

Using Process Mining to Study Business Phenomena

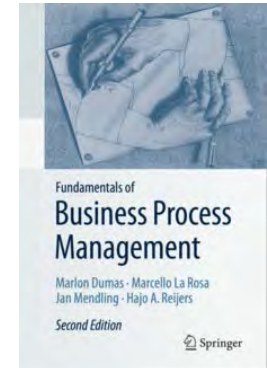
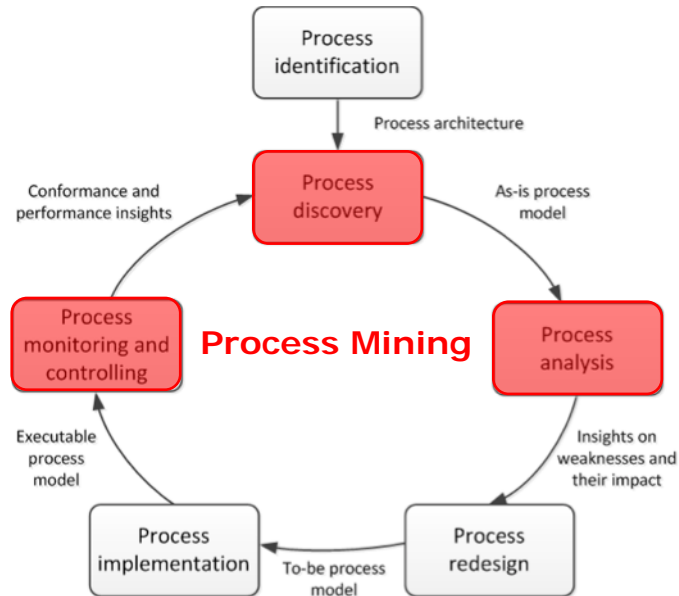
Prof. Dr. Jan Mendling

