INHOUSE TAILORED WORKSHOPS

- **3-Day DATA MODELING WORKSHOP**

Data Modeling Workshop (3 days)

Purpose of the Workshop

This 3-day workshop teaches business managers and their staff ("business experts") as well as analysts, data administrators and data base administrators ("IT experts") how to work together in a design partnership to develop a data model for their organization. It comprises two major topics:

- Business Data Modelling Concepts
- Business Normalization Concepts

The workshop teaches students, through many exercises with sample solutions, how to develop a data model that provides a blueprint of the data needed to support business processes, and the information needed by management for decision-making. A data model is a prerequisite for:

- Development of integrated data bases to be used for applications and for redevelopment of legacy systems

- Development of a Corporate Metadata Repository for databases and data warehouses, and for later implementation using XML and Service-Oriented Architecture (SOA) rapid delivery technologies

What is Business Normalization?

Business normalization applies a number of business rules to the definition and meaning of data, so enabling business experts and IT experts to identify data and information that are needed for the organization based on its current needs, as well as its anticipated future needs.

It ensures that the many uses of that data throughout an organization can be satisfied from a single non-redundant version. Thus information derived from that single data version is able to be maintained consistent and up-to-date. Common reusable business processes can also be defined that operate efficiently against the data.

Data Administrators and Data Base Administrators have used normalization techniques for years to design data bases that readily accommodate change. These techniques are often called *"Traditional Normalization"* to distinguish them from *"Business Normalization".* Traditional normalization has been found to be difficult for business experts to apply. In contrast, Business Normalization uses a variation in the normalization rules that business experts understand more readily. They can participate actively with IT experts, using business knowledge to develop normalized data models that reflect great business expertise. With business and IT experts working together in a design partnership, data bases are designed to incorporate business rules and expert rules that address current and future business needs.

Business normalization is a vital component of data modeling which, in turn, is an essential prerequisite for development of data bases and data warehouses, for business transformation to take advantage of the Internet and corporate Intranet technologies and for definition of metadata for later implementation using XML, SOA and other rapid delivery technologies. Business normalization can also be used to identify data used by legacy systems and data bases, and develop data models to migrate the legacy data to other environments.

Prerequisites

- This course has no prerequisites. It can be attended by business staff (with no IT knowledge) who – as business experts – will work with IT staff on data modeling projects. It also can be jointly attended by IT staff who will work with the business experts on data modeling projects.

Audience for the Course

- Business managers and their staff who need to understand the concepts of data modeling, so they can participate actively in a partnership with IT staff in data modeling projects that draw on their business expertise.
- IT managers, data administrators and systems development staff who also need to understand the concepts of data modeling to participate with business managers and business staff in data modeling projects, and so enable the IT staff to draw on their systems development expertise in a design partnership with the business experts.

Business Data Modeling Objectives

On completion of this part of the course, both business experts and IT experts will understand:

- How data modeling and data mapping are used to represent expert business knowledge.
- How data entities, attributes and associations are used to represent business meaning in a design partnership with business and IT staff.
- How data modeling can be used to represent management information needs and the underlying data in data models that enable rapid business change.
- How data modeling can identify business requirements for data bases, for Data Warehousing projects and for metadata-based projects such as using XML and SOA
- How data modeling can be used for Forward Engineering and Reverse Engineering

Business Normalization Objectives

On completion of this part of the course, both business experts and IT experts will understand:

- How to develop a normalized entity list from any unnormalized data source.
- How business normalization can be used to identify current business needs.
- How business normalization can be used to eliminate redundant data versions, to implement integrated data bases that can be used more effectively.
- How business normalization can be used to identify reusable business processes that can be implemented once, yet shared as common, standardized processes throughout an organization
- How business normalization can be used to identify future business needs and cross-check the accuracy of business meaning, to design for the future.

- How expert knowledge can be captured in fifth business normal form (5BNF) Structure entities to manage knowledge as a valuable business asset.

- How business normalization and data mapping both support each other, and how they can be used iteratively in data modeling to uncover business meaning.

- How business normalization identifies and refines the metadata needed to populate metadata repositories for use with XML, SOA and other rapid delivery technologies

Business Data Modeling Course Outline

- ***Data Modeling Concepts:*** Introduces and defines the components of a data model - data entities, attributes and associations, and their representation in data maps and entity lists.

