

OMiLAB: Open Model Initiative Lab

3 Jan 2020

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**Chonbuk National Univ.
Republic of Korea**

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1. OMiLAB GLOBAL



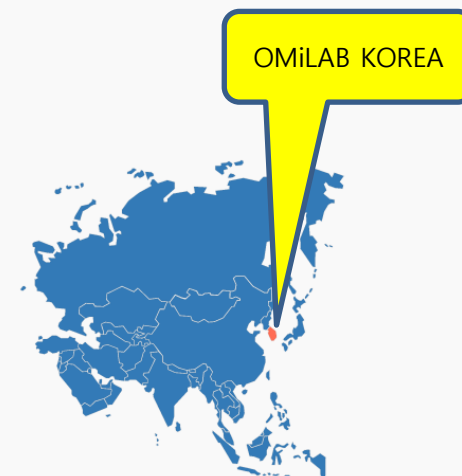
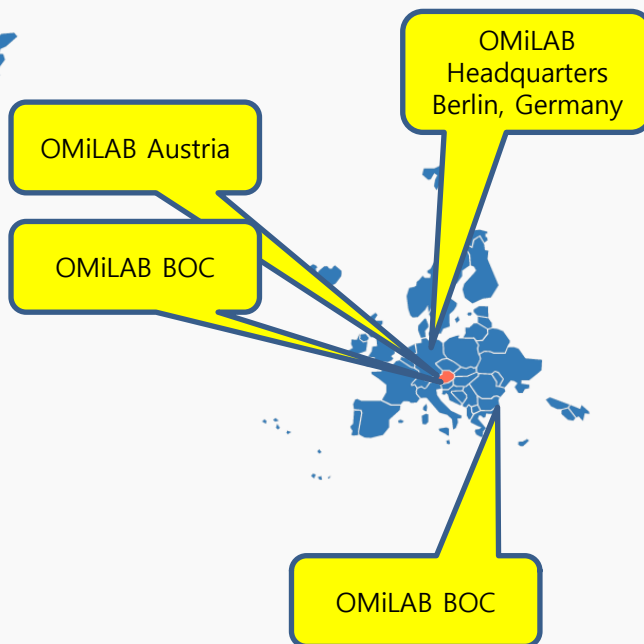
The OMiLAB Global Network

Our Laboratories around the world

AMERICA

EUROPE

ASIA



OMiLAB – Open Innovation for Digital Transformation

FoF EU Project and OMiLAB Nodes develop Digital Services for Cyber Physical Systems.

3 OMiLABs existing:

- 2 x Vienna, Chonbuck



<http://go0dman-project.eu/>

5 OMiLABs in preparation:

- Sibiu, Bergamo, Warsaw, St. Etienne, City of Oulo



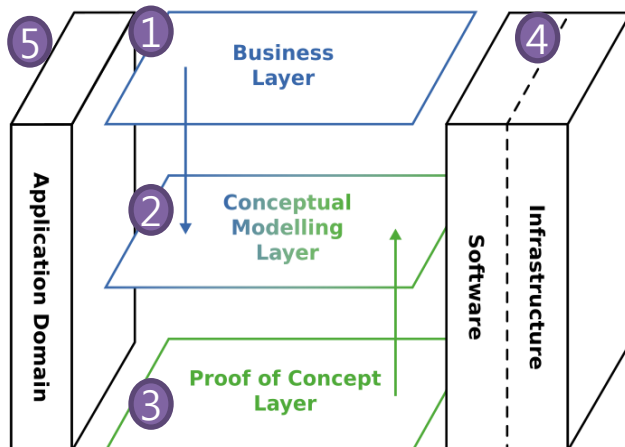
<https://digifof.eu/>

3 OMiLABs under Investigation

- 2 x Germany, 1 x South Korea
1 x Poland, 1 x Slovenia



<http://omilab.org>



Innovate, Develop and Evaluate Digital Services considering:

1. **Scenario Layer** – using Scene2Model Environment
2. **Conceptual Model Layer** – using the Bee-Up Tool
3. **Run-time Layer** – using Dobot Magician, Makeblock mbot
4. **Software** – using ADOxx, OLIVE, ...
5. **Application Domain:** i.e. Factory of the Future

OMiLAB Nodes

[Home](#) / [OMiLAB Nodes](#)

All network nodes share common tools and processes, while focusing on their individual core topic. Together we build a worldwide distributed laboratory with multi-disciplinary competences.

[Build Your Node!](#)

Best Service

OMiLAB Nodes

The Vienna Node – Austria



Here in Vienna our Focus is on Knowledge-based Methods and Technologies for Digitalisation.

[Read More](#)

The Chonbuk Node – Korea



Here in Chonbuk our focus is on formal methods and the Internet of Things.

[Read More](#)

Your Node – Next



You can launch your own OMiLAB and interact with our global community.

[Read More](#)

Domain-specific Conceptual Modelling

The book draws new attention to domain-specific conceptual modelling by presenting the work of thought leaders who have designed and deployed modelling methods. It provides hands-on guidance on how to build models in specific application domains. In addition to these results, it also puts forward ideas for future developments. All this is enriched with exercises, case studies, detailed references and further related information.

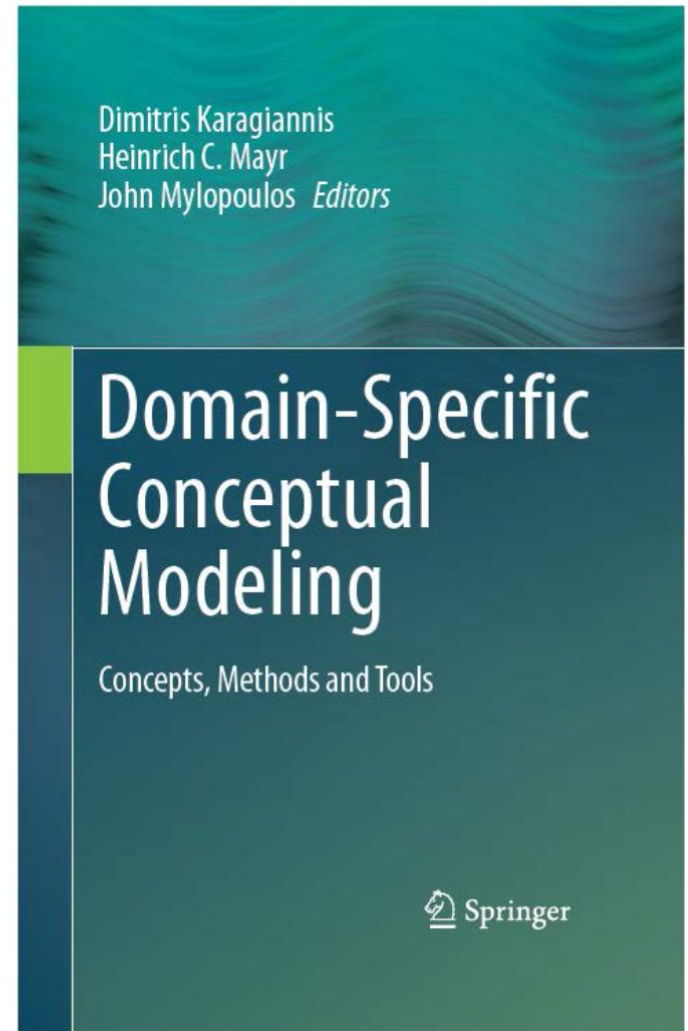
All domain-specific methods described in this book also have a tool implementation in the OMiLAB Tool section [Link catre Tools], which has been made available by the OMiLAB Node Vienna – a dedicated research and experimentation space for modelling method engineering.

The domains addressed by the modelling methods and tools contained in this book are:

- Modelling Method Conceptualization
- Big Data
- Business Process Management
- Business and Process Transformation
- Enterprise Information Systems
- Enterprise Strategic Management
- Internet of Things
- Knowledge Engineering
- Production Management Systems
- Requirements Engineering
- Service Science: Social Implications
- Technology Enhanced Learning

The collection of works presented here will benefit experts and practitioners from academia and industry alike, including members of the conceptual modelling community as well as lecturers and students.

To get access to the book and its chapters, please visit [“Springer Publishing”](#)



Dates

Start: July 6, 2020 at 9 a.m.

End: July 17, 2020 after 5 p.m.

Location

University of Vienna
Faculty of Computer Science
Währinger Str. 29 Vienna, Austria



NEMO Brochure

Download pdf



REGISTER

Registration form



NEMO Website

nemo.omilab.org



NEMO Summer School

Today's students will work in and for digitized organisations where smart devices, digital artefacts, intelligent machines and robots, data streams and connectivity are ubiquitous. In their work they will face human/machine interaction challenges, lifecycle challenges (e.g. ICT embedded in the lifecycle of consumer products), disruptive business models and increased questions about privacy and security. Additionally, a higher level of automated processing of digital information as well as the “end-to-end” integration of processes across multiple organizations and customers is required by the users.

The NEMO Summer School Series focuses on addressing these challenges through modelling, both in theory and practice. How to define modelling with the ‘right’ level of abstraction and how to engineer suitable modelling tools is at the heart of the summer school.

NEMO 2019 SUMMER SCHOOL

Participants

Austria	4	Italy	2
Belgium	1	Japan	2
Chile	3	Korea	6
Croatia	2	Luxembourg	1
Denmark	1	Poland	1
Estonia	2	Romania	5
France	4	South Africa	1
Germany	4	Sweden	1
Greece	2	Switzerland	6
India	3	Tunisia	1
Ireland	2		

Total:
54 Participants
21 Countries

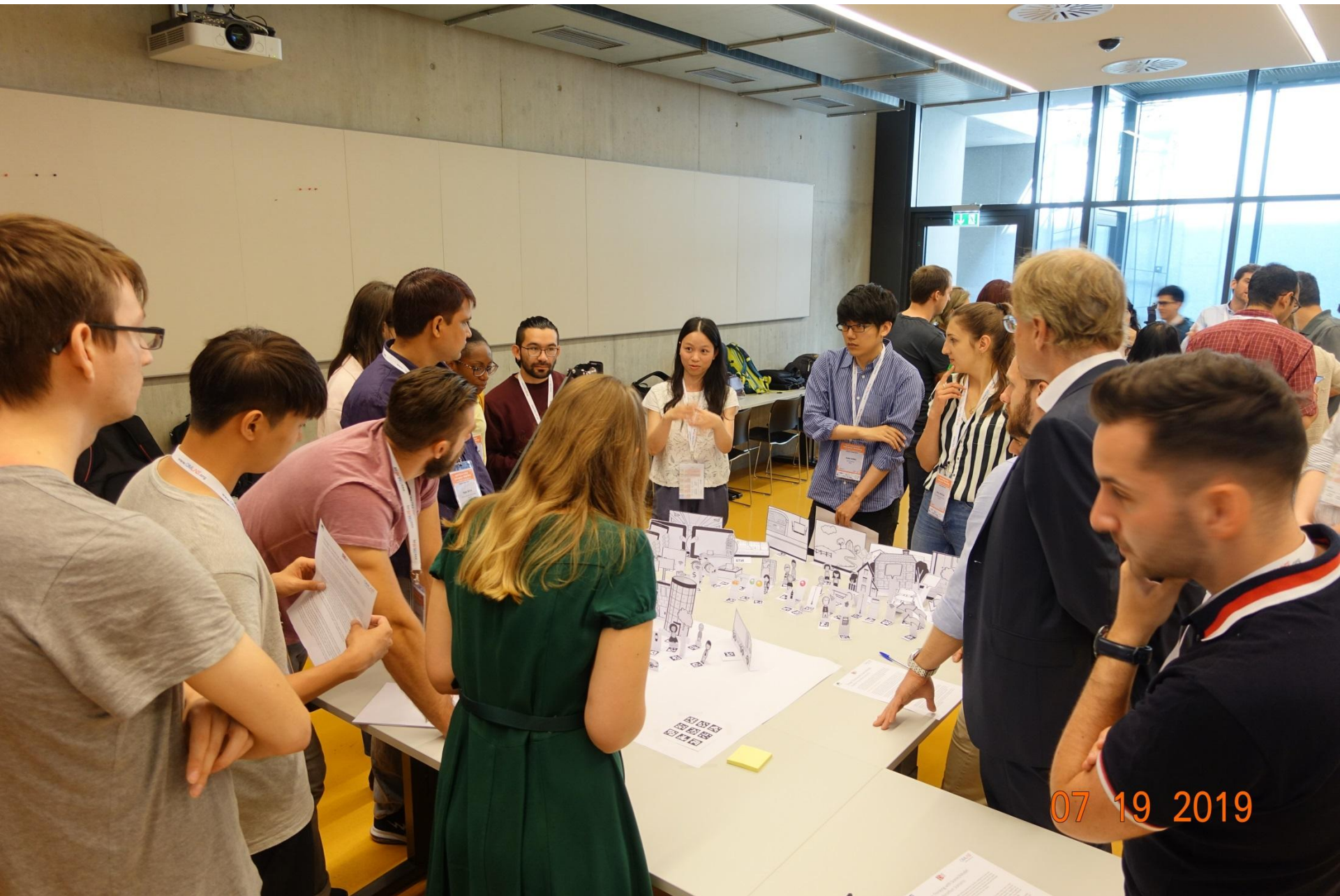
NEMO 2019 Summer School - Programme Overview

	10 - 12 July	15 July	16 July	17 July	18 July	19 July
ADOXX TRAINING DAYS		Opening Ceremony W. Gansterer, Dean Fac. of Comp. Science	Modern Approaches in Data Engineering and Information System Design I. Lukovic	Modelling Knowledge Action and Time: Action Theories and Their Application in Dynamic Domains D. Plexousakis, T. Patkos	Digital Transformation: Better Guided than Chaotic J. Ralyte	OMILAB NPO: An Introduction D. Karagiannis, M.K. Lee
		The Power of Model-Centering H.C. Mayr	N.N. N. Choi	Space of Services (SoS) - a method of design and improvement of services V. Strahonja, M. Tomicic Furjan	Foundations and Applications of Business Process Compliance S. Rinderle-Ma	OMILAB@work A Smart City Case - Design Thinking Workshop The OMILAB-Team
		B R E	A K	B R E A K	B R E A K	
		How can Conceptual Modelling Support Digitalization? D. Karagiannis	Security Assessment Using SAPnet in the Internet of Things (IoT) Ecosystem C. Douligeris	Service Engineering models for the design and development of Product-Service Systems S. Cavalleri	Japanese Creative Service as a Next Generation Enterprise Modelling Y. Hara, H. Masuda	OMILAB@work A Smart City Case - Parallel Working Groups The OMILAB-Team
		L U N	C H	L U N C H	L U N C H	
		Bee-UP The ADOxx-Team	Value Modelling: from current practice to future applications B. Roelens	Capability-oriented Enterprise Modelling for Mastering Dynamic Business Context J. Zdravkovic	Integrated Decision and Process Modelling J. Vanthienen	OMILAB@work A Smart City Case - Parallel Working Groups The OMILAB-Team
		Practice Session - DSMM H.C. Mayr, M. Paczona	Collaborative and well-behaved outdoor robots in harsh environment J. Röning	Participatory Enterprise Modeling with the 4EM Method J. Stirna, B. Lantow	Modelling Knowledge Work: Integrating Decision-aware Business Processes and Case Management K. Hinkelmann	OMILAB@work A Smart City Case - Parallel Working Groups The OMILAB-Team
		B R E	A K	B R E A K	B R E A K	
		FUJITSU Rebuilding Trust in the Digital Age Y. Takashige	HILTI Intelligent Customer Interactions Require an Intelligent System Setup M. Petry	Practice Session - 4EM J. Stirna, B. Lantow	Practice Session K. Hinkelmann	OMILAB@work A Smart City Case - Parallel Working Groups The OMILAB-Team
		Get Together Open End				
	20 - 21 July	22 July	23 July	24 July	25 July	26 July
LEISURE DAYS		Multi-Perspective Enterprise Modelling as a Foundation of IT-Business Alignment U. Frank	Hybrid Knowledge Bases: the Interplay between Domain-specific Models and Knowledge Graphs R. Buchmann, A.M. Ghiran	Process Algebra to Model Probabilistic Behavior of Smart IoT M. Lee	Enterprise Modelling and Business Intelligence W. Grossmann, C. Moser	STUDENT PRESENTATIONS
		Domain Storytelling: A Modelling Approach for Business Processes H. Züllighoven, S. Hofer	The industrial transition towards Product-Service-Systems: articulating enterprise modelling and economic model balancing X. Boucher	Supporting Business Process Improvement through a Modeling Tool F. Johannsen	Agent-oriented Cyber-physical Systems Modelling C. Cares	STUDENT PRESENTATIONS
		B R E	A K	B R E A K	B R E A K	
		Parallel Practice Session U. Frank/ H. Züllighoven	Parallel Practice Session R. Buchmann/ X. Boucher	Parallel Practice Session M. Lee/ F. Johannsen	Parallel Practice Session W. Grossmann/ C. Cares	STUDENT PRESENTATIONS
		L U N	C H	L U N C H	L U N C H	
		A User-Centric Platform PRINTEPS to Develop Intelligent Robot Applications T. Yamaguchi	Enterprise Modeling for Continuous Requirements Engineering M. Kirikova	Capability Oriented Requirements Engineering E. Kavakli	Grounded Enterprise Modelling E. Proper	STUDENT PRESENTATIONS
		Joining Distributed Ledger Technologies and Enterprise Models: The Concept of Knowledge Blockchains H.G. Fill	Systematic development of web information systems B. Thalheim	Business Processes for Business Communities A. Oberweis	Fractal Enterprise Model and its Usage for Business Transformation I.Bider, E. Perjons	STUDENT PRESENTATIONS
		B R E	A K	B R E A K	B R E A K	
		ATOS	How to model your eco-system? J. Gordijn	Quality Assurance for BPMN Models A. Polini	Trials & tribulations of PhD research and beyond P. Loucopoulos	Closing Ceremony



NEMO **S**UMMER
Next-Generation Enterprise:
Modelling in the Digital Age
SCHOOL
ERIES

Opening Ceremony 2019
nemo.omilab.org



07 19 2019

Know About

ADOxx Platform Trainings



OMiLAB community members benefit from free ADOxx Platform Trainings, which are provided by our partner the ADOxx.org team. Typically held four times a year in Vienna or upon request at a community member's location the three day training programme teaches method- and software engineers in the basics of coding on ADOxx.

The interactive training sessions enable participants to develop individual notation, syntax and semantic without programming effort.

The training curriculum includes:

- ⊗ Setting up the implementation environment
- ⊗ Modelling language implementation (including classes, relations, attributes and attribute facets, model types)
- ⊗ Mechanisms & algorithms implementation (including core functions for model manipulation, configuration of ADOxx components, external coupling of ADOxx functionality and add-on implementation)
- ⊗ Software packaging and deployment

At the end of the training each participant is able to take home an individual installable and distributable software package.

Click [HERE](http://www.adoxx.org/) for more information on ADOxx Trainings.



Overview

Project Name: DigiFoF

Funding: European Union

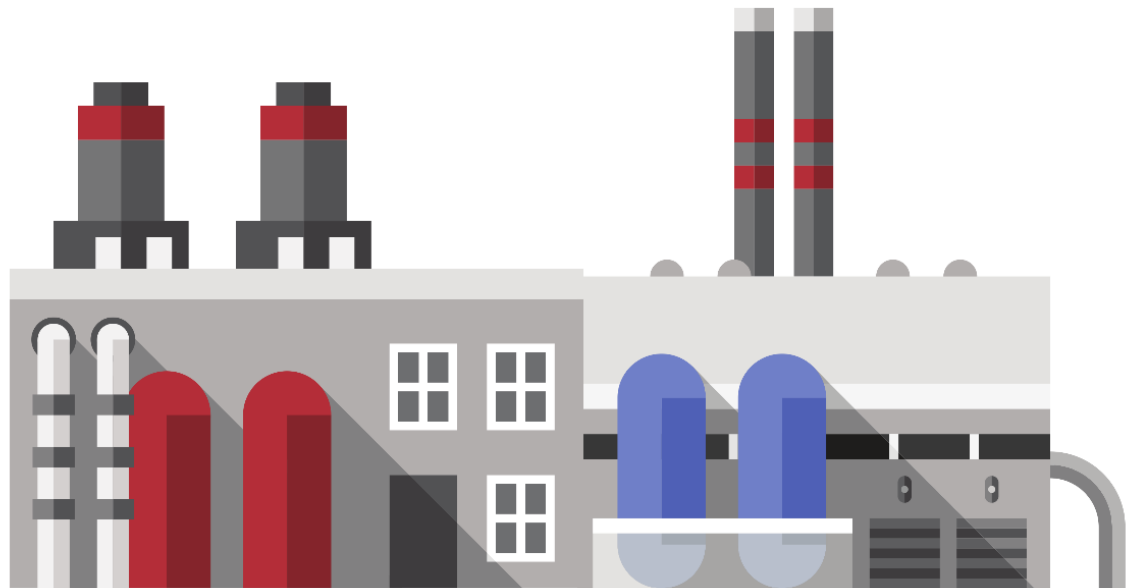
Program: Erasmus+ Knowledge Alliance

Start: January 2019

End: December 2021



Co-funded by the
Erasmus+ Programme
of the European Union



“DigiFoF: Digital Design Skills for Factories of the Future

The DigiFoF project proposes a network of training environments where HEIs, enterprises, and training institutions come together to develop skill profiles, trainings concepts as well as materials for design aspects of the Factory of the Future (FoF). It aims to contribute to the transformation of the manufacturing sector, which is disrupted by digitalization. The economic potential of the digital technologies is significant: the Factory of the Future (FoF) is expected to yield a market of about USD 67 billion globally by 2020. 87% of European manufacturing enterprises estimate that digital transformation is a competitive opportunity. Yet industry needs new types of digital skills, which 90% of European enterprises indicate they lack, as 30-90 million manufacturing employees could lose their (semi)-manual jobs.

