Copenhagen Business School
HANDELSHØJSKOLEN

The future of ERP systems

Niels Bjørn-Andersen
Professor
Center for Applied ICT
Copenhagen Business School

Guimarães, 2-11-2009

Agenda

- TCO challenges
- Market trends to watch
- Market drivers
- Current ERP-developments to watch
  a) New architectures
  b) Personas and role-tailored client
  c) Better methods for implementation
- Enterprise 2.0 challenges
- 3gERP-project and characteristics of future ERP
- Conclusion

TOTAL COST OF OWNERSHIP - TCO CHALLENGES

Broken Promises: Unfulfilled Aspirations

Low Adoption Rates

In a typical enterprise resource planning (ERP) implementation, on average 46 percent of licensed seats are unused.

Failed Implementations

Nearly 50 percent of customer resource management (CRM) projects fail.

Long, Costly Training Periods

Up to 60 percent of implementation costs are spent on user training.

Low Penetration

15 percent of employees have licensed seats.

Three Danish cases

Copenhagen Business School
HANDELSHØJSKOLEN

1. High technology, strong innovation service company, growing 40%/year, very strong top and bottom line
2. Classic furniture design company, furniture made to order, all manufacturing in Denmark (C on next slide)
3. Design, manufacturing and distribution of high quality household goods, mainly manufactured in China (D on next slide)

Variations in relative costs

Copenhagen Business School
HANDELSHØJSKOLEN

Cost Categories (0) by Company

	A	B	C	D	E	Avg	StDev	
Software	30%	21%	15%	22%	23%	**21%**	5%	< avg - 1.0 std
Hardware	3%	3%	4%	3%	2%	**3%**	1%	> avg + 0.8 std
External	38%	47%	27%	56%	22%	**40%**	14%	
Internal	28%	29%	53%	20%	53%	**35%**	16%	
Misc	0%	0%	0%	0%	0%	**0%**	0%	
Total	100%	100%	100%	100%	100%	100%		

	A	B	C	D	E	Avg	StDev	
Software	857,415	1,245,604	674,636	759,834	345,200	**776,538**	325,300	< avg - 0.8 std
Hardware	98,745	177,965	167,000	100,000	24,600	**113,662**	61,889	< avg - 1.0 std
External	1,109,631	2,776,864	1,212,449	1,953,585	333,860	**1,477,278**	925,810	
Internal	822,388	1,750,000	2,361,187	686,250	794,500	**1,282,865**	739,507	
Misc	0	17,891	0	0	0	**3,578**	8,001	
Total	**2,888,178**	**5,968,324**	**4,415,272**	**3,499,669**	**1,498,159**	**3,653,920**	1,672,840	

lower
higher

Copenhagen Business School
HANDELSHØJSKOLEN

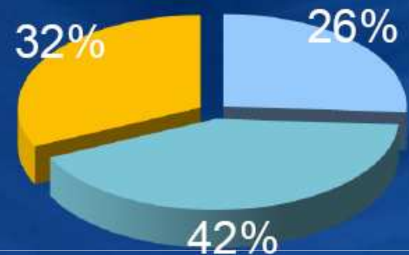
MARKET TRENDS TO WATCH

Business Applications Market In Transition

2005: $66.9 USD Billion Market*

10,000 – 12,000 Others $21.7B Highly Local and Vertical

10 Large Vendors $17.1B



- Epicor
- Exact
- Infor
- Intuit
- Lawson
- Microsoft
- SAP
- Sage
- Salesforce.com
- Oracle

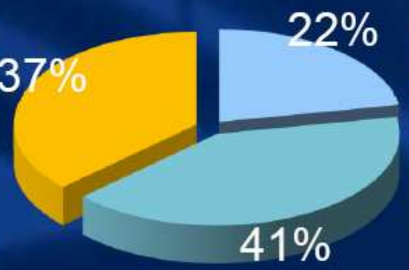
600 'Named' Vendors $28.1B

Picture2-Layer 0

2002: $51 USD Billion Market*

10,000 – 12,000 Others $18.9B Highly Local and Vertical

13 Large Vendors $11.2B



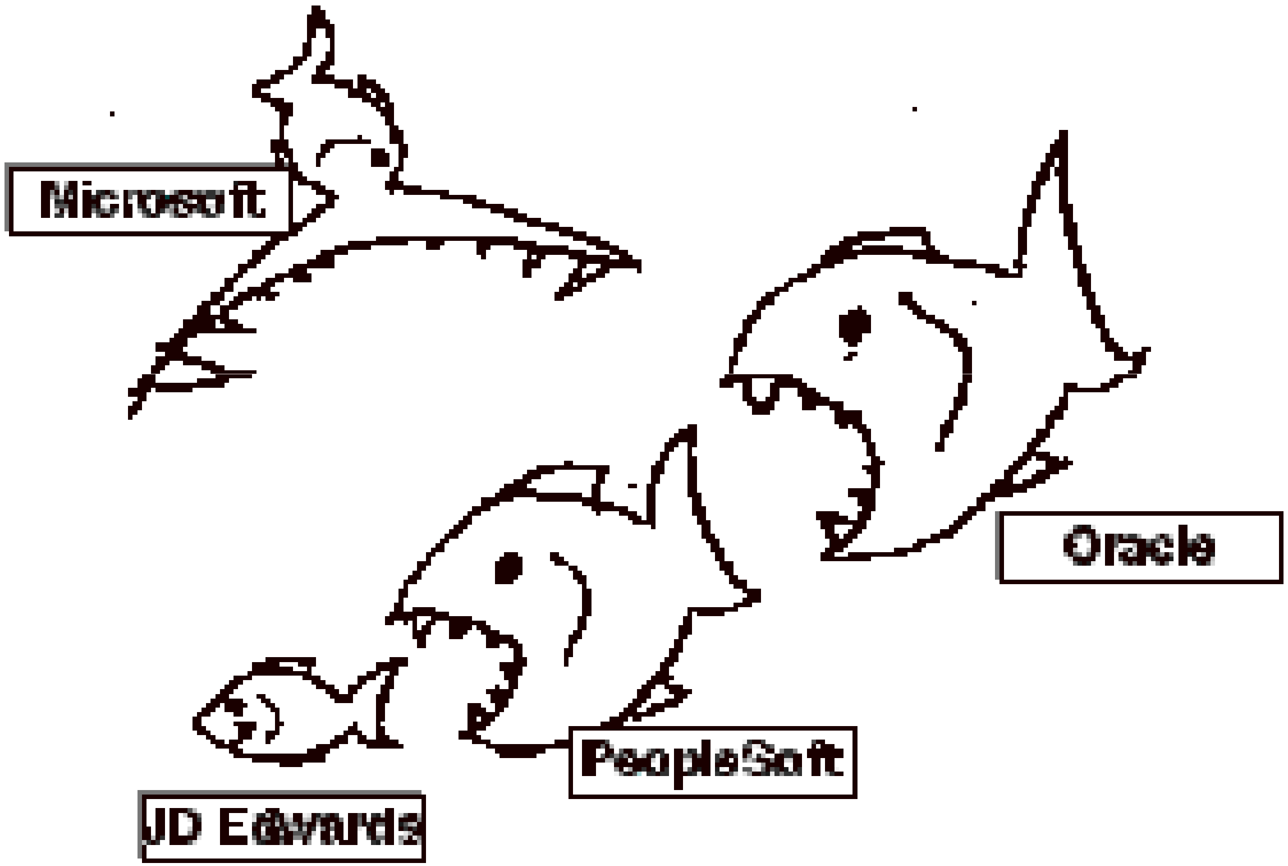
- Epicor
- Exact
- Infor
- Intuit
- Intentia
- Lawson
- Microsoft
- SAP
- Sage
- Salesforce.com
- SSA Global
- Oracle/ PS
- Siebel

