Modul 0:

Vorbesprechung

a.Univ.-Prof. Dr. Werner Retschitzegger

Mag. Jürgen Mangler

universität
wien

Johannes Kepler University Linz
www.jku.ac.at

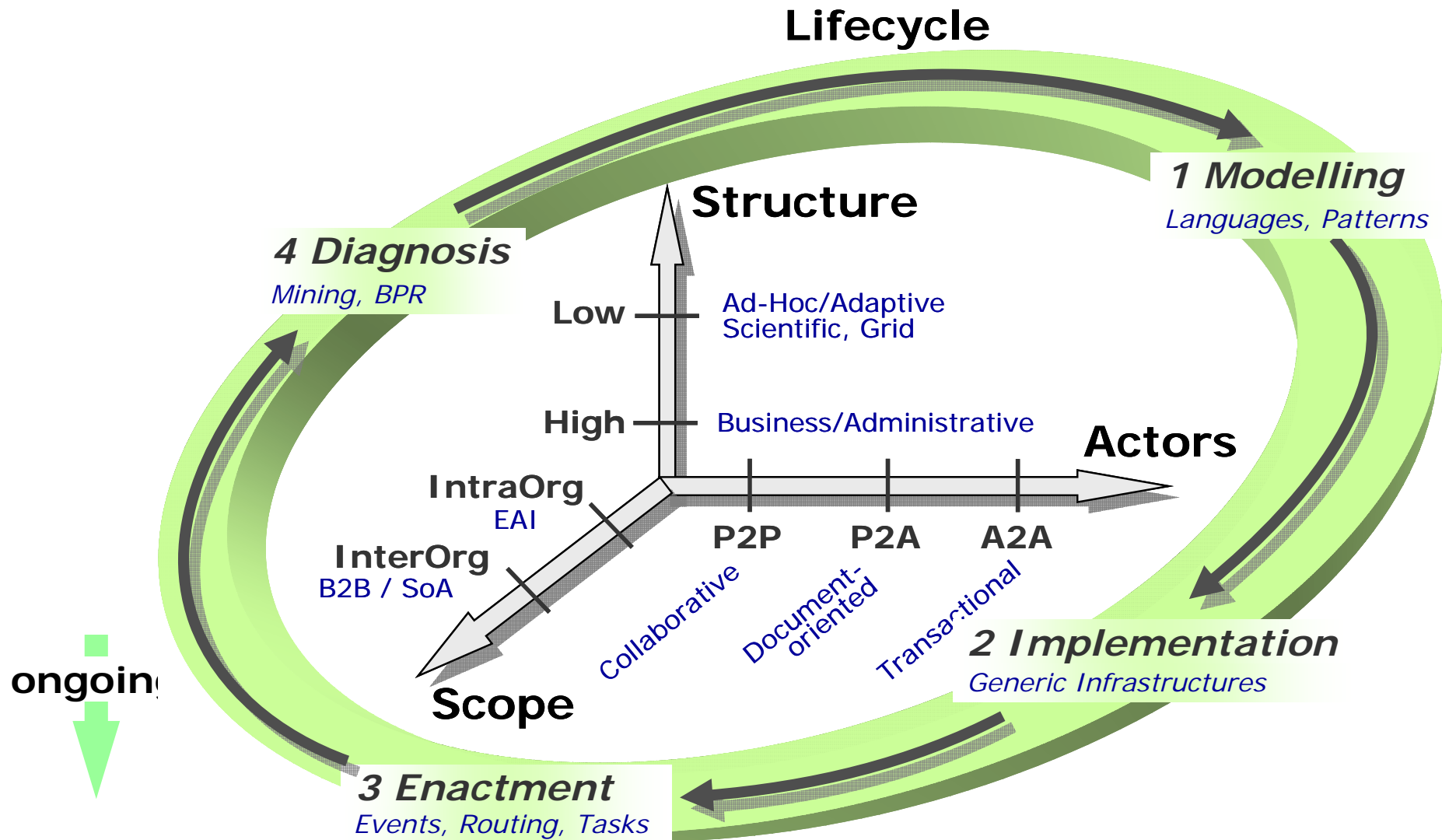**Institute of Bioinformatics**
www.bioinf.jku.at