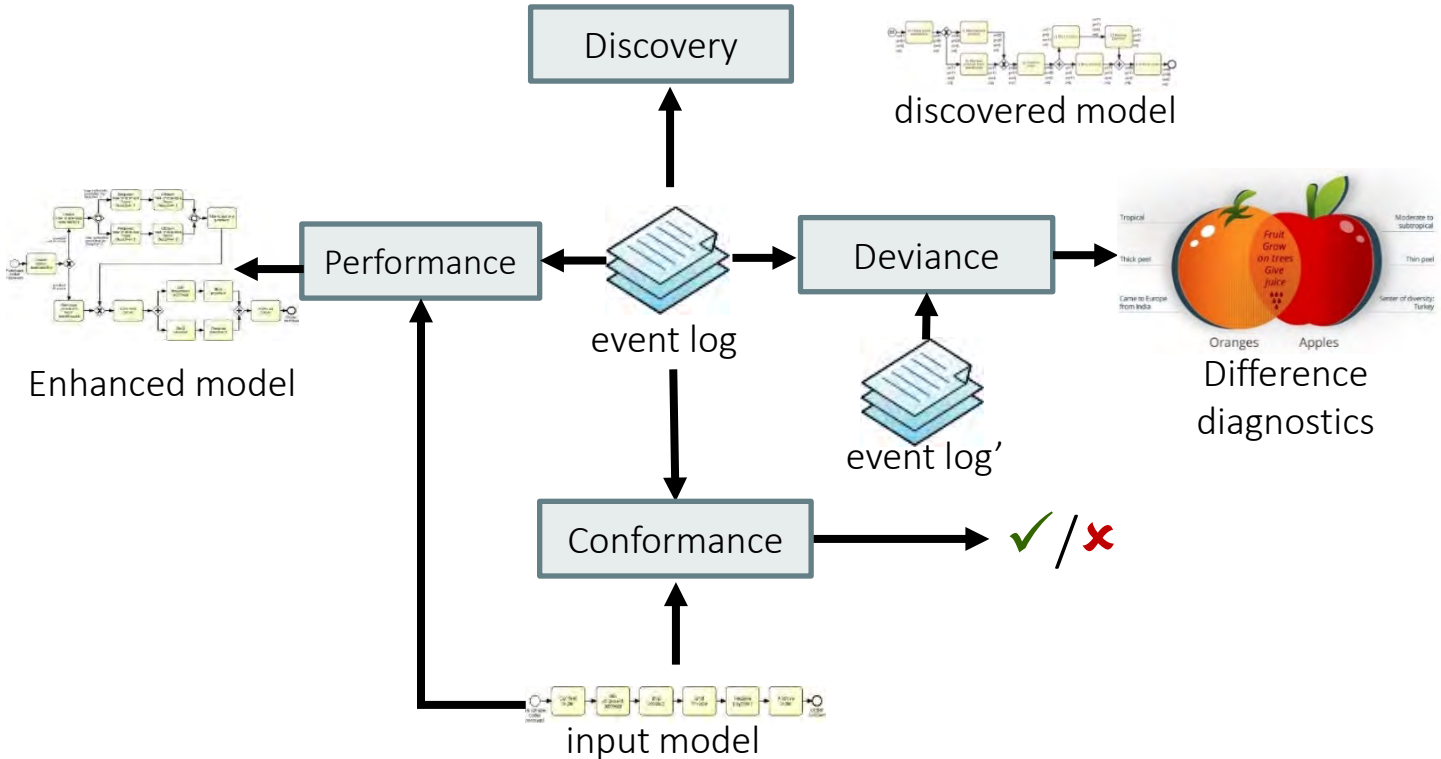


WIRTSCHAFTS
UNIVERSITÄT
WIEN VIENNA
UNIVERSITY OF
ECONOMICS
AND BUSINESS



Locating Process Mining in BPM Lifecycle





Starting Point: Event logs

order number	activity	timestamp	user	product	quantity
9901	register order	22-1-2014@09.15	Sara Jones	iPhone5S	1
9902	register order	22-1-2014@09.18	Sara Jones	iPhone5S	2
9903	register order	22-1-2014@09.27	Sara Jones	iPhone4S	1
9901	check stock	22-1-2014@09.49	Pete Scott	iPhone5S	1
9901	ship order	22-1-2014@10.11	Sue Fox	iPhone5S	1
9903	check stock	22-1-2014@10.34	Pete Scott	iPhone4S	1
9901	handle payment	22-1-2014@10.41	Carol Hope	iPhone5S	1
9902	check stock	22-1-2014@10.57	Pete Scott	iPhone5S	2
9902	cancel order	22-1-2014@11.08	Carol Hope	iPhone5S	1
...

