



Osaamista ja oivallusta

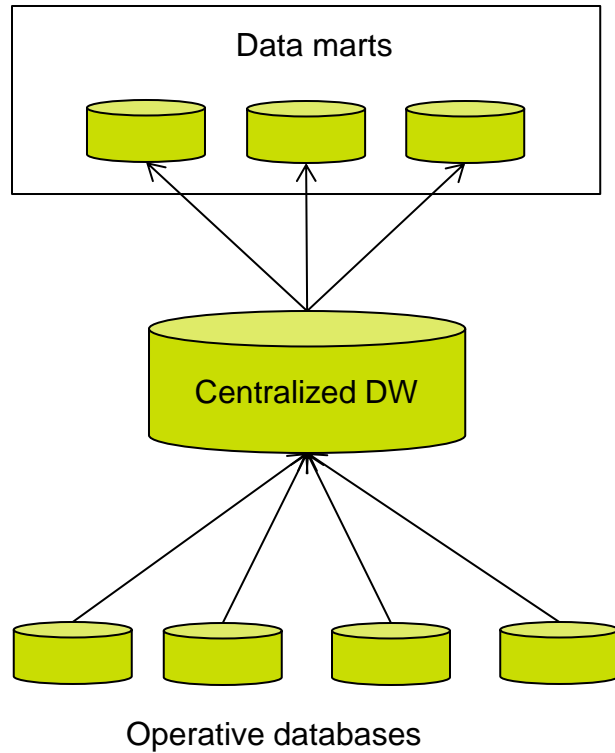
tulevaisuuden tekemiseen

Building data warehouse in Metropolia University of Applied Sciences