Information Systems Group
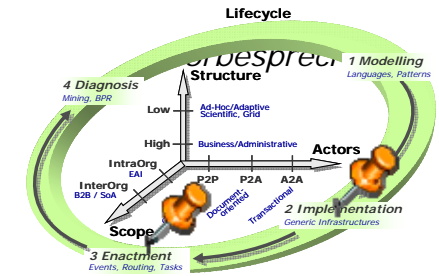*www.ifs.uni-linz.ac.at*

Inhalt

- History of WfM at a Glance

- Own Contributions to WfM

- Ziele der LVA

- Inhalte der LVA

- Organisatorisches

History of WfM at a Glance
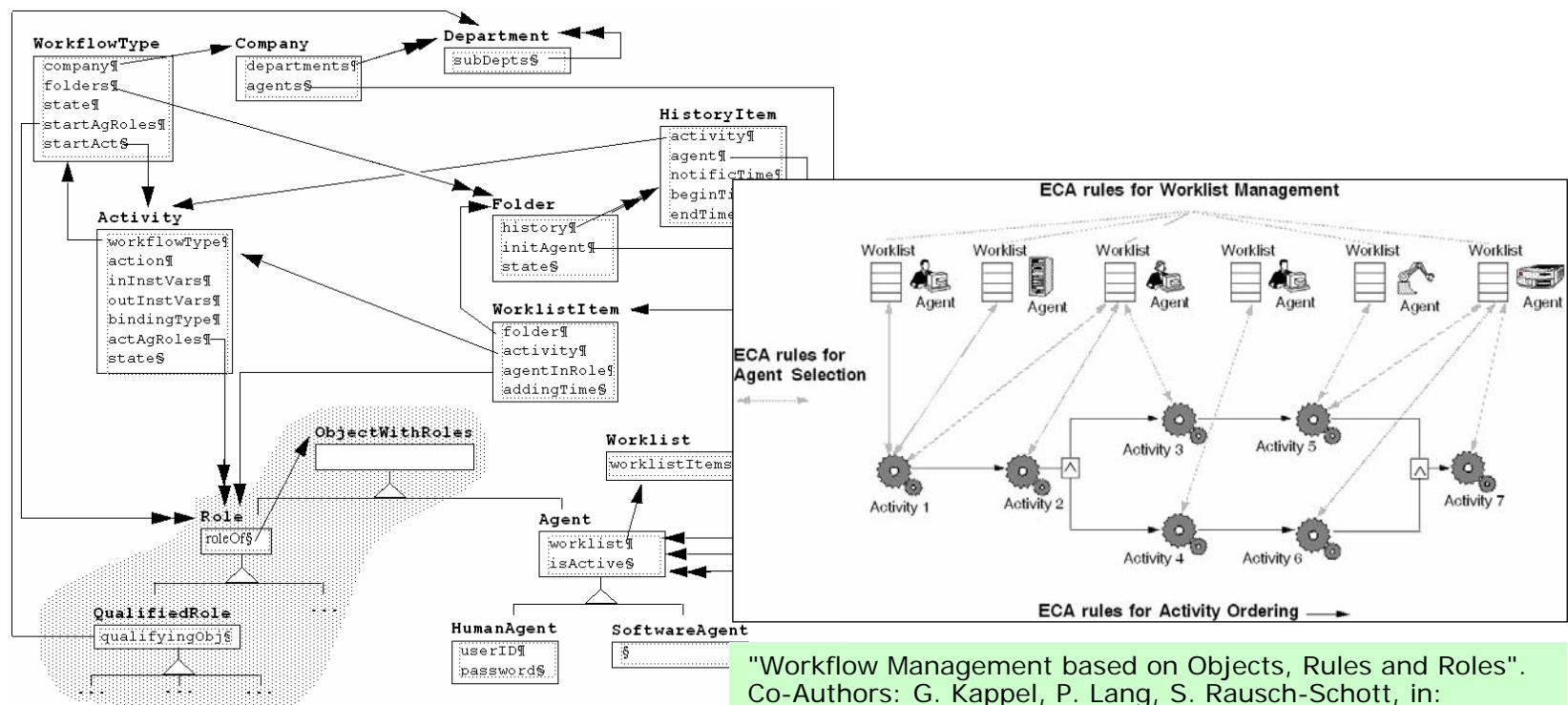## Paradigm Shift and Lines of Development

