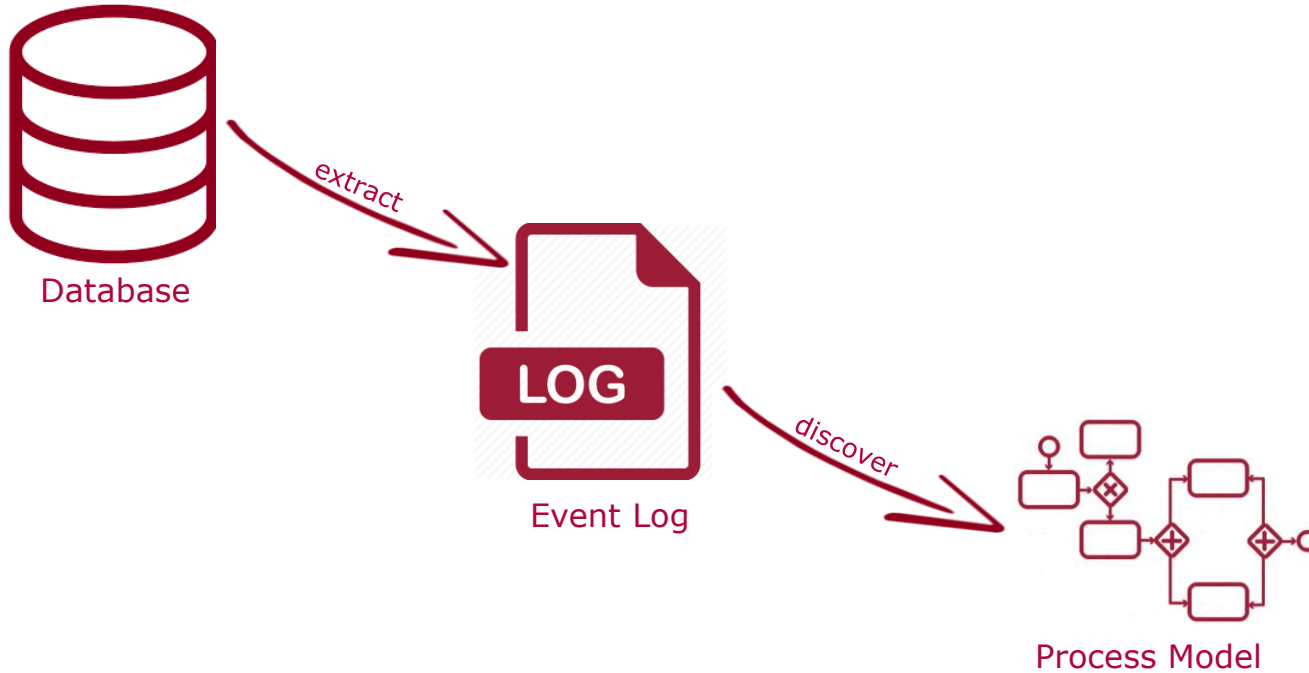




Discovering Data Models from Event Logs

Dorina Bano, Mathias Weske
Business Process Technology Group
Hasso Plattner Institute, University of Potsdam, Germany

