Open Source Enterprise Resource Planning (ERP)

Reasonable tools for manufacturing SMEs?

Marcus Sauer[1], Peter Egri[2]

[1]Fraunhofer-Institute for Manufacturing Engineering and Automation

[2]Fraunhofer Project Center for Production Management and Informatics
A joint initiative of Fraunhofer and MTA SZTAKI

25/05/11

Györ

MTA SZTAKI Fraunhofer

Table of content

Functions of ERP Systems

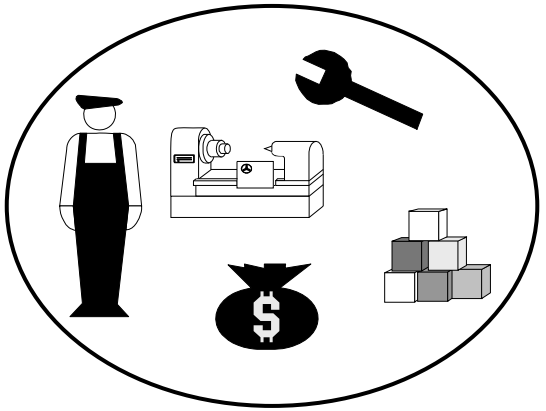
- **Supply Chain Management (SCM)**
  (e.g. inventory management, supply chain planning)
- **Sales & Marketing**
  (e.g. pricing, contact management)
- **Customer Relationship Management**
  (e.g. customer contact, call center support)
- **Financial Management**
  (e.g. cash management, invoicing)
- **Human Resource Management (HR)**
  (e.g. recruitment, training)
- **Manufacturing**
  (e.g. resource & capacity planning, material requirements planning)

Functions of an ERP system:
Usually organized in a modular way

ERP Software: Reasons for Use

Enterprise Resource Planning (ERP)

Standard business software for integrated information processing, used to process company-wide data for routine tasks in the different departments of a company.