Lifecycle

Structure

1 Modelling
Languages, Patterns

4 Diagnosis
Mining, BPR

Low — Ad-Hoc/Adaptive
Scientific, Grid

High — Business/Administrative

Actors

IntraOrg
EAI

InterOrg
B2B / SoA

P2P   **P2A**   **A2A**

Collaborative   Document-oriented   Transactional

2 Implementation
Generic Infrastructures

ongoing

Scope

3 Enactment
Events, Routing, Tasks

Werner Re

Own Contributions to WfM
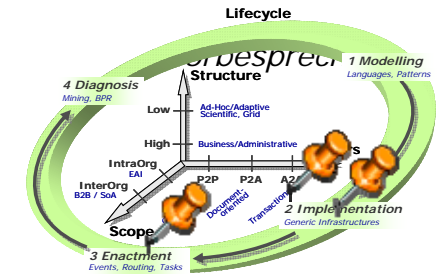## … from Implementation to Modelling Aspects

1994   **TriGS***flow*

- WfMS using the Smalltalk-based OODBS „GemStone"
- Roles and objects for organisational modeling
- ECA rules for Wf-Enactment

"Workflow Management based on Objects, Rules and Roles".
Co-Authors: G. Kappel, P. Lang, S. Rausch-Schott, in:
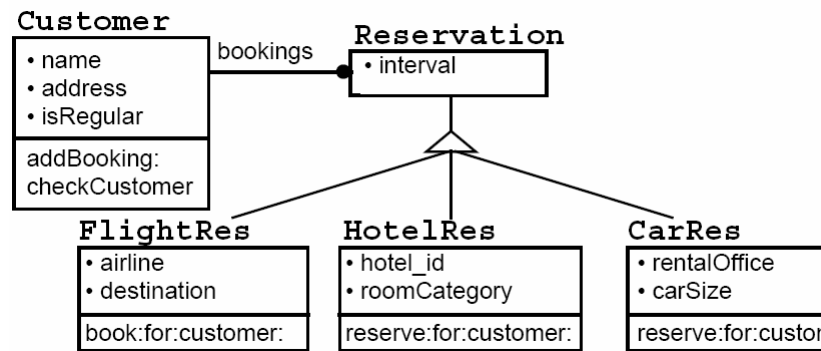**IEEE Bulletin on Data Engineering**, Vol. 18/1, March 1995.
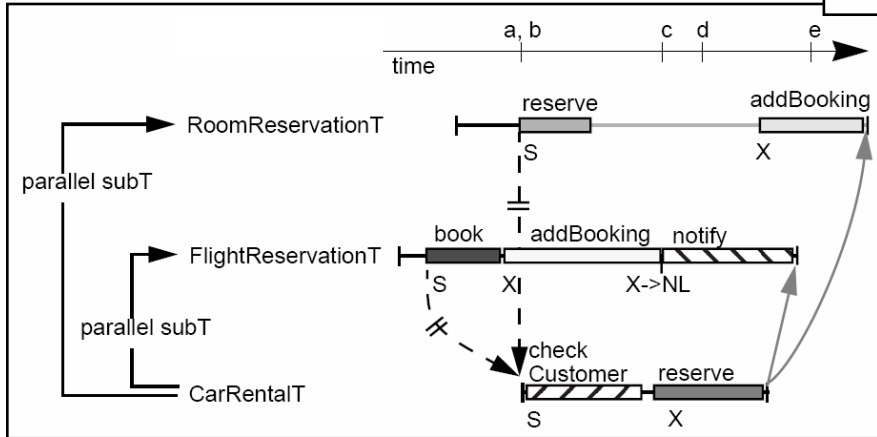
1994 **TriGS**_flow_

