The Clinical View
of the
Common Basic Specification

The Cosmos Project
Clinical Process Model
Version 2.0

Prepared by:	Thomas Cairns
	Anne Casey
	Martin Fowler
	Mark Thursz
	Hazim Timimi
IMC Consultant:	Gerry Gold
Project Manager:	Michael Thick

BT Gold: NHS 500

Table of Contents

Introduction

The Cosmos Project

The Cosmos Project was based at St Mary's Hospital, Paddington, London. It was funded from 1990-1992 by the National Health Service Information Management Centre, and led by Mr Michael Thick, Consultant Transplant Surgeon at St Mary's. Its principal product, The Clinical Process Model, is the Clinical View of the Common Basic Specification (CBS). CBS Version 2.0, was completed at the end of 1992. It is a generic model of the business of healthcare, and of the data required to support it. The model resulted from a significant investment by the NHS Management Executive, many participating health organisations and their staffs in England and Wales. It is now being widely used, and its value assessed in practice.

The Cosmos Clinical Process Model

The Cosmos Model of clinical care is designed to cater for the clinical record. It allows the record of clinical care to be as complete or as limited as required in given circumstances.

This document contains a description of Version 2.0 of the Cosmos Clinical Process Model (CCPM). It replaces all previous releases of that model.

The model itself includes an Activity Diagram (described in Section 1), a Concept Diagram (Section 2), and an Event Diagram (Section 3). Each section has at its beginning a fold-out guide to the graphical symbolism used in that section. Inside the back cover of Volume 1 there is fold-out illustration of the entire Concept Diagram. Volume 2 comprises a Glossary of all Concept Names.

The Cosmos project has settled on a number of terms in collaboration with other clinical projects funded by the NHS Information Management Centre (IMC). It was agreed that, in the absence of any better single term, 'clinician' would be used to refer to any health care professional (doctors, nurses, physiotherapists, etc). Likewise, 'clinical' is a descriptor defined by the scope of a clinician's work. The professions involved in health care are distinguished by a body of knowledge and experience, in which specialist training is required, and to which some common affiliation is made. The 'clinical process' is regarded as covering any act that has clinical import, and that is informed by the health care professions' corpus of knowledge.

Because the various IMC projects with which we collaborated were concerned with the care of individual patients, groups of patients (including family groups), as well as populations, the term 'object of care' was selected to represent one or more individuals who were the focus of clinical care.

The modelling work has been constrained by what it is possible to place in any record, whether paper or computer. We have focused on the complexity of clinical decision making and interpretation, and the extent to which the process of making decisions and forming interpretations can be recorded. It would not have been possible to do that by

looking solely at existing paper records, although we have looked closely at the many advantages paper has in terms of how flexibly, even vaguely, information can be recorded. Instead the model is the result of regarding the <u>process</u> of care with constant reference to those concepts that are necessary and sufficient for a record of the process to be complete.

Of course, a proportion of clinical care is based on the instincts and hunches of clinicians. Such intuitive contributions are no less valuable for being all but impossible to record. They can be spoken of (how effectively depends on the eloquence rather than the insight of the clinician), but not written down. No provision has been made as yet in the Cosmos model for those thoughts and decisions that are not currently recorded, but which are nevertheless a significant part of the clinical process.

Information system designs that use the model as a logical base must be customised to the needs of individual establishments, departments, or clinicians. For each design the necessary component of the model is extracted and extended with regard to the specialised use intended for it. This can be done without sacrificing the advantages of using a core model as the logical base. The advantages include an understanding of how all systems using the same logical base can be completely integrated. Designs can also be re-used across areas of specialised interest.

The model is not intended to be prescriptive. It is possible to extract from the model designs that cater for a record that is as detailed or as limited as the circumstances require it to be.

