

WELCOME @

JKU Institute for
Telecooperation
www.tk.jku.at

 cis.jku.at
Department of
**COOPERATIVE
INFORMATION SYSTEMS**

PRÄSENTATION:

A.UNIV.-PROF. DR.

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Scientific Team

Guest Professor@

 2009 2002



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 INFORMATION SYSTEMS**



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 Project Collaborator

"Promotio sub auspiciis"
 & professor@CMU
 Project Collaborator

Teaching

BACHELOR

COMPUTER SCIENCE

Wirtschaftsgrundlagen der Informatik	VO	2 h	3 ECTS	SS	6. Sem.
Datenbanken & Informationssysteme 2 (IFS2)	VO/UE	3 h	4,5 ECTS	WS	3. Sem.
Projektorganisation	KV	2 h	3 ECTS	WS	5. Sem.
Multimediasysteme	VO/UE	3 h	4,5 ECTS	SS	2. Sem.

BUSINESS INFORMATICS

Softwareentwicklung 1 und 2	UE	2 h	3 ECTS	SS	1. Sem.
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COMPUTER SCIENCE: MAJOR SUBJECTS

Web Information Systems	KV	3 h	4,5 ECTS	SS	IIS
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COMPUTER SCIENCE: ELECTIVES

Advanced Model Engineering	KV	2 h	3 ECTS	WS	
Modelling Internet Applications	KV	2 h	3 ECTS	SS	
Big Data Engineering	KV	2 h	3 ECTS	SS	
Human Computer Interaction (HCI)	KV	2 h	3 ECTS	WS	
Mobile Computing	KV	2 h	3 ECTS	WS	
Mobile Web Development	KV	2 h	3 ECTS	SS	
Web Performance	KV	2 h	3 ECTS	WS	

DIGITAL SOCIETY

Informatische Grundlagen der Digital Society	KV	1 h	2 ECTS	WS	
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DATA SCIENCE

Big Data Management and Processing	KV	2 h	3 ECTS	SS	
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MASTER

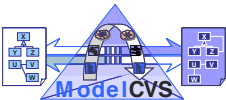
















Research

- ① Model-Driven Engineering
- ② Semantic Systems Engineering
- ③ Web Engineering
- ④ Distributed & Mobile Computing
- ⑤ Media & Interaction



Projects 1/8

① Model-Driven Engineering

	ModelCVS – A semantic Infrastructure for Model-based Tool Integration <ul style="list-style-type: none">FUNDING: FFG FIT-IT Semantic SystemsVOLUME: 428.000 EURDURATION: JAN/2006 – DEC/2007	PARTNER:   	www.modelcvs.org
	TROPIC – Transformations on Petri-nets in Color <ul style="list-style-type: none">FUNDING: FWFVOLUME: 200.000 EURDURATION: MAR/2009 – FEB/2012	PARTNER: 	www.modeltransformation.net
	AMOR – Adaptable Model Versioning <ul style="list-style-type: none">FUNDING: FFG FIT-IT Semantic SystemsVOLUME: 558.841 EURDURATION: FEB/2009 – AUG/2011	PARTNER:  	www.modelversioning.org
	DARWIN – Model-driven Evolution of Semantic Infrastructures <ul style="list-style-type: none">FUNDING: FFG BRIDGEVOLUME: 320.000 EURDURATION: MAR/2012 – FEB/2014	PARTNER:    	www.model-evolution.net
	TETRABox – Generic White-Box Test Framework f. Model Transformations <ul style="list-style-type: none">FUNDING: FWFVOLUME: 343.300 EURDURATION: OCT/2016 – SEP/2019	PARTNER: 	www.modeltransformation/tetrabox
	iSEM – Inductive Situation Evolution Modeling <ul style="list-style-type: none">FUNDING: FWF Hertha FirnbergVOLUME: 230.000 EURDURATION: NOV/2018 – OCT/2021		www.modeltransformation/isem

Projects 2/8

① Model-Driven Engineering

- **Aktuelles EU-Projekt:** »**BETTER EMPLOYABILITY FOR EVERYONE WITH ORACLE APEX**«

- **Fokus:** Low-Code Development

- **Partner:**

- Oracle Academy
- 5 Unis: Zagreb, Marburg, Slovakia Žilinský, Thessaloniki, Warschau

- **Bakk-Themen:**

- **Case study-driven comparison** of Low-Code-Development Platforms (LCDPs) in different application domains
 - **IoT** (Internet-of-Things)
 - **CPS** (Cyber-Physical Systems)
 - **Data Science / AI**
 - **SaaS Integration / Mashups**
 - **Mobile Applications**
 - **General Purpose** LCDPs
- **Vorschläge für Bakk-Themen HIGHLY WELCOME!**



