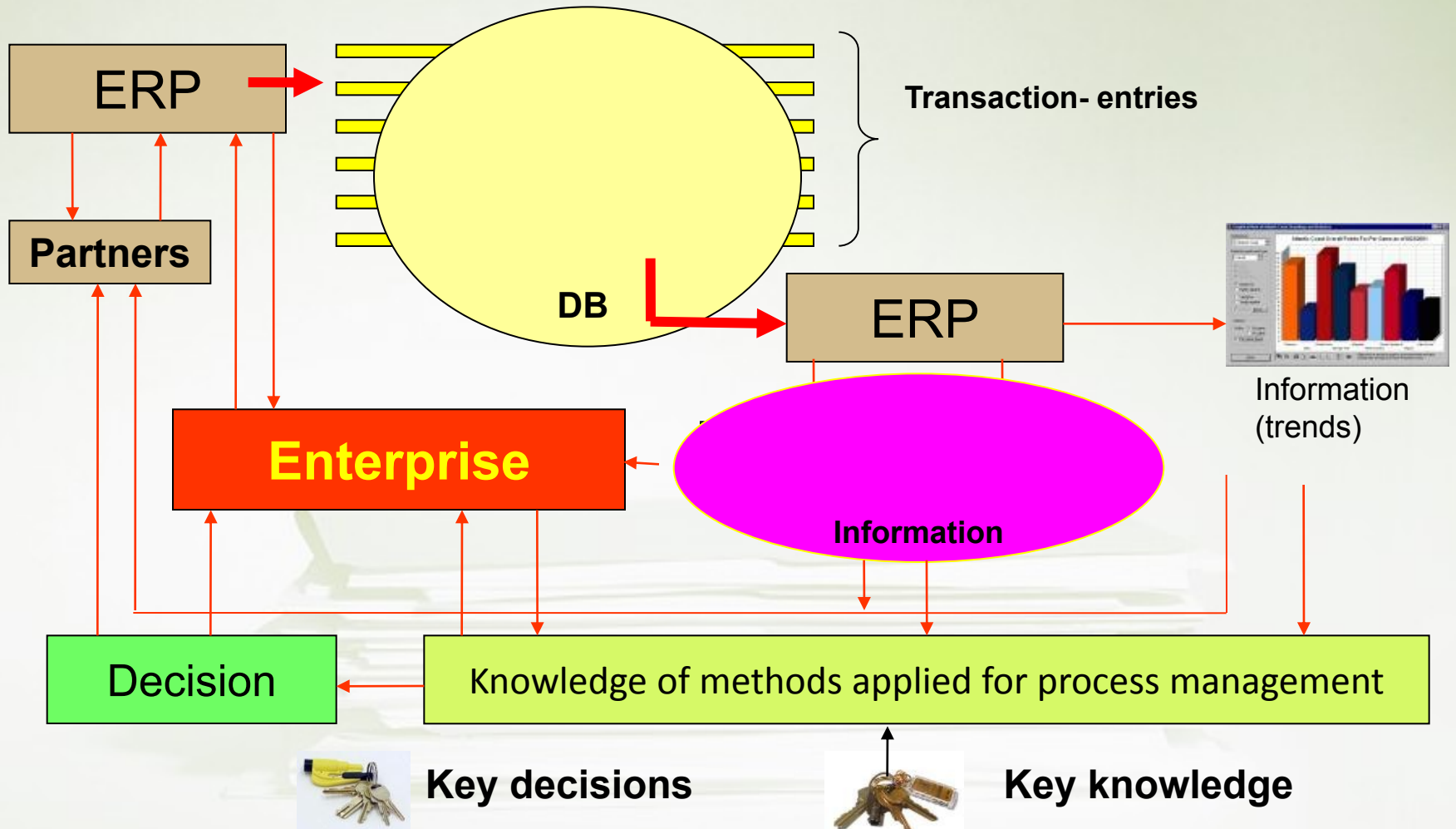


BASIC ERP ARCHITECTURE

Skorkovský, KPH, ESF MU, Brno



Simplified schema of ERP usage



Methods

- Theory of constraint
- Critical chain
- DBR
- Ishikawa Fishbone Diagram
- Boston matrix and PLC
- Magic Matrix (Gartner)
- Use of ERP analytic tools
- Pareto analysis
- SWOT (basic and advanced)
- MRP,MRP-II,CONWIP,
- Advanced Planning and scheduling
- Linear programming
- Methods of quality management

What could be controlled...



ERP

The main objective of **Enterprise Resource Planning**, or ERP, is to integrate all departments and functions across a company into a single system by using a common database, the value of which is to be able to have only one correct set of data.



