

Mining Bureaucracy Debt

Process Intelligence for Evidence-Based Deregulation

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Mining Bureaucracy Debt: Process Intelligence for Evidence-Based Deregulation

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Abstract—Administrative processes accumulate complexity over time. New forms, controls, approvals, reporting duties, and verification steps are introduced in response to incidents, audits, legal changes, political demands, or digitalization projects. These additions are usually individually defensible, but they are rarely reassessed or removed. Surprisingly, digitalization often accelerates this accumulation. Instead of eliminating obsolete procedures, organizations frequently reproduce them in software, add new digital controls, and retain parallel manual practices. The result is bureaucracy debt: the growing burden created by administrative requirements whose original purpose may have weakened, disappeared, or become achievable in a simpler way. This paper introduces bureaucracy mining, the systematic use of process mining and process intelligence to identify, quantify, compare, and reduce bureaucracy debt. We distinguish four layers at which debt may arise (legal, organizational, digital, and operational) and show how each translation from rules to execution may introduce additional burden. We outline longitudinal and comparative forms of bureaucracy mining, emphasize the need for object-centric event data, and argue that process observability and event-data portability are prerequisites for meaningful analysis.

I. INTRODUCTION

DIGITALIZATION is often introduced to make processes more efficient and faster. However, without systematic process-based evaluation, it may preserve old administrative obligations, introduce new ones, and make bureaucracy more deeply embedded in information systems. Work may also be shifted to end users (e.g., citizens or employees). Therefore, we advocate process mining as a tool for evidence-based deregulation.

Bureaucracy debt is analogous to technical debt, but it concerns administrative rules and processes rather than software. Technical debt arises when developers choose a quick

ing text, reports, messages, software, and other content almost effortless. Organizations consequently generate more information than people can meaningfully process, creating additional reading, checking, coordination, and decision-making work.

- *Blurring* occurs when precise, structured, and verifiable information is replaced by plausible but probabilistic AI-generated language. Facts, assumptions, interpretations, and fabricated details become harder to distinguish, reducing transparency and accountability.
- *Blasting* occurs when digital technologies remove the natural constraints that previously limited the scale and speed of communication and action. AI-generated messages, requests, applications, reviews, and decisions can be produced and distributed in enormous volumes, shifting costs and overload to other participants in the process.

Together, these effects illustrate process mindlessness: AI may successfully optimize a local task while making the end-to-end process noisier, less reliable, and more burdensome.

Another factor leading to bureaucracy debt is the tendency of people to systematically overlook subtractive solutions and add “more stuff” instead to solve problems. Adams et al. [8] demonstrate across multiple experiments that, when asked to improve an object, idea, or situation, people are more likely to consider adding components than removing them. Subtractive alternatives become even less likely under cognitive pressure or when people are not explicitly prompted to consider removal. The authors identify institutional red tape as one domain in which this additive bias may have important consequences.

This tendency helps explain why bureaucracy accumulates. When an incident occurs, an audit identifies a weakness

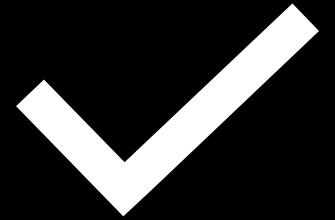


- Introduced in the 16th century by the King of Spain to bind together important documents.
- Later, the red tape was sealed to prevent unauthorized access.
- The only way to access the documents is to cut the seal.
- Over the past 200 years, it has become the symbol of bureaucracy.

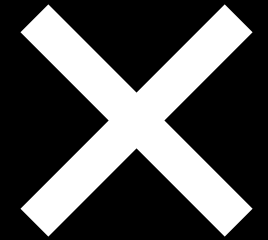


Bureaucracy: A formalized structure with a well-defined hierarchy, division of labor, and standards of operation

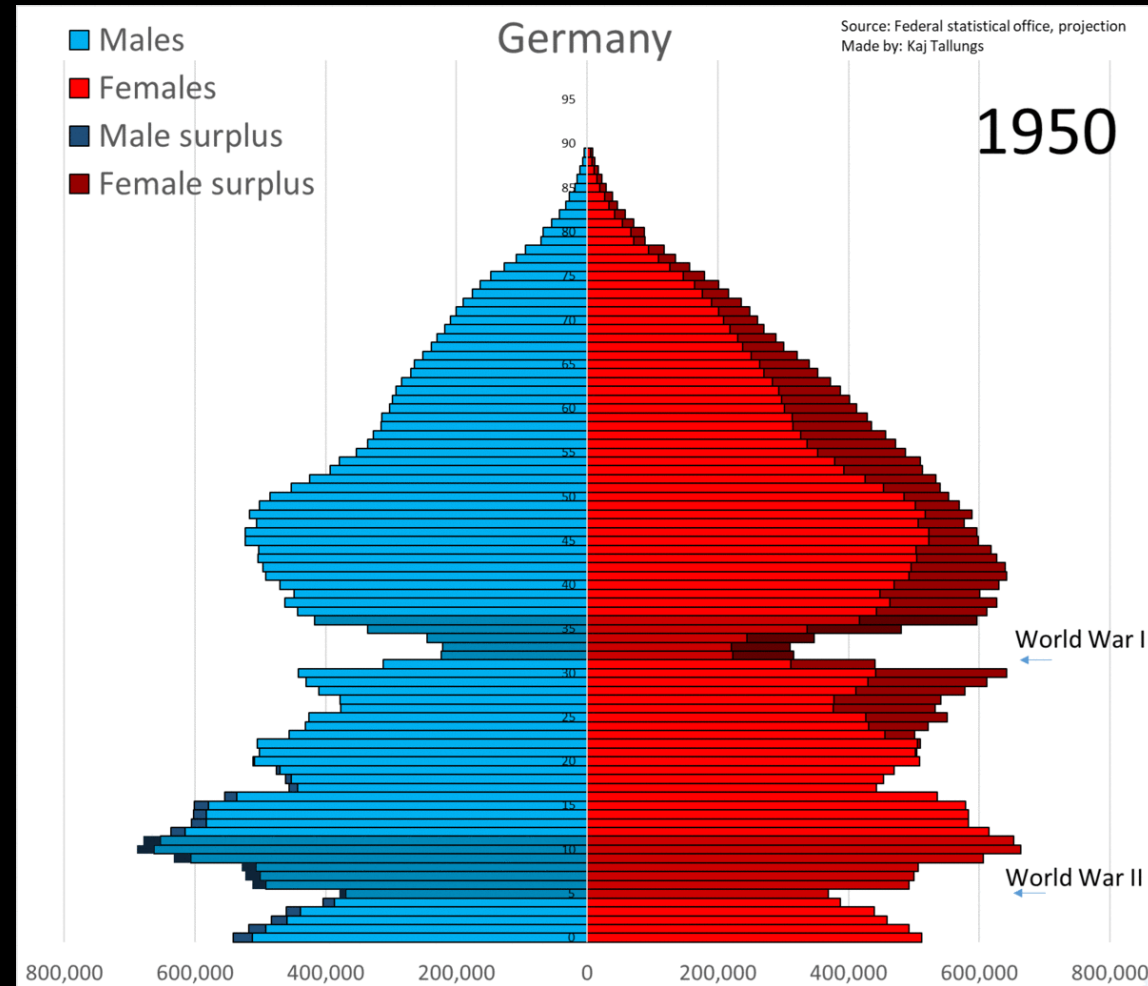
- ☐ **Clear Hierarchy and Roles**
- ☐ **Consistency and Standardization**
- ☐ **Accountability**
- ☐ **Efficiency in Repetition**
- ☐ **Aiming for Fairness**



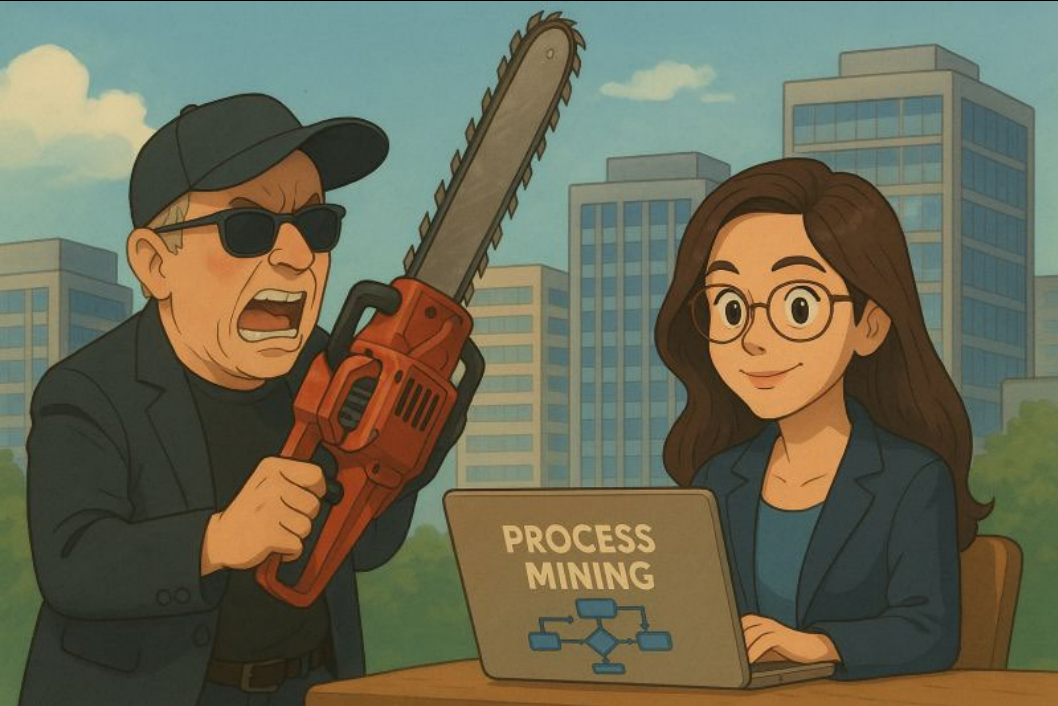
- ☐ **Rigidity and Inability to Deal With Exceptions**
- ☐ **Resistance to Change and Innovation**
- ☐ **Overspecialization – Goals are Forgotten**
- ☐ **Alienation, Impersonal, Demotivation**
- ☐ **Bureaucratic Creep (Self-Perpetuating Growth)**



Aging Society, Increasing Healthcare Costs, ... Can we afford the negative effects of bureaucracy?



In Many Countries, A New Sense of Urgency is Emerging



Karsten Wildberger baut das neue Ministerium für Digitales und Staatsmodernisierung auf. Ein Budget hat er noch nicht. Doch selbst wenn er Geld hätte, will der neue Minister eines nicht mehr kaufen: ein Faxgerät. Allerdings werden auch E-Mails derzeit nicht zuverlässig beantwortet.



British Prime Minister Keir Starmer is hoping that the announcement of billions of pounds of international investment in U.K. projects will overshadow its chaotic build-up.

JONATHAN BRADY - WPA POOL/GETTY IMAGES



The problem is real!

- Based on a survey of approximately 7,000 companies, the Bundesbank estimates that bureaucracy costs rose from around 5% of annual turnover in 2022 to around 7% in 2024.
- The burden is particularly severe for small firms because many compliance and documentation activities involve fixed costs that do not decrease proportionally with firm size.
- Manufacturing firms experienced an increase of more than 50% relative to turnover
- Econometric estimates further suggest that increasing bureaucracy costs may have reduced German productivity growth by approximately 0.5 percentage point between 2022 and 2024.