Request Free Consultation

Name

Email Address

Subject

Modelling methods

BPMN

EPC

ER

UML

Petri Nets



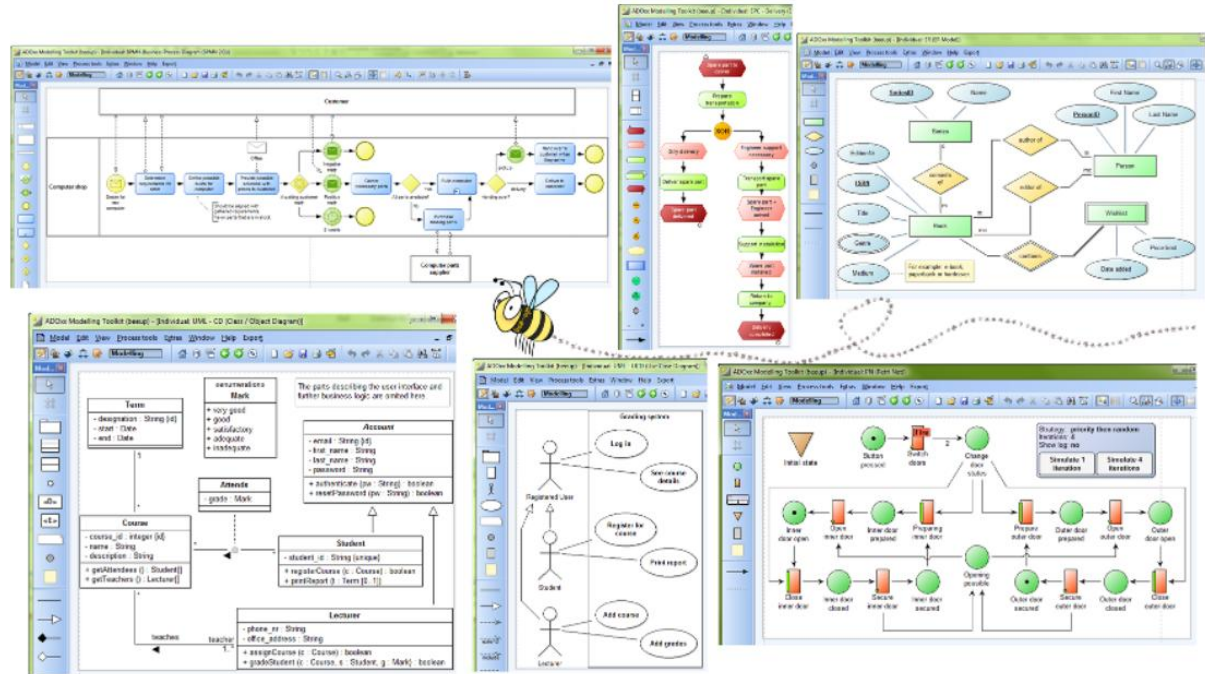
Bee-Up Case Study

[Download pdf](#)



Bee-Up Tool

[Download tool](#)



Teaching Conceptual Modelling with the Bee-up Tool

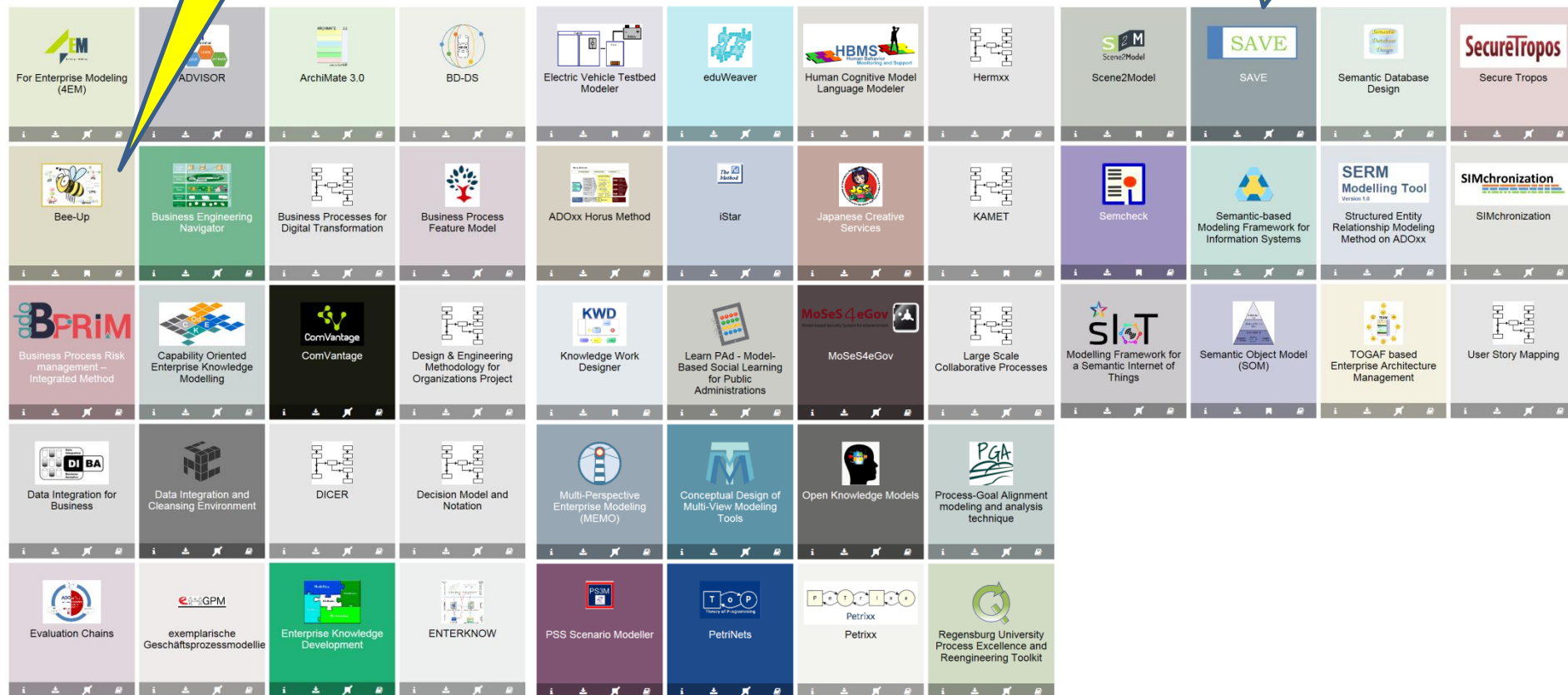
Bee-Up is an implementation of a hybrid modelling method incorporating and extending several modelling languages that gained wide popularity, namely

- ⌕ the Business Process Model and Notation (BPMN)
- ⌕ Event-driven Process Chains (EPC),
- ⌕ Entity-Relationship models (ER),
- ⌕ the Unified Modelling Language (UML) and
- ⌕ Petri Nets.

52 Open Modeling Tools

BEE-UP

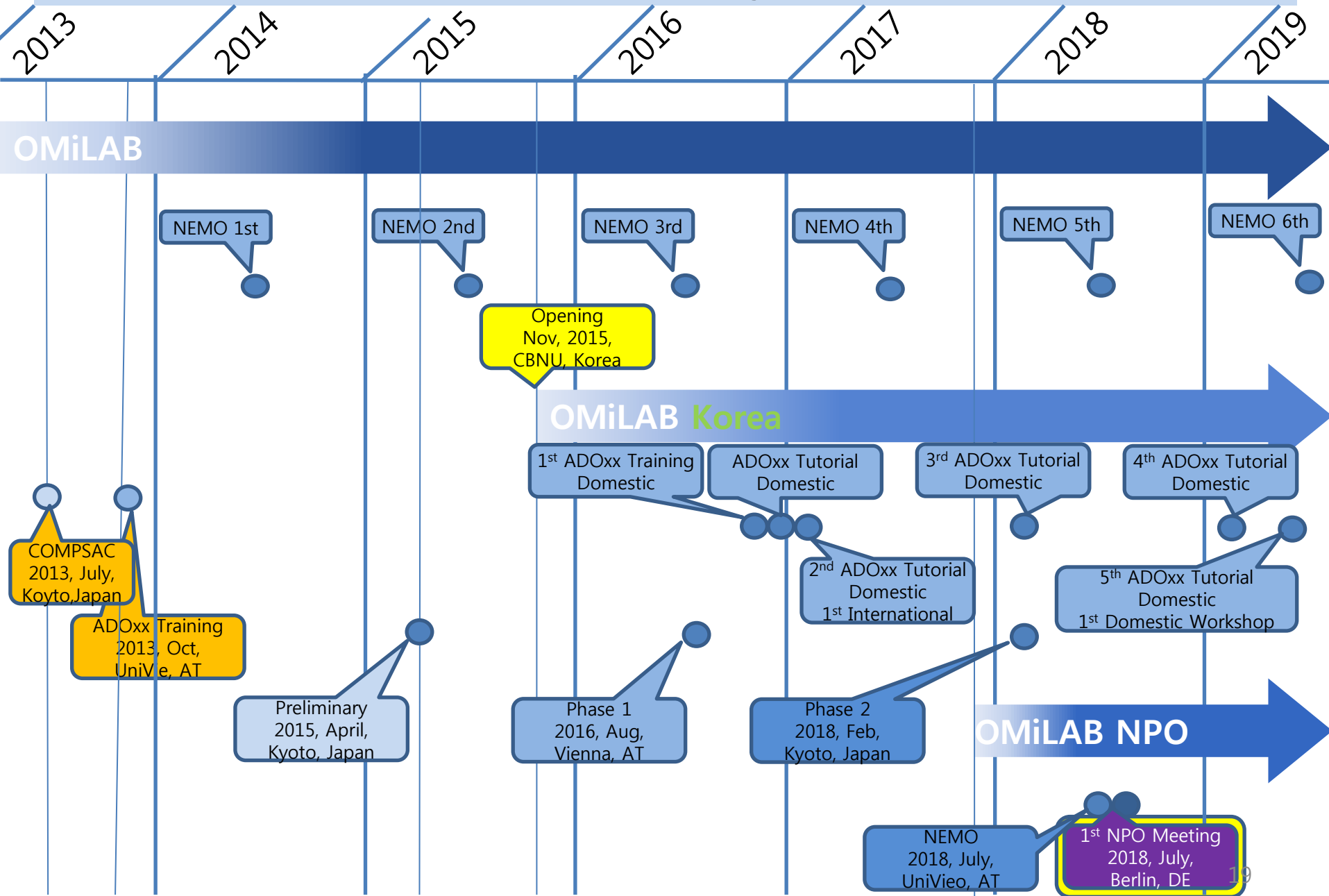
SAVE



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8. Discussion

2. OMiLAB KOREA

History



ASIA

OMiLAB[®]KOREA



East & South ASIA			
Korea	CNBU	Prof. Lee	SAVE
Korea	CNBU	Prof. Lee	PRISM
Korea	CNBU	Prof. Lee	SR²E
Korea	KAIST	Prof. Bae	MoM
Korea	SWU	Prof. Seo	SU
Korea	Korea U.	Prof. Choi	ACSR
Taiwan	NSYSU	Prof. Hwang	?

OMiLAB KOREA: 2nd Nov. 2015



Opening
Ceremony



ADOxx Meta-Modeling Platform

- **1st Domestic Training**
 - 19th~21st Nov. 2016
 - Participants: 8
 - Sungshin University: 2
 - KAIST: 4
 - CBNU: 2
- **1st Tutorial at Korean Conference**
 - 21st Dec. 2017
 - KIISE Winter Congress
- **2nd Domestic/1st International Training**
 - 24th~26th Feb. 2017:
 - Participants: 4
 - National Sun Yat-sen University, Taiwan: 2
 - CBNU: 2
- **3rd Domestic Training**
 - 2nd ~5th Feb. 2018:
 - Participants: 13
 - KAIST: 7
 - CBNU: 6
- **4th Domestic Training**
 - March 2019:
 - Participants: 13
 - KAIST: 1
 - Korea.: 1
 - CBNU: 12
- **5th Domestic Training & 1st Workshop for Professors**
 - June 2019:
 - Participants: 13
 - Korea.: 1
 - Sungshin: 1
 - Sangmyung:1
 - CBNU: 1

1st Domestic Training: Nov. 2016



OMILAB KOREA에서는, 새 모델링 도구 개발을 위해, 비엔나 대학에서 개발한 ADOxx Meta-Modeling Platform에 대한 교육을 다음과 같이 진행합니다.

일 시 : 11월 19일 (토) ~ 11월 21일 (월)
장 소 : 전북대학교 공과대학 7호관 620호 [OMILAB KOREA Research Center]
대 상 : 1) 전북대 컴퓨터공학부 대학원생
 2) 고려대 컴퓨터공학부 대학원생
 3) 성신여대 컴퓨터공학부 대학원생
 4) 카이스트 전산학과 대학원생
 5) 관심이 있는 컴퓨터공학부 대학원생 또는 학부 졸업예정자

프로그램 :

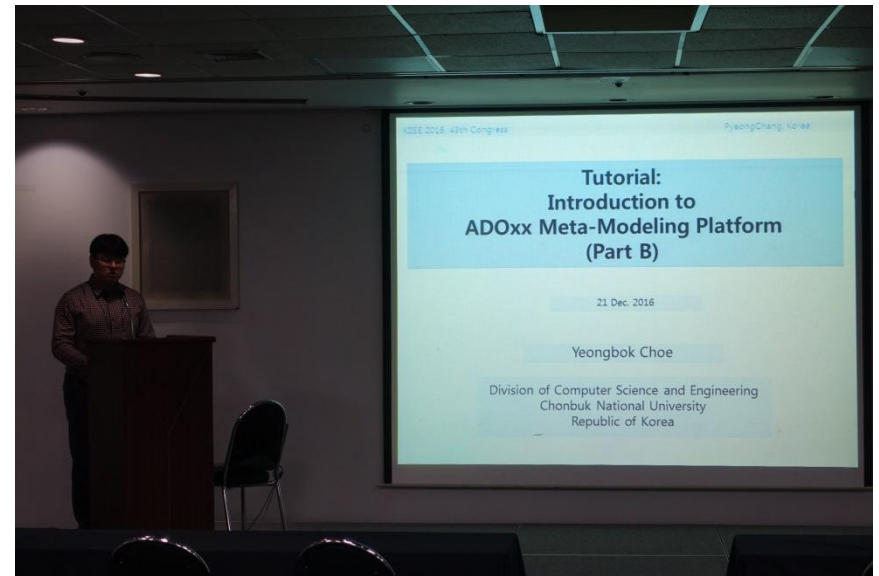
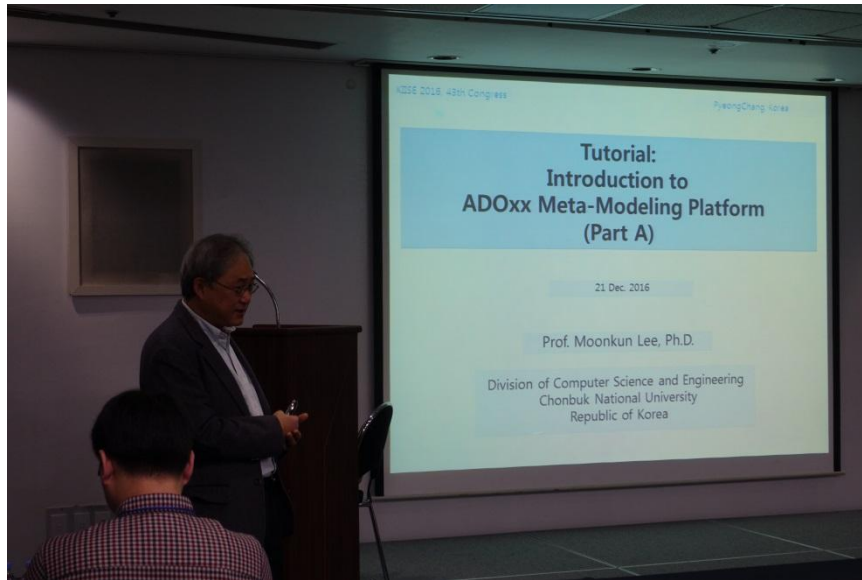
11월 19일 (토)	11월 20일 (일)	11월 21일 (월)
09 : 30 ~ 10 : 00 ADOxx 소개 및 자료	09 : 30 ~ 10 : 00 오후	09 : 30 ~ 10 : 00 오후
10 : 00 ~ 10 : 30 ADOxx 소개	10 : 00 ~ 11 : 00 ADOxx를 활용한 시스템 모델링 및 시뮬레이션	10 : 00 ~ 10 : 45 ADOxx를 활용한 시스템 모델링 및 시뮬레이션
10 : 30 ~ 11 : 15 ADOxx 소개	11 : 00 ~ 12 : 00 점심식사	10 : 45 ~ 12 : 15 ADOxx 개발 서비스 소개
11 : 15 ~ 12 : 00 ADOxx를 활용한 시스템 모델링 및 시뮬레이션	12 : 00 ~ 12 : 30 점심식사	
12 : 00 ~ 12 : 30 ADOxx를 활용한 시스템 모델링 및 시뮬레이션	12 : 30 ~ 13 : 00 점심식사	
13 : 00 ~ 14 : 00 휴식	13 : 00 ~ 14 : 00 휴식	
14 : 00 ~ 15 : 00 ADOxx를 활용한 시스템 모델링 및 시뮬레이션	14 : 00 ~ 15 : 00 ADOxx를 활용한 시스템 모델링 및 시뮬레이션	
15 : 00 ~ 16 : 00 ADOxx를 활용한 시스템 모델링 및 시뮬레이션	15 : 00 ~ 16 : 00 ADOxx를 활용한 시스템 모델링 및 시뮬레이션	
16 : 00 ~ 17 : 00 ADOxx를 활용한 시스템 모델링 및 시뮬레이션	16 : 00 ~ 17 : 00 ADOxx를 활용한 시스템 모델링 및 시뮬레이션	

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 ✉ http://korea.omilab.org



1st Tutorial at KIISE Winter Cong. : Dec 2016



2nd Domestic/1st International Training : Feb. 17



In the training, OMLAB KOREA will provide you with the basic program for ADOxx Meta-Modeling Platform, which has been developed in OMLAB Austria in the University of Vienna, as follows:

When : 24th Feb 2017 (Fri) ~ 26th Feb 2017 (Sun)

Where : OMLAB KOREA (Rm 620, Bldg 7, School of Engineering, CBNU)

Whom : 1) Prof. San-Yih Hwang and his Ph.D. student from National Sun Yat-sen University, Taiwan
2) Ph.D. Students from Korea University.
3) Graduate students from Div. of Computer Science and Engineering from CBNU.
4) Research fellows from OMLAB Korea.

DAY 1	10 : 00 ~ 10 : 20	Individual ADOxx Access Support for Participants - Local installation of ADOxx Environment
	10 : 20 ~ 11 : 00	Introduction to OMLAB Korea and ADOxx
	11 : 15 ~ 13 : 00	Scenario: Modelling Language Implementation
	13 : 00 ~ 14 : 00	Lunch Break
DAY 2	14 : 00 ~ 16 : 00	Modelling Language Implementation on ADOxx - Cookbook Implementation and walk through of all parts of modelling language development
	16 : 00 ~ 17 : 00	Q&A, Wrap-up, Individual Practice Time
	09 : 30 ~ 10 : 00	Welcome, Recap, Q&A
	10 : 00 ~ 11 : 00	Scenario: Mechanisms and Algorithms Implementation
DAY 3	11 : 15 ~ 13 : 00	Mechanisms and Algorithms Implementation on ADOxx - Cookbook Implementation and walk through of mechanisms and algorithms
	13 : 00 ~ 14 : 00	Lunch Break
	14 : 00 ~ 15 : 00	Queries with ADOxx - Introduction to the AGL query language of ADOxx
	15 : 15 ~ 17 : 00	Q&A, Wrap-up, Individual Practice Time
DAY 4	09 : 30 ~ 10 : 00	Welcome, Recap, Q&A
	10 : 00 ~ 10 : 45	Advanced Application: Simulation with ADOxx - Introduction of the simulation algorithms of ADOxx
	10 : 45 ~ 11 : 30	Introduction of ADOxx.org Development Services - How to build your own modelling toolkit

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http://korea.omilab.org



3rd Domestic Training: Mar. 2018



제 3차 ADOxx 정기교육, 2018년 봄학기

OMLAB KOREA 연구센터에서는, 오스트리아 비엔나 대학의 OMiLAB Global 본부에서 개발한 ADOxx Meta-Modeling Platform에 대한 교육을 다음과 같이 진행합니다.

- 일 시 : 매주 금요일 오후 2시~5시, 3월 2주 ~ 3월 5주 (총 4주)
- 장 소 : 전북대학교 공과대학 7호관 620호 [OMLAB KOREA Research Center]
- 프로그램 :

1주 (3/9)	
14:00 ~ 14:30	ADOxx 소개
14:30 ~ 15:00	ADOxx 설치를 위한 환경 구성 및 설치
15:00 ~ 16:00	ADOxx 의 기본 기능 및 ADOxx 기반 도구 소개
16:00 ~ 16:30	Q&A
2주 (3/16)	
14:00 ~ 15:30	모델링 언어 정의
15:30 ~ 16:30	실습: 모델링 언어 정의
16:30 ~ 17:00	Q&A
3주 (3/23)	
14:00 ~ 15:30	메커니즘&알고리즘 구현
15:30 ~ 16:30	실습: 메커니즘&알고리즘 구현
16:30 ~ 17:00	Q&A
4주 (3/30)	
14:00 ~ 15:00	Queries with ADOxx
15:00 ~ 16:00	Simulation with ADOxx
16:00 ~ 16:30	Q&A

- 준 비 물 : 1) 노트북 준비
- 2) ADOxx 다운로드 및 라이선스 준비
 - www.adoxx.org 에서 다운로드 가능
 - 다운로드 시 작성한 e-mail 주소로 라이선스 코드가 전송됨
- 해 택 : 1) 수수료 수여
- 2) 2018년 EU NEMO Summer School 추천

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<http://korea.omlab.org>



4th Domestic Training: Mar. 2019



OMILAB KOREA 연구센터에서는, 오스트리아 비엔나 대학의 OMILAB Global 본부에서 개발한 ADOxx Meta-Modeling Platform에 대한 교육을 다음과 같이 진행합니다.

