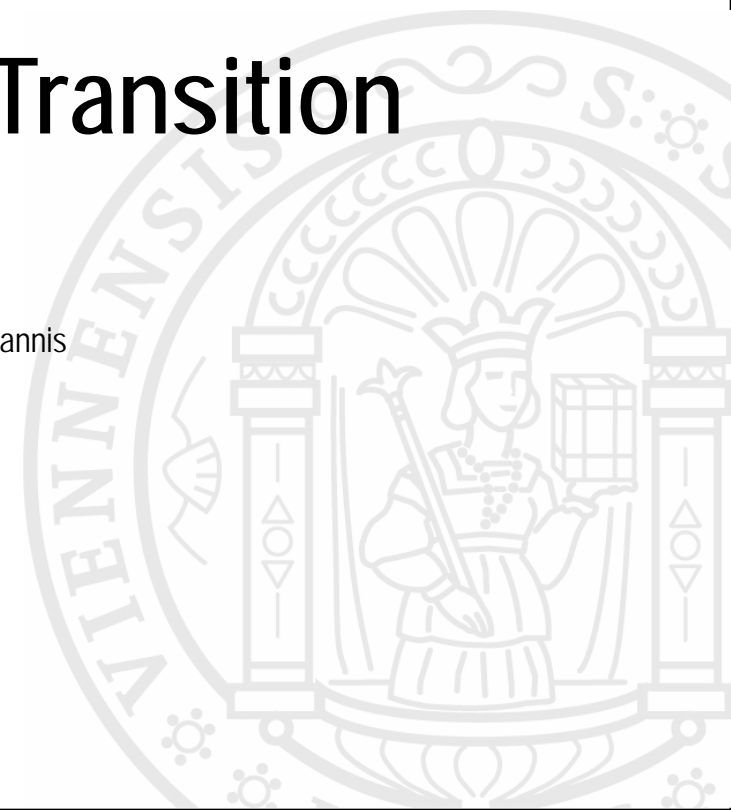


1st Workshop on
OMILAB: AN ENVIRONMENT TO DESIGN AND DEVELOP MODELLING METHODS
FOR THE FACTORY OF THE FUTURE
June 27th, 2016 – Troyes, France

OMiLAB for the FoF Transition

o. Univ. Prof. Prof. h.c. Dr. Dimitris Karagiannis
Elena-Teodora Miron
University of Vienna



The University of Vienna

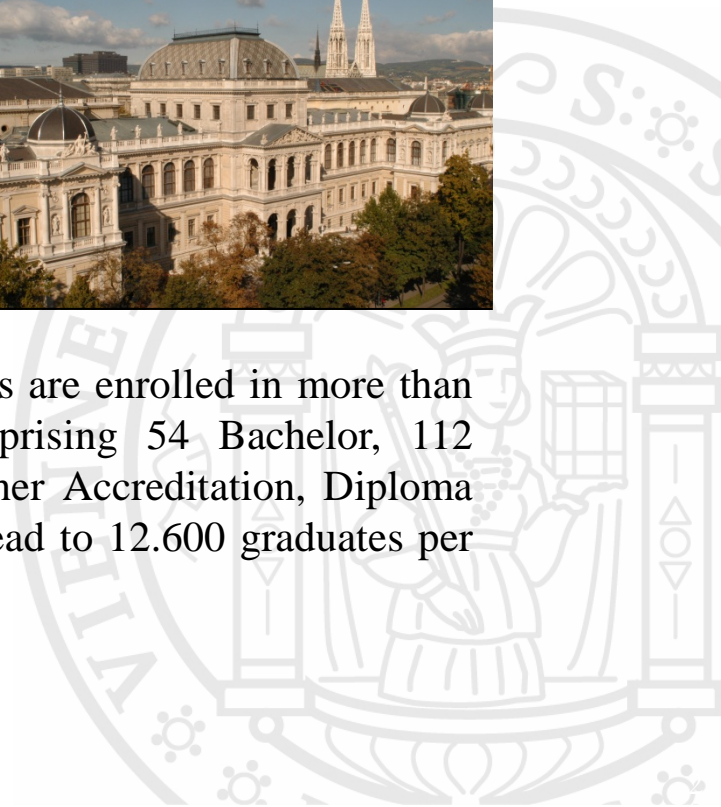


Was founded by Duke Rudolph IV in 1365. It is the **oldest university in the German-speaking cultural area** and one of the largest in Central Europe.