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Bundesbank Monthly Report: Measurable increase in bureaucracy costs in Germany

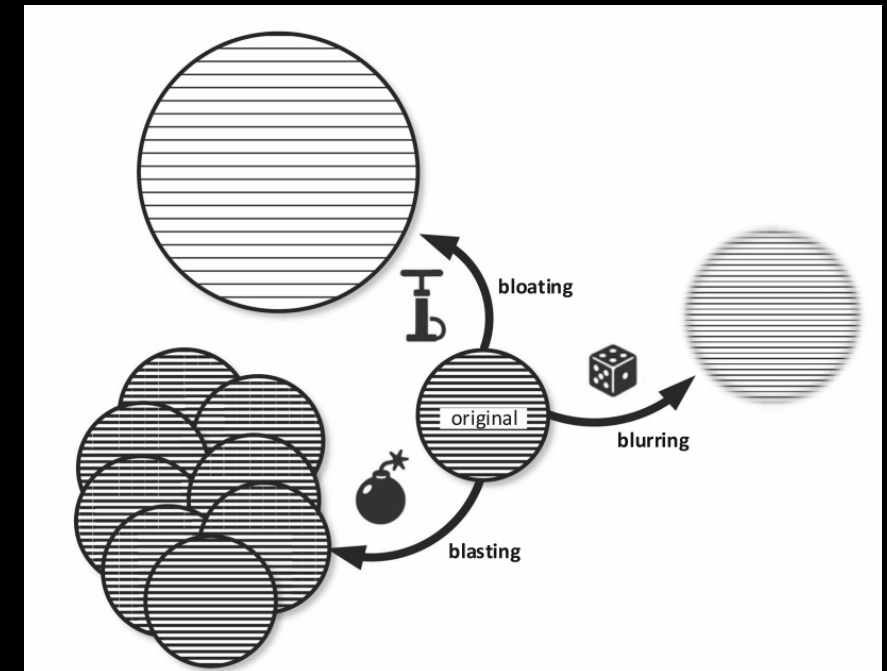
30.07.2026 DE

Bureaucracy costs for firms in Germany have risen significantly in recent years. A new Bundesbank analysis quantifies the rise in bureaucracy costs. On average, they increased between 2022 and 2024 from around 5% to around 7% of annual turnover, according to the latest Bundesbank Monthly Report – which is equivalent to an increase of almost one-half. The ratio of bureaucracy costs to turnover is particularly unfavourable for small enterprises, where bureaucracy consumes already limited working hours to the detriment of productive activities.

**AI will solve this,
right !?**

Not really

- **Bloating** occurs when generative AI makes producing text, reports, messages, software, and other content almost effortless. Organizations consequently generate more information than people can meaningfully process, creating additional reading, checking, coordination, and decision-making work.
- **Blurring** occurs when precise, structured, and verifiable information is replaced by plausible but probabilistic AI-generated language. Facts, assumptions, interpretations, and fabricated details become harder to distinguish, reducing transparency and accountability.
- **Blasting** occurs when digital technologies remove the natural constraints that previously limited the scale and speed of communication and action. AI-generated messages, requests, applications, reviews, and decisions can be produced and distributed in enormous volumes, shifting costs and overload to other participants in the process.

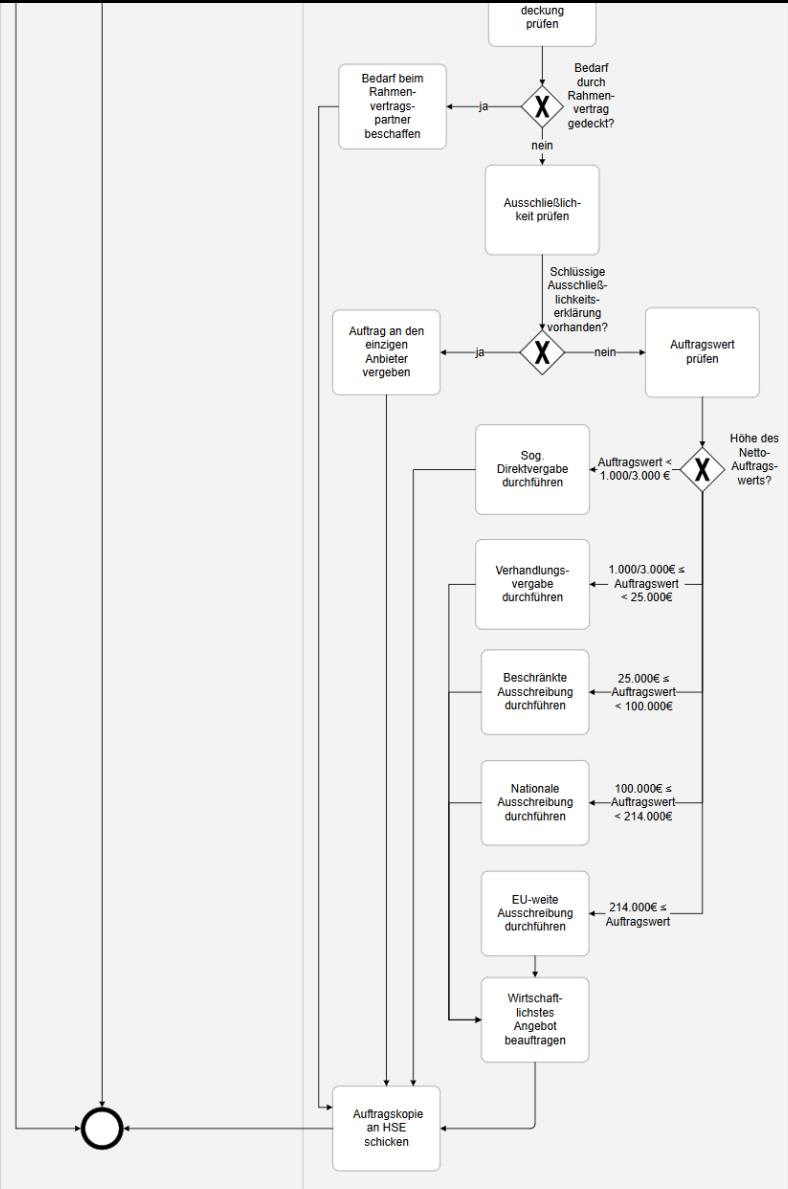
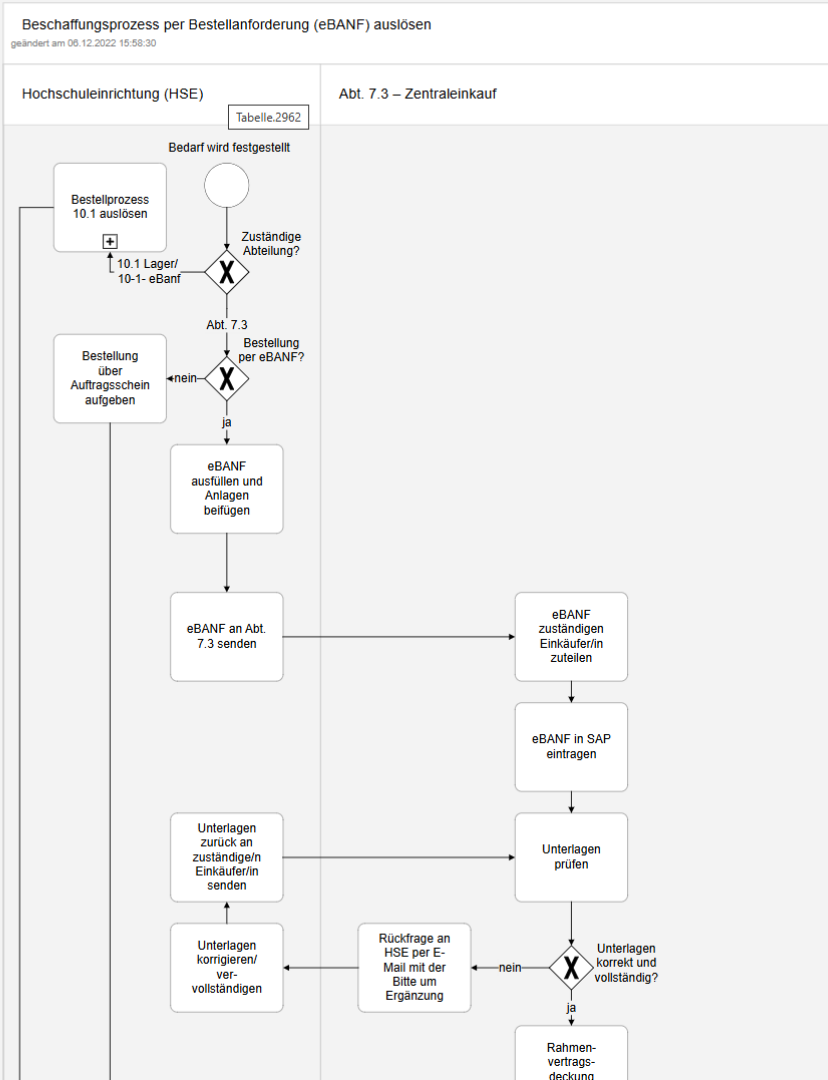


Example

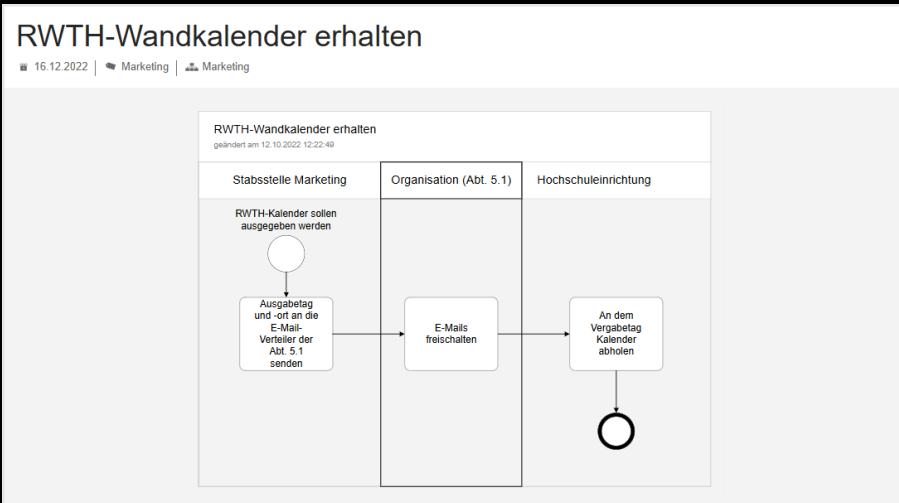
176 BPMN models (available for all via intranet.rwth-aachen.de)