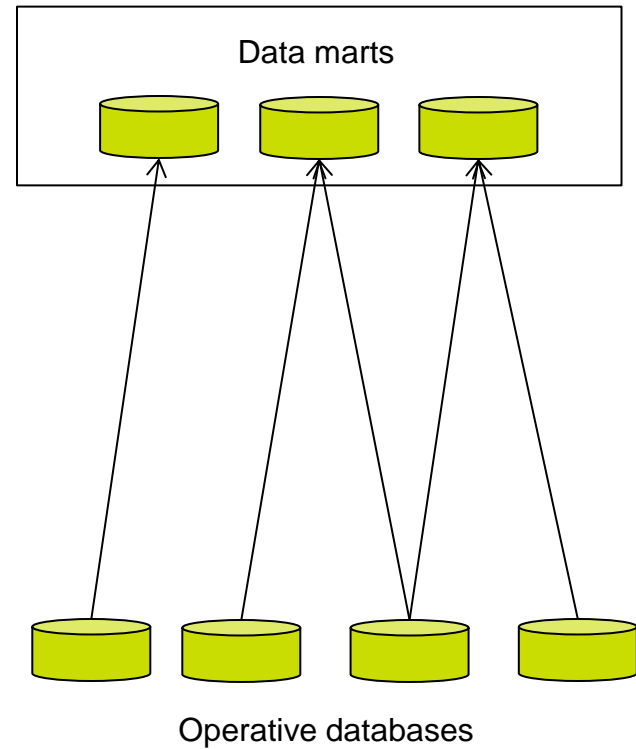
Antti Tikka, 12.6.2013

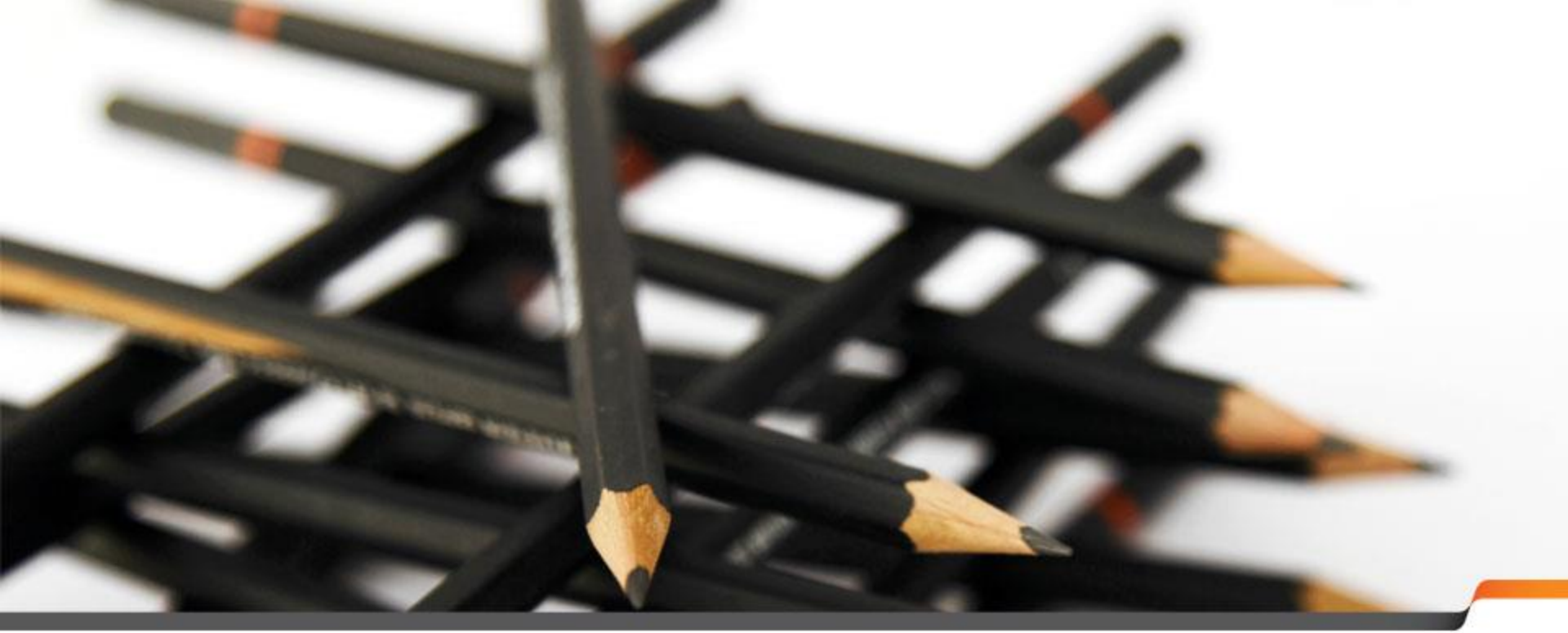
Introduction

Inmon



Kimball