The University of Vienna is the **largest teaching and research institution in Austria**, with ca. 6,900 persons academic staff. It aims to sustain a wide range of studies as well as to promote new and innovative fields of research.

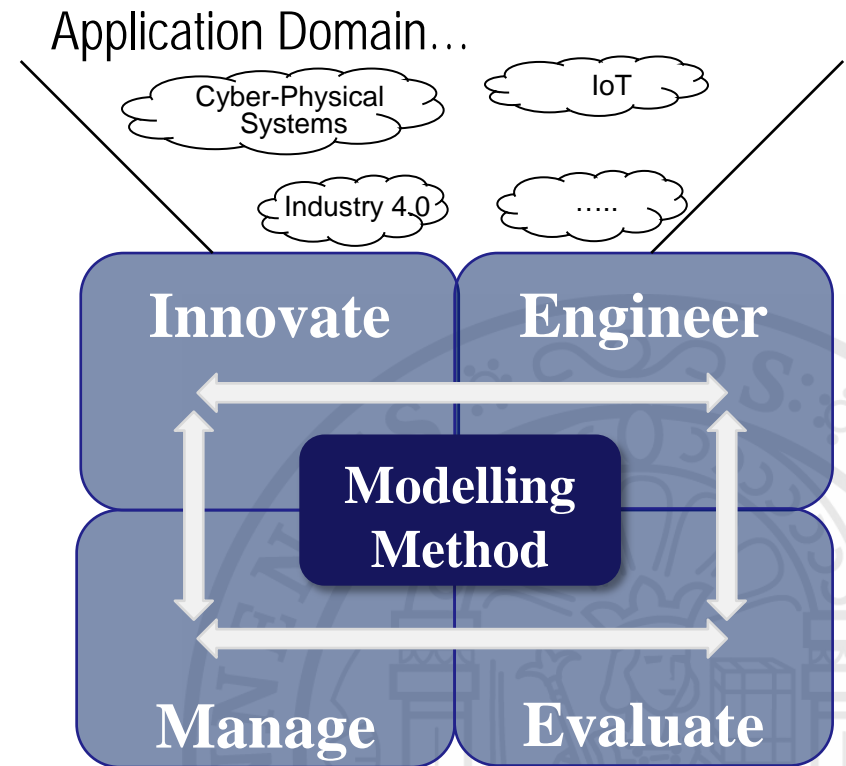


Currently, about 92,000 students are enrolled in more than 200 Study Programmes, comprising 54 Bachelor, 112 Master, and a number of Teacher Accreditation, Diploma and PhD Programmes, which lead to 12.600 graduates per year.



OMiLAB Mission

- A research and experimental laboratory for the conceptualization, development and deployment of modeling methods and the models designed with them.
- Project space for Engineering of modeling methods and modeling tools
- A space for a community of researchers and practitioners sharing a common understanding about model value



OMiLAB Organization

Lead

University of Vienna, Faculty of Computer Science,
Research Group Knowledge Engineering

Open Models Laboratories

- OMiLAB Austria – University of Vienna
- OMiLAB Korea - Chonbuk National University
- 4 more in negotiation