600 'Named' Vendors $20.9B

"By 2008, there will be at least 40 percent fewer vendors in the enterprise resource planning market than there were in 2003 (0.7 probability)."

Gartner

* License and Maintenance Revenue Only; Source: IDC, Internal Estimates


Microsoft
Oracle
PeopleSoft
JD Edwards

Three market segments

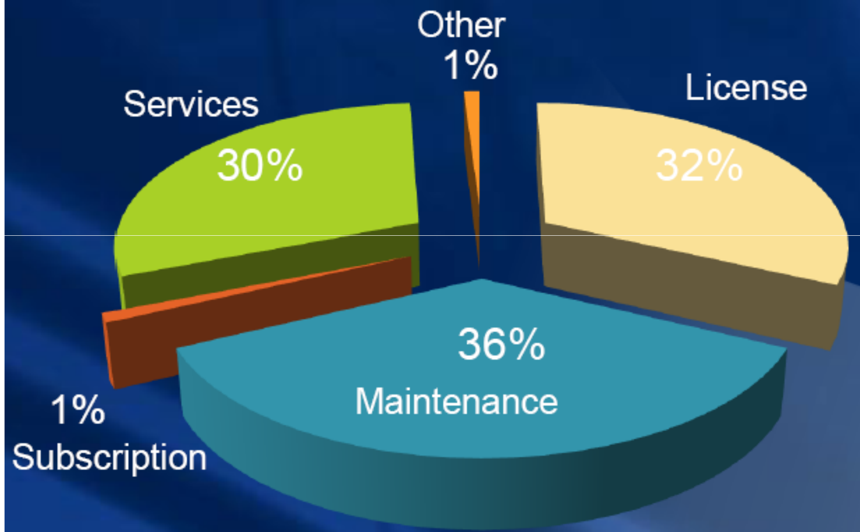
Copenhagen Business School
HANDELSHØJSKOLEN

- High end ERP implementations,
  - SAP, Oracle, PeopleSoft, Microsoft Dynamics AX, …
- Mid market ERP implementations
  - Bison, Epicor, Lawson, IFP, Microsoft Dynamics NAV, Sage, Intuit, Infor, …..
- Low end, small and micro companies, Stand alone packages like C5 or Quicken will be substituted with Software as a Service
  - Salesforce.com, e-conomic

MARKET DRIVERS

Market driver (1): Consolidation fueled by Share Holder Value

ERP Application Revenue by Type:



Source: AMR Research; "The ERP Market Sizing Report, 2006-2011"; June 2007

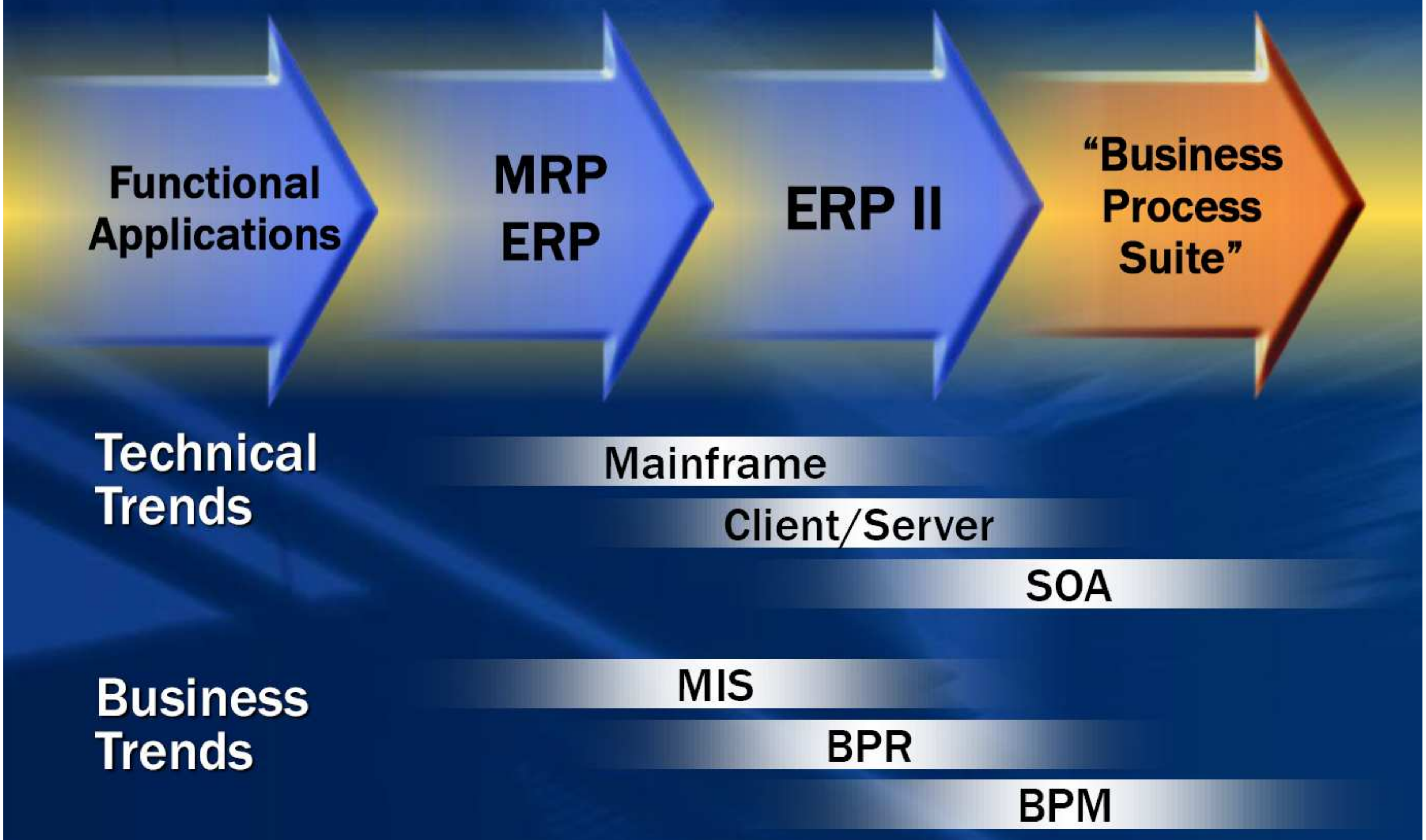
Service & Maintenance revenue a primary business driver:

"What these 'collector' companies do is buy vendors that have a mature product with a big installed base and collect the maintenance revenue"

"They'll keep the product lines going for as long as they can, making just enough R&D investment to stay in the market"

Source: Nigel Rayner, - Gartner, July 2006

Market driver (2): Platform Innovation



Market driver (3): from Buyer to User focus

Buyers :

- Proof the ROI
- Low TCO
- Process focus
- Industry best practices
- Compliance (SOX ea)

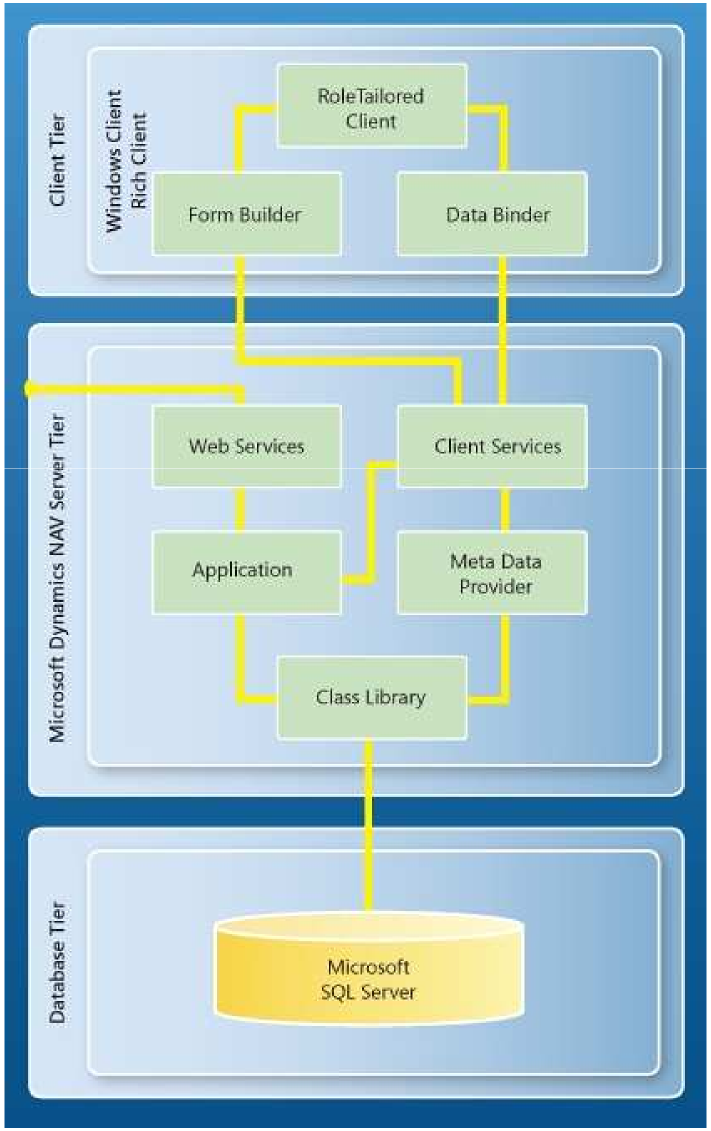
Users :

- Web 2.0 technologies:
  - Wiki's
  - Blogs
  - Online Ad-platforms
- Structured + Unstructured information
- Search
- Mobile (access anytime, anywhere)

CURRENT ERP TRENDS:
A. NEW ARCHITECTURES

NAV 2009 architecture

Copenhagen Business School
HANDELSHØJSKOLEN

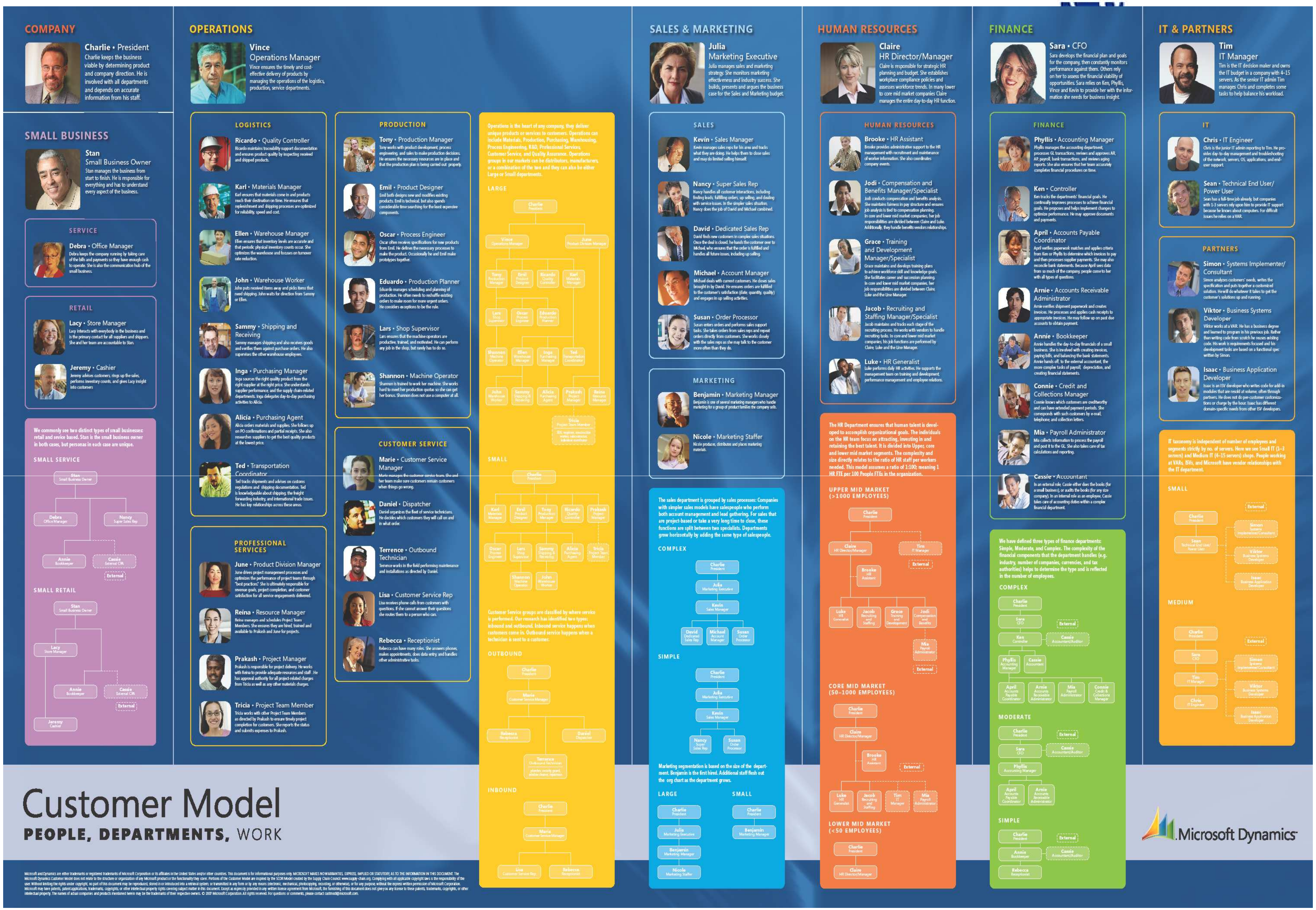


Service Oriented Architecture (SOA)