- 일 시 : 매주 금요일 오후 2시~6시, 3월 2주 ~ 3월 4주 (총 3주)
- 장 소 : 전북대학교 공과대학 7호관 620호 [OMILAB KOREA Research Center]
- 수강대상 : 전北大 SWDII 팀, 카이스트 SE 연구실, 고려대 FM 연구실, 성신대 SE 연구실 그리고, 관심이 있는 컴퓨터공학전공 학부생 및 대학원생

프로그램 : 1주 (3/15)	
14:00 ~ 14:30	ADOxx 소개
14:30 ~ 15:00	ADOxx 설치를 위한 환경 구성 및 설치 방법 설명
15:00 ~ 15:30	ADOxx 의 기본 기능 및 ADOxx 기반 도구 소개
15:30 ~ 17:00	모델링 언어 정의
17:00 ~ 18:00	실습: 모델링 언어 정의
2주 (3/22)	
14:00 ~ 15:30	메커니즘&알고리즘 구현
15:30 ~ 16:30	실습: 메커니즘&알고리즘 구현
16:30 ~ 17:30	Queries with ADOxx
17:30 ~ 18:00	Q&A
3주 (3/29)	
14:00 ~ 18:00	개인별 모델링 도구 제작

- 준 비 물 : 1) 노트북 준비
- 2) ADOxx 다운로드 및 라이선스 준비
 - www.adoxx.org 에서 다운로드 가능
 - 다운로드 시 작성한 e-mail 주소로 라이선스 코드가 전송됨

- 해 택 : 1) 수료증 수여
- 2) 2019년 EU NEMO Summer School 추천

OMILAB Korea Contact:
Prof. Dr. Moon Kun Lee
School of Engineering,
Chonbuk National University,
Deokjin Ku, Deokjin Dong 1 Ka 664-14,
Jeonju, Jeonbuk, 561-756, South Korea

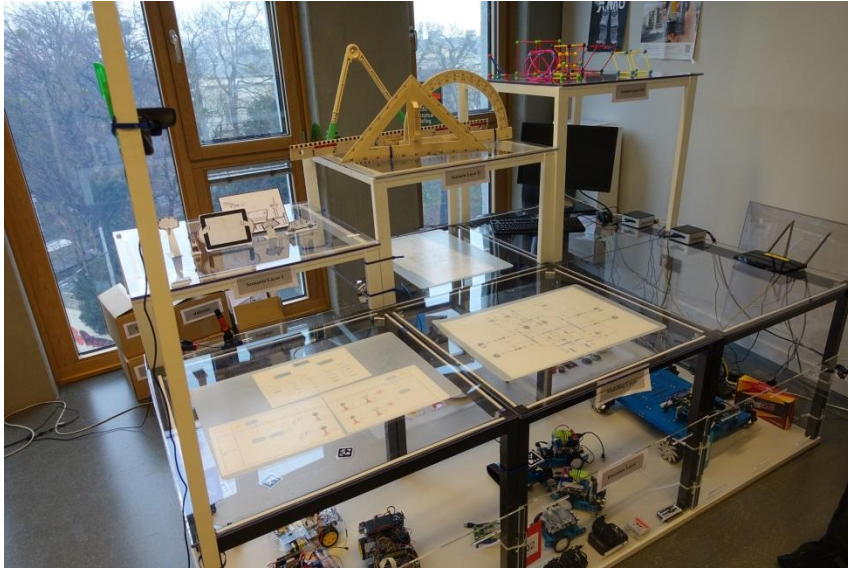
+82-63-270-3404
+82-63-270-3403
moonkun@chonbuk.ac.kr
<http://moon.bnu.ac.kr>

OMILAB Korea Contact:
Open Models Initiative Laboratory
School of Engineering,
Chonbuk National University,
Deokjin Ku, Deokjin Dong 1 Ka 664-14,
Jeonju, Jeonbuk, 561-756, South Korea

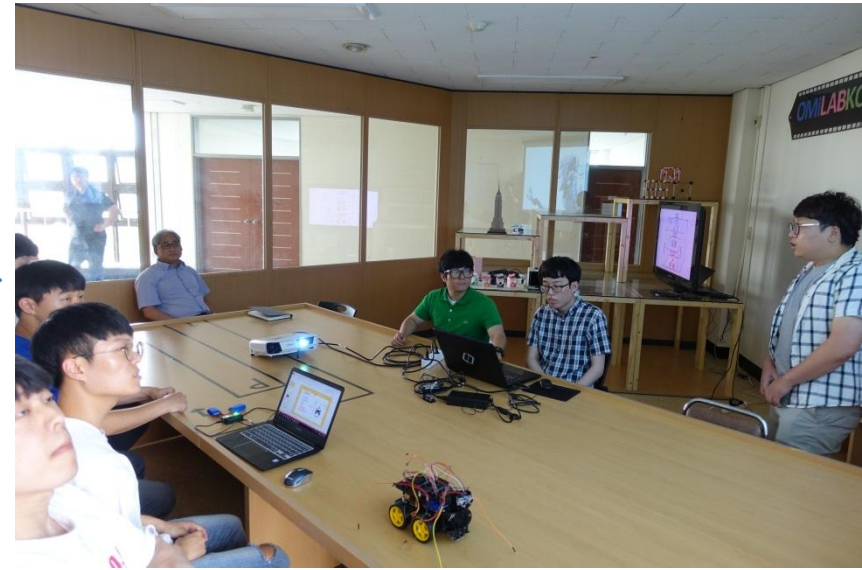
+82-63-270-3404
+82-10-3856-2297
<http://Omlab-korea.org>
<http://korea.omilab.org>



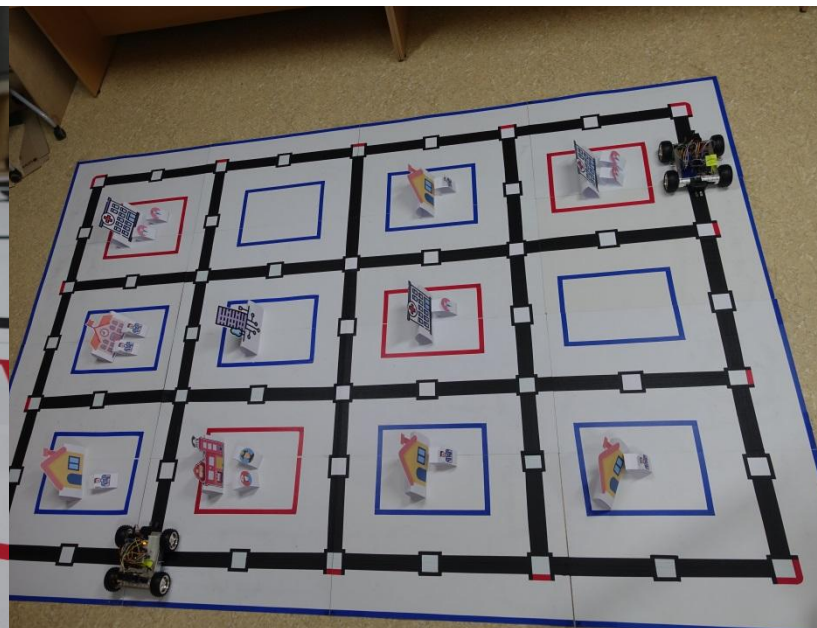
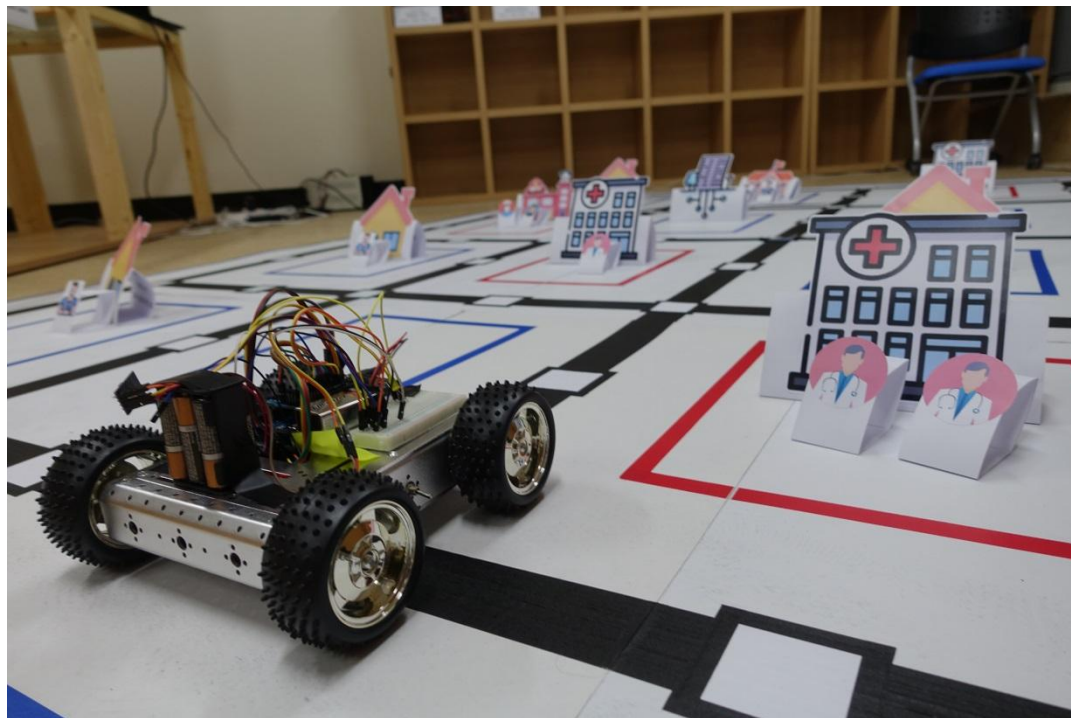
Vienna



Korea



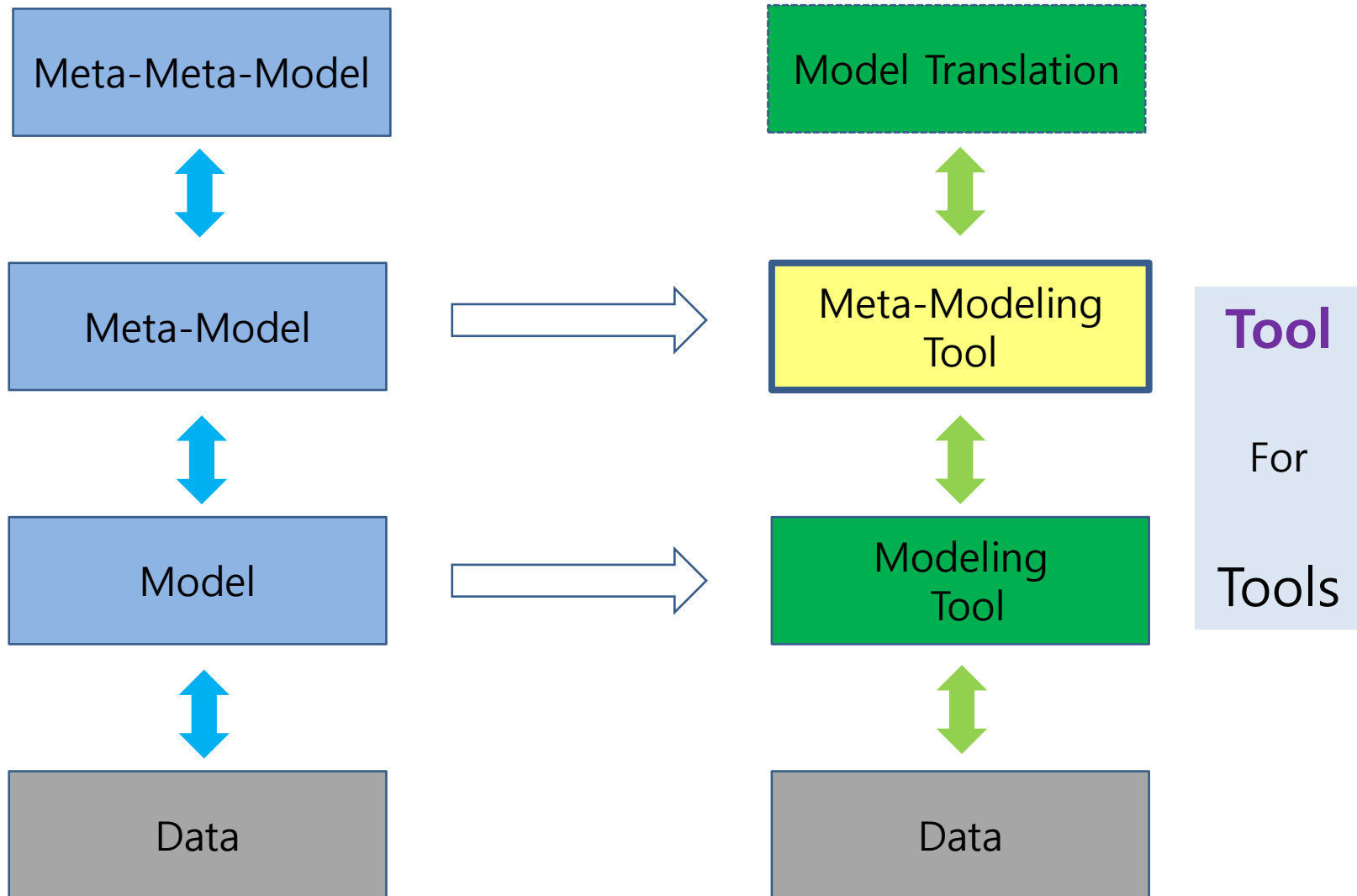
DESIGN
ROOM
OMLAB[®]KOREA



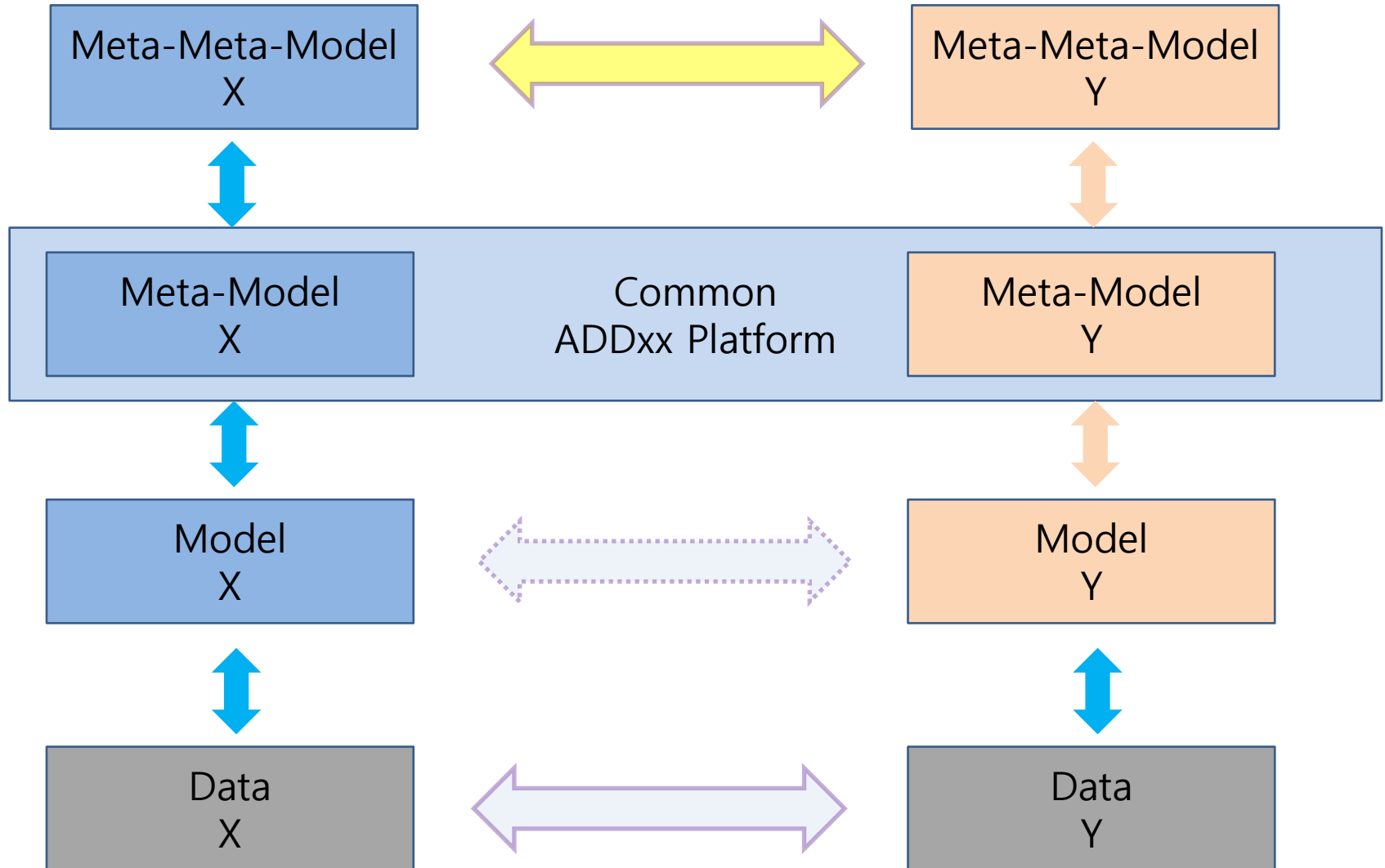
1. OMiLAB GLOBAL
2. OMiLAB KOREA
- 3. ADOxx Meta-Modeling Platform**
4. Research Domain for Open Models
5. Modeling Tools
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7. Summary w/ Vision

3. ADOxx Meta-Modeling Platform

Modeling Hierarchy



Model Transformation/Translation

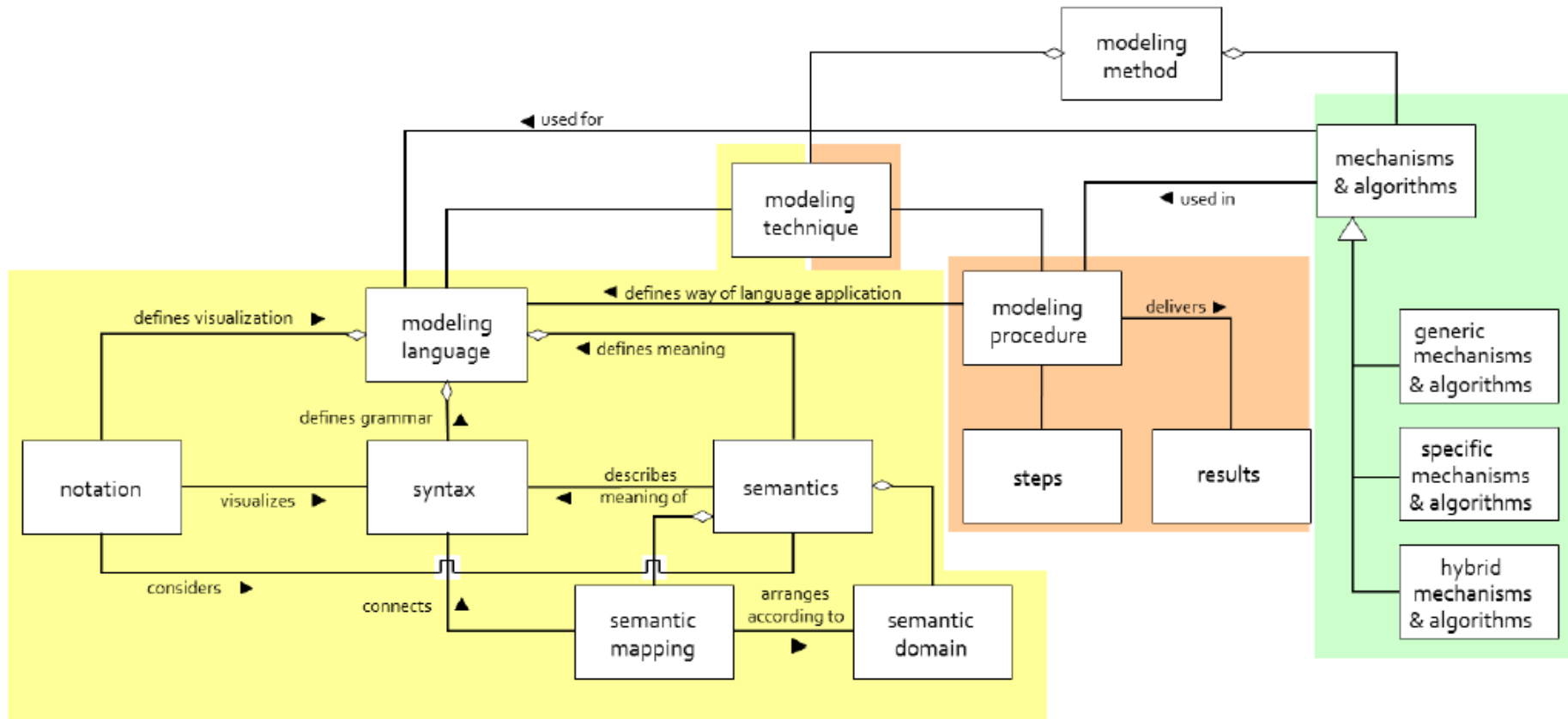


Meta-Modeling Tools

Aspects	AToM3	MetaEdit+	DOME	ADOxx
Platforms	Windows, Unix	Windows, Unix, Sun Solaris, HP	Windows, Linux, Sun Solaris	Windows
Meta-modeling language	ER	GOPRR	The DOME Tool Specification language	ADOxx Meta-modeling Language
Graphical specification?	Yes	No	Partly, the graphical appearance can't be edited in a graphical way	Yes
Hierarchy	Partly, not implement complete yet	Yes, decomposition	Yes, sub-diagram	Yes
Inheritance	No	Yes, (make dependant)	Yes	Yes
Constraint	Python function or OCL	No specific constraint language	Alter language	ADOxx Definition Language, AdoScript
Simulation	Yes	Yes	Yes	Yes
Simulation method and implementation workload	Graph Grammar, an intuitive way, less code by hand	Report definition language, all code by hand	Alter function, all code by hand	Supported by ADOxx or all code by hand
Code generation and workload	Python source code Little code by hand	Can be any language Most code by hand	Can be any language Most code by hand	No
Report generation	No	Yes	No	Yes