- ***Data Entity Types:*** Defines and illustrates the use of each data entity type - principal (supertype) entities, secondary (subtype) entities, type entities, role entities, intersecting entities that are used to represent business activities, processes and systems, and structure entities that are used to capture expert knowledge for development of dynamically-updated expert data bases.

- ***Data Mapping Conventions:*** Introduces conventions used to document data maps, and represent business strategies for strategic analysis of business alternatives.

- ***Strategies and Associations:*** Shows how data maps can be used for rapid feedback to management for refinement of strategic alternatives.

- ***Data Attribute Types:*** Defines and illustrates the use of primary and foreign keys, compound keys and candidate keys. Defines and illustrates non-key attributes including secondary keys (i.e. selection attributes), derived attributes, elemental attributes, group attributes and repeating groups.

- ***Course Exercises:*** Course exercises of increasing difficulty are included for student completion throughout the course, together with sample solutions.

Business Normalization Course Outline

- ***Introduction to Business Normalization:*** Provides business examples that illustrate the benefits and advantages of business normalization.

- ***Reasons for Business Normalization:*** Uses typical business problems that show how business normalization is used to structure data so that data redundancy is eliminated, and data maintenance problems that arise from redundant data are also eliminated.

- ***First, Second and Third Business Normal Form:*** Contrasts business normalization with traditional normalization. Covers the rules of First Business Normal Form (1BNF), Second Business Normal Form (2BNF) and Third Business Normal Form (3BNF). Shows how business normalization cross-checks are used to uncover business meaning, identify homonyms and synonyms, and identify potential future business needs.

- ***Fourth and Fifth Business Normal Form:*** Shows the rule and use of Fourth Business Normal Form (4BNF) to identify supertypes and subtypes. Covers the identification and capture of business expertise in Fifth Business Normal Form (5BNF) Structure entities, as dynamically-updated business knowledge defined by business experts.

- ***Business Normalization Examples:*** Uses progressively completed course exercises, as well as many business examples, to illustrate application of the five business normal form rules. Shows how these rules can help identify additional business needs that may have been missed earlier, so that systems and data bases that are later developed do accurately address the business requirements.

- ***Course Exercises:*** Course exercises of increasing difficulty are included for student completion throughout the course, together with sample solutions.

Certified Business Data Modeler (CBDM)

Participants who complete this course can optionally qualify as a *Certified Business Data Modeler (CBDM)* by completing the optional self-study *Data Modeling Case Study Workshop*. This tests each student's understanding of the principles learned in the 3-day Data Modeling workshop with a real-life case study problem that each student uses to develop a data model solution.

The *Visible Advantage* modeling tool is supplied to each student. This is a time-limited, limited capacity, but full-function modeling tool that is used in conjunction with the case study workshop. It includes laboratory exercises and instructions for entering each student's case study solution into Visible Advantage so that the student can check the validity of the solution before submitting it for assessment.

The Visible Advantage encyclopedia must be returned by each student to the instructor by email as the student's personal solution to the CBDM Exam, for individual assessment. If required, the instructor will set additional remedial study and exercises until each student demonstrates a full understanding of the relevant Data Modeling and Business Normalization concepts.

Following completion of the workshop, the evaluation edition used for the case study can be converted to a non-time-limited student edition of Visible Advantage, if required. This can be retained by each student to be used for small projects, if desired. The encyclopedia from each small project can be automatically merged into larger project encyclopedias, using the enterprise edition of Visible Advantage - if relevant. This enables students to apply the skills they have learned to specific areas of their enterprise where they have particular expertise.

Data Modelling Case Study Workshop for CBDM (Optional)

The purpose of this workshop is to enable each student to apply the data modeling and business normalization skills learned in the 3-day Data Modeling Workshop course by completing a real-life case study on a self-study basis in their own time. The student carries out a number of laboratory exercises using the supplied modeling tool, Visible Advantage (with supplied step-by-step guidance in a workbook in using the modeling tool) to develop an encyclopedia that contains the student's solution. This encyclopedia is then emailed to the instructor for assessment as the student's personal CBDM Exam solution, to qualify as a Certified Business Data Modeler (CBDM).

If this assessment demonstrates that the student has gained a good understanding of Data Modeling concepts and Business Normalization concepts, that student will qualify as a Certified Business Data Modeler and will then be awarded a Certificate showing attainment of this qualification.