Motivation

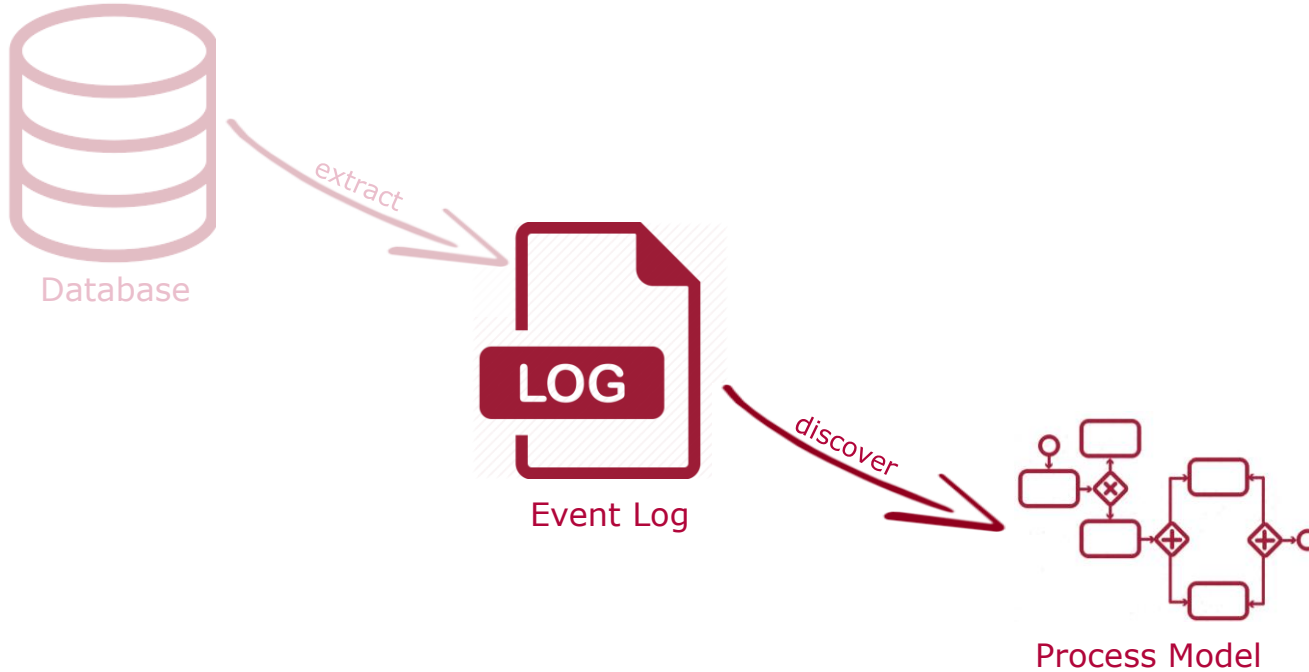


Discovering Data Models from Event Logs

Dorina Bano

Chart 2

Motivation

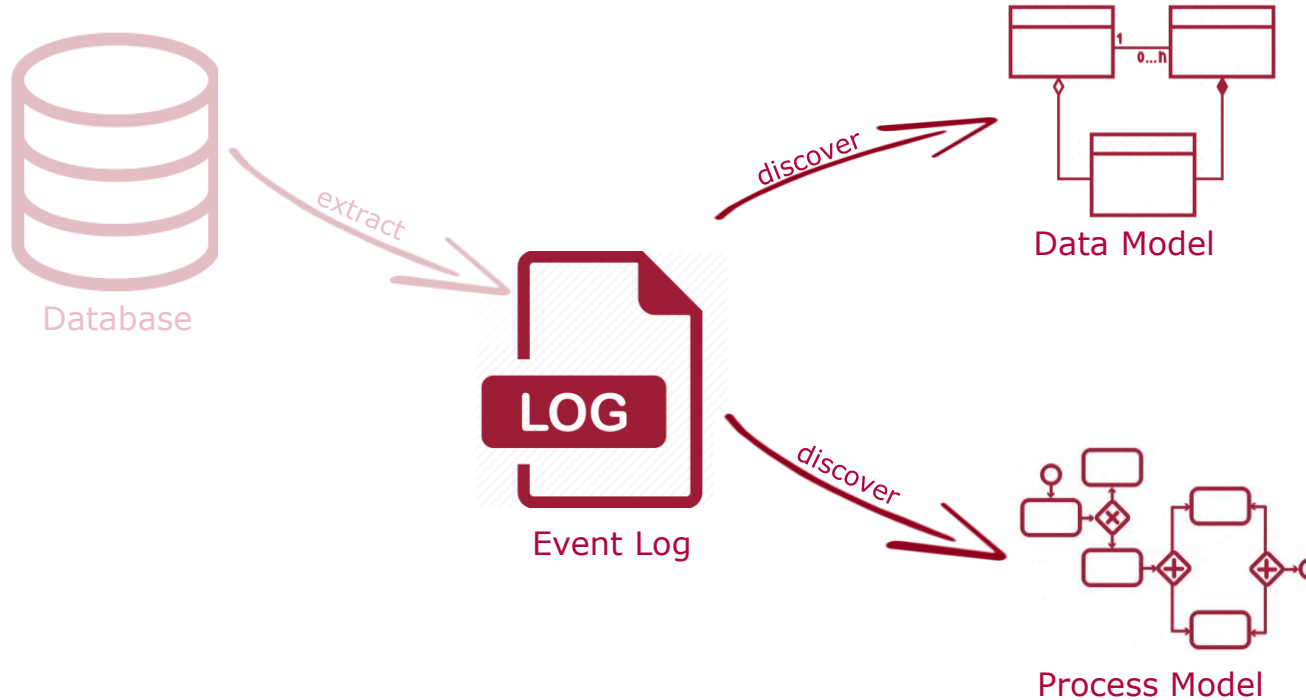


Discovering Data Models from Event Logs

Dorina Bano

Chart 3

Motivation

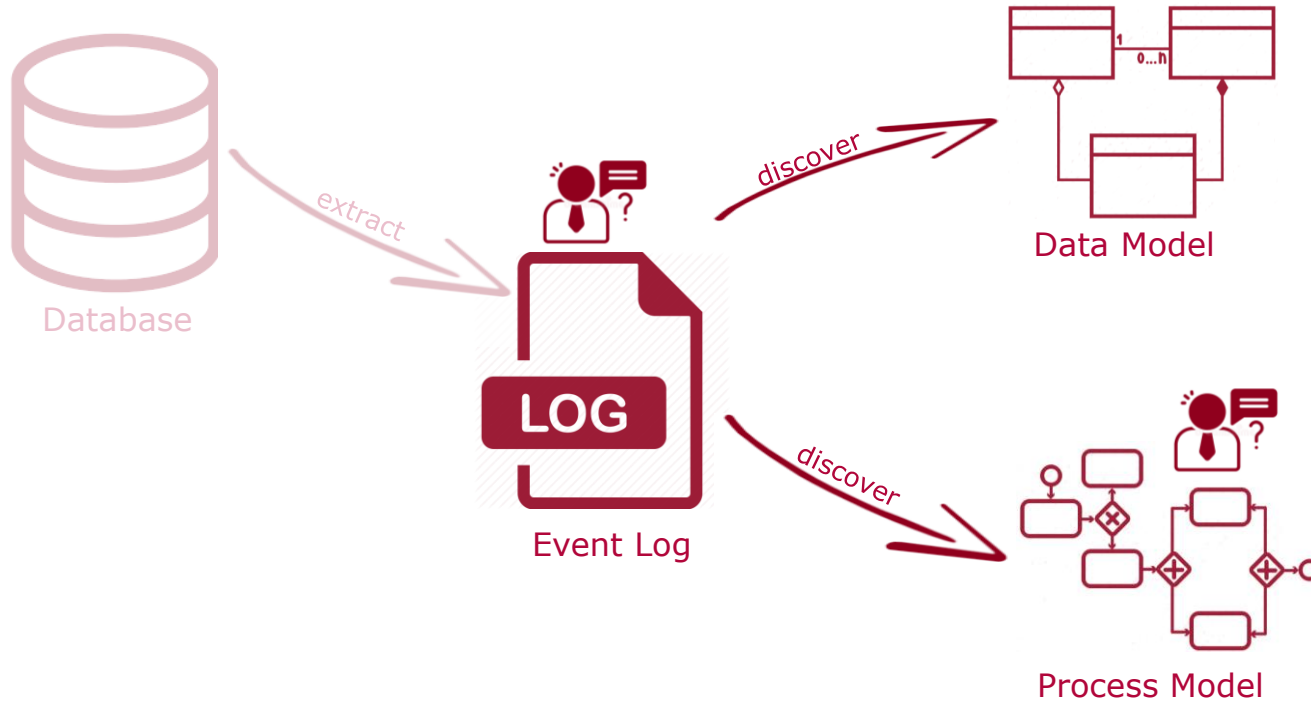


Discovering Data Models from Event Logs

Dorina Bano

Chart 4

Motivation



Discovering Data Models from Event Logs

Dorina Bano

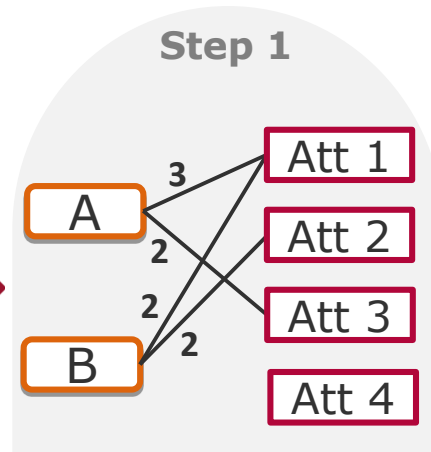
Chart 5

Approach

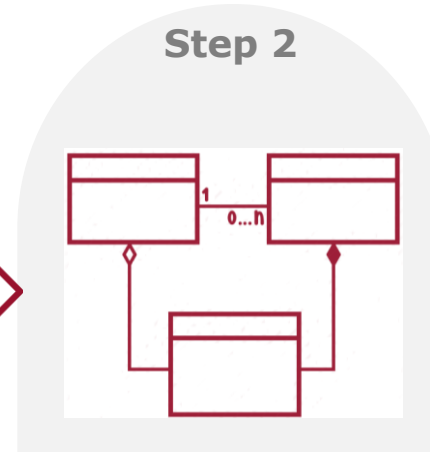
➤ Two steps semi-automatic approach