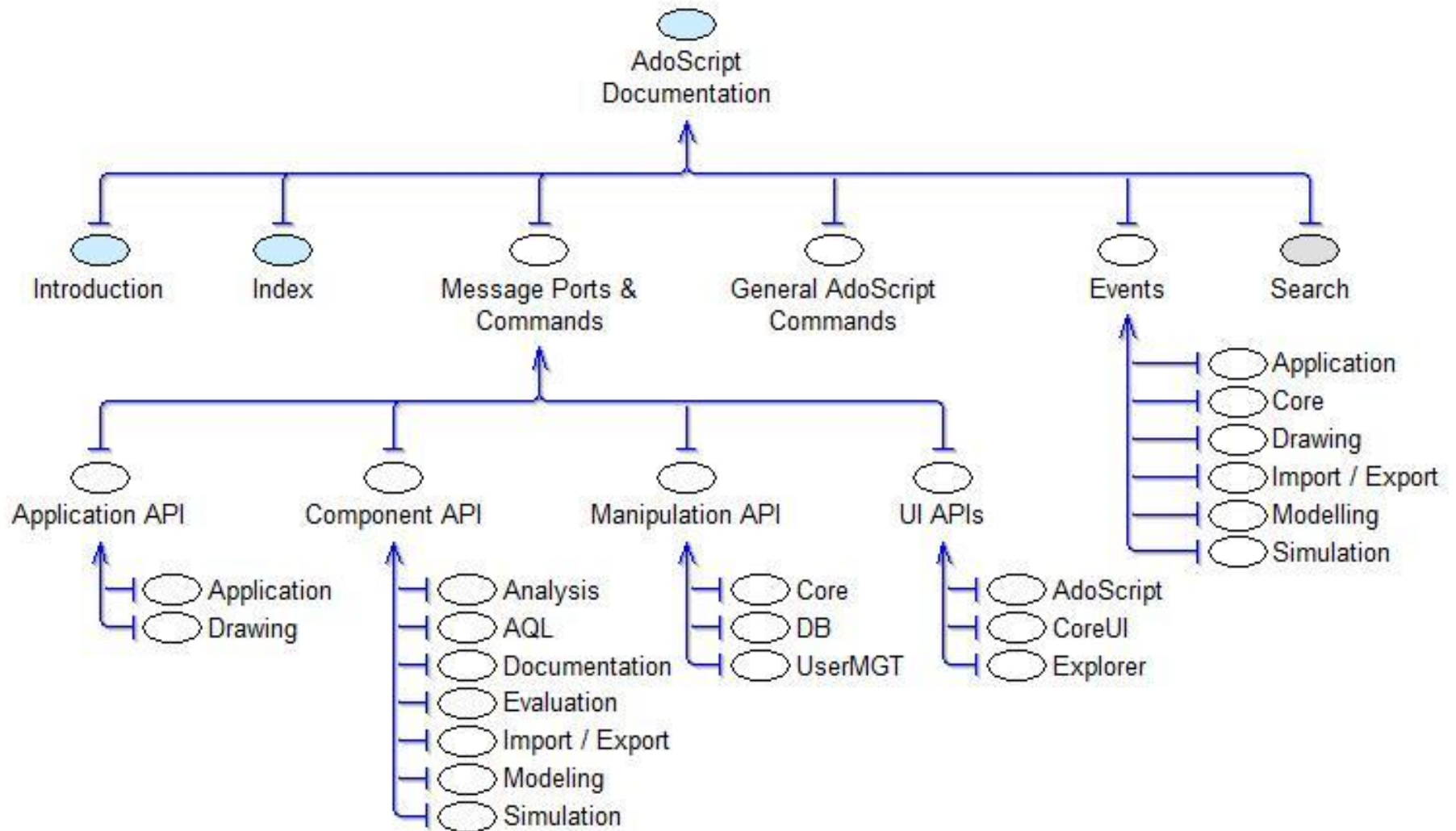
Generic Modelling Method Framework

$$\text{Method} = (T+MA) \cdot (L+P)$$

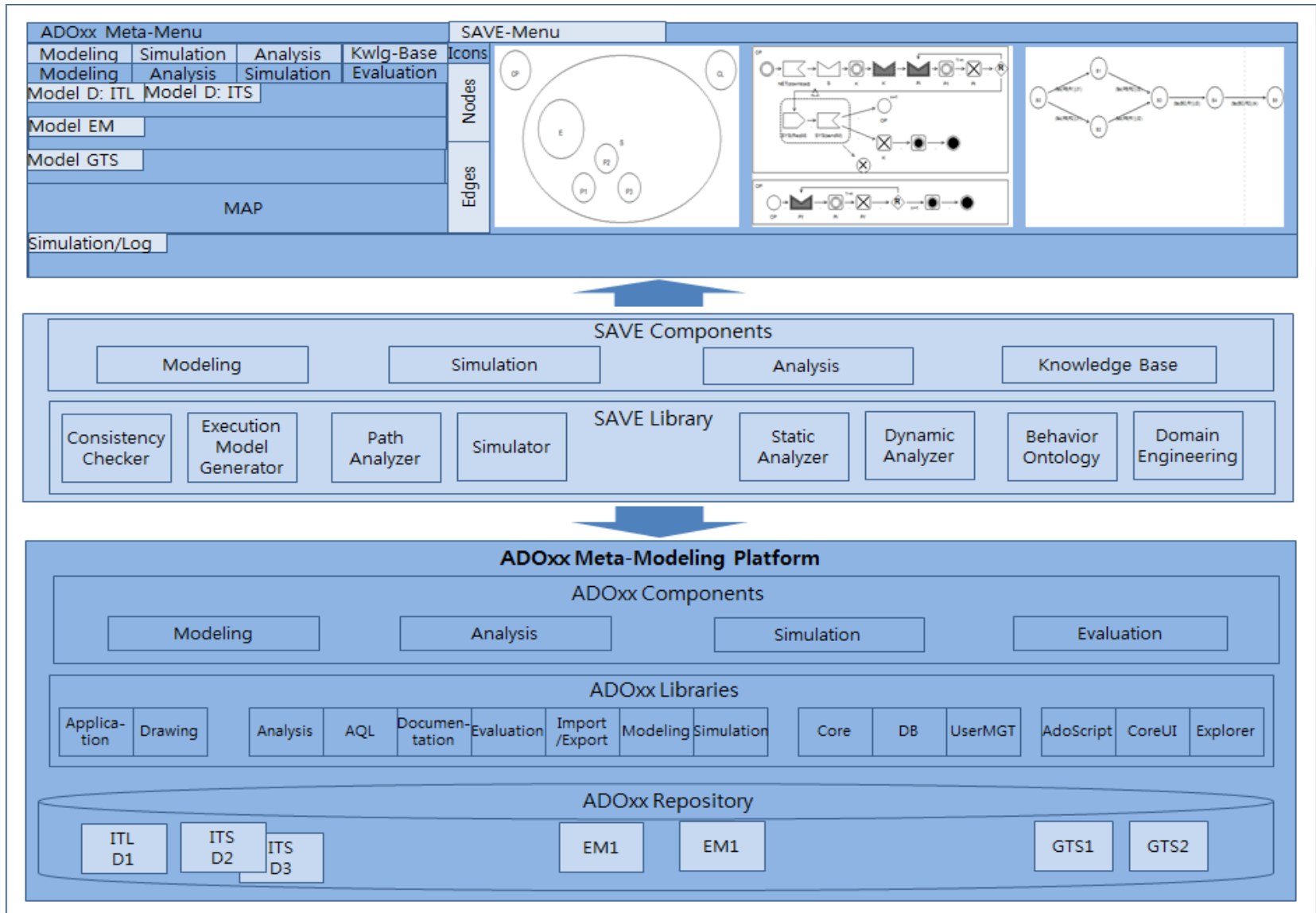


Karagiannis, D., Kühn, H.: „Metamodelling Platforms“. In Bauknecht, K., Min Tjoa, A., Quirchmayer, G. (Eds.): Proceedings of the Third International Conference EC-Web 2002 – DEXA 2002, Aix-en-Provence, France, September 2002, LNCS 2455, Springer, Berlin/Heidelberg, p. 182.

ADOxx Library



A Tool on the Platform



DEMO: PBC

The screenshot displays the ADOxx Modelling Toolkit interface. The title bar reads "ADOxx Modelling Toolkit (savetest) - [ADOxx Start Page]". The menu bar includes "Model", "Edit", "View", "Process tools", "Delta calculus mechanims", "Extras", "Window", and "Help". The toolbar contains various icons for file operations and modeling. The "Explorer - Model groups" pane on the left shows a tree structure with "Models" expanded, containing "Crypto", "CryptoLocker", "IOT", "PBC", "Execution model", "GTS", "Specification", and "Production Cell". The "PBC" folder is selected. The main workspace shows nine model thumbnails arranged in a 3x3 grid, each with a title and a "Last change" timestamp. The "Event Logging" window at the bottom displays a series of log entries.

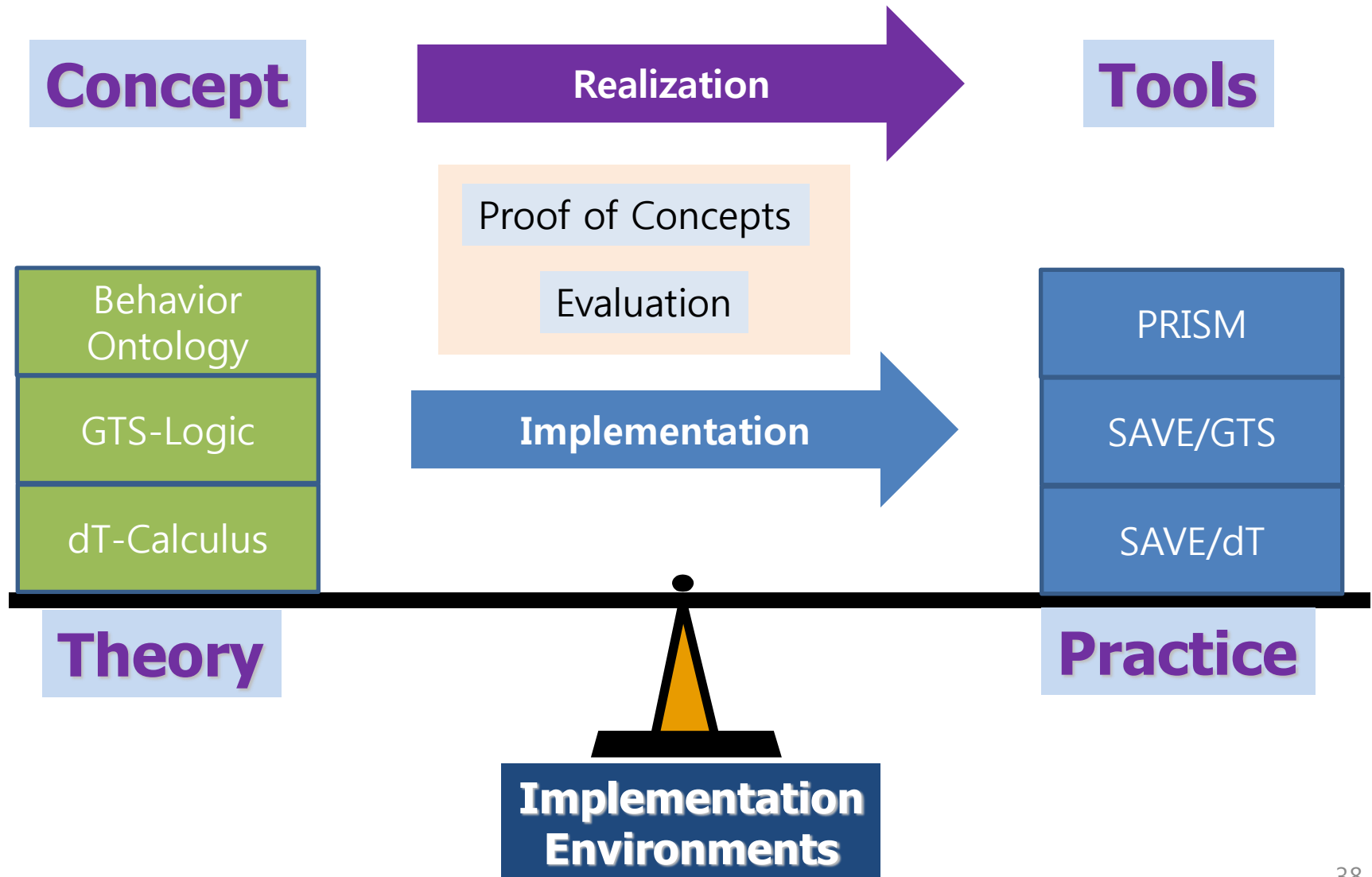
Model thumbnails in the workspace:

- P&C_tau_ITS (ITS)**: Last change: test5, 30.04.2015, 03:37
- P&C_tau_ITL (ITL)**: Last change: test5, 07.05.2015, 08:45
- GTS-Start S1 S2 S3 S4 S5 S6 S7 S8 End (GTS)**: Last change: savetest, 29.07.2015, 09:08
- Execution model 29.07.2015-09:08:14 (Execution Model)**: Last change: savetest, 29.07.2015, 09:08
- Execution model 29.07.2015-09:07:20 (Execution Model)**: Last change: savetest, 29.07.2015, 09:07
- GTS-Start S1 S2 S3 S4 S5 S24 S25 S26 S27 S28 S29 S30 S31 S32 ...**: Last change: savetest, 28.07.2015, 15:54
- GTS-Start S1 S2 S3 S4 S5 S6 S7 S8 End-req (GTS)**: Last change: savetest, 28.07.2015, 15:57
- ITS_Iot (ITS)**: Last change: savetest, 28.06.2015, 10:18
- ITL_IoT (ITL)**: Last change: savetest, 28.06.2015, 10:18

Event Logging window:

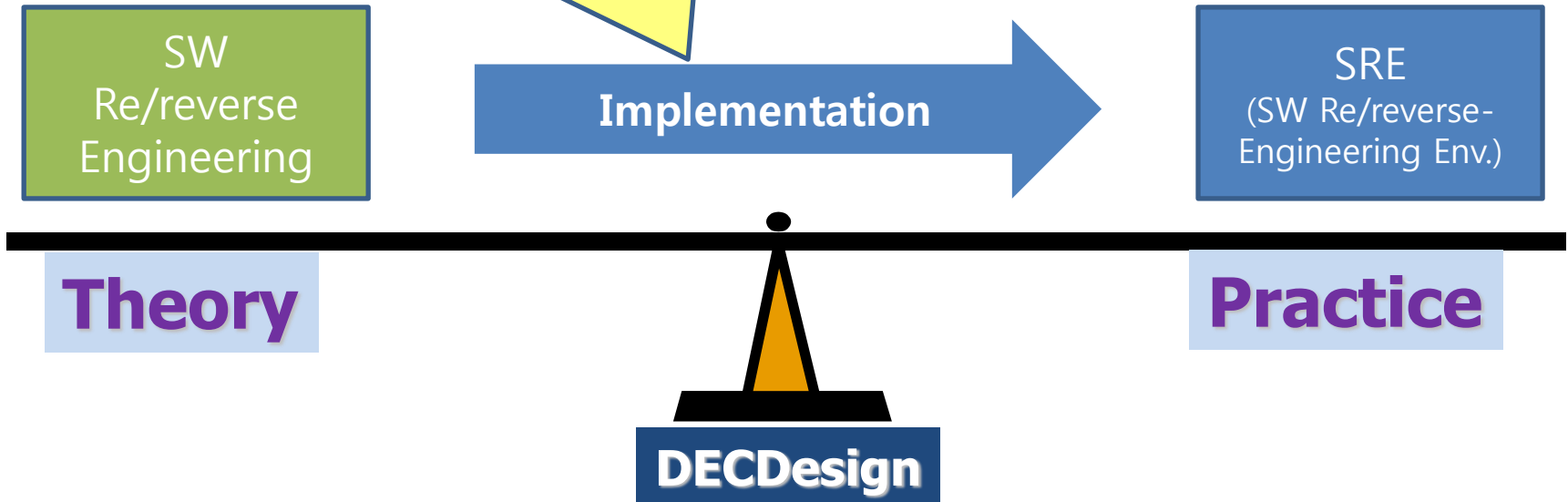
```
[EVENT_LOG@29/07/2015 12:39:25]: S5=<P(Exit,2)B(B(put request:R2),0)C(C(get request:R1),5)R1(R1(get permit:C),0)R2(R2(put permit:B),1), T5,{R2 in B}>
[EVENT_LOG@29/07/2015 12:39:25]: T6=(delta(B put R2),t6)
[EVENT_LOG@29/07/2015 12:39:25]: T6=(delta(C get R1),t6)
[EVENT_LOG@29/07/2015 12:39:26]: S6=<P(Exit,3)B(Exit,0)C(C(get request:R2),0)R1(Exit,0)R2(R2(get permit:C),0), T6,{R1 in C}>
[EVENT_LOG@29/07/2015 12:39:26]: T7=(delta(C get R2),t7)
[EVENT_LOG@29/07/2015 12:39:27]: S7=<P(Exit,4)B(Exit,1)C(Exit,0)R1(Exit,1)R2(Exit,0), T7,{R1 in C;R2 in C}>
[EVENT_LOG@29/07/2015 12:39:28]: ***** END *****
```

SW Engineering

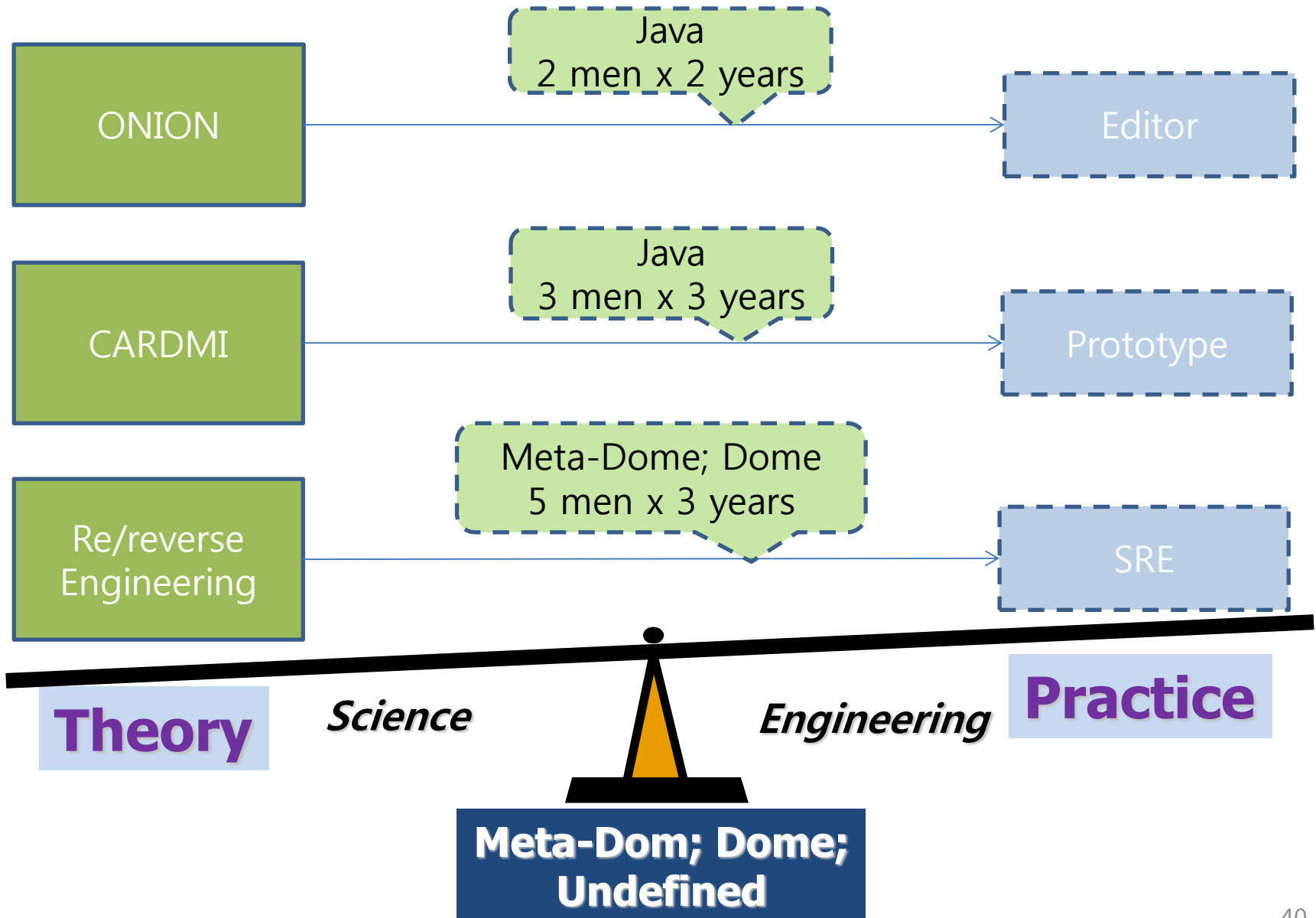


SW Engineering (1991~1996)

