standard to replace Public Transport Departure Data Object + Bus Location Object – this will impact on Tenet
- The issues arising will be addressed through the current "notification process"
- **Action:** Stephen Corlett (by end-August) – for wider discussion at Meeting 2
- Underway – Bus & Rail
- **User Permission Object**
- All to supply Brendan with comments on the "Notified" Data Object by the end-August for discussion at Meeting 2
- **Action:** All Meeting Attendees (by end-August) – for wider discussion at Meeting 2
- Underway – wider discussion needed about session management – how handled – no standard exists at the present time – could be included in the re-issue of UTMC documentation (that will replace UTMC 10 documentation set)

Other Issues raised (to be further discussed at Meeting 2)

- **UTMC 'Conformity'**
- During discussions it became clear that inter-operability between suppliers needs to be specified down to data object level so that a customer can see who can talk to who

- Session management, functional management and object access issues have not been mandated and probably need to be
- Claiming “compliance” still leaves interpretation issues
- **Object Definitions need improving**
- Need to devise a process for better Object Definition – definitions are far too loose as they stand
- Suggestion to use XML Schema for object definition and object inter-relation – this needs further discussion at Meeting 2
- Stephen to enlarge on E-Mail statements circulated – Ian Cornwell (Mott MacDonald) to present views based on further thinking since the issuing of the UTMC 10 Research Project Report
- **Action:** Stephen Corlett / Ian Cornwell (by end-August) – for wider discussion at Meeting 2
- Definitions need streamlining for Version 2 – how do we do this ?
- Needs evolutionary review as people develop systems
- **Extensions to Data Objects**
- Extensions being made – should these be made public for consideration for inclusion in the main data object
- Jim David to lead the discussion to be continued at Meeting 2
- **Action:** Jim David (by end-August) – for wider discussion at Meeting 2
- **Data Object Version Control**
- Each customer’s position needs to be known at any one time to enable an assessment to be made as to which suppliers are “compatible” with the customer’s existing UTMC system(s)
- **Action:** For wider discussion at Meeting 2
- **Process for Data Object approval (re Derek Renaud proposals)**
- It is proposed that this be reviewed at Meeting 2
- **Action:** For wider discussion at Meeting 2
- **Data Object evolution**
- It is proposed that this be reviewed at Meeting 2
- **Action:** For wider discussion at Meeting 2
- **Version Control**
- It is proposed that this be reviewed at Meeting 2
- **Action:** For wider discussion at Meeting 2
- **Session Management**
- Brendan – consolidation of IDL issues (session management, heart beat, termination) – needs an extension to the IDL which needs to be fed into the documentation – access to data objects eg. bus data between operators
- Joint proposal to be built
- Brendan to draft from existing Technical Note and circulate to USF Management Team for discussion at Meeting 2 –
- **Action:** Brendan Mason (by end-August) – for wider discussion at Meeting 2
- anyone planning any such extensions should advise them now to be included in Brendans note
- **Action:** All meeting attendees (by end-August) – for wider discussion at Meeting 2
- **Subscription Modules**
- Data Objects are encapsulated data
- Originally end user can set up individual views associated with data objects – constructs own data objects at run time
- Does this compromise a data object approach
- Has anyone implemented ?
- Creating own views across the database is agreed as not being a good idea – could severely impact performance
- Brendan to suggest removal in Specifications E-Mail
- **Action:** Brendan Mason (by end-August) – for wider discussion at Meeting 2
- **IC** to lead on proposal - need to consider TIH mechanisms – joint working ?
- **UTMC 10 Specification**
- There is a proposal to modify the Julian Date – the specification in UTMC 10 may be wrong ? Needs clarification
- Amendments need to be put in to the modified documentation proposed
- Mark to co-ordinate update
- **Action:** Mark Bodger (by end-August) – for wider discussion at Meeting 2
- Underway -

- **Application of Data Filtering**

- This refers to the defining of a generic structure for a filter to be applied to data objects
- Do you apply at source to prevent high-bandwidth transfers
- Do you apply at receiving end so client has the choice
- Generic method being sought – Lancashire Demonstrator due to state how this has been handled ?
- Different levels may be required – established at user session level / transient level / individual user views
- Extend the interface to control the filtering and the user permissions at the table level
- Gareth to take to UDG in liaison with the USF (taking into account what TIH is doing) to be included in the next version of the Technical Specification
- **Action:** Gareth Tilley (by end-August) – for wider discussion at Meeting 2

- **Data Object Registry Updates**

- It was agreed that a number of updates needed to be made to the Data Objects Registry as defined below (row references relate to the document "UTMC Data Objects Status Summary" dated 25.07.2003)
- (1) = Under *Meteorological* – a new tab is needed for Meteorological Support Objects into which the Support Objects in Rows 48 49 50 & 51 should be placed
- (2) = Under *Network Structures* – a new tab is need for Network Structures Support Objects into which the Support Objects in Rows 56 59 62 & 63 should be placed + the Objects in Rows 57 & 58 should be changed to Data Objects
- (3) = Under *Planned & Unplanned Occurrences* – a new tab is needed for Planned and Unplanned Occurrences Support Objects in to which the Support Objects in Rows 70 71 72n 73 & 74 should be placed
- (4) = The "Day Type Data Object" should be moved into the *Profile Data Object* tab
- (5) = The "Data Source Support Object" should be moved into the *General Support Objects* tab
- (6) = The "Network Route Support Object" and the "Network Route Type Support Object" should be compared with the corresponding Objects in the *Network Structures* tab and the latest version placed in the *Network Structures Data Objects* tab or the *Network Structures Support Objects* tab as appropriate + the "Network Route Support Object" and the "Network Route Type Support Object" should be removed from the *Route Support Objects* tab
- **Action:** Gareth Tilley (by end-August)

Annex 7

Minutes (2 of 3) from the UTMC Suppliers Forum - Data Objects Working Group - Meeting 2 – 1st October 2003

The following illustrates the updates made during Meeting 2 to the Minutes from Meeting 1-Session2.

Meeting Notes

Subject: UTMC Suppliers Forum – Data Objects Working Group – Meeting 1 – Session 2

Date: 03.09.2003

Attendees:

Gary Umpleby	(Mott MacDonald)	UTMC29 Lancashire CC	(Chair)
Jim David	(Mott MacDonald)	UTMC29 Lancashire	
Brian Robinson	(Peek)	UTMC29 York	
Denis Tate	(Peek)	UTMC29 York	
[Tim Cooper	(PIPS Technology)	UTMC29 Stratford and Lancashire CC] (Written Comment)	
Mark Bodger	(Siemens)	UTMC29 Reading BC / Stratford / Lancashire CC	
Janet Ansell	(Siemens)	UTMC29 Reading BC / Stratford / Lancashire CC	
Brendan Mason	(Tenet)	UTMC29 Stratford / York	
Stephen Corlett	(Thales)	UTMC29 Reading BC	
Gareth Tilley	(Centaur Consulting)	Representing UTMC Programme Management	

Notes:

Aims of Meeting

The aims of the meeting were to:

- (1) Establish the different interpretations and number of 'commercial' implementations of the Network and UTC Data Object made by six suppliers playing a major role in the delivery of the 4 UTMC29 Demonstrator Projects;
- (2) To identify an agreed set of Data Objects (wherever possible based on existing Data Objects) to resolve the identified inconsistencies that have developed in the implementation of Common Databases (CDBs);
- (3) To conduct an 'off-line' analysis of the commercial implication of moving to the agreed set of Data Objects
- (4) To present the findings, together with the output from Meeting 1-Session 1, as a baseline to the USF Technical Working Group for review at Meeting 2 of the Technical Working Group on the 1st October 2003.

Key Issues identified

A number of 'key issues' have developed through the different interpretations made by each supplier:

- (1) Ambiguity now exists when "link references" are made within data objects;
- (2) Does a "Link Reference" refer to a UTC Data Object or to a Network Data Object ?
- (3) The term "Link" in each case means different things to different suppliers;
- (4) New suppliers will not know how other suppliers have interpreted a particular "Link Reference". This will lead to inevitable incompatibility in systems and therefore severely detract from the benefits of implementing a UTMC solution.

Key Points considered

The following key points needed to be considered:

- (1) The importance of the "Network Link" is that it is needed not just for visualisation but also for analysis – for example, "I am at X,Y and therefore associated with Network Link Z which has the following attributes for speed, flow, pollution";
- (2) However, if a customer does not want a geographical approach (for example he wishes only to implement a SCOOT-based UTC system with no geographical referencing which in the past has often been the starting point for many Local Authorities) then enforcing Network Objects may result in a lot of unnecessary work;
- (3) But ... there is a growing need in new "systems" for a method to relate non-traffic data (eg. bus data) with traffic data (for example journey times);
- (4) Ordnance Survey have introduced the ITN Data Network based on their Master Map initiative – this includes

waterways and may in the future include rail networks – this may become a foundation on which Local Authorities will wish to build future solutions.

Individual Supplier Views and 'Commercial' Implementations

The individual views of each of the six suppliers were reviewed, including the 'commercial' implementations made. In alphabetical order:

(1) Mott MacDonald

- Systems implemented or being implemented = 5.

(2) Peek

- Systems implemented or being implemented = 1.

(3) PIPS

- Systems implemented or being implemented = 2.

(4) Siemens

- Within the UTC Link Data Object, Siemens have used the Link Travel Time attributes for both SCOOT and ANPR links;
- Systems implemented or being implemented = 15 + all UK Siemens UTC systems implement the UTMC Data Objects to enable future connection to a UTMC CDB & Parking Guidance System.

(5) Tenet

- Systems implemented or being implemented = 4.

(6) Thales

- Systems implemented or being implemented = 4.

