

# Open-Source ERP-Solutions

## Open-Source ERP-Solutions - a new way for SMEs

M.Sc. Falk Neubert, University of Osnabrück

Gefördert durch:



Bundesministerium  
für Wirtschaft  
und Technologie

aufgrund eines Beschlusses  
des Deutschen Bundestages



Netzwerk Elektronischer  
Geschäftsverkehr

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BWL/Produktions-Management and  
Wirtschaftsinformatik / University of Osnabrück

Member of the competence center RECO  
(Osnabrück)



# Structure of the network

- The network exists from
  - 28 regional competence center
  - 1 center for trade
  - 6 extern partners
  - 7 special projects



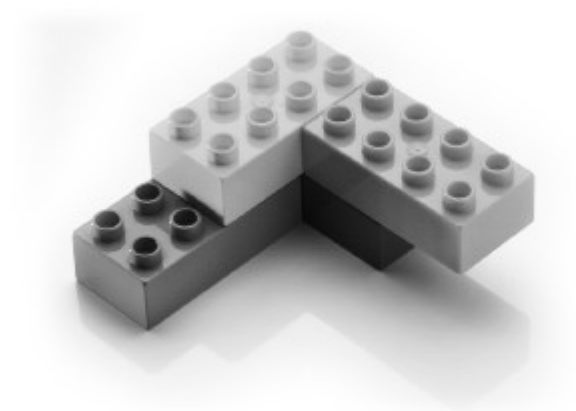
- Regionales Kompetenzzentrum
- ▲ Branchen-Kompetenzzentrum
- Externer Netzwerkpartner

# Structure of the network

- Individual consulting
- Events and “Road shows”
- Guidelines, instructions and studies as well as entry-level CD-ROM on the target areas:
  - Information Security
  - RFID
  - ERP
  - E-Billing, E-Invoicing
  - Femme Digitale
- Yearly NEG-Website-Award

# Outline

- Some topics for the issue „ERP“
- Freie Software / Open-Source
- Open-Source ERP-Solutions
- Next steps at the project  
„ERP-Lösungen auf Basis Freier Software“

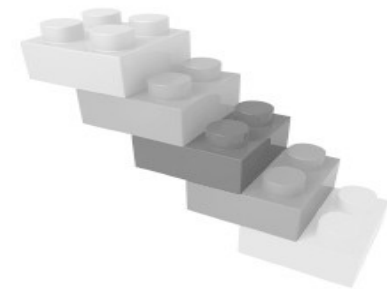


# Topic on ERP

- Companies have to optimize your business processes
- Companies need flexible IT-Infrastructure
- ERP-Software need interfaces to customers and suppliers
- Webbased components are needed
- Business Intelligence will be important in the future

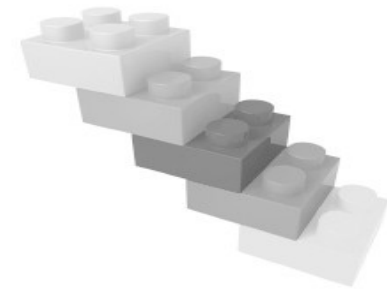
Quelle:

Der IT-Markt in Deutschland, 2007-2012 – 2.  
Quartal 2008, IDC Studie  
Befragung im Rahmen der „ERP-  
Initiative 2008

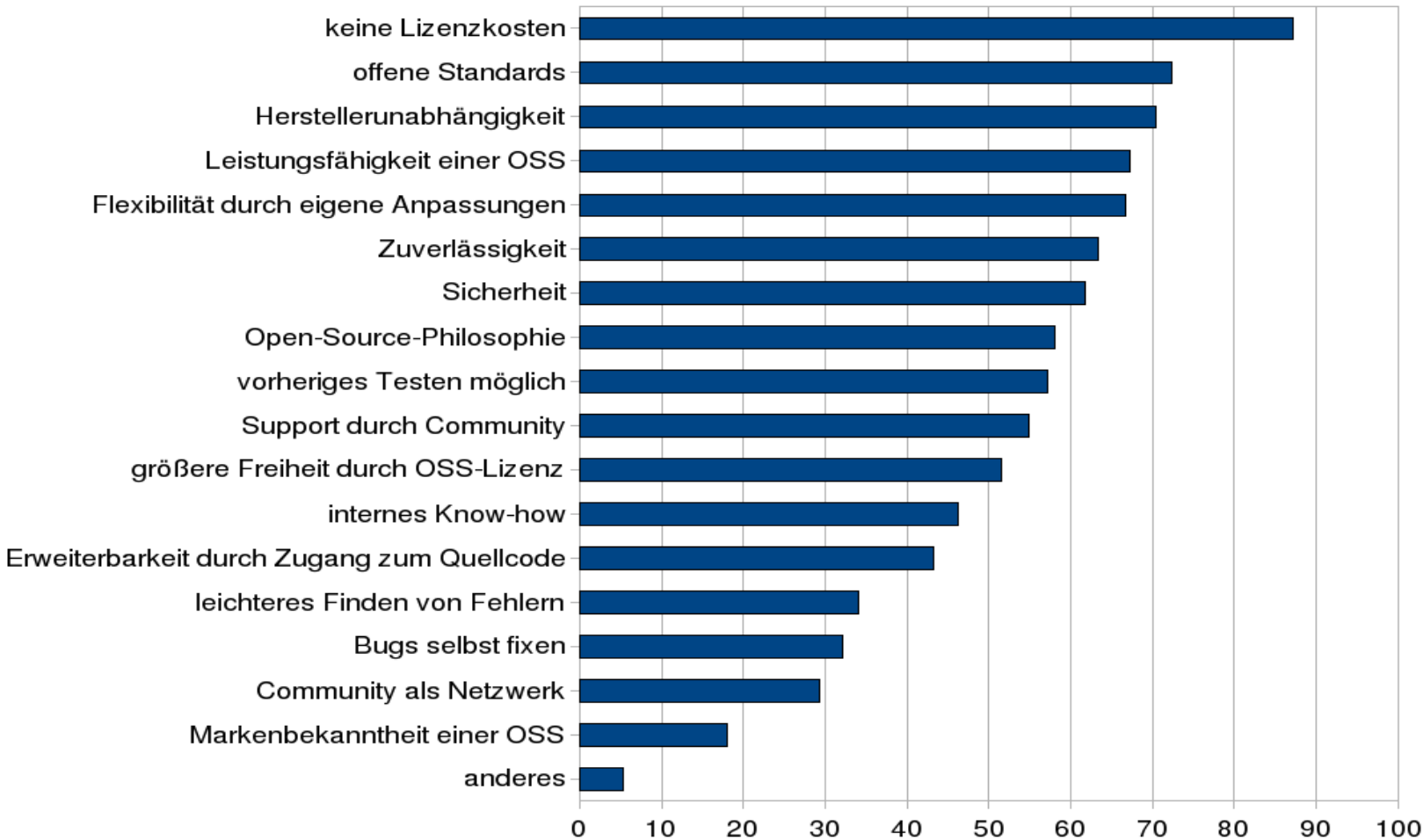


# Coverage of E-Business-Applications

E-mail	99% (1%)
• E-Procurement	45% (9%)
• CRM	41% (7%)
• Finance applications	38% (2%)
• ERP	37% (3%)
• Online Shop B2B	36% (5%)
• Mobile Applications	33% (8%)
• Online Shop B2C	33% (4%)