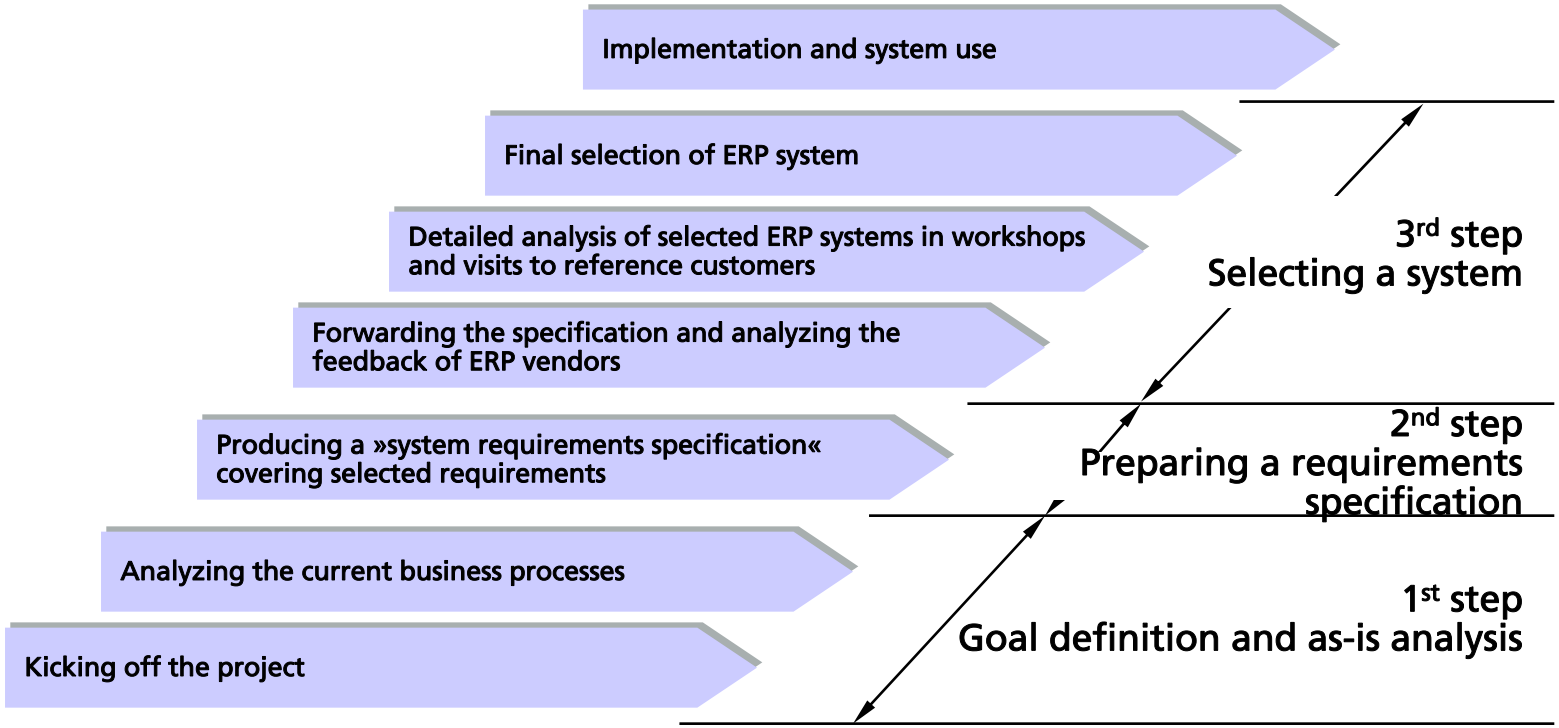
Scope

Optimization of company internal processes

Reasons for use

- ⇨ Integration and automation of tasks that are part of the business processes of a company
- ⇨ Company-wide information flow
- ⇨ Consistency and timeliness of data
- ⇨ Standardization of data
- ⇨ Uniform application
- ⇨ Exploiting the advantages of standard software

Steps in the Selection Process



- Step 1 and 2 need to be taken when selecting proprietary and Open Source Software
- Having done the selection does not mean that work is finished.
  Intensive maintenance and system adaptations are required during use.

What is Open Source Software? A Brief Summary

- Started in the 1980s: Foundation of the Free Software Foundation (FSF)
  → Definition of criteria to define free software:
  - Freedom to run the program for any purpose
  - Freedom to study and modify the program
  - Freedom to redistribute copies
  - Freedom to distribute copies of modified versions

- The name „Free Software“ was often criticized
  („Free“ was meant to refer to *Freedom*, but was often understood as *Free of charge*)

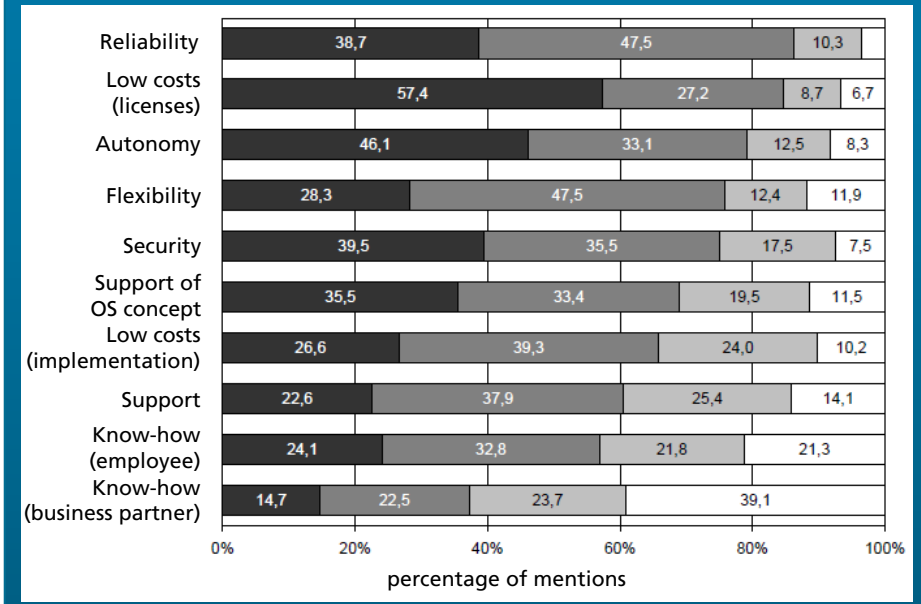
- In the late 1990s: Foundation of the Open Source Initiative (OSI)
  - Definition of Open Source Software via 10 criteria:
    - Free redistribution
    - Software must not restrict other software
    - Software must be technology-neutral
    - …

- Today, OS Software solutions are widely used for private purposes (multimedia, games, web-browsing, file sharing, etc.) but in the business sector, utilization is still in its infancy.