Decision

It was agreed that a way forward needed to be sought based on the following key facts:

- We cannot leave the situation as it is – there is too much ambiguity in the Data Objects as currently defined which will lead to growing confusion between existing and new suppliers with inevitable and growing incompatibility existing between systems;
- We cannot drop either the UTC Link Data Object or the Network Link Data Object – both Object types are needed;

Proposed solution for discussion

It was agreed that we are therefore faced with "merging" the two "Link Types".

This could be achieved through the introduction of a new "Functional Link" (to be called the "Transport Link"). This would be used, for example, to define ANPR-based Journey Time Networks and Public Transport networks.

Agreed Definitions

To aid discussions the following definitions and changes were established (the coloured text indicates "equivalencies" between the UTC and Geographic Network Object types – (Purple) (Red) (Green)):

(1) UTC Objects consist of:

- UTC Link is defined as = The Link in the CDB that has UTC as the source (may or may not be SCOOT enabled) – **this will be replaced by the Transport Link;** (P)
- Traffic Signals Data Object = Node Object (R)
- Route Data Object = Route Object – **this will be replaced by the Transport Route Object;** (G)
- Link Type Object (Support Object) – **this will be replaced by the Transport Link Type Support Object;** (P)

(2) Geographic Network Objects consist of:

- Network Node Object = Node Object (R)
- Network Link Object = Topological units that can be used to define a network (eg. transport network, road network) (P)
- Geometry Object
- Network Junction Object
- Network Road Element Object
- Network Turn Object
- Network Zone Support Object

- Network Junction Type Support Object
- Network Road Support Object
- Network Route Support Object (= Route Object) - **to be replaced with the Network Path Object (G)**
- **Network Path Object** – is made up from an ordered list of **n Network Links (P)** (a path between 2 co-ordinates) in a sequence **(G)**

(3) Transport Objects (see “The Agreed Solution) consist of:

- Transport Link **(P)**
- Transport Route **(G)**

The Agreed Solution

Overview

It was agreed that the way forward was to:

- Introduce a new ‘Link Type’ called the *Transport Link* as defined above;
- The Transport Link has a 1:1 mapping to a (Geographic) *Network Path* (see below);
- The Transport Link replaces the (UTC) *Link Data Object*;
- The *Transport Link* will retain the existing ‘geographic data’ fields of the (UTC) *Link Data Object* but ...
- ... if there are (Geographic) *Network Path* references (new fields that will be added to the redefined object) then these references will be used in preference to any data held in the ‘geographic data’ fields (this allows for those systems that have (UTC) *Link Data Objects* already populated with geographic data because they have no underlying network reference or for systems where the customer does not wish to have an underlying network defined);
- (Generic) *Link Types* will now be defined in the *Transport Link* and will therefore be removed from the *Network Path Object* (which replaces the (Geographic) *Network Route Support Object*) and **the (UTC) *Link Type Support Object* (which will be ‘retired’) –**

Generic Link Object discussion and decision

The introduction of a *Transport Link* provides the opportunity for several different ‘types’ of link to be established for each of the different transport modes (for example, bus, road (including SCOOT), Journey Time ...). The question arises – “Do we have a **generic** *Transport Link Object* that supports all transport modes or **separate** *Transport Link Objects* for each mode of transport?”. The options are:

- (5) One ‘generic’ data object is used for all transport modes;
 - This would require the whole data object to be updated if one mode needed to change – this is creating unnecessary baggage;
- (6) Have a ‘generic’ data object + support objects for each mode type;
 - This may have a performance implication in terms of database implementation since it would be necessary to make 2 ‘database writes’ when submitting data to or changing data in the database;
- (7) Define a Transport Link Object for each type of mode (for example, Transport Link-Journey Time, Transport Link-SCOOT ...);
 - This would lead to a multitude of Transport Link <type> data objects that would need to be understood and maintained – undesirable;
- (8) A combination of (2) and (3) based on a Transport Link definition, which would include a Link Type reference which would point to a separate Configuration Table and Dynamic Table for the Link Type.

It was agreed that Option (4) would be adopted.

Revised existing Data Object definitions based on the introduction of the Transport Data Objects

The following redefinitions of existing data objects were agreed:

- (4) *Transport Link Object*:
 - Replaces the *UTC Link Data Object*;
 - A Transport Link is a path between two transport measurement points;
 - A Transport Link has a 1:1 mapping to a (Geographic) Network Path;
 - Is defined by a *Network Path Object* reference, or ‘internal’ geographic references;
 - Consists of a ‘Link Definition’ which contains a ‘Link Type’ which in turn points to a ‘Link Configuration’ Table and a ‘Link Dynamic’ Table;
- (5) *Transport Route Object*:
 - Replaces the *Route Data Object*;
 - **Defined by an ordered sequence of unidirectional *Transport Links***;
 - Consists of a ‘Definition’, a ‘Type’ and a list of associated *Transport Links* (the list may contain different *Transport Link* ‘types’);
- (6) *Network Path Object*:
 - Replaces the *Network Route Object*;

- Some fields will need to be redefined / removed.

Identified 'knock-on' consequences of agreed changes

The following consequences of the agreed introduction of the Transport Data Objects were identified as needing action:

- (6) *Transport Route* – what will the introduction of this data object mean in terms of the Route Journey Time and the impact on the *Journey Time Object*? Should the *Journey Time Object* be killed? Should the *Journey Time Object* become an optional part of the *Transport Route Object*?
- (7) Consideration needs to be given to 'normalising' the *Transport Route Object* and *Transport Link Object* with the *Network Path Object* and the *Network Link Object*; - ordered lists should be defined in the same way?
- (8) 'Link References' in other Data Objects will now need to have two references
 - Network Link Reference;
 - Transport Link Reference.
 The current 'Link Reference' will need to be 'killed';
- (9) For naming convention consistency, the *Geometry Object* should be renamed *Network Geometry Object*;
- (10) For naming convention consistency, the *Network Zone Support Object* should be renamed the *Network Zone Object*.

Other Identified issues for consideration

(2) It was agreed that the following data objects would remain unchanged:

- Network Junction Object + Network Junction Type Support Object;
- Network Road Element Object + Network Road Support Object;
- Network Turn Object;

although ... the following data objects in this list may be superseded by new objects referring to / normalised with the *Transport Link* in due course:

- Network Junction Object;
- Network Road Element Object;
- Network Turn Object.

Actions

The following actions were agreed:

- (10) *Network Node* and *Network Link* data objects to be reviewed against the agreed re-structuring **A: Mark Bodger, Siemens**
- (11) *Network Path* and *Network Geometry* data objects to be reviewed against the agreed re-structuring **A: Brendan Mason, Tenet**
- (12) All data objects to be reviewed to ensure no unforeseen consequences of the agreed changes are missed **A: All**
- (13) The *Traffic Signal Data* object to be reviewed against the agreed re-structuring **A: Mark Bodger, Siemens**
- (14) Siemens to consider the implications of the 'splitting into two' the UTC Link Data Object **A: Mark Bodger, Siemens**
- (15) Rationalise the description of *Transport Route* objects as a collection of *Traffic Links* in a similar way to how *Network Routes* are described by a collection of *Network Links* **A: Mark Bodger, Siemens**
- (16) Conduct a review of how the new fields will be used **A: Mark Bodger, Siemens**
- (17) Consider making the *Journey Time* object a separate dynamic as for the *Traffic Link* object **A: Mark Bodger, Siemens**
- (18) COMMERCIAL IMPLICATIONS OF AGREED CHANGES TO BE REVIEWED BY EACH COMPANY A: ALL**

Agreed Way Forward

The following 'Way Forward' was agreed:

- (5) Each company to consider the 'commercial implications' of the agreed changes to be made:
To upgrade existing systems will have a cost implication – direct funding or funding through system upgrades / new systems or bespoke interfaces need to be created to manage the different interpretations - two elements to cost – updating "product" and then implementing at each customer site including the data reformatting + inter-system compatibility remain
- (6) Any objections to the agreed changes following the consideration of the 'commercial implications' to be raised as soon as possible to the other suppliers represented in Meeting 1-Session 2;
- (7) Subject to full agreement to proceed – the agreed changes to be published to the wider USF Technical Working Group (at Meeting 2) as the baseline for future Data Object development;
- (8) Subject to full agreement to proceed – the agreed changes to be proposed to the UDG as the baseline for the Data Objects Registry – Version 2 on which all future systems enhancements and new systems will be based

10.10.2003 - Champions to be actioned
Champions take their objects from the Controlled Version 2 Registry, review, improve descriptions, identify generic referencing issues for generic list, propose updates and circulate, gain company agreement, back into

controlled registry

15.11.2003 - Review process complete

27.11.2003 - Baseline Version 2 final review / resolution of issues for submission to be agreed at final meeting –
before USH Mgt Mtng

31.12.2003 - Agree baseline Version 2 for submission to UDG for 'Validation' (new 'spreadsheet' fully agreed by
USF-TWG

Annex 8

Minutes (3 of 3) from the UTMC Suppliers Forum - Data Objects Working Group - Meeting 2 – 1st October 2003

The following illustrates the new Minutes taken during Meeting 2

Meeting Notes

Subject: [USF Technical Working Group – Data Objects Review – Meeting 2](#)

Date: 01.10.2003

Attendees:

Mark Bodger – Siemens
Janet Ansell – Siemens
Brendan Mason – Tenet
Lawrence Jordan – Amey-Datel
Stephen Corlett - Thales
Brian Robinson - Peek
Mandi Patel - Independent Consultant
Ian Cornwell - Mott MacDonald
Gary Umpleby - Mott MacDonald

Action Items:

- **Data Objects Baseline**
 - See “Updated” original meeting notes
 -
- **Data Objects Registry Management**
 - **Registry data types**
 - Number character and date – insufficient, needs additional description
 - IDL approach could be considered but do all suppliers use the same IDL ?
 - Common Database needs to remain relational for Version 2 Baseline (future OO may be considered)
 - Agreed = Registry data types should be those actually used in the Common Database IDL
 - **Registry Implementation**
 - The existing spreadsheet method of recording the data objects is not a valued approach
 - (1) Glasgow BIAS Access Model -
 - Move from Exel to Access ?
 - MM have produced a prototype tool for managing data objects for the Glasgow BIAS Project – could this be shared as a common “industry tool” – would need some modification for general use – distribute for comment ?
 - (2) HA Registry -
 - Scope of the HA Registry is wider and the context is different but
 - Scope is centered on the TIH but it is hoped that it will be useful to others
 - Implemented using UML but with software tools to aid the import of other formats
 - UML and XMI files can be imported from different suppliers
 - XML scheme can be exported with additional information such as the registrar, registry status
 - There is a web-facing capability
 - Imports from Rational have been proven
 - MagicDraw has also been proven
 - (3) XML Schema –
 - Could be considered
 - Tools used by TWG representatives -
 - SQL Server
 - Rational Rose (UML)
 - XML + XML Spy (for Web Applications)
 - Sybase Power Designer
 - Lowest common denominator is the use of Access which is a step improvement on using Exel
 - XML Spy costs £300-£400 ... but would not handle Data Registry Management ?