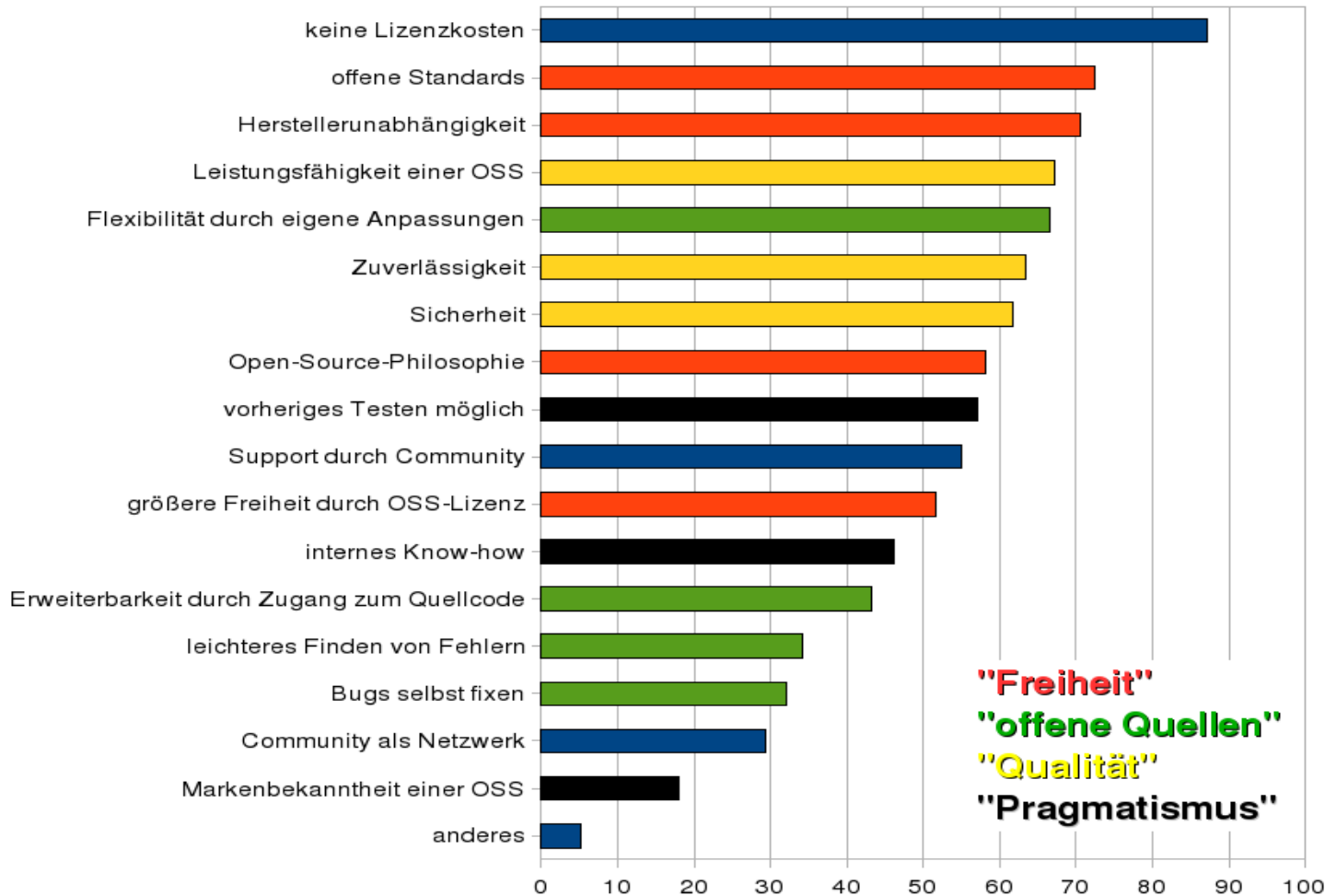
# Reasons for the application from OSS



Quelle: Trendstudie Opensource 2009

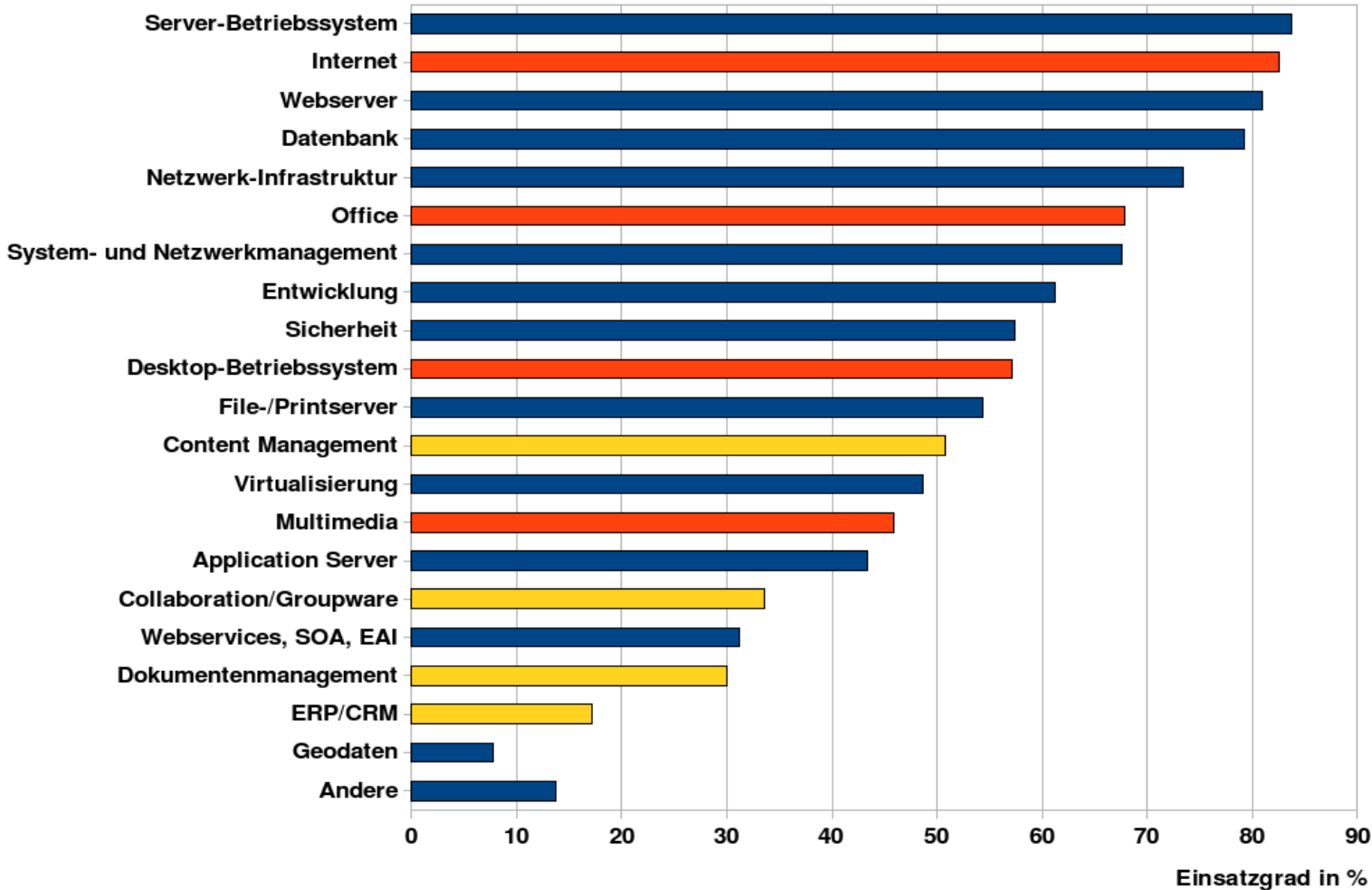


# Reasons for the application from OSS



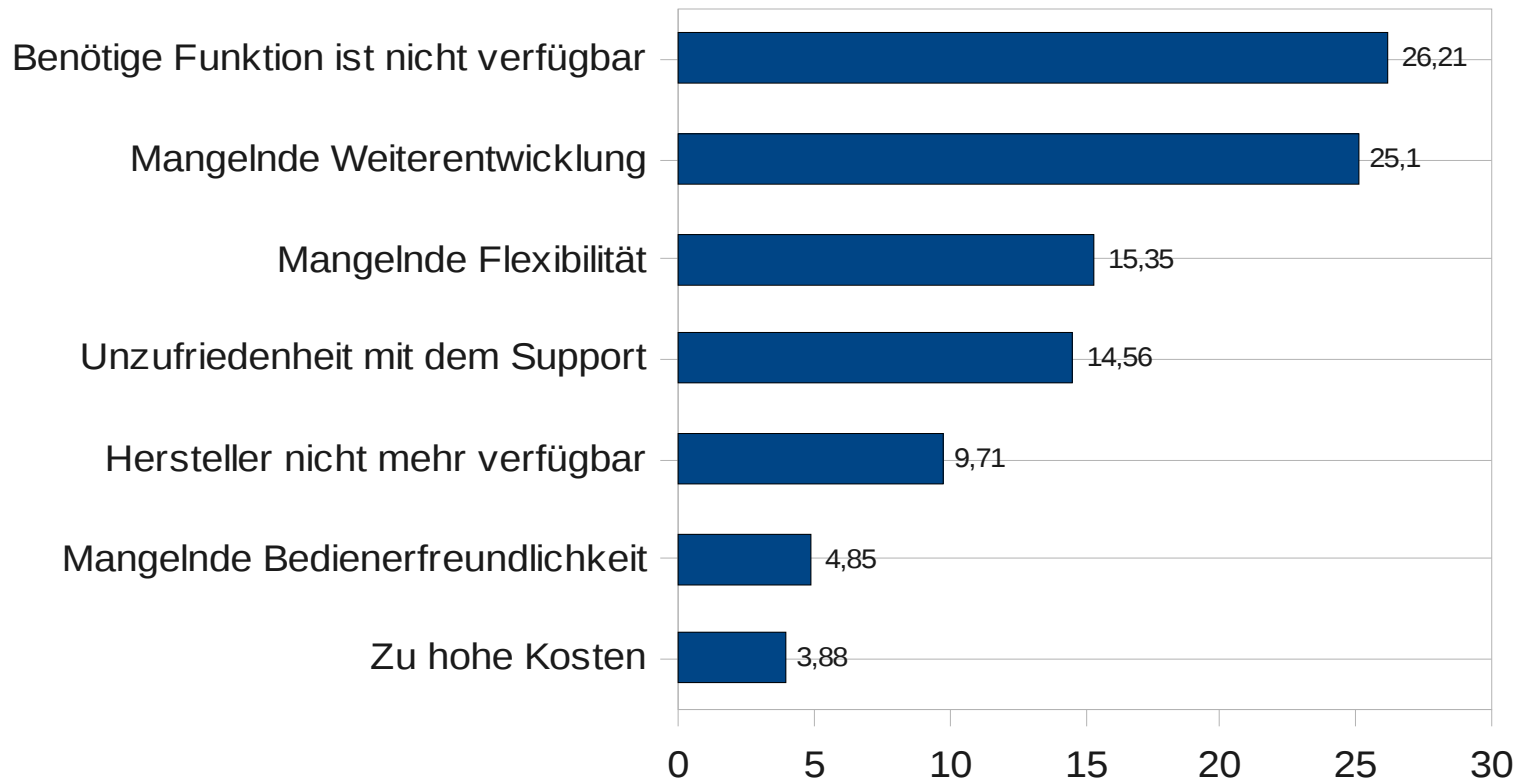
Quelle: Trendstudie Opensource 2009

# Witch applications are used?



Quelle: Trendstudie Opensource 2009

# Reasons for changing of ERP?



Quelle: ERP Trend Report 2009

# Functionality

## ERP- SYSTEM

### Bereichsübergreifende Funktionen



**Finanzwesen**



**Logistik**



**Produktion**



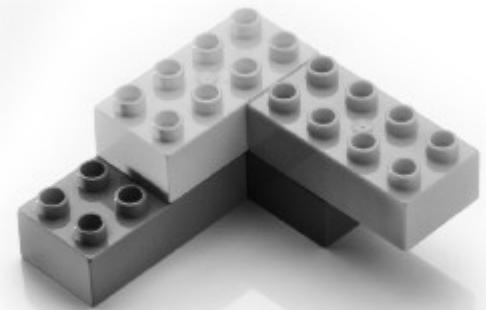
**Personalwesen**

# Interfaces



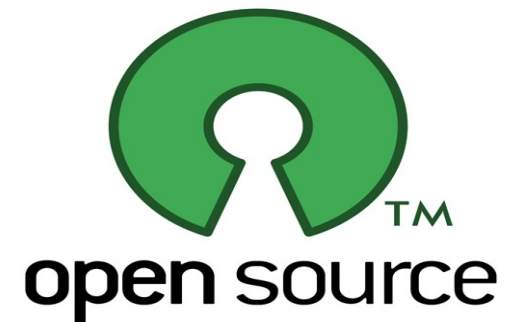
# Outline

- Some topics for the issue „ERP“
  - Freie Software / Open-Source
  - Open-Source ERP-Solutions
  - Next steps at the project
- „ERP-Lösungen auf Basis Freier Software“



# Fres Software

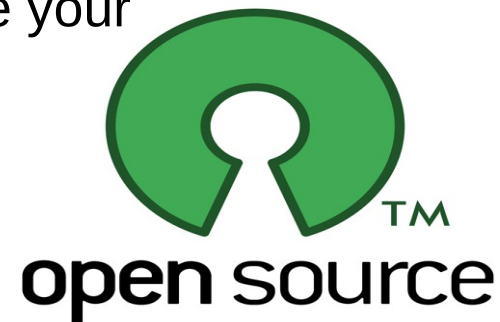
*„Free software, is a matter of liberty, not price. To understand the concept, you should think of „free“ as in „free speech“, not as in „free beer“.*



# Free Software

*Free software offers four essential freedoms:*

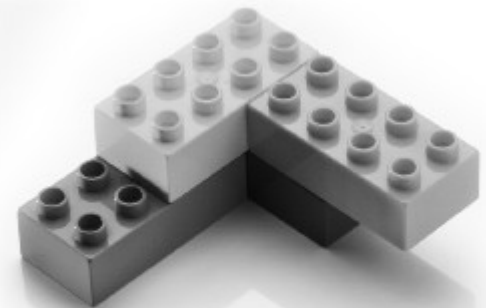
- The freedom to run the program, for any purpose.