Technologies / LCDPs:

- MS PowerApp
- Google AppMaker / Sheet / DialogFlow
- Amazon Honeycode / AppFlow / Lex
- Oracle APEX
- OutSystems
- Mendix Zoho Creator
- Kissflow
- Salesforce App Cloud
- Appian
- Zapier / IFTTT / Trello
- Node-RED
-

Projects 3/8

② Semantic Systems Engineering

SW Engineering Methods for CPS



SPHINX – Co-Evolution for Model Refactoring & Proof Adaptation in CPS

- FUNDING: FP7-PEOPLE-2012-IOF
- VOLUME: 183.000 EUR
- DURATION: FEB/2014 – APR/2016

PARTNER:



Carnegie Mellon University



Analysis of Computational Grids Efficiency via Colored Petri Nets

- FUNDING: WTZ 07/2013
- VOLUME: ~10.000 EUR
- DURATION: JAN/2014 – MAR/2016

PARTNER:



ProofAwareECPS – Proof-Aware Engineering of Cyber-physical Systems

- FUNDING: P 28187-N31
- VOLUME: 237.100 EUR
- DURATION: SEP/2015 – AUG2019

PARTNER:



Carnegie Mellon University



FlexPod – Flexible Production Through Secure Auctions

- FUNDING: FFG Produktion der Zukunft im Rahmen von open4innovation
- VOLUME: 320.000 EUR
- DURATION: MAR/2019 – FEB/2021

PARTNER:

EBNER Industriehafenbau GmbH

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

NET SERVICES

www.flexprod.at

Situation-Awareness in Critical Infrastructures



BeAware – Situation-Awareness in Road Traffic Control

- FUNDING: FFG FIT-IT Semantic Systems
- VOLUME: 400.000 EUR
- DURATION: MAR/2009 – JUN/2011

PARTNER:

FREQUENTIS team

AISIFI INIAIG HEUSCH BOESEFELDT Brains for roads

www.situation-awareness.net



CSI – Collaborative Situation Awareness

- FUNDING: FFG FIT-IT Semantic Systems
- VOLUME: 500.000 EUR
- DURATION: OCT/2011 – SEP/2014

PARTNER:

POLIZEI CNS LINZ FREQUENTIS team

AISIFI INIAIG LINZ AG LINIEN

csi.situation-awareness.net



ProFlow – Situation Aware Process Management

- FUNDING: FFG Basisprogramm
- VOLUME: 400.000 EUR
- DURATION: OCT/2012 – SEP/2013

PARTNER:

PROLOGICS BUSINESS IN MOTION

FREQUENTIS team

Rail Cargo Austria Ein Unternehmen der OBB

OeKB

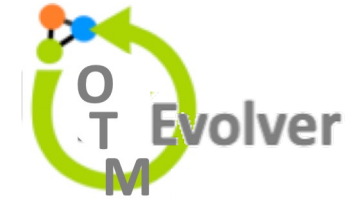


Evolution-Aware Semantic Framework For Operational Technology Monitoring in Critical Infrastructures

- FUNDING: FFG ÖSTERREICH-FONDS
- VOLUME: 100.000 EUR
- DURATION: APR/2019 – MAR/2022

PARTNER:

FREQUENTIS team



■ Aktuelles FFG-Projekt:

»EVOLUTION-AWARE SEMANTIC FRAMEWORK FOR **O**PERATIONAL **T**ECHNOLOGY **M**ONITORING IN CRITICAL INFRASTRUCTURES«

■ Fokus:

- IoT-based Large Scale Control Systems (LSCS) / Road Traffic Control / Data Mining auf Real-Daten, Visual Data Exploration

■ Partner:

- Team GmbH (Frequentis), ASFINAG

■ **Bakk-Themen:**

- **Event Pattern/Process Mining** in IoT-based LSCS
- **Evolution/Change Detection** in IoT-based LSCS
- **Provenance** for Data Mining in IoT-based LSCS
- **Predictive Maintenance** for IoT-based LSCS
- **Smart Alarm Management** in IoT-based LSCS
- **Visual Data Exploration** in IoT-based LSCS
- **Vorschläge für Bakk-Themen HIGHLY WELCOME!**

Technologien:

- Python, R
- Docker
- Jupyter Notebook / Lab
- NumPy, bokeh, hvPlot,
- Pandas
- Parquet
- MS PowerBI
- Amazon Quicksight
- KNIME
- RapidMiner
- Tableau
- Protegé – Ontologies
-

Projects 5/8

③ Web Engineering



theHiddenU – A Social Nexus for Privacy-Ensured Personalisation Brokerage

- FUNDING: FFG FIT-IT Semantic Systems
- VOLUME: 385.000 EUR
- DURATION: SEP/2010 – AUG/2013