- XML would define the interface and link to the underlying data structures
- Entity Relationship Diagram – a central view is needed but what do we use to generate it ? UML ? XML ?
- How do we handle optional links to other objects ?
- Who will manage the Registry – will they have the necessary skills ?
- Will the Registry be managed by a single person with the knowledge of the data structures ?
- Will the Registry be managed by a body – everyone throws in their requirements ?
- SSSG could provide the secretariat function in terms of advising enquirers of latest versions
- Would DfT fund a “party” to manage the Registry ?
- Once Version 2 achieved then the status-quo needs to be maintained to avoid the same situation developing
- The USF has achieved a level of co-operation to avoid conflict
- Therefore – Registry is held by the SSSG – format and tools to be used to be agreed by the USF
- SSSG pass down the data requirements
- USF jointly decide how to implement and update the Registry
- This would require a new LA with new requirements to agree the changes with the UDG before going to tender
- IC to investigate of the possibility of issuing the MM Access Tool only if the existing Registry is held in this form or is easy to achieve
- If not – will have to use Exel for December deadline But could consider building an Access approach as the Data Objects come back into the Controlled Registry after review
-
- **AOB – Session Management**
- Is there a need for a central management of user views and data transfer from the sub-systems to the common database ?
- Should a sub-system automatically populate the common database with new “items” ?
- What level of management and filtering should be adopted ?
- Should we be looking at a more “plug-and-play” approach ?
- Common Database control issues requests to sub-systems for the data it wants – the sub-system advises the common database of new items that then appear on the common database pick-list
- Research project needed to determine how this might be done ?
-

Annex 9

Copy of E-Mail to Ben Thancanamootoo (Mouchel Parkman – UTMC Programme Management Team) re suggestions for potential areas of research proposed by the USF as discussed at UTMC Suppliers Forum - Data Objects Working Group - Meeting 2 – 1st October 2003

E-Mail: "RE: USF - Research Proposals for UDG" to Ben Thancanamootoo dated Wed 08/10/2003 16:31

Ben,

As promised please find below suggestions for potential areas of research that have been proposed by members of the USF which we feel would facilitate the continued growth and acceptance of the UTMC programme. No particular priority was placed on the individual items but a natural precedence within the items can perhaps be perceived.

(1) Data Registry Management

There will be an ongoing secretarial function + technical mandate (including tool selection) to manage the Registry - this will need a level of technical expertise and will need to be performed by someone. Data Registry management techniques also need to be researched (including tool selection) to ensure the most appropriate environment is implemented.

(2) Development of the strategic technical vision for UTMC

There is a view that the overall strategic technical direction of UTMC will need to be researched and managed by a co-ordinated and central "body" to ensure its future development and success. It is felt that this cannot be achieved by "voluntary committees". In addition there is a strong view that there is a growing need to co-ordinate with the TIH, RTIG and Transport Direct.

(3) UTMC as the basis of a future European Standard

There is a concern that UK authorities and organisations have invested heavily in UTMC. At present there is no equivalent European standard. Should a European Standard be developed then UK plc could find itself having to adopt the European Standard in place of UTMC. It is suggested therefore that UK plc should "trigger" and lead the European Standards process for Traffic Management and Control to ensure that any future European Standard has UTMC at its core.

(4) Use of XML in UTMC

It is suggested that the use of XML be considered as an alternative (but in addition) to CORBA - i.e. not excluding the use of CORBA - in a similar way to that being considered for the TIH. In addition it is proposed that the use of an XML schema for the data registry (to provide a more rigorous definition) should be researched.

(5) Session Management

There are a number of elements of Session Management that need to be researched and considered. Who has access to what data - who is allowed to enter or extract data into the common database? What is a user allowed to see - to what functionality does he have access? Should a user be allowed to create his own views of the data dynamically?

(6) Common Object Model (COM)

There is a view that COM should be researched in addition to XML for the interfacing to support Visual Basic and other rapid development languages.

(7) Object Oriented v SQL

There is a view that SQL is very specific with a need of some understanding of the underlying data. There is an interest within the USF to move to an object-oriented approach. It is noted that UTMC 10 took some time to define an interface and it is anticipated that developing an OO approach would also take some time and investment. However, it is felt that a better approach in the future would be to deal with objects rather than tables. Therefore rebuilding the interface using OO is suggested for investigation (could use CORBA OO capability).

(8) Has UTMC made a difference ?

The UTMC Demonstrator Programme will be delivering reports on the benefits brought by adopting a UTMC approach to delivering solutions from a Local Authority perspective. An equivalent evaluation from a suppliers point of view is thought to be of interest to determine the benefits, and / or costs, to Industry in delivering UTMC solutions. Viability to Industry may impact in the future on UTMC solution costs (i.e. do UTMC solutions cost less or more to deliver ?).

Research approaches considered -

The USF looked at different approaches for how a research budget could be fairly divided amongst suppliers - following are a few thoughts:

- (1) The Research Budget is let as a Framework Contract for which all suppliers can bid to be included within the Framework. As individual research items are let, suppliers within the Framework bid for that specific research item against the pre-agreed Framework rates;
- (2) The division of the Research Budget is left to the USF to agree a fair split with adjudications from the UDG;
- (3) The USF agree with the UDG the research that needs to be conducted. The USF then debate and agree who will conduct the research and determine a cost and workload split. The Research Budget is then allocated accordingly.

Ben, I hope that the above is of use to you tomorrow - please feel free to give me a call should you need any clarification of the above items.

Best regards,

Gary Umpleby

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Mott MacDonald

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Annex 10

Copy of E-Mail to Gareth Tilley (Centaur Consulting – UTMC Programme Management Team) re the USF Responses to Standards and Specification Group / Programme Management Questions discussed at UTMC Suppliers Forum - Data Objects Working Group - Meeting 2 – 1st October 2003

E-Mail: "UDG / USF - Responses to Standards and Specification Group / Programme Management Questions" to Gareth Tilley dated Thu 02/10/2003 16:28

Gareth,
Thank you for your E-Mail.

We discussed the three issues raised in your E-Mail at the USF Technical Working Group Meeting yesterday (Meeting 2).

Re: "A list of Data Objects that the group would like to put forward for Validation"

As you know we have completed a full review of all data objects during the 3-meetings we have held and have identified issues for resolution including the need to significantly re-vamp the Route and Network data objects sets to avoid future incompatibility of different supplier systems .

We now have a detailed action plan in place, subject to agreement with the Standards and Specification Group/Programme Management, to resolve the major issues extant in the existing Registry to bring the Registry to what we have been calling Version 2. We would recommend to the SSG/PM that the Data Objects Registry Version 2 become the baseline on which future data object introduction and development is based.

On this basis, all the data objects in the Data Objects Registry Version 2 would be validated at the same time to form the new Version 2 Registry (the majority of the data objects that would form the Baseline Version 2 are already "under test" in several systems and therefore the validation process should be reasonably straight forward given the extent of the work currently being conducted on the data objects by currently "UTMC active" suppliers to get them to the state where we can consider releasing a Version 2 Registry).

If we are able to hold the action plan tabled, then we should be in a position to "release" the Version 2 Registry at the end of December.

Re: "A date for a meeting or a method by which Standards and Specification Group/Programme Management for the proposals can be presented/discussed"

Richard Gibson has been invited to attend part of the UDG Management Group meeting on the 9th October. I will be providing Richard with a briefing paper for discussion at that meeting.

However, we would very much like to hold an interim meeting with the SSG/PM as soon as possible in October to ratify the action plan that we have in place, and to meet the deadline, on which we have already commenced work. Clearly we would not wish to continue down a path if there should be conflict with the thinking of the SSG/PM. However, I hope that you will agree having attended Meeting 1-Sessions 1 and 2, we are resolving a number of key and very important issues with complete co-operation across the industry representatives involved in the UTMC Demonstrator projects (albeit a small group at this time). The individuals involved in the

discussions and resolutions are experienced software engineers and project managers, and are in fact the same people responsible for delivering the UTMC Demonstrator systems, and therefore already working at a detailed technical level, cross-company, to develop the required solutions.

The aim of the Interim Meeting would be to reach agreement with the SSG/PM of the acceptability of the USF Technical Working Group "Action Plan" before we progress too far. We would then suggest that a further review meeting be held in December to finally agree the Data Objects Registry Version 2 for release. We would anticipate that the Data Objects Registry Version 2 would then become the Registry version that the UDG would promote, and issue, to new or existing local authorities or suppliers as the version on which to implement new systems or to which existing systems be upgrade in time. We would hope to be in a position to enable the UDG to announce and promote Version 2 of the Data Objects Registry at the UTMC Conference in December, safe in the knowledge that key issues that have arisen in the Demonstrator Projects, and currently exist, have been resolved in the Version 2 Registry.