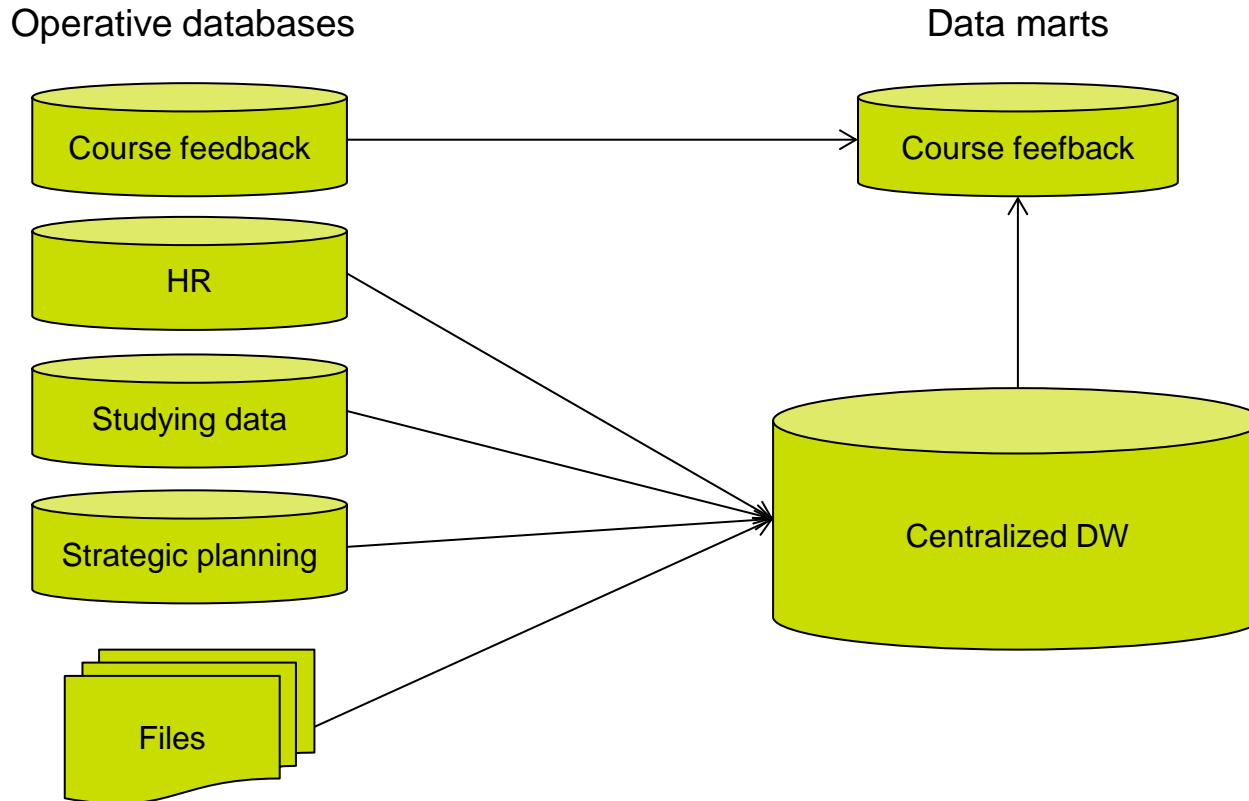


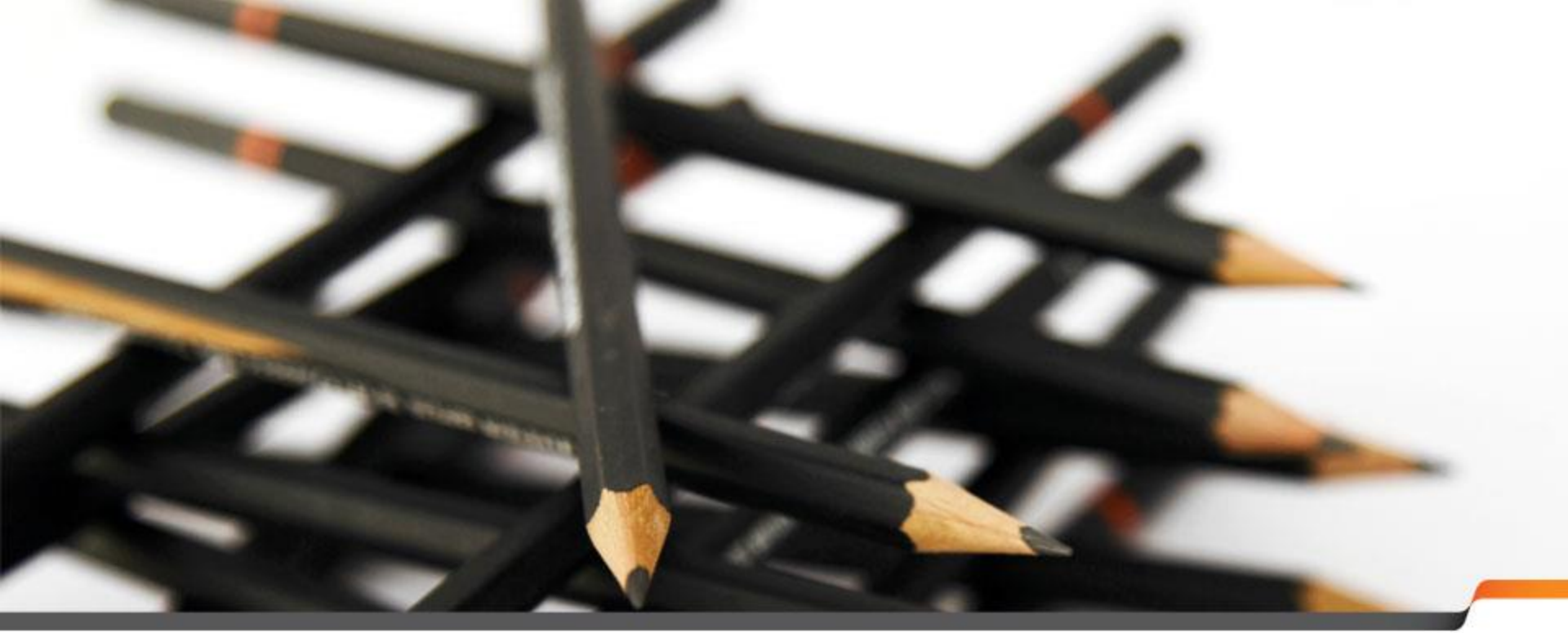
1. **Starting with Inmon's architecture**
2. Problems
3. Kimball's architecture