- Functionality organized around business processes
- Packaged as interoperable services
- Functions are organized in services which often may be accessed over the network
- Loose coupling of service with operating system and databases
- Often shown as a 3 tier architecture like here, but could be 4 tier

Copenhagen Business School
HANDELSHØJSKOLEN

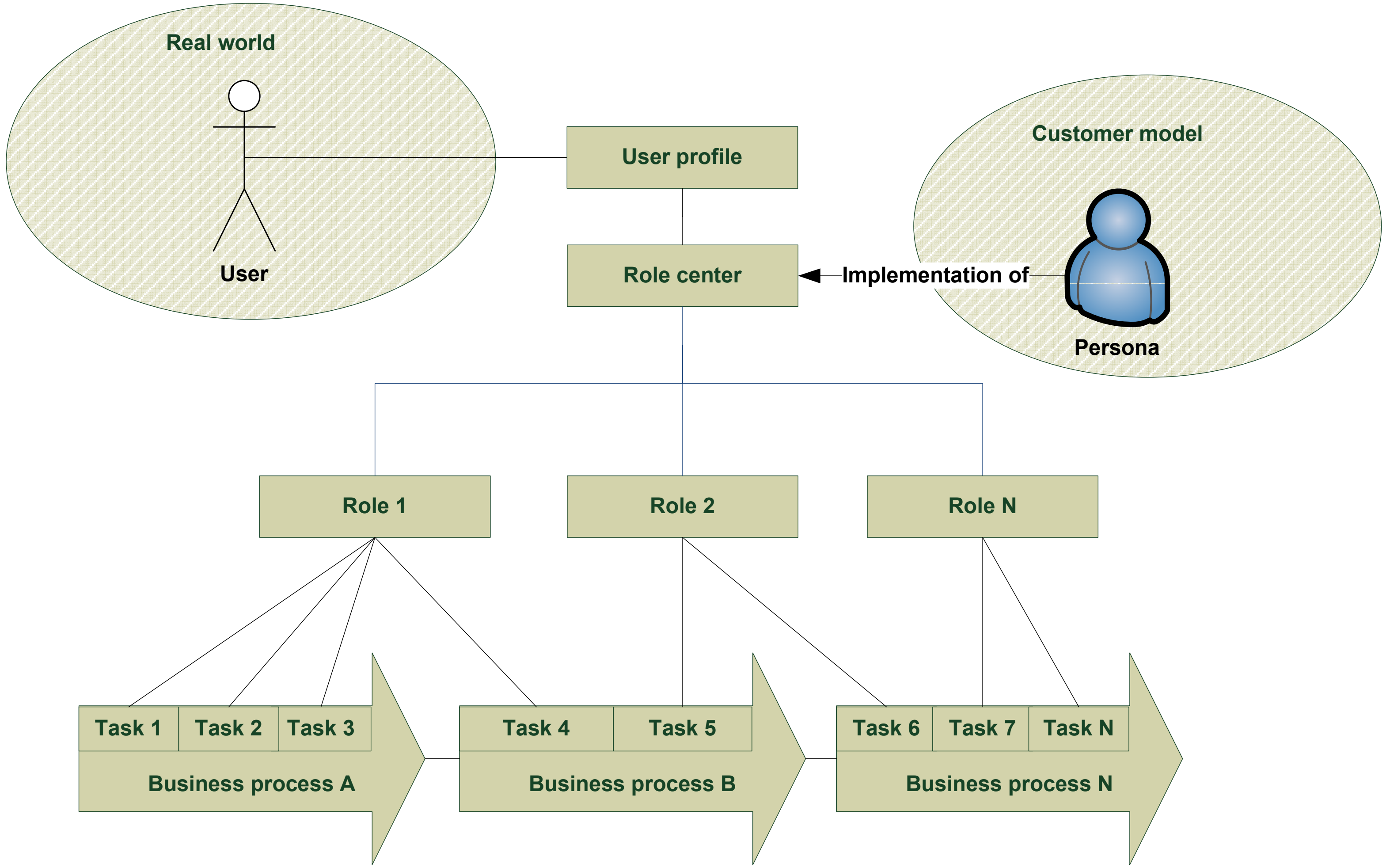
CURRENTS ERP TRENDS
B. PERSONAS AND ROLE-TAILORED CLIENT


COMPANY
Charlie • President
Charlie keeps the business viable by determining product and company direction. He is involved with all departments and depends on accurate information from his staff.
SMALL BUSINESS
Stan
Small Business Owner
Stan manages the business from start to finish. He is responsible for everything and has to understand every aspect of the business.
SERVICE
Debra • Office Manager
Debra keeps the company running by taking care of the bills and payments so they have enough cash to operate. She is also the communication hub of the small business.
RETAIL
Lacy • Store Manager
Lacy interacts with everybody in the business and is the primary contact for all suppliers and shippers. She and her team are accountable to Stan.
Jeremy • Cashier
Jeremy advises customers, rings up the sales, performs inventory counts, and gives Lacy insight into customers
We commonly see two distinct types of small businesses: retail and sevice based. Stan is the small business owner in both cases, but personas in each case are unique.
SMALL SERVICE
SMALL RETAIL
OPERATIONS
Vince
Operations Manager
Vince ensures the timely and cost-effective delivery of products by managing the operations of the logistics, production, service departments.
LOGISTICS
Ricardo • Quality Controller
Ricardo maintains traceability support documentation and ensures product quality by inspecting received and shipped products.
Karl • Materials Manager
Karl ensures that materials come in and products reach their destination on time. He ensures that replenishment and shipping processes are optimized for reliability, speed and cost.
Ellen • Warehouse Manager
Ellen ensures that inventory levels are accurate and that periodic physical inventory counts occur. She optimizes the warehouse and focuses on turnover rate reduction.
John • Warehouse Worker
John puts received items away and picks items that need shipping. John waits for direction from Sammy or Ellen.
Sammy • Shipping and Receiving
Sammy manages shipping and also receives goods and verifies them against purchase orders. He also supervises the other warehouse employees.
Inga • Purchasing Manager
Inga sources the right quality product from the right supplier at the right price. She understands supplier performance, and the supply chain-related departments. Inga delegates day-to-day purchasing activities to Alicia.
Alicia • Purchasing Agent
Alicia orders materials and supplies. She follows up on PO confirmations and partial receipts. She also researches suppliers to get the best quality products at the lowest price.
Ted • Transportation Coordinator
Ted tracks shipments and advises on customs regulations and shipping documentation. Ted is knowledgeable about shipping, the freight forwarding industry, and international trade issues. He has key relationships across these areas.
PROFESSIONAL SERVICES
June • Product Division Manager
June drives project management processes and optimizes the performance of project teams through "best practices." She is ultimately responsible for revenue goals, project completion, and customer satisfaction for all service engagements delivered.
Reina • Resource Manager
Reina manages and schedules Project Team Members. She ensures they are hired, trained and available to Prakash and June for projects.
Prakash • Project Manager
Prakash is responsible for project delivery. He works with Reina to provide adequate resources and staff . He has approval authority for all project-related charges from Tricia as well as any other materials charges.
Tricia • Project Team Member
Tricia works with other Project Team Members as directed by Prakash to ensure timely project completion for customers. She reports the status and submits expenses to Prakash.
PRODUCTION
Tony • Production Manager
Tony works with product development, process engineering, and sales to make production decisions. He ensures the necessary resources are in place and that the production plan is being carried out properly.
Emil • Product Designer
Emil both designs new and modifies existing products. Emil is technical, but also spends considerable time searching for the least expensive components.
Oscar • Process Engineer
Oscar often receives specifications for new products from Emil. He defines the necessary processes to make the product. Occasionally he and Emil make prototypes together.
Eduardo • Production Planner
Eduardo manages scheduling and planning of production. He often needs to reshuffle existing orders to make room for more urgent orders. He considers exceptions to be the rule.
Lars • Shop Supervisor
Lars ensures that the machine operators are productive, trained, and motivated. He can perform any job in the shop, but rarely has to do so.
Shannon • Machine Operator
Shannon is trained to work her machine. She works hard to meet her production quotas so she can get her bonus. Shannon does not use a computer at all.
CUSTOMER SERVICE
Marie • Customer Service Manager
Marie manages the customer service team. She and her team make sure customers remain customers when things go wrong.
Daniel • Dispatcher
Daniel organizes the fleet of service technicians. He decides which customers they will call on and in what order.
Terrence • Outbound Technician
Terrence works in the field performing maintenance and installations as directed by Daniel.
Lisa • Customer Service Rep
Lisa receives phone calls from customers with questions. If she cannot answer their questions she routes them to a person who can.
Rebecca • Receptionist
Rebecca can have many roles. She answers phones, makes appointments, does data entry, and handles other administrative tasks.
Operations is the heart of any company, they deliver unique products or services to customers. Operations can include Materials, Production, Purchasing, Warehousing, Process Engineering, R&D, Professional Services, Customer Service, and Quality Assurance. Operations groups in our markets can be distributors, manufacturers, or a combination of the two and they can also be either Large or Small departments.
LARGE
SMALL
Customer Service groups are classified by where service is performed. Our research has identified two types: inbound and outbound. Inbound service happens when customers come in. Outbound service happens when a technician is sent to a customer.
OUTBOUND
INBOUND
SALES & MARKETING
Julia
Marketing Executive
Julia manages sales and marketing strategy. She monitors marketing effectiveness and industry success. She builds, presents and argues the business case for the Sales and Marketing budget.
SALES
Kevin • Sales Manager
Kevin manages sales reps for his area and tracks what they are doing. He helps them to close sales and may do limited selling himself.
Nancy • Super Sales Rep
Nancy handles all customer interactions, including finding leads, fulfilling orders, up selling, and dealing with service issues. In the simpler sales situation, Nancy does the job of David and Michael combined.
David • Dedicated Sales Rep
David finds new customers in complex sales situations. Once the deal is closed, he hands the customer over to Michael, who ensures that the order is fulfilled and handles all future issues, including up selling.
Michael • Account Manager