Re: The method for the selection of up to 3 suppliers forum members to join the Standards and Specification Group in place for a reasonable period of time (eg over a year)

A significant level of trust has been built up within the USF Technical Working Group in the 3 meetings held to date. The reason it is working and we have been able to achieve the significant progress that has been made is because we are all represented. Within the USF Technical Group also exists a spread of skills that could not be encapsulated in 3 individuals. Our recommendation therefore is that appropriate individuals are selected by the USF Technical Working Group to attend SSG meetings depending on the subject matter. If the "agenda items" were published sufficiently far in advance it would be possible for the USF Technical Working Group to debate the issues (so everyone can have a say thereby avoiding biased or inexperienced views from prevailing), reach consensus (which is very important to us), and to decide, again by consensus, who would be best to represent the USF at the SSG meeting. The need for continuity is understood and therefore we could consider that one of the three representatives should be a permanent attendee for an agreed period of time - this permanent representative would be "appointed" through consensus of the USF Technical Working Group.

Gareth, I hope that these responses are adequate for your needs. We believe that the next step is really to get round the table with the SSG/PM as soon as possible to explain in detail what we have done, why it was necessary, what we have found, what we have identified as needing doing, and to agree the action plan we have drawn-up. Hopefully this approach can be agreed by Richard and the UDG Management Team at next week's meeting.

Let me know if you need any clarification of the above.

Many thanks, Gareth.

Best regards,

Gary Umpleby

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-----Original Message-----

From: Gareth Tilley [mailto:gareth.tilley@centaurconsulting.co.uk]

Sent: Tuesday, September 30, 2003 2:52 PM

To: gu1@mm-winc.mottmac.com; gary.umpleby@ukonline.co.uk

Cc: Derek Renaud

Subject: Re: USF - Attendees at the Technical Working Group Meeting 2 - Wednesday 1st October 2003 - (DfT - Conference Room S3, 10.30am - 5pm, GMH)

Gary

It would be useful if following the meeting the group could offer the Standards and Specification Group/Programme Management:

- A list of Data Objects that the group would like to put forward for Validation;
- A date for a meeting or a method by which Standards and Specification Group/Programme Management for the proposals can be presented/discussed;
- The method for the selection of up to 3 suppliers forum members to join the Standards and Specification Group in place for a reasonable period of time (eg over a year).

As you know the S&SG are currently examining the Data Objects Registry operation and wider Technical Specification issues. We look forward to hearing the SF proposals in this area.

Thanks

Gareth

Annex 11

Participating Companies in the USF Technical Working Group

List of USF Companies wishing to belong to the USF Technical Working Group

<i>Company</i>	<i>Primary Representative</i>
AGD Systems	Pete Hutchinson
Amey-Datel	Lawrence Jordan
Babtie	Will Sharpe
IC24	Mandi Patel
IDT UK	Richard Gibson
Microsense	Mark Pleydell
Mott MacDonald	Gary Umpleby (Chair)
Owen Williams	Paul Welsh
Peek Traffic	Brian Robinson
Siemens	Mark Bodger
Tenet	Brendan Mason
Thales Information Systems	Stephen Corlett

List of companies wishing to belong to the USF Technical Working Group (Data Objects Sub-Group)

<i>Company</i>	<i>Primary Representative</i>
AGD Systems	Richard Jenkins
Amey-Datel	Lawrence Jordan
IC24	Mandi Patel
Mott MacDonald	Ian Cornwell
Mott MacDonald	Jim David
Mott MacDonald	Gary Umpleby (Chair)
Peek Traffic	Brian Robinson
PIPS Technology (Co-opted Member)	Tim Cooper
Siemens	Mark Bodger
Siemens	Janet Ansell
Tenet	Brendan Mason
Thales Information Systems	Stephen Corlett

Annex 12

**Agenda for the UTMC Suppliers Forum - Data Objects Working Group - Meeting 3 –
27th November 2003**

- 10.00-10.30** Arrive & Coffee
- 10.30-10.45** Update on discussions with UDG
- 10.45-11.00** Assess Data Object Review progress to date
- 11.00-12.30** Assess level of agreement / approval for those Revised Data Objects that have been proposed + resolve if possible any outstanding issues relating to these specific data objects
- 12.30-13.00** Assess and plan completion of outstanding Data Objects
- 13.00** Lunch prior to USF Management Meeting at 2.00pm

Annex 13

Minutes from the UTMC Suppliers Forum - Data Objects Working Group - Meeting 3 – 27th November 2003

031127A-USF Technical Working Group - Data Objects Meeting 3

Update on discussions with UDG

We need to be careful that the “principles” that we have developed and are now working to are adhered to by future data objects additions if the UDG manage the Registry

Revised Data Objects

Reference System

It is agreed that the Location Reference is now defined in the Network Structures and therefore ALL data objects will have the “ReferenceSystem” field removed

Type Ids (see several references below)

All to consider if these fields should be mandatory – feedback to Janet **A: JA / All**

If reply is “Yes” then all Data Object Champions need to ensure that this is implemented in all Data Objects **A: Data Object Champions**

Traffic Signal Data Objects

TypeID added with the following pre-defined TypeIDs added to the Traffic Signal Support Object–

- 1 = Intersection
- 2 = Pelican
- 3 = Puffin
- 4 = Toucan
- 5 = Pegasus
- 6 = Tram Crossing
- 7 = Wig Wag
- 999 = Other (see below)

It is essential that if a supplier wishes to add to this list it must be with the approval of the Data Objects Registry Manager

TypeID 999 is used for those occasions when a formal TypeID has been requested but has not yet been incorporated into the Data Objects Registry

Janet to send Gary the final version for submission to the controlled Data Objects Registry Version 2 file. **A: JA**

Air Quality Data Object

Question raised why has the measurement units moved from the Configuration Table to the Definition Table when this makes the Definition Table for Air Quality non-standard **A: BM**

Changing the pollutant Data Type to “Real” will mean that a number of “live” databases will need to be reformatted from “Integer” to “Real” – however, the data is received from the MIB in “Real” format.

Brendan requested to confirm before a switch to “Real” is agreed (why is a decimal fraction needed when we are measuring in parts per million anyway ?). **A: BM**

In both the DYNAMIC and CONFIGURATION tables the “SystemCodeNumber” is missing – Brendan needs to put in (see JA E-Mail dated 25.11.2003) **A: BM**

In the Table / View Reference the references AIRQUALITY_DEF and AIRQUALITY_CONFIG need to be renamed AIRQUALITY_DEFINITION and AIRQUALITY_CONFIGURATION to be consistent **A: BM**

Air Quality Fault Types Object should be moved to become part of the Common Support Fault Types Support Object **A: BM**

Meteorological Objects

Meteorological Fault Type (Support) Object needs to be moved to the Common Fault Type Support Object **A: BM**

In the Table / View Reference the references METEOROLOGICAL_DEF needs to be renamed METEOROLOGICAL_DEFINITION to be consistent **A: BM**

Air Temperature is being proposed to be a “Real” value – is this really necessary due to need to reformatting data in several “live” databases – Brendan to confirm before change agreed **A: BM**

Agreed to move the Road Condition Type Support Object Into a single Support Object as separate tables **A: BM**

VMS Objects

Move the individual Support Objects into a single Support Object **A: BM**

Missing “_” in VMS_CONFIGURATION **A: BM**

Confirm “Y” in ET columns match up to the appropriate Support Object Tables **A: BM**

Detector Objects

Add TypeID with an appropriate Support Object to define “Detector Types” **A: BM / JA**

Initial list proposed =

- 0 = SCOOT Loops
- 1 = Count 1 count bit
- 2 = Count 2 count bit

- 3 = Occupancy 1 count bit
- 4 = Occupancy 2 count bit
- 5 = RMS – this type needs to be discussed (supplier specific) **A: JA**
- 6 = Artemis – this type needs to be discussed (supplier specific) **A: JA**
- 7 = Congestion
- 8 = Count 1 assignable bit

Janet to co-ordinate the final Detector Type list – all to provide Janet with their additions **A: JA / All**

Occupancy is being proposed to be a “Real” value – is this really necessary due to need to reformatting data in several “live” databases – Brendan to confirm before change agreed **A: BM**

If we intend to switch to using “Real” values should “Speed” also be “Real” ? **A: BM**

The Enhanced Detector Data Object is no longer needed – the Detector Data Object will provide this data

Prediction and Profile Objects

Discussed but agreed to defer until Brendan available to discuss

Transport Objects

“TransportLinkType” within the data object should be renamed TypeID with its appropriate Support Object = Transport Link Support Object **A: JA**

Agreement needed as to which fields are required within the CONFIGURATION and DYNAMIC tables for SCOOT and ANPR links. Janet to circulate E-Mail requesting input **A: JA / ALL (replies to Janet)**

Need to introduce a Transport Route Type ID and associated Support Object **A: JA**

All to comment on Janet’s proposals issued in E-Mail dated 25.11.2003 – particularly the “ordered list” **A: JA / ALL**

Journey Time Object is no longer needed as this data will be provided by the Transport Route Data Object

CCTV and other Interface Issues

Need to change the “interface specification” to accommodate the transmission of binary CCTV data.

Proposal is to “lose” the SQL interface – or should we add a new interface (should not remove existing interfaces ?). SQL has problems as you have to understand the structure of the data that you are accessing.

Could CCTV be resolved by passing the “image” out of the data object and leave the transfer of the “binary” to “local arrangements” ? ... pass a reference (which could be a file name). This is agreed to be a pragmatic approach at this stage to avoid delay in getting the Data Objects Registry Version 2 released. Stephen will progress this approach and document. **A: SC**

Session management needs addressing. Key players are the CDB suppliers – Siemens, Tenet and Motts + Peek.