Process Mining

case id

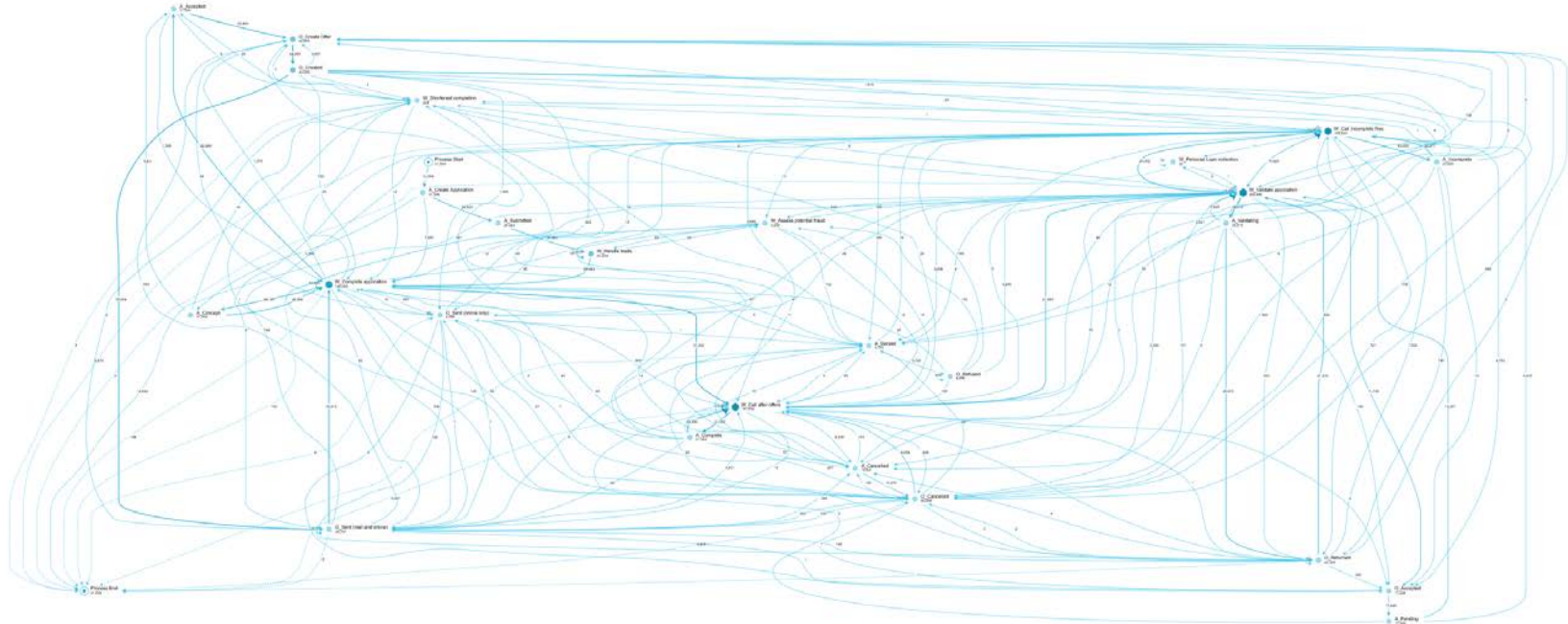
activity name

timestamp

resource

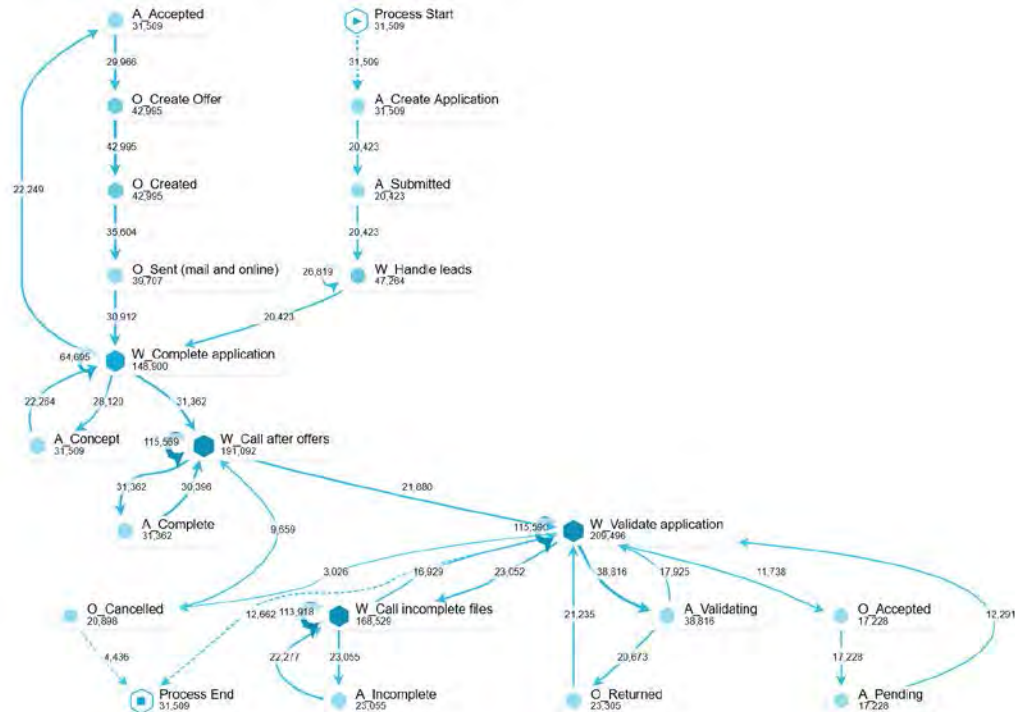
other data

Raw process maps of a real-life log (In Celonis)