- The freedom to study how the program works, and change it to make it do what you wish. Access to the source code is a precondition for this.
- The freedom to redistribute copies.
- The freedom to improve the program, and release your improvements (and modified versions in general) to the public.





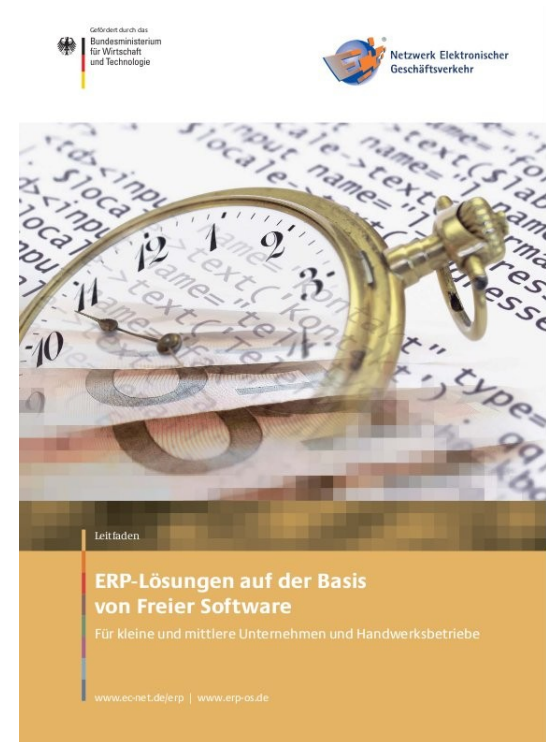
# Outline

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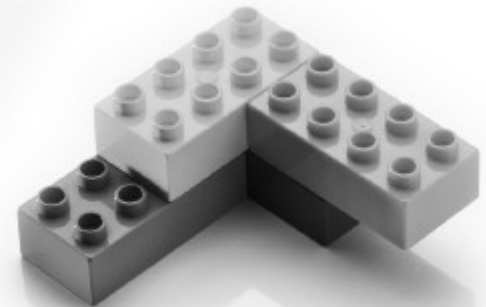
# Project – ERP solutions based on Free Software

- **Overview** about the OS ERP-solutions
- Definition of some evaluation criteria
- **Evaluation** of ERP-solutions
  - Test of some business workflows



# Evaluation Criteria

- If the solution is covering the **definition of Open Source**?
- Which features offers the ERP-solution?
- How active is the **Community**?
  - Requests per month?
  - Registered user?
  - Response time / Quality of service
- **Continued development** in last years
- Is the solution **sufficiently documented**?
- Are there any **professional support**
- Are there any erp-solutions installed at customers?



# ERP-solutions based on Open Source



# ERP-solutions based on Open Source



# Open-Source ERP Overview

System	Lizenz	Ausrichtung	Datenbank	URL	Bemerkung
<b>ADempiere</b>	GPLv2	ERP, CRM	Oracle, PostgreSQL	<a href="http://www.adempiere.org">www.adempiere.org</a>	Fork from Compiere
