Agile Data Warehouse Design

Collaborative BI Requirements Analysis & Dimensional Modeling Training

**Three day workshop
by Lawrence Corr**

///**Adept**Events

- Agile dimensional modeling using Business Event Analysis & Modeling (BEAM)
- Model BI requirements with stakeholders using business-friendly tools and techniques
- Tell dimensional data stories using the 7Ws (who, what, when, where, how many, why and how)
- Help business stakeholders develop powerful mental maps for exploring their data with modern BI tools
- Storyboard the data warehouse to discover conformed dimensions and plan iterative development
- Rapidly translate BI data requirements into efficient, flexible data warehouse and data mart designs
- Plan, design and develop BI solutions incrementally
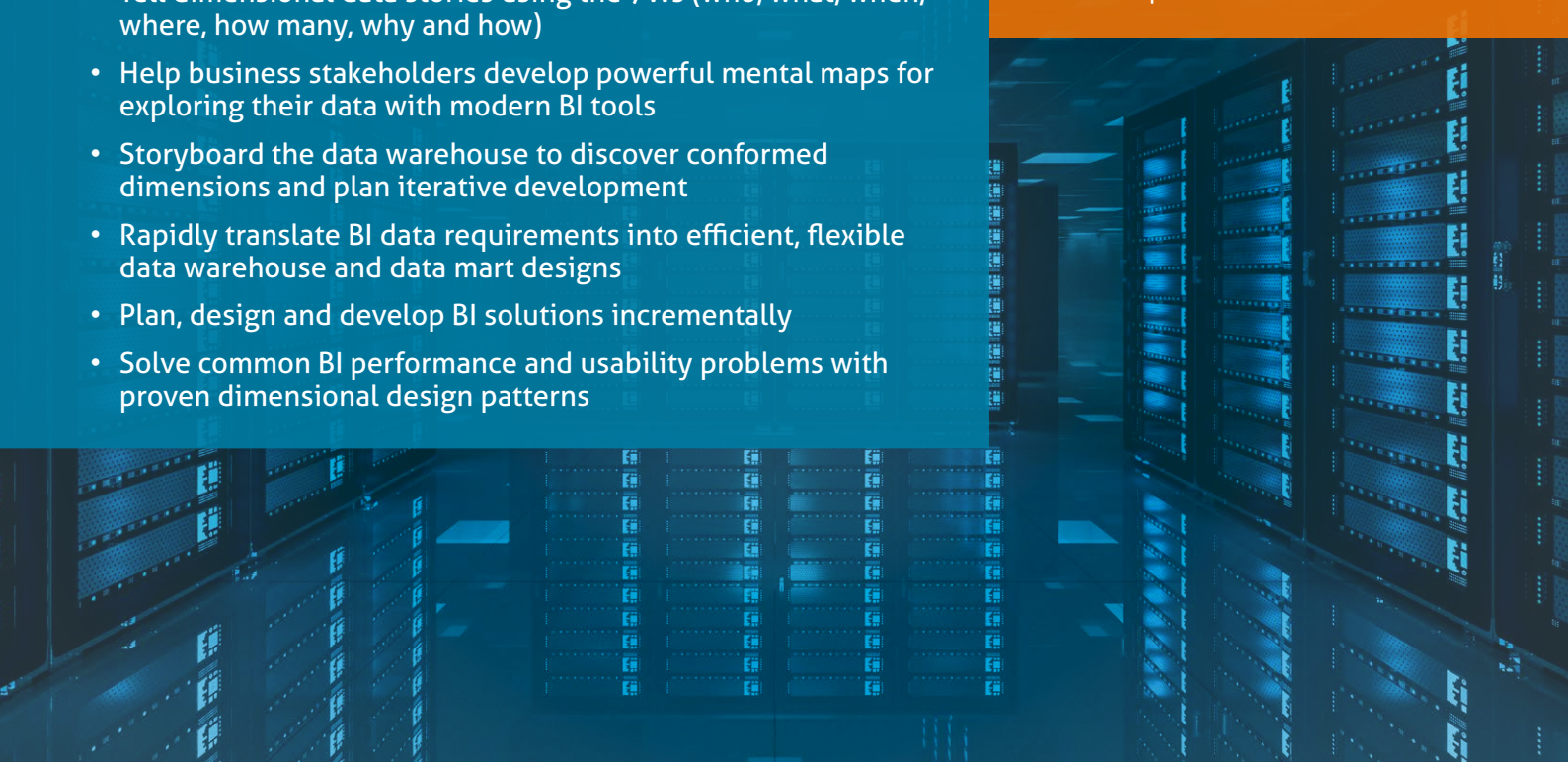- Solve common BI performance and usability problems with proven dimensional design patterns

