Data Constellation

Agile Information Management and Design

Fact Based Modeling In Depth

Course Outline

Semantic Modeling is a formal process for discovering, clarifying and encoding meanings within a knowledge domain. The approach makes extensive use of natural verbalisations, both to discover and to communicate the details. In the process it becomes possible precisely to describe any factual situation, to ask or answer any factual question, and to elaborate detailed rules about possible or allowable situations. The fact-based approach transforms natural verbalisations into the graphical language of Object Role Modeling (ORM2) and alternatively into the Constellation Query Language (CQL), a controlled natural language, to allow interpretation by a wide audience having very little training.

The software tools used also bring a high degree of automation to the design of databases (both relational and NoSQL) and messaging systems, and also to the analysis, specification, design and testing of computer software to operate them. In this respect it is superior to previous modeling languages, including Entity-Relational Modeling, the Unified Modeling Language, and Semantic Web approaches.

Whether you want to define the content of an expert knowledge domain, design databases, build or specify software, or just publish glossaries, this course will give you a new thinking cap, helping you communicate clearly about any subject.

Learning Outcomes

After successful completion of this course, a student will be able to:

- Use verbalisation and fact-based analysis to understand any subject material
- Use the ORM diagramming tool and CQL to capture and validate the concepts
- Specify the detailed business rules and constraints of a knowledge domain
- Communicate at a deep conceptual level with those less expert in the field
- Produce and present design documentation that business users can understand
- Design an efficient and comprehensible database schema for the subject
- Recognise and improve incorrect or inadequate schema designs

Audience

This course provides necessary skills for those who wish to become expert modelers:

- Students and designers of information systems
- Practitioners in software requirements management
- Database experts who wish to expand their semantic modeling abilities
- Domain experts who wish communicate their expertise to a wide audience

Requirements

The free NORMA software is installed during the course, but students must bring a laptop computer running Windows (virtualisation is acceptable). Windows must be at least version 7 (with Service Pack1), or must have a recent version of Visual Studio installed (>= 2008, NOT the Express edition, and NOT Visio). If Visual Studio is not already installed, the new VS Community Edition 2013 will be installed during the course (hence the requirement for Windows 7SP1 or above). A free implementation of the Constellation Query Language will also be installed during the course; students are recommended to choose a preferred text editor (such as Sublime) rather than rely on Notepad or WordPad.

The recommended textbook for ongoing study is "Information Modeling and Relational Databases" 2nd Edition by Terry Halpin and Tony Morgan 2008, Morgan Kaufmann, ISBN 978-0-12-373568-3. The book is highly recommended but not mandatory for the course.

Duration

The course runs two full days, and can be extended as necessary to gain in-depth expertise in the approach or to tackle modelling tasks that are specific to your enterprise. Contact Data Constellation for current details of the next scheduled course, or to book an intensive course.

About the instructor

Clifford Heath is a software toolmaker and independent computer research scientist with long experience in the design and implementation of enterprise-scale software products, and in the use of fact-based and semantic modeling tools. He has published a number of papers in peer-reviewed scientific journals, holds several patents and is the creator of the Constellation Query Language. He is also a Certified Data Management Professional (CDMP) at Masters level. He has frequently presented at chapter meetings of the Data Management Association as well as at the NATO CAX Forum and the European Space Agency.