<b>Apache OFBiz</b>	Apache 2.0 License		MySQL, PostgreSQL	<a href="http://ofbiz.apache.org">ofbiz.apache.org</a>	Framework
<b>CAO-Faktura</b>	GPL	WaWi	MySQL	<a href="http://www.cao-faktura.de">www.cao-faktura.de</a>	
<b>ERP5</b>	GPL	ERP, CRM	alle Datenbanken mit ODBC-Schnittstelle	<a href="http://www.erp5.com">www.erp5.com</a>	SaaS Modell
<b>Intars</b>	GPL	ERP	SQL-Datenbanken	<a href="http://www.intars.at">www.intars.at</a>	
<b>Limbas</b>	GPL	ERP	Max-DB, Adabas	<a href="http://www.limbas.org">www.limbas.org</a>	
<b>Lx-Office</b>	GPL, Artistic Licence	WaWi, CRM	PostgreSQL	<a href="http://www-lx-office.org">www-lx-office.org</a>	Fork von SQL-Ledger
<b>Openbravo</b>	MPL 1.1	ERP	Oracle, PostgreSQL	<a href="http://www.openbravo.com">www.openbravo.com</a>	Fork teilweise von Compiere
<b>Opentaps</b>	GPL	ERP, CRM	MySQL, PostgreSQL	<a href="http://www.opentaps.org">www.opentaps.org</a>	
<b>SQL-Ledger</b>	GPL	ERP	Oracle, PostgreSQL	<a href="http://sql-ledger.org">sql-ledger.org</a>	
<b>XTuple</b>	CPAL1.0	ERP	PostgreSQL	<a href="http://www.xtuple.com/openmfg">www.xtuple.com/openmfg</a>	
<b>openERP</b>	GPL	ERP, CRM	PostgreSQL	<a href="http://www.openerp.com">www.openerp.com</a>	
<b>webERP</b>	GPLv2	ERP	MySQL	<a href="http://www.weberp.org">www.weberp.org</a>	