Michael deals with current customers. He closes sales brought in by David. He ensures orders are fulfilled to the customer's satisfaction (date, quantity, quality) and engages in up selling activities.
Susan • Order Processor
Susan enters orders and performs sales support tasks. She takes orders from sales reps and repeat orders directly from customers. She works closely with the sales reps as she may talk to the customer more often than they do.
MARKETING
Benjamin • Marketing Manager
Benjamin is one of several marketing managers who handle marketing for a group of product families the company sells.
Nicole • Marketing Staffer
Nicole produces, distributes and places marketing materials.
The sales department is grouped by sales processes: Companies with simpler sales models have salespeople who perform both account management and lead gathering. For sales that are project-based or take a very long time to close, these functions are split between two specialists. Departments grow horizontally by adding the same type of salespeople.
COMPLEX
SIMPLE
Marketing segmentation is based on the size of the department. Benjamin is the first hired. Additional staff flesh out the org chart as the department grows.
LARGE
SMALL
HUMAN RESOURCES
Claire
HR Director/Manager
Claire is responsible for strategic HR planning and budget. She establishes workplace compliance policies and assesses workforce trends. In many lower to core mid market companies Claire manages the entire day-to-day HR function.
HUMAN RESOURCES
Brooke • HR Assistant
Brooke provides administrative support to the HR management with recruitment and maintenance of worker information. She also coordinates company events.
Jodi • Compensation and Benefits Manager/Specialist
Jodi conducts compensation and benefits analysis. She maintains fairness in pay structure and ensures job analysis is tied to compensation planning. In core and lower mid market companies, her job responsibilities are divided between Claire and Luke. Additionaly, they handle benefits vendors relationships.
Grace • Training and Development Manager/Specialist
Grace maintains and develops training plans to achieve workforce skill and knowledge goals. She facilitates career and succession planning. In core and lower mid market companies, her job responsibilities are divided between Claire, Luke and the Line Manager.
Jacob • Recruiting and Staffing Manager/Specialist
Jacob maintains and tracks each stage of the recruiting process. He works with vendors to handle recruiting tasks. In core and lower mid market companies, his job functions are performed by Claire, Luke and the Line Manager.
Luke • HR Generalist
Luke performs daily HR activities. He supports the management team on training and development, performance management and employee relations.
The HR Department ensures that human talent is developed to accomplish organizational goals. The individuals on the HR team focus on attracting, investing in and retaining the best talent. It is divided into Upper, core and lower mid market segments. The complexity and size directly relates to the ratio of HR staff per workers needed. This model assumes a ratio of 1:100; meaning 1 HR FTE per 100 People FTEs in the organization.
UPPER MID MARKET (>1000 EMPLOYEES)
CORE MID MARKET (50–1000 EMPLOYEES)
LOWER MID MARKET (<50 EMPLOYEES)
FINANCE
Sara • CFO
Sara develops the financial plan and goals for the company, then constantly monitors performance against them. Others rely on her to assess the financial viability of opportunities. Sara relies on Ken, Phyllis, Vince and Kevin to provide her with the information she needs for business insight.
FINANCE
Phyllis • Accounting Manager
Phyllis manages the accounting department, processes GL transactions, reviews and approves AR, AP, payroll, bank transactions, and reviews aging reports. She also ensures that her team accurately completes financial procedures on time.
Ken • Controller
Ken tracks the departments' financial goals. He continually improves processes to achieve financial goals. He proposes and helps implement changes to optimize performance. He may approve documents and payments.
April • Accounts Payable Coordinator
April verifies paperwork matches and applies criteria from Ken or Phyllis to determine which invoices to pay and then processes supplier payments. She may also reconcile bank statements. Because April sees data from so much of the company, people come to her with all types of questions.
Arnie • Accounts Receivable Administrator
Arnie verifies shipment paperwork and creates invoices. He processes and applies cash receipts to appropriate invoices. He may follow up on past due accounts to obtain payment.
Annie • Bookkeeper
Annie handles the day-to-day financials of a small business. She is involved with creating invoices, paying bills, and balancing the bank statements. Annie hands off, to the external accountant, the more complex tasks of payroll, depreciation, and creating financial statements.
Connie • Credit and Collections Manager
Connie knows which customers are creditworthy and can have extended payment periods. She corresponds with such customers by e-mail, telephone, and collection letters.
Mia • Payroll Administrator
Mia collects information to process the payroll and post it to the GL. She also takes care of tax calculations and reporting.
Cassie • Accountant
In an external role, Cassie either does the books (for a small business), or audits the books (for any size company). In an internal role as an employee, Cassie takes care of accounting duties within a complex financial department.
We have defined three types of finance departments: Simple, Moderate, and Complex. The complexity of the financial components that the department handles (e.g. industry, number of companies, currencies, and tax authorities) helps to determine the type and is reflected in the number of employees.
COMPLEX
MODERATE
SIMPLE
IT & PARTNERS
Tim
IT Manager
Tim is the IT decision maker and owns the IT budget in a company with 4–15 servers. As the senior IT admin Tim manages Chris and completes some tasks to help balance his workload.
IT
Chris • IT Engineer
Chris is the junior IT admin reporting to Tim. He provides day-to-day management and troubleshooting of the network, servers, OS, applications, and end-user support.
Sean • Technical End User/Power User
Sean has a full-time job already, but companies with 1-3 servers rely upon him to provide IT support because he knows about computers. For difficult issues he relies on a VAR.
PARTNERS
Simon • Systems Implementer/Consultant
Simon analyzes customers' needs, writes the specification and puts together a customized solution. He will do whatever it takes to get the customer's solutions up and running.
Viktor • Business Systems Developer
Viktor works at a VAR. He has a business degree and learned to program in his previous job. Rather than writing code from scratch he reuses existing code. His work is requirements focused and his development tasks are based on a functional spec written by Simon.
Isaac • Business Application Developer
Isaac is an ISV developer who writes code for add-in modules that are resold at volume, often through partners. He does not do per-customer customizations or charge by the hour. Isaac has different domain-specific needs from other ISV developers.
IT taxonomy is independent of number of employees and segments strictly by no. of servers. Here we see Small IT (1–3 servers) and Medium IT (4–15 servers) shops. People working at VARs, ISVs, and Microsoft have vendor relationships with the IT department.
SMALL
MEDIUM
Customer Model
PEOPLE, DEPARTMENTS, WORK
Microsoft Dynamics