Conceptual model of the centralized DW

- Design started in 2006
- Co-operation with consultants and our own specialists in different subject areas
- First version ready in 2008
- 120 different concepts of studying, teaching, HR, organization ja finance

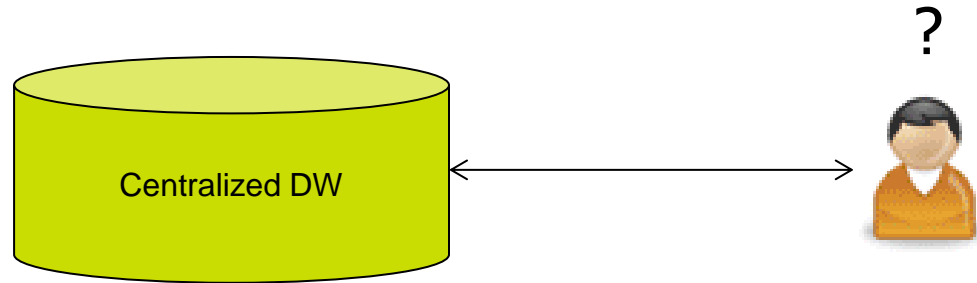
Implemented architecture in 2010





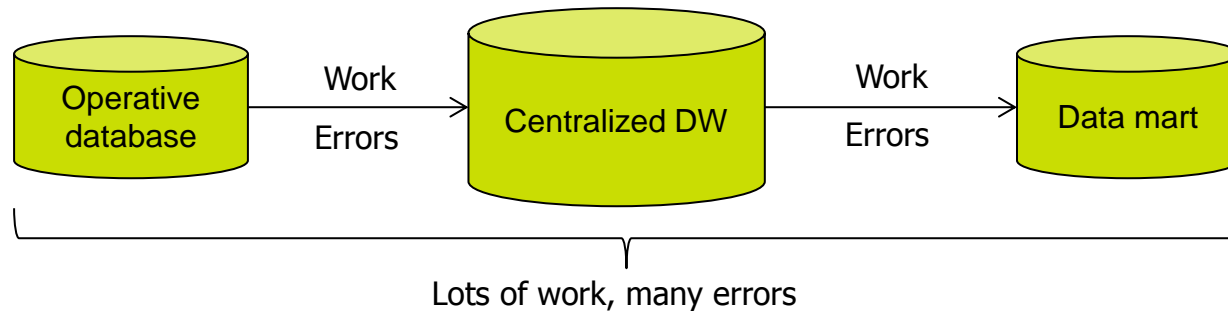
1. Starting with Inmon's architecture
2. **Problems**
3. Kimball's architecture