Consider views for initial proposal at the next meeting.

A: MB/JA/JM/BM/GU/JD/IC/BR

Way Forward to achieve completion

Target completion date = mid-February 2004

Continue by E-Mail with review meeting to be held on – 15.01.2004 in London – Gary to book room **A: GU**

Annex 14

**Agenda for the UTMC Suppliers Forum - Data Objects Working Group - Meeting 4 –
15th January 2004**

AGENDA

- 10.00am - Coffee (provided by TfL)
- 10.30am - Review position as of last meeting and developments since
- 10.45am - Establish any data objects that can be placed immediately into the Version 2 Registry
- 11.15am - Continue the trawl of data objects with a view to getting as many as possible agreed and into the Version 2 Registry
- 12.30pm - Lunch (to be provided by TfL)
- 01.00pm - Continue the trawl of data objects ...
- 02.30pm - Coffee & Tea break (to be provided by TfL)
- 04.30pm - Washup and agree position reached
- 04.45pm - Agree next steps

Annex 15

Minutes from the UTMC Suppliers Forum - Data Objects Working Group - Meeting 4 – 15th January 2004

Attendees:

- Gary Umpleby, Mott MacDonald (Chair)
- Jim David, Mott MacDonald
- Mark Bodger, Siemens
- Janet Ansell, Siemens
- Brendan Mason, Tenet
- Stephen Corlett, Thales

**040115MN – USF TWG Data Objects Meeting 4
(London – TfL Offices, Eccleston Place)**

(Purple text added 15.01.2004)

Update to Discussion Notes from Meeting 3

Update on discussions with UDG

We need to be careful that the “principles” that we have developed and are now working to are adhered to by future data objects additions if the UDG manage the Registry

Revised Data Objects

Reference System

It is agreed that the Location Reference is now defined in the Network Structures and therefore ALL data objects will have the “ReferenceSystem” field removed

Type Ids (see several references below)

All to consider if these fields should be mandatory – feedback to Janet **A: JA / All**

If reply is “Yes” then all Data Object Champions need to ensure that this is implemented in all Data Objects **A: Data Object Champions**

The Type ID table (below) structure to be moved to common data objects
The Type Data Source should be used to differentiate between Type ID instantiations, for example a Peek Pelican or a Siemens Pelican

Type ID Table

Attribute Name	Attribute Type	Description	Data Type	Min size	Max size	Ma n	Com ments	Table/View reference
TypeID	STATIC	Identifier for type	Number	1	10	Y		Traffic_Signal_TypeID
TypeID Description	STATIC	Description of type	Character	6	32	Y		

Type IDs need to be controlled -> therefore we need to a formal ID range 1-999 which is controlled by the Registry Administrator but individual suppliers will be allocated "blocks" from 1000 upwards in 100 chunks – Brendan to allocate and formalise **A:BM**

Brendan to formalise this data object **A:BM**

Traffic Signal Data Objects

TypeID added with the following pre-defined TypeIDs added to the Traffic Signal Support Object–

- 1 = Intersection
- 2 = Pelican
- 3 = Puffin
- 4 = Toucan
- 5 = Pegasus
- 6 = Tram Crossing
- 7 = Wig Wag
- 999 = Other (see below)

It is essential that if a supplier wishes to add to this list it must be with the approval of the Data Objects Registry Manager

TypeID 999 is used for those occasions when a formal TypeID has been requested but has not yet been incorporated into the Data Objects Registry

Janet to send Gary the final version for submission to the controlled Data Objects Registry Version 2 file. **A: JA**

Janet to align with the Type ID changes proposed above **A: JA**

Janet to forward final Data Object to GU for GU Approval Circulation **A: BM**

Air Quality Data Object

Question raised why has the measurement units moved from the Configuration Table to the Definition Table when this makes the Definition Table for Air Quality non-standard **A: BM**

To maintain consistency with other Data Objects the decision = Measurements Units will now be placed in the Air Quality BASIC DATA component

Changing the pollutant Data Type to "Real" will mean that a number of "live" databases will need to be reformatted from "Integer" to "Real" – however, the data is received from the MIB in "Real"

format.

Brendan requested to confirm before a switch to “Real” is agreed (why is a decimal fraction needed when we are measuring in parts per million anyway ?). **A: BM**
It is unavoidable (driven by the equipment supplier) – we will use “Real”

In both the DYNAMIC and CONFIGURATION tables the “SystemCodeNumber” is missing – Brendan needs to put in (see JA E-Mail dated 25.11.2003) **A: BM**

In the Table / View Reference (now Component Reference) the references AIRQUALITY_DEF and AIRQUALITY_CONFIG need to be renamed AIRQUALITY_DEFINITION and AIRQUALITY_CONFIGURATION to be consistent **A: BM**

Air Quality Fault Types Object should be moved to become part of the Common Support Fault Types Support Object **A: BM**

Brendan to complete above actions + align with the new Generic Data Object Structure **A: BM**

Brendan to forward final Data Object to GU for GU Approval Circulation **A: BM**

Meteorological Objects

Meteorological Fault Type (Support) Object needs to be moved to the Common Fault Type Support Object – **DONE (BM)**

In the Table / View Reference the references METEOROLOGICAL_DEF needs to be renamed METEOROLOGICAL_DEFINITION to be consistent – **DONE (BM)**

Air Temperature is being proposed to be a “Real” value – is this really necessary due to need to reformatting data in several “live” databases – Brendan to confirm before change agreed **A: BM** - this will be Real **A: BM**

Agreed to move the Road Condition Type Support Object Into a single Support Object as separate tables – these should be a Global Type Object so that everyone can refer to it and not just meteorological applications **A: BM**

Brendan to complete above actions + align with the new Generic Data Object Structure **A: BM**

Brendan to forward final Data Object to GU for GU Approval Circulation **A: BM**

Global Data Objects are to be advised

Road **A:BM**

Visibility **A:BM**

Precipitation **A: BM**

Data Source **A: JD**

Day Type **A: SC (but not for V2 –**

The Day Type Data Object needs to be extended in due course to accommodate the Calendar Data Object (to be defined in due course). For now we will stick with the Basic Day Type Data Object as in the Profile Support Data Object – Janet to supply a copy **A: JA**

VMS Objects

Move the individual Support Objects into a single Support Object – **DONE (BM)**

Missing “_” in VMS_CONFIGURATION – **DONE (BM)**

Confirm “Y” in ET columns match up to the appropriate Support Object Tables – **DONE (BM)**

Move TypeID into GENERIC DATA

Brendan to forward final GU Data Objects for GU Approval Circulation **A: BM**

Detector Objects

Add TypeID with an appropriate Support Object to define “Detector Types” **A: BM / JA**

This is covered by the TypeID actions above (based on the Revised Initial List below) **A: BM**

Initial List proposed =

- 0 = SCOOT Loops
- 1 = Count 1 count bit
- 2 = Count 2 count bit
- 3 = Occupancy 1 count bit
- 4 = Occupancy 2 count bit
- 5 = RMS – this type needs to be discussed (supplier specific) **Superseded (JA)**
- 6 = Artemis – this type needs to be discussed (supplier specific) **Superseded (JA)**
- 7 = Congestion
- 8 = Count 1 assignable bit

It was agreed that the above list could be reduced to the Revised Initial List proposed =

- 1 = SCOOT Loops
 - 2 = Count
 - 3 = Occupancy
 - 4 = Speed
 - 5 = Queue
 - 6 = Bus
- Combinations also need to be defined

Janet to co-ordinate the final Detector Type list – all to provide Janet with their additions
Completed during meeting (All/JA)

Occupancy is being proposed to be a “Real” value – is this really necessary due to need to reformatting data in several “live” databases – Brendan to confirm before change agreed **A: BM**
Decision = for consistency it would be better to change this to “Real” to avoid future potential problems

If we intend to switch to using “Real” values should “Speed” also be “Real” ? **A: BM**
Decision = for consistency it would be better to make Speed “Real” to avoid future potential problems

The Enhanced Detector Data Object is no longer needed – the Detector Data Object will provide this data

It has been suggested that the Detector Object should have an additional DYNAMIC for Congestion (as a measure rather

than a "yes / no" – Decision = for now such an attribute should be included as private table until a generic definition can be defined

Brendan to forward final Data Object to GU for GU Approval Circulation **A: BM**

Prediction and Profile Objects

Discussed but agreed to defer until Brendan available to discuss

Agreed to leave in today's discussion to enable higher priority Data Objects to be discussed

Transport Objects

"TransportLinkType" within the data object should be renamed TypeID with its appropriate

Support Object = Transport Link Support Object **A: JA**

In the Transport Link Object the Generic Definition Component references a Transport Link which is not used in this particular object – this attribute should be removed in this Data Object **A: JA**

Agreement needed as to which fields are required within the CONFIGURATION and DYNAMIC tables for SCOOT and ANPR links. Janet to circulate E-Mail requesting input **DONE (JA / ALL (replies to Janet))**

It is suggested that there is a need to split the CONFIGURATION DATA into a BASIC DATA part and a CONFIGURATION DATA part – Siemens to consider (including Profile) and propose a solution **A: JA**

Need to introduce a Transport Route Type ID and associated Support Object **DONE (JA)**

All to comment on Janet's proposals issued in E-Mail dated 25.11.2003 – particularly the "ordered list" **A: JA / ALL**

LinkSystemCodeNumber is now TransportLinkReference

The following will now become "private" fields...

LinkStart
LinkVia
LinkEnd
SegmentLength
SCNExists
ConfigurationDate

The following attributes will be removed ...