Isolated Data Islands

Accounting
Island



Marketing

Marketing
& Sales
Islands



Accounting

Production
Island



Customer
Orders



Sales
Representatives



Customers



Production
Planning

Island of
Deliveries



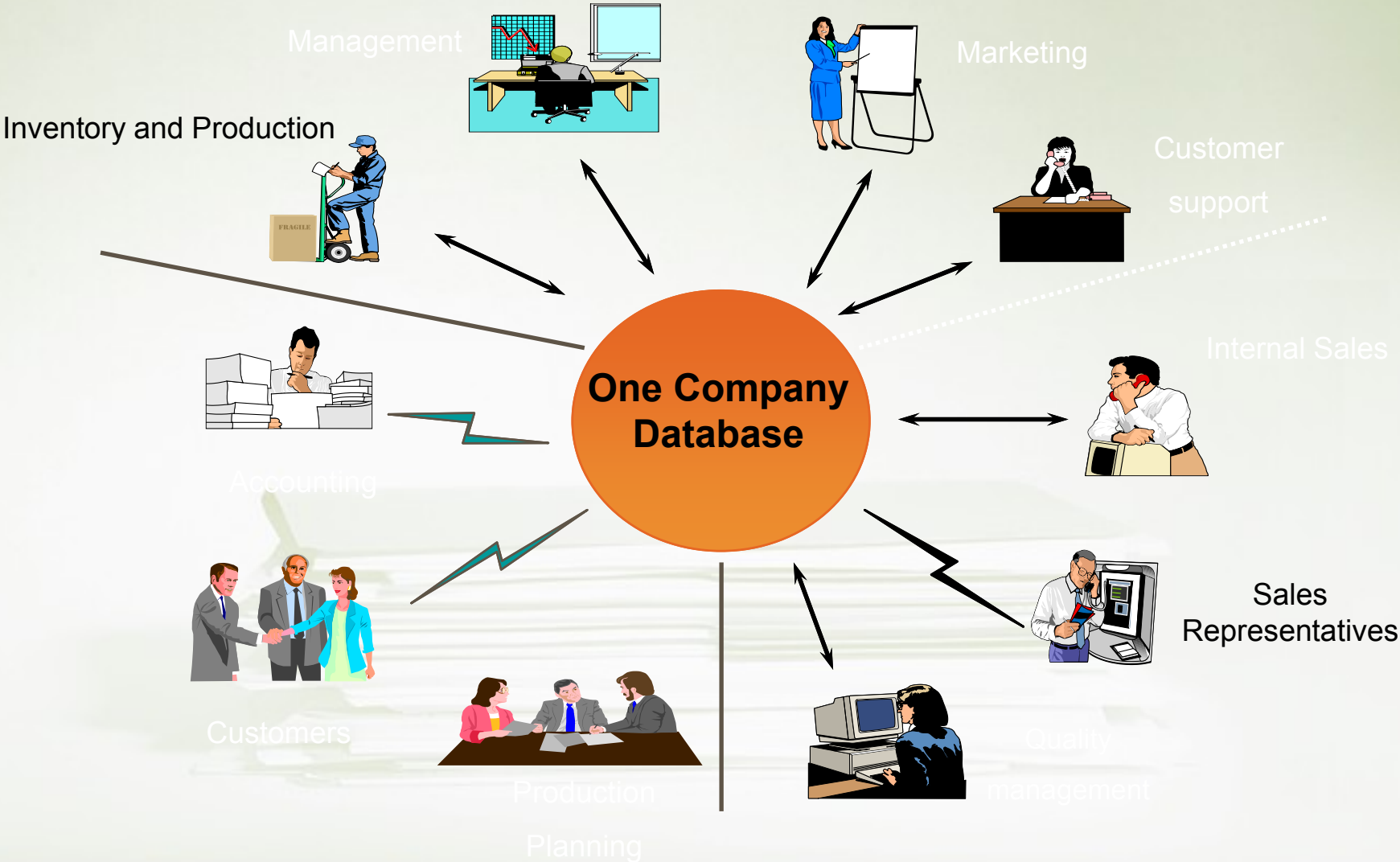
Quality Management

Quality
Management
Island



Inventory and Production

One Solution ● One Database ● All Microsoft



ISLAND SYSTEMS

For example, records about inventory levels may be found in one database, while customer information may be found in its own separate database. Furthermore, these databases may be "island systems" (operating independently from each other and having no integration with other databases).

Warehouse data (examples)	Production Data (examples)	Sales & Customer Data (examples)
<ul style="list-style-type: none">• Physical location of items• Actual stock count• Number of items on hold (pending quality inspection)	<ul style="list-style-type: none">• Number of items to be produced• Number of items already produced• Capacity	<ul style="list-style-type: none">• Open sales orders• Confirmed sales orders• Customer information

From hell to paradise –ERP (see meaning)



You can change a business in order to copy rigid functions of the software ERP

Programming

You can change a software in order to support your business

Parameter setup



ERP Evaluation and Success dimensions

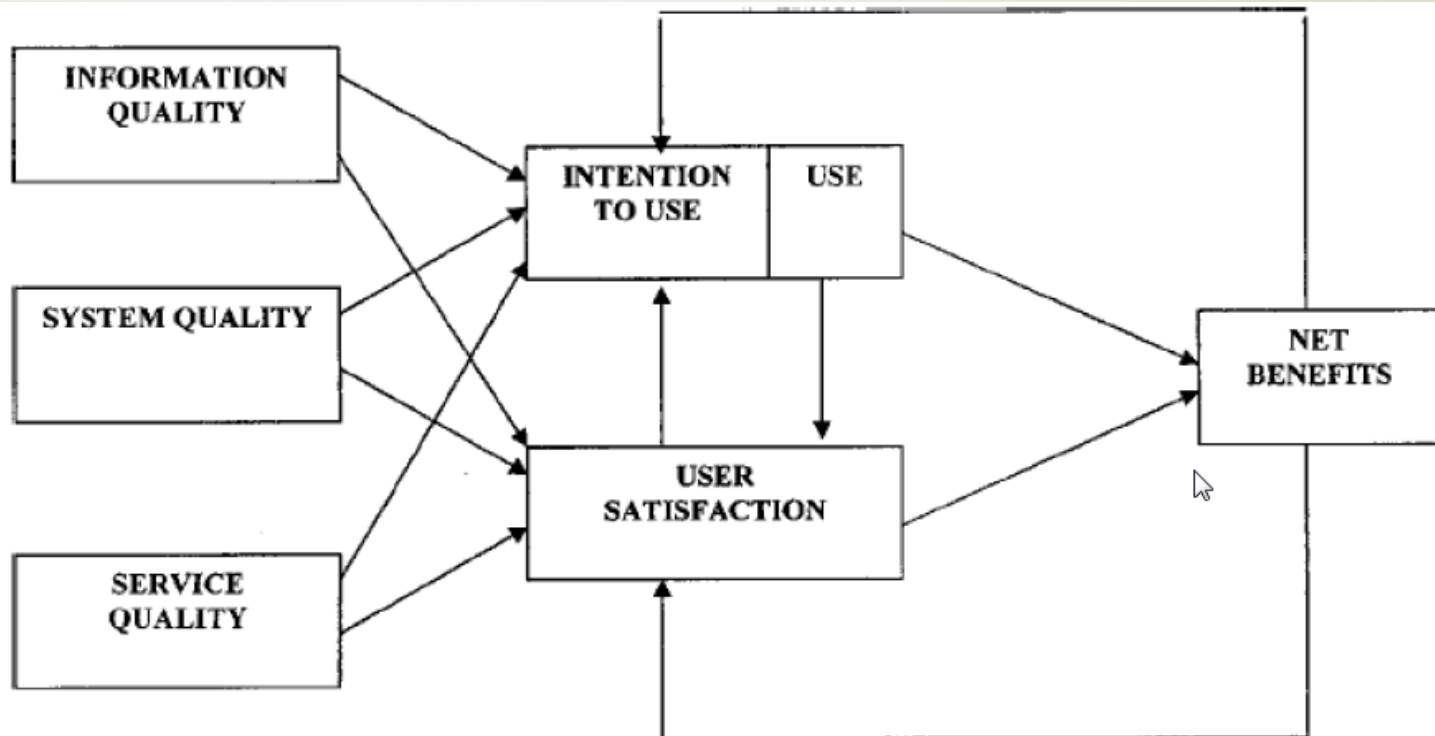
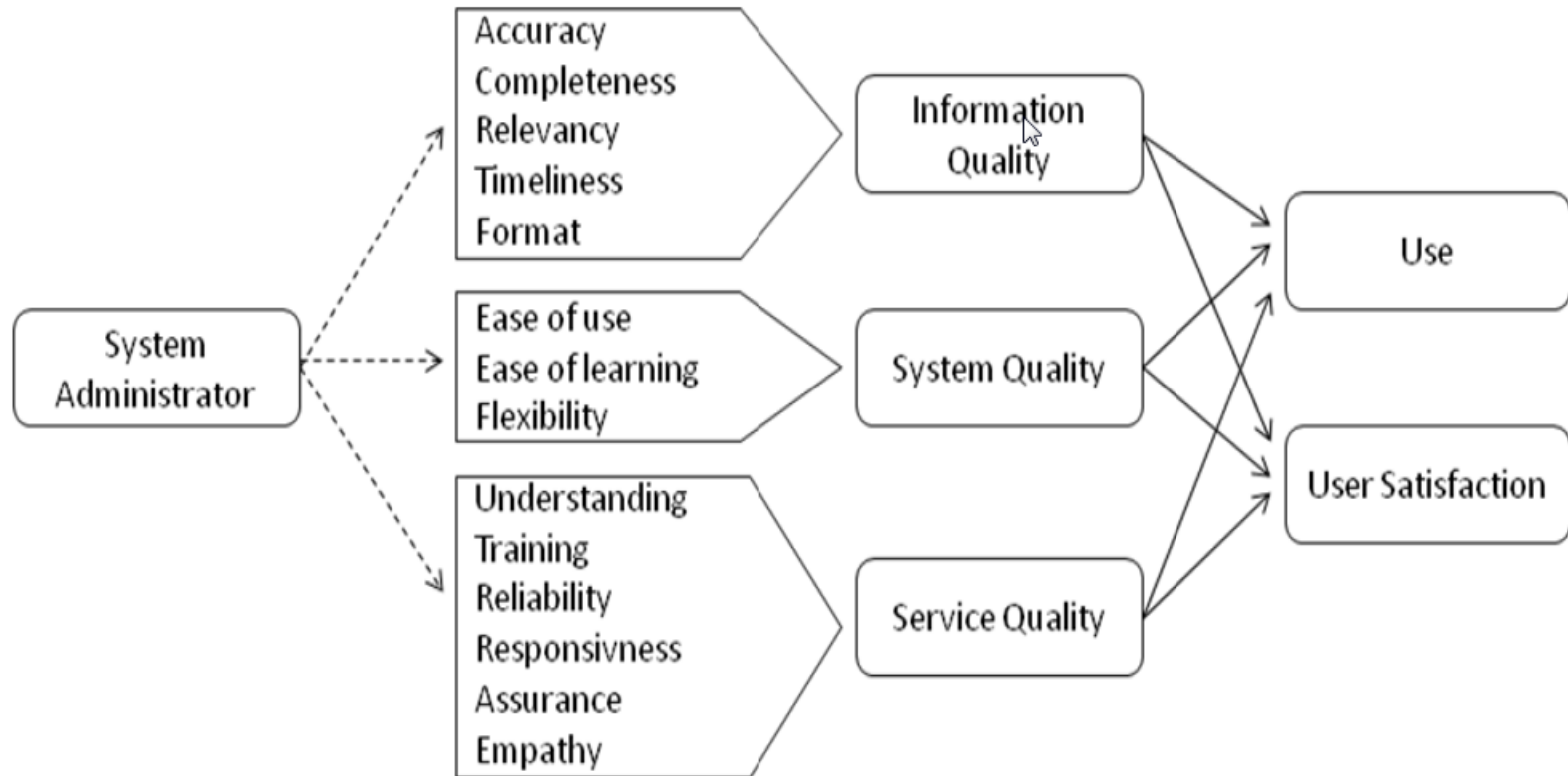