# Lx-Office



<b>Technical Data</b>	
Operating System	Linux
GUI	Web-Client
Database	PostgreSQL
Programming Language	Perl, PHP
License	GPL, Artistic License
Actual Version	ERP 2.6.0 (CRM 1.4)

- Hauptmenue
- CRM
- Stammdaten
  - Kunde erfassen
  - Lieferant erfassen...
  - Ware erfassen
  - Dienstleistung...
  - Erzeugnis erfassen...
  - Projekt erfassen
  - Preise aktualisi...
  - Lizenz erfassen
- Berichte
- Kunden**
- Lieferanten
- Waren
- Dienstleistu...
- Erzeugnisse
- Projekte
- Lizenzen
- Verkauf
- Einkauf
- Lager
- Finanzbuchhaltung
- Zahlungsverkehr
- Berichte
- Druck
- Produktivität
  - Aufgabenliste anz...
  - Wiedervorlage ers...
  - Zugriffsrechte bea...
- Berichte
- System
- Programm

## Kunden

Alle

Name ▾	Nummer	Kontakt	Telefon	eMail	Straße	PLZ	Stadt
Syncope Communication Systems	1005		040-251545-0	office@syncope.de	Klaus-Groth-Str. 84	20535	Hamburg
Advancd PC	1001	Hr. Werner		info@advancd-pc.de	Maria-Hilf-Str. 22a	55411	Bingen
Blueline PC	1002		0291-3444	info@blueline.de	Seestrasse 4	22334	Werdenweiler
DTAG	1011	Hr. Meier			Test Weg 1	42112	Wuppertal
Hardware Junge	1003		036357 64597	info@hardware-junge.de	Am Schulplatz 23	06572	Bilzingsleben
IT-Service Sebastian Reimers	1006			service@it-sreimers.de	Am Blanken Boom 14	32369	Rahden
Keller	01						
LINET Services	1007		0531-28019171	info@linet-services.de	Gotenweg 15	38106	Braunschweig
Lx-System	1010	Holger Lindemann	0700 LXSYSTEM	info@lx-system.de	Ensingerstrasse 19	89073	Ulm
Mehner, Eduard	1004				Wiesenweg 52a	22334	Woanders
procube systementwicklung	1008		+49(0)221-16930695	pro3@mail.procube.de	Strundener Strasse 65	51069	Köln
Ranseier	4711	Karl Ranseier	0900123456789	karl.ranseier@ranseier-kekse.com.keks	Hausnumm	55555	Wohnort
softfabrik GmbH	1009		069 74 30 92 77	nfo@softfabrik.de	Große Seestr. 32 - 34	60486	Frankfurt am Main

Neuer Kunde

Listenexport





- Hauptmenue
- Verkauf
    - Angebot erfa...
    - Auftrag erfas...
    - Lieferschein...
    - Rechnung e...
    - Gutschrift erf...
    - Mahnung erz...
    - Berichte
      - Angebote
      - Aufträge
      - Liefersch...
      - Rechnun...
      - Mahnung...
  - Einkauf
  - Lager
    - Einlagern
    - Erzeugnis fe...
    - Umlagern
    - Entnahme
    - Berichte
  - Finanzbuchhalt...
    - Dialogbuchen
    - Debitorenbu...
    - Kreditorenb...
    - DATEV-Expo...
    - Berichte
      - Offene F...
      - Offene V...
      - Buchung...
  - Zahlungsverkehr
  - Berichte
  - Druck
  - Produktivität
    - Aufgabenliste a...
    - Wiedervorlage ...
    - Zugriffsrechte b...
    - Berichte
  - System
  - Programm

## Offene Forderungen

für den Zeitraum bis 26 Oktober 2009

	Kunde	Rechnung	Datum	Fällig	Betrag	Offen
<input type="checkbox"/>	Keller	1011	25-10-2009	25-10-2009	790,00	785,00
					<b>790,00</b>	<b>785,00</b>
<input type="checkbox"/>	procube systementwicklung	1018	19-10-2009	19-10-2009	143,99	143,99
		1014	25-10-2009	25-10-2009	4.120,00	3.957,00
					<b>4.263,99</b>	<b>4.100,99</b>
					<b>5.053,99</b>	<b>4.885,99</b>

Sammelrechnung HTML Bildschirm

### Sammelrechnung

Alle auswählen Drucken eMail

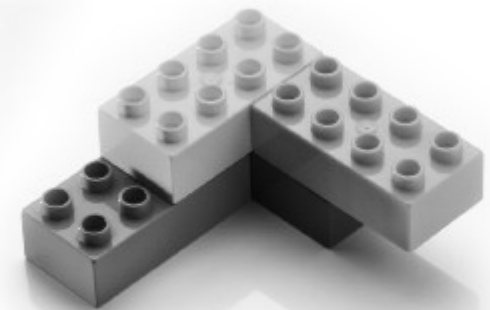
### Listenexport

Als PDF exportieren Als CSV exportieren



# Lx-Office

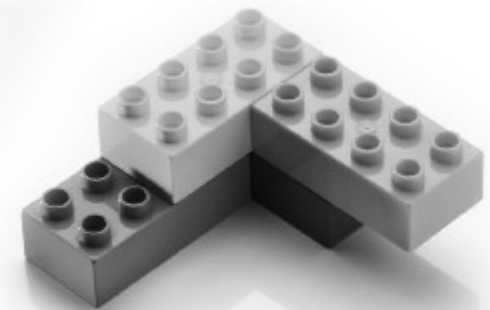
Functionality	Lx-Office
Purchase	X
Sales	X
Personal	
Finance	X
Stock	X
Production	
Documentmanagement	
Projectmanagement	
CRM	X



# Lx-Office

## Positiv / Negativ

- + very good documentation
- + Good adaptation to German financial accounting (SKR03, SKR04)
- + Datev-Interface
  
- no production management
- lack of human resources
- it is only working on Linux