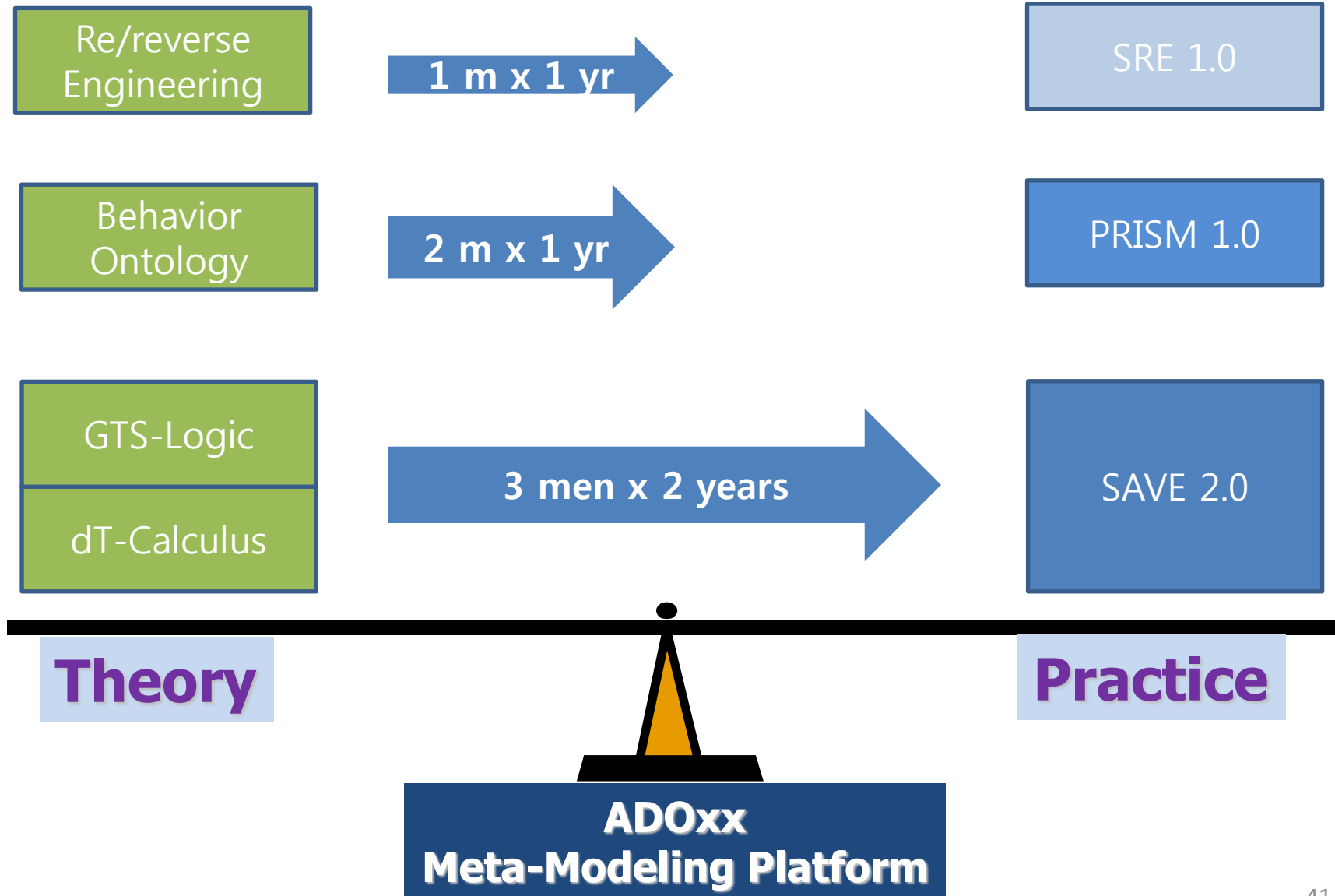
- R&D, CCCC, USA (~1996)
 - SRE(SW Re/Reverse-engineering Environment) Tool
 - DECDesign,
 - 5 years (11 yrs x 5 men)
 - USA, Navy, 100,000 ~ 1,000,000 LOC (Scalability)
 - OS: ATES, SDEX-20 → Unix, VMS
 - PL: Fortran, C, Ada83 → C, C++, Ada83, Ada95



SW Engineering



SW Engineering



Open Models

- ADOxx Horus Method
- BEN
- BIM
- CIDOC
- Co-creation in Design Teams
- ComVantage
- COPROM
- DIBA
- eGPM
- EKD
- IMP2.0
- Information Sec
- iStar
- iStarSuperSet
- JCS
- MeLCa
- MoSeS4eGov
- OKM
- OMiStarT
- PetriNets
- pmSOA
- PROMOTE
- Signature Tropos

**More than 52
Open Model
Tools
Registered**

1. OMiLAB GLOBAL
2. OMiLAB KOREA
3. ADOxx Meta-Modeling Platform
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5. Modeling Tools
 - 1) Tool 1: SAVE 3.0
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4. RESEARCH DOMAIN FOR OPEN MODELS

SW Engineering Process Models

R1

Prescriptive Process Model

Waterfall Model
Incremental Model
RAD Model
Evolutionary Model
UP Model

Agile Process Model

Extreme Programming
ASD Model
DSDM
SCRUM
Agile Modeling

R2

Generic Engineering Process

Communication → Planning → Modeling → Construction → Deployment

Modeling/Formal Methods

R3

Logic

Z
Temporal logic
I/O Automata
CASL
(Common Algebraic
Specification Language)

State Machine

LTL
(Linear temporal logic)
CTL
(Computational tree
logic)
ASM
(Abstract state Machine)
Actor model

Process Algebra

Pi-Calculus
CCS
CSP
 δ -Calculus

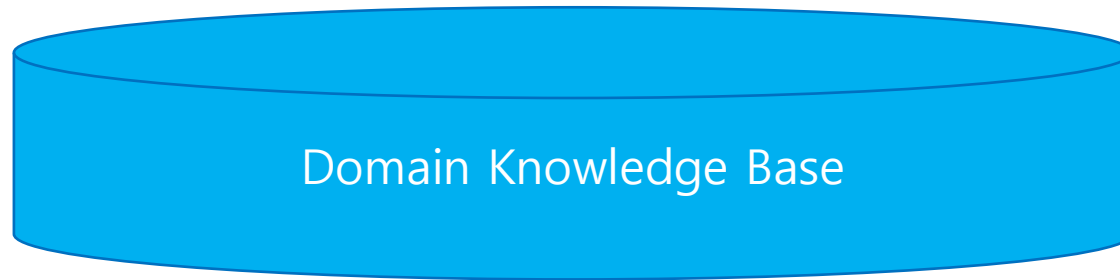
R4

TOOLS

R5

Object-Oriented Paradigm

Engineering Models



Knowledge Engineering

Generic Engineering Process

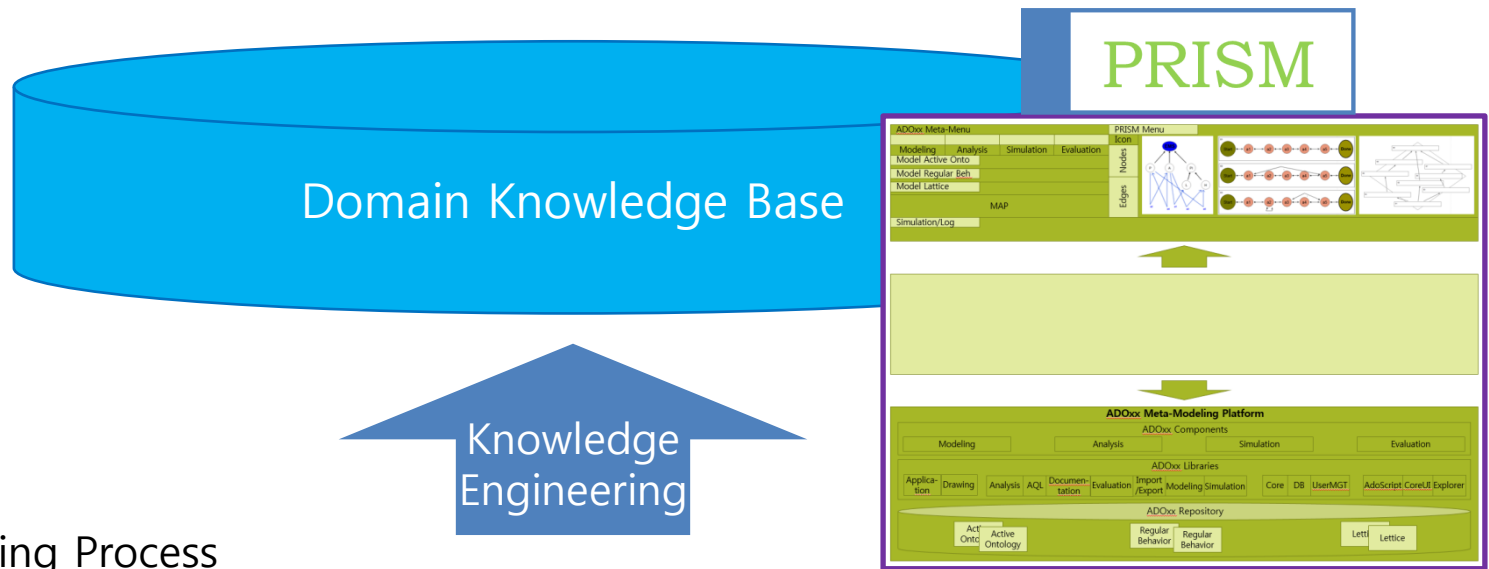
Communication → Planning → Modeling → Construction → Deployment

Forward Engineering

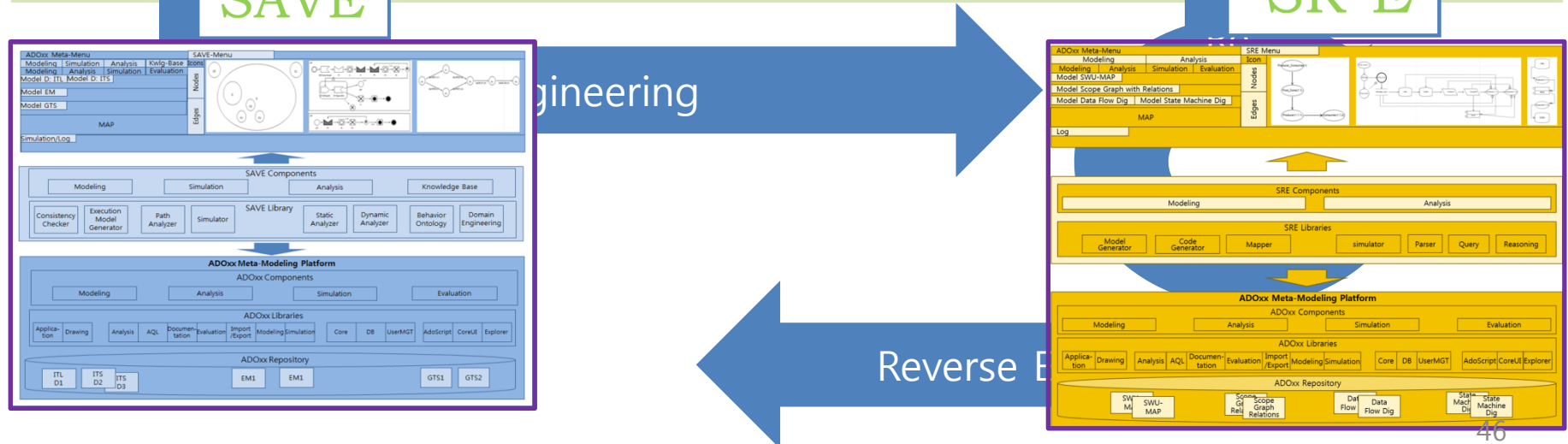
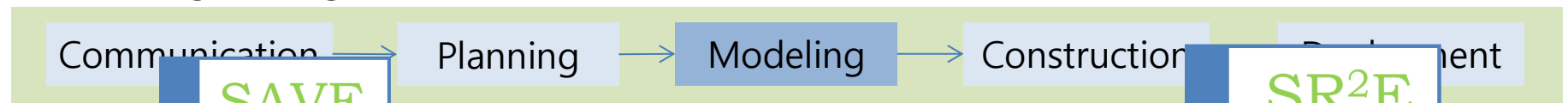
Re-engineering

Reverse Engineering

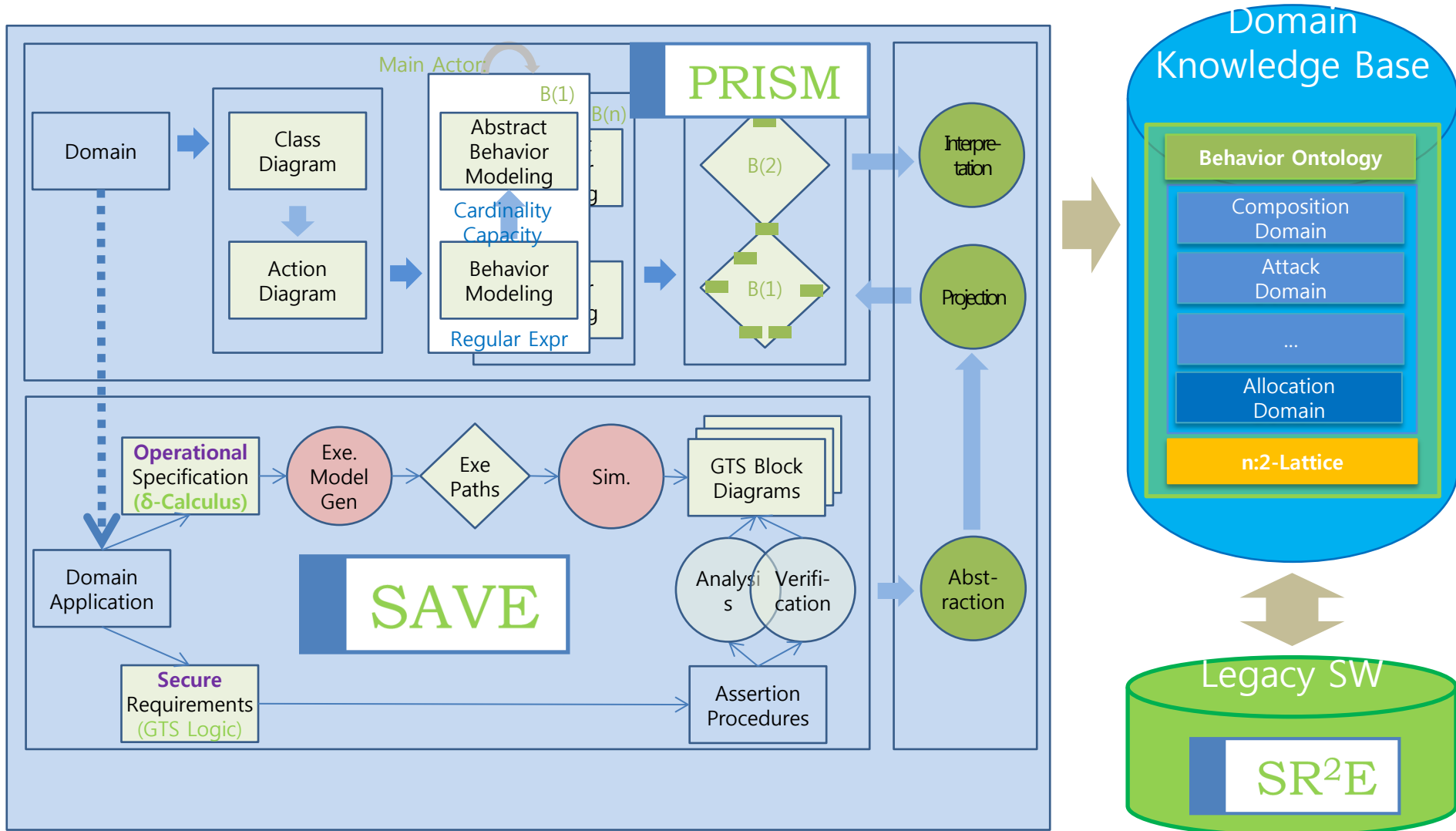
Engineering Tools



Generic Engineering Process



Engineering Process



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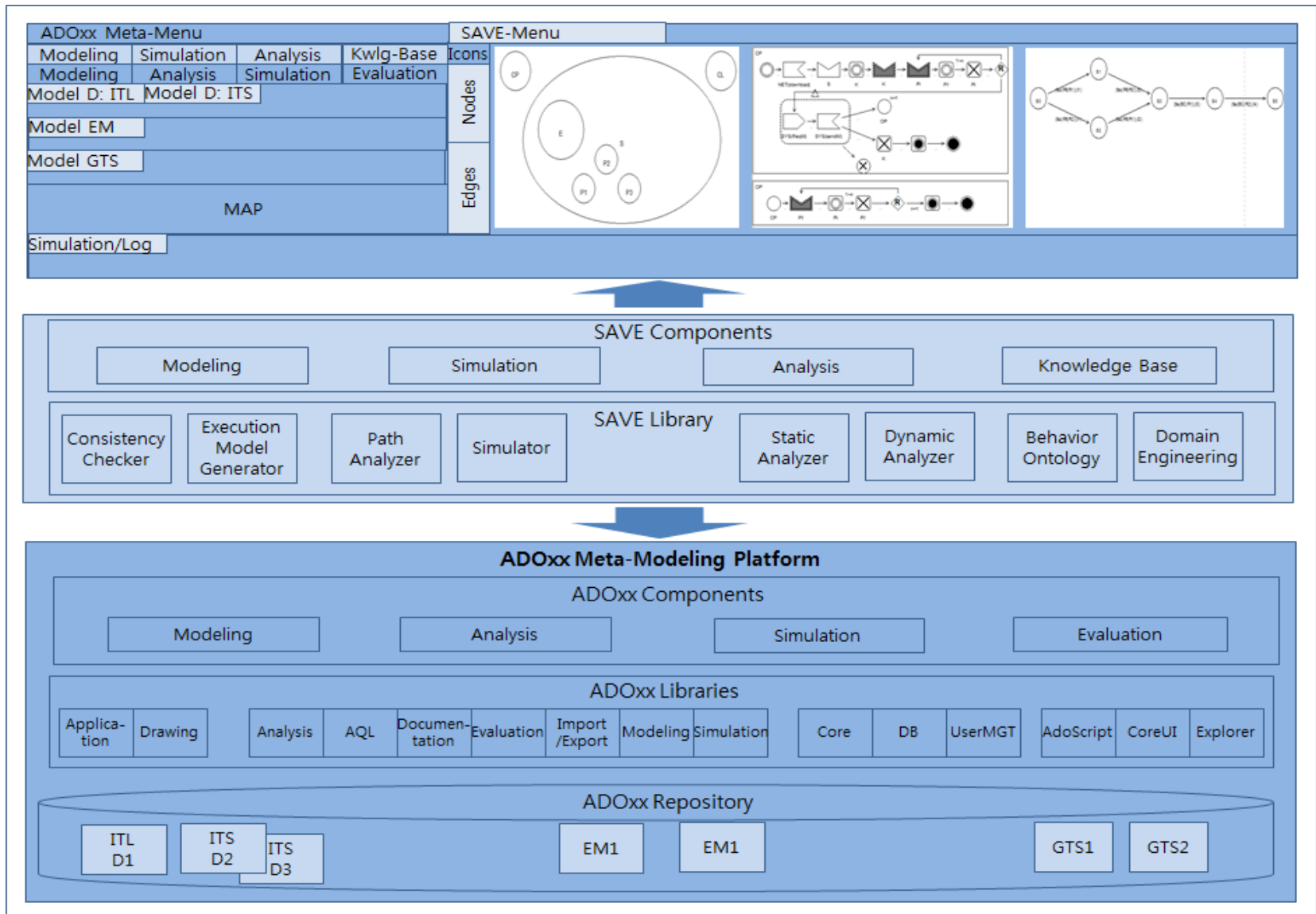
5. MODELING TOOLS