PARTNER:

www.social-nexus.net

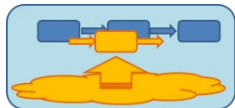


crowdSA – Crowdsourced Situation Awareness for Crisis Mangement

- FUNDING: FFG BRIDGE
- VOLUME: 360.000 EUR
- DURATION: SEP/2013 – JUN/2015

PARTNER:

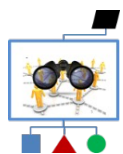
csi.situation-awareness.net



WT22 – Agile Specification and Validation of Web-based Situative Workflows

- FUNDING: AR 18/2013
- VOLUME: ~10.000 EUR
- DURATION: JUN/2013 – MAY/2015

PARTNER:



WT23 – Reference Architecture for Crowd-Based SA in Crisis Management

- FUNDING: AR 2015
- VOLUME: ~10.000 EUR
- DURATION: JUN/2015 – MAY/2017

PARTNER:



CrAc – Cooperative Activities

- FUNDING: FFG COIN
- VOLUME: 772.000 EUR
- DURATION: OCT/2014 – SEP/2017

PARTNER:

www.crac.at



iVolunteer – Ein digitales Eco-System zur Unterstützung lebensbegleitender Freiwilligenarbeit

- FUNDING: FFG COIN
- VOLUME: 786.050 EUR
- DURATION: JAN/2018 – DEZ/2021

PARTNER:



■ Aktuelles FFG-KIRAS-Projekt:

- »CIVOLUNTEER – CRITICAL INFRASTRUCTURES POWERED BY VOLUNTEERS«

■ Fokus:

- Digitaler Freiwilligenpass, Gamification, Personal Goal Setting/Tracking, Recommender/Community Platforms, Competency Mgmt., Mobile Apps

■ Partner:

- BMSGPK, KunstUni, WU Wien, FH Hagenberg, xNet / doloops GmbH

■ **Bakk-Themen:**

- **Mobile App** for
 - personal / collaborative goal definition / progress tracking
 - goal recommendations and task matching
 - gamification mechanisms for goal pursuing
 - visual mechanisms for personal goal reflection
- **AI techniques** for deriving competencies from tasks
- Evaluation of **community / socializing platforms**
- **Vorschläge für Bakk-Themen HIGHLY WELCOME!**





Technologien:

- AngularJ
- MongoDB
- Gamification
- Deep Learning
- TensorFlow
- TorchRec
- amCharts, plotly, D3
-

Projects 7/8

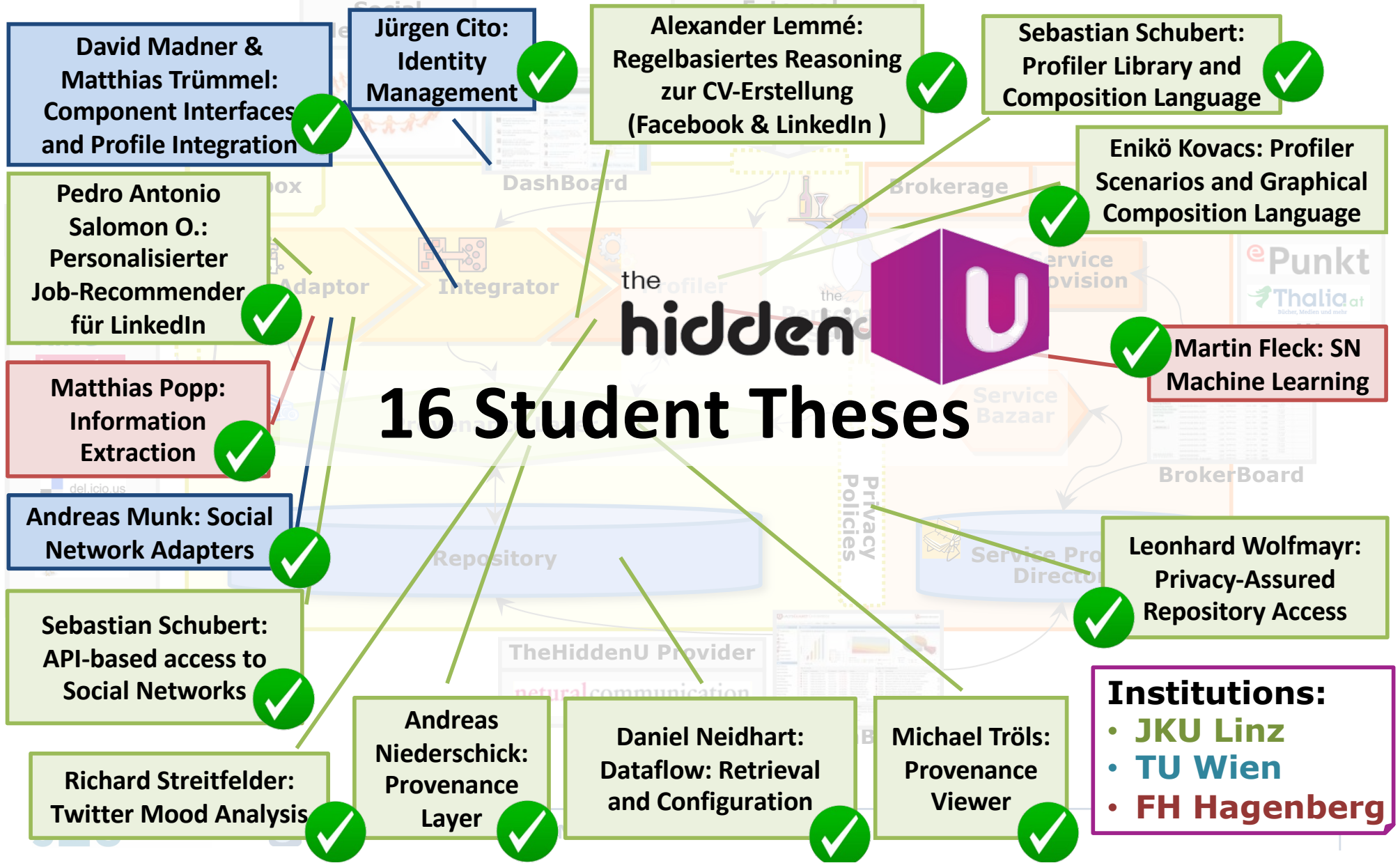
Scientific Publications & Student Thesis