Beschaffungsprozess per Bestellanforderung (eBANF) auslösen

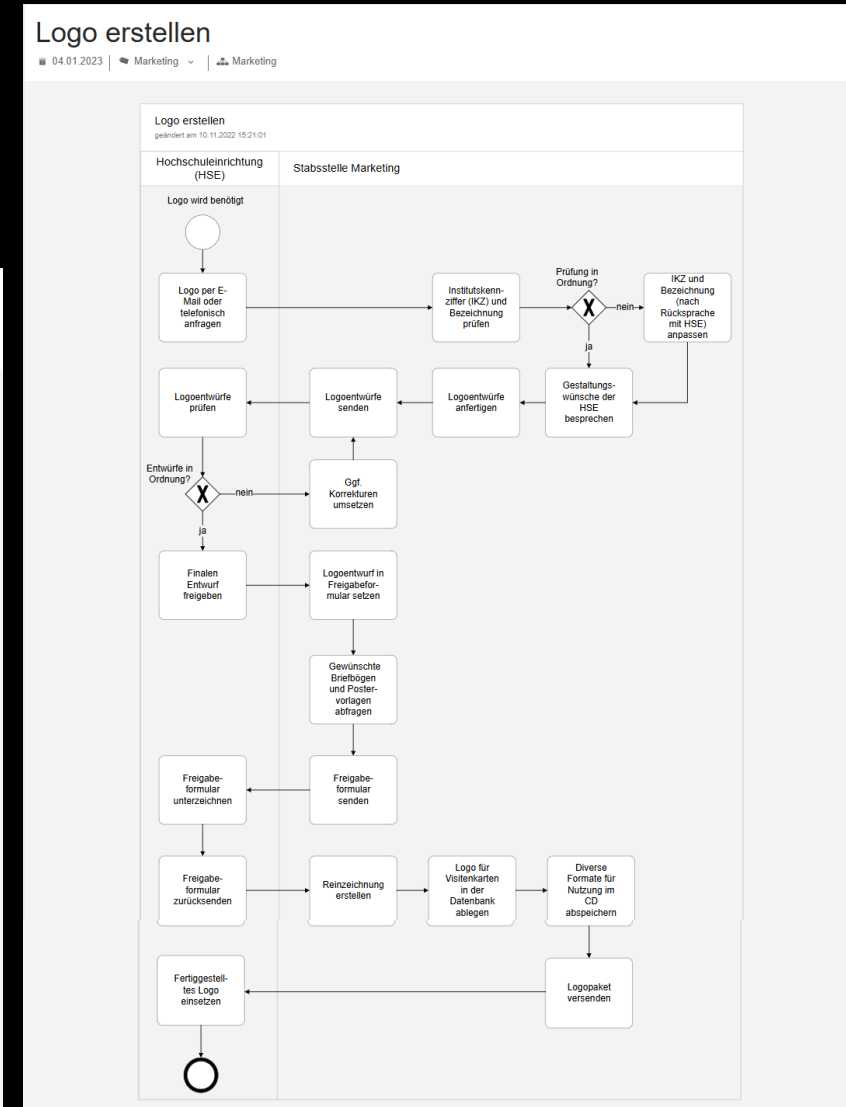
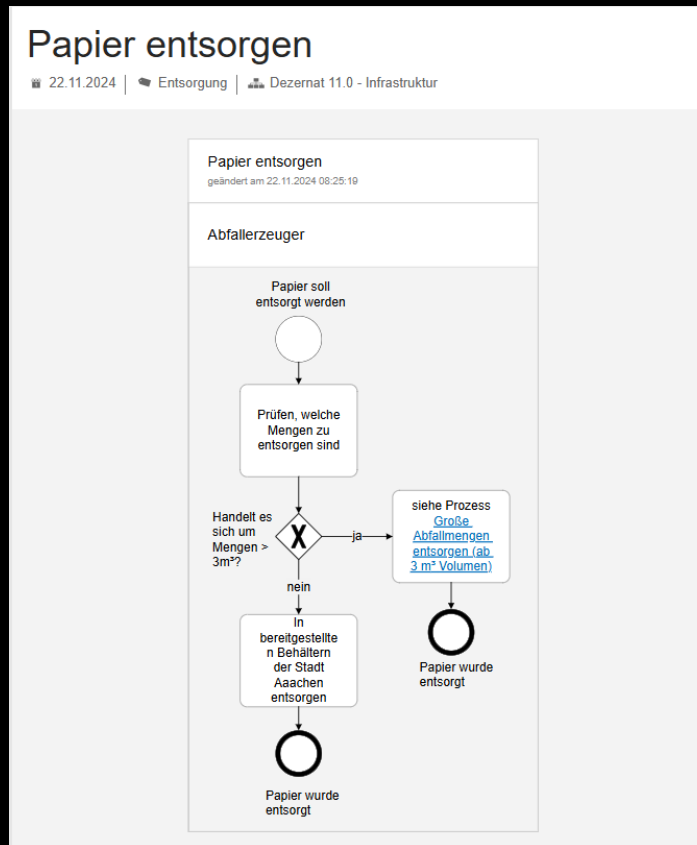
06.12.2022 | Beschaffung | Abteilung 7.3 - Zentraleinkauf



176 BPMN models (available for all via intranet.rwth-aachen.de)



Striking observation: I did not find a single non-sequential process, i.e., no AND or OR gateways or any of the more advanced concepts (only a tiny subset of the > 150 symbols are used).



16 persons from RWTH involved (on average 3 interactions per person, 6 weeks duration)

Historie	xSuite-Historie	xSuite-Historie
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[illegible]

Reality (deliberately made unreadable)

One payment coffee break summer school €995

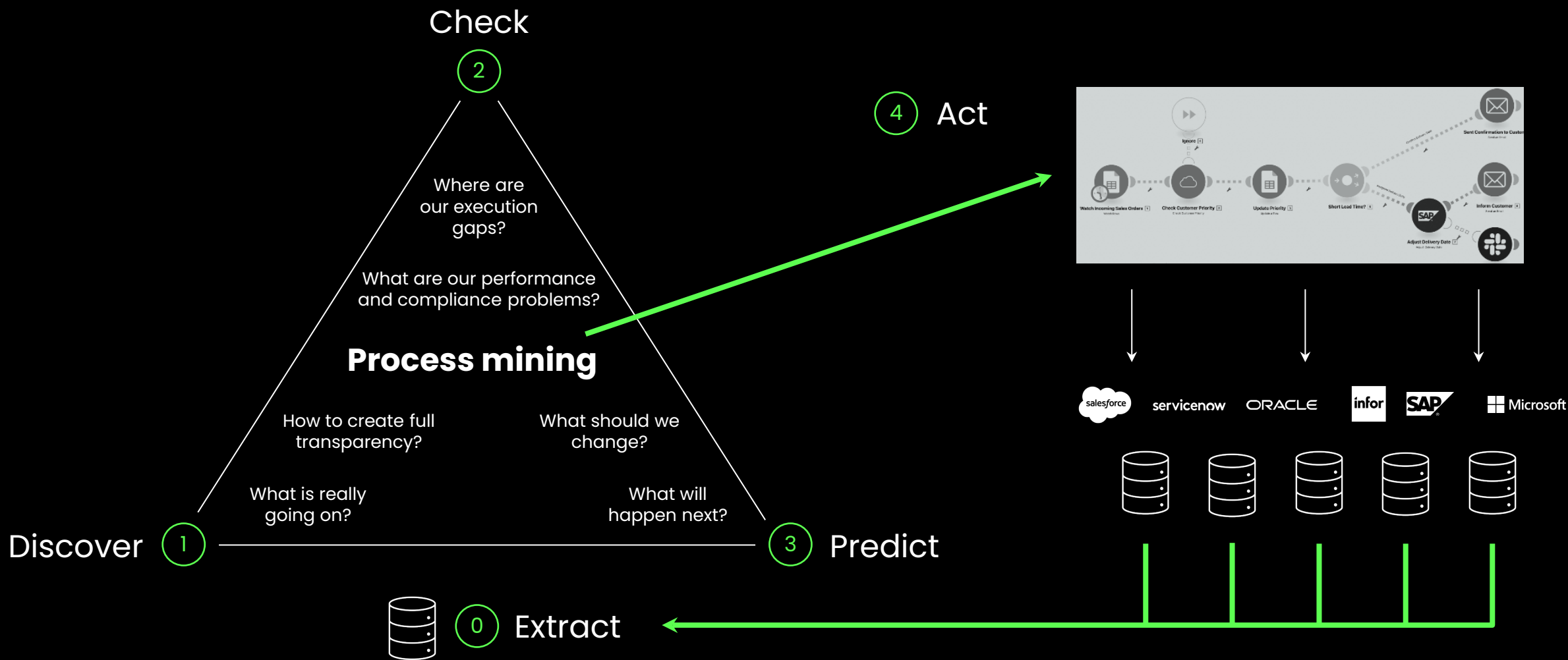
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20220721141725	1	Zurück zur Fachliche Prüfung			
PY105196				000000000000	
20220721214009	1	XI - Beleg geprüft. Level 001			
CS619806		RELEASED		000047323520	
20220803135655	1	XI - Document released. Level 001			
QK647033		MORE		000047340243	
20220803135655	2	----> Item: 000000 0001			
QK647033		MORE		000047340243	
20220803135659	1	XI - Document released. Level 002			
WF-BATCH		RELEASED		000048012987	
20220803135703	1	XI - PO approved. Level 001			
WF-BATCH		MORE		000048013000	
20220803135707	1	XI - PO approved. Level 002			
WF-BATCH		RELEASED		000048013029	
20220804071646	1	XI - Beleg weitergeleitet. Empfänger:			
OC303519		FORWARD		000048013071	
20220804071646	2	----> [REDACTED]			
OC303519		FORWARD		000048013071	
20220804073814	1	XI - Beleg weitergeleitet. Empfänger:			
OB653475		FORWARD		000048036576	
20220804073814	2	----> [REDACTED]			
OB653475		FORWARD		000048036576	
20220804084550	1	XI - Beleg weitergeleitet. Empfänger:			
TC561794		FORWARD		000048038428	
20220804084551	1	----> [REDACTED]			
TC561794		FORWARD		000048038428	
20220804120437	1	XI - Beleg weitergeleitet. Empfänger:			

a)	3	k)	2
b)	5	l)	2
c)	2	m)	3
d)	2	n)	4
e)	4	o)	5
f)	6	p)	2
g)	2		
h)	3		
i)	2		
j)	4		

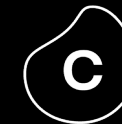
16 persons from RWTH involved (on average 3 interactions per person, 6 weeks duration)

PM

High-level view of process mining



It all starts with event data



Case ID	Activity	Resource	Timestamp	Product	Prod-price	Quantity	Address
...	...	...	...	...	...	...	...
6350	place order	Aiden	2018/02/13 14:29:45.000	APPLE iPhone 6 16 GB	639,00 €	5	NL-7751DG-21
6283	pay	Lily	2018/02/13 14:39:25.000	SAMSUNG Galaxy S6 32 GB	543.99 €	3	NL-7828AM-11a
6253	prepare delivery	Sophia	2018/02/13 15:01:33.000	APPLE iPhone 6 16 GB	639,00 €	3	NL-7887AC-13
6257	prepare delivery	Aiden	2018/02/13 15:03:43.000	SAMSUNG Galaxy S6 32 GB	543.99 €	1	NL-9521KJ-34
6185	confirm payment	Emily	2018/02/13 15:05:36.000	SAMSUNG Galaxy S4	329,00 €	1	NL-9521GC-32
6218	confirm payment	Emily	2018/02/13 15:08:11.000	APPLE iPhone 6s Plus 64 GB	969,00 €	2	NL-7948BX-10
6245	make delivery	Michael	2018/02/13 15:14:04.000	APPLE iPhone 6 16 GB	639,00 €	3	NL-7905AX-38
6272	pay	Emily	2018/02/13 15:20:36.000	APPLE iPhone 6 16 GB	639,00 €	1	NL-7821AC-3
6269	pay	Charlotte	2018/02/13 15:25:21.000	SAMSUNG Galaxy S4	329,00 €	1	NL-7907EJ-42
6212	prepare delivery	Sophia	2018/02/13 15:43:39.000	HUAWEI P8 Lite	234,00 €	1	NL-7905AX-38
6323	send invoice	Alexander	2018/02/13 15:46:08.000	APPLE iPhone 6 16 GB	639,00 €	1	NL-7833HT-15
6246	confirm payment	Jack	2018/02/13 15:56:03.000	SAMSUNG Galaxy S4	329,00 €	3	NL-7833HT-15
6347	send invoice	Jack	2018/02/13 15:57:42.000	SAMSUNG Galaxy S4	329,00 €	3	NL-7905AX-38
6351	place order	Zoe	2018/02/13 16:17:37.000	APPLE iPhone 5s 16 GB	449,00 €	3	NL-9521GC-32
6204	prepare delivery	Sophia	2018/02/13 16:31:28.000	SAMSUNG Core Prime G361	135,00 €	1	NL-7828AM-11a
6204	make delivery	Kaylee	2018/02/13 16:51:54.000	SAMSUNG Core Prime G361	135,00 €	1	NL-7828AM-11a
6265	confirm payment	Lily	2018/02/13 16:55:55.000	SAMSUNG Galaxy S4	329,00 €	4	NL-9521GC-32
6250	confirm payment	Jack	2018/02/13 17:03:26.000	MOTOROLA Moto G	199,00 €	4	NL-7942GT-2
6328	send invoice	Lily	2018/02/13 17:30:16.000	APPLE iPhone 6s 64 GB	858,00 €	4	NL-9514BV-16
6352	place order	Aiden	2018/02/13 17:53:22.000	APPLE iPhone 6 16 GB	639,00 €	2	NL-9514BV-16
6317	send invoice	Jack	2018/02/13 18:45:30.000	APPLE iPhone 6s 64 GB	858,00 €	5	NL-7907EJ-42
6353	place order	Sophia	2018/02/13 20:16:20.000	APPLE iPhone 5s 16 GB	449,00 €	4	NL-7751AR-19
...	...	...	...	...	...	...	...

