Poseidon House
Castle Park
Cambridge CB3 0RD
United Kingdom

TELEPHONE: **Cambridge (01223) 515010**
INTERNATIONAL: **+44 1223 515010**
FAX: **+44 1223 359779**
E-MAIL: **apm@ansa.co.uk**

ANSA Phase III

Auxiliary projects

Rob van der Linden

Abstract

The MC and TC meeting of September 1995 asked for details of ReTINA, E2S, DCAN and Trends.

This document contains short description of each of the projects and details of the technical and commercial relationships between these projects and the ANSA Workprogramme.

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Project Management (confidential to ANSA consortium for 2 years)

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1 Introduction

1.1 Background

APM is involved in several part-publicly funded projects (E2S, DCAN, ReTINA, Trends) as well as the fully industry funded ANSA Workprogramme.

The current ANSA Workprogramme [APM.1275] is due for an update. A draft of the new workprogramme [APM.1528] was presented to the TC/MC in September 1995.

After consultation with the sponsors the extent of the ANSA prorgamme has gradually been reduced in response to (1) a need for a stronger focus on results which are usable in the short to medium term and (2) reduced funding.

APM has carefully selected new projects to complement the work being carried out in ANSA. The partners in ANSA now wish to understand the relationships between the projects.

1.2 Aim of this document

This document is to help ANSA sponsors

- understand what benefit they can derive from other part-publically funded projects in which APM is involved
- understand who is involved in which project
- understand the relationships between the ANSA Workprogramme and other projects in terms of IPR flows.

1.3 Audience

The audience for this document is composed of the Techncial and Management Committee members in companies sponsoring the ANSA Workprogramme.

1.4 Structure

- brief overview of each of the projects: DCAN, E2S, ReTINA, Trends, stating the aim of each of the projects, the approach taken, the organisation, funding and partnership;
- the relationships between the projects and the ANSA Workprogramme, organised by Project task group
- a statement of IPR relationships: who will be able to use what, on what terms and conditions etc.

2 Background to projects

2.1 DCAN

The DCAN (Distributed Control of ATM Networks) project is concerned with producing an architecture for and realisation of a scalable management system for ATM networks. Scalable here does not just refer to size, it means being able to cope with a range of system capabilities, including simple devices with limited functionality. Thus while retaining compatibility with developments in telecommunication system management, the emphasis is on ATM networks used to interconnect workstations and simple devices.

2.1.1 Objective

DCAN propose to develop a system which allows the distributed management platform to encompass a range of intelligences. While the TINA work is directed at wide area telecommunications, DCAN believe that much of the TINA / ANSA philosophy can be extended to local networks where elements are simpler and control will be distributed alongside applications.

DCAN aims to scale down to the desk area network.

2.1.2 Approach

As the basis for achieving distributed control DCAN require a distributed object platform that can meet stringent performance and dependability guarantees. Support for isochronous streams, real-time resource control and event handling is planned within the ANSA programme. DCAN propose to extend this work and port it to a microkernel, developed in the Cambridge Computer Laboratory, with support for time critical operations. This will be used as a platform for distributed management of an ATM network. The network will consist of switches, workstations, which themselves will use DIMMA for distributed applications, and simple ATM peripherals. A lightweight protocol family for the management of simple ATM peripherals will be defined.

The final result will be a distributed control platform and supporting services which will be scalable in both resource requirements and size from telecommunication networks, through LAN switches controlled by intelligent end systems, down to simple slave devices.

2.1.3 Organisation

The project has financial support under the DTI and EPSRC supported “High Performance Interfaces and Protocols” LINK Programme. The project partners are

- Architecture Projects Management Limited (Distributed Systems Architecture)
- Nemesys Research Limited (ATM devices)

- The University of Cambridge Computer Laboratory (operating systems and microkernels).

2.2 ReTINA

The ReTINA project is concerned with the design and development of a telecommunications ORB. It was set up to build the Distributed Processing Environment (DPE) proposed by TINA-C after consultation with ANSA in 1994-1995.