Figure 2.2 Updated DeLone and McLean IS success model
(Source: DeLone and McLean 2003, p.24)

Components of ERP success



Information quality

- Accuracy** - *The information in System X is accurate*
- Completeness** - *System X provide sufficient information*
- Timeliness** - *The information in System X is up-to-date*
- Format** - *The information in System X is presented in a clear way*
- Relevancy** - *System X provide me with the information that I need to do my job*

System quality

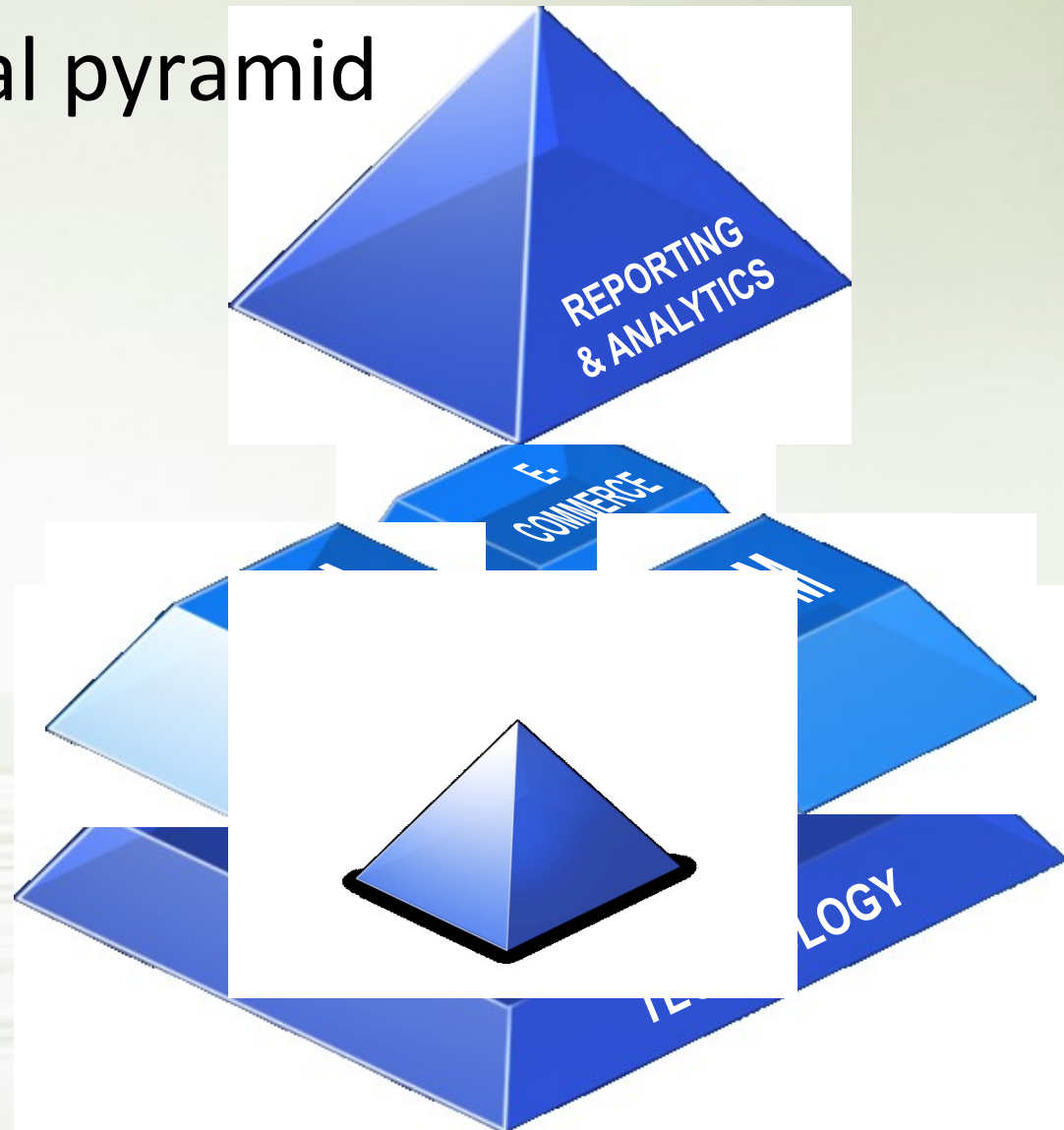
- Ease of use** – *System X is easy to use*
- Ease of learning** – *System X is easy to learn*