Associated Partners

- Concept currently in evaluation
- 10 early adopters

Members

- More than 40 universities
- From 4 continents



OMiLAB Best Practice Community Output

Book

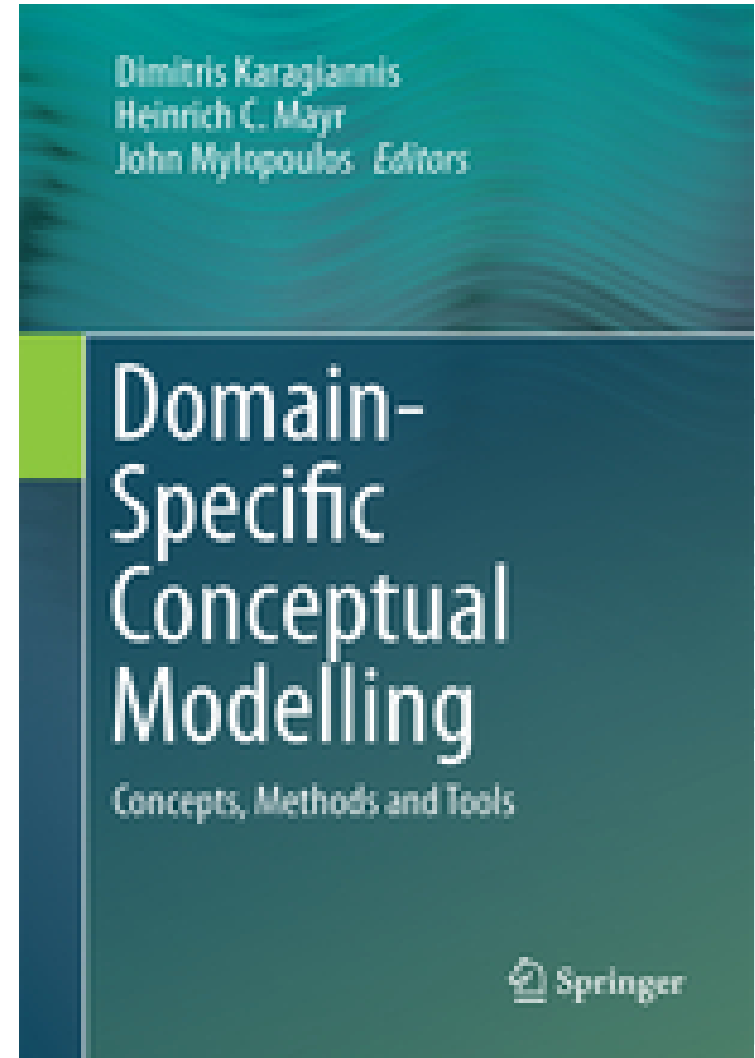
Domain-Specific Conceptual Modelling

Contributions

- 25 modelling methods
- 25 modelling tools freely available on OMiLAB
- more than 65 authors

Availability

- online – Summer 2016
- print - Autumn 2016



OMiLAB Environment

Development environment consists of

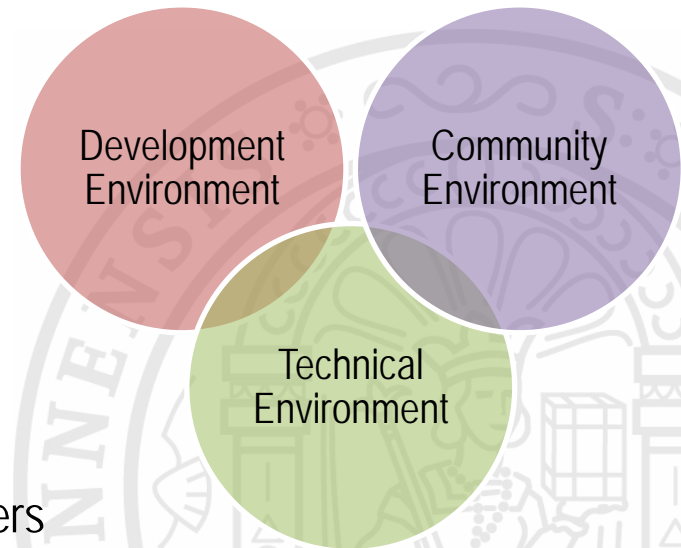
- Core (Open Use): ADOxx on OMiLAB
- Add-Ons (Open Source): implemented community tools such as Model Annotator, GraphRep Generator, Model Publisher, Method Publisher, OM-Repository, Meta-Model Browser, MLEA – Modelling Language Engineering Assistant

Technical environment supports

- virtual and physical accessibility
- packaging and deployment capabilities

Community environment provides

- Web-platform based on Liferay
- Community events like **conferences**, workshops, **summer schools**
- **Publications** like books, conference and journal papers
- Project networking activities
- Newsletters, media and OM-TV