VENUE
Utrecht / Hilversum Area, The Netherlands

TIME
9:30 – 17:00 hours

REGISTRATION
www.adeptevents.nl

Agile Data Warehouse Design

Collaborative BI Requirements Analysis & Dimensional Modeling Training

Agile Data Warehouse Design covers step-by-step techniques for capturing data warehousing/business intelligence (DW/BI) requirements and turning them into high performance dimensional models in the most direct way: by modelstorming (data modeling + brainstorming) with BI stakeholders. Agile techniques emphasise the early and frequent delivery of working software, stakeholder collaboration, responsiveness to change and waste elimination. They have revolutionised application development and are increasingly being adopted by DW/BI teams. This course provides practical tools and techniques for applying agility to the design of database schemas – the earliest needed and most important working software for BI.

The course contrasts agile and non-agile DW/BI development and highlights the inherent failings of traditional BI requirements analysis and data modeling. Via class room sessions and team exercises attendees will discover how *modelstorming* (modeling + brainstorming) data requirements directly with BI stakeholders overcomes these limitations.

The course teaches BEAM (Business Event Analysis & Modeling), an agile approach to dimensional modeling, for improving communication between data designers, BI stakeholders and the whole DW/BI development team. BEAM provides tools and techniques that will encourage designers and developers to set aside their keyboards and entity relationship based tools and model interactively with their business stakeholders and colleagues. The result is everyone thinks dimensionally from the initial high level data requirements right down to detailed datasets. Developers understand how to efficiently implement dimensional modeling solutions. Business stakeholders feel ownership of the models they co-create and can already imagine how they will use them to answer their business questions. BEAM helps close the gap between the business users' data requirements and database design. It allows groups of business and IT professionals to model data collaboratively to not only gather and prioritize data requirements but create a shared understanding of data analytics opportunities and design more flexible BI solutions.

Join Lawrence Corr, author of the DW/BI bestseller "*Agile Data Warehouse Design*" for a lively three-day collaborative dimensional modeling course covering the latest agile techniques for systematically gathering Business Intelligence (BI) requirements and designing effective DW/BI systems.

Learning objectives

- Understand the requirements and challenges of DW/BI design in a "Big Data" world
- Explain the impact of agile practices on DW/BI design
- Agile dimensional modeling using Business Event Analysis & Modeling (BEAM)
- Run modelstorming sessions: do data modeling that is quicker, more inclusive, more productive, and quite frankly more fun!
- Model BI requirements with stakeholders using business-friendly tools and techniques
- Model data requirements collaboratively using visual thinking and storytelling
- Tell dimensional data stories using the 7Ws (who, what, when, where, how many, why and how)
- Use narrative, visual thinking, 7Ws and lots of Post-it (tm) notes to get everyone thinking more clearly about data requirements and creating better data models
- Help business stakeholders develop powerful mental maps for exploring their data with modern BI tools
- Model by example not abstraction; using data story themes, not crow's feet, to describe detail
- Storyboard the data warehouse to discover conformed dimensions and plan iterative development
- Rapidly translate BI data requirements into efficient, flexible data warehouse and data mart designs
- Plan, design and develop BI solutions incrementally
- Solve common BI performance and usability problems with proven dimensional design patterns

Who is it for?

Business and IT professionals who want to jointly develop better analytical data solutions sooner. Business analysts, scrum masters, data modelers/architects, DBAs and application developers new to DW/BI, will benefit from the solid grounding in dimensional modeling. Data scientists and engineers will learn valuable techniques for designing feature rich datasets. Experienced DW/BI professionals will find the course updates their hard-earned industry knowledge with fresh ideas on agile modeling, dimensional design patterns and business model alignment. Data Vault practitioners will appreciate BEAM's systematic approach for designing query-friendly dimensional data marts and unlocking business value.