Service quality

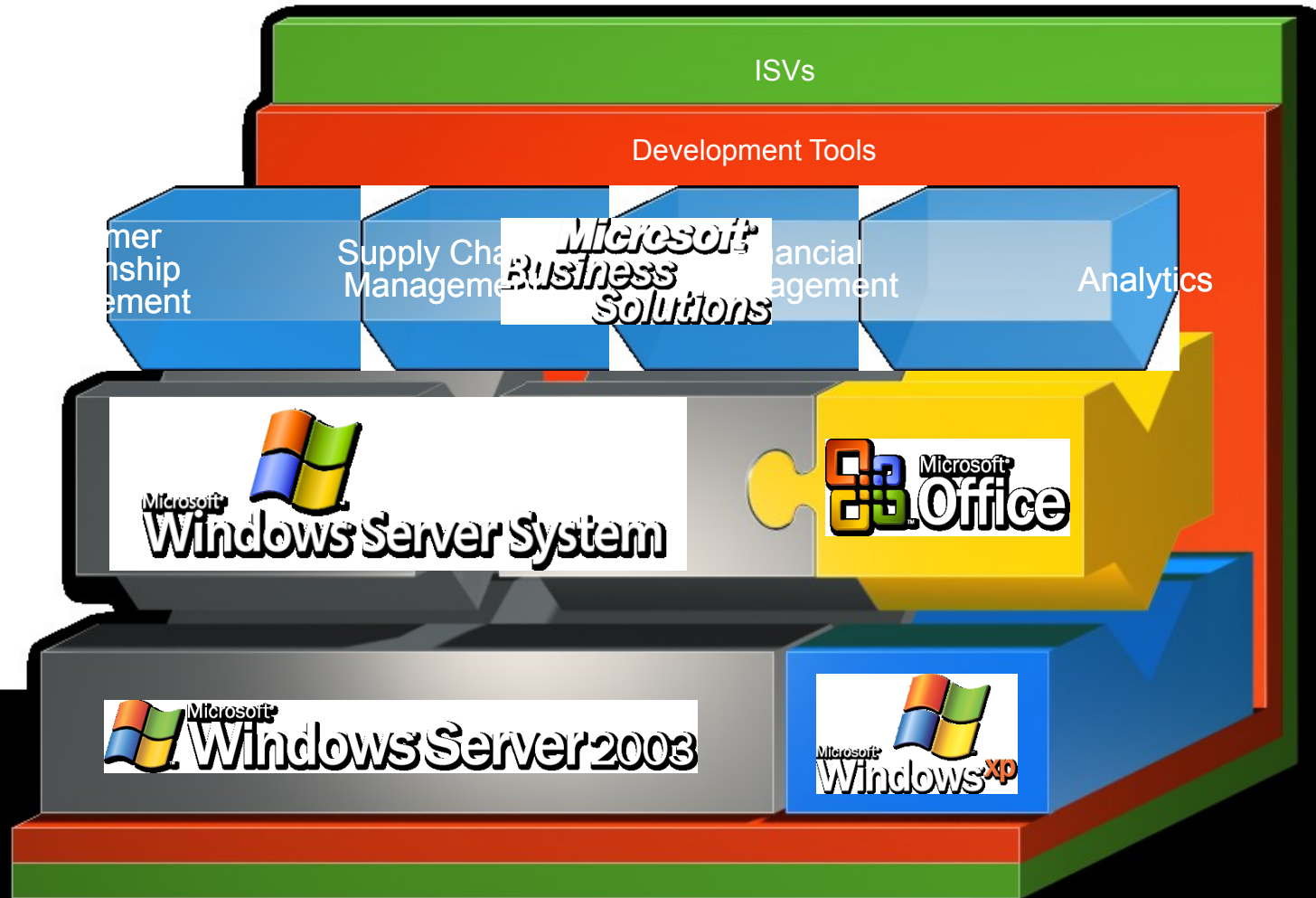
- Understanding** - *I have sufficient understanding about System X*
- Training** - *I have gained enough training on how to operate System X*
- Reliability** – *If the Service Support promises to do something by a certain time they will*
- Responsiveness** - *The Service Support provide prompt service*
- Assurance** - *The Service Support has adequate knowledge to help me if I experience any problems with System X*
- Empathy** – *The Service Support understands my needs*