Case	Act	Time	Att1	Att2	Att3	Att4
1	A	24.02.2007	10		1	0
2	A	27.03.2007	7		1	0
2	B	28.05.2007	6	8		0
3	A	01.06.2007	3			0
3	B	19.06.2007	23	2		0

Event Log



A2A Diagram



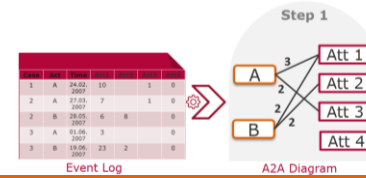
Data Model

Discovering Data Models from Event Logs

Dorina Bano

Chart 6

From event log to A2A diagram



Step 1

Case	Act	Time	Att1	Att2	Att3	Att4
1	A	24.02.2007	10		1	0
2	A	27.03.2007	7		1	0
2	B	28.05.2007	6	8		0
3	A	01.06.2007	3			0
3	B	19.06.2007	23	2		0

Event Log



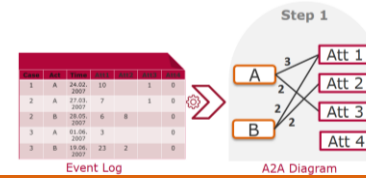
A2A Diagram

Discovering Data Models from Event Logs

Dorina Bano