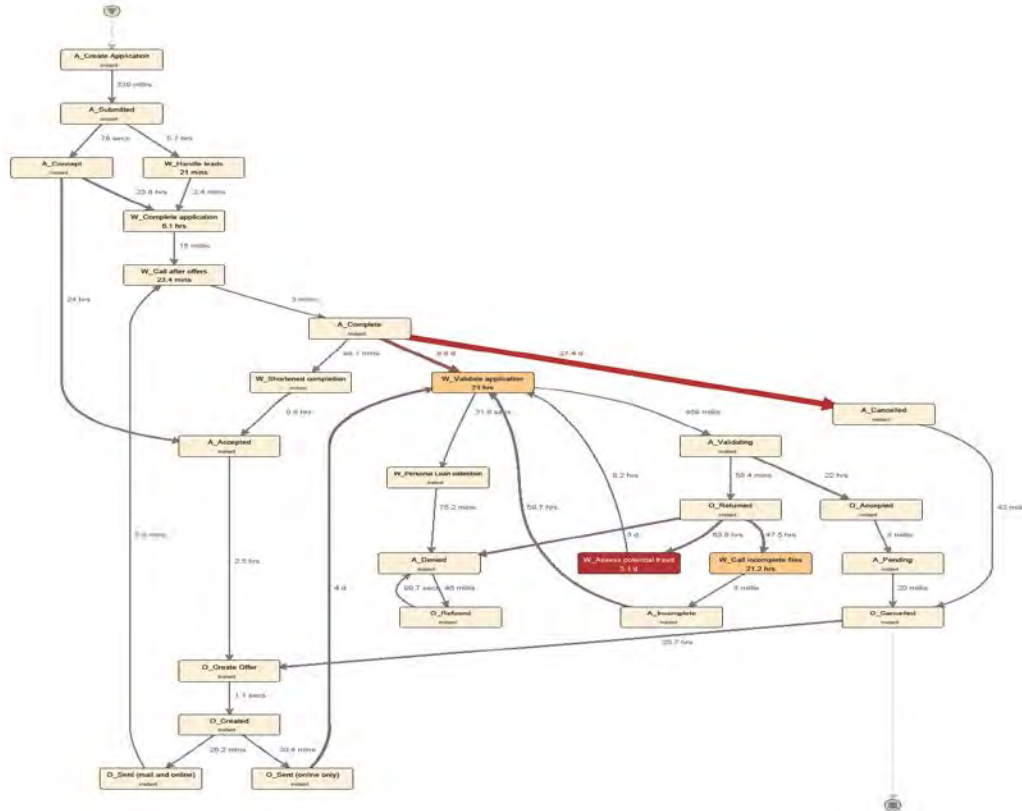
Abstracted map (In Celonis)

90% of node abstraction, 98% arc abstraction

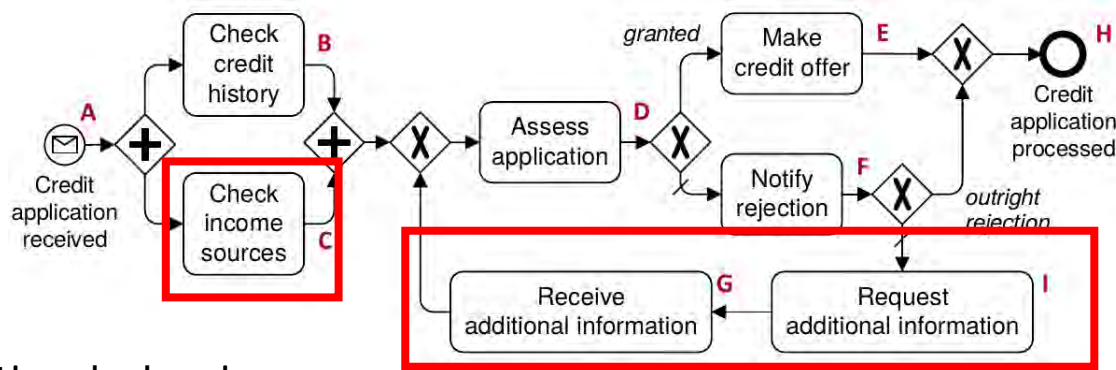


Performance-enhanced process map

Nodes are activities (default)



Conformance Checking: Unfitting vs. Additional Behavior

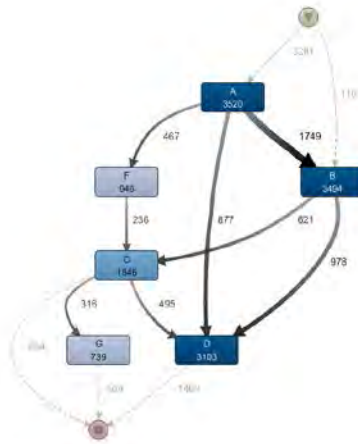


- Unfitting behaviour:
- Task C is optional (i.e. may be skipped) in the log
- Additional behavior:
- The cycle including IGDF is not observed in the log