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5.1

TOOL 1: SAVE

SAVE



Simulation: IoT/EMS

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Event Logging

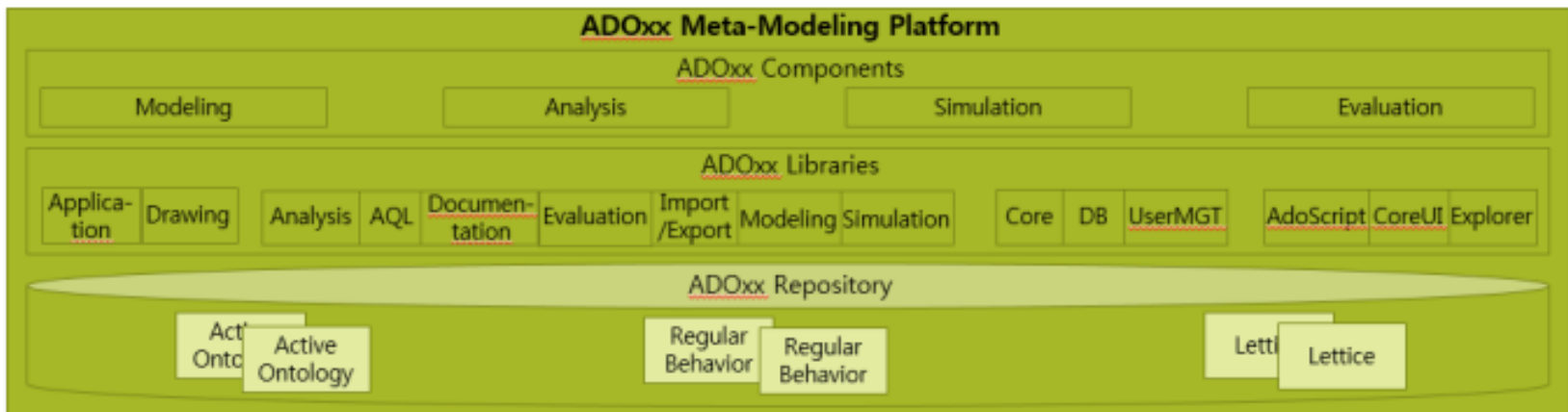
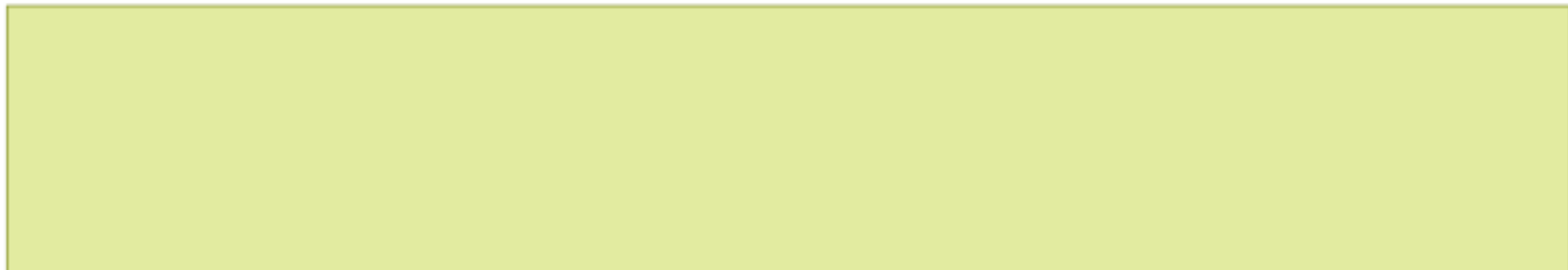
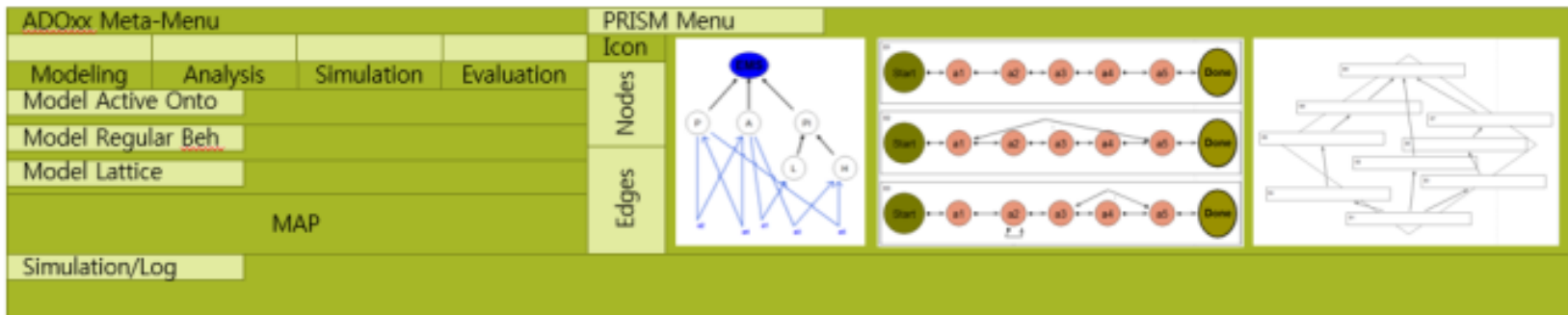
```
[EVENT_LOG@29/07/2015 12:34:35]: T10=(delta(AMB in HB),t10)
[EVENT_LOG@29/07/2015 12:34:36]: S10=<Location_B(Exit,10)911(Exit,0)HB(Exit,0)MC(Exit,0)Location_A(Exit,10)HA(Exit,5)Car(Exit,6)AMB(AMB(put request:Patient),0)Patient(Patient(put permit:AMB),3)Phone(Exit,6), T10,(911 in Location_B;HB in Location_B;Car in Location_B;AMB in HB;HA in Location_A;Patient in AMB;Phone in Patient)>
[EVENT_LOG@29/07/2015 12:34:36]: T11=(delta(AMB put Patient),t11)
[EVENT_LOG@29/07/2015 12:34:36]: S11=<Location_B(Exit,11)911(Exit,1)HB(Exit,1)MC(Exit,1)Location_A(Exit,11)HA(Exit,6)Car(Exit,7)AMB(Exit,0)Patient(Exit,0)Phone(Exit,7), T11,(911 in Location_B;HB in Location_B;Car in Location_B;AMB in HB;Patient in HB;HA in Location_A;Phone in Patient)>
[EVENT_LOG@29/07/2015 12:34:38]: ##### END #####
```

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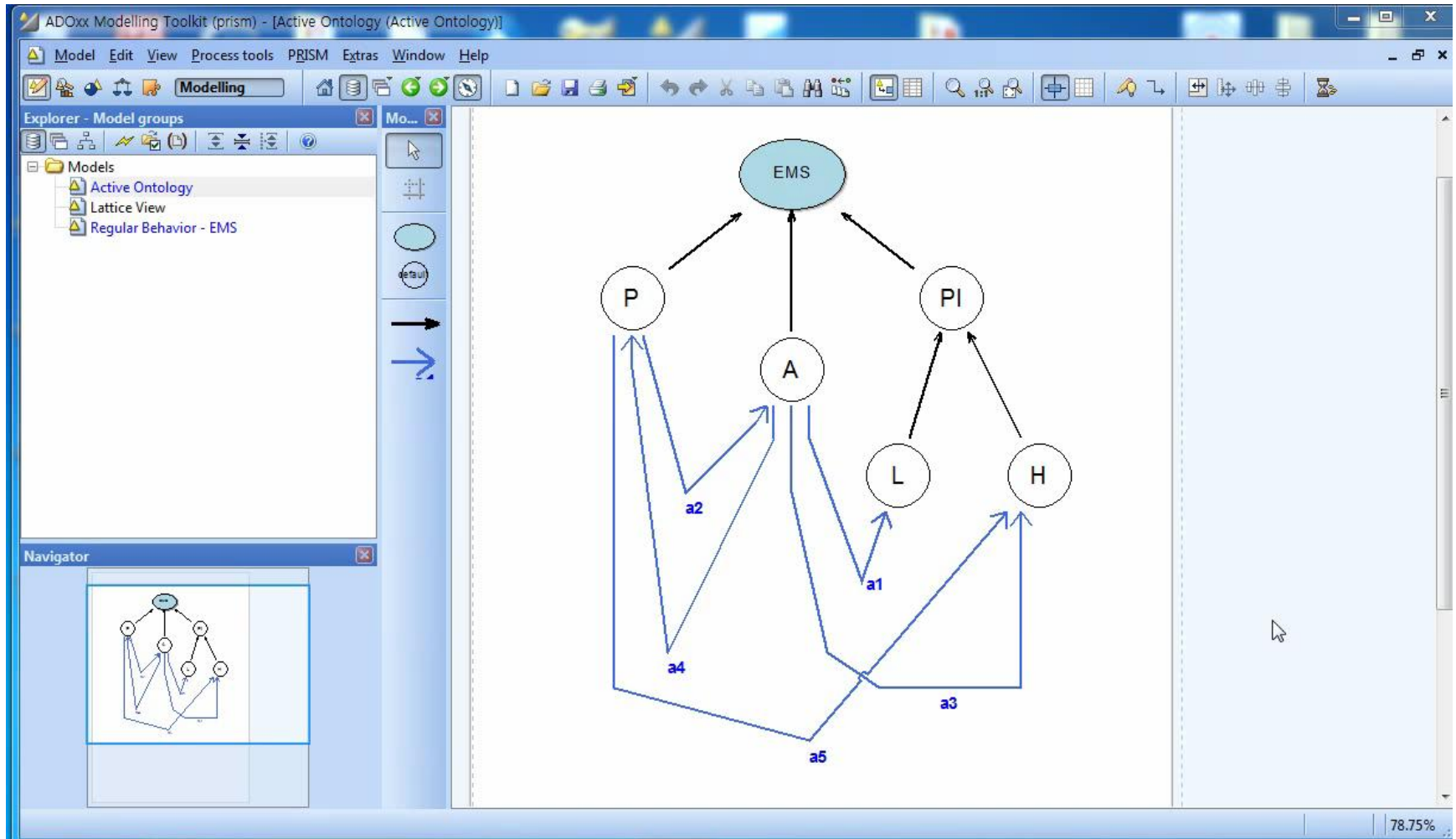
5.2

PRISM

PRISM



PRISM: Simulation

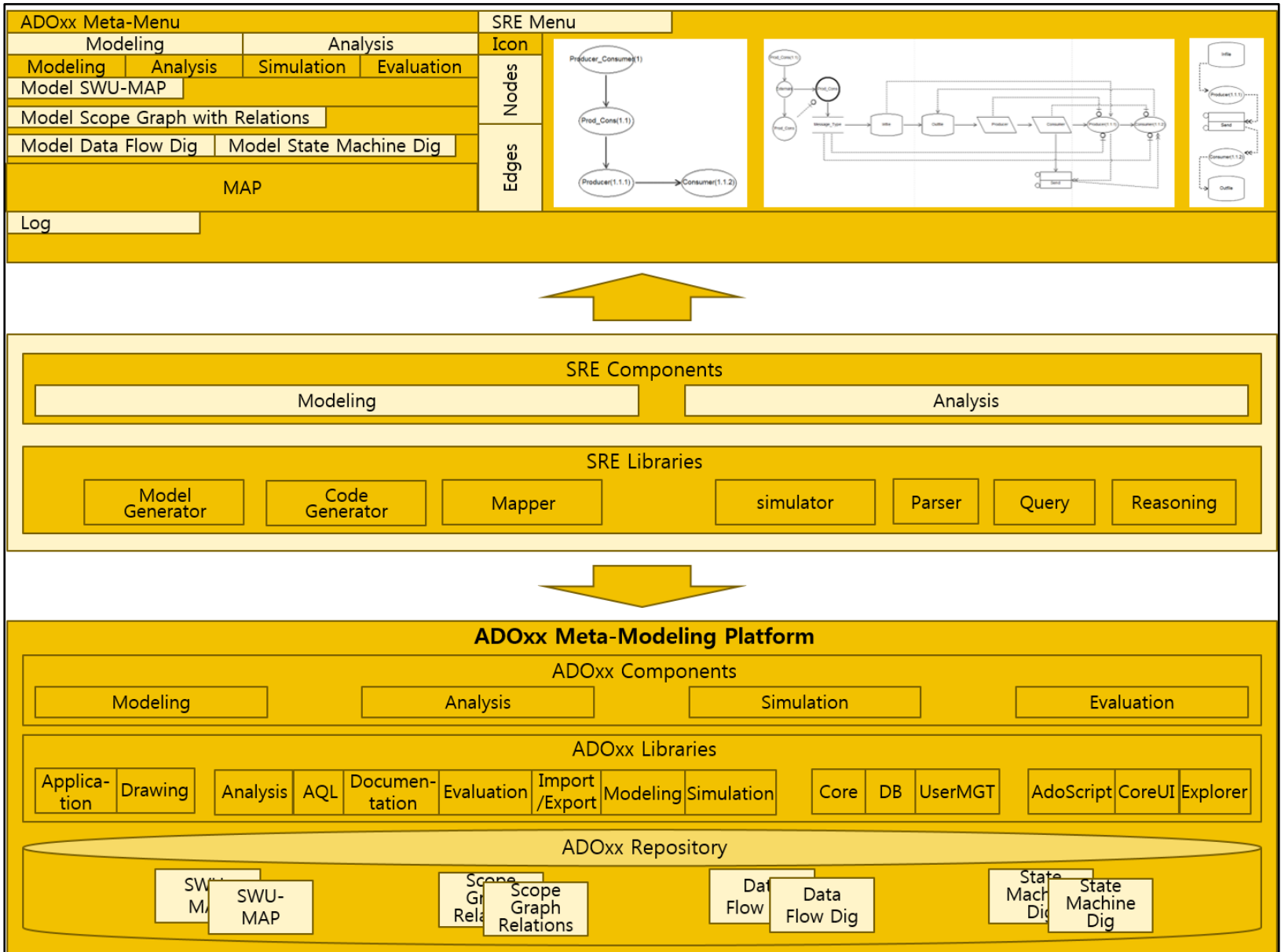


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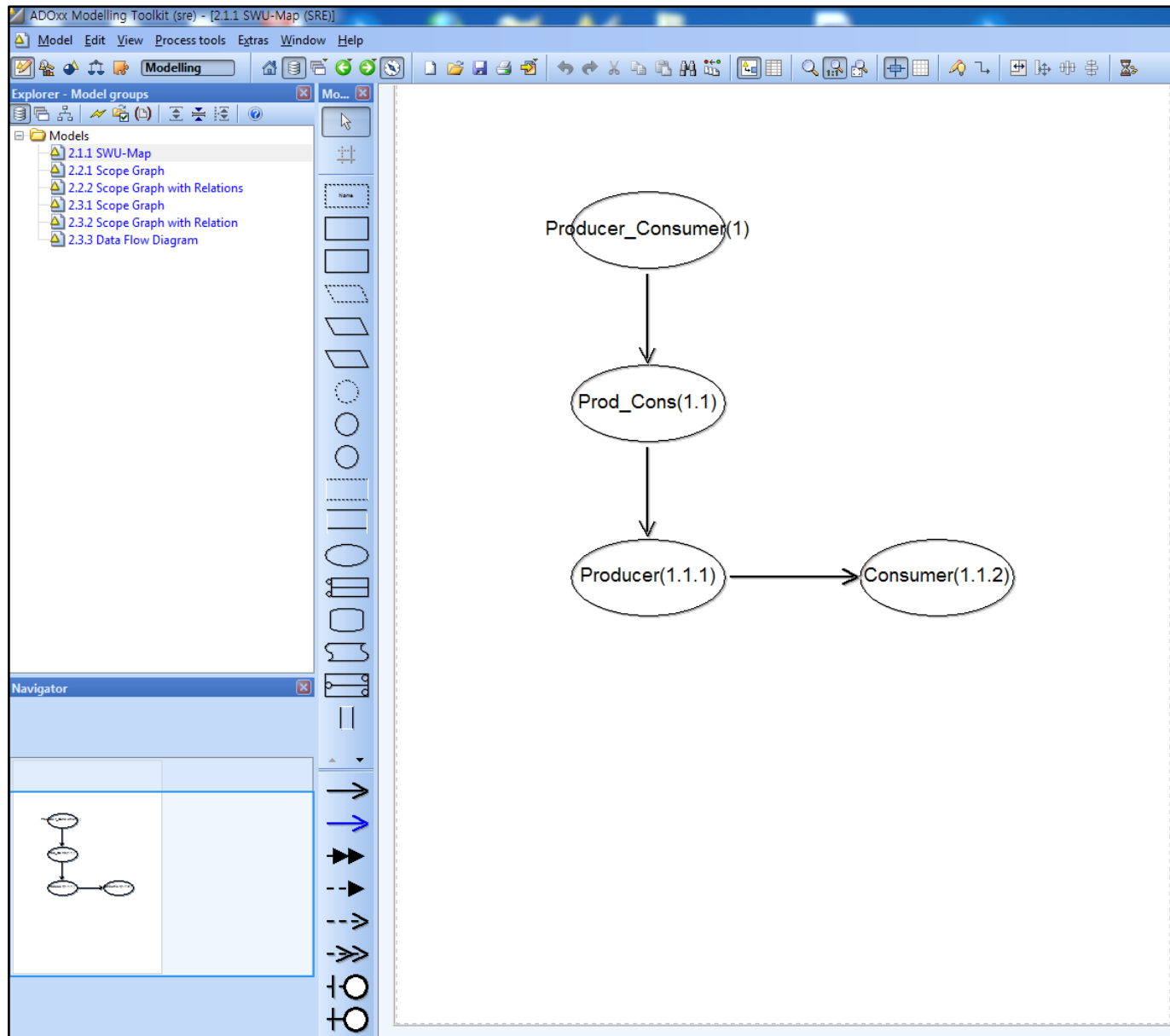
5.3