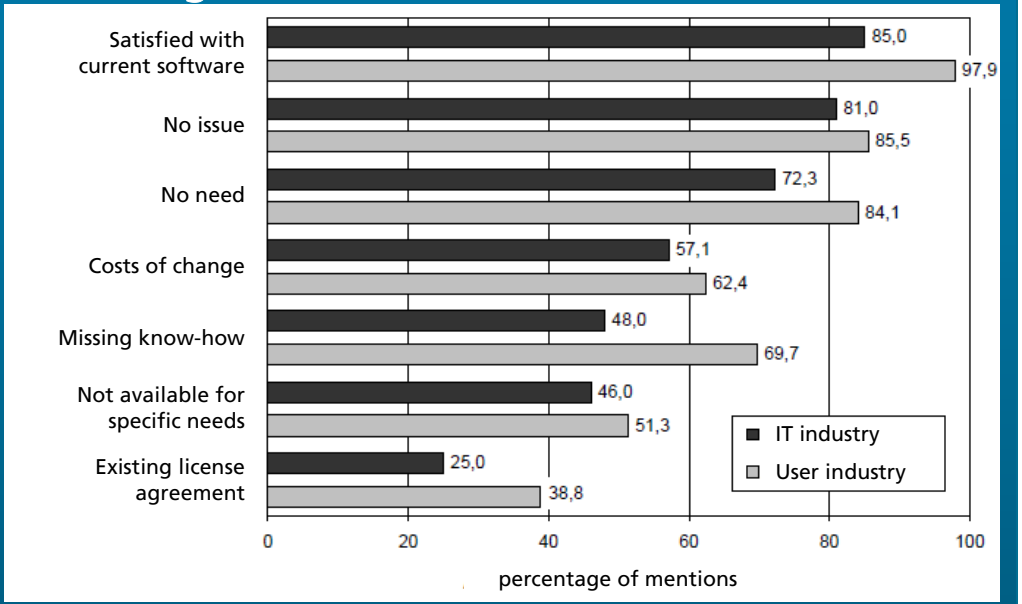
Free Software Foundation: http://www.fsf.org Open Source Initiative: http://www.opensource.org

Why Use Open Source Software?

Factors for the use of OS-software



Factors against the use of OS-software



Applies completely
Applies more or less
Applies predominantly
Does not apply

Bertschek, I.; Döbler, T: „Open Source Software and IT-Security"
Enterprise survey 2005 in Baden-Württemberg, Germany

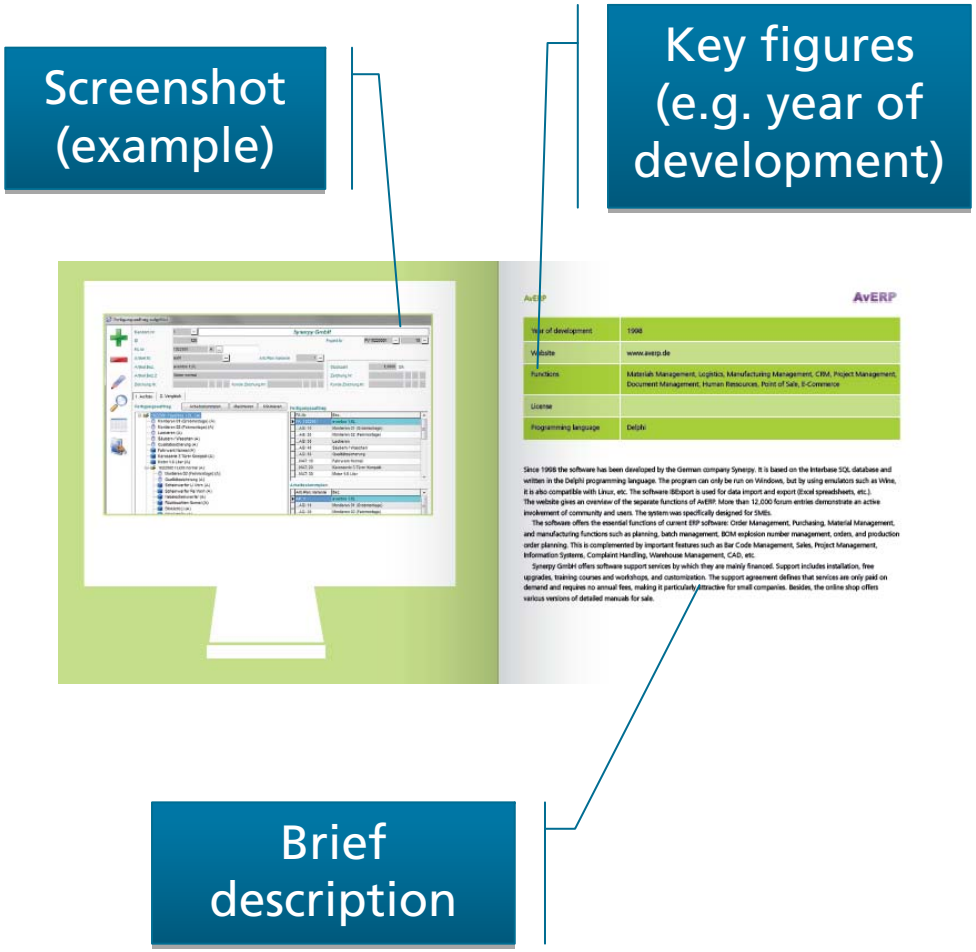
- Many enterprises are not considering an Open Source Software solution
- If they do, they are primarily interested in lower costs
- Open source Software *often has the potential* to lower costs while increasing functionality and flexibility (e.g. firefox) → Consideration of total cost of ownership