# OpenERP (früher TinyERP)



<b>Technical Data</b>	
Operating System	Linux, Microsoft
GUI	Web-Client, GTK-Client
Database	PostgreSQL
Programming Language	Python, XSL
License	GPL
Actual Version	5.0

Menü

Umschalten

Werkzeugleiste

- Partner
- Produkte
- Personal
- Finanzen
- Lager
- Einkauf
- Fertigung
- Verkauf
- Anzeigetafeln
- Administration

Menü

- ▶ Konfiguration
- ▶ Partner
- Partner Addresses

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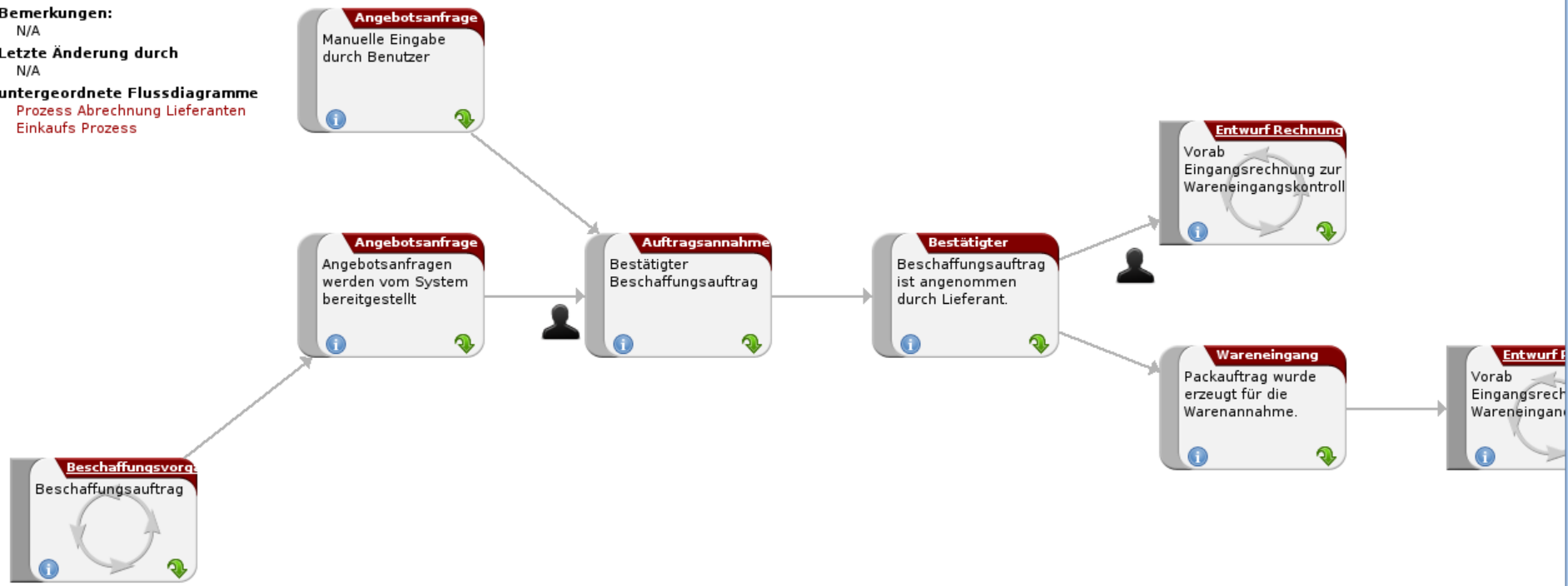
Der Web-Cient wurde von Axelor entwickelt (<http://axelor.com>) und Tiny (<http://tiny.be>)

Server: socket://127.0.0.1:8070 - database: nemus\_dev

Fertig

### Einkauf Prozess

**Bemerkungen:**  
N/A  
**Letzte Änderung durch**  
N/A  
**untergeordnete Flussdiagramme**  
Prozess Abrechnung Lieferanten  
Einkaufs Prozess



[ANPASSEN]

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Der Web-Cient wurde von Axelor entwickelt (<http://axelor.com>) und Tiny (<http://tiny.be>)

# OpenERP (formerly TinyERP)

Functionality	Lx-Office	openERP
Purchase	X	X
Sales	X	X
Personal		X
Finance	X	X
Stock	X	X
Production		X
Documentmanagement		X
Projectmanagement		X
CRM	X	X

# OpenERP (früher TinyERP)

## Positiv / Negativ

- + Variety of reports available
- + Active community
- + Good variety of functions
- + Good separation between the DB server, application server and client
  
- Financial needs to be adjusted





# Openbravo

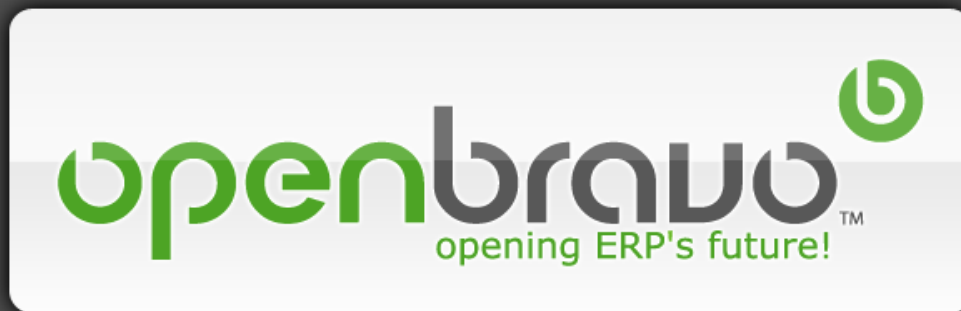


<b>Technische Daten</b>	
Operating System	Linux, Windows, FreeBSD, Open Solaris
GUI	Web-Client
Database	Oracle, PostgreSQL
Middleware	Apache-Tomcat, Apache-Ant, Java 2 Platform Standard Edition
Programming Language	Java, Javascript, PL/SQL
License	GPL
Actual Version	2.40

yourCOMPANY

powered by openbravo

- Openbravo
- 0 Alerts
- Application Dictionary
- General Setup
- Master Data Management
- Procurement Management
- Warehouse Management
- Production Management
- Material Requirement Planning (MRP)
- Sales Management
- Project & Service Management
- Financial Management
- Openbravo ERP
- Information