SR²E

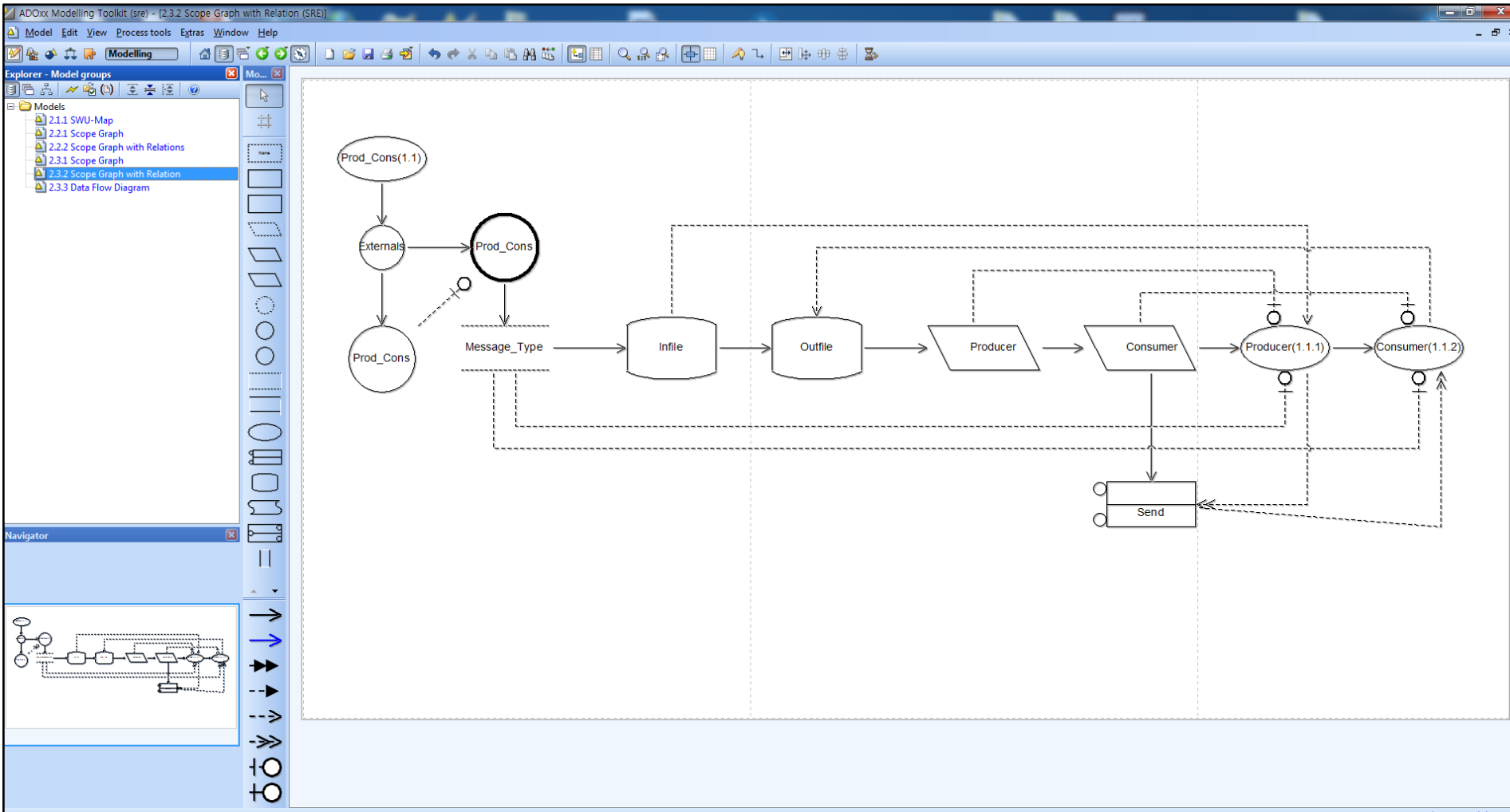
SR²E



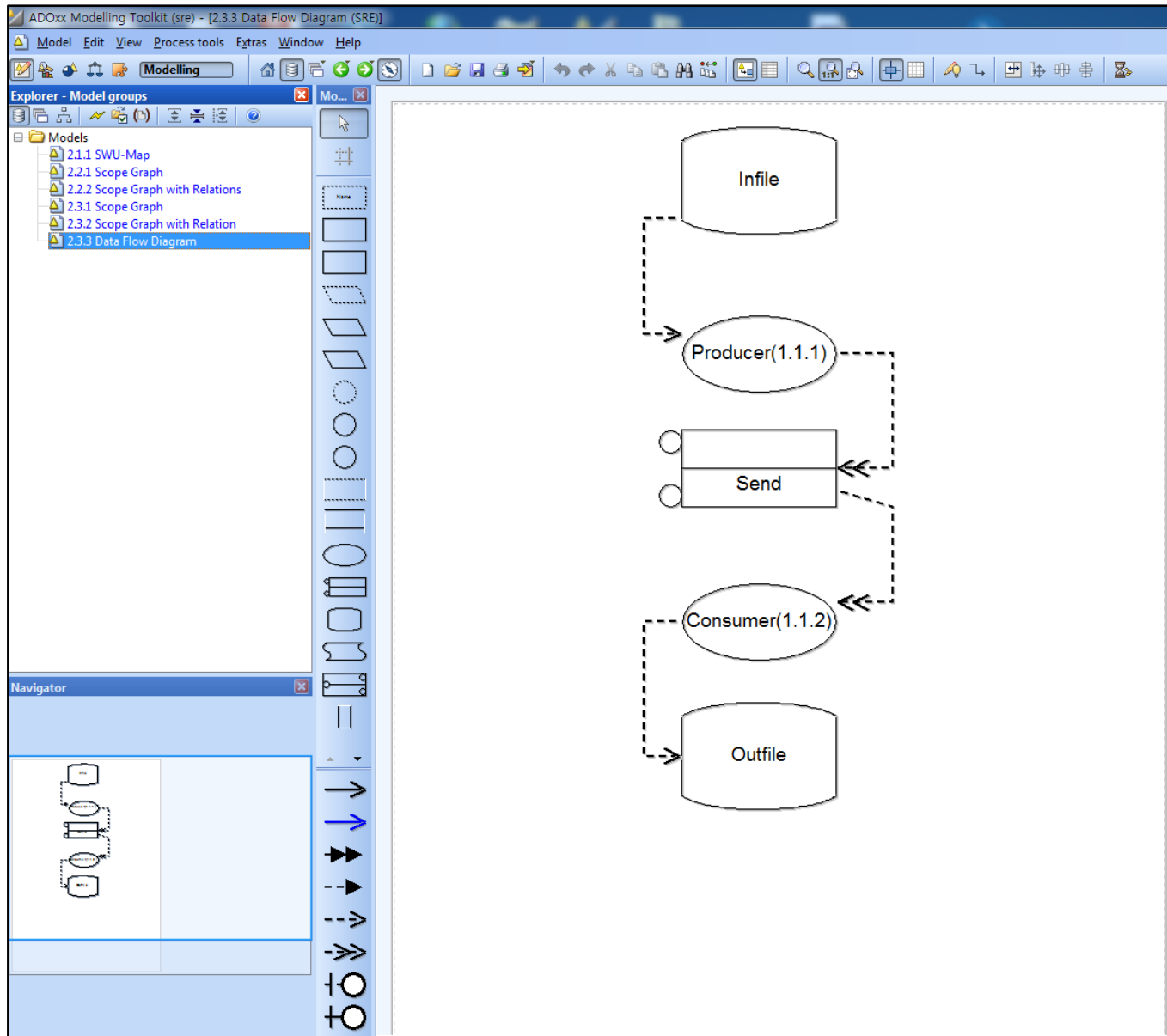
Architecture: Map



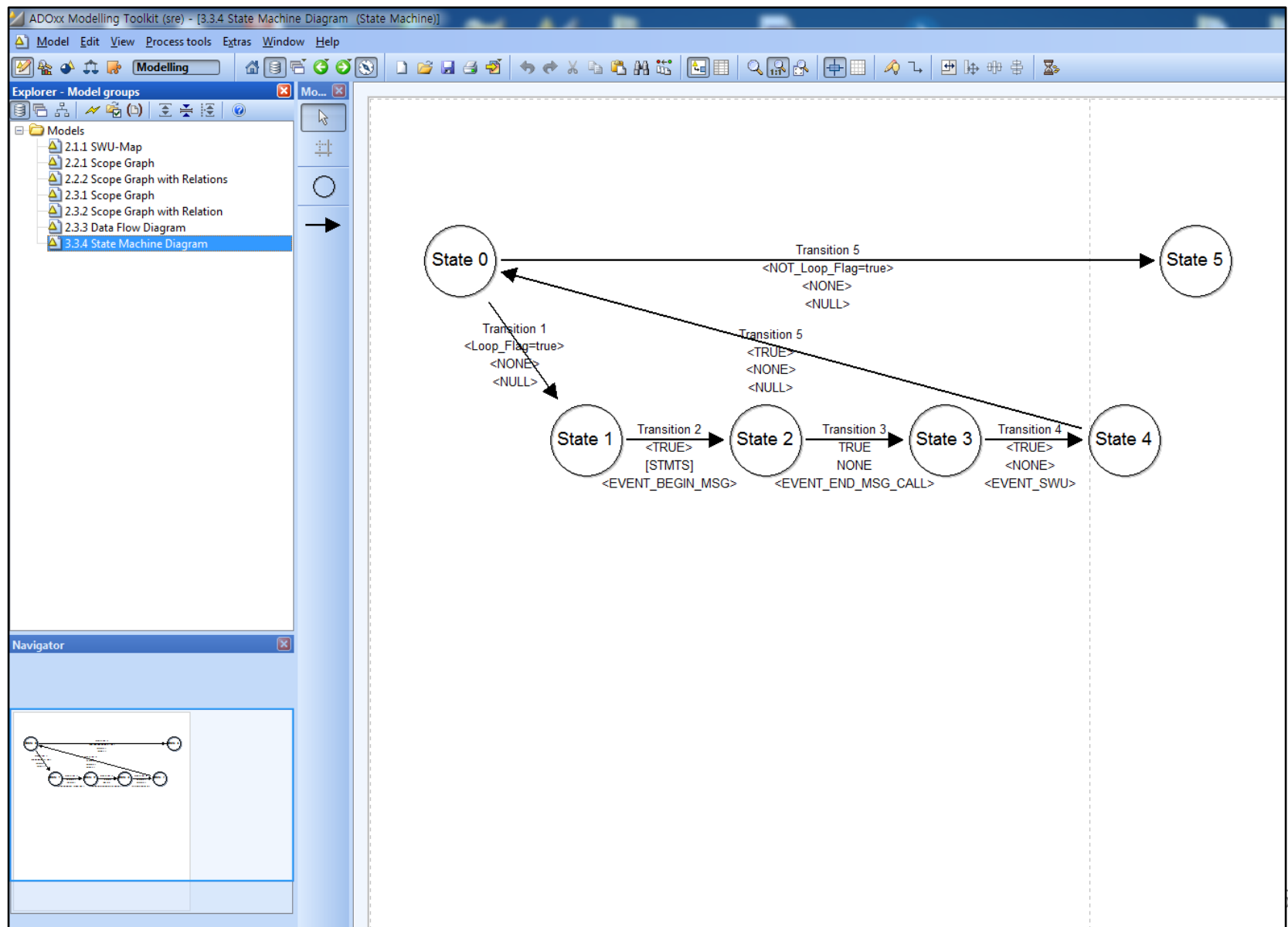
Scope Diagram



Data Flow Diagram



State Diagram



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6.

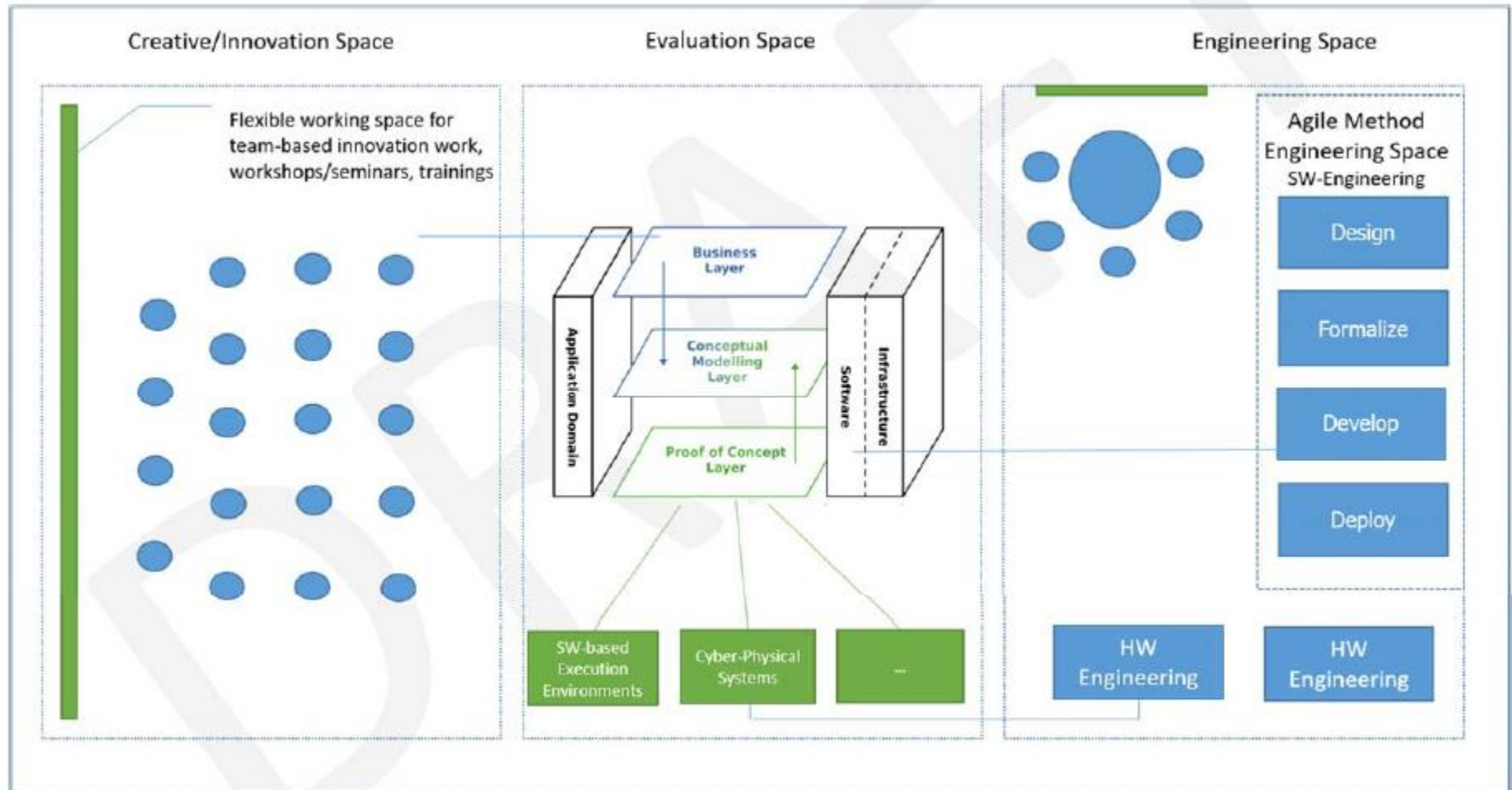
SERVICE ENGINEERING

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6.1

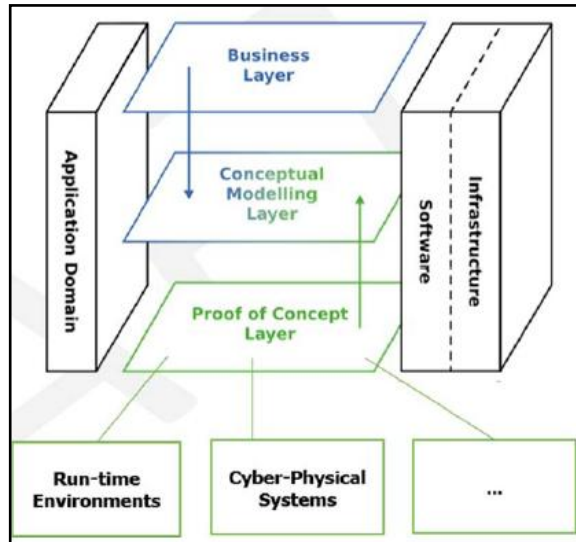
OMiLAB Layout

OMiLAB Layout

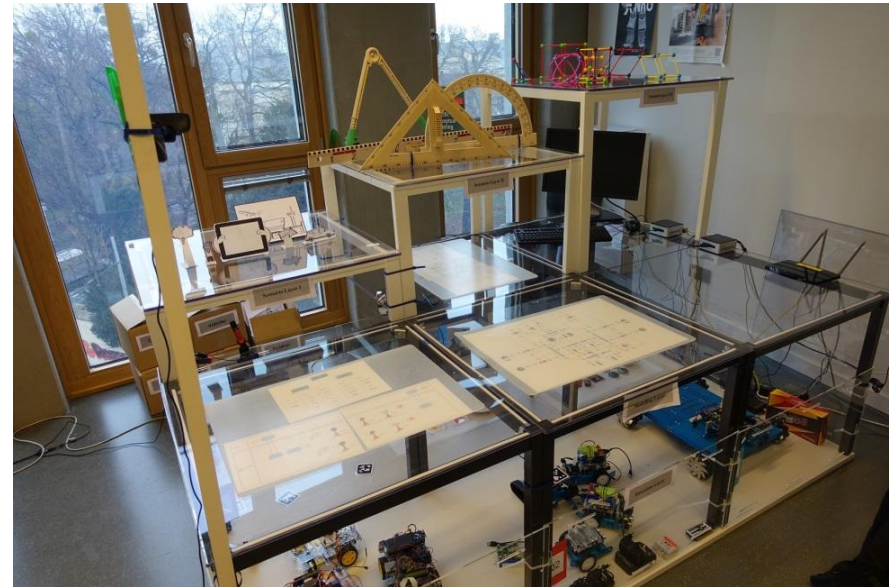


<http://www.omilab.org/docs/OMiLAB%20Laboratory%20Layout%20DRAFT.pdf>

OMiLAB Evaluation Space



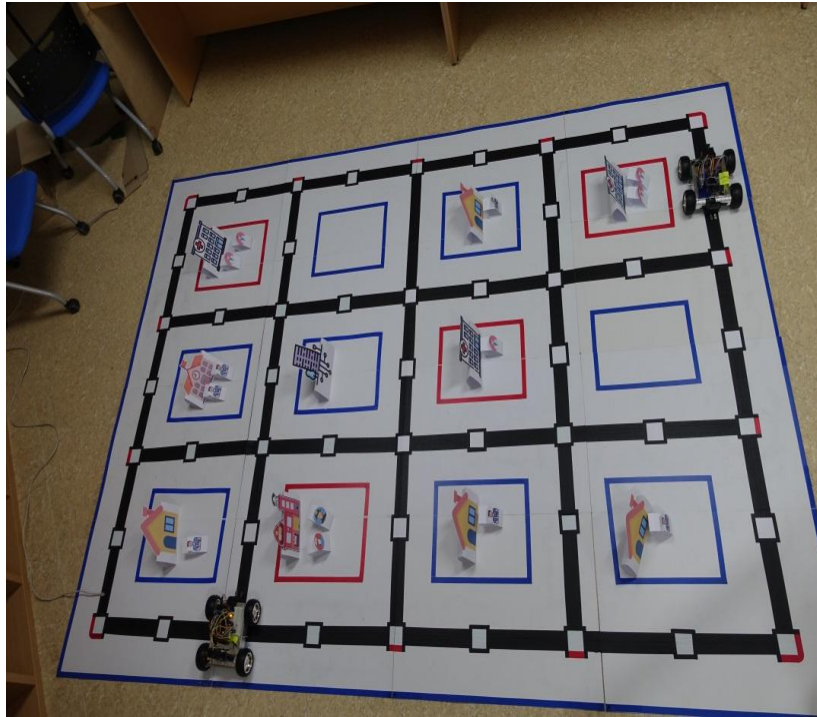
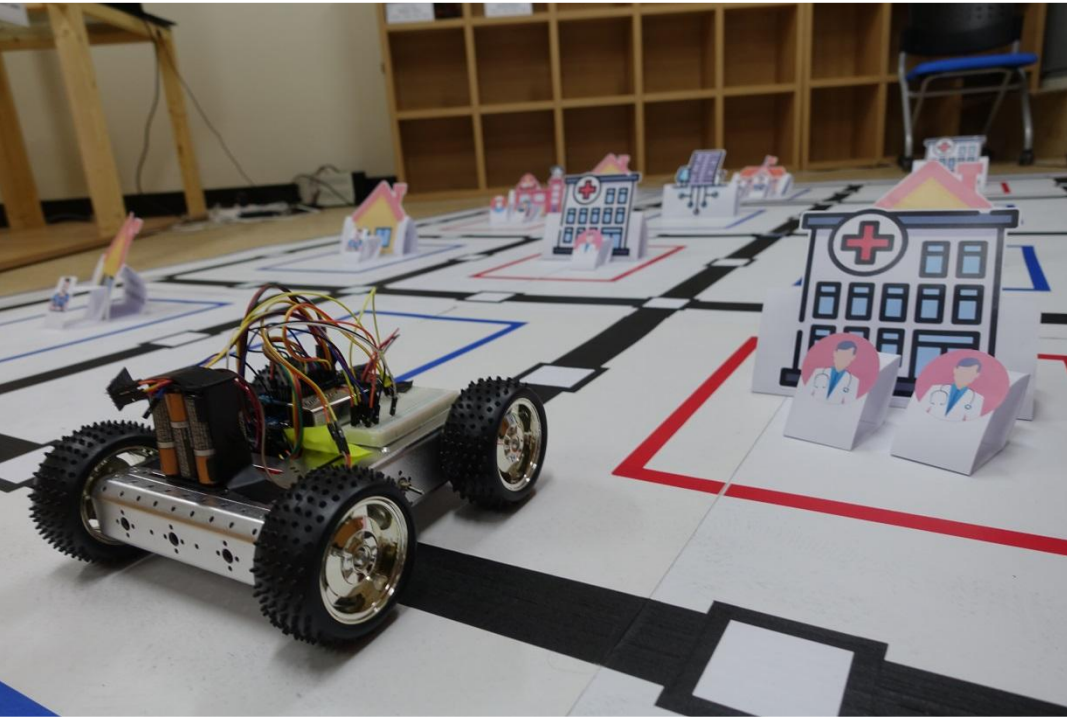
OMiLAB Vienna