Course description

Modelstorming – Agile BI Analysis and Design

- BI/DW design requirements, challenges and opportunities: the need for agility and collaboration
- The 7 Vs of Data. The 3 Vs of Big Data + 4 more that technology alone cannot solve. Facts and opinions. Configuration, calibration and collaboration. The need for collaborative data design
- Reactive data warehouse design vs. proactive design
- The 6Ws Game - Breaking the ice, introducing the Ws and basic visual collaboration techniques. Adding a 7th W for analytical data modeling
- Waterfall BI vs. Agile BI: balancing 'just enough design up front' (JEDUF) and 'just in time' (JIT) data modeling
- Traditional BI requirements gathering limitations: data-driven vs. report-driven. Supply vs. demand. Avoiding the 'field of dreams' build-it-and-they-will-come approach. Becoming value-driven
- Modelstorming with BI stakeholders: the case for collaborative data modeling

Agile Dimensional Modeling Fundamentals

- Modeling for measurement: the case for dimensional modeling, star schemas, facts & dimensions
- Business Event Analysis and Modeling (BEAM): an agile approach to dimensional modeling
- Thinking dimensionally with 7Ws (who, what, when, where, how many, why & how). Supporting a measurement mindset

Collaborative Data Requirements Gathering

- Introduction to BEAM: "Who does what?" a simple question for discovering business events
- Describing business event details using the 7Ws. Modeling a single business event in 7 simple questions: using the BEAM script
- Documenting business events with the BEAM Canvas (and lots of Post-it notes)
- Modeling multiple business events in just enough detail. Avoiding technical data modeling jargon. Modelstorming data as verbs, nouns and adjectives
- Modeling related business processes (multiple business events) using the BEAM Storyboard

Visual Dimensional Modelstorming Tools

- NoERD: Not only Entity Relationship Diagrams – using more appropriate diagrams for collaborative modeling with subject matter experts
- Business Model Canvas: aligning business intelligence and data analytics with business model definition and innovation. Value-driven BI job one: measuring the business model
- BEAM Canvas: a detailed BI model canvas for systematic data set & database schema design
- Data Stories: Using narrative to engage stakeholders and help them describe data-rich business events
- Data Story Types: Discrete, Evolving and Recurring business events
- BEAM Tables and Data Story Themes: modeling data requirements by (structured) example
- Data Timelines: Sorting multiple business events chronologically. Modeling time and process measurement
- BEAM Storyboard: modeling processes, shared data definitions and development priorities using a collaboration-friendly, non-technical version of the dimensional matrix
- Recording priorities and estimates for agile BI data development within the design
- Hierarchy Charts: modeling BI drill-downs, rollups and critical measurement levels for cross process comparison. Using the Ws to identify 'hot' levels
- Change Stories: capturing historical data requirements and reporting defaults (slowly changing data rules)

Bill of Materials: a M:M Recursive relationship
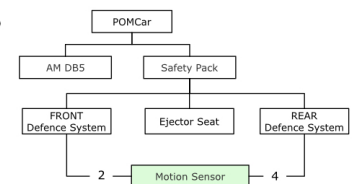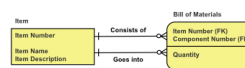
PARTS EXPLOSION [MV, HM]					
PRODUCT KEY	contains COMPONENT KEY	at PART LEVEL	in SEQUENCE NUMBER	SUB ASSEMBLY	QUANTITY
SK, PK	SK, PK	N	N	[Y/N]	N
POMCar	AM DB5	1	10	N	1
POMCar	Safety Pack	1	20	Y	1
POMCar	FRONT Defence System	2	30	Y	1
POMCar	Motion Sensor	3	40	N	2
POMCar	Ejector Seat	2	50	N	1
POMCar	REAR Defence System	2	60	Y	1
POMCar	Motion Sensor	3	70	N	4