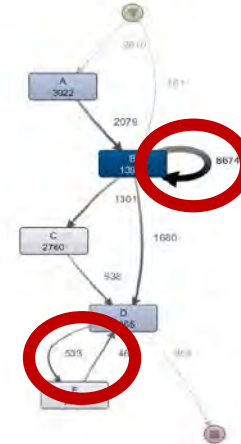
Event log:

ABCDEH
ACBDEH
ABCD FH
ACBDFH
ABDEH
ABDFH

Variants Analysis via Model Differencing



Model
Delta
Analysis



Simple claims and quick

Simple claims and slow

Business Impact of Process Mining

<p>Speed:</p> <ul style="list-style-type: none">• Cycle time• Time to delivery• Time to cash	<p>Quality:</p> <ul style="list-style-type: none">• Reducing rework• Reducing cancellations
<p>Costs:</p> <ul style="list-style-type: none">• Reduced inventory• Variant reduction	<p>Compliance:</p> <ul style="list-style-type: none">• Regulatory compliance• As-is versus to-be comparison

What Process Mining is not

- It is not a project
- It does not automate processes
- It does not give answers
- It does not replace analysts
- It is a technique that supports projects
- It helps to spot what to automate
- It helps finding answers
- It accelerates analysts



https://cdn-images-1.medium.com/max/1200/1*KZ2ALuUn70HRyPKuS7Rk5Q.jpeg



<https://www.paul-consultants.de/wp-content/uploads/2019/01/Folie25-1024x768.jpg>

What process mining is



[https://ftaelectronics.com/image/cache/catalog/Satellite%20Finders/Small%20Plastic%20Compass%20for%20Aiming%20with%20Satellite%20Dish%20Finder%20\(4\)-1024x768_0.jpg](https://ftaelectronics.com/image/cache/catalog/Satellite%20Finders/Small%20Plastic%20Compass%20for%20Aiming%20with%20Satellite%20Dish%20Finder%20(4)-1024x768_0.jpg)
<http://www.wandern.org/images/bergwandern.jpg>
<https://opelit-bikes.de/wp-content/uploads/2015/09/opelit-altkoenig-mountainbike.jpg>

Research on Routine Dynamics

		CENTRALITY	
		Peripheral	Central
DEPTH	Surface	Easy to change: habit is accessible and nonconsequential	Moderate: potential problem is opening Pandora's box
	Buried	Moderate: potential problem is getting access to the habit, awareness of it	Difficult to change: habit is inaccessible and consequential

ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES 47, 65-97 (1990)