Problems in centralized DW

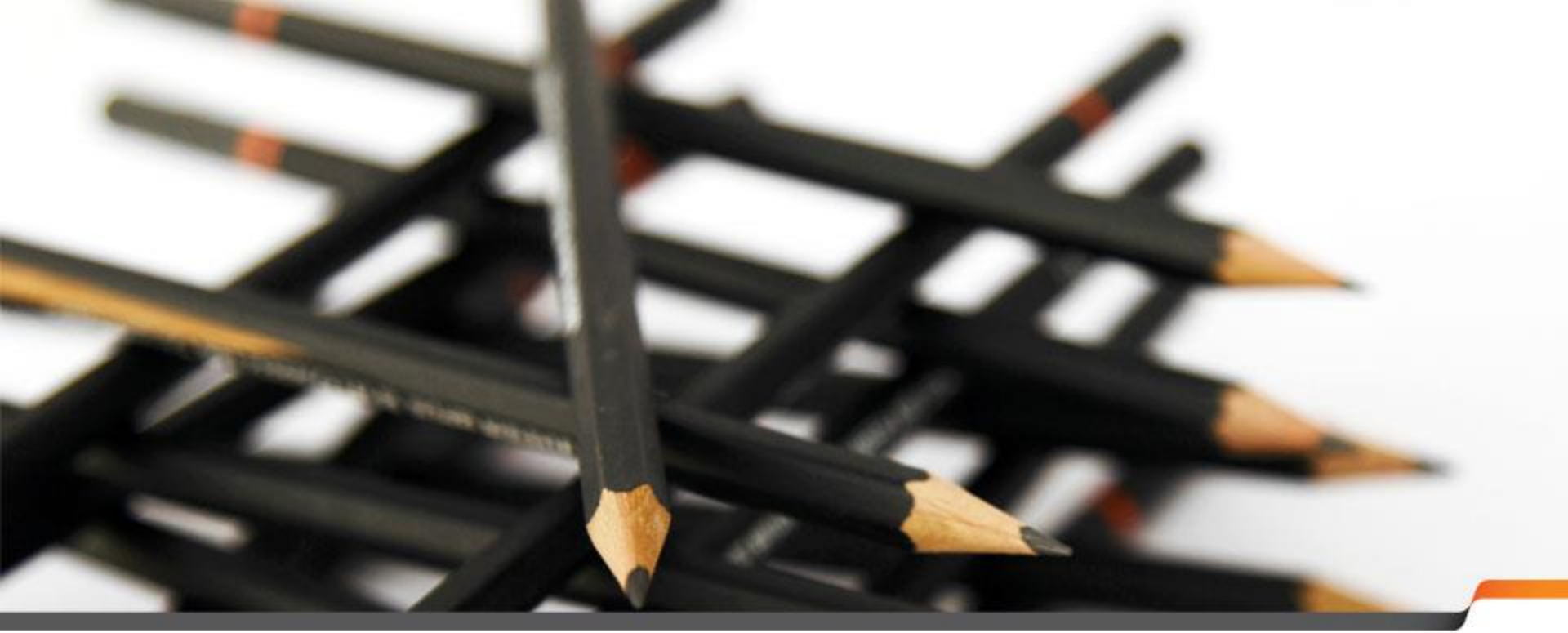


- Complex queries
- Empty tables and columns
- Old data in some tables
- Major focus in centralized DW and only little in data marts
- => Need for data marts