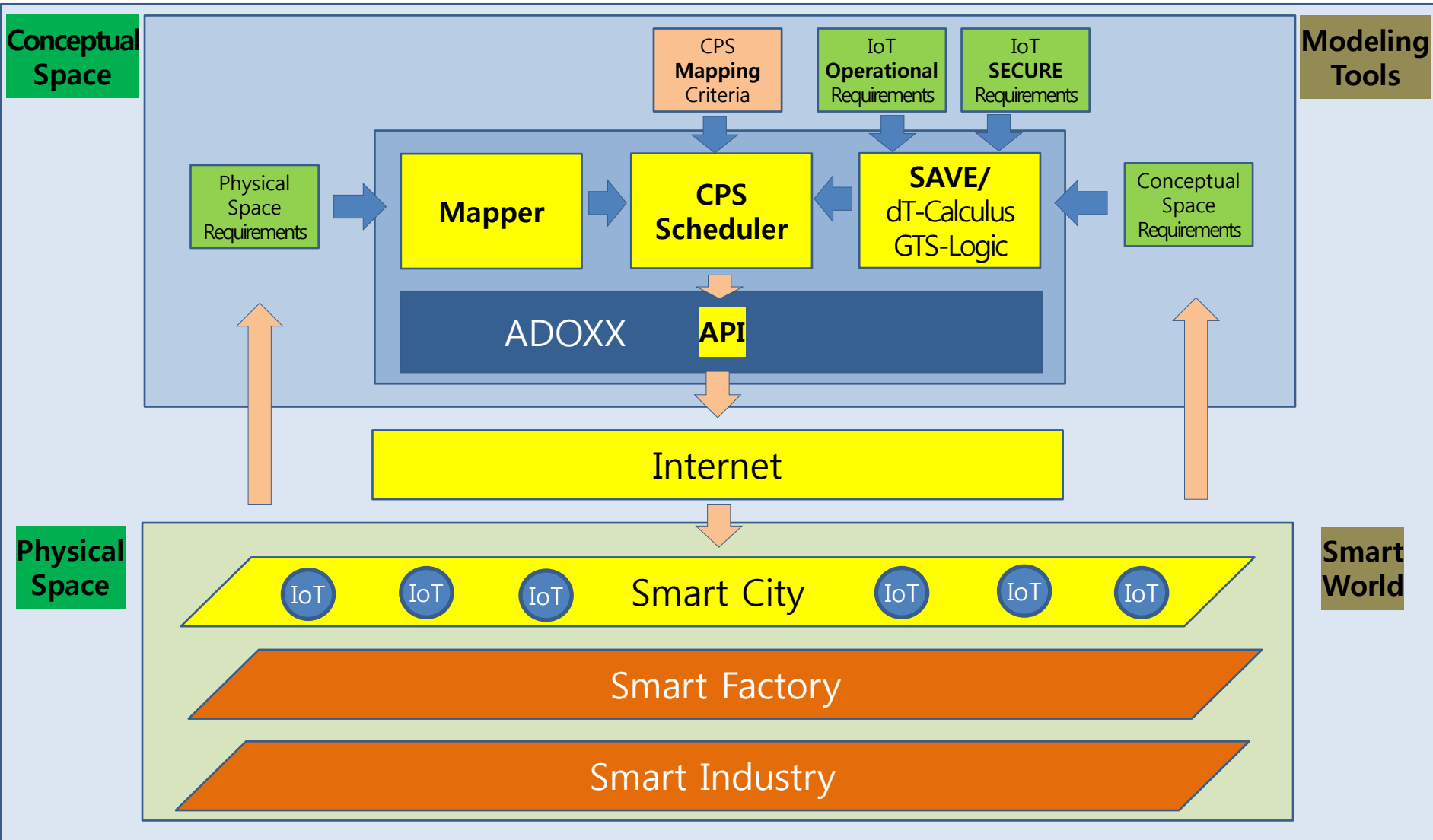
OMiLAB KOREA Design Room



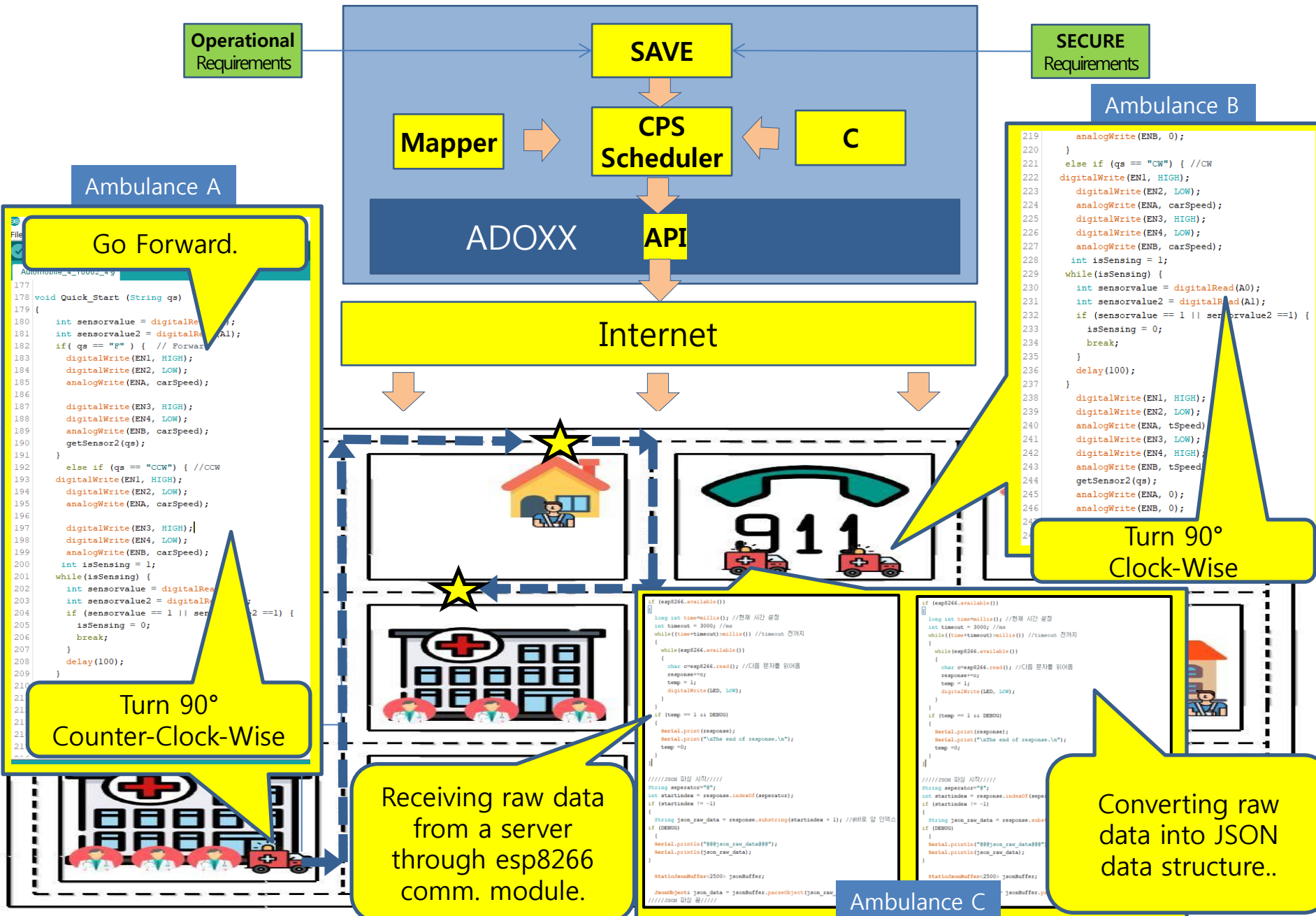
BOC OMiLAB Innovation Lab



Application: CPS



Distributed Real-time Mobile Systems: Scheduling

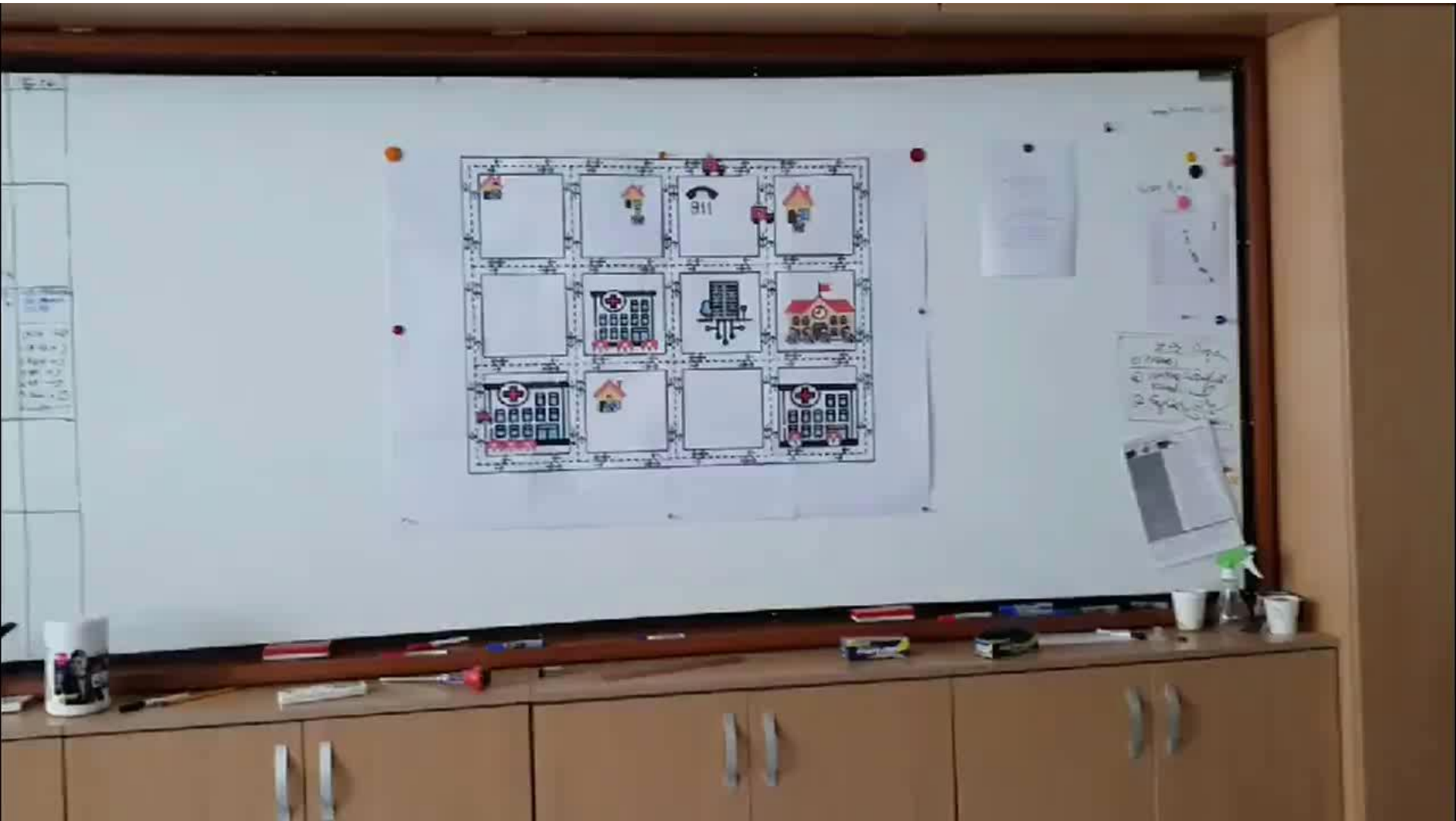


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6.2

SMART CITY: EMERGENCY MEDICAL SYSTEMS

Smart City: EMS [Academy]



CAPSTONE Engineering Contest

Out of 199 Teams

[Contest]

Grand Prize

Gold Prize

Silver Prize

Bronze Prize



[UCC]

Grand Prize

Gold Prize

Silver Prize

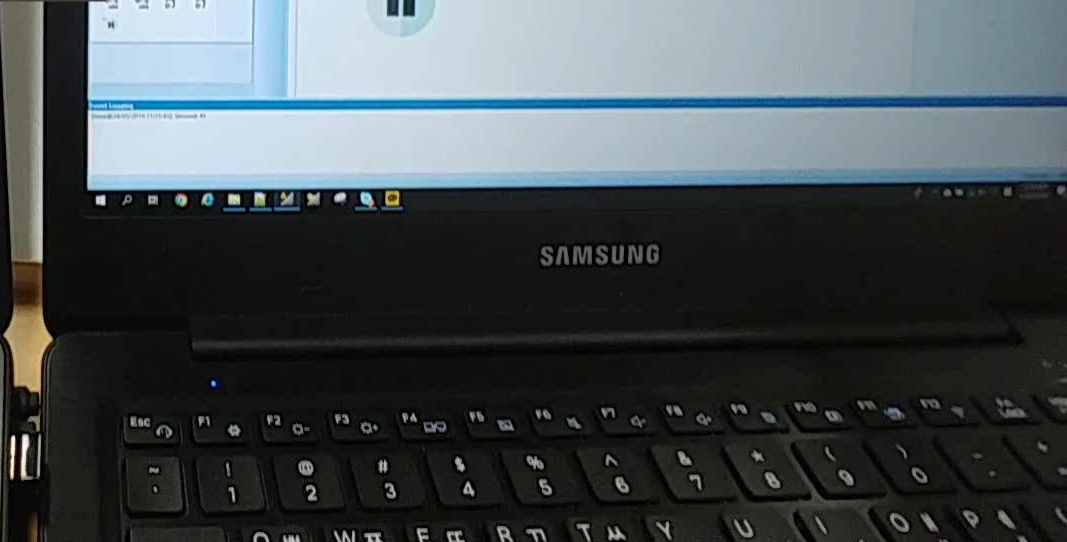
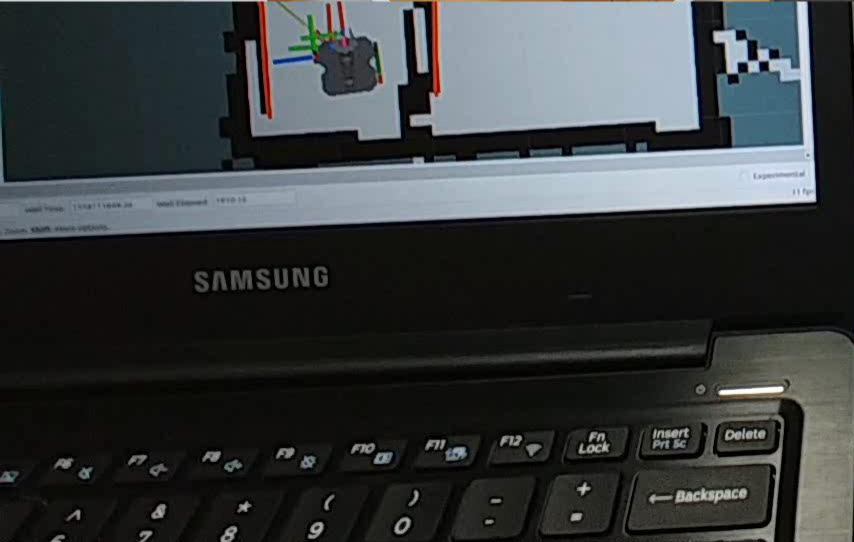
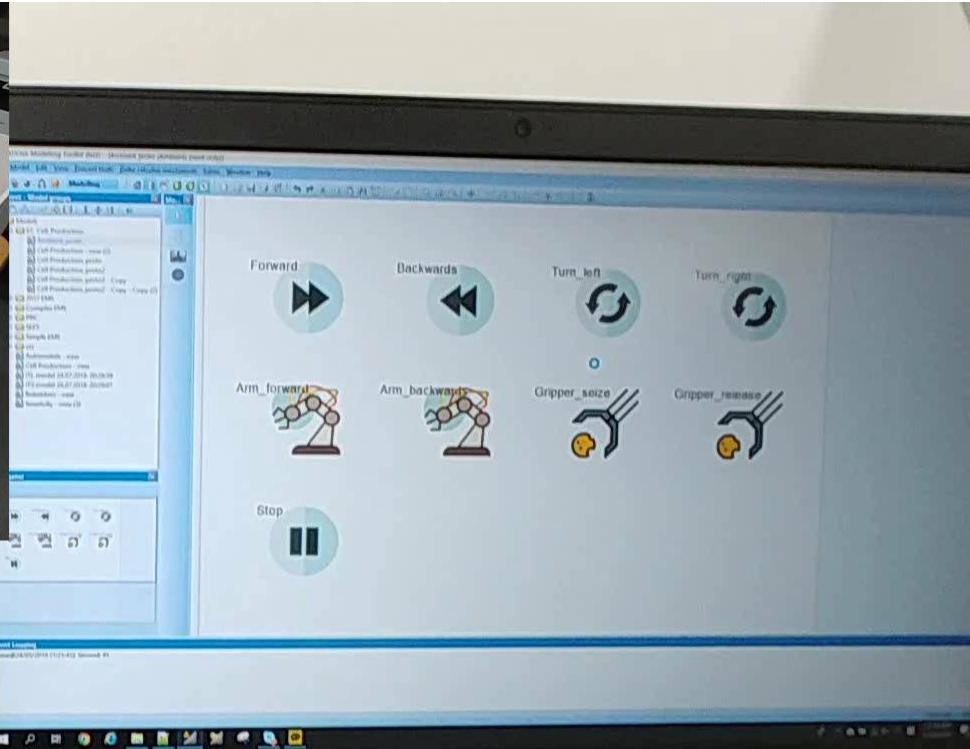
Bronze Prize

1. OMiLAB GLOBAL
2. OMiLAB KOREA
3. ADOxx Meta-Modeling Platform
4. Research Domain for Open Models
5. Modeling Tools
 - 1) Tool 1: SAVE 3.0
 - 2) Tool 2: PRISM 2.0
 - 3) Tool 3: SR²E 1.0
6. Service Engineering
 - 1) OMiLAB Layout
 - 2) Smart City: CPS/EMS
 - 3) Smart Factory: CPS/NGV**
7. Summary w/ Vision

6.3

SMART FACTORY: NEXT-GENERATION VEHICLE IN HYUNDAI MOTORS

Smart Factory: NGV [Industry]



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7. SUMMARY W/ VISION

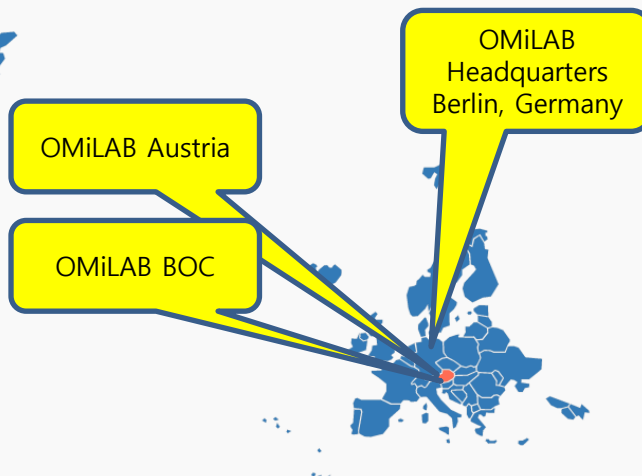
The OMiLAB Global Network

Our Laboratories around the world

AMERICA

EUROPE

ASIA



OMiLAB – Open Innovation for Digital Transformation

FoF EU Project and OMiLAB Nodes develop
Digital Services for Cyber Physical Systems.

3 OMiLABs existing:

- 2 x Vienna, Chonbuck



<http://go0dman-project.eu/>

5 OMiLABs in preparation:

- Sibiu, Bergamo, Warsaw, St. Etienne, City of Oulo



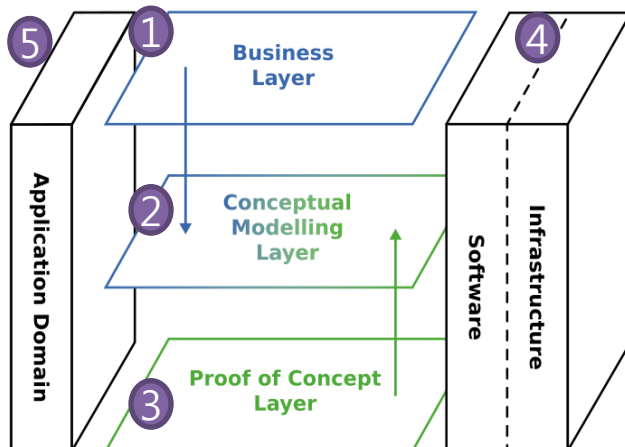
<https://digifof.eu/>

3 OMiLABs under Investigation

- 2 x Germany, 1 x South Korea
1 x Poland, 1 x Slovenia



<http://omilab.org>

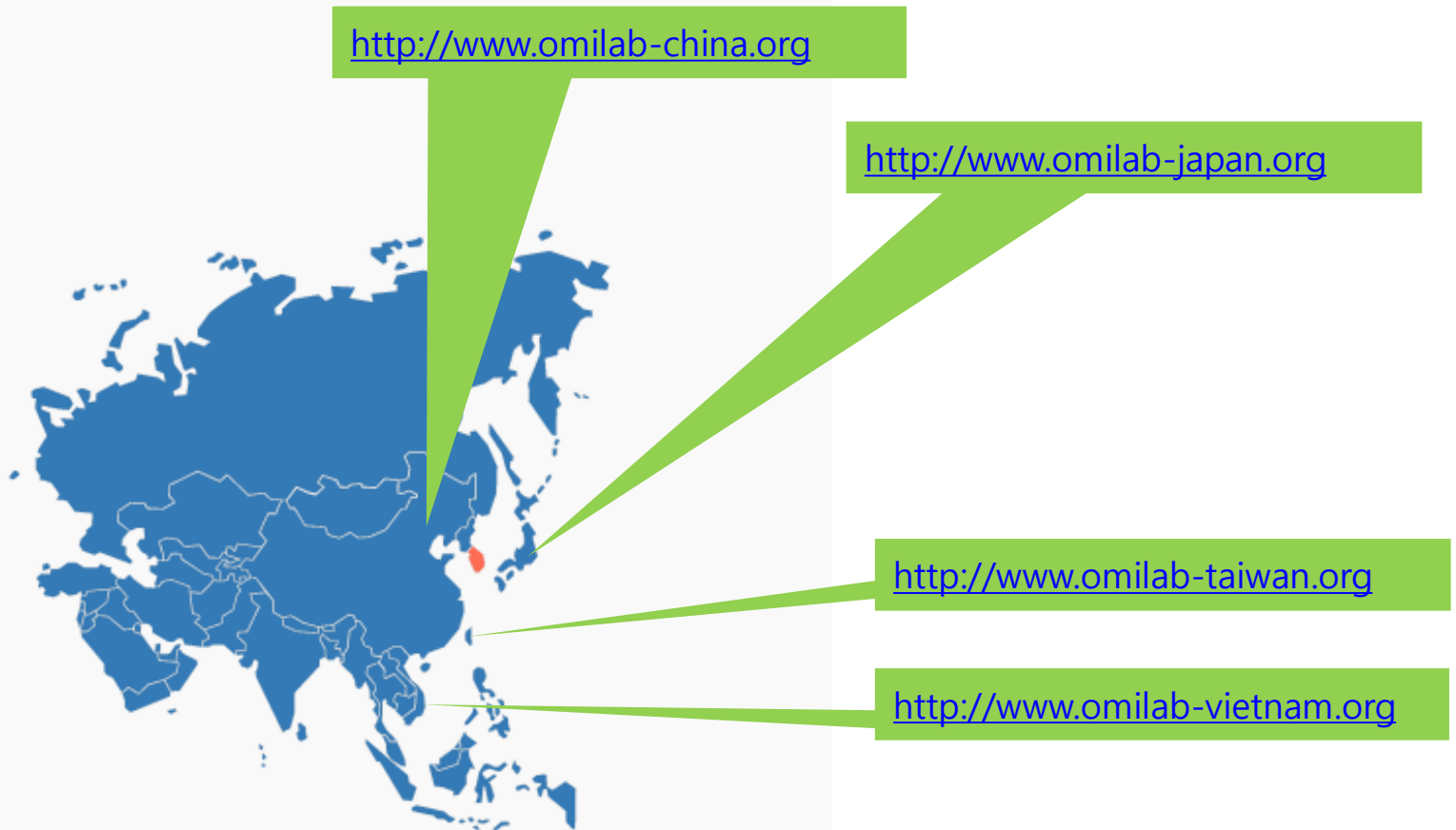


Innovate, Develop and Evaluate Digital Services considering:

1. **Scenario Layer** – using Scene2Model Environment
2. **Conceptual Model Layer** – using the Bee-Up Tool
3. **Run-time Layer** – using Dobot Magician, Makeblock mbot
4. **Software** – using ADOxx, OLIVE, ...
5. **Application Domain:** i.e. Factory of the Future

Collaboration for Future

ASIA



Open Model: Philosophy (1)

- We support an active global community for conceptual modelling who benefits from open artefacts. To this end we act as a facilitator to the development of scientific methods and technologies for all those who value models. In addition we act as a platform, where participants can bring in ideas related to modelling and engage in the exploration process.
- We follow a user-driven approach in our understanding of the term “model”, recognizing that there are useful models in widely different domains like information technology, biology, chemistry or medicine, as well as various functional areas like procurement, marketing, logistics and engineering.
- Our organization contributes structurally to the community through a worldwide network of OMiLAB Nodes as well as a variety of resources, like:
 - Knowledge and procedures (e.g. domain-independent methodologies, trainings and documentation)
 - Technology (e.g. open source software and services), and through
 - Community building activities.
- **Educational institutions, digital innovation hubs, research and innovation organizations and non-profit concerns are our primary beneficiaries.**

from OMiLAB Global

<http://www.omilab.org/about.html>

Open Model: Philosophy (2)

- Originally the Open Model is a movement of **collective "open" intelligence** from the Knowledge Engineering Group in The University of Vienna, as *José Palazzo M. de Oliveira* defined with goals as follows:
 - "Open models is the idea that certain models should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control."
 - "The goals of the open models movement are similar to those of other open movements such as open source, open hardware, open content, open data, open science, and open access."

from OMiLAB KOREA

http://omilab-korea.org/OMilabKOREA_Introduction

OMiLAB Global

You can be a **member** of OMiLAB Global.



Thank You Very Much.