SystemCodeNumber
PeriodNumber
StartPeriod
EndPeriod
DefaultJourneyTime
ConfigurationDate

Journey Time Object is no longer needed as this data will be provided by the Transport Route Data Object

Janet to forward final Data Object to GU for GU Approval Circulation **A: JA**

CCTV and other Interface Issues

Need to change the "interface specification" to accommodate the transmission of binary CCTV

data.

Proposal is to “lose” the SQL interface – or should we add a new interface (should not remove existing interfaces ?). SQL has problems as you have to understand the structure of the data that you are accessing.

Could CCTV be resolved by passing the “image” out of the data object and leave the transfer of the “binary” to “local arrangements” ? ... pass a reference (which could be a file name). This is agreed to be a pragmatic approach at this stage to avoid delay in getting the Data Objects Registry Version 2 released. Stephen will progress this approach and document. **A: SC**

Session management needs addressing. Key players are the CDB suppliers – Siemens, Tenet and Motts + Peek. Consider views for initial proposal at the next meeting.

A: MB/JA/JM/BM/GU/JD/IC/BR

To be discussed in a future meeting

Way Forward to achieve completion

Target completion date = mid-February 2004

Continue by E-Mail with review meeting to be held on – 15.01.2004 in London – Gary to book room **A: GU**

ADDITIONAL NOTES FROM DISCUSSIONS 15.01.2004

Definition of Data Types

(This discussion originated from the Air Quality Data Object review discussion)

It is agreed that all Data Types should be defined in the Data Objects Registry (for example, Real Integer = xxxx) – implementers must adhere to these definitions to ensure cross-compatibility and ability to implement on different database engines

Should we use the XML definitions ?

Type definition discussions

Date, Time, DateTime = agreed that all three types are needed

The Modified Julian Date to be used is to be defined in the Registry – Janet has a reference to an industry statement

Integer = all integer fields should be 64-bit

Real = Decimal value (no precision defined in the specification – implementers define)

Char String = for system control values it is necessary to retain max and min string lengths but for description fields the length should be unrestricted

Single Char =

or

Boolean = (1 and 0) or (YES and NO) or (TRUE and FALSE) – do we want Boolean ?

Decision is to use Logical which = “Y” and “N”

Based on this starting point Brendan to co-ordinate E-Mail discussion to construct a Data Type Definition Table for inclusion in the Registry (ensuring the due consideration is given to avoiding impact and change on the interface) **A: BM**

Generic Data Object Structure

Using the Generic Data Object Structure defined during the meeting, Brendan to provide general description document to explain the structure and the meaning of each element **A: BM**

Janet to re-vamp the Traffic Signal Data Object as an example of a specific implementation **A: JA**

Fault Objects

Jim to propose a Generic Fault Object + Support Tables and circulate for E-Mail discussion **A: JD**

Access Control Data Object

Jim to re-format to new Generic Template

The Access Control Support Object should be incorporated into the Access Control Data Object

Jim to forward final Data Object to GU for GU Approval Circulation **A: JD**

Car Park Data Objects

Transferred to Siemens to review – need to consider the availability of “raw” count data and the use of “Real” v “Integer” attributes **A: JA**

Car Park System Type Object – becomes part of the generic TypeID

Day of Week Type Object becomes “DayType” which is part of the Global Objects

DATE OF NEXT MEETING

DATE OF NEXT MEETING = 12.02.2004 (TfL, ECCLESON PLACE, LONDON – 10.30AM TO 5.00PM)

Review those Dos not yet reviewed

Review those Dos under final approval

If time permits to review Registry Management

Review Faults, Planned and Unplanned prior to next meeting for final discussion at the meeting

A: JD

Stephen to propose interim CCTV solution for final discussion at the next meeting **A: SC**

Annex 16

Consolidated "List of Actions" from the five meetings of the USF Technical Working Group (including the Data Objects Sub-Group)

USF – Technical Working Group – Data Objects

Summary of Actions

Following is a summary of the actions resulting from Meeting 1 Sessions 1 & 2 and Meetings 2-4.

Meeting 1 – Session 1

Air Quality Data Object

There is a need to agree whether the data elements should be stored as decimal or integer values – there is a question as to whether the Data Object needs to be changed or whether this is an issue purely for the MIB ?

Brendan to pursue this issue and advise the USF by E-Mail a position in preparation for wider discussion at Meeting 2

Action: [Brendan Mason](#)

Underway – replacement of measurement units and number type needs further discussion

Day of Week Type Data Object

Should Day Type be specific to a single Data Object or should there be a generic Day Type ?

What about other groups, eg. RTIG – should a generic Day Type reflect the needs of other "standards" ?

This issue is linked to the proposed Calendar Data Object

The consensus was that we should have a generic solution for supporting all Data Objects

Stephen to lead with existing work started in this area for wider discussion at Meeting 2

Action: [Stephen Corlett](#)

Action pending – the Cal function has not yet been implemented – this will be addressed when the Cal function is registered – not high priority

CCTV Data Object

Technical issue –

Data object should be specifying the external view (interface) – in what form can it be put into a CORBA message ?

Jim (to lead with details of problem) / Brendan / Stephen to debate and make a proposal

Alternative proposal originally was not to put the image through XML at all – transfer image via FTP – this was not done due to issues of keeping messages and images in step

Action: [Jim David](#) / [Brendan Mason](#) / [Stephen Corlett](#)

Under discussion – additional function needed for binary objects which affects a wider number of objects – needs early resolution

Fault Support Object

Tenet = need an acknowledgement to be fed back –

Mott MacDonald = have extended the data object to say that fault is cleared –

Siemens = Agree with issues around different fault types

Brendan to propose an extension in discussion with all and circulate to USF for agreement at Meeting 2

Action: [Brendan Mason](#)

Discussion has widened from adding a few additional fields – data source ... but issue has widened to other fault related issues – managing faults, analysis – set of fault codes needs to be agreed – do we need unique fault codes – do we want UTMC to manage fault of use just as a reporting system – faults managed elsewhere

Detector Data Object

A number of changes are proposed to this data object following implementation in the Demonstrator Projects.

It is proposed to introduce Detector Data Object Version 2

Brendan and Jim to propose Version 2 and circulate for agreement at Meeting 2

Action: [Jim David](#) / [Brendan Mason](#)

Under discussion – needs to be finalised

Link Data Object

See Meeting 1 – Session 2

Action: Siemens / Peek / Tenet / Thales / PIPS Technology / Mott MacDonald

Meteorological

This will be handled by the 'standard' process when agreed

Network Structures

Covered in Stephen Corlett's Briefing Note re Route / Network and Link issues – for wider discussion

Action: Stephen Corlett

Planned & Unplanned Occurrences

Jim to circulate proposed extensions to Objects for all to review prior to approval as Version 2 of objects

Action: Jim David

Underway

Prediction Data Objects

Mark to provide better detail of the Data Objects – should this become a General Support Object ? Mark to propose way forward

Action: Mark Bodger

Underway – MB leading

Profile Support Objects

Mark to provide better detail of the Data Objects – should this become a General Support Object ? Mark to propose way forward

Action: Mark Bodger

Underway – MB leading

VMS Data Object

Siemens have proposed an extension - Strategic VMS Signs using message Ids - suggested Car Parks text is stored in a dynamic - Mott MacDonald = Motorway VMS messages need to be accommodated

Mark to lead with Jim and Brendan to propose Data Object enhancements to this data object for wider discussion at Meeting 2

Action: Mark Bodger / Jim David / Brendan Mason

Text field agreed – co-ordination of resubmission needed – suggest this is done as Baseline Version 2

Potential need for a de-limiter to be agreed

Bus Services Data Object + Public Transport Departure Data Object + Bus Location Object

A proposal is tabled to replace this data object with the proposed RTIG Data Objects

Rail data from Amey Datel – Bus Data from Infocell – neither support CORBA due to proposal to support RTIG XML schemas

Thales proposing to adopt RTIG XML schemas as UTMC Data Objects

Tenet have already implemented existing Bus Services Data Object + Public Transport Departure Data Object – some re-work would therefore be needed

How would we deal with timetable information within UTMC ? Adopt TransXchange XML schema ?

Richness of bus information data – how much should be transferred to the 'common database' ?

Stephen to notify new Data Objects = the Real Time Bus and Real Time Train Information based on the RTIG draft

standard to replace Public Transport Departure Data Object + Bus Location Object – this will impact on Tenet

The issues arising will be addressed through the current "notification process"

Action: Stephen Corlett

Underway – Bus & Rail

User Permission Object

All to supply Brendan with comments on the "Notified" Data Object by the end-August for discussion at Meeting 2

Action: All Meeting Attendees

Underway – wider discussion needed about session management – how handled – no standard exists at the present time – could be included in the re-issue of UTMC documentation (that will replace UTMC 10 documentation set)

UTMC 'Conformity'

During discussions it became clear that inter-operability between suppliers needs to be specified down to data object level so that a customer can see who can talk to who

Action: All Meeting Attendees

Session management, functional management and object access issues have not been mandated and probably need to be. Claiming "compliance" still leaves interpretation issues

Object Definitions need improving

Need to devise a process for better Object Definition – definitions are far too loose as they stand

Suggestion to use XML Schema for object definition and object inter-relation – this needs further discussion at Meeting 2

Stephen to enlarge on E-Mail statements circulated – Ian Cornwell (Mott MacDonald) to present views based on further thinking since the issuing of the UTMC 10 Research Project Report

Action: Stephen Corlett / [Ian Cornwell](#)

Definitions need streamlining for Version 2 – how do we do this ?