Problems in ETL-processes

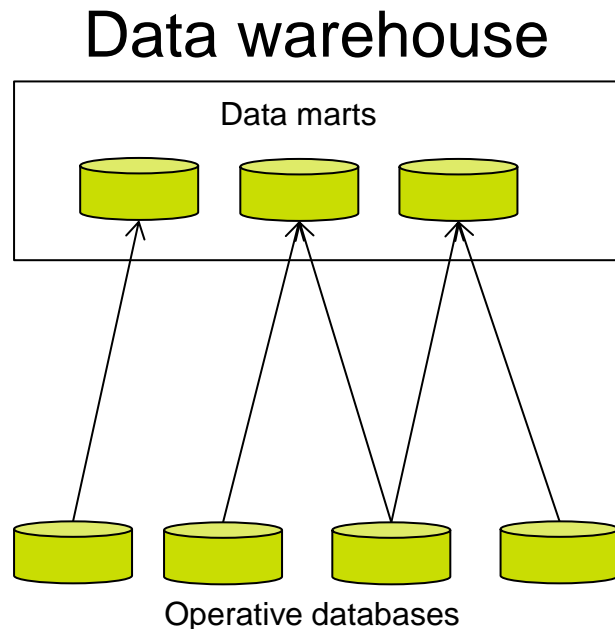


- Two data models and two ETL-processes
- => Lots of work and many errors
- Tracking error: Is it in first or second ETL-process?



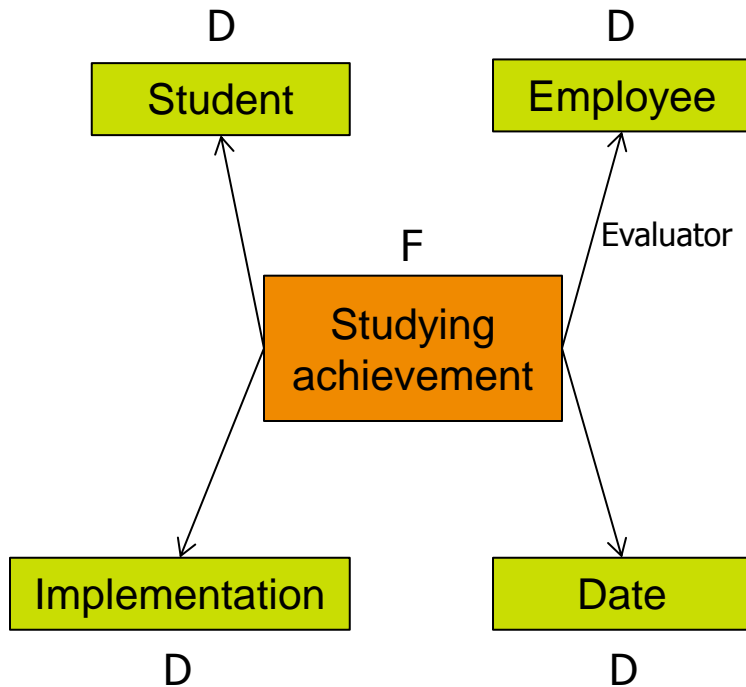
1. Starting with Inmon's architecture
2. Problems
3. **Kimball's architecture**