Technological pyramid



MICROSOFT
BUSINESS
SOLUTIONS
- NAVISION

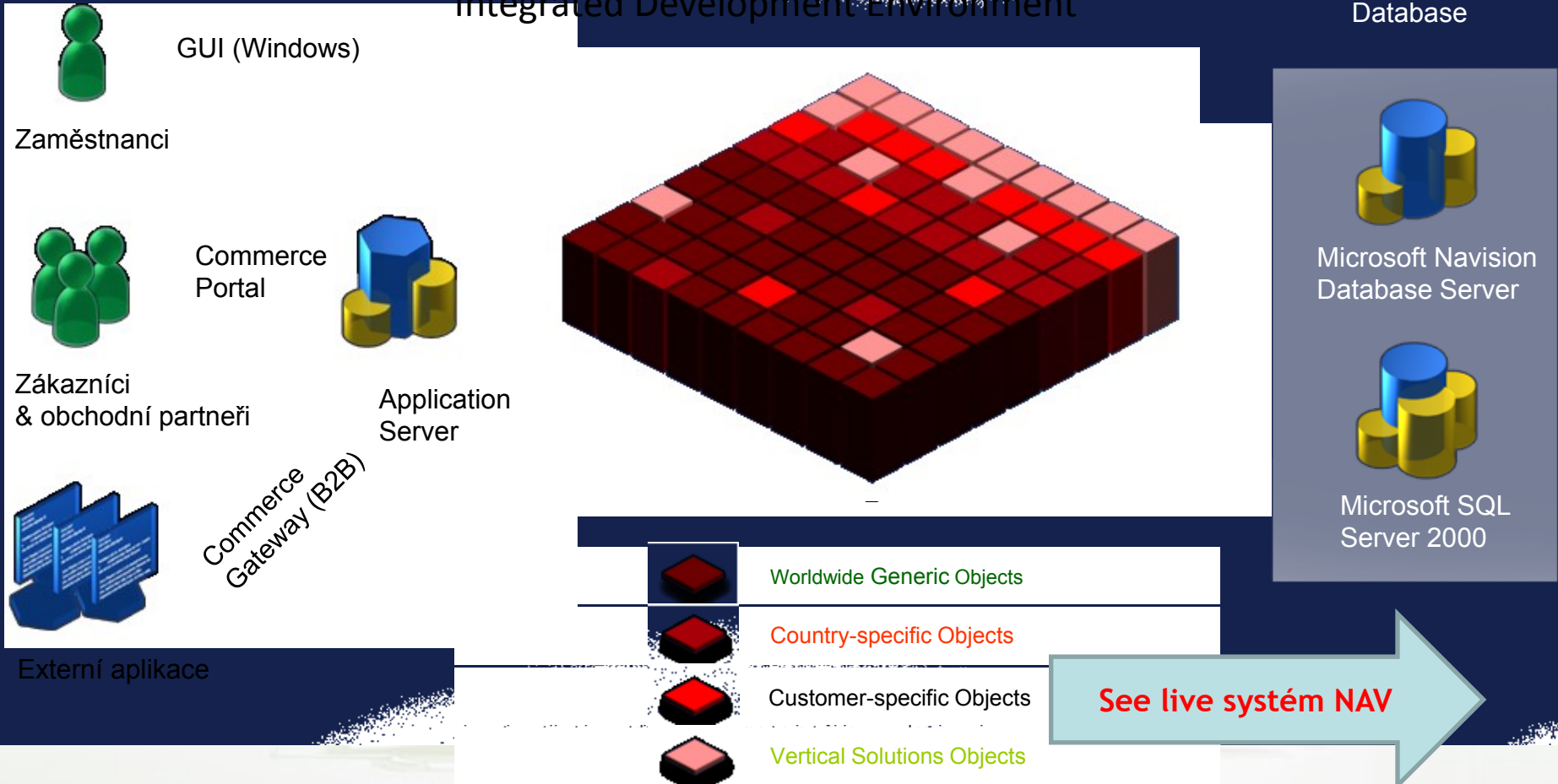
Integrated homogeneous solution



Unique architecture

Integrated Development Environment

Database



Main form (menu, toolbar, forms)

CRONUS CZ s.r.o. - Microsoft Dynamics NAV

File Edit View Tools Window Help

Financial Management

- General Ledger
 - Chart of Accounts
 - Budgets
 - General Journals
 - Analysis & Reporting
 - Intercompany Postings
 - Reports
 - History
 - Periodic Activities
- Cash Management
- Receivables
- Payables
- Fixed Assets
- Inventory
- Setup

Financial Management

Sales & Marketing

Purchase

Warehouse

Manufacturing

Jobs

Resource Planning

Service

Human Resources

Administration

Chart of Accounts

Name	Income/Balance	Totaling	Account Type	Gen. Posting Type	Gen. Bus. Posting Group	Gen. Prod. Posting Group	Net Change	Bal
Režie, kapacita	Income Statement		Posting					
Nákupní odchylka, kapacita	Income Statement		Posting					
Celkové náklady na kapac...	Income Statement	511050..511990	End-Total					
Travel expenses	Income Statement		Posting	Purchase		BEZ DPH	1 012 816,40	
Režie, suroviny	Income Statement		Posting					
Entertainment costs	Income Statement		Posting				149 170,50	
Other services	Income Statement		Begin-Total	Purchase	NÁRODNÍ	SLUŽBY		
Cleaning	Income Statement		Posting	Purchase	NÁRODNÍ	SLUŽBY	992 215,91	
Overhead services	Income Statement		Begin-Total	Purchase	NÁRODNÍ	SLUŽBY		
Phones	Income Statement		Posting	Purchase	NÁRODNÍ	SLUŽBY	2 029 440,00	
Postage	Income Statement		Posting	Purchase	NÁRODNÍ	BEZ DPH	121 574,70	
Other overhead services	Income Statement		Posting	Purchase	NÁRODNÍ	RŮZNÉ		
Overhead services, Total	Income Statement	518205..518295	End-Total				2 151 014,70	
Advertising	Income Statement		Posting	Purchase	NÁRODNÍ	RŮZNÉ	3 834 471,87	
Rent and renting	Income Statement		Begin-Total					
Renting of operational sp...	Income Statement		Posting					
Renting of vehicles	Income Statement		Posting					
Rent and renting	Income Statement	518405..518495	End-Total					

Account Balance Functions Help

Net Change: 18.12.08 FILTER

Start Odeslaná pošta ... 2 Microsoft Of... TEMPORARY OP... Angličtina - Lexi... CRONUS CZ s.r.... CS 10:19

Main forms (card, list, form->sub-form)

The screenshot shows a software window titled "01121212 Spotsmeyer's Furnishings - Customer Card". The window has a blue title bar with standard minimize, maximize, and close buttons. Below the title bar are several tabs: "General" (selected), "Communication", "Invoicing", "Payments", "Shipping", and "Foreign Trade". The main area contains a form with two columns of fields. The left column includes: "No." (01121212), "Name" (Spotsmeyer's Furnishings), "Address" (612 South Sunset Drive), "Address 2" (empty), "Post Code/City" (US-FL 37125, Miami), "Country/Region Code" (US), "Phone No." (empty), "Primary Contact No." (empty), and "Contact" (Mr. Mike Nash). The right column includes: "Search Name" (SPOTSMeyer's FU...), "Balance (LCY)" (0,00), "Credit Limit (LCY)" (0,00), "Salesperson Code" (JM), "Responsibility Center" (empty), "Service Zone Code" (X), "Blocked" (empty), and "Last Date Modified" (09.06.08). At the bottom of the window are four buttons: "Customer" (with a dropdown arrow), "Sales" (with a dropdown arrow), "Functions" (with a dropdown arrow), and "Help".

Field	Value
No.	01121212
Name	Spotsmeyer's Furnishings
Address	612 South Sunset Drive
Address 2	
Post Code/City	US-FL 37125 Miami
Country/Region Code	US
Phone No.	
Primary Contact No.	
Contact	Mr. Mike Nash
Search Name	SPOTSMeyer's FU...
Balance (LCY)	0,00
Credit Limit (LCY)	0,00
Salesperson Code	JM
Responsibility Center	
Service Zone Code	X
Blocked	
Last Date Modified	09.06.08

Main forms (card, **list**, form->sub-form)

The screenshot shows a 'Customer List' window with a table of customer records. The table has the following columns: No., Name, Responsib..., Location C..., Phone No., and Contact. The first row is selected, and a mouse cursor is pointing at the 'Responsib...' column header.