Agile Star Schema Design

- Converting analytical data requirements into logical data models. Turning data story nouns, verbs, and adjectives into entities, relations, attributes.
- Converting a BEAM canvas into star schemas and other ER diagrams/models. Turning business events into facts and dimensions or hubs, links and satellites
- Test-driven design: agile/lean data profiling for validating and improving requirements models
- Data warehouse reuse: identifying, defining and developing conformed dimensions and facts. Developing an agile data warehouse bus architecture. Coping with conformance failure
- Designing flexible, high performance star schemas: maximising the benefits of surrogate keys
- How Much/How Many: Designing facts, measures and KPIs (Key Performance Indicators)
- Fact types: transactions, periodic snapshots, accumulating snapshots
- Fact additivity: fully additive, semi-additive and non-additive data. Full documenting and correctly aggregating semi-additive measures
- Fact performance and usability: indexing, partitioning, aggregating and consolidating facts
- Capturing complex slowly changing data rules: mixing type 1 and 2 attributes. Differentiating between minor and major changes and corrections via multi-column dependencies
- Designing facts, measures and KPIs (Key Performance Indicators)
- Fact table types: transactions, periodic snapshots, accumulating snapshots. Choosing the appropriate types

- Refactoring star schemas: responding to change, dealing with data debt
- Agile process measurement: designing and developing derived fact tables for multi-verb/event analysis
- Recording a BEAM Storyboard as a Dimensional Matrix – bus architecture.
- Enhance Star Schema: drawing better database diagrams. Taking advance of position and visually consistent layouts to encourage reuse and encode common data model patterns. Using BEAM short codes to fully document dimensional design decisions
- Developing Data Warehouse Matrix dashboards. Documenting the design without complex global schemas

Dimensional Design Patterns

- Using the 7W data types to identify common analytical data challenges ant the dimensional design patterns that address them.
- Adapting design pattern and understanding their limitations – when to uses them, when not to.

Who & What dimension patterns: customers, employees, products and services

- Modeling large volatile populations with rapidly changing attributes: mini-dimensions & customer facts
- Customer segmentation: business to business (B2B), business to consumer (B2C) dimensions: Swappable population subsets for performance, usability and compliance
- Multi-level dimensions: supporting business events with varying levels of descriptive information and variable granularity measurements
- Recursive customer relationships and organisation structures: variable-depth hierarchy maps for analysing 1:M and M:M recursive relationships
- Current and historical reporting perspectives: hybrid slowly changing dimensions. Using highly efficient swappable views to support multiple historic perspectives with agility. Avoiding unnecessary type 6 and 7 slowly changing dimensions
- Mixed business models: heterogeneous products/services, diverse attribution, ragged hierarchies: swappable attribute subset dimensions
- Product and service decomposition: component (bill of materials) and product unbundling analysis
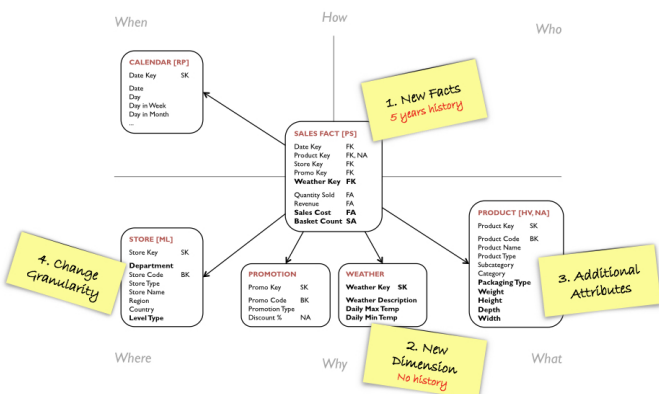
- When & Where dimension patterns: dates, times and locations
- Flexible date handling, ad-hoc date ranges and year-to-date analysis
- Describing and measuring time: modeling when details as dimensions and facts. Coping with specialist clocks and varying schedules
- Multinational BI: national languages reporting, multiple currencies, time zones & national calendars
- Understanding journeys and trajectories: modeling events with multiple geographies – the importance of first and last locations