Needs evolutionary review as people develop systems

Extensions to Data Objects

Extensions being made – should these be made public for consideration for inclusion in the main data object

Jim David to lead the discussion to be continued at Meeting 2

Action: [Jim David](#)

Underway

Data Object Version Control

Each customer's position needs to be known at any one time to enable an assessment to be made as to which suppliers are "compatible" with the customer's existing UTMC system(s)

Action: For wider discussion

Process for Data Object approval (re Derek Renaud proposals)

It is proposed that this be reviewed at Meeting 2

Action: For wider discussion

Data Object evolution

It is proposed that this be reviewed at Meeting 2

Action: For wider discussion

Version Control

It is proposed that this be reviewed at Meeting 2

Action: For wider discussion

Session Management

Brendan – consolidation of IDL issues (session management, heart beat, termination) – needs an extension to the IDL which needs to be fed into the documentation – access to data objects eg. bus data between operators

Joint proposal to be built

Brendan to draft from existing Technical Note and circulate to USF Management Team for discussion at Meeting 2 –

Action: [Brendan Mason](#)

anyone planning any such extensions should advise them now to be included in Brendans note

Action: All meeting attendees

Subscription Modules

Data Objects are encapsulated data

Originally end user can set up individual views associated with data objects – constructs own data objects at run time

Does this compromise a data object approach

Has anyone implemented ?

Creating own views across the database is agreed as not being a good idea – could severely impact performance

Brendan to suggest removal in Specifications E-Mail

Action: [Ian Cornwell](#) / Brendan Mason to lead on proposal - need to consider TIH mechanisms – joint working ?

UTMC 10 Specification

There is a proposal to modify the Julian Date – the specification in UTMC 10 may be wrong ? Needs clarification

Amendments need to be put in to the modified documentation proposed

Mark to co-ordinate update

Action: [Mark Bodger](#)

Underway -

Application of Data Filtering

This refers to the defining of a generic structure for a filter to be applied to data objects

Do you apply at source to prevent high-bandwidth transfers

Do you apply at receiving end so client has the choice

Generic method being sought – Lancashire Demonstrator due to state how this has been handled ?

Different levels may be required – established at user session level / transient level / individual user views

Extend the interface to control the filtering and the user permissions at the table level

Gareth to take to UDG in liaison with the USF (taking into account what TIH is doing) to be included in the next version of the Technical Specification

Action: [Gareth Tilley](#)

Data Object Registry Updates

It was agreed that a number of updates needed to be made to the Data Objects Registry as defined below (row references relate to the document "UTMC Data Objects Status Summary" dated 25.07.2003)

(1) = Under *Meteorological* – a new tab is needed for Meteorological Support Objects into which the Support Objects in Rows 48 49 50 & 51 should be placed

(2) = Under *Network Structures* – a new tab is need for Network Structures Support Objects into which the Support Objects in Rows 56 59 62 & 63 should be placed + the Objects in Rows 57 & 58 should be changed to Data Objects

(3) = Under *Planned & Unplanned Occurrences* – a new tab is needed for Planned and Unplanned Occurrences Support Objects in to which the Support Objects in Rows 70 71 72n 73 & 74 should be placed

(4) = The "Day Type Data Object" should be moved into the *Profile Data Object* tab

(5) = The "Data Source Support Object" should be moved into the *General Support Objects* tab

(6) = The "Network Route Support Object" and the "Network Route Type Support Object" should be compared with the corresponding Objects in the *Network Structures* tab and the latest version placed in the *Network Structures Data Objects* tab or the *Network Structures Support Objects* tab as appropriate + the "Network Route Support Object" and the "Network Route Type Support Object" should be removed from the *Route Support Objects* tab

Action: [Gareth Tilley](#)

COMPLETED

Meeting 1 – Session 2

Network Node and Network Link data objects

To be reviewed against the agreed re-structuring

Action: [Mark Bodger](#)

Network Path and Network Geometry data objects

To be reviewed against the agreed re-structuring

Action: [Brendan Mason](#)

All data objects

To be reviewed to ensure no unforeseen consequences of the agreed changes are missed

Action: All

The Traffic Signal Data object

To be reviewed against the agreed re-structuring

Action: [Mark Bodger](#)

UTC Link Data Object

Siemens to consider the implications of the 'splitting into two'

Action: [Mark Bodger](#)

Transport Route Objects and Traffic Links

Rationalise the description of *Transport Route* objects as a collection of *Traffic Links* in a similar way to how *Network Routes* are described by a collection of *Network Links*

Action: Mark Bodger

Conduct a review of how the new fields will be used

Action: Mark Bodger

Journey Time Object

Consider making the *Journey Time* object a separate dynamic as for the *Traffic Link* object

Action: Mark Bodger

Commercial Review

The following 'Way Forward' was agreed:

- (9) Each company to consider the 'commercial implications' of the agreed changes to be made;
- (10) Any objections to the agreed changes following the consideration of the 'commercial implications' to be raised as soon as possible to the other suppliers represented in Meeting 1-Session 2;
- (11) Subject to full agreement to proceed – the agreed changes to be published to the wider USF Technical Working Group (at Meeting 2) as the baseline for future Data Object development;
- (12) Subject to full agreement to proceed – the agreed changes to be proposed to the UDG as the baseline for the Data Objects Registry – Version 2 on which all future systems enhancements and new systems will be based
- (13) To upgrade existing systems will have a cost implication – direct funding or funding through system upgrades / new systems or bespoke interfaces need to be created to manage the different interpretations - two elements to cost – updating "product" and then implementing at each customer site including the data reformatting + inter-system compatibility remain

Action: All

Meeting 2

The following actions were agreed at Meeting 2:

1. Champions to be actioned
Action: Gary Umpleby
COMPLETE
2. Champions take their objects from the Controlled Version 2 Registry, review, improve descriptions, identify generic referencing issues for generic list, propose updates and circulate, gain company agreement, back into controlled registry
Action: Champions

Meeting 3

The following actions were agreed at Meeting 3:

Revised Data Objects

Reference System

It is agreed that the Location Reference is now defined in the Network Structures and therefore ALL data objects will have the "ReferenceSystem" field removed **A: All**

Type Ids (see several references below)

All to consider if these fields should be mandatory – feedback to Janet **A: JA / All**

If reply is "Yes" then all Data Object Champions need to ensure that this is implemented in all Data Objects **A: Data Object Champions**

Traffic Signal Data Objects

Janet to send Gary the final version for submission to the controlled Data Objects Registry Version 2 file. **A: JA**

Air Quality Data Object

Question raised why has the measurement units moved from the Configuration Table to the Definition Table when this makes the Definition Table for Air Quality non-standard **A: BM**

Changing the pollutant Data Type to "Real" will mean that a number of "live" databases will need to be reformatted from "Integer" to "Real" – however, the data is received from the MIB in "Real" format. **A: JA / All**

Brendan requested to confirm before a switch to "Real" is agreed (why is a decimal fraction needed when we are measuring in parts per million anyway?). **A: BM**

In both the DYNAMIC and CONFIGURATION tables the "SystemCodeNumber" is missing – Brendan needs to put in (see JA E-Mail dated 25.11.2003) **A: BM**

In the Table / View Reference the references AIRQUALITY_DEF and AIRQUALITY_CONFIG need to be renamed AIRQUALITY_DEFINITION and AIRQUALITY_CONFIGURATION to be consistent **A: BM**

Air Quality Fault Types Object should be moved to become part of the Common Support Fault Types Support Object **A: BM**

Meteorological Objects

Meteorological Fault Type (Support) Object needs to be moved to the Common Fault Type Support Object **A: BM**

In the Table / View Reference the references METEOROLOGICAL_DEF needs to be renamed METEOROLOGICAL_DEFINITION to be consistent **A: BM**

Air Temperature is being proposed to be a "Real" value – is this really necessary due to need to reformatting data in several "live" databases – Brendan to confirm before change agreed **A: BM**

Agreed to move the Road Condition Type Support Object Into a single Support Object as separate tables **A: BM**

VMS Objects

Move the individual Support Objects into a single Support Object **A: BM**

Missing "_" in VMS_CONFIGURATION **A: BM**

Confirm "Y" in ET columns match up to the appropriate Support Object Tables **A: BM**

Detector Objects

Add TypeID with an appropriate Support Object to define "Detector Types" **A: BM / JA**

Initial list proposed =

- 0 = SCOOT Loops
- 1 = Count 1 count bit
- 2 = Count 2 count bit
- 3 = Occupancy 1 count bit
- 4 = Occupancy 2 count bit
- 5 = RMS – this type needs to be discussed (supplier specific) **A: JA**
- 6 = Artemis – this type needs to be discussed (supplier specific) **A: JA**
- 7 = Congestion
- 8 = Count 1 assignable bit

Janet to co-ordinate the final Detector Type list – all to provide Janet with their additions **A: JA / All**

Occupancy is being proposed to be a "Real" value – is this really necessary due to need to reformatting data in several "live" databases – Brendan to confirm before change agreed **A: BM**

If we intend to switch to using "Real" values should "Speed" also be "Real" ? **A: BM**

The Enhanced Detector Data Object is no longer needed – the Detector Data Object will provide this data **A: All**

Transport Objects

“TransportLinkType” within the data object should be renamed TypeID with its appropriate Support Object = Transport Link Support Object **A: JA**

Agreement needed as to which fields are required within the CONFIGURATION and DYNAMIC tables for SCOOT and ANPR links. Janet to circulate E-Mail requesting input **A: JA / ALL (replies to Janet)**

Need to introduce a Transport Route Type ID and associated Support Object **A: JA**

All to comment on Janet’s proposals issued in E-Mail dated 25.11.2003 – particularly the “ordered list” **A: JA / ALL**

Journey Time Object is no longer needed as this data will be provided by the Transport Route Data Object **A: All**

CCTV and other Interface Issues

Need to change the “interface specification” to accommodate the transmission of binary CCTV data.

Proposal is to “lose” the SQL interface – or should we add a new interface (should not remove existing interfaces ?). SQL has problems as you have to understand the structure of the data that you are accessing.