No.	Name	Responsib...	Location C...	Phone No.	Contact
01121212	Spotsmeyer's Furnishings		ŽLUTÝ		Mr. Mike Nash
01445544	Progressive Home Furnishings		ŽLUTÝ		Mr. Scott Mitchell
01454545	New Concepts Furniture		ŽLUTÝ		Ms. Tammy L. McDonald
01905893	Candoxy Canada Inc.		ŽLUTÝ		Mr. Rob Young
01905899	Elkhorn Airport		ŽLUTÝ		Mr. Ryan Danner
01905902	London Candoxy Storage Campus		ŽLUTÝ		Mr. John Kane
20309920	Metatorad Malaysia Sdn Bhd		ŽLUTÝ		Mrs. Azleen Samat
20312912	Highlights Electronics Sdn Bhd		ZELENÝ		Mr. Mark Darrell Boland
20339921	TraxTonic Sdn Bhd		ŽLUTÝ		Mrs. Rubina Usman
21233572	Somadis		ŽLUTÝ		M. Syed ABBAS

At the bottom of the window, there are five buttons: OK, Cancel, Customer (with a dropdown arrow), Sales (with a dropdown arrow), and Help.

Main forms (card, list, **form->**sub-form)

The screenshot shows a SAP Sales Order form with the following data:

Field	Value
No.	101018
Posting Date	25.01.08
Sell-to Customer No.	01454545
VAT Settlement Date	25.01.08
Sell-to Contact No.	
Order Date	25.01.08
Sell-to Customer Name	New Concepts Furniture
Document Date	25.01.08
Sell-to Address	705 West Peachtree Street
Requested Delivery Date	
Sell-to Address 2	
Promised Delivery Date	
Sell-to Post Code/City	US-GA 31772 Atlanta
Quote No.	
Sell-to Contact	Ms. Tammy L. McDonald
External Document No.	
No. of Archived Versions	0
Salesperson Code	JM
Reason Code	
Campaign No.	
Responsibility Center	
Status	Open

Type	No.	Purch... Code	Drop Shipment	Description	Location Code	Quantity	Reserved Quantity
Item	1980-S		<input type="checkbox"/>	MOSCOW Swivel Chair, red	ZELENÝ	6	

Partner

What

Table->Form principle

Field No.	Field Name	Data Type	Length
1	No.	Code	20
2	Name	Text	50
3	Search Name	Code	50
4	Name 2	Text	50
5	Address	Text	50
6	Address 2	Text	50
7	City	Text	30
8	Contact	Text	50
9	Phone No.	Text	30
10	Telex No.	Text	20
14	Our Account No.	Text	20
15	Territory Code	Code	10
16	Global Dimension 1 Code	Code	20
17	Global Dimension 2 Code	Code	20
18	Chain Name	Code	10
19	Budgeted Amount	Decimal	
20	Credit Limit (LCY)	Decimal	
21	Customer Posting Group	Code	10
22	Currency Code	Code	10
23	Customer Price Group	Code	10
24	Language Code	Code	10



General Communication **Invoices** Payments Shipping Foreign Trade

No. 01121212 Search Name SPOTSMAYER'S FU...

Name Spotsmeyer's Furnishings Balance (LCY) 0,00

Address 612 South Sunset Drive Credit Limit (LCY) 0,00

Address 2 Salesperson Code JM

Post Code/City US-FL 37125 Miami Responsibility Center

Country/Region Code US Service Zone Code X

Phone No. Blocked

Primary Contact No. Last Date Modified 09.06.08

Contact Mr. Mike Nash

Form (Card, Window), which is object as well and it is used to display data stored in the Table (object)

Specification of fields in Table (object)

Table X->Table Y relations I. (example)

01121212 Spotsmeyer's Furnishings - Customer Card

General Communication Invoicing Payments Shipping Foreign Trade

No. 01121212 Search Name SPOTSMEYER'S FU...
Name Spotsmeyer's Furnishings Balance (LCY) 0,00
Address 612 South Sunset Drive Credit Limit (LCY) 0,00
Address 2
Post Code/City US-FL 37125 Miami
Country/Region Code US
Phone No.
Primary Contact No.
Contact Mr. Mike Nash
Salesperson Code JM
Responsibility Center
Service Zone Code X
Blocked
Last Date Modified 09.06.08

Customer Sales Functions Help

Code	City
UG-KLA	Kampala
US-AL 35...	Birmingham
US-FL 37125	Miami
US-GA 31...	Atlanta

X= Customer table

Relation

Y=Post Code table

Table X->Table Y relations II. (example)

1054 The Cannon Group PLC - Sales Order

General Invoicing Shipping Foreign Trade E-Commerce Prepayment

No. 1054

Sell-to Customer No. 10000

Sell-to Contact No. CT000001

Sell-to Customer Name The Cannon Group PLC

Sell-to Address 192 Market Square

Sell-to Address 2

Sell-to Post Code/City B27 4KT Birmingham

Sell-to Contact Mr. Andy Teal

No. of Archived Versions. 0

Posting Date 10.12.14

Order Date 10.12.14

Document Date 10.12.14

Requested Delivery Date

Promised Delivery Date

Quote No.

External Document No.

Salesperson Code PS

Campaign No.

Opportunity No.

Responsibility Center BIRMINGHAM

Assigned User ID

Status Open

Customer Information

Sell-to Customer

- Ship-to Addresses (2)
- Contacts (5)
- Sales History

Bill-to Customer

- Avail. Credit -627 293

Type	No.	Description	Location Code	Reserved Quantity	Unit of Measure	S. Unit Price	Line Amount
Item	XX2	XX2	BLUE	11	S	4,00	44,00
Item	TRANSFER_AVR	Transfer Item AVR	BLUE	1	PCS	250,00	250,00

Item Information

- Item Card
- Availability (-11)
- Substitutions (0)
- Sales Prices (0)
- Sales Line D...

