



IT730A Business Intelligence A1F, 7,5 hp,

Introduction

Mikael Berndtsson



- Associate professor in Informatics
- Business Intelligence, analytics, data-driven organisations
- Final year projects



→ BSc: Computer & Economics

→ MSc Computer Science



→ PhD 1998, Exeter, UK.

Objectives

- extensively describe and problematize the origin of the area Business Intelligence,
- extensively describe and discuss application areas for Business Intelligence solutions,

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Objectives

- present and discuss ethical issues that may arise in connection with a Business Intelligence solution, and
- design and implement a Business Intelligence solution, and reflect on how an organisation may use the implemented solution.

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Objectives vs examination

Objectives	Seminars 2,5hp	Project report and demonstrator 5hp
extensively describe and problematize the origin of the area Business Intelligence	X	
extensively describe and discuss application areas for Business Intelligence solutions	X	
present and discuss ethical issues that may arise in connection with a Business Intelligence solution		X
design and implement a Business Intelligence solution, and reflect on how an organisation may use the implemented solution		X

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Seminar 1: Business Intelligence / Analytics

- Chaudhuri, S., Dayal, U., och Narasayya, V. (2011). An Overview of Business Intelligence Technology, Communications of the ACM, Vol 54(8), pages 88-98
- Chen, H., Chiang, R. H. L., & Storey, V. C. (2012). Business Intelligence and Analytics: From Big Data to Big Impact. MIS Quarterly, 36(4), 1165-1188.
- Davenport, T. H. (2010). Business intelligence and organizational decisions. International Journal of Business Intelligence Research, 1(1):1-12, January-March.
- Watson, H. (2013). All About Analytics. International Journal of Business Intelligence Research, 4(1), 13-28, January-March.
- Wixom, B. och Watson, H. (2010). The BI-Based organization. International Journal of Business Intelligence Research, 1(1): 13-28, January-March.

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Seminar 1

- 15-20 minutes presentation:
 - What is BI/Analytics?
 - Why is BI/Analytics needed?
 - Application areas for BI/Analytics?
 - BI/Analytics evolution?
- Hand in your presentation before the seminar

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Seminar 2: Data Driven Culture

- Barton, D., & Court, D. (2012). Making Advanced Analytics Work For You. *Harvard Business Review*, October.
- Berndtsson, M., Lennerholt, C., Svahn, T., & Larsson, P. (2020). 13 Organizations' Attempts to Become Data-Driven. *International Journal of Business Intelligence Research (IJBIR)*, 11(1), 1-21.
- Davenport, T. and Malone, K. Deployment as a Critical Business Data Science Discipline. *Harvard Data Science Review*, 3 (1).
- Kaushik, A. (2007). Creating a Data Driven Culture (YouTube)
- McAfee, A., & Brynjolfsson, E. (2012). Big data: the management revolution. *Harvard Business Review*, 90(10), 60-68.

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Seminar 2

- 15-20 minutes presentation:
 - What is Data Driven Culture?
 - Problems and opportunities with Data Driven Culture?
- Hand in your presentation before the seminar

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Seminar Report

- A five page report (including references + cover page) on what have you learnt from seminars 1-2.
- Harvard style.

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Project report and demonstrator



1. Compare 1991 and 2001 with respect to:

- What characterizes flights that are on time?
- Add your own analytics (predictive, prescriptive) question and answer it.

2. A bigger airport intends to collect data (ethics)

Report (5 pages) + oral presentation/demonstration

Data:
<https://doi.org/10.7910/DVN/HG7NV7>

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Code of conduct

Everything you write in the assignments must have proper citations to references. If you plagiarize text (or code) during your studies you are immediately reported to the head of the school. Thus, you cannot copy and paste text from someone else and claim that you have written the text.

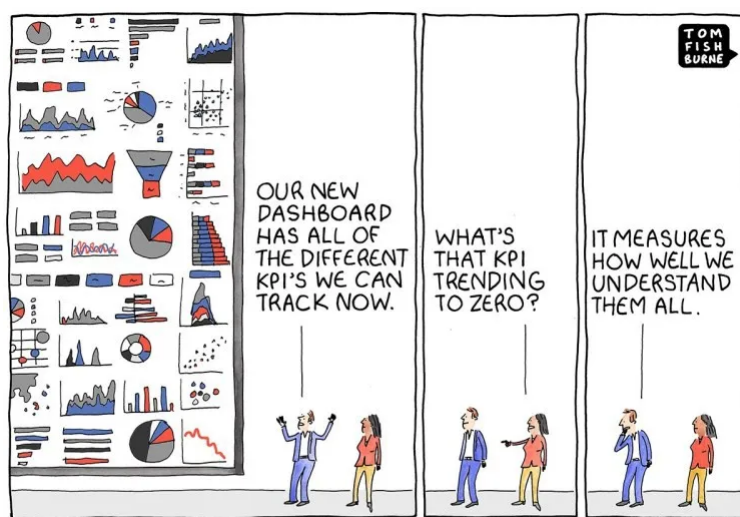
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Business Intelligence (BI) is not...