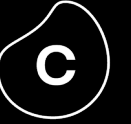
It all starts with event data



Case ID	Activity	Resource	Timestamp	Product	Prod-price	Quantity	Address
...	...	...	...	...	...	...	...
6350	place order	Aiden	2018/02/13 14:29:45.000	APPLE iPhone 6 16 GB	639,00 €	5	NL-7751DG-21
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6253	prepare delivery	Sophia	2018/02/13 15:01:33.000	APPLE iPhone 6 16 GB	639,00 €	3	NL-7887AC-13
6257	prepare delivery	Aiden	2018/02/13 15:03:43.000	SAMSUNG Galaxy S6 32 GB	543,99 €	1	NL-9521KJ-34
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6323	send invoice	Alexander	2018/02/13 15:46:08.000	APPLE iPhone 6 16 GB	639,00 €	1	NL-7833HT-15
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6353	place order	Sophia	2018/02/13 20:16:20.000	APPLE iPhone 5s 16 GB	449,00 €	4	NL-7751AR-19
...	...	...	...	...	...	...	...

event =
case +
activity +
timestamp +

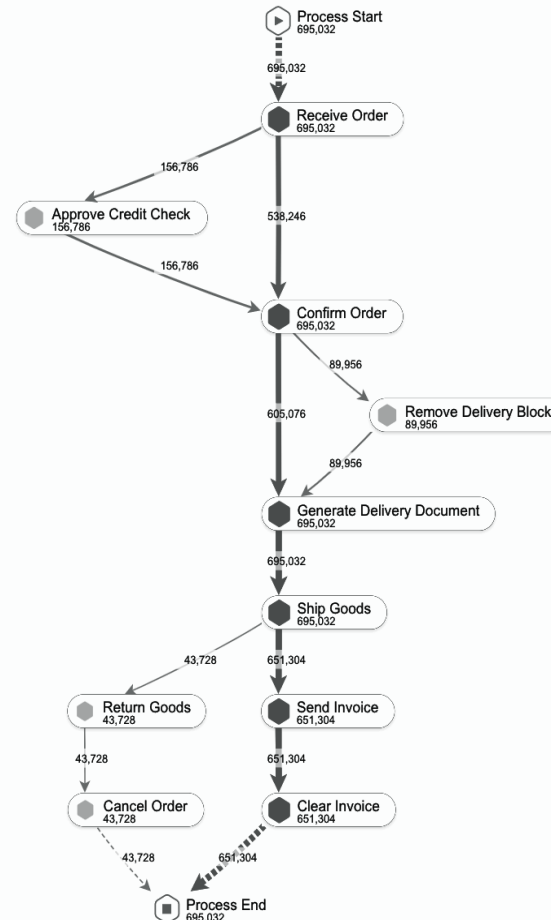
Actual processes are very different from what stakeholders think !



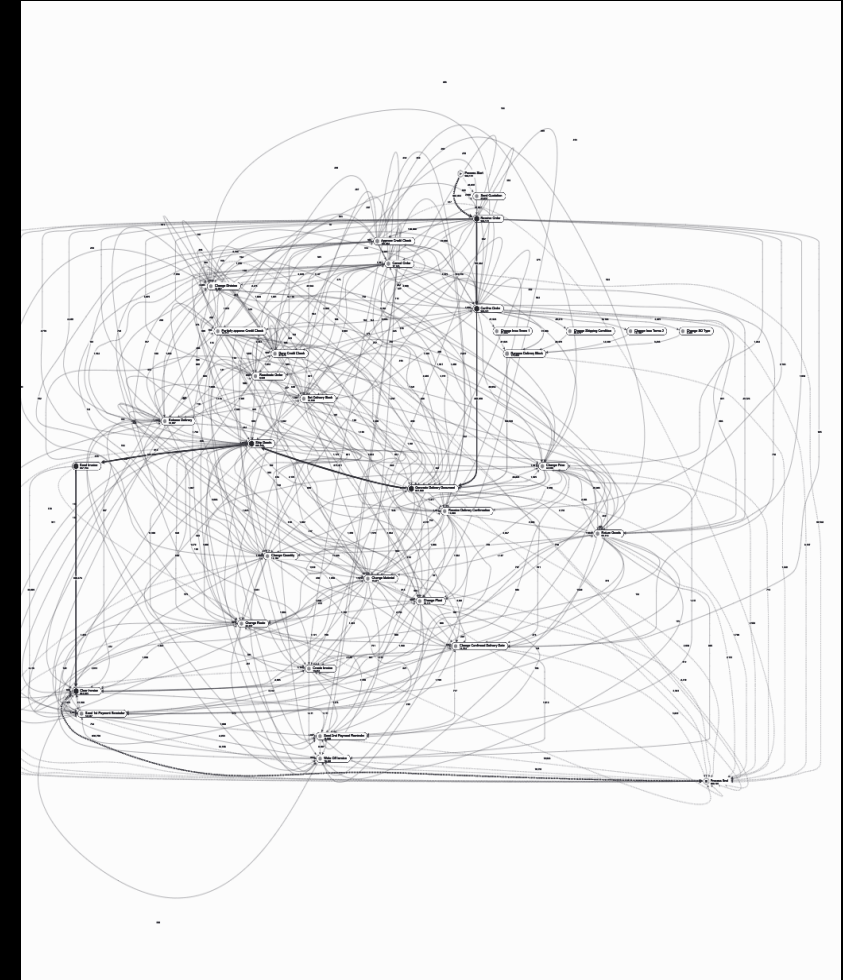
Happy path



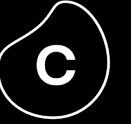
Expected paths



Reality



80/20 rule

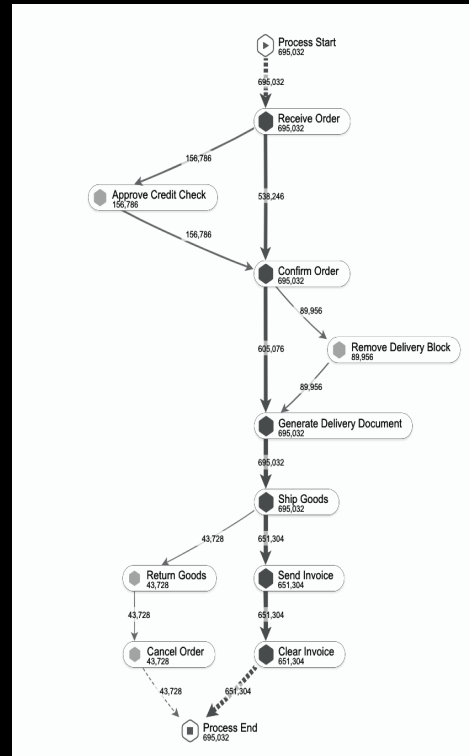


80% of cases

20% of variants

20% of inefficiencies

20% of compliance problems



100% of cases

100% of variants

100% of inefficiencies

100% of compliance problems

145,800 road traffic fines



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Road Traffic Fine Management Process

DOI: 10.4121/uuid:270fd440-1057-4fb9-89a9-b699b47990f5

Cite

DATASET

by [M. \(Massimiliano\) de Leoni](#) , [Felix Mannhardt](#) 

Real-life event log of an information system managing road traffic fines.

History

2015-02-10 first online, published, posted

Publisher

Eindhoven University of Technology 

Format

media types: application/x-gzip, application/zip, text/xml

References

<https://doi.org/10.1007/s00607-015-0441-1>



Usage statistics

20124 views	95 citations	8038 downloads
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Categories