Why & How dimension patterns: cause and effect

- Causal factors: trigger events, referrals, promotions, weather and exception reason dimensions
- Fact specific dimensions: transaction and event status descriptions
- Multi-valued dimensions: bridge tables, weighting factors, impact and 'correctly weighted' analysis. Avoiding unnecessary model complexity - efficiently handling exceptional data which is only 'slightly' multi-valued
- Behaviour Tagging: modeling causation and outcome with dimensional overloading. Using step dimensions to understand sequential behaviour
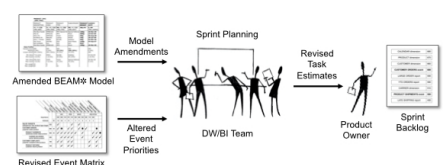
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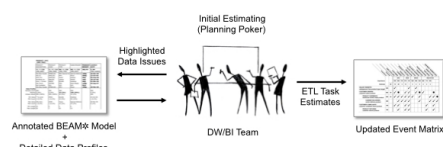
• Stakeholder Model Review
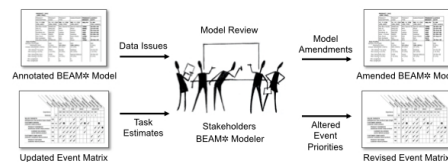
• Sprint Planning

Review

- Further reading/viewing for encouraging and supporting modelstorming within your organisation
- Downloadable BEAM templates and other online modelstorming resources
- Documented and Distributed Modelstorming: photography, visual collaboration tools and platforms
- The immutable laws of data warehousing – anticipating agile BI.

LAWRENCE CORR

Lawrence Corr is a leading international BI consultant and former Ralph Kimball Associate. He is the author of Agile Data Warehouse Design: Collaborative Dimensional Modeling, from Whiteboard to Star Schema, an Amazon #1 bestseller in data warehousing and database design.
Lawrence has worked on data warehousing projects in the US, Europe, the Middle East and Africa within healthcare, telecoms, broadcasting, higher education, financial services and retail, helping organizations benefit from simpler, more inclusive requirements modeling techniques.

Information

DATE AND TIME
The workshop will take place once or twice a year with the exact date and time available on our website. The programme starts at 9:30 am and ends at 5:00 pm on both days. Registration commences at 8.30 am and we recommend that you arrive early.

VENUE
Adept Events works with several venues in and near Amersfoort and Utrecht. We strive to provide you with the location details as soon as possible. The exact venue will be on our website and in the confirmation e-mail that you will receive one week prior to the event. Always check our website prior to your departure to ensure you have the exact location and directions.

HOW TO REGISTER
Please register online at **www.adeptevents.nl**. For registering by print, please scan the completed registration form and send this or your Purchase Order to **seminars@adeptevents.nl**. We will confirm your registration and invoice your company by e-mail therefore please do not omit your e-mail address when registering.

REGISTRATION FEE
Taking part in this three-day workshop will only cost € 1791 when registering 30 days beforehand and € 1990 per person afterwards (excl. 21% Dutch VAT). This also covers documentation, lunch, tea/coffee.

Note: This seminar may also be offered 'Online' or as 'Face-to-face and live streaming'. In that situation, the prices for attending online differ from the prices listed here. On the **Registration Fee** page of our website you will always find the current rates for all available formats of this seminar.

Members of the DAMA are eligable for 10 percent discount on the registration fee.

In completing your registration form you declare that you agree with our Terms and Conditions.

Team discounts
Discounts are available for group bookings of two or more delegates representing the same organization made at the same time. Ten percent off for the second and third delegate and fifteen percent off for all delegates when registering four or more delegates (all delegates must be listed on the same invoice).
This cannot be used in conjunction with other discounts.

All prices are VAT excluded.

PAYMENT
Full payment is due prior to the workshop. An invoice will be sent to you containing our full bank details including BIC and IBAN. Your payment should always include the invoice number as well as the name of your company and the delegate name.

Payment by credit card is also available. Please mention this in the Comment-field upon registration and find further instructions for credit card payment on our **customer service page**.

Cancellation Policy
Cancellations must be received in writing at least three weeks before the commencement of the workshop and will be subject to a € 75,– administration fee. It is regretted that cancellations received within three weeks of the workshop date will be liable for the full workshop fee. Substitutions can be made at any time and at no extra charge.

Cancellation Liability
In the unlikely event of cancellation of the workshop for any reason, Adept Events' liability is limited to the return of the registration fee only. Adept Events will not reimburse delegates for any travel or hotel cancellation fees or penalties. It may be necessary, for reasons beyond the control of Adept Events, to change the content, timings, speakers, date and venue of the workshop.

MORE INFORMATION

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