Chart 8

From event log to A2A diagram



Step 1

A

B

A2A Diagram

1. Activities

Case	Act	Time	Att1	Att2	Att3	Att4
1	A	24.02.2007	10		1	0
2	A	27.03.2007	7		1	0
2	B	28.05.2007	6	8		0
3	A	01.06.2007	3			0
3	B	19.06.2007	23	2		0

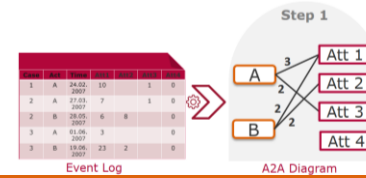
Event Log

Discovering Data Models from Event Logs

Dorina Bano

Chart 9

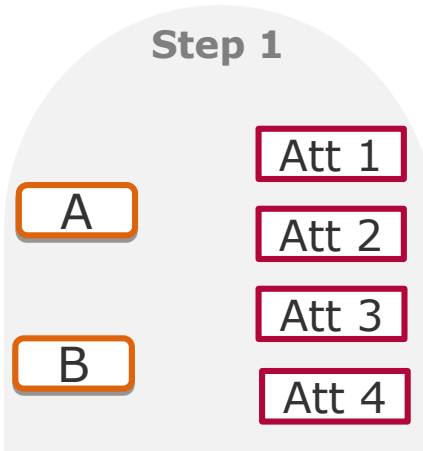
From event log to A2A diagram



Step 1

Case	Act	Time	Att1	Att2	Att3	Att4
1	A	24.02.2007	10		1	0
2	A	27.03.2007	7		1	0
2	B	28.05.2007	6	8		0
3	A	01.06.2007	3			0
3	B	19.06.2007	23	2		0