Transportation And Freight Services

Business And Management

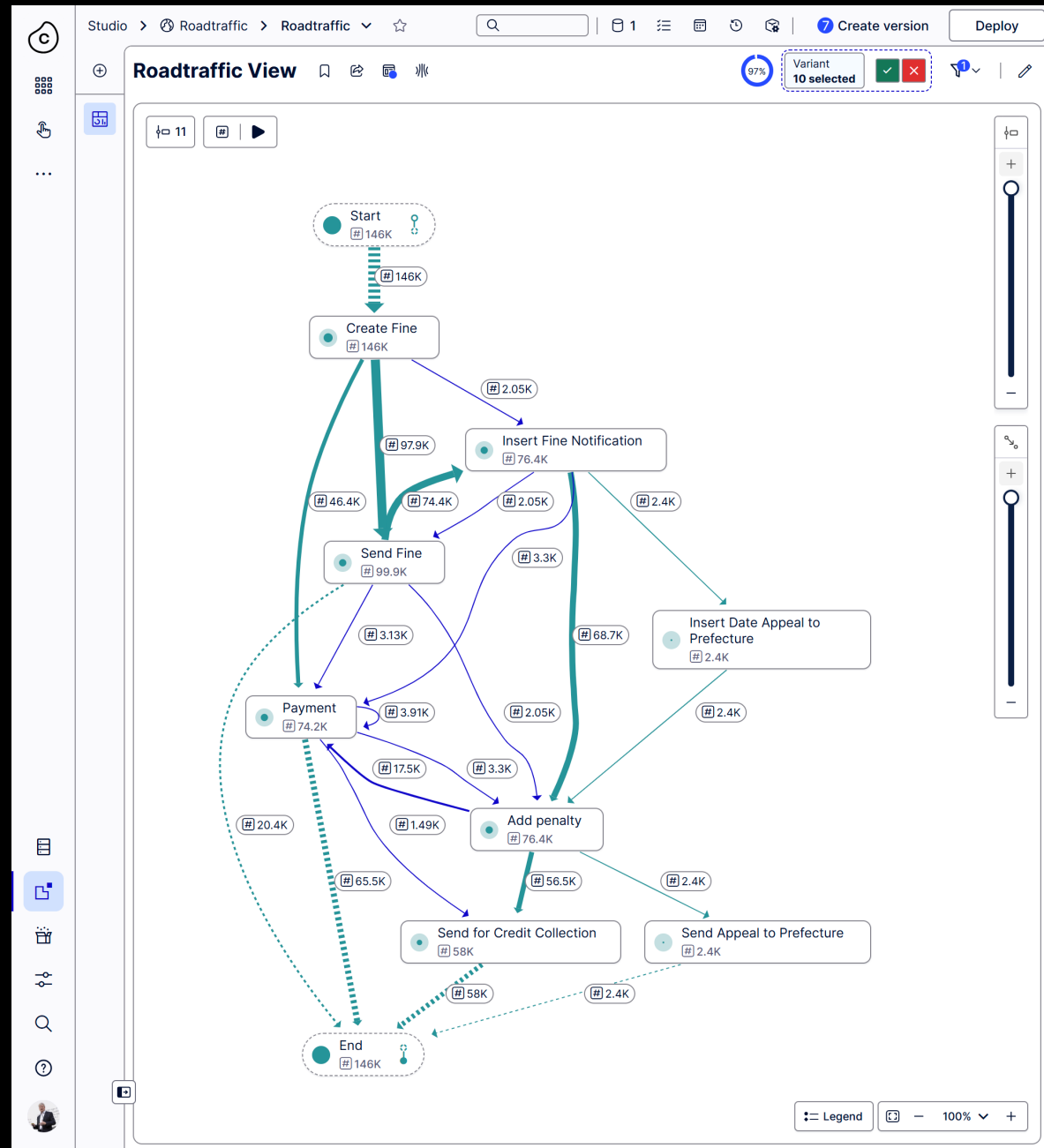
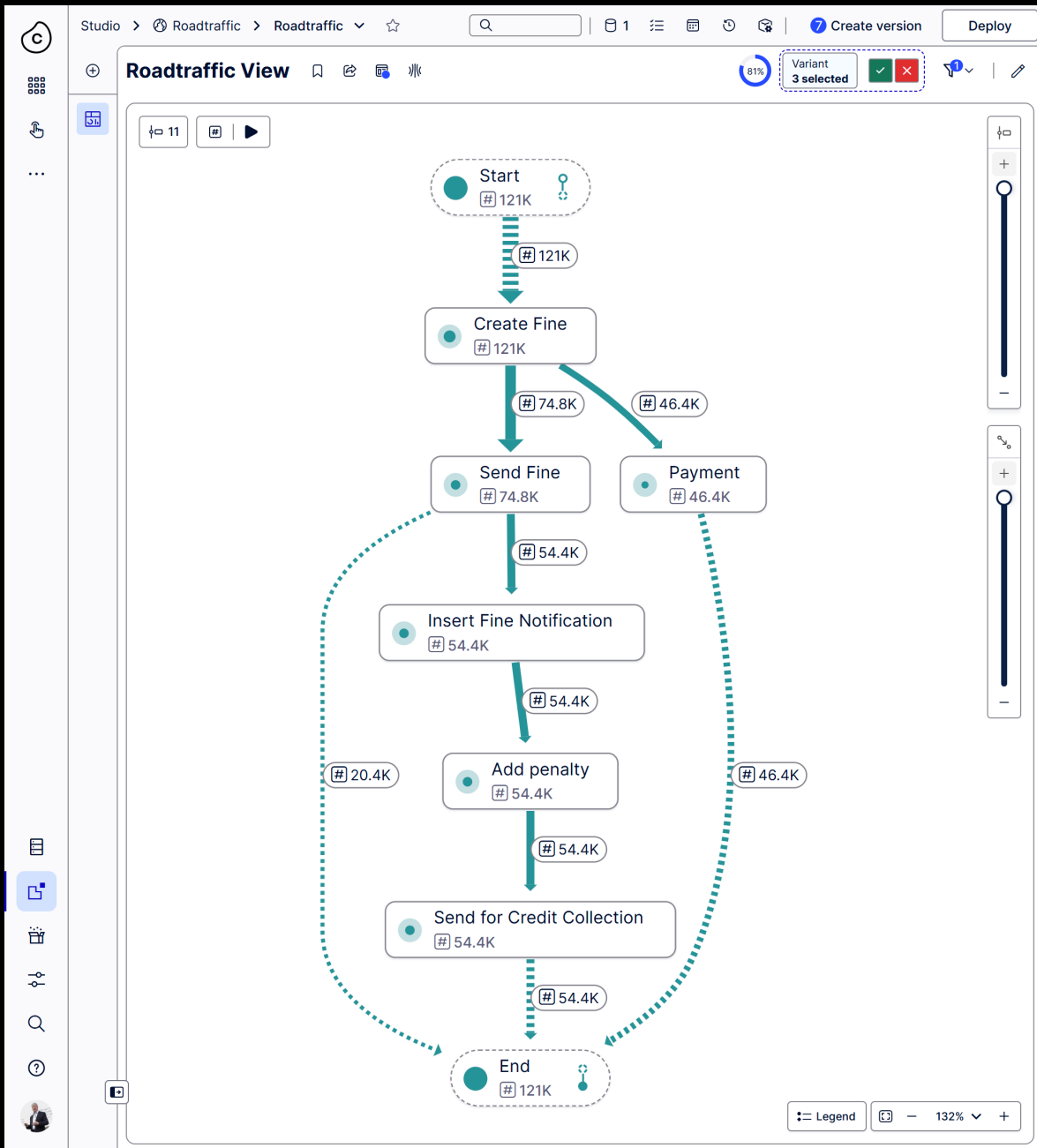
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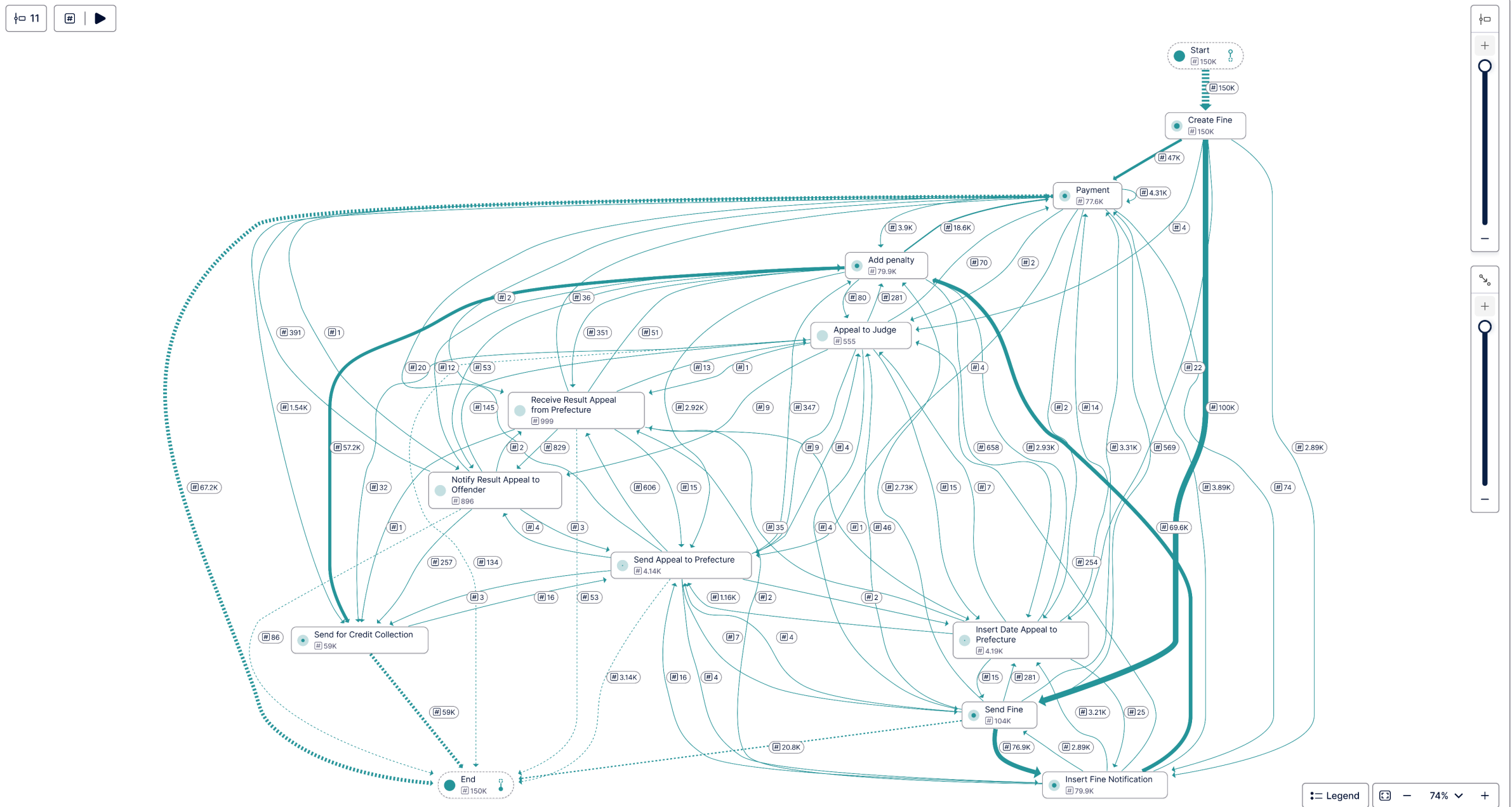
000 Computer Science, Knowledge & Systems

IEEE Task Force On Process Mining

Real Life Event Logs

Traffic Enforcement





This is what we expect ...

traces

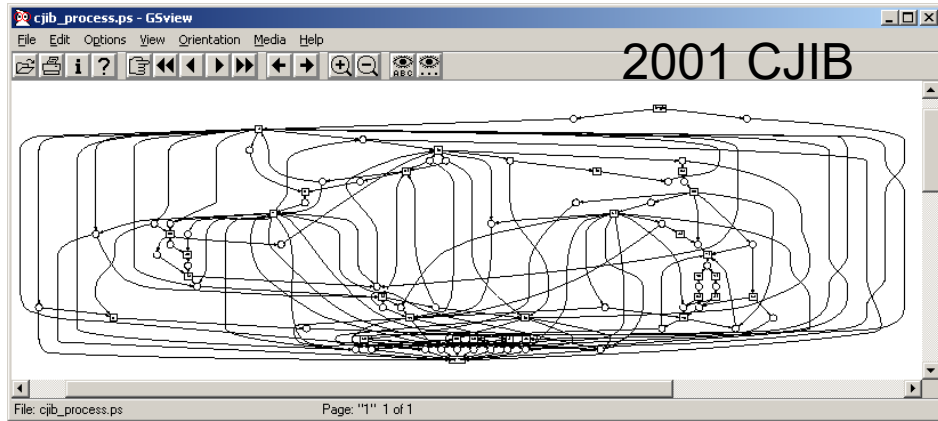


This is what we find ...