Both computer and telecommunications vendors are settling on the ISO/ITU-T Reference Model for Open Distributed Processing as a framework, and products based on the Object Management Group (OMG) standards as technology for the “distributed processing environment (DPE)” to support interactive, multi-media services.

There is a clear need to extend CORBA to meet the needs of developers of distributed interactive multi-media applications. The emergence of low cost broadband networks is opening a market for such applications, but development is inhibited by the lack of a high level applications platform which can meet both functionality and performance requirements.

Current distributed system products fall significantly short of meeting the requirements of new information network applications and services. In particular, current distributed system products are seen to be significantly lacking in terms of scalability and adaptability to different environments (from low-level network nodes to high-end management systems), and provision of appropriate performance and quality of service guarantees.

2.2.1 Objectives

The goal of the ReTINA project is to develop and demonstrate an industrial-quality Distributed Processing Environment (DPE) that meets the above requirements. Specifically, the objectives of the ReTINA project are threefold:

- DPE: to develop a TINA-compliant, industrial-strength DPE, and associated specifications for use by manufacturers and procurers;
- Demonstrators: to demonstrate and experiment with information network services implemented on the project’s DPE and involving heterogeneous environments, in terms of size and supporting technology;
- Standards: to establish its DPE platform and associated technologies as a world-wide de facto standard for TINA-C compliant telecommunications applications, and to contribute to the development of standards for the telecommunications industry at large.

2.2.2 Deliverables

The ReTINA project will develop an industrial-strength, TINA-compliant distributed processing environment together with a set of associated application development tools and a set of service demonstrators implemented on the project’s DPE.

The ReTINA project will use as a basis:

- the ISO/ITU-T ODP Reference Model;

- OMG's CORBA specifications (including Object Request Broker and Common Object Services specifications);
- TINA-C specifications (logical framework architecture, service architecture, connection management architecture).

In terms of technology, the project will deliver the following results:

- a CORBA-compliant and TINA-compliant distributed object-based DPE, with real-time and quality of service management capabilities;
- generic object services integrated on the DPE and aligned with OMG and TINA-C specifications;
- generic connection management services aligned with TINA-C specifications;
- application development tools to ease the mapping of applications to the DPE.

2.2.3 Organisation

Project size is 12 MEcus (approx. $17M) over 3 years, launched on September 1st., 1995, supported by the European Union, under the Advanced Communications Technology and Services (ACTS) Programme, Project AC048 - ReTINA.

Participating Companies are

- Technology Companies:
  - Chorus Systems (France): Microkernel Operating System (Coordinating Contractor) .
  - APM (UK): Distributed Systems Architecture .
  - BroadCom (Ireland): Telecommunication services .
  - O2 Technology (France): Object-Oriented Databases
- Telecommunication manufacturers:
  - Alcatel (France): Private and public networks
  - Hewlett-Packard (UK): Telecommunications equipments and services
  - Siemens (Germany): Private and public networks
- Public Network Operators:
  - France Telecom (France)
  - British Telecom (UK)
  - CSELT (Italy): linked to Italian Telecom
  - TeleNor (Norway)

2.3 E2S

E2S aims to contribute to the development of electronic commerce on the Internet by developing and installing end-to-end security mechansisms for commercial transactions using the Internet infrastructure. The intention is to make a professional infrastructure that is attractive to business and consumers, and to support the economic growth that the Information Society offers.

2.3.1 Objective

The objective of E2S are to:

- investigate secure commercial and business operation over the Internet and build the corresponding architecture model;
- explore the multi-cultural and mult-country aspects of the models;
- design and implement end user and server facilities and arrange for user evaluation at all stages;
- monitor and contribute to standards and market developments;
- build prototype application packages and arrange their assessment by the consortium user members.