However if the assessment indicates a possible lack of understanding in some areas, the student may be asked to review certain concepts in the prerequisite courses. The student may also be given additional study and workshop exercises to complete, for reassessment. If the solution for

this additional work is assessed as satisfactory, the student will then be certified as having reached the required level of understanding and so will receive the CBDM certificate.

CLIVE FINKELSTEIN

Clive Finkelstein is acknowledged worldwide as the "Father" of Information Engineering, and is Managing Director of Information Engineering Services Pty Ltd in Australia. He has over 46 years' experience in the Computer Industry. He has published many books and papers, and contributed Chapters and Forewords to books published by McGraw-Hill and Springer-Verlag. Clive has authored the following books:

- *"Information Engineering",* James Martin and Clive Finkelstein, Savant Institute, Carnforth: Lancs UK (1981). This was the book that started the Information Engineering Revolution in the 1980's.
- *"An Introduction to Information Engineering",* Clive Finkelstein, Addison-Wesley, Sydney: Australia (1989). This book covers the history and evolution of Information Engineering.
- *"Information Engineering: Strategic Systems Development",* Clive Finkelstein, Addison-Wesley, Sydney: Australia (1992). This is the "how-to" book on using Information Engineering.
- *"Building Corporate Portals with XML"*, Clive Finkelstein and Peter Aiken, McGraw-Hill New York: NY (2000). This book covers methodologies and technologies for Enterprise Portals.
- *"Enterprise Architecture for Integration: Rapid Delivery Methods and Technologies",* Clive Finkelstein, Artech House, Norwood MA (March 2006). This book is the reference for the course, which covers the rapid delivery methods and technologies.

Clive Finkelstein is an internationally renowned consultant and instructor, and has completed projects for Defense, Government and Commercial organizations throughout the world and in most industries. The emphasis of these projects has been to bridge from strategic business plans to information systems, so aligning systems closely with corporate goals. Many projects have involved the *Zachman Framework for Enterprise Architecture*, using the latest methods and technologies for rapid delivery of priority processes into production. These methods use Enterprise Engineering for rapid definition of Enterprise Architecture. His technology focus addresses Enterprise Integration technologies using XML, Enterprise Application Integration (EAI), Enterprise Portals, Web Services and Service-Oriented Architecture (SOA) for Business Process Management (BPM) using XML-based BPM languages.

His application of these methods in large and medium Government, Defense and Commercial enterprises results in *Business Transformation Enablement,* so that business and IT managers and their staffs can plan for and achieve rapid business change. Enterprise Architecture provides a Governance Analysis Framework that supports Sarbanes-Oxley and other Governance Audit requirements. It provides direct support and linkage to Balanced Scorecard for Strategy-Focused Organizations, to ensure that IT systems and databases support defined scorecard strategies and governance requirements for Enterprise Architecture maturity.

He provides training and consulting in all aspects of the Zachman Framework for Enterprise Architecture, with rapid delivery of standardized processes using Enterprise Engineering. During implementation he also moves organizations to rapid implementation using XML, Enterprise Portals, Web Services, BPM and SOA. These provide a central gateway to the information and knowledge resources of an enterprise on its Intranet and via the Internet. Enterprise Architecture, Enterprise Portals, Web Services, SOA and BPM will be key development methods and delivery technologies for most enterprises in the 21st century.

Clive writes a monthly online column on Enterprise Architecture for the BEye Network online magazine in the USA. He also publishes a free, quarterly technology newsletter via email: *"The Enterprise Newsletter (TEN)".* Past issues of TEN are available from: http://www.ies.aust.com/ten/TEN_index.htm. His books, papers and projects are also summarized on the IES web site at http://www.ies.aust.com/cbfindex.htm. He can be contacted at <cfink@ies.aust.com>. Many in-house skills-transfer workshops, seminars and online webcast courses presented by Clive Finkelstein are available at http://shop.ies.aust.com/.

Contact Details
Clive Finkelstein, Managing Director
Information Engineering Services Pty Ltd
PO Box 246, Hillarys Perth WA 6923 Australia

Phone :	+61-8-9402-8300
Fax:	+61-8-9402-8322
Email:	cfink@ies.aust.com
Details:	http://www.ies.aust.com/cbfindex.htm
Web Sites:	http://www.ies.aust.com/
	http://shop.ies.aust.com/