Preface

Quality Assurance

Quality assurance of Version 2.0 of the Cosmos Clinical Process Model was undertaken by:

Rosemary Currell
Research Midwife
NHS Information Management Centre (IMC)

David Jones
Principal Consultant
NHS IMC

Dr Michael Message
Director of Medical Studies
St Catharine's College
Cambridge

Dr Conamore Smith
Director - Services for Women
Parkside Health Trust
Raymede Clinic

Three day-long meetings were held over five months to review the report and its revisions. The report and each revision were distributed about two weeks before each meeting.

The Quality Assurance panel agreed to address the following questions:

- Is the model internally consistent, in terms of:

  the view taken of the clinical process;

  use of the object-oriented modelling technique.

- Is the perspective taken too biased towards one discipline or profession?

  Is too singular a view taken of the discourse between patient and clinician?

- Is the level of abstraction - too high, too low?

- Are there any significant gaps in the model as a representation of the clinical process?

After revision, the panel reported favourably on the model and the supporting documentation. All members were appreciative of the modelling technique and judged that it had been used consistently. The perspective taken of the clinical process was thought to have been consistent and sufficiently broad and inclusive to justify viewing the model as appropriate to many different disciplines, not simply hospital medicine.

The panel members were happy that from the first meeting they were able to maintain a consistent and unchanging approach. A further conclusion and recommendation was that quality assurance cannot be taken any further until development of a prototype system is well under way.

Common Basic Specification (CBS) Version 2

Extensive work has been done to integrate CBS Version 2 and CCPM 2.0. A report is available detailing the equivalencies and necessary extensions to the CBS to incorporate the CCPM. The report can be obtained through Gerry Gold.

Cosmos bibliography

CBS Development Project - Feasibility Reports: March 1989 & September 1989.

Human Organ Transplants Register, a Logical Model: March 1990.

CCPM Version 1.0: released after completion of Quality Assurance in November 1990.

Fowler M. A comparison of object-oriented analysis and design methods. Tutorial at OOPSLA, Vancouver October 1992.

Cairns T, Fowler M. A case study of domain analysis: health care. Tutorial at OOPSLA, Vancouver October 1992.

Thick M, Gold G. Clinical information system: tools for clinico-managerial interface. Conference paper: Health Care 92, Harrogate 1992.

Gold G, Thick M. Systems evolution: the challenge of real time. Conference paper: Systems Science in Health Care, Prague 1992.

Cairns T, Timimi H, Thick M, Gold G. A generic model of clinical practice - the Cosmos Project. In: Lecture Notes in Medical Informatics 45 (eds. Adlassnig K-P, Grabner G, Bengtsson S, Hansen R.) Pubs. Springer-Verlag 1991.

Cairns T, Timimi H, Thick M, Gold G. Patient selection for transplantation - the Cosmos model. Conference paper: MIE 91, Budapest August 1991.

Fowler M. The use of object-oriented analysis in medical informatics for large integrated systems. Conference paper: Technology of Object-Oriented Languages and Systems, Paris 1991.

Fowler M, Capey A. The use of object-oriented analysis to define a generic model for health care. Paper presented at SCOOP-Europe 1991.

Common Basic Specification bibliography

An explanation for the general reader is available in a booklet entitled:

The Common Basic Specification - Proving its Worth.

More than thirty development projects contributed detailed material which was used in the construction of the generic model.

Where possible, this detailed material has been reviewed against the completed generic model, and specific Application Views produced for publication during 1993. This View is the result of one such analysis. The Views comprising the set to be published cover the following areas:

Clinical Practice
Clinical Audit
Human Resource Management
Maternity Care
The Minimum Data Set
Paediatric Care
Pharmacy
Public Health
The RICHE ESPRIT project

Other development material, whilst not being published, is available from the Information Management Centre.

Acknowledgements

The Hospitals for Sick Children PACE Project:
Peter Helms, Andy Capey, Simon Horslen, Sue Peacham, Rob Ross-Russell, Keith Smith.

St Thomas's Hospital DiabPtech Project:
Peter Sonksen, John Harrison, Fiona Harvey.

ADT (Europe):
Paul Edwards, Brad Kain, Matthew Thomas.

Cosmos Office:
Wendy Bryant.

John Edwards (author of Ptech).

John Hope.

Jim Odell.