2.3.2 Approach

The project will institute schemes that are appropriate to general forms of transaction, but which share core technologies that will allow businesses to use a common framework for electronic transactions of varying scales and requirements. The approach will be to make a pragmatic assessment of partner requirements, design appropriate solutions for these requirements and generalise across each set to produce the common technology framework for graceful, appropriate, large-scale electronic commerce.

The general technical approach will be to establish electronic transfer schemes for a model of business being adopted by the consortium members, based on user specifications. There are at least 5 different areas with very different requirements and the initial phase of the project will define a model which covers key aspects of the different areas.

- Retail
- Business-to-business
- EDI
- Service subscription
- Customer support

The project is likely to concentrate on retail and business-to-business areas. These are very important especially in an SME context.

2.3.3 Organisation

The project is supported by the European Union under the Framework IV Programme. The project partners are:

- APM Ltd. (UK),
- Gemplus (F),
- GMD German Research Centre in IT (D),
- Hewlett Packard
  - — Grenoble Networking Division (F),
  - — European Research Laboratories (UK),
  - — World-wide Customer Support Organisation,
- Octacon Ltd. (UK),
- Technische Universitat Berlin (D: end user,

- Swiss Bank Corporation (CH): end user,
- Smart Card Forum (International): end user.

2.4 Trends

Note: Information on Trends to be added

3 Relationship to ANSA workpackages

3.1 E2S

E2S will deliver:

- security requirements and these will impose upon the DIMMA architecture, design and implementation
- secure transactions and authentication facilities which will enhance the services offered in the context of the ISF activities in ANSA

E2S will:

- demonstrate the ability to build services efficiently using stubcompiler technology under development in the ISF group
- prove the DIMMA infrastructure, subject to the Internet community moving to true objects in the web for instance.

3.2 DCAN

DCAN will deliver:

- experience in applying DIMMA over an ATM network
- experience with low level management of devices, feeding into the QoS management activity
- ports to Windows/NT

DCAN will prove:

- the DIMMA nucleus concepts in an ATM setting

3.3 ReTINA

ReTINA will deliver:

- an opportunity to contrast the different approaches to building a real time (telecommunications) ORB
  - — by starting from an existing CORBA implementation (HP ORBlite)
  - — by starting from the ODP computational model (DIMMA)
  - — by starting from a real time kernel with ORB like extensions (Chorus COOL)
- an understanding of real application requirements (telco services)

ReTINA will prove:

- ANSA assumptions about multimedia platform requirements
- the DIMMA multi-media platform interface specifications (but not the implementation of the DIMMA nucleus), API and tools

3.4 Summary of workpackage relationships

The tables below describe the relationships between the workpackages in the auxiliary projects and tasks in the ANSA Workprogramme. Delivery dates for the auxiliary project deliverables have been included to illustrate when results from these projects become available.

Table 3.1: DCAN deliverables

Task	Title	Delivery date	Related ANSA task	
2.1	State of the Art Report	31/8/95	B1	Basic DIMMA
2.2	ANSAware/RT	31/7/95		
2.3	Redesigned/impl nucleus	31/8/96	B1 B5	Basic DIMMA DIMMA with QoS negotiation
2.4	Extended programming tools	28/2/97	B6	DIMMA with controlled QoS
2.5	Isochronous components	31/8/97	B6	DIMMA with controlled QoS
2.6	Platform evaluation	14/2/98		
3.1	ATM MM API Definition	30/11/95	B1	Basic DIMMA
3.2	UNIX & NT implementation	31/5/96	B2	DIMMA with streams
3.3	optimised UNIX impl	28/2/97	B2	DIMMA with streams
3.4	Pegasus impl	31/8/97		
3.5	API evaluation	14/2/98	B1	Basic DIMMA
4.1	protocol selection	30/4/95		
4.2	master end impl	30/11/95		
4.3	distr. control system design	28/2/96	B4	DIMMA life cycle mgmt
4.4	distr ctl syst impl UNIX	30/11/96	B4	DIMMA life cycle mgmt
4.5	distr ctl syst impl Pegasus	30/11/97		
4.6	demo ctl syst evaluation	14/2/98	B4	DIMMA life cycle mgmt
5.1	meta signalling review	31/5/95		
5.2	protocol definition	30/11/95		
5.3	protocol implementation	28/2/96		
5.4	FE ANSAware management	30/11/97	B4	DIMMA life cycle mgmt
5.5	FE Pegasus	31/8/97		
5.6	demo AVA	30/11/97		
5.7	evaluation	14/2/98		