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... or



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... instead

“THE RIGHT DATA TO THE RIGHT
PERSON AT THE RIGHT TIME!”

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Origin

- Hans Peter Luhn – IBM, 1958: “*A business intelligence system*”

An automatic system is being developed to disseminate information to the various sections of any industrial, scientific or government organization. This intelligence system will utilize data-processing machines for auto-abstracting and auto-encoding of documents and for creating interest profiles for each of the “action points” in an organization. Both incoming and internally generated documents are automatically abstracted, characterized by a word pattern, and sent automatically to appropriate action points. This paper shows the flexibility of such a system in identifying known information, in finding who needs to know it and in disseminating it efficiently either in abstract form or as a complete document.

H.P. LUHN IBM JOURNAL OF RESEARCH AND DEVELOPMENT VOL 2, NR 4, SIDA 314, 1958

Origin

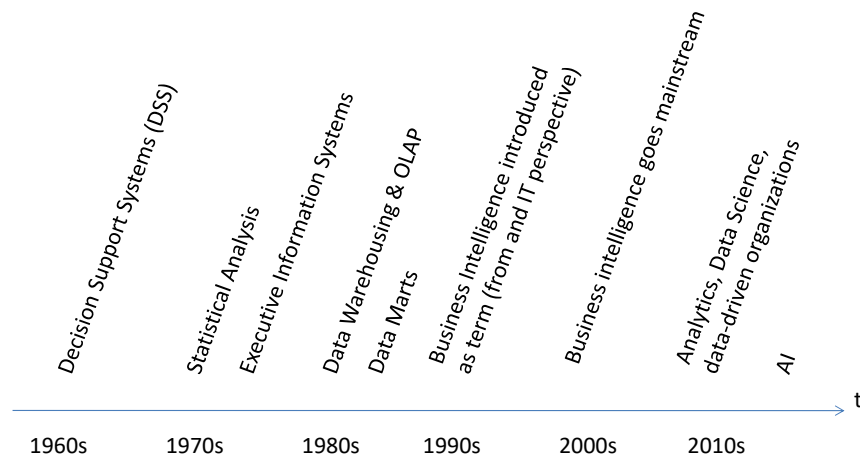
- 1989, Howard Dresner (Gartner group) BI is:
“an umbrella term to describe concepts and methods to improve business decision making by using fact-based support systems”
- => mainstream

Definitions

- “incorporates the collection, management and, reporting of decision-oriented data as well as the analytical technologies and computing approaches that are performed on that data” (Davenport & Harris, 2007, p. 12)
- “a broad category of technologies, applications, and processes for gathering, storing, accessing, and analyzing data to help its users make better decisions” (Wixom & Watson, 2010, p. 14)
- “systems that combine: data gathering, data storage, and knowledge management with analysis to evaluate complex corporate and competitive information for presentation to planners and decision makers, with the objective of improving the timeliness and the quality of the input to the decision process” (Negash & Gray, 2008, p. 176)
- “is an umbrella term that includes architectures, tools, databases, applications, and methodologies”. (Turban et al., 2008, p. 9)
- “a set of methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information used to enable more effective strategic, tactical, and operational insights and decision-making” (Evelson, 2008, p. 1)

A Historic Overview

(Adopted from Davenport & Harris, 2007)



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Why BI?

- Technology: copy/paste
- “Decisions based on analytics are more likely to be correct than those based on intuition” (Davenport & Harris, 2007, p. 13)

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What is Business Intelligence (BI)?

- Analytics:
 - descriptive analytics
 - predictive analytics
 - prescriptive analytics?