1996 **Multi-Parent Subtransactions**

- Extended nested transaction model for ensuring Wf-Consistency in face of composite triggering events
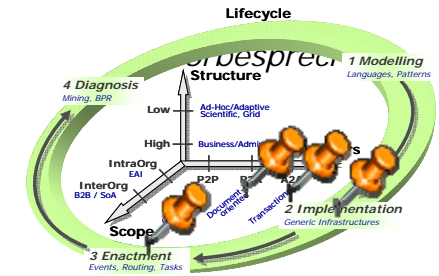


```
DEFINE RULE reserveRentalCar AS
ON e1:(PRE(Hotel, reserve:roomRequest for:interval
                customer:aCust) AND
   e2:PRE(Airline, book:destination for:interval
                customer:aCust)) DO
IF checkCustomer /* regular customer &
                accepts cheap rental car offer */ THEN
EXECUTE rentalOffice reserve:compact for:e1.interval
                customer:aCust
TRANSACTION MODES((e1:PARALLEL SUBT, e2:PARALLEL SUBT))
END RULE reserveRentalCar.
```

"Multi-Parent Subtransactions – Covering the Transactional Needs of Composite Events". Co-Authors: G. Kappel, S. Rausch-Schott, M. Sakkinen, in: Proc. of the **Int. Workshop on Advanced Transaction Models and Architectures (ATMA), in conj. with VLDB**, Goa, India, Sept. 1996.

Own Contributions to WfM
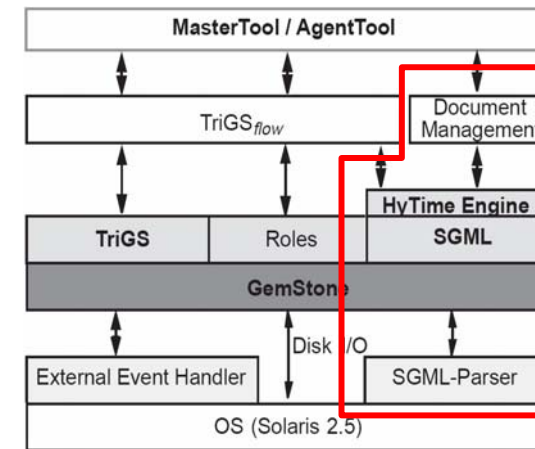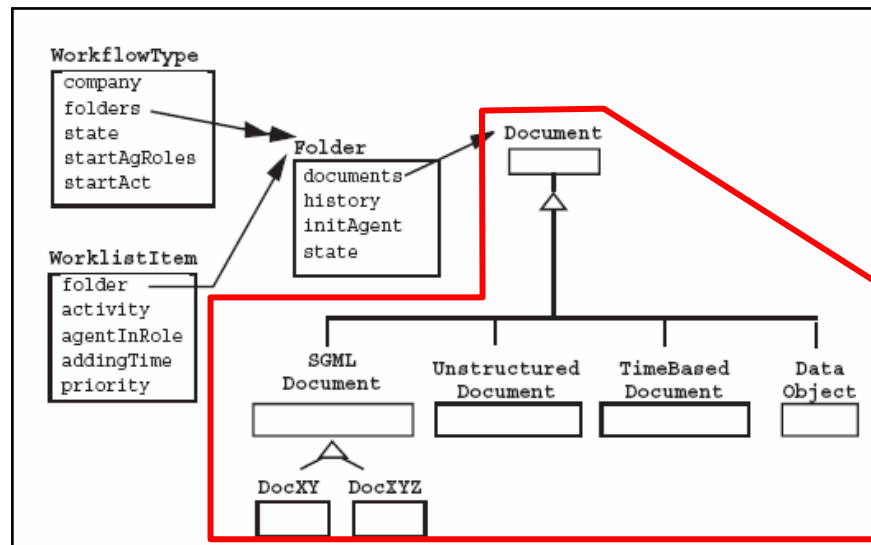## ... from Implementation to Modelling Aspects