Microsoft Dynamics “Customer Model”

People, Departments, Work

Microsoft Dynamics NAV 2009
– the role concept



CURRENT ERP TRENDS:
C. BETTER METHOD FOR IMPLEMENTATION

Sure Step for implementation

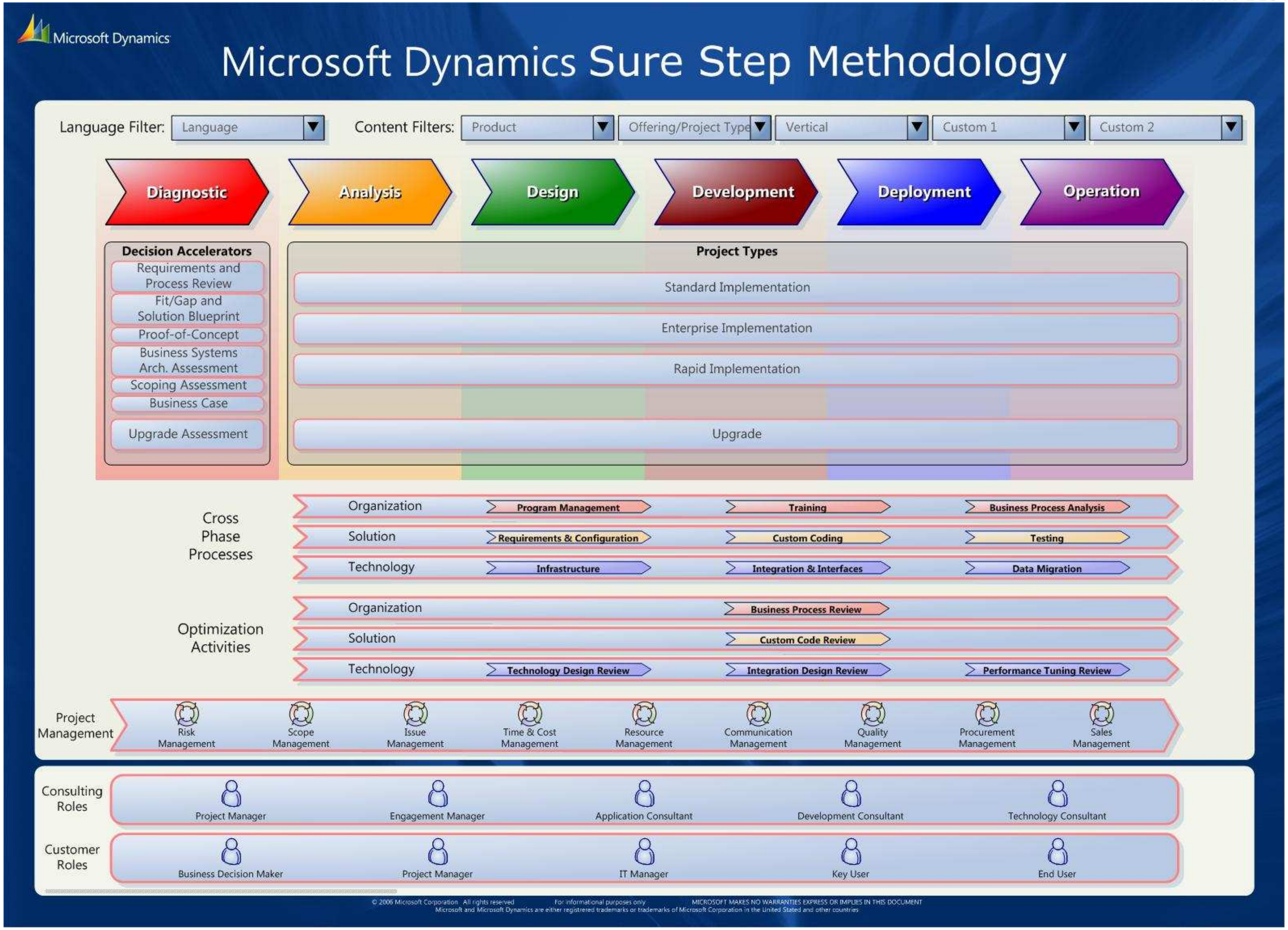
Copenhagen Business School
HANDELSHØJSKOLEN