Fertig

yourCOMPANY

Master Data Management || Business Partner || Business Partner

powered by  
openbravo

Openbravo

0 Alerts

Application Dictionary

General Setup

Master Data Management

Business Partner

Product

Send Mail Text

Business Partner Setup

Business Partner Category

Invoice Schedule

Title

Payment Term

Volume Discount

Discount

Business Partner Info

Salary Category

Interest Area

Total Product Template Report

Vendor Details

Business Partner Setup

Product Setup

Pricing

Import Data

Procurement Management

Warehouse Management

Production Management

Material Requirement Planning (MRP)

Sales Management

## Business Partner

## Business Partner

Customer Vendor/Creditor Employee Bank Account Location/Address Contact Product Template Shipment Route Discount

volume Discount

	Search Key	Name	Tax ID	Business Partner Category
1	10000238	The South Bank	12999999G	CREDITOR
2	10000255	The East Bank	13209876G	CREDITOR
3	Big bazaar Admin	Big bazaar Admin	37037036A	STANDARD
4	Big bazaar im	Internal moves Big bazaar	12444444M	CUSTOMER
5	Big bazaar User	Big bazaar User	24691357A	STANDARD
6	CR1	Gadwa ,Corporation	13320987G	CREDITOR
7	CR10	Asad ,Corporation	14160493S	CREDITOR
8	CR11	Ashquar ,Limited	11382715M	CREDITOR
9	CR12	Asil ,Company	11271604J	CREDITOR
10	CR1216	Tibelda ,Company	13283950G	CREDITOR
11	CR1217	Treffen ,Corporation	11691357M	CREDITOR
12	CR1218	Trennen ,Limited	11407407M	CREDITOR
13	CR1219	Tretan ,Company	13037036G	CREDITOR
14	CR1220	Truda ,Corporation	13617283R	CREDITOR
15	CR1221	Tugenda ,Limited	12049382M	CREDITOR
16	CR1222	Ubel ,Company	11024691J	CREDITOR
17	CR1223	Ulla ,Corporation	11345678J	CREDITOR
18	CR1224	Ulrich ,Limited	11753086M	CREDITOR
19	CR1225	Ulrike ,Company	13814814R	CREDITOR
20	CR1226	Valborga ,Corporation	12172839M	CREDITOR

Fertig

# Openbravo

Functionality	Lx-Office	openERP	Openbravo
Purchase	X	X	X
Sales	X	X	X
Personal		X	
Finance	X	X	X
Stock	X	X	X
Production		X	X
Documentmanagement		X	
Projectmanagement		X	X
CRM	X	X	X

# Openbravo

## Positive/ Negative

- + Good program documentation
- + Good Features
- + Good software architecture
- + CRM and business intelligence functionality are integrated
  
- Lack SKR03/04, Datev interface



# opentaps



<b>Technical Data</b>	
Operating System	Linux, Windows
Database	DB2, MySQL, PostgreSQL, Oracle, SQL Server
Programming Language	Java
License	GPL
Actual Version	1.4



- Shortcuts**
- Open Back Orders
  - Find Inventory Item
  - Receive an Item
  - Receive Purchase Order
  - Adjust Quantities
  - Stock Moves
  - Inventory Transfer
  - Manage Lots

## Open Back Orders

**Product ID**    
**Shipment Method**  

Reserved On	Product ID	Order Date	Order	Status	Ship Via	Qty Ordered	Qty Back Ordered	Promised By
8/28/07 11:35 AM	GZ-1000	8/17/07 8:38 AM	<a href="#">WS10040</a>	Approved	UPS Guaranteed Next Day	1	1	9/16/07 8:38 AM
8/28/07 11:35 AM	GZ-1000	8/17/07 8:58 AM	<a href="#">WS10043</a>	Approved	UPS Guaranteed Next Day	1	1	9/16/07 8:58 AM
8/28/07 11:35 AM	GZ-1000	8/17/07 8:58 AM	<a href="#">WS10042</a>	Approved	UPS Guaranteed Next Day	1	1	9/16/07 8:58 AM
8/28/07 11:35 AM	GZ-1001	8/17/07 8:38 AM	<a href="#">WS10041</a>	Approved	DHL Ground	1	1	9/16/07 8:38 AM
8/28/07 11:35 AM	GZ-1000	8/17/07 8:58 AM	<a href="#">WS10044</a>	Approved	UPS Guaranteed Next Day	1	1	9/16/07 8:58 AM
8/28/07 11:35 AM	GZ-2002	8/20/07 2:39 PM	<a href="#">WS10063</a>	Approved	UPS Guaranteed Next Day	1	1	8/22/07 2:39 PM
8/28/07 11:35 AM	PC001	8/24/07 11:21 AM	<a href="#">WS10102</a>	Approved	UPS Ground	1	1	9/23/07 11:21 AM
8/28/07 11:35 AM	GZ-1000	8/16/07 11:44 AM	<a href="#">WS10021</a>	Created	UPS Guaranteed Next Day	1	1	9/15/07 11:44 AM
8/28/07 11:35 AM	PC001	8/17/07 11:33 AM	<a href="#">WS10045</a>	Created	UPS Guaranteed Next Day	1	1	9/16/07 11:33 AM
8/28/07 11:35 AM	GZ-1000	8/23/07 11:45 AM	<a href="#">WS10090</a>	Created	USPS Express	1	1	9/22/07 11:45 AM
8/28/07 11:35 AM	GZ-5005	8/23/07 5:00 PM	<a href="#">WS10092</a>	Created	UPS Ground	1	1	9/22/07 5:00 PM

# opentaps

Functionality	Lx-Office	openERP	Openbravo	opentaps
Purchase	X	X	X	X
Sales	X	X	X	X
Personal		X		
Finance	X	X	X	X
Stock	X	X	X	X
Production		X	X	X
Documentmanagement		X		
Projectmanagement		X	X	
CRM	X	X	X	X



# opentaps

## Positiv / Negativ



- + Multi-level BOM are possible
- + Great variety of functions
- + Easy installation
- Work plans are unclear up
- Surface: it can not be simultaneously open multiple masks

# ADempiere



## Technical Data

Operating System	Linux, Windows, FreeBSD, Solaris
Database	Oracle, PostgreSQL
Programming Language	Java
License	GPL
Actual Version	3.4.0 „Emily“

- Menu
- Business Partner
- Sales Order
- Product

- Menu
  - System Admin
  - Application Dictionary
  - Partner Relations
  - Quote-to-Invoice
  - Requisition-to-Invoice
  - Open Items
  - Material Management
  - Project Management
  - Performance Analysis
  - Assets