Habitual Routines in Task-Performing Groups

CONNIE J. G. GERSICK

University of California, Los Angeles

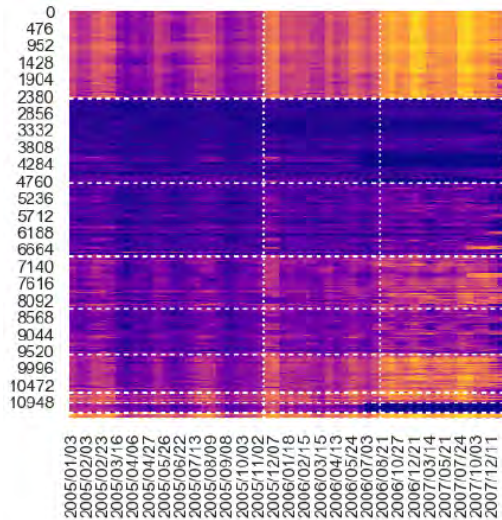
AND

J. RICHARD HACKMAN

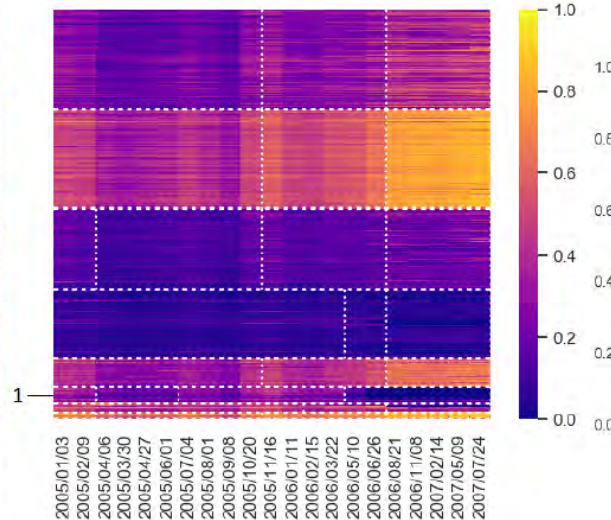
Harvard University

Groups, like individuals, often develop habitual routines for dealing with frequently encountered stimuli. Although such routines are consequential for group life and work, little is known about them. This paper reconnoiters the territory of habitual behavior in groups that perform work within organizations. We offer a definition of group habits, identify their functions and dysfunctions, suggest how they develop and are maintained, and identify the circumstances when they are likely to be altered or abandoned. Throughout, we give special attention to the social nature of habitual routines in groups, to the interaction between habitual behavior and group life cycle phenomena, and to the role of the organizational context in prompting, shaping, and terminating habitual routines. © 1990 Academic Press, Inc.

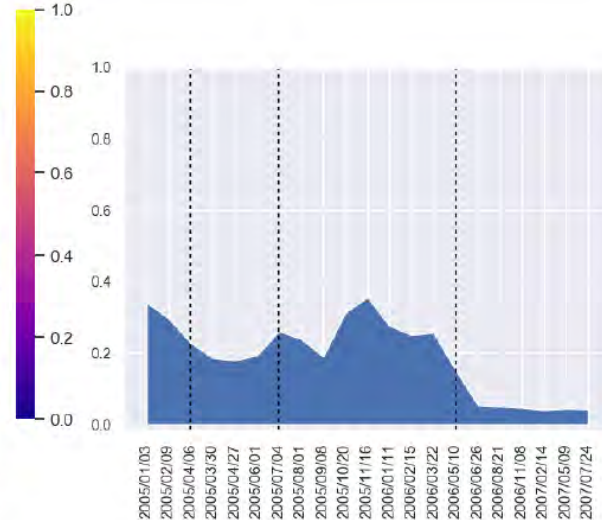
Change of Behaviour over Time (Work with Anton Yeshchenko et al.)