"Sure Step will shortly become synonymous with <u>on-time</u>, <u>on-budget</u>, <u>on-spec</u> implementations of Microsoft Dynamics applications, and most importantly, will help our partners exceed their customers' expectations."
— ***Kirill Tatarinov*** *Corporate Vice President, MBS*

- Content and client 2.0 released July 2009
- Originally released in April 2007
- Over 1,300 people have attended training
- 26% of partner organizations report having used Sure Step
- Provided to Microsoft Dynamics Partners enrolled in a Partner Service Plan

Sure Step - Overview

Copenhagen Business School
HANDELSHØJSKOLEN

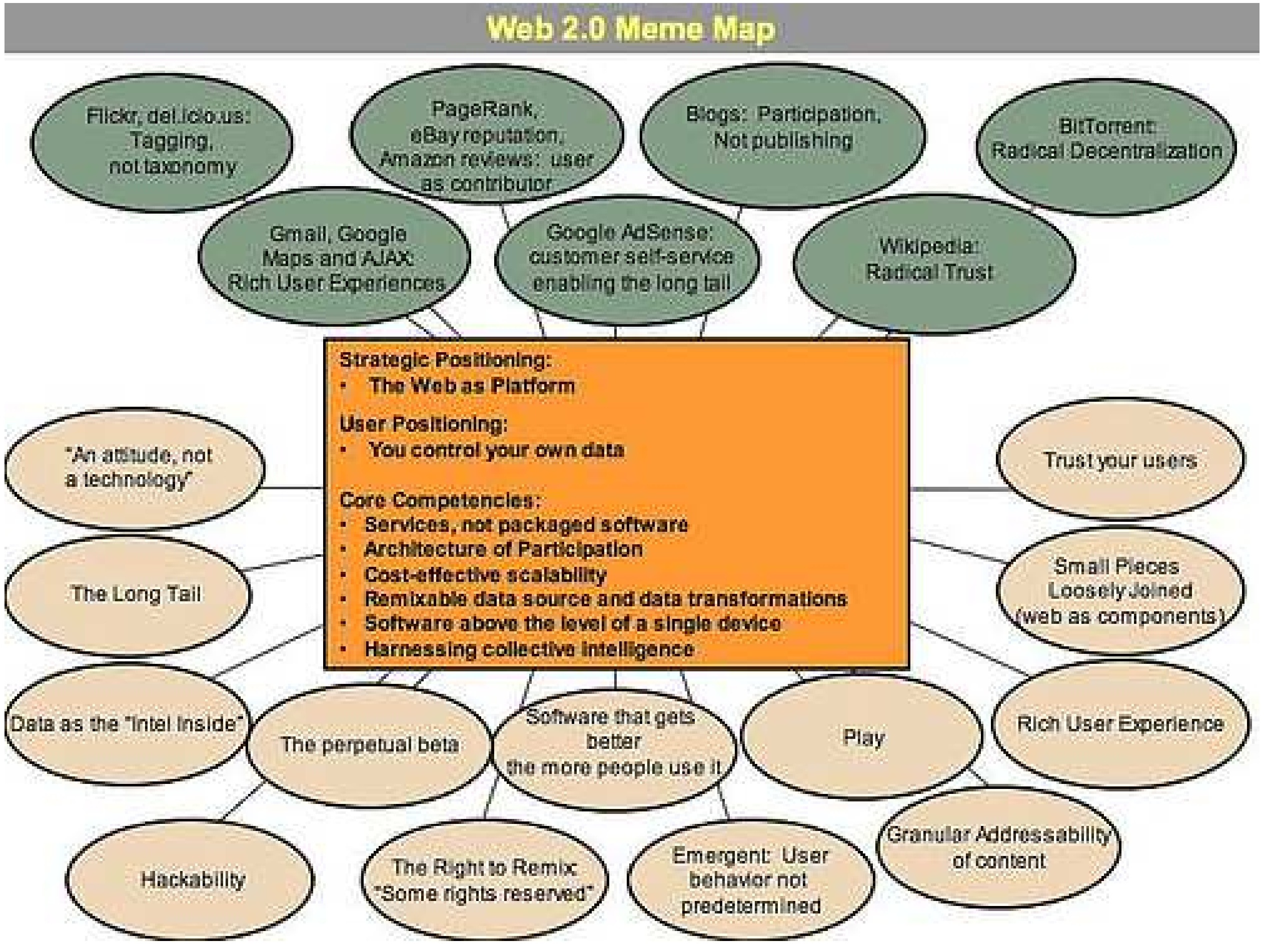


Copenhagen Business School
HANDELSHØJSKOLEN

ENTERPRISE 2.0 CHALLENGES

Web 2.0 developments

Copenhagen Business School
HANDELSHØJSKOLEN



Meme map of Web 2.0 (O'Reilly 2005)

Profile of Enterprise 2.0

Copenhagen Business School
HANDELSHØJSKOLEN

Enterprise 1.0	Enterprise 2.0
Hierarchical organization	Flat organization
Automation in the core	Interaction in the core
Tree representation	Associative representation
Bureaucracy	Agility
Static and rigid	Dynamic and adaptive
IT driven technology	User driven technology
Feature-driven value	User-driven value
Top-down	Bottom-up
Centralized	Distributed
Hand-picked teams	Self-organizing teams
Silos	Open borders
Controlled communication	Transparency
Taxonomies	Folksonomies
Complexity	Simplicity
Closed standards	Open standards

"Enterprise 2.0 is the use of emergent social software platforms within companies, or between companies and their partners or customers" .