Order Line Functions Posting Print Nápověda

Sales Order header

Sales Order lines

Item List

No.	Description
XX1	XX1
XX2	XX2
X1	Item X1
X100	Ginko Biloba
X2	Páčka

Location List

Code	Name
BLUE	Blue Warehouse
GREEN	Green Warehouse
RED	Red Warehouse
SILVER	Silver Warehouse
WHITE	White Warehouse
YELLOW	Yellow Warehouse

BLUE Blue Warehouse - Location Card

General Communication Warehouse Bins Bin Policies

Code BLUE

Name Blue Warehouse

Address South East Street, 3

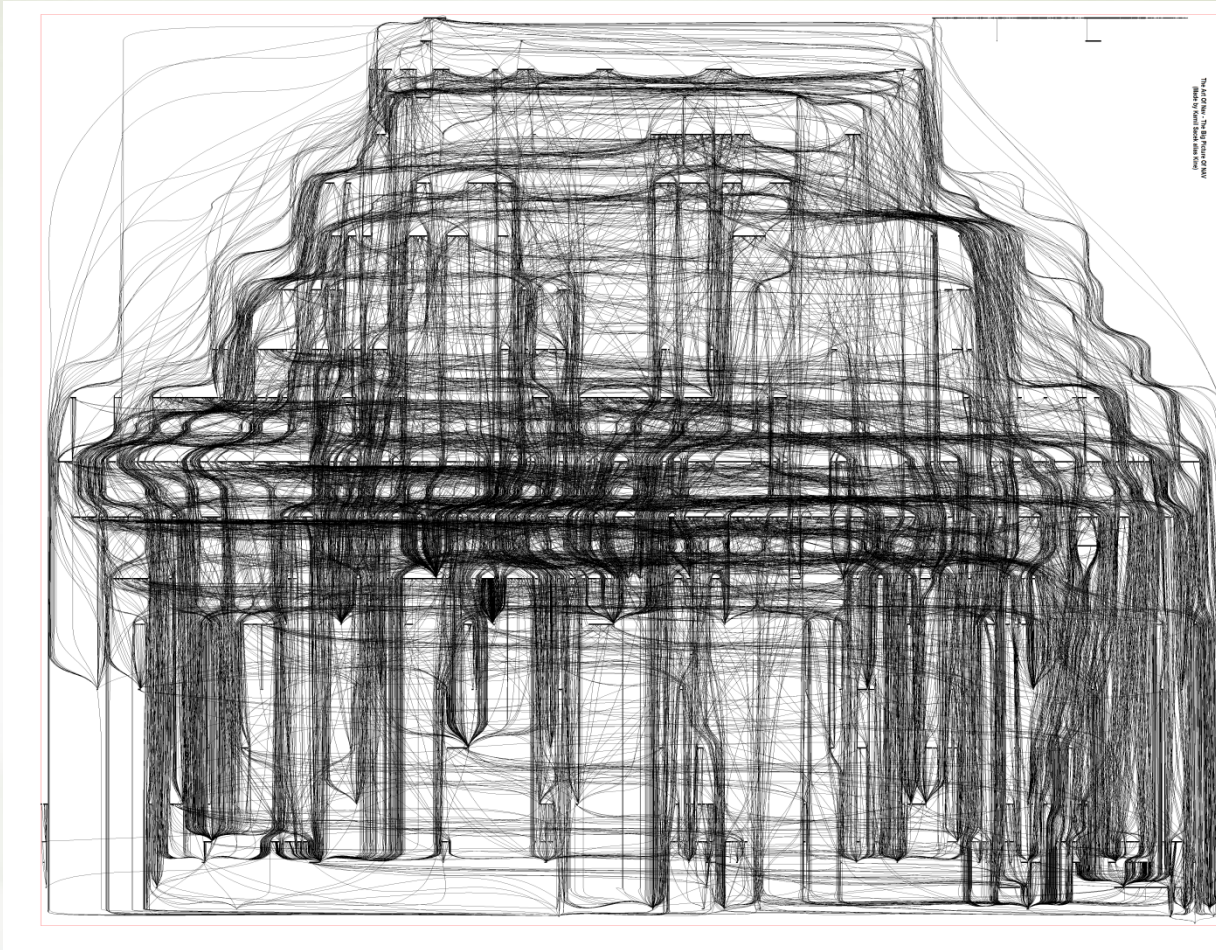
Address 2

Post Code/City B27 4KT Birmingham

Country/Region Code GB

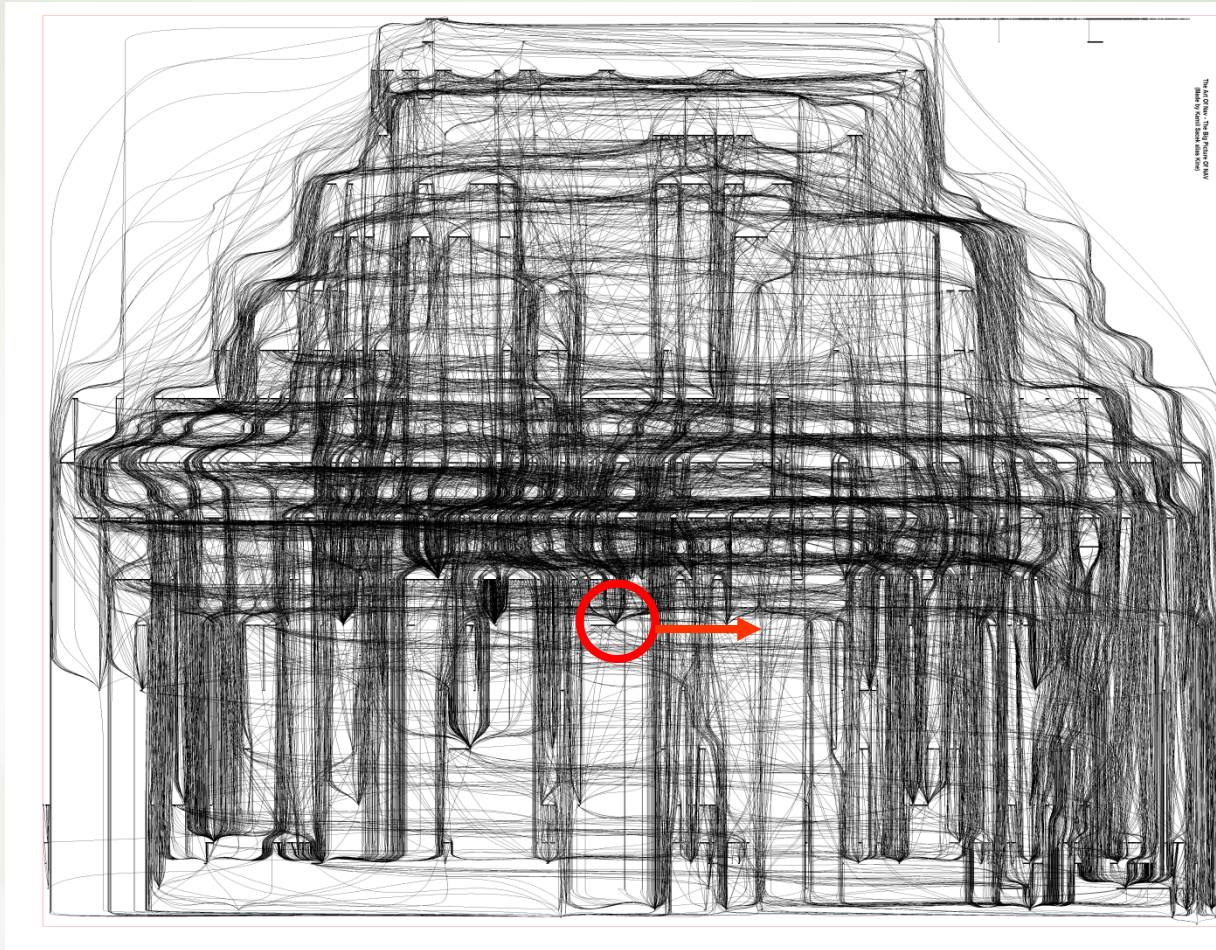
Contact Jeff Smith

Relations among tables I



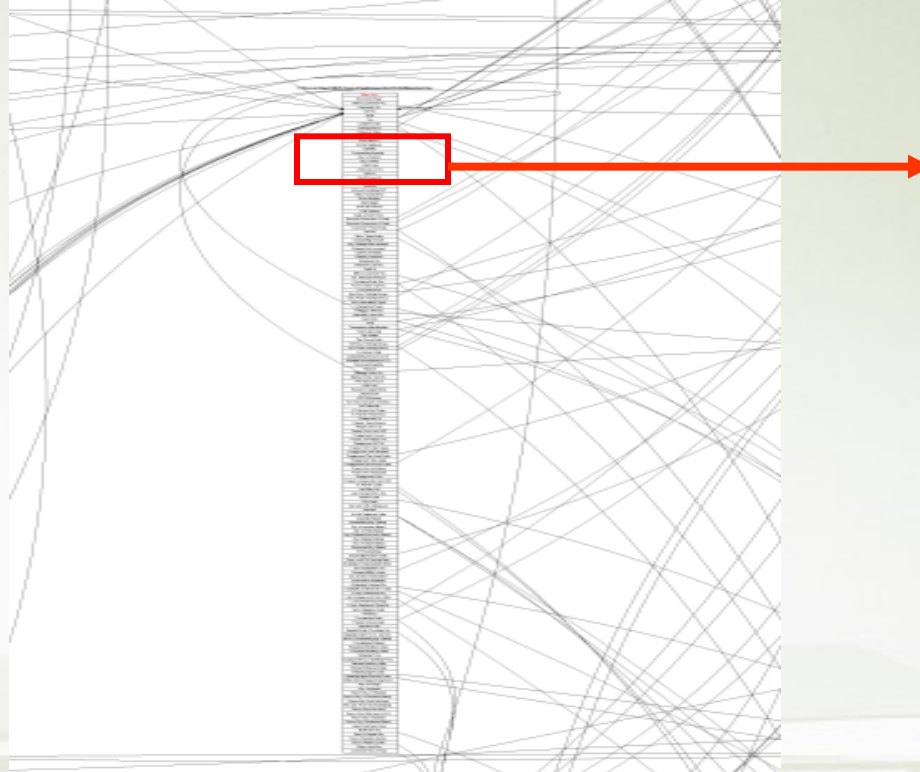
26.2.2016

Relations among tables II

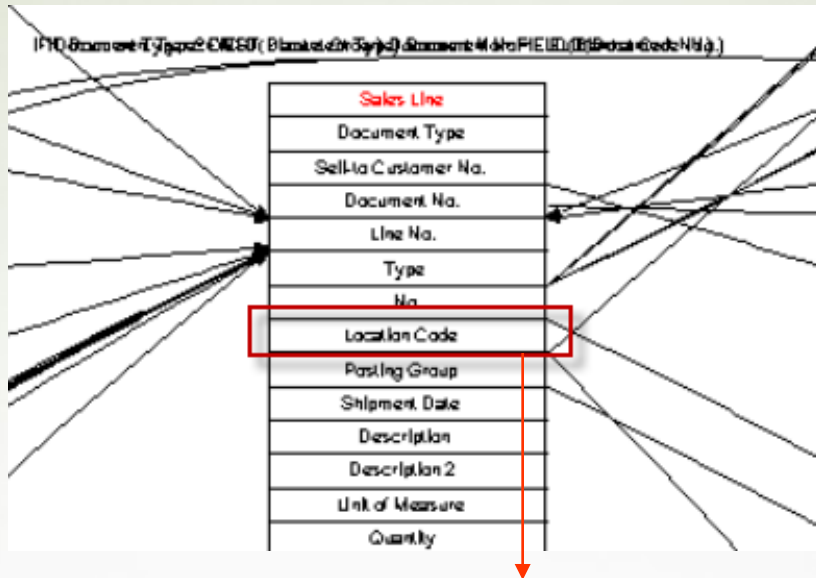


26.2.2016

One table and its relations I



One table (Sales Line) and its relations II



ERP NAV

Type	No.	Purch... Code	Drop Shipment	Description	Location Code	Quantity	Reserved Quantity	L
