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Distributed Control of ATM Networks

Management Report Q3: 1/9/95 - 30/11/95

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Abstract

This document is the third quarterly management report for the DCAN project.

It covers the period 1 Sept. 1995 to 30 Nov. 1995.

APM.1678.01

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Project Management (confidential to the DCAN consortium)

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1 Overview

1.1 Summary

The project is on schedule, but slightly underspent on overall effort at this stage. CUCL's resource shortage, reported in the previous report is currently being addressed by employing unfunded research students as a stop gap. Nemesys have under-spent by 0.5 pm due to their relocation in Cambridge. APM have overspent and as a result are ahead of schedule on the nucleus definition and implementation.

Technical progress is good with some re-arrangement in activities to cater for developments in the market and in standardisation of protocols. Specifically:

- activities 5.2 (switch control protocol definition) and 5.3 (switch control protocol implementation) are not sequential as originally planned. It is proving infeasible to define a protocol and then implement it without regard for the market place and standardisation activities in the area. Nemesys is finding partners to help bring extensions to existing switch control protocols to the ATM Forum. The definition of these protocols is being supported by pilot implementation work. The combination of activities 5.2. and 5.3 is still on target for delivery at the end of Q4. However, further modifications should be expected as market and standards progress.
- activity 4.3 (object model for switch control) heavily depends on what the switch control protocol capabilities will be. Switch control capabilities are being discussed in standards fora (ATM Forum) and the DCAN project has limited power to control the outcome of these discussions.
- activities 3.1 (ATM MM API definition) and 3.2 (ATM MM API implementation) also benefit from parallel development. The API is closely related to the object model for switch control.

Despite these internal and external dependencies the project remains on schedule.

Activity 2.1 (State of the Art Report) was delivered in the reporting period.

The Level 2 Plan received one further minor adjustment (in the resource plan) after comments from the Project Monitoring Officer.

2 Report by activity

The following is a report of progress of the activities which are in progress according to the DCAN Level 2 plan (APM.1457.01.02).

Progress is summarised in the table below.

Table 2.1: Summary of progress by activity

Task	status	compared with plan
2.1	completed Q3	-
2.2	completed Q2	-
2.3	in progress	ahead of schedule
2.4	not started	-
2.5	not started	-
2.6	not started	-
3.1	in progress	behind schedule*
3.2	in progress	ahead of schedule
3.3	not started	-
3.4	not started	-
3.5	not started	-
4.1	completed Q1	-
4.2	completed Q2	-
4.3	in progress	on schedule
4.4	not started	-
4.5	not started	-
4.6	not started	-
5.1	completed Q2	-
5.2	in progress	behind schedule*
5.3	started	on schedule
5.4	not started	-
5.5	not started	-
5.6	not started	-
5.7	not started	-

* now running in parrallel with tasks 3.2 and 5.3.

2.1 Workpackage 1: Project Management

Workpackage leader: APM

2.1.1 Project plan

The plan received one further very minor update: the effort figures should have indicated "person-months". The current version of the plan is APM.1457.01.02.

2.1.2 Other issues

The DCAN project plan to attend the HPIP meeting at the DTI on Feb. 7th 1996.

ANSA's sponsorship and Nemesys' customers are deemed to form the initial "user group" for the DCAN project.

DCAN now has a web page at: <http://www.ansa.co.uk/DCAN/index.html>

2.2 Workpackage 2: ANSA for time constrained systems

Workpackage leader: CUCL

2.2.1 Activity 2.1: Platform: State of the Art Survey and proposal

The activity has been completed in Quarter 3.

This document should have been completed at the end of Q2. In draft form it has been available to all partners since then, thus no delays in other work packages were incurred. Other work had been given priority over formal completion of the document [APM.1529.01].

The State of the Art report contains Requirements, Operating System issues, Middleware (CORBA limitations), Telecommunications (TINA limitations) and suggest an RT nucleus, MM API and CORBA personality. The proposal part covers the Binding Model, the Streams Model, Events and Scheduling.