Principle of Kimball's architecture



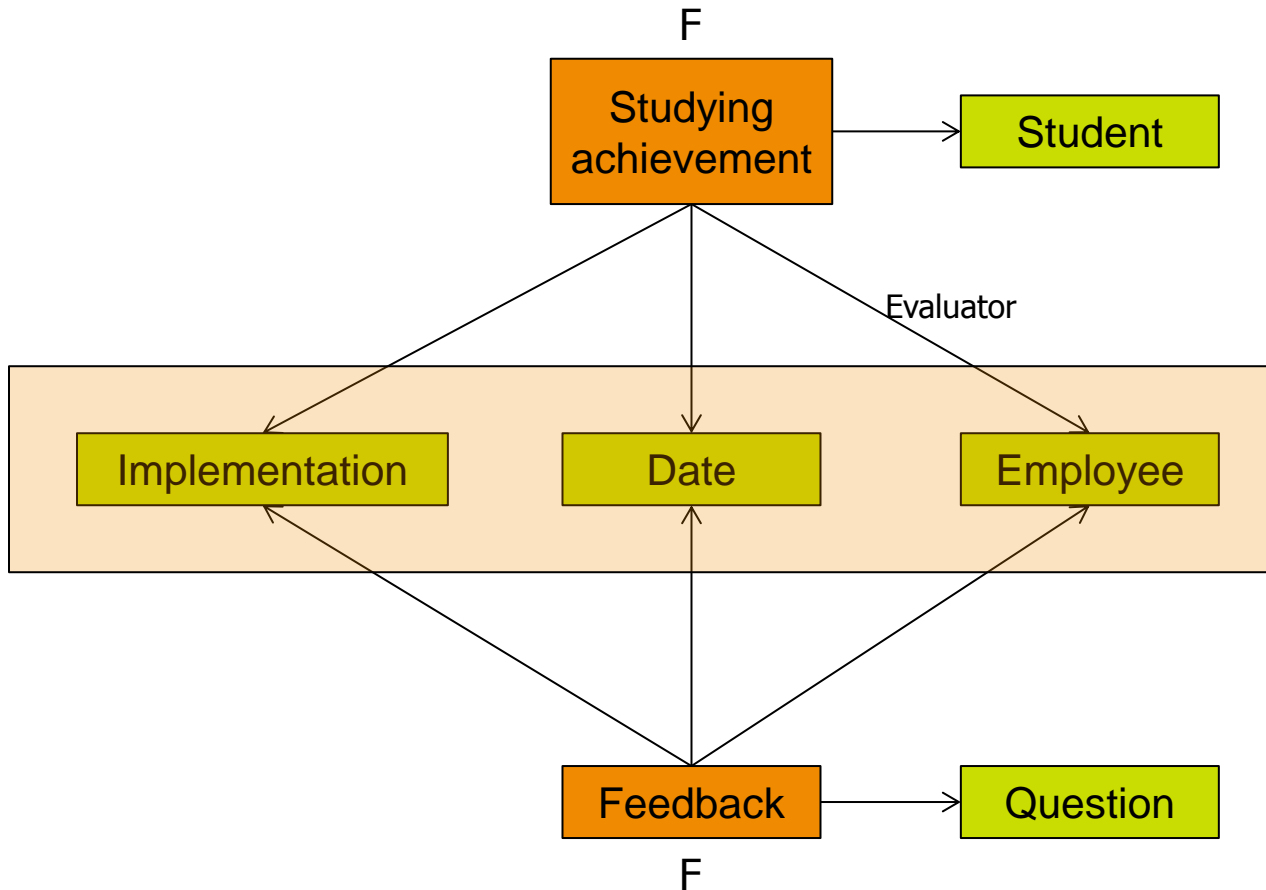
- No centralized DW
- DW is just a group of data marts
- Data marts are compatible to each other
- Data warehouse is built one data mart at a time

Star schema



- Core of Kimball's architecture
- Consist of fact and dimension tables
- Diverse aggregating possibilities
- Simple and efficient queries
- Work well with automatic query generation tools
- Easily transformed into OLAP-cube

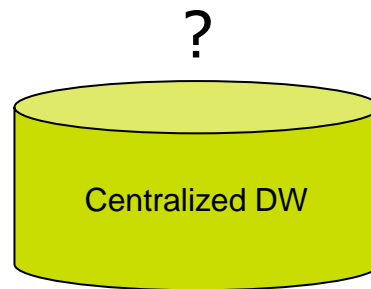
Conformed dimensios



Bus matrix

		Dimensiot																	
		Date	Month	Quartal	Season	Year	Implementation	Course	Degree program	Studying area	Employee	Student	Grade	Question	Reason	Cost center	Account	Function	
Dara mart / fact table	Fact																		
Studying																			
Achievement	Number of credits	X	X	X	X	X	X	X	X	X	X	X	X						
Presence	True / false					X	X			X	X		X						
Course feedback																			
Answer to question	Numerical assesment	X	X	X	X	X	X	X	X	X	X			X	X				
Open feedback	Textual assesment	X	X	X	X	X	X	X	X	X	X								
Finance																			
Accounting event	Amount of money			X	X	X	X										X	X	X
Budget	Amount of money			X	X	X	X										X	X	