(a) Overall change points

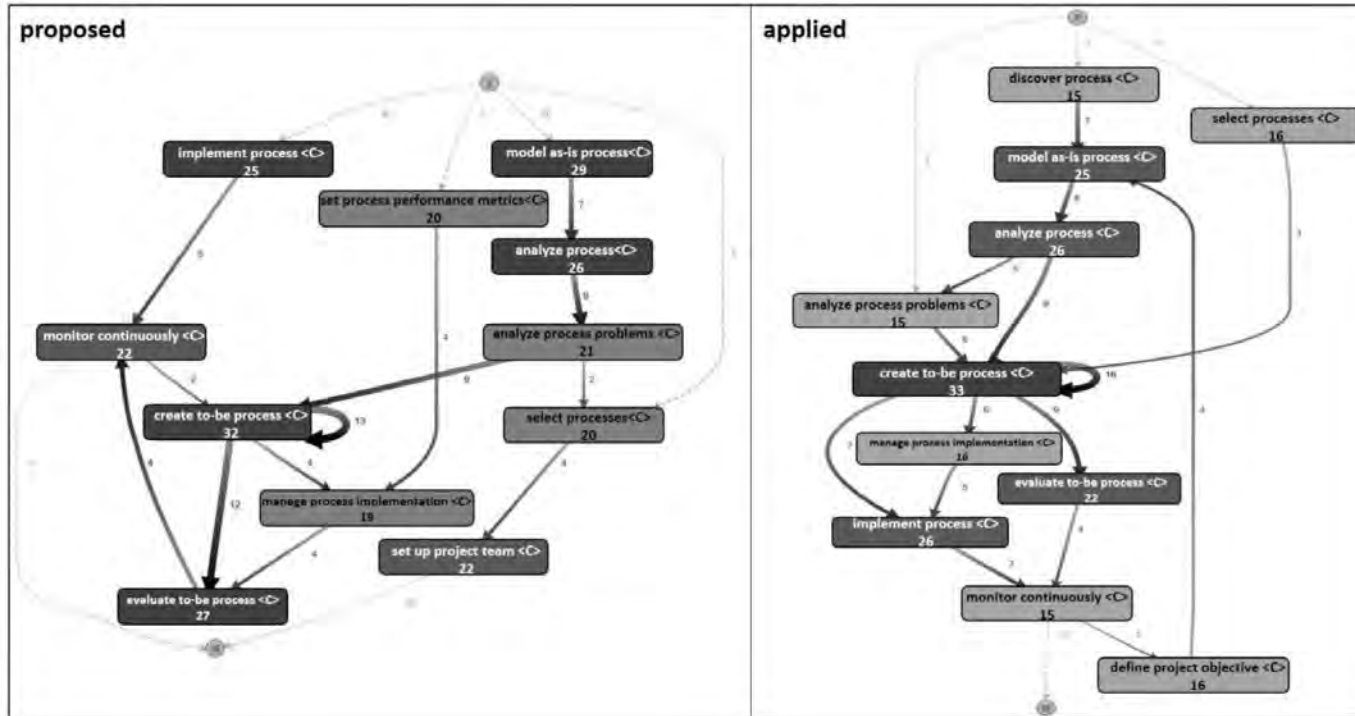


(b) Drifts by cluster

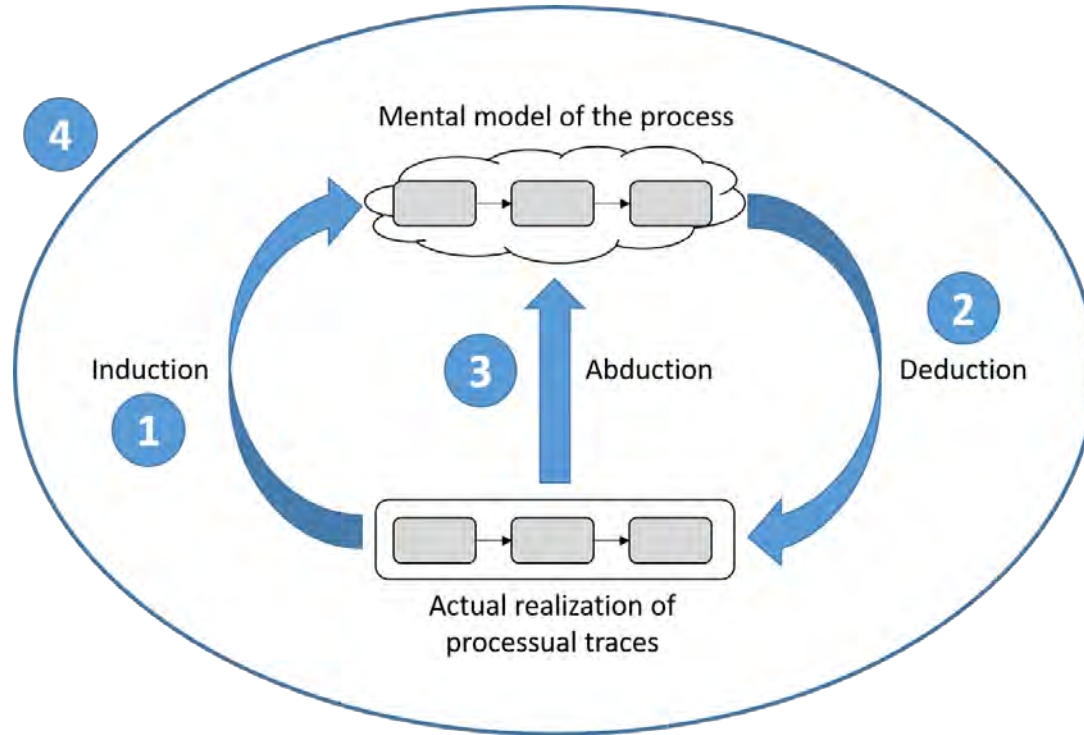


(c) Most erratic cluster

Method Mining (Work with Steven Groß et al.)



Epistemological Perspectives (Work with Bastian Wurm et al.)



Take Aways

- Event Data is Everywhere – we have to make it useful
- Process Mining is the key to evidence-based process improvement
- Business analysts become faster and more effective with process mining
- Process Mining bears also the potential to serve as a research method



VIENNA UNIVERSITY OF
ECONOMICS AND BUSINESS

Prof. Dr. Jan Mendling
Wirtschaftsuniversität Wien - WU Vienna
Institute for Information Business
Building D2, Entrance C, 3rd Floor
Welthandelsplatz 1, 1020 Vienna, Austria
Email: jan.mendling@wu.ac.at
Phone: +43 1 31336 5200
Fax: +43 1 31336 739
Web: <http://www.mendling.com>
Office: <http://www.wu.ac.at/infobiz/contact>