**Understanding this is the key
to process improvement!**

A brief history of process mining

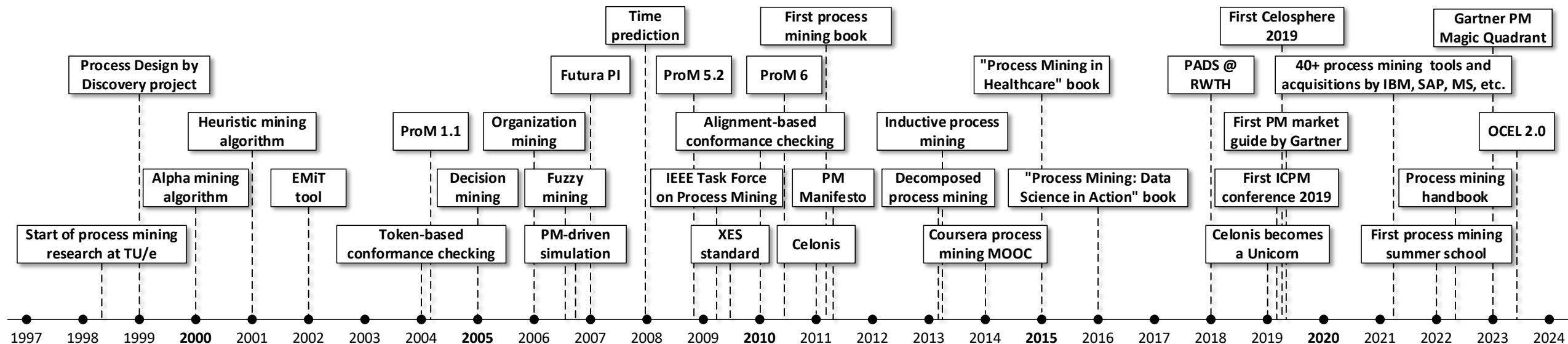


Kinderbijslag Kindergeld Familienzuschlag

- Landesamt für Besoldung und Versorgung Nordrhein-Westfalen
- Familienkasse Nordrhein-Westfalen
- Familienkasse Rheinland-Pfalz-Saarland
- Sociale Verzekeringsbank (SVB)



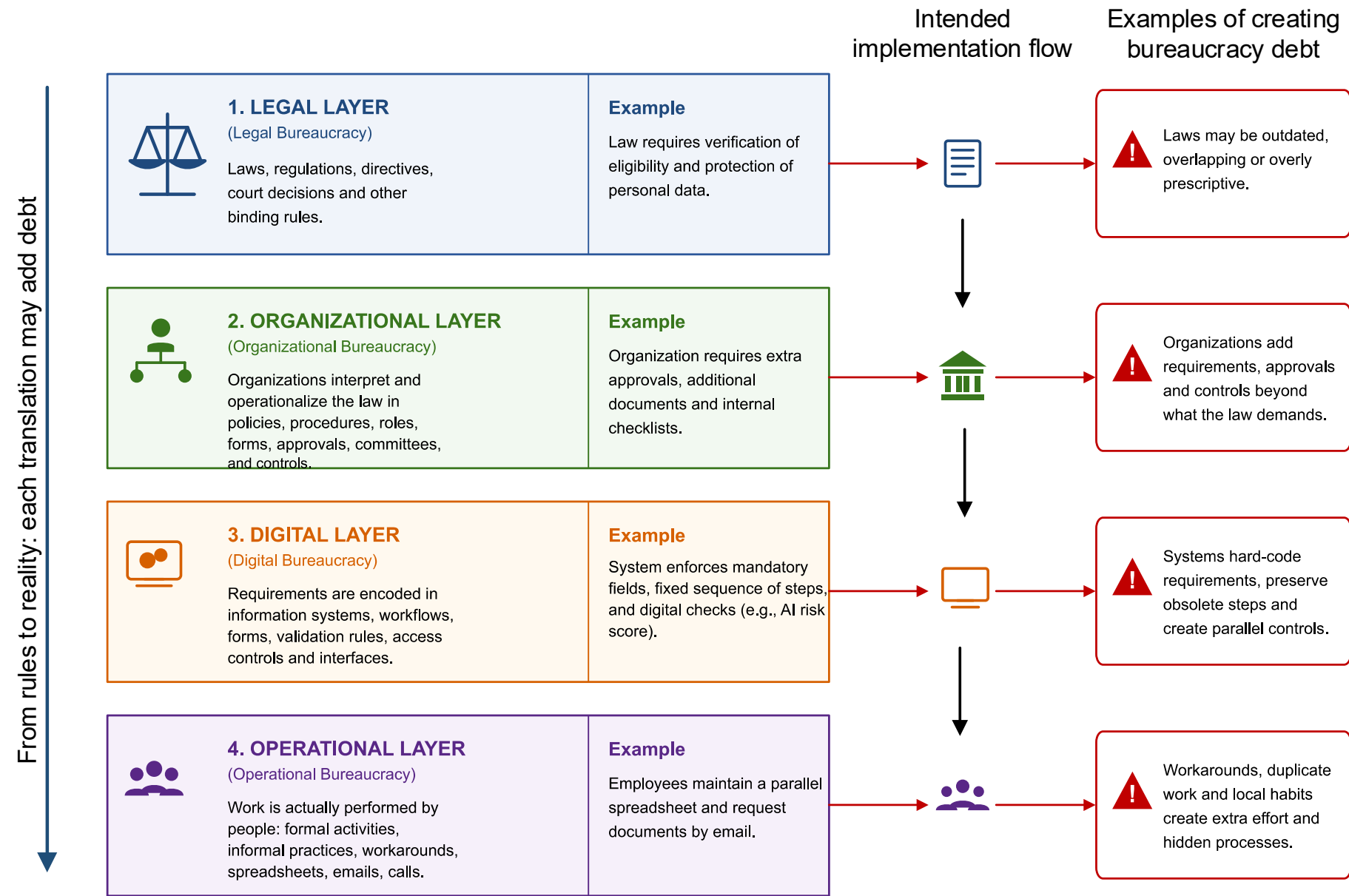
2017-2018



Bureaucracy Debt

Bureaucracy debt is the accumulated gap between the administrative burden generated by a process and the minimum burden necessary to achieve its legitimate legal and public-policy objectives. Like technical debt, it creates recurring “interest” in the form of additional processing, coordination, maintenance, explanation, and workaround costs.

Four Layers of Bureaucracy Debt



Digitalization Paradox

THE DIGITALIZATION PARADOX

Technology promises simplicity. Reality often multiplies complexity.

THE PROMISE

Digitalization should...

-  **SPEED UP PROCESSES**
Faster throughput and shorter cycle times
-  **IMPROVE QUALITY**
Fewer errors, higher compliance
-  **BETTER SERVICE**
Easier for citizens, employees, and businesses
-  **INCREASE TRANSPARENCY**
More insight, better decisions
-  **USE RESOURCES WISELY**
Lower cost, sustainability



THE PARADOX

In practice, digitalization often adds to the burden



BUREAUCRACY DEBT

The gap between administrative effort and the minimum needed to achieve legitimate objectives

WHAT OFTEN HAPPENS

Digitalization can...

-  **ENCODE THE OLD**
Existing rules and steps are simply digitized
-  **ADD NEW CONTROLS**
Digital checks, validations, and risk rules multiply
-  **CREATE MORE DATA**
More fields, reports, and documentation
-  **FRAGMENT AND DUPLICATE**
Parallel systems, silos, and duplicate processes
-  **SHIFT WORK AND BURDEN**
More tasks move to citizens and front-line employees
-  **GENERATE MORE NOISE**
Information overload, alerts, and coordination





THE GOAL
Effective processes that deliver outcomes with the minimum necessary burden



THE WAY OUT: PROCESS INTELLIGENCE
Make processes visible. Measure what matters. Identify and remove unnecessary steps. Shift from adding more to achieving more with less.



Bureaucracy Mining

Motivating Example: CoSeLog

Promotor  [prof.dr.ir. W.M.P. \(Wil\) van der Aalst](#)

Co-Promotors

-  [dr.ir. B.F. \(Boudewijn\) van Dongen](#)
-  [dr.ir. H.A. \(Hajo\) Reijers](#)
-  [dr.ir. H.M.W. \(Eric\) Verbeek](#)

Partner Investigators

-  [prof.dr. M. \(Marlon\) Dumas](#)
-  [prof.dr. A.H.M. \(Arthur\) ter Hofstede](#)
-  [dr. M. \(Marcello\) La Rosa](#)

PhD Candidates

The research is performed by the following two researchers:

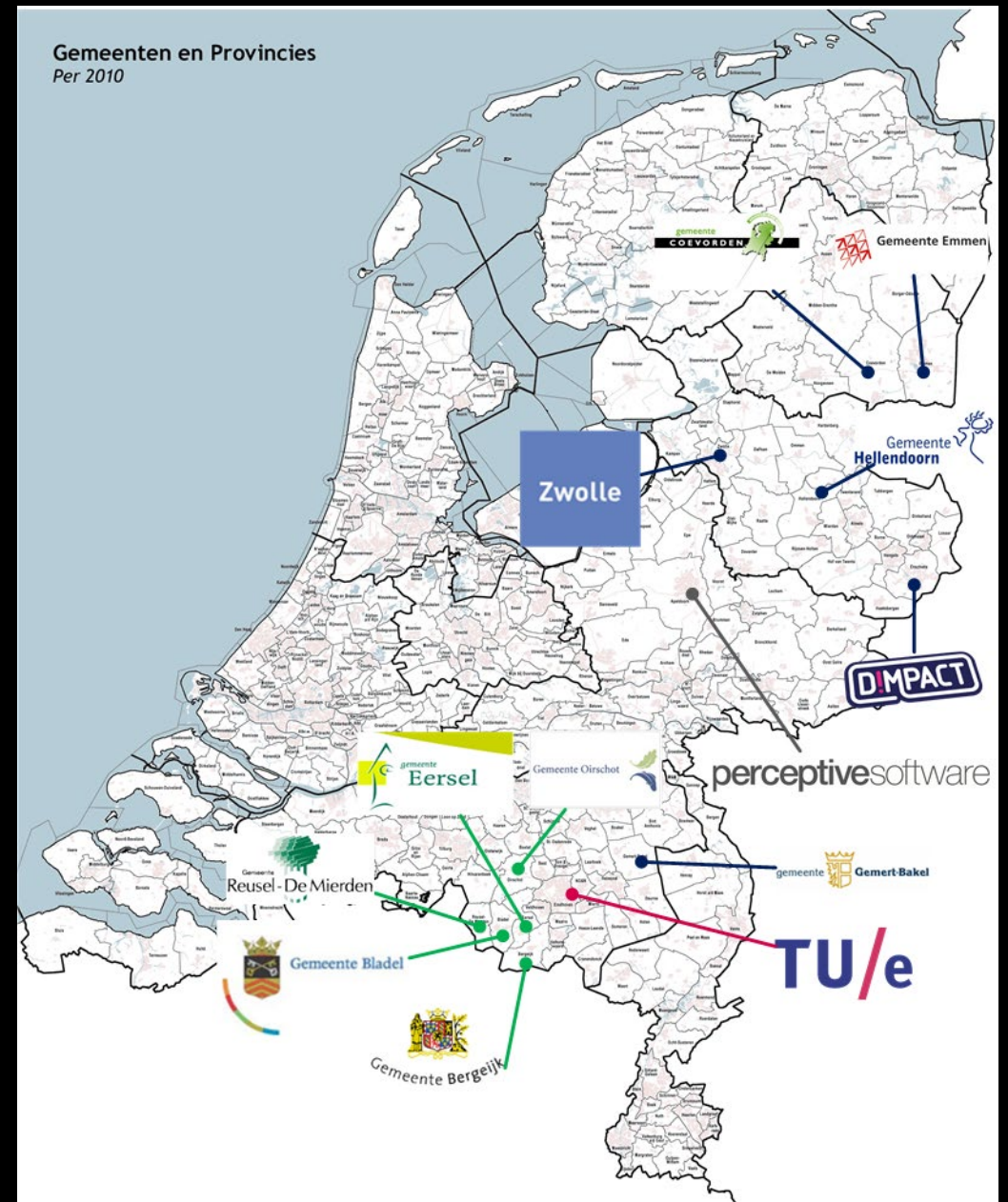
-  [J.C.A.M. \(Joos\) Buijs MSc.](#) (main focus on process mining)
-  [D.M.M. \(Dennis\) Schunselaar MSc.](#) (main focus on configurable workflow models)

IT Companies

-  [D!IMPACT](#)
-  [Perceptive Software](#)