Could CCTV be resolved by passing the “image” out of the data object and leave the transfer of the “binary” to “local arrangements” ? ... pass a reference (which could be a file name). This is agreed to be a pragmatic approach at this stage to avoid delay in getting the Data Objects Registry Version 2 released. Stephen will progress this approach and document. **A: SC**

Session management needs addressing. Key players are the CDB suppliers – Siemens, Tenet and Motts + Peek. Consider views for initial proposal at the next meeting.
A: MB/JA/JM/BM/GU/JD/IC/BR

Meeting 4

The following actions were agreed at Meeting 4:

Revised Data Objects

Reference System

It is agreed that the Location Reference is now defined in the Network Structures and therefore ALL data objects will have the “ReferenceSystem” field removed **A: All**

Type Ids (see several references below)

All to consider if these fields should be mandatory – feedback to Janet **A: JA / All**

If reply is “Yes” then all Data Object Champions need to ensure that this is implemented in all Data Objects **A: Data Object Champions**

The Type ID table (below) structure to be moved to common data objects **A: All**

The Type Data Source should be used to differentiate between Type ID instantiations, for example a Peek Pelican or a Siemens Pelican

Type ID Table

Attribute Name	Attribute Type	Description	Data Type	Min size	Max size	Ma n	Co m me	Table/View refence

							nts	
TypeID	STATIC	Identifier for type	Number	1	10	Y		Traffic_Signal_TypeID
TypeID Description	STATIC	Description of type	Character	6	32	Y		

Type IDs need to be controlled -> therefore we need to a formal ID range 1-999 which is controlled by the Registry Administrator but individual suppliers will be allocated "blocks" from 1000 upwards in 100 chunks – Brendan to allocate and formalise **A:BM**

Brendan to formalise this data object **A:BM**

Traffic Signal Data Objects

Janet to send Gary the final version for submission to the controlled Data Objects Registry Version 2 file. **A: JA**

Janet to align with the Type ID changes proposed above **A: JA**

Janet to forward final Data Object to GU for GU Approval Circulation **A: JA**

Air Quality Data Object

Question raised why has the measurement units moved from the Configuration Table to the Definition Table when this makes the Definition Table for Air Quality non-standard **A: BM**

To maintain consistency with other Data Objects the decision = Measurements Units will now be placed in the Air Quality BASIC DATA component **A: All**

Brendan requested to confirm before a switch to "Real" is agreed (why is a decimal fraction needed when we are measuring in parts per million anyway?). **A: BM**

It is unavoidable (driven by the equipment supplier) – we will use "Real"

In both the DYNAMIC and CONFIGURATION tables the "SystemCodeNumber" is missing – Brendan needs to put in (see JA E-Mail dated 25.11.2003) **A: BM**

In the Table / View Reference (now Component Reference) the references AIRQUALITY_DEF and AIRQUALITY_CONFIG need to be renamed AIRQUALITY_DEFINITION and AIRQUALITY_CONFIGURATION to be consistent **A: BM**

Air Quality Fault Types Object should be moved to become part of the Common Support Fault Types Support Object **A: BM**

Brendan to complete above actions + align with the new Generic Data Object Structure **A: BM**

Brendan to forward final Data Object to GU for GU Approval Circulation **A: BM**

Meteorological Objects

Meteorological Fault Type (Support) Object needs to be moved to the Common Fault Type Support Object – **DONE (BM)**

In the Table / View Reference the references METEOROLOGICAL_DEF needs to be renamed METEOROLOGICAL_DEFINITION to be consistent – **DONE (BM)**

Air Temperature is being proposed to be a "Real" value – is this really necessary due to need to reformatting data in several "live" databases – Brendan to confirm before change agreed **A: BM - this will be Real A: BM**

Agreed to move the Road Condition Type Support Object Into a single Support Object as separate tables – these should be a Global Type Object so that everyone can refer to it and not just meteorological applications **A: BM**

Brendan to complete above actions + align with the new Generic Data Object Structure **A: BM**

Brendan to forward final Data Object to GU for GU Approval Circulation **A: BM**

Global Data Objects are to be advised

Road **A:BM**
Visibility **A:BM**
Precipitation **A: BM**
Data Source **A: JD**
Day Type **A: SC (but not for V2 –**

The Day Type Data Object needs to be extended in due course to accommodate the Calendar Data Object (to be defined in due course). For now we will stick with the Basic Day Type Data Object as in the Profile Support Data Object – Janet to supply a copy **A: JA**

VMS Objects

Move the individual Support Objects into a single Support Object – **DONE (BM)**

Missing “_” in VMS_CONFIGURATION – **DONE (BM)**

Confirm “Y” in ET columns match up to the appropriate Support Object Tables – **DONE (BM)**

Move TypeID into GENERIC DATA **A: BM**

Brendan to forward final GU Data Objects for GU Approval Circulation **A: BM**

Detector Objects

Add TypeID with an appropriate Support Object to define “Detector Types” **A: BM / JA**

This is covered by the TypeID actions above (based on the Revised Initial List below) **A: BM**

Initial List proposed =

0 = SCOOT Loops
1 = Count 1 count bit
2 = Count 2 count bit
3 = Occupancy 1 count bit
4 = Occupancy 2 count bit
5 = RMS – this type needs to be discussed (supplier specific) **Superseded (JA)**
6 = Artemis – this type needs to be discussed (supplier specific) **Superseded (JA)**
7 = Congestion
8 = Count 1 assignable bit

Janet to co-ordinate the final Detector Type list – all to provide Janet with their additions **Completed during meeting (All/JA)**

Occupancy is being proposed to be a “Real” value – is this really necessary due to need to reformatting data in several “live” databases – Brendan to confirm before change agreed **A: BM**

Decision = for consistency it would be better to change this to “Real” to avoid future potential problems

If we intend to switch to using “Real” values should “Speed” also be “Real” ? **A: BM**

Decision = for consistency it would be better to make Speed “Real” to avoid future potential problems

The Enhanced Detector Data Object is no longer needed – the Detector Data Object will provide this data **A: ALL**

It has been suggested that the Detector Object should have an additional DYNAMIC for Congestion (as a measure rather than a “yes / no” – Decision = for now such an attribute should be included as private table until a generic definition can be defined **A: ALL**

Brendan to forward final Data Object to GU for GU Approval Circulation **A: BM**

Transport Objects

"TransportLinkType" within the data object should be renamed TypeID with its appropriate Support Object = Transport Link Support Object **A: JA**

In the Transport Link Object the Generic Definition Component references a Transport Link which is not used in this particular object – this attribute should be removed in this Data Object **A: JA**

Agreement needed as to which fields are required within the CONFIGURATION and DYNAMIC tables for SCOOT and ANPR links. Janet to circulate E-Mail requesting input **DONE (JA / ALL (replies to Janet))**

It is suggested that there is a need to split the CONFIGURATION DATA into a BASIC DATA part and a CONFIGURATION DATA part – Siemens to consider (including Profile) and propose a solution **A: JA**

Need to introduce a Transport Route Type ID and associated Support Object **DONE (JA)**

All to comment on Janet's proposals issued in E-Mail dated 25.11.2003 – particularly the "ordered list" **A: JA / ALL**

LinkSystemCodeNumber is now TransportLinkReference
The following will now become "private" fields...

LinkStart
LinkVia
LinkEnd
SegmentLength
SCNExists
ConfigurationDate

The following attributes will be removed ...

SystemCodeNumber
PeriodNumber
StartPeriod
EndPeriod
DefaultJourneyTime
ConfigurationDate

Journey Time Object is no longer needed as this data will be provided by the Transport Route Data Object

Janet to forward final Data Object to GU for GU Approval Circulation **A: JA**

CCTV and other Interface Issues

Need to change the "interface specification" to accommodate the transmission of binary CCTV data.

Proposal is to "lose" the SQL interface – or should we add a new interface (should not remove existing interfaces ?). SQL has problems as you have to understand the structure of the data that you are accessing.

Could CCTV be resolved by passing the "image" out of the data object and leave the transfer of the "binary" to "local arrangements" ? ... pass a reference (which could be a file name). This is agreed to be a pragmatic approach at this stage to avoid delay in getting the Data Objects Registry Version 2 released. Stephen will progress this approach and document. **A: SC**

Session management needs addressing. Key players are the CDB suppliers – Siemens, Tenet and Motts + Peek. Consider views for initial proposal at the next meeting.

A: MB/JA/JM/BM/GU/JD/IC/BR

To be discussed in a future meeting

ADDITIONAL NOTES FROM DISCUSSIONS 15.01.2004

Definition of Data Types

Brendan to co-ordinate E-Mail discussion to construct a Data Type Definition Table for inclusion in the Registry (ensuring the due consideration is given to avoiding impact and change on the interface) **A: BM**

Generic Data Object Structure

Using the Generic Data Object Structure defined during the meeting, Brendan to provide general description document to explain the structure and the meaning of each element **A: BM**

Janet to re-vamp the Traffic Signal Data Object as an example of a specific implementation **A: JA**

Fault Objects

Jim to propose a Generic Fault Object + Support Tables and circulate for E-Mail discussion **A: JD**

Access Control Data Object

Jim to re-format to new Generic Template **A: JD**

The Access Control Support Object should be incorporated into the Access Control Data Object **A: JD**

Jim to forward final Data Object to GU for GU Approval Circulation **A: JD**

Car Park Data Objects

Transferred to Siemens to review – need to consider the availability of “raw” count data and the use of “Real” v “Integer” attributes **A: JA**

Car Park System Type Object – becomes part of the generic TypeID **A: JA**

Day of Week Type Object becomes “DayType” which is part of the Global Objects **A: JA**

DATE OF NEXT MEETING

Review Faults, Planned and Unplanned prior to next meeting for final discussion at the meeting **A: JD**

Stephen to propose interim CCTV solution for final discussion at the next meeting **A: SC**