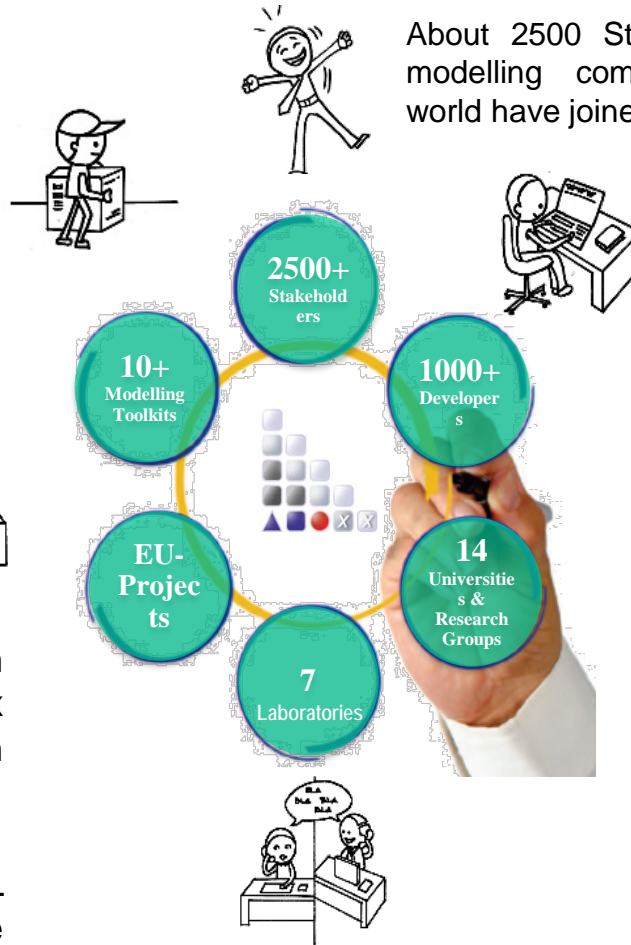


ADOxx.org – Open Innovation Community

10+ modelling toolkits have been realized by ADOxx.org. Community Members and are free for download.

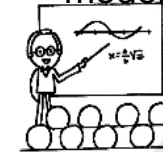


EC-founded Research Projects actively use ADOxx to realize open solution (CloudSocket, CAxMan, OrbEEt, LearnPAD, eHealthMonitor, NEXTTELL and BIVEE – see <https://www.adoxx.org/research/> for details).



About 2500 Stakeholders from the modelling community around the world have joined our newsletter.

More than 1.100 Developers from Europe, Japan, South Korea, Canada, USA, Brazil, Colombia, Argentina, Egypt Kenia and Israel downloaded ADOxx to develop their own modelling toolkits.



14 Universities and Research Groups from Austria, Germany, Sweden, Lithuania, Netherlands, Croatia, Romania, Belgium, Argentina, Greece, Switzerland use ADOxx for research and teaching and are in tight collaboration with the ADOxx.org team.

7 Research Laboratories in Austria, Germany, Switzerland and South Korea are using ADOxx for teaching and implementation projects.

Email: info@adoxx.org
Web: www.adoxx.org

Model-Based contributions for Industry 4.0 in EU projects

1. Business Modelling

1. **Goal:** Product and Service management
2. **Model:** e3Value Model, Thread Model, Business Model Canvas and BOC extensions
3. **Results:** Prototypes from CaxMan

DEMO

2. Zero Defect Manufacturing

1. **Goal:** Big Data and Knowledge Management
2. **Model:** BPMN + (DMN) + CMMN + Data and Skill extensions
3. **Results:** Prototypes planned in GOODMAN