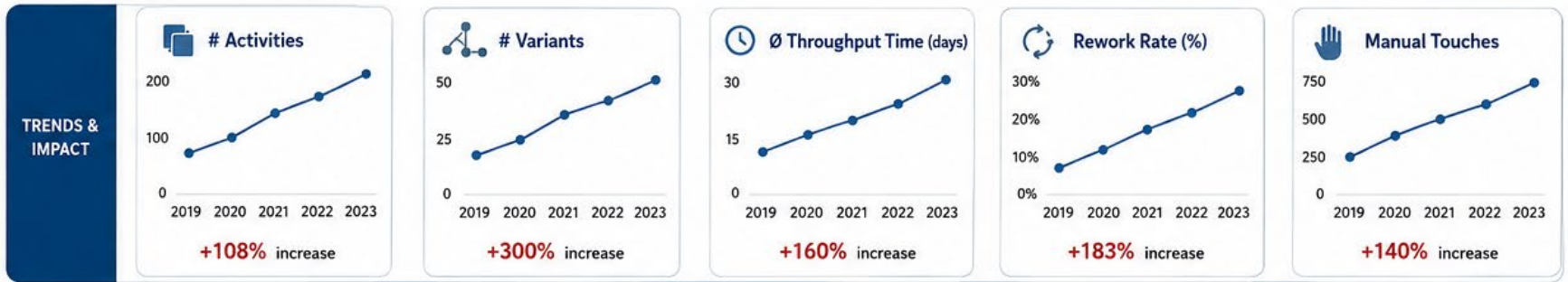
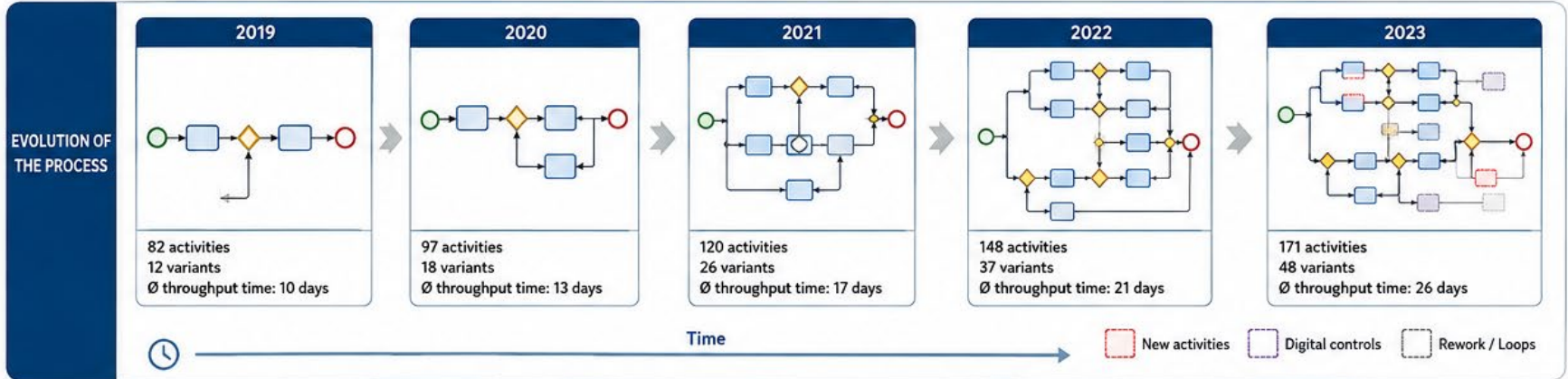
Municipalities

-  [Bergeijk](#)
-  [Bladel](#)
-  [Coevorden](#)
-  [Eersel](#)
-  [Emmen](#)
-  [Gemert-Bakel](#)
-  [Hellendoorn](#)
-  [Oirschot](#)
-  [Reusel de Mierden](#)
-  [Zwolle](#)



LONGITUDINAL BUREAUCRACY MINING

Making the evolution of administrative processes visible.



WHAT WE DISCOVER

- Complexity increases continuously.
- Processes take longer and become less predictable.
- More work is shifted to employees and citizens.
- Many additions have low or uncertain contribution to the intended objectives.

WHAT WE CAN DO

- Quantify burden and prioritize problem areas.
- Challenge the necessity and proportionality of controls.
- Remove, simplify or automate with impact.
- Monitor the effect of improvement over time.

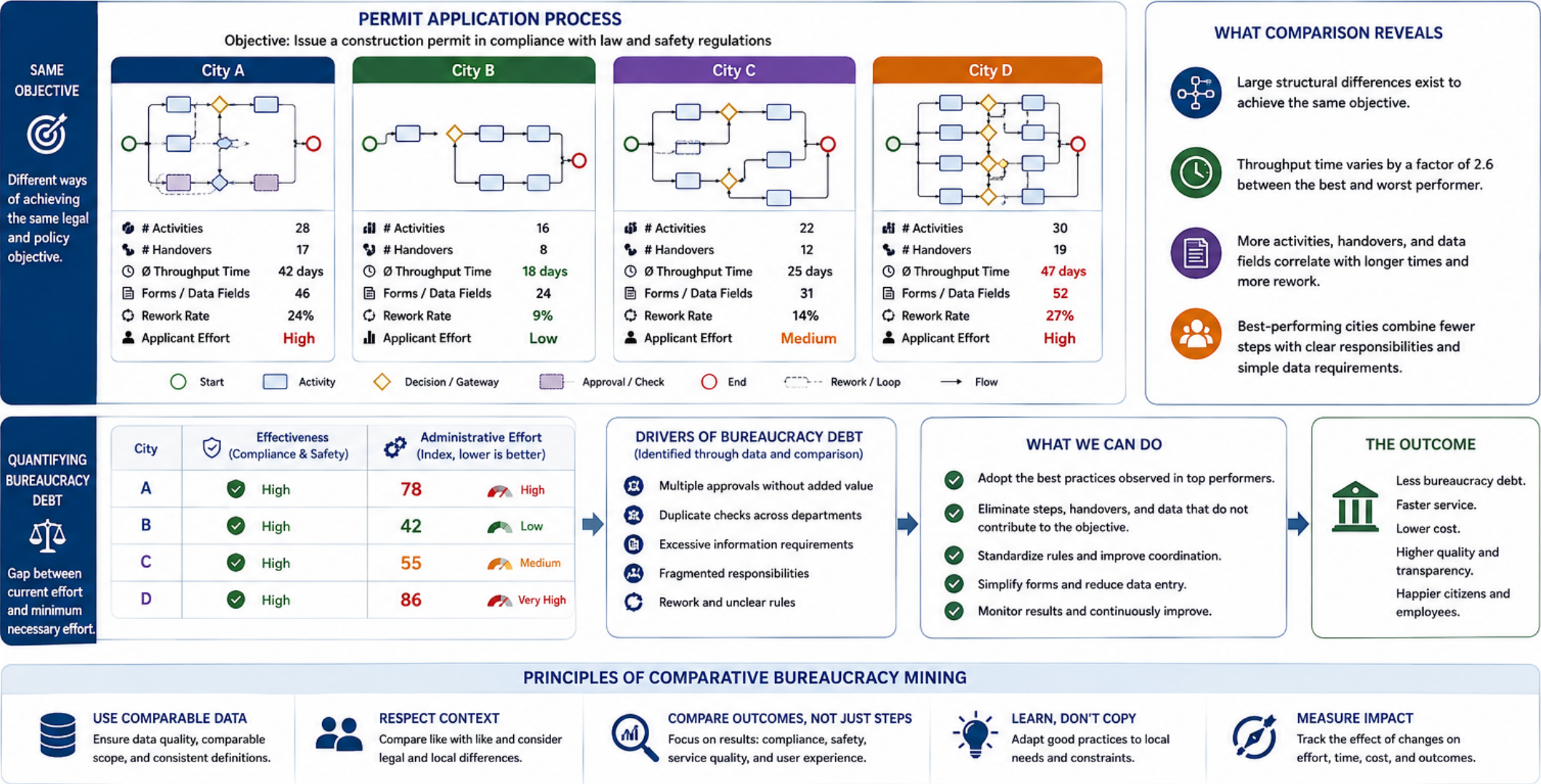
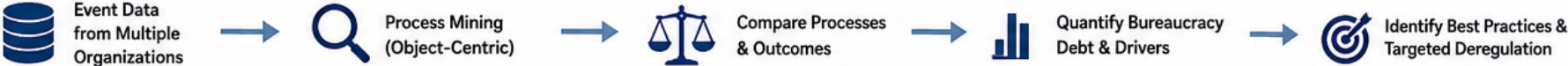
THE OUTCOME

- Less bureaucracy.
- Better services.
- Higher compliance.
- Lower administrative cost.



COMPARATIVE BUREAUCRACY MINING

Learning from differences to reduce unnecessary administrative burden.



COMPARATIVE BUREAUCRACY MINING TURNS DIVERSITY INTO INSIGHT AND INSIGHT INTO BETTER ADMINISTRATION.

Different processes are not the problem—unnecessary burden is.

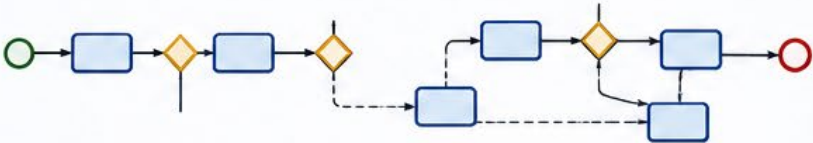
FREE THE PROCESS: OBSERVABILITY AND PORTABILITY

Transparent processes. Portable event data. Better government.

We cannot improve what we cannot see. We cannot compare what we cannot move.

1. OBSERVABILITY: MAKE THE PROCESS VISIBLE

Capture what really happens — not just what should happen.



END-TO-END VISIBILITY

See the full flow across systems, handovers and exceptions.



REAL-TIME & HISTORICAL INSIGHT

Understand performance, waiting times, rework and variants.



EVIDENCE, NOT ASSUMPTION

Base decisions on facts captured from actual execution.



ACCOUNTABILITY & TRANSPARENCY

Make responsibilities, decisions and outcomes traceable.

WHAT OBSERVABILITY ENABLES



Bottleneck detection



Rework and loop analysis



Cycle time and resource analysis



Compliance monitoring



Complexity measurement

OBJECT-CENTRIC EVENT DATA (OCED)

The foundation for faithful, complete and reusable process insight.

- Citizen
- Application
- Document
- Payment
- Employee
- Organization
- Events



- ✓ Captures multiple interacting objects and their relations
- ✓ Preserves context across systems and time
- ✓ Enables accurate analysis, comparison and simulation
- ✓ Supports AI and automation with high-quality data

FREE THE PROCESS



Make processes visible.
Make data portable.

Unlock better government.

PREREQUISITES



Common semantics and data standards



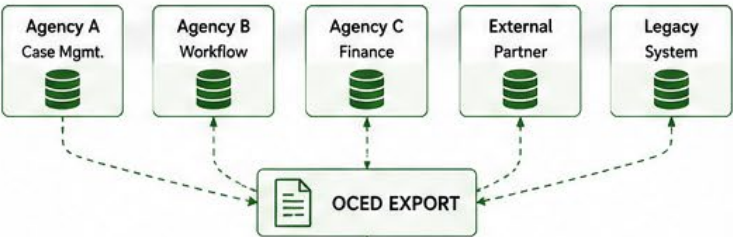
Consistent event logging



Privacy, security and data governance

2. PORTABILITY: FREE THE DATA

Move event data across systems, organizations and borders.



SYSTEM-INDEPENDENT

Export once, use anywhere.



COMPARABLE

Same data, same meaning, fair comparison.



REUSABLE

For auditing, improvement, AI and research.



FUTURE-PROOF

Avoid vendor lock-in and technological obsolescence.