Business Models

- **Dual licensing.**
  The same software is offered for free with open source license and a commercial license.
  (Due to the viral character of open source license, any proprietary software may not be connected without making it open source.)
  (e.g. MySQL)
- **Open core (or split open source/proprietary).**
  Basic version of the software is open source, additional functionality in commercial version.
- **Selling services.**
  A company offers services (training, consultancy, selection, customization, integration and support), only charging the added value.
- **Indirect revenues.**
  Developers expect revenues from other products not directly connected with the open source code (e.g. providing open source driver software for hardware instruments).
- **Partnerships and donations.**
  Some open source projects are funded by business partners or accept donations
  (e.g. the Mozilla Firefox web browser contains built-in search engines due to the sponsorship of Google and other companies.)

Study on „Open Source ERP Software“

- Objective
  - Market research
  - Compile a current list of existing Open Source – ERP – Systems (focus on systems suitable for manufacturing enterprises)
- Definition of criteria to evaluate the systems
  - General information
  - Functionality
  - Flexibility
  - Support
  - Continuity
- Description of the systems



Systems on Close Examination

- Open Source Enterprise Resource Planning (ERP): Analysis of 14 different and independent systems
  - Focus on systems suitable for manufacturing enterprises
  - Focus on small and medium enterprises (SMEs)
- Definition of criteria considering the differences compared to proprietary software (e.g. the uncertainty of future support)
- Evaluation of the systems in most cases via internet research (websites of developers and distributors)

System Evaluation via Criteria

- Since open source systems fundamentally differ from proprietary systems, the criteria to evaluate such systems need to be adapted
- Concerning the study, criteria have been researched concerning

  - General information
  - Continuity
  - Support
  - Functionality
  - Flexibility

		Compiere
General Information	Webseite	www.compiere.com
	Licence	GPL v.2/Professional Edition
	Programming language	Java
	Server-OS	Linux, Windows
	Client-OS	Linux, Windows, Browser (only for professional edition)
	database	Oracle
	Web-GUI	only for professional edition
	Format for imports	.csv, .xml
	Format for exports	.csv, .html, .xml, .txt, .pdf, .ps, .doc
Functionality	Functions	Financial Management Materials Management Purchasing Order Management Manufacturing Warehouse Management Projects Sales E-Commerce Point of Sale Performance Management

		Compiere
Continuity	Year of development	1999
	Update frequency	29.9.2010 (Version 3.6.2)
	Transparency	upcoming events calender
Flexibility	User friendliness	complex configuration, cloud service
	Customization	wide range of functions, multi-lingual/ -currencies/ -client
	Security	data encryption, data/role-based security
	Scalability	SME
Support	Supoport (Developer)	yes
	Support and maintenance agreement	yes
	Support infrastructure	service packs, community wiki, forum
	Training	functional/technical training, eLerning
	Documentation	weak, free documentaion

Conclusion

- Study analyzes 14 open source ERP systems
- ERP systems are not very widely used, yet there are a number of systems that provide support for manufacturing-related areas
- Vary greatly in functionality (as proprietary systems)
- Additional criteria needed to evaluate systems (e.g. update frequency, usage of forums)
- A „plug and play"-ERP does not exist
  → Integrating professional support providers is a suitable way to create alternatives to proprietary systems

- Long-standing systems are very sophisticated (e.g. AvERP, OpenERP)
- With „newcomers", it remains to be seen whether they are pushed by a large and active community (e.g. Tryton)

Contact and download („free")
www.fraunhofer.hu
www.ipa.fraunhofer.de/corporatelogistics

Thank you for you attention,

any questions?