Expand Tree

Lookup

Notice: 1

Request: 0

108 MB - 57%

Select Program

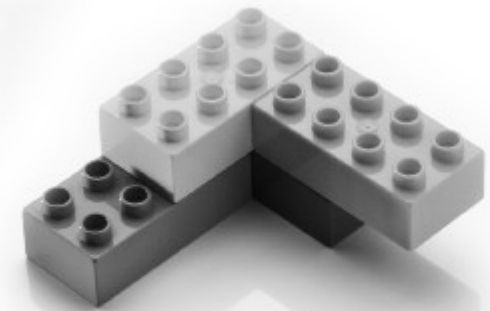


- Business Partner
- Customer
- Customer Accounting
- Vendor
- Vendor Accounting
- Employee
- Employee Accounting
- Bank Account
- Location
- Contact (User)
- BP Access
- Interest Area
- Withholding

Client	GardenWorld	Organization	HQ
Search Key	mb		
Name	materialboerse.de GmbH	<input checked="" type="checkbox"/> Active	
<input checked="" type="checkbox"/> Customer		Document Copies	0
Invoice Rule		Invoice Schedule	
Delivery Rule		Delivery Via	
Price List	Standard		
Discount Schema		Flat Discount %	0,0
Payment Rule		Payment Term	Immediate
Sales Representative		Dunning	Default
Order Reference		<input type="checkbox"/> Discount Printed	
Order Description			
Invoice Print Format		Min Shelf Life %	0
Credit Limit	0,00	Credit Used	0,00

# ADempiere

Functionality	Lx-Office	openERP	Openbravo	opentaps	ADempiere
Purchase	X	X	X	X	X
Sales	X	X	X	X	X
Personal		X			
Finance	X	X	X	X	X
Stock	X	X	X	X	X
Production		X	X	X	X
Documentmanagement		X			
Projectmanagement		X	X		X
CRM	X	X	X	X	



# ADempiere

## Positiv / Negativ

- + Clear Surface
- + Large variety of functions
- + Good customizing properties
- Large + Language
- + Active Community

\* System Architectur



# WebERP



<b>Technical Data</b>	
Operating System	Linux
Database	MySQL
Programming Language	PHP
License	GPL
Actual Version	3.10.1

Sales	Receivables	Payables	Purchases	Inventory	Manufacturing	General Ledger	Setup
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<b>General</b>	<b>Receivables/Payables</b>	<b>Inventory Setup</b>
<ul style="list-style-type: none"> <li>➤ Company Preferences</li> <li>➤ Configuration Settings</li> <li>➤ User Maintenance</li> <li>➤ Role Permissions</li> <li>➤ Bank Accounts</li> <li>➤ Currency Maintenance</li> <li>➤ Tax Authorities and Rates Maintenance</li> <li>➤ Tax Group Maintenance</li> <li>➤ Dispatch Tax Province Maintenance</li> <li>➤ Tax Category Maintenance</li> <li>➤ List Periods Defined (Periods are automatically maintained)</li> <li>➤ Report Builder Tool</li> <li>➤ View Audit Trail</li> <li>➤ View System Check</li> <li>➤ Geocode Setup</li> </ul>	<ul style="list-style-type: none"> <li>➤ Sales Types</li> <li>➤ Customer Types</li> <li>➤ Credit Status</li> <li>➤ Payment Terms</li> <li>➤ Payment Methods</li> <li>➤ Sales People</li> <li>➤ Sales Areas</li> <li>➤ Shipping-methods</li> <li>➤ Sales GL Interface Postings</li> <li>➤ COGS GL Interface Postings</li> <li>➤ Shipping Costs Maintenance</li> <li>➤ Discount Matrix</li> </ul>	<ul style="list-style-type: none"> <li>➤ Inventory Categories Maintenance</li> <li>➤ Inventory Locations Maintenance</li> <li>➤ Discount Category Maintenance</li> <li>➤ Units of Measure</li> </ul>



Version - 3.11-cvs

webERP Copyright © weberp.org - 2009

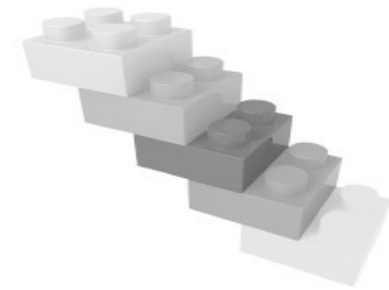
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# WebERP

Functionality	Lx-Office	openERP	Openbravo	opentaps	ADempiere	WebERP
Purchase	X	X	X	X	X	X
Sales	X	X	X	X	X	X
Personal		X				
Finance	X	X	X	X	X	X
Stock	X	X	X	X	X	X
Production		X	X	X	X	X
Documentmanagement		X				
Projectmanagement		X	X		X	
CRM	X	X	X	X		



# ERP5



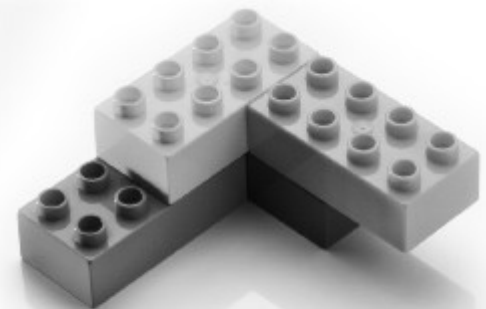
<b>Technical Data</b>	
Operating System	Unix, Linux, Windows, Mac OS X
Database	MySQL, PostgreSQL, DB2
Programming Language	Python
License	GPL
GUI	Webinterface
Architecture	Based on Zope Application Server

# ERP5

Functionality	Lx-Coper	Oper	oper	ADer	WebERP	ERP5
Purchase	X	X	X	X	X	X
Sales	X	X	X	X	X	X
Personal		X				X
Finance	X	X	X	X	X	X
Stock	X	X	X	X	X	X
Production		X	X	X	X	X
Documentmanagement		X				X
Projectmanagement		X	X		X	
CRM	X	X	X	X		X

# Outline

- Some topics for the issue „ERP“
- Free Software / Open-Source
- Open-Source ERP-Solutions
- Next steps at the project  
„ERP-Lösungen auf Basis Freier Software“



# Shop-Integration

- Analysis of existing Open Source Shops
- Which solutions are suitable for existing open source ERP systems?
- Which interfaces provide the existing Open-source ERP systems?



# Interfaces

- What interfaces offer  
Open-source ERP systems?
- How can
  - > Identifikationsstandards,
  - > Classification Standards
  - > Catalog exchange formats,
  - > Transaction standards and
  - > Process Standards  
be observed?



# Implementation Strategy

- How does the introduction  
an open source ERP solution from a  
proprietary solution?
- What are the "stumbling blocks" are aware of?
- Develop a model for their own actions  
Open Source ERP Systems



# Thanks you!

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