1994   **TriGS**_flow_

1996   **Multi-Parent Subtransactions**

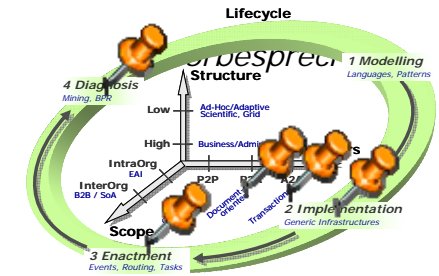**1997**   **Hypermedia Document-based Workflow**
- Enabling TriGS_flow_ to exchange interlinked documents across system boundaries in a platform-independent way

"Hypermedia Document and Workflow Management Based on Active Object-Oriented Databases". Co-Authors: G. Kappel, S. Rausch-Schott, S. Reich, in: **Proc. of the 30th Hawaiian Int. Conf. on System Sciences (HICSS), IEEE**, Maui, Hawaii, Jan. 1997.

Own Contributions to WfM
... from Implementation to Modelling Aspects

1994 **TriGS**$_{flow}$

1996 **Multi-Parent Subtransactions**

1997 **Hypermedia Document-based Workflow**

1999 **Industry Project: ProPat**

- Process Optimization for Patient-Orientation
- Business Process Re-Engineering and WfMS Support in Health Care Domain

VINZENZ GRUPPE

Generic Patient Treatment Workflow

Aufnahme > Anamnese > Diagnostik > Therapie > Entlassung

Orthopädie

Interne

HNO

Konservativ   Operativ

Einleitung   Schnitt/Naht   Ausleitung

Own Contributions to WfM
... from Implementation to Modelling Aspects
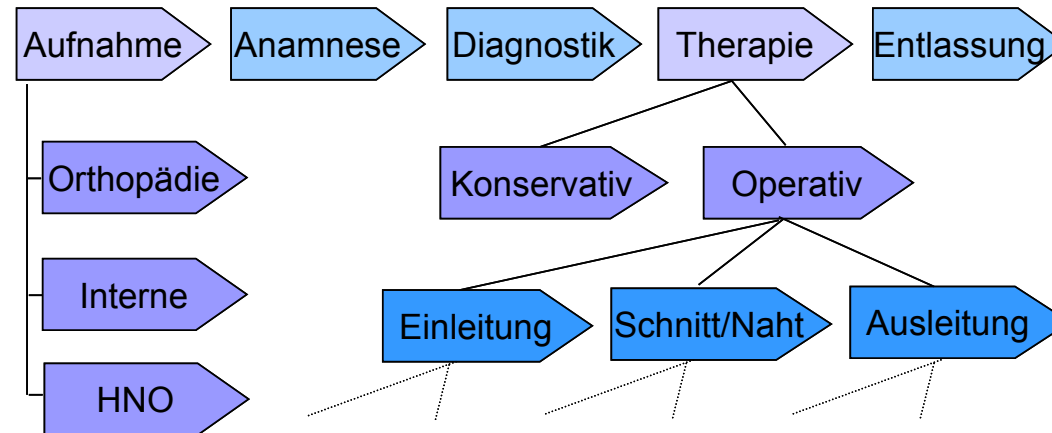
1994 **TriGS**_flow_

1996 **Multi-Parent Subtransactions**

1997 **Hypermedia Document-based Workflow**

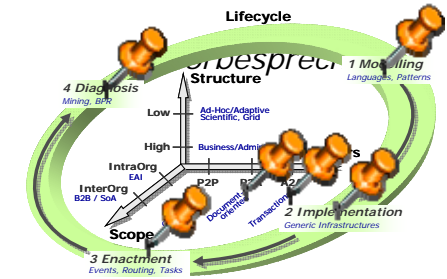**1999** **Industry Project: ProPat** VINZENZ GRUPPE[·ius]

2000 **Rule Patterns for WfMS**

- A framework of interaction rule patterns and coordination policies for WfMS

		End of Interaction		
		Synchronous	**Asynchronous**	**Future Synchronous**
Start of Interaction / Synchronous	Timeout = ∞	Blocker	Asynchronous Blocker	Future Blocker
	Timeout = ⏱	Timeout Blocker	Asynchronous Timeout Blocker	Future Timeout Blocker
	Timeout = 0	Balker	Asynchronous Balker	Future Balker
Asynchronous		*not applicable*	Asynchronizer	Future Synchronizer