Item	1980-S		<input type="checkbox"/>	MOSCOW Swivel Chair, red	ZELENÝ	6		k ^

Item Information

- Item Card
- Availability (8)
- Substitutions (1)
- Sales Prices (0)
- Sales Line Dis... (1)

Order Line Functions Posting Print Help

Microsoft Dynamics NAV Sweet Points

- Windows compatible (menu, command, mutual relations to MS Office,..)
- Security (ID, passwords, roles, protocols)
- Menu and basic modules
- Shorthand keys and HELP
- Multilanguage
- Navigate and calculation (flow) fields, finding the reason why any document was created
- Reports
- Entries, dimensions

Balance, Payments,..

Business Case Principles

Customer Table

Sales Entry in database
(Type Invoice)

Sales Order
Header

F11=post

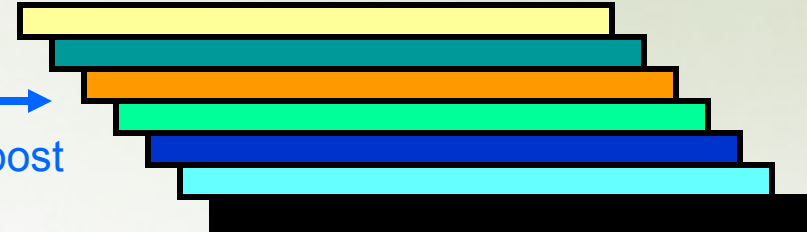
Item Chair 4 pcs 30 EURO

Item Table 1 pcs 100 EURO

Item Table

Item Table

Availability, Costs,...



Entries in General Ledger

Item Ledger Entries
in database
(Type Sales)

F11 = posting, booking to G/L,...

Thanks for your attention



26.2.2016