Table 3.2: E2S deliverables

Task	Title	Delivery date	Related ANSA task	
D1	overall architecture	31/5/96	B1 C1	Basic DIMMA Well engneered web
D2(a)	system design	31/8/96	C2	WWW over basic DIMMA
D2(b)	update design	28/2/97	C2	WWW over basic DIMMA
D3	security models & policies	31/5/96		
D4(a)	standards report #1	31/8/96		
D4(b)	standards update	30/11/97		
E1(a)	implementation plan	28/2/96		
E1(b)	implementation update plan	30/11/96		
E2	implementation specs	28/2/97	B3 C4	CORBA personality DIMMA Broadband WWW with QoS
E3	client tools	31/5/97	C4	Broadband WWW with QoS
E4	transaction sec & auth.	31/5/97		
E5	server tools	30/11/96	C4	Broadband WWW with QoS

Table 3.3: ReTINA deliverables

Task	Title	Delivery date	Related ANSA task	
D1.01	DPE Kernel V0	31/1/96	B1	Basic DIMMA
D1.02	DPE Req. spec	30/4/96	B2	DIMMA with streams
D1.03	DPE arch spec V1	31/7/96	B5	DIMMA with QoS negotiation
D1.04	DPE Kernel V1	30/9/96	B5	DIMMA with QoS negotiation
D1.05	DPE arch spec V2	30/4/97	B6	DIMMA with controlled QoS
D1.06	DPE Kernel V2	30/9/97	B6	DIMMA with controlled QoS
D1.07	DPE refined implementation	31/8/98	B7	DIMMA consolidation
D2.01	DPE services req. spec	30/4/96	B4	DIMMA life cycle management
D2.02	DPE services specs V1	31/7/96	B4	DIMMA life cycle management
D2.03	DPE services impl V1	31/10/96	B4	DIMMA life cycle management
D2.04	DPE services specs V2	30/4/97	B4	DIMMA life cycle management
D2.05	DPE services impl V2	31/10/97	B4	DIMMA life cycle management
D2.06	DPE services refined	31/8/98	B4	DIMMA life cycle management

4 Intellectual Property arrangements

All the below details are in line with the agreement with the European Commission regarding IPR on ISA.

4.1 E2S, DCAN and Trends

In respect of the E2S, DCAN and TRENDS projects, which are synergistic with the ANSA Workprogamme and which contribute to, rather than draw upon ANSA, APM will make available to ANSA sponsors all the foreground which APM generates as a result of the projects. It should be noted, of course, that APM cannot pass on results which it does not itself generate. Such results may be available through negotiation with the full project consortium. Furthermore, in each of the projects, APM has a role of inputting appropriate results to standards bodies as determined by the project consortium.

4.2 ReTINA

In respect of the ReTINA project, which draws upon ANSA as well as contributing to it , APM has arranged to protect the ANSA results from free exploitation by other members of the ReTINA consortium who are not sponsors of the ANSA Workprogramme. In line with the Management Committee Policy, therefore, the following statement is included in the ReTINA Consortium Agreement.

“Certain IPR resulting from the commercially-funded Phase III ANSA Programme of Research and Development in Distributed Systems may be brought to the ReTINA project by one or more of the partners. For the avoidance of doubt, this Background is commercially available IPR and will be provided under the terms of the ANSA Sponsorship Agreement. Any subsequent use of such IPR in exploitation shall be licensed on fair and reasonable commercial terms to be agreed by the exploiting company with the group of companies who are parties to the ANSA Sponsorship Agreement; such licences shall not be unreasonably witheld.”