Event Log



A2A Diagram

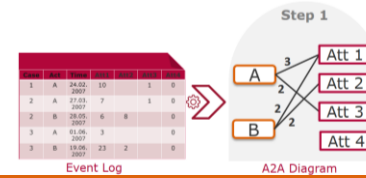
1. Activities
2. Attributes

Discovering Data Models from Event Logs

Dorina Bano

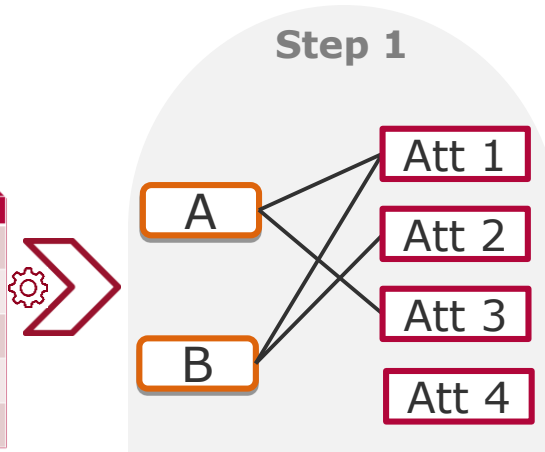
Chart 10

From event log to A2A diagram



Case	Act	Time	Att1	Att2	Att3	Att4
1	A	24.02.2007	10		1	0
2	A	27.03.2007	7		1	0
2	B	28.05.2007	6	8		0
3	A	01.06.2007	3			0
3	B	19.06.2007	23	2		0

Event Log



A2A Diagram

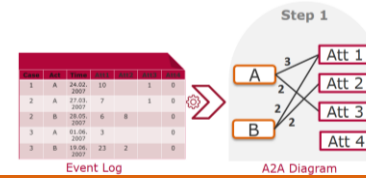
1. Activities
2. Attributes
3. Relations

Discovering Data Models from Event Logs

Dorina Bano

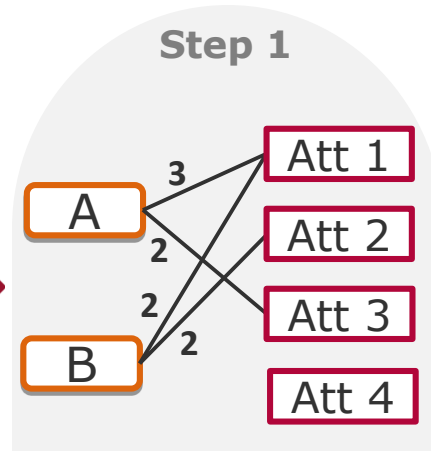
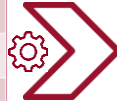
Chart 11

From event log to A2A diagram



Case	Act	Time	Att1	Att2	Att3	Att4
1	A	24.02.2007	10		1	0
2	A	27.03.2007	7		1	0
2	B	28.05.2007	6	8		0
3	A	01.06.2007	3			0
3	B	19.06.2007	23	2		0