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Organisations and Decisions

	Advanced analytics			
	Descriptive analytics	Predictive analytics	Prescriptive analytics	
			MANUAL	AUTOMATED
Top-level management decisions				
Middle management decisions				
Operational decisions				

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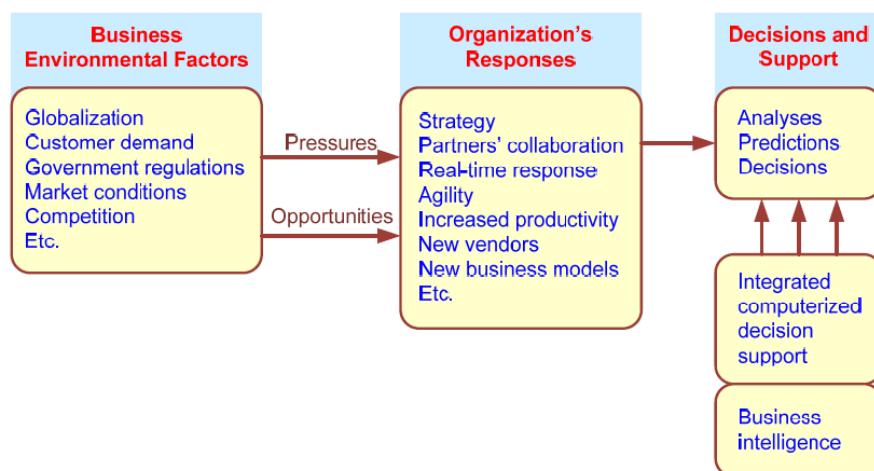
An Early Decision Support Framework

(by Gory and Scott-Morten, 1971)

Type of Decision	Type of Control		
	Operational Control	Managerial Control	Strategic Planning
Structured	Accounts receivable Accounts payable Order entry	Budget analysis Short-term forecasting Personnel reports Make-or-buy	Financial management Investment portfolio Warehouse location Distribution systems
Semistructured	Production scheduling Inventory control	Credit evaluation Budget preparation Plant layout Project scheduling Reward system design Inventory categorization	Building a new plant Mergers & acquisitions New product planning Compensation planning Quality assurance HR policies Inventory planning
Unstructured	Buying software Approving loans Operating a help desk Selecting a cover for a magazine	Negotiating Recruiting an executive Buying hardware Lobbying	R & D planning New tech. development Social responsibility planning

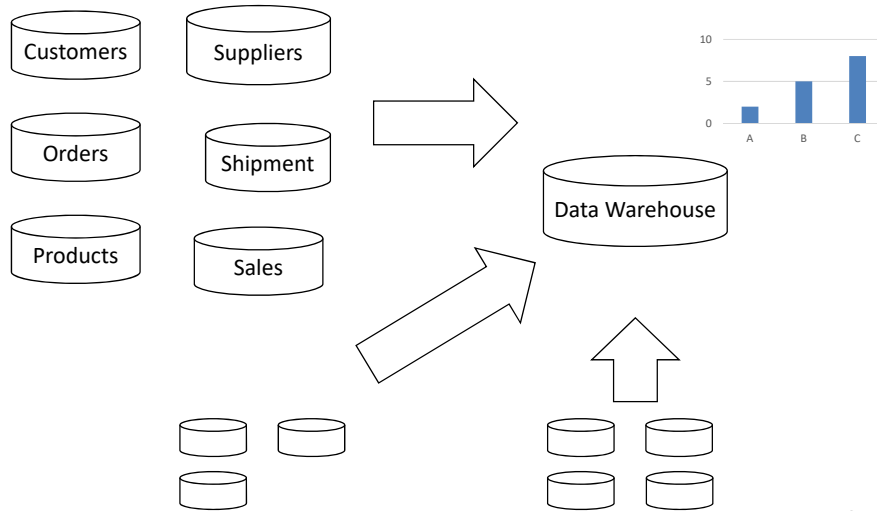
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Business Pressures–Responses–Support Model



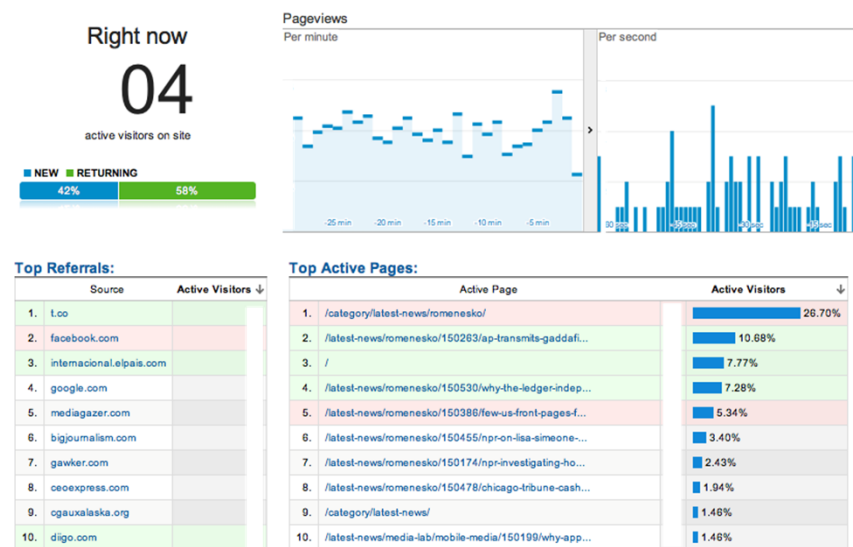
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Descriptive Analytics