"Rule Patterns – Bottom-up Design of Active Object-Oriented Databases". Co-Authors: G. Kappel, S. Rausch-Schott, M. Sakkinen, in: **Communications of the ACM (CACM)**, Vol. 44/4, April 2001.
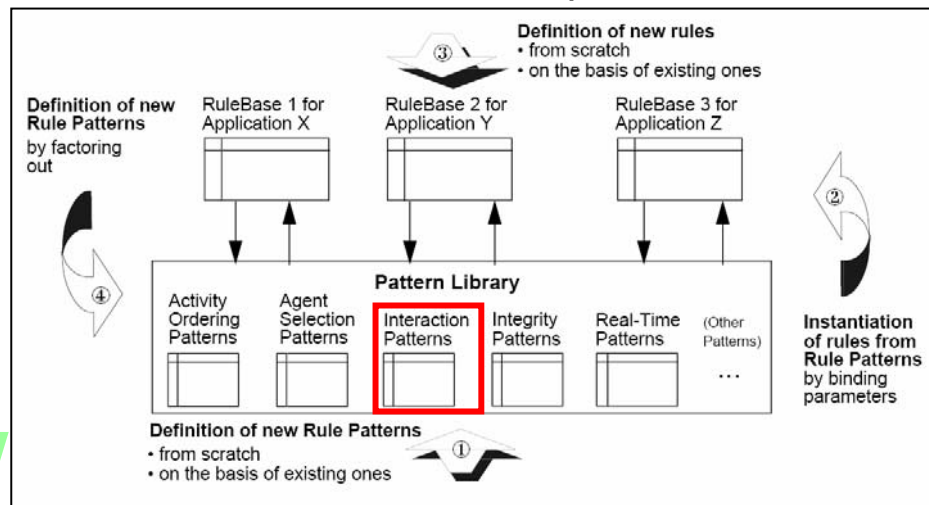
Own Contributions to WfM
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1994 **TriGS**_flow_

1996 **Multi-Parent Subtransactio**

1997 **Hypermedia Document-bas**

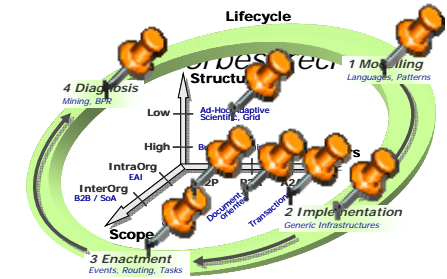**1999** **Industry Project: ProPat**

2000 **Rule Patterns for WfMS**

2002 **Industry Project: Co-flow**

- Industrialization of **TriGS**_flow_ and extension for adaptable / ad-hoc workflows

- Incorporating **TriGS**_flow_ into **SIEMENS product CONDIS** (Communication Network Documentation and IFS)
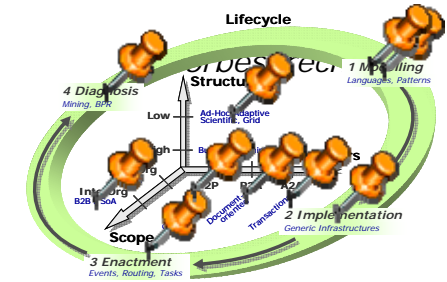
Own Contributions to WfM
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1994 TriGS_flow_