Andrew McAfee, HBS

Web 2.0 implications for ERP

Copenhagen Business School
HANDELSHØJSKOLEN

Web as a platform

Software above a single device

Data rich internet applications

Harnessing collective intelligence

Lightweight business models

Trust your users

Crowd sourcing

Copenhagen Business School
HANDELSHØJSKOLEN

RESEARCH COLLABORATION – THE 3GERP-PROJECT

Copenhagen Business School
HANDELSHØJSKOLEN

Microsoft Business Solutions

Copenhagen Business School
HANDELSHØJSKOLEN

oxford
SAID BUSINESS SCHOOL

ESADE
Business School

- 4 million € over the period of 2007 - 2010
- more than 40 researchers
- more than ten research groups

Internal structure of project

Copenhagen Business School
ØJSKOLEN

Phase 1 - Project area A: Requirements definition
- Identify differences in requirements in local markets depending on legal, institutional and cultural grounds
- Study of transactions and reporting requirements
- Surveys, case studies in each market of legal, industry practices
- Multidimensional taxonomy
- Future IT -trends

Phase 2 - Project area B: Future Business Information Requirements
- Future trends in accounting and Supply Chain, International standards e.g. within the EU
- Process orientation instead of function orientation
- Reporting requirements
- New accounting rules, principles
- IAS, EBRL and .NET

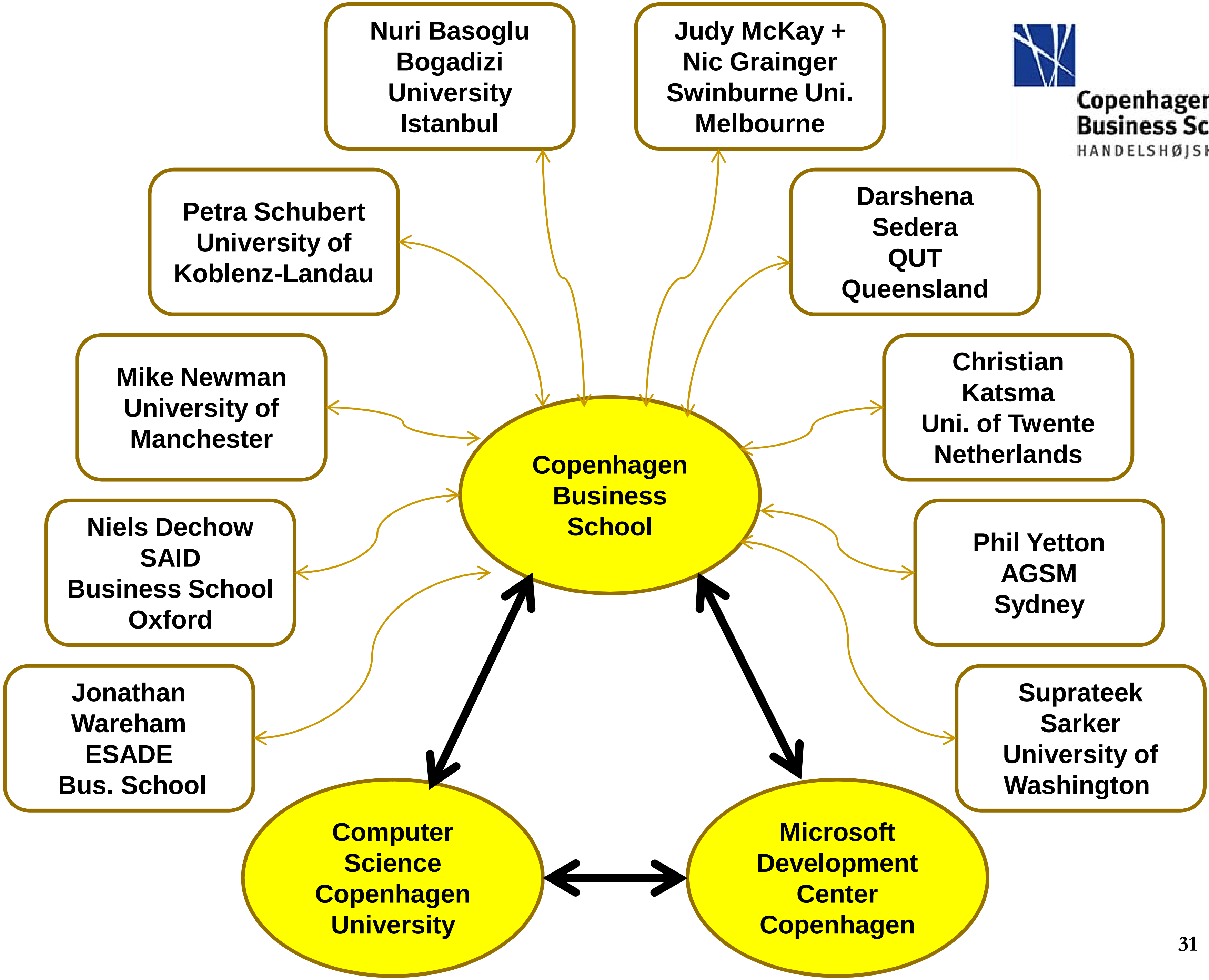
Phase 2 - Project area C: Future IT-architecture
- Process and data models
- Structuring principles in form of kernel, market specific components, modifiable design
- Static and dynamic verification of business rules and security
- Built-in support for updating, scaling and flexibility.

Phase 2 - Project area D: Tools and technology
- Technical implementation
- Languages and tools for defining, managing and analyzing processes
- Technology for real-time business analysis

Phase 2 - Project area E: Organizational impl. and partnership models
- Tools and techniques for adoption
- Integration and partnership models with business partners in inter-organizational networks
- Division of work between MBS and partners
- Modifications according to market culture and organization

Results
- Dramatically lower TCO
- Dramatically enhanced TBO
- Easier implementation
- Easier integration with others
- Increased flexibility
- Enhanced scalability
- Enhanced Customer Value Proposition

Copenhagen Business School
HANDELSHØJSKOLEN



Long term perspective

Copenhagen Business School
HANDELSHØJSKOLEN

- The 3gERP consortium is convinced that it is possible to develop a prototype of a radical new ERP architecture with all necessary implementation tools, business models, market strategies, etc
- Process-oriented, Event-driven Transaction System – POETS
- This will be based on newest .NET technology
- Programming of POETS consists of formalization in a domain dependent contract language, using a requirement specification tool, where specifications will be executed directly in POETS without any coding
- We expect a 50 – 80% reduction in TCO

Copenhagen Business School
HANDELSHØJSKOLEN

CONCLUSION

Conclusion

Copenhagen Business School
HANDELSHØJSKOLEN

- Still very costly and difficult to implement ERP-systems
- Consolidation of ERP-vendors comes slowly
- Focus will shift from buyers/decision makers to users
- Current developments that build on business processes rather than functions with a) SOA like architectures, b) role-centers/persones and c) new formalized implementation methodologies, is a big step forward
- Web 2.0 enterprises will raise new demands
- Third generation of ERP-systems are likely to be much easy to implement, maintain and adapt like POETS
- New delivery modes: SaaS, Cloud computing, ASP….

Q u e s t i o n s ?