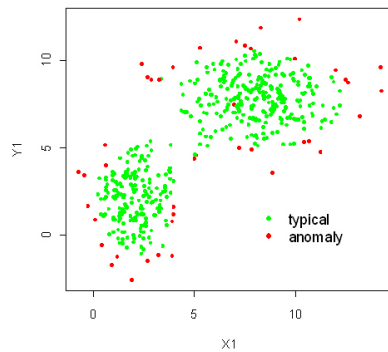
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Descriptive Analytics



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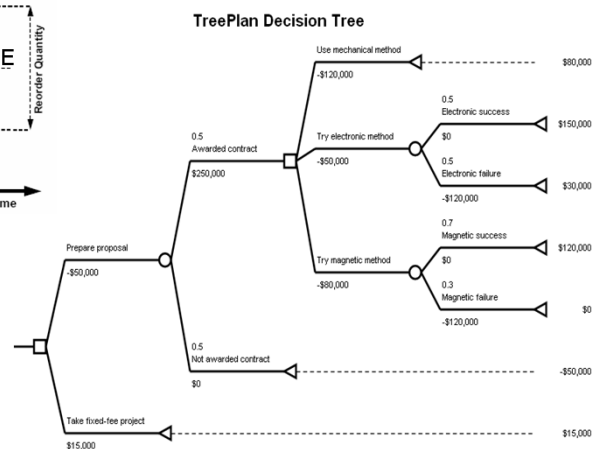
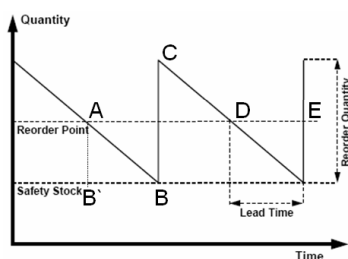
Predictive Analytics



- Anomaly
- Patterns

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Prescriptive analytics

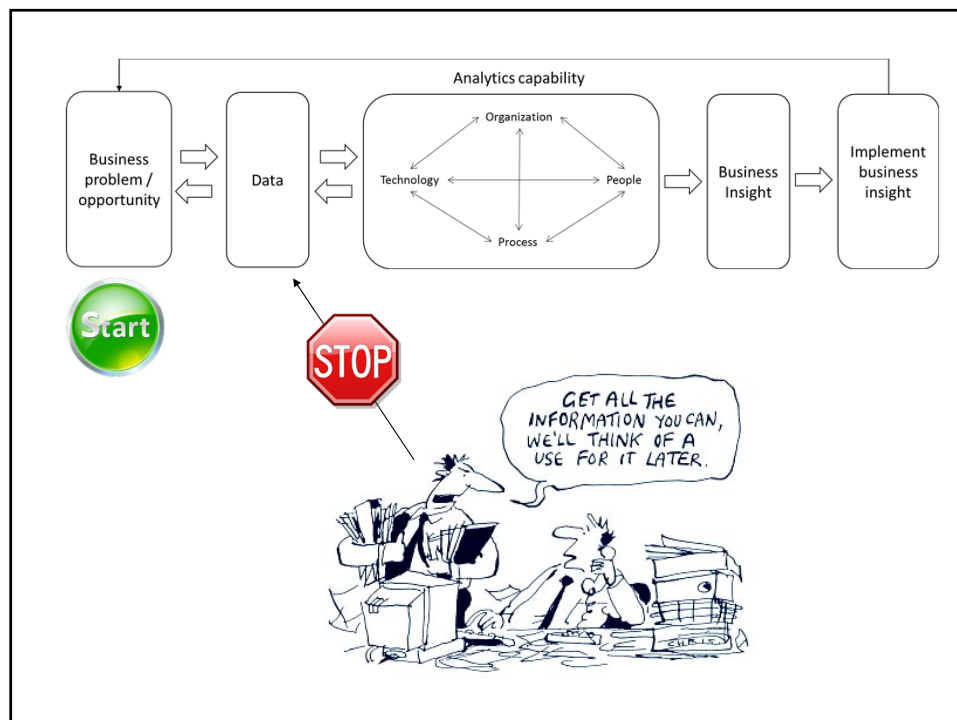


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Ethics



The power of habit



Next week: Seminar 1

- 15-20 minutes presentation:
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