Change of architecture

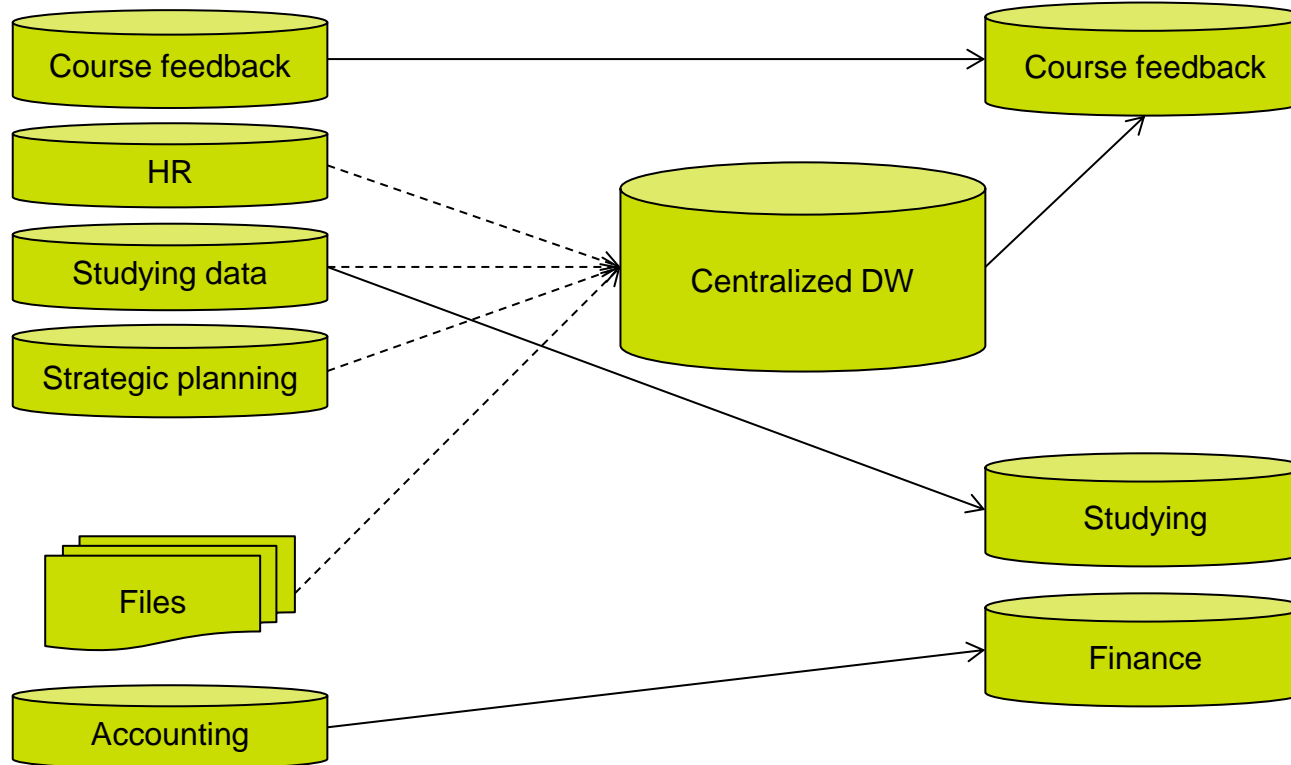


- Do we have to replace already implemented Centralized DW?
- No, just leave implemented structures as they are
- Continue development using Kimball's architecture

Data warehouse architecture in 2013

Operatiiviset tietokannat

Datamartit



References

- [1] Adamson, C. (2010). *Star Schema, The Complete Reference*. McGraw-Hill Osborne Media.
- [2] Kimball, R. (2002). *The Data Warehouse Toolkit: The Complete Guide to Dimensional Modeling (Second Edition)*. Wiley.
- [3] Watson, H. J., Ariyachandra, T. (2005). *Data Warehouse Architectures: Factors in the Selection Decision and the Success of the Architectures*.
http://www.terry.uga.edu/~hwatson/DW_Architecture_Report.pdf.



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Thank you!

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