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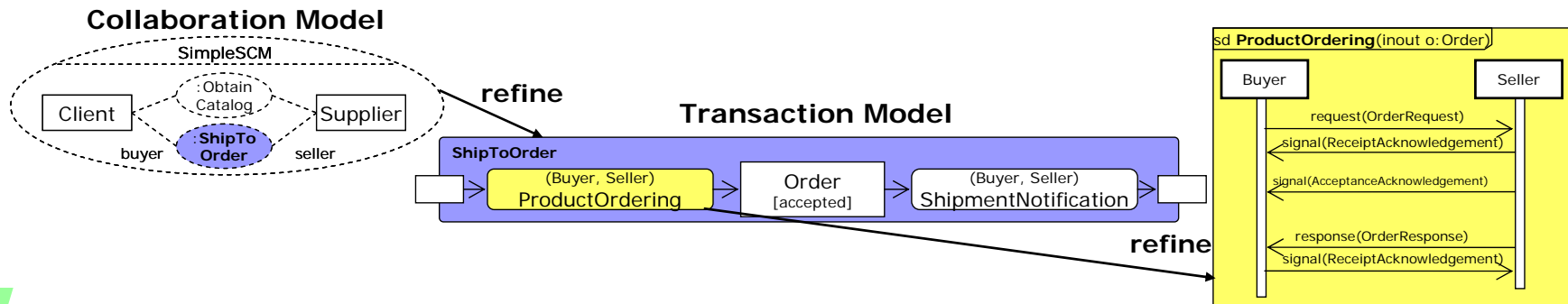
1997 Hypermedia Document-based Workflow

1999 Industry Project: ProPat VINZENZ GRUPPE[ⁱᴮⁱˢ]

2000 Rule Patterns for WfMS

2002 Industry Project: Co-flow SIEMENS PSE

2005 Modelling B2B Workflows

- Modelling **collaboration protocols** between **Web Services**

Collaboration Model

SimpleSCM

Client — :Obtain Catalog — Supplier
buyer   :ShipTo Order   seller

refine

Transaction Model

ShipToOrder
(Buyer, Seller) ProductOrdering → Order [accepted] → (Buyer, Seller) ShipmentNotification

refine

sd **ProductOrdering**(inout o:Order)

Buyer | Seller
request(OrderRequest)
signal(ReceiptAcknowledgement)
signal(AcceptanceAcknowledgement)
response(OrderResponse)
signal(ReceiptAcknowledgement)

Interaction Model

"Towards Using UML2 for Modelling Web Service Collaboration Protocols".
Co-Authors: G. Kappel, G. Kramler, E. Kapsammer, in: Proc. of the 1st Int.
Conf. on **Interoperability of Enterprise Software and Applications,
(INTEROP-ESA)**, Geneva, Switzerland, Feb. 2005.

Own Contributions to WfM
... from Implementation to Modelling Aspects

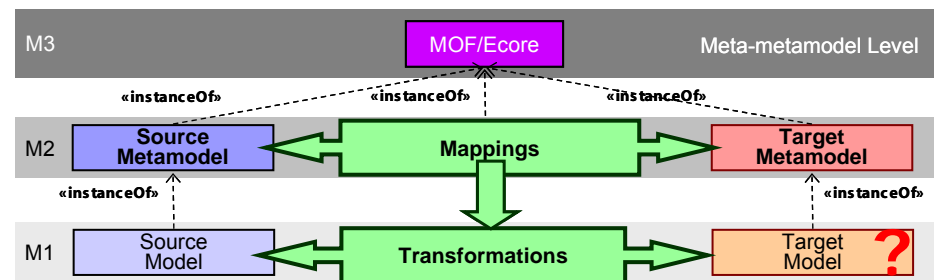|	
1994	**TriGS***flow*
1996	**Multi-Parent Subtransactions**
1997	**Hypermedia Document-based Workflow**
1999	**Industry Project: ProPat** VINZENZ GRUPPE|*isis*
2000	**Rule Patterns for WfMS**
2002	**Industry Project: Co-flow** SIEMENS PSE
2005	**Modelling B2B Workflows**
	Industry Consulting: BALI QUELLE.
ongoing	**Model-Driven Integration**

- Modelling translations between heterogeneous (Wf) languages

From Models to Ontologies: A Step to the Semantic Integration of Modeling Languages". Co-Authors: G. Kappel, et al., in: **Proc. of the ACM/IEEE 9th Int. Conf. on Model Driven Engineering Languages and Systems (MODELS/UML)**, Genova, Italy, October 2006.

Ziele der LVA
Kenntnis ...