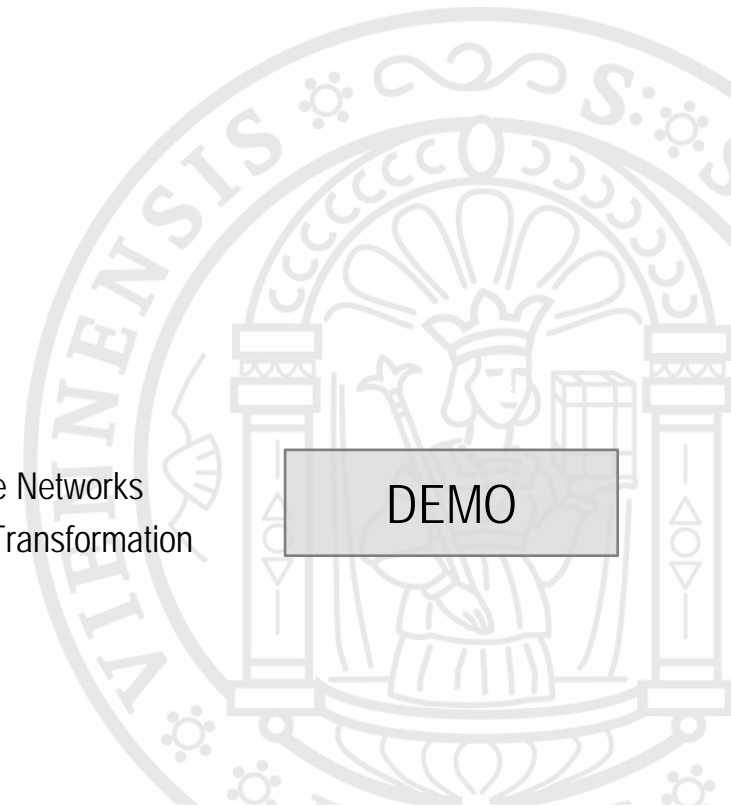
3. Production Process Simulation

1. **Goal:** Production Process Simulation
2. **Model:** BPMN + DMN + CMMN + Simulation extensions
3. **Results:** Prototypes planned in DISRUP

4. Mobile Maintenance

1. **Goal:** LinkedData and Requirements Management in Collaborative Networks
2. **Model:** BPM + Machine Model + App Requirements Model+ RDF Transformation
3. **Results:** Prototype from ComVantage

DEMO





2. Zero Defect Manufacturing: Goals

Adding sensors to the machine lines enable the introduction of **Cyber Physical Systems**. This enables to move towards Big Data analytics.

In order to keep the human expert in the loop the following approaches can be applied

- (1) **Knowledge-Based Process Improvements:** Zero Defect Manufacturing aims to reduce waste towards zero defect. Production processes, their indicators, and the corresponding data model enable a holistic management of data and knowledge.
- (2) **Skill Management:** When moving from traditional manufacturing towards digital manufacturing, the expected skills and competences from the working staff needs to be transferred towards digital manufacturing and data analytics.

Production Line



Skill Models



Indicator Dashboard

Name	State	Trend	Unit	Should value	Is Value
↳ LPT Host - Production-Process					
↳ A. Cost Reduction	🟢				
↳ A. Cost Reduction	🟢		EUR	3	3
↳ A. Cost Reduction	🟡				
↳ A. Cost Reduction	🟡		EUR	2	1
↳ A. In-time Delivery percent	🟢		%	100	99
↳ A. In-time Delivery percent	🟢		%	100	99
↳ A. Production Cycle Time Reduction	🔴		Weeks	10	10
↳ A. Production Cycle Time Reduction	🔴		Weeks	10	10
↳ A. Defect Quality	🟡		%	99	92
↳ Average Defect percentage per meter	🟡		%	99	92

Approaches developed in ADOxx:

H2020 (tdb)

GOODMAN*

* Currently under negotiation, expected starting date October 2016

2. Zero Defect Manufacturing: Models and Results



Input from Technology Enhanced Learning, Data and Knowledge Management

Initial input from Technology Enhanced Learning:

DOWNLOAD
ADOxx.org: LearnPAD Developer Space

<https://www.adoxx.org/live/web/learnpad-developer-space/space>

DOWNLOAD
ADOxx.org: GOODMAN

Expected start in October 2016

2. Zero Defect Manufacturing: EU-Projects Fact Sheet



GOOD MAN

GOODMAN aims to spearhead the transition to flexible factories that can be quickly reprogrammed to provide faster time-to-market responding to global consumer demand, address mass-customisation needs and bring life to innovative products. BOC develops a modelling tool for production processes that can be simulated in multiple ways.

Key-Facts	
Project Start	October 2016
Project End	September 2019

Partner

1	AEA s.r.l.	LOC	IT
2	Instituto Politécnico de Bragança	IPB	PT
3	UNINOVA-INSTITUTO DE DESENVOLVIMENTO DE NOVAS TECNOLOGIAS-ASSOCIACAO	UNINOVA	PT
4	UNIVERSITA POLITECNICA DELLE MARCHE	UNIVPM	IT
5	BOC ASSET MANAGEMENT GMBH	BOC	AT
6	COMPANY FOR PROVISION OF SERVICES, RESEARCH AND DEVELOPMENT NISSATECH INNOVATION CENTRE DOO	NISSA	RS
7	Current under negotiation		
8	ZANNINI POLAND SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA	ZAN	PL
8.1	ZANNINI SPA	ZAN_ITA	IT
9	ELECTROLUX PROFESSIONAL SPA	ELUX	IT

THANK YOU FOR YOUR ATTENTION!

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