2.2.2 Activity 2.3: Re-design and implementation of the ANSAware nucleus

The activity has started and is on target for delivery in Q6.

A pilot implementation of the new nucleus will be completed in December and handed to CUCL for evaluation. It allows controlled allocation of resources to applications and has a modular communications structure which in due course will allow ATM protocols to be included.

CUCL will be basing their designs on the new ANSAware nucleus and include their Pegasus developments.

2.3 Workpackage 3: ATM API

Workpackage leader: CUCL

2.3.1 Activity 3.1: ATM multimedia API

Activity is now on target for delivery Q4 (one quarter late).

Several brainstorming sessions on the nature and functions of the ATM multimedia API were held in early October 1995. The API should fit with the directions industry at large is following. Since industry is moving quite slowly in this area, it is difficult for the project to make hard decisions about its API.

Reviews of currently available APIs have been completed and available to project members in report form from CUCL. Nemesys is building up experience with the APIs provided in current product. This means that whilst task 3.1 is slightly delayed, task 3.2 gets a flying start. The DCAN API is likely to be UNIX and Win32 based and a super-set of the APIs offered in industry products today.

A draft document on the API will be drafted by CUCL for mid January 1996.

2.3.2 Activity 3.2: ATM multimedia API: portable implementation

Activity started ahead of schedule.

Nemesys is evaluating several APIs available in current products. The experience gained is at the implementation level.

2.4 Workpackage 4: Control of ATM switches

Workpackage leader: APM

2.4.1 Activity 4.3: Object model for distributed switch control

This activity started late due to staff changes at CUCL; it is on target for delivery in Q4.

The activity is closely related to activity 5.3. The project feels that some experimentation with switch control protocols is needed before an object model can be agreed. Such experiments are being carried out in activity 5.3.

An interim report [APM.1680], describing switch control protocols in terms of policies which look like interfaces and further management interfaces through which the switch can be controlled has been produced by CUCL and is available to the consortium.

Links have been established with Laurent Hazare (Columbia University) who has designed X-bind, a CORBA interface to the signalling interface. DCAN members will attend the OpenSIG meeting at Columbia in April 1996.

2.5 Workpackage 5: Control of simple devices

Workpackage leader: Nemesys Research

The definition of the protocol (activity 5.2) and its implementation (activity 5.3) are progressing hand-in-hand. Experience with implementation is fed back into the definition phase and then discussed in the standards arena. Progress in standards making cannot be dictated by a project such as DCAN. The project is influencing standards in this area and therefore progressing on its best guess of the direction industry is moving. Activities 5.2 and 5.3 are not sequential as originally planned. Activity 5.2 is thus set to be completed behind schedule.

2.5.1 Activity 5.2: New protocol definition

This activity will be delivering in Q4 (one quarter late).

The practicality of getting a new protocol accepted in current market conditions have been questioned. It is likely that Q2931 will actually be chosen. Nemesys is negotiating extensions to existing protocols and is finding support for these extensions in ATM Forum.

2.5.2 Activity 5.3: New protocol implementation

This activity is on target for delivery in Q4.

The design for locating the switch control function in a workstation was completed. The loop-back through the AVA-200 device is not considered architecturally clean. A better implementation is available using the FairIsle switch from CUCL. Simple extensions of existing protocols with a “managed-by” attribute is supported by ATM Forum as well as companies such as ATML.

3 Effort

The effort expended and the planned effort over the period were as follows:

Table 3.1: Effort in person-months

Partner	Effort this period	Effort up to last period	Effort to date	Effort planned	under/over spend
APM	7.89	26.68	34.57	28.50	6.07
CUCL	3.00	7.00	10.00	17.50	(7.50)
Nemesys	2.50	6.50	9.00	9.50	(0.50)
total	13.39	40.18	53.57	55.50	(1.93)