	Scientific Publications	Student Theses
 <p>Model-driven Evolution of Semantic Infrastructures</p> <ul style="list-style-type: none"> FUNDING: FFG BRIDGE VOLUME: 320.000 EUR DURATION: MAR/2012 – FEB/2014 <p>PARTNER: joinVISION, FREQUENTIS team, LieberLieber software gmbh, TU VIENNA</p> <p>www.model-evolution.net</p>	15	6 + 1 PhD
 <p>A Social Nexus for Privacy-Ensured Personalisation Brokerage</p> <ul style="list-style-type: none"> FUNDING: FFG FIT-IT Semantic Systems VOLUME: 385.000 EUR DURATION: SEP/2010 – AUG/2013 <p>PARTNER: Thalia.at, Netural IVENTA, TU VIENNA</p> <p>www.social-nexus.net</p>	11	16 + 1 PhD
 <p>Collaborative Situation Awareness</p> <ul style="list-style-type: none"> FUNDING: FFG FIT-IT Semantic Systems VOLUME: 500.000 EUR DURATION: OCT/2011 – SEP/2014 <p>PARTNER: POLIZEI LINZ AG, FREQUENTIS team, CNS AISIFI INI AG, LINZ</p> <p>csi.situation-awareness.net</p>	12	11 + 2 PhDs
 <p>Crowdsourced Situation Awareness for Crisis Mangement</p> <ul style="list-style-type: none"> FUNDING: FFG BRIDGE VOLUME: 360.000 EUR DURATION: SEP/2013 – JUN/2015 <p>PARTNER: FREQUENTIS team, FAW Netural, OSTERREICHISCHES ROTES KREUZ</p> <p>crowdsa.situation-awareness.net</p>	11	28 + 1 PhD

Projects 8/8

Scientific Publications & Student Thesis



Students



- **Study abroad ...**
 - ... FIN (Jyväskylä), **SWE** (Skövde), **ESP** (Malaga), **ITA** (Mailand), **USA** (Pittsburgh – CMU), **AUS** (Adelaide)
- **Practicums, seminars, bachelor/master thesis ...**
 - ... within interesting, research-driven industry-related **projects**
- **Dissertations ...**
 - ... funded positions within research projects
- **Supervision ...**
 - ... intensive, personal, **cooperative**
- **Teamwork ...**
 - ... with colleagues!
- **Start ...**
 - ... possible **anytime!**



you are most welcome @



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Univ.-Prof. Dr. Gabriele KOTSIS

Assoc.Prof. Dr. Karin HUMMEL

Assoc.Prof. Dr. Wieland SCHWINGER

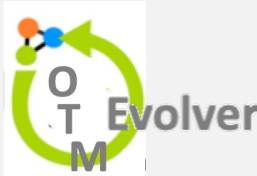
a.Univ.-Prof. Dr. Werner

Bakk-Themen

① Low-Code Platforms in Different Domains



② Data Mining in Road Traffic IoT



③ Mobile Apps, Gamification, Recommender for Volunteers



Institute for Telecooperation

LEIBOLD KAPSAMMER



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