APPENDIX D

IDEFØ MODELLING CONCEPT

IDEFØ (Integration DEFinition language 0) is a structured design analysis technique developed by Douglas T. Ross and SofTech, Inc of United States. In its original form, IDEFØ includes both a definition of a graphical modelling language (syntax and semantics) and a description of a comprehensive methodology for developing models.

IDEFØ may be used to model a wide variety of automated and non-automated systems. For new systems, IDEFØ may be used first to define the requirements and specify the functions, and then to design an implementation that meets the requirements and performs the functions. For existing systems, IDEFØ can be used to analyze the functions the system performs and to record the mechanisms (means) by which these are done.

The result of applying IDEFØ to a system is a model that consists of a hierarchical series of diagrams, text, and glossary cross-referenced to each other. The two primary modelling components are functions (represented on a diagram by boxes) and the data and objects that inter-relate those functions (represented by arrows).

As a function modelling language, IDEFØ has the following characteristics:

1. It is comprehensive and expressive, capable of graphically representing a wide variety of business, manufacturing and other types of enterprise operations to any level of detail.
2. It is a coherent and simple language, providing for rigorous and precise expression, and promoting consistency of usage and interpretation.
3. It enhances communication between systems analysts, developers and users through ease of learning and its emphasis on hierarchical exposition of detail.
4. It is well-tested and proven, through many years of use in Air Force and other government development projects, and by private industry.
5. It can be generated by a variety of computer graphics tools; numerous commercial products specifically support development and analysis of IDEFØ diagrams and models.

In addition to definition of the IDEFØ language, the IDEFØ methodology also prescribes procedures and techniques for developing and interpreting models, including ones for data gathering, diagram construction, review cycles and documentation. Materials related solely to modelling procedures are presented in the informative annexes of this document.

IDEFØ is a modelling technique based on combined graphics and text that are presented in an organised and systematic way to gain understanding, support analysis, provide logic for potential changes, specify requirements, or support systems level design and integration activities. An IDEFØ model is composed of a hierarchical series of diagrams that gradually display increasing levels of detail describing functions and their interfaces within the context of a

system. There are three types of diagrams: graphic, text, and glossary. The graphic diagrams define functions and functional relationships via box and arrow syntax and semantics. The text and glossary diagrams provide additional information in support of graphic diagrams.

IDEFØ is an engineering technique for performing and managing needs analysis, benefits analysis, requirements definition, functional analysis, systems design, maintenance, and baselines for continuous improvement. IDEFØ models provide a "blueprint" of functions and their interfaces that must be captured and understood in order to make systems engineering decisions that are logical, affordable, integrate-able and achievable. The IDEFØ model reflects how system functions interrelate and operate just as the blueprint of a product reflects how the different pieces of a product fit together. When used in a systematic way, IDEFØ provides a systems engineering approach to:

1. Performing systems analysis and design at all levels, for systems composed of people, machines, materials, computers and information of all varieties - the entire enterprise, a system, or a subject area;
2. Producing reference documentation concurrent with development to serve as a basis for integrating new systems or improving existing systems;
3. Communicating among analysts, designers, users, and managers;
4. Allowing coalition team consensus to be achieved by shared understanding;

5. Managing large and complex projects using qualitative measures of progress;
6. Providing a reference architecture for enterprise analysis, information engineering and resource management.