- ... des grundsätzlichen **Aufbaus** von WfMS

- ... der wichtigsten **Einsatzbereiche** von WfMS

- ... der **Modellierung** von Wfs und **Umsetzung** mittels WfMS

- ... der wichtigsten **Basistechnologien** für WfMS

- ... der wichtigsten klassischen / aktuellen WfMS-**Literatur**

- ... der **zukünftigen Entwicklungen** im WfMS-Bereich

Inhalte der LVA

M1: **Einführung in WfMS**

M2: **Wf-Modellierung – Grundlagen**

M3: **Wf-Modellierungssprachen**
- UML2 Aktivitätsdiagramme
- BPMN et al.
- Exkurs: XPDL als Speicher-/Austauschformat

M4: **Wf-Composition**
- BPEL4WS

M5: **Exkurs: Petri-Netze**

M6: **Wf-Patterns**

M7: **Wf-Evolution & Mining**

Organisatorisches 1/4

- **LVA-Beurteilung**
  - Klausur, ohne Unterlagen! (50% Notenanteil)
  - Präsentation eines Workflow-Werkzeugs (50% Notenanteil)
  - Mitarbeit – kann Note um 1 Grad verbessern
- **Skriptum**
  - Jeweils spätestens am Vortag der LVA online
  - `http://www.pri.univie.ac.at/courses/wt/ws08/`
- **LVA-Termine / Raum**
  - Mittwoch, 13.00-16.00, wöchentlich
  - HS 26 (HG)

- **Kontakt LVA-Leiter**

  a.Univ.-Prof. Dr. Werner Retschitzegger

  Fakultät für Informatik, BIS, Universität Wien

  Rathausstrasse 19, 1010 Wien

  werner.retschitzegger@univie.ac.at

Organisatorisches 2/4
LVA-Blöcke

- **M0: Vorbesprechung**
  - 8. Okt.
- **M1 + M2: Einführung in WfMS / Wf-Modellierung**
  - 15. Okt.
- **M3 + M4: Wf-Modellierungsprachen / Wf-Composition**
  - 22. Okt.
- **Fragestunde zu Präsentationen**
  - 29. Okt.
  - Jeweils 15 min pro Gruppe
- **M5 + M6: Exkurs: Petri Netze / Wf-Patterns**
  - 5. Nov.
- **M7: Wf-Evolution und -Mining**
  - 12. Nov.
- **Präsentationen**
  - 2-3 Blöcke: 19. / 26. Nov., 3. Dez.

Organisatorisches 3/4
Werkzeug-Präsentationen – Ablauf

- **Bildung von 3er-Gruppen**
  - Online, inkl. Themenzuordnung unter:
    `http://www.pri.univie.ac.at/courses/wt/ws08/`

- **45-minütige Präsentation + Diskussion**

- **Theoretische Vorstellung der Grundlagen des Werkzeugs**
  - Evaluierung des Werkzeugs anhand eines selbstzuerstellenden Kriterienkatalogs (systematisch!) – nicht nur die Inhalte der VO dazu verwenden!

- **Praktische Online-Demo anhand eines aussagekräftigen Beispiels**

- **Fragestunde:**
  - Die Gruppen müssen sich bereits eingehend mit der Thematik beschäftigt haben
  - Auch Fragen an die Gruppen!

Organisatorisches 4/4
Werkzeug-Präsentationen – Themen

(1) Oracle BPEL Process Manager
- http://www.oracle.com/technology/products/ias/bpel/index.html

(2) Orchestra BPEL Process Engine
- http://orchestra.objectweb.org/xwiki/bin/view/Main/WebHome

(3) Windows Workflow Foundation
- Teil von Visual Studio 2008
- http://msdn.microsoft.com/de-de/netframework/aa663328.aspx

(4) @enterprise
- Austrian WfMS!
- http://www.groiss.com/index_en.html

(5) Eclipse Workflow
- http://www.eclipse.org/jwt/

(6) Open Workflow Engine
- http://openwferu.rubyforge.org/

(7) jBPM
- http://sourceforge.net/projects/jbpm/