WHAT PORTABILITY ENABLES



Cross-organization benchmarking



Regulatory oversight



Research and innovation



AI, simulation and automation



Continuous improvement

PORTABLE EVENT DATA = PUBLIC VALUE



Builds trust and transparency



Enables evidence-based deregulation



Improves performance and service quality



Delivers value for citizens and society



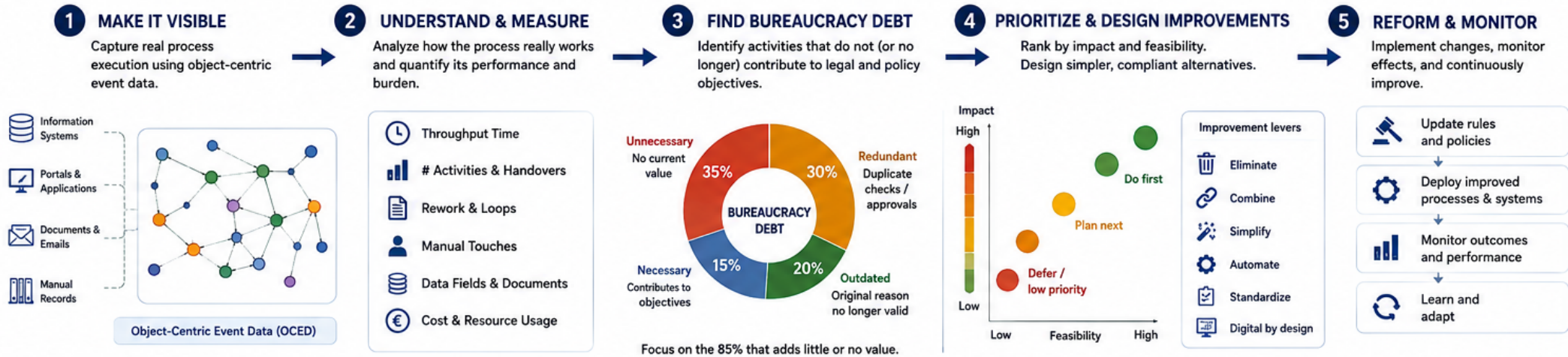
OBSERVABILITY SHOWS THE TRUTH. PORTABILITY SHARES THE TRUTH. TOGETHER, THEY FREE THE PROCESS.

- ✓ Less bureaucracy.
- ✓ Better decisions.
- ✓ Lower cost.
- ✓ Higher quality.
- ✓ Happier citizens and employees.



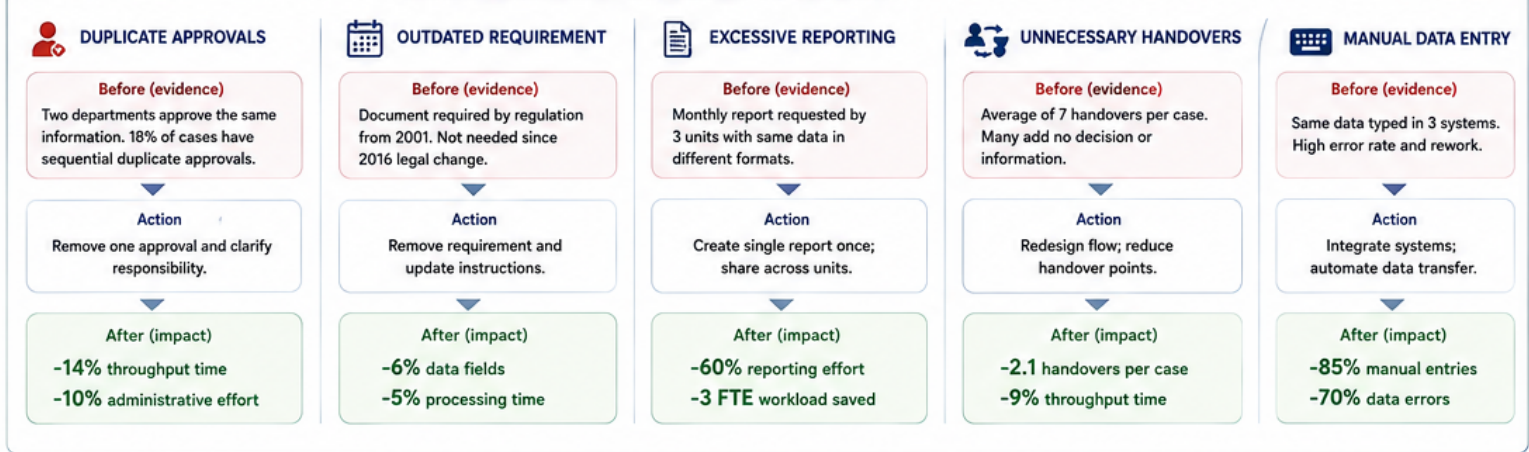
EVIDENCE-BASED DEREGULATION

From process evidence to better rules, simpler processes, and greater impact.



EVIDENCE AT EVERY STEP • TRANSPARENCY IN DECISIONS • MEASURABLE IMPACT

EXAMPLES: FROM EVIDENCE TO ACTION



PRINCIPLES OF EVIDENCE-BASED DEREGULATION

- OBJECTIVE**
Decisions based on facts and measurable evidence, not opinions.
- PROPORTIONAL**
Controls must be proportionate to the risk and public interest.
- TRANSPARENT**
Evidence, decisions and expected impacts are public and traceable.
- ACCOUNTABLE**
Clear responsibility for rules, processes and outcomes.
- CONTINUOUS**
Monitor, evaluate and improve over time.

SAFEGUARDS

- Protect fundamental rights and equity.
- Preserve necessary controls for safety, security and fairness.
- Ensure data protection, privacy and cybersecurity.
- Engage stakeholders and communicate changes.

THE IMPACT OF EVIDENCE-BASED DEREGULATION

- Less bureaucracy
More time for people
- Faster processes
Better services
- Lower administrative costs
- Stronger compliance
where it matters
- Higher quality
policy outcomes
- Happier citizens
and employees



Measure. Question. Simplify.

Good rules, applied simply.
That is effective government.

Red Tape Never Dies

RED TAPE NEVER DIES

Every problem adds a rule. Few remove the obsolete ones.

Policies change. Systems digitize. But bureaucracy accumulates.

THE ADDITIVE CYCLE OF BUREAUCRACY

1. A PROBLEM OCCURS

Incident, risk, audit finding, new requirement, political demand...



2. ADD A RULE

The usual response: add a control, approval, form, or check.



3. BUILD IT IN

Digitalization encodes the rule in systems, forms, workflows, and data.



4. RARELY REVISIT

Old rules remain in place. Outdated requirements stay active.



5. RED TAPE GROWS

More rules, more steps, more checks, more data, more burden.



BUREAUCRACY DEBT ACCUMULATES: THE GAP BETWEEN THE ADMINISTRATIVE BURDEN AND THE MINIMUM NEEDED TO ACHIEVE LEGITIMATE LEGAL AND POLICY OBJECTIVES.

THE CONSEQUENCES



SLOWER PROCESSES

More steps and handovers increase cycle times.



HIGHER BURDEN

Work shifts to citizens and employees.



MORE COMPLEXITY & COST

Systems, data, and compliance become more expensive.



LESS TRANSPARENCY

Harder to understand, control, and improve.



LOCK-IN EFFECT

Old rules in systems are hard to change or remove.

DIGITALIZATION WITHOUT SUBTRACTION = AUTOMATING RED TAPE

BREAK THE CYCLE: EVIDENCE-BASED DEREGULATION

Use process intelligence to remove what no longer adds value.

1. MAKE IT VISIBLE

Capture real execution with object-centric event data.



See how work really happens, end to end.

2. MEASURE & ANALYZE

Quantify performance, compliance, and burden per rule and activity.



Identify low-value, duplicate, outdated, or unnecessary steps.

3. PRIORITIZE & DECIDE

Compare alternatives. Assess risk, cost, and policy impact.



Focus on high-impact, low-risk simplifications.

4. SIMPLIFY & REMOVE

Eliminate, combine, or redesign. Remove the obsolete.



Free capacity and reduce bureaucracy debt.

5. MONITOR & IMPROVE

Continuously monitor outcomes and adapt the rules.



Keep only what adds value. Improve over time.

THE OUTCOME



Less bureaucracy. Better services. Lower cost. Higher trust.



Happier citizens and employees.



Stronger compliance and accountability.

LESS RED TAPE. MORE IMPACT.

PRINCIPLES FOR LASTING CHANGE



Make processes transparent.



MEASURE

Base decisions on evidence, not opinions.



PROPORTIONAL

Match controls to risk and value.



SUBTRACT

Remove before you add.



ENGAGE

Involve staff and users in simplification.



IMPROVE

Make simplification a continuous practice.



GOOD RULES. WELL DESIGNED. EFFECTIVELY APPLIED. NOT JUST ADDED.

WE ARE TOO BUSY TO APPLY PROCESS MINING



Learn More?

Mining Bureaucracy Debt: Process Intelligence for Evidence-Based Deregulation

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Abstract—Administrative processes accumulate complexity over time. New forms, controls, approvals, reporting duties, and verification steps are introduced in response to incidents, audits, legal changes, political demands, or digitalization projects. These additions are usually individually defensible, but they are rarely reassessed or removed. Surprisingly, digitalization often accelerates this accumulation. Instead of eliminating obsolete procedures, organizations frequently reproduce them in software, add new digital controls, and retain parallel manual practices. The result is bureaucracy debt: the growing burden created by administrative requirements whose original purpose may have weakened, disappeared, or become achievable in a simpler way. This paper introduces bureaucracy mining, the systematic use of process mining and process intelligence to identify, quantify, compare, and reduce bureaucracy debt. We distinguish four layers at which debt may arise (legal, organizational, digital, and operational) and show how each translation from rules to execution may introduce additional burden. We outline longitudinal and comparative forms of bureaucracy mining, emphasize the need for object-centric event data, and argue that process observability and event-data portability are prerequisites for meaningful analysis.

I. INTRODUCTION

DIGITALIZATION is often introduced to make processes more efficient and faster. However, without systematic process-based evaluation, it may preserve old administrative obligations, introduce new ones, and make bureaucracy more deeply embedded in information systems. Work may also be shifted to end users (e.g., citizens or employees). Therefore, we advocate process mining as a tool for evidence-based deregulation.

Bureaucracy debt is analogous to technical debt, but it concerns administrative rules and processes rather than software. Technical debt arises when developers choose a quick

ing text, reports, messages, software, and other content almost effortless. Organizations consequently generate more information than people can meaningfully process, creating additional reading, checking, coordination, and decision-making work.

- *Blurring* occurs when precise, structured, and verifiable information is replaced by plausible but probabilistic AI-generated language. Facts, assumptions, interpretations, and fabricated details become harder to distinguish, reducing transparency and accountability.
- *Blasting* occurs when digital technologies remove the natural constraints that previously limited the scale and speed of communication and action. AI-generated messages, requests, applications, reviews, and decisions can be produced and distributed in enormous volumes, shifting costs and overload to other participants in the process.

Together, these effects illustrate process mindlessness: AI may successfully optimize a local task while making the end-to-end process noisier, less reliable, and more burdensome.

Another factor leading to bureaucracy debt is the tendency of people to systematically overlook subtractive solutions and add “more stuff” instead to solve problems. Adams et al. [8] demonstrate across multiple experiments that, when asked to improve an object, idea, or situation, people are more likely to consider adding components than removing them. Subtractive alternatives become even less likely under cognitive pressure or when people are not explicitly prompted to consider removal. The authors identify institutional red tape as one domain in which this additive bias may have important consequences.

This tendency helps explain why bureaucracy accumulates. When an incident occurs an audit identifies a weakness

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