Event Log



A2A Diagram

1. Activities
2. Attributes
3. Relations
4. Occurrence

Discovering Data Models from Event Logs

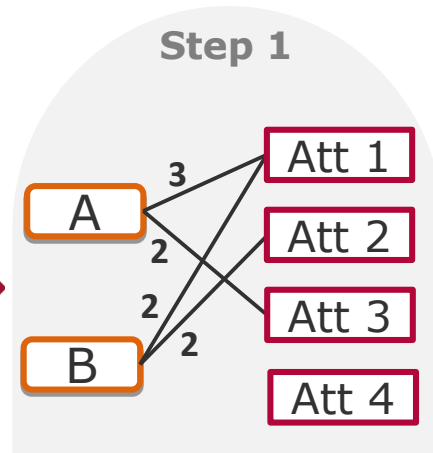
Dorina Bano

Chart 12

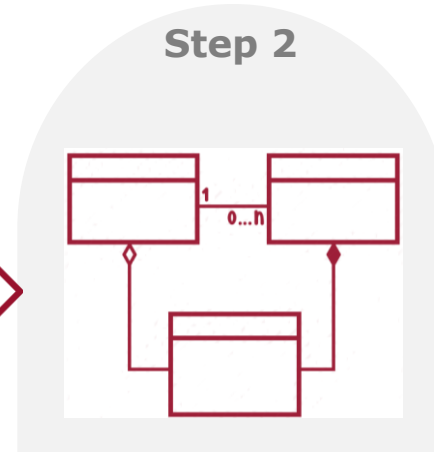
Approach

Case	Act	Time	Att1	Att2	Att3	Att4
1	A	24.02.2007	10		1	0
2	A	27.03.2007	7		1	0
2	B	28.05.2007	6	8		0
3	A	01.06.2007	3			0
3	B	19.06.2007	23	2		0

Event Log



A2A Diagram



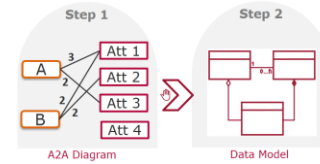
Data Model

Discovering Data Models from Event Logs

Dorina Bano

Chart 13

From A2A Diagram to Data Model



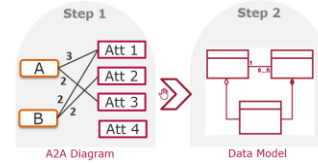
Rules	Isolated activities	Non-isolated activities
Isolated attributes		
Non-isolated attributes		

Discovering Data Models from Event Logs

Dorina Bano

Chart 14

From A2A Diagram to Data Model



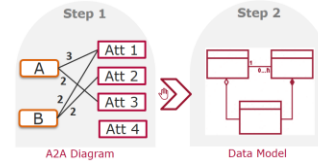
Rules	Isolated activities	Non-isolated activities
Isolated attributes		
Non-isolated attributes		

Discovering Data Models from Event Logs

Dorina Bano

Chart 15

From A2A Diagram to Data Model



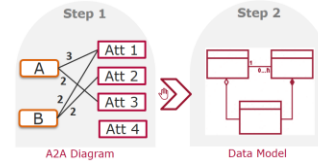
Rules	Isolated activities	Non-isolated activities
Isolated attributes	<p>Activity A is connected to Att 1. Activity B is connected to Att 2. Att 1 and Att 2 are highlighted with dashed yellow boxes.</p>	<p>Activity A connects to Att 1 (x). Activity B connects to Att 1 (y). Activity C connects to Att 1 (z). Activity D connects to Att 2 (e). Activity E connects to Att 2 (f). Att 1 and Att 2 are highlighted with dashed yellow boxes.</p>
Non-isolated attributes		

Discovering Data Models from Event Logs

Dorina Bano

Chart 16

From A2A Diagram to Data Model



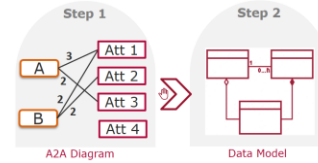
Rules	Isolated activities	Non-isolated activities
Isolated attributes		
Non-isolated attributes		

Discovering Data Models from Event Logs

Dorina Bano

Chart 17

From A2A Diagram to Data Model



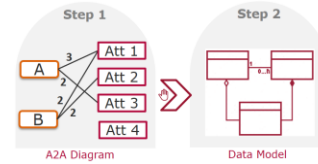
Rules	Isolated activities	Non-isolated activities
Isolated attributes		
Non-isolated attributes		

Discovering Data Models from Event Logs

Dorina Bano

Chart 18

From A2A Diagram to Data Model



A2A Island	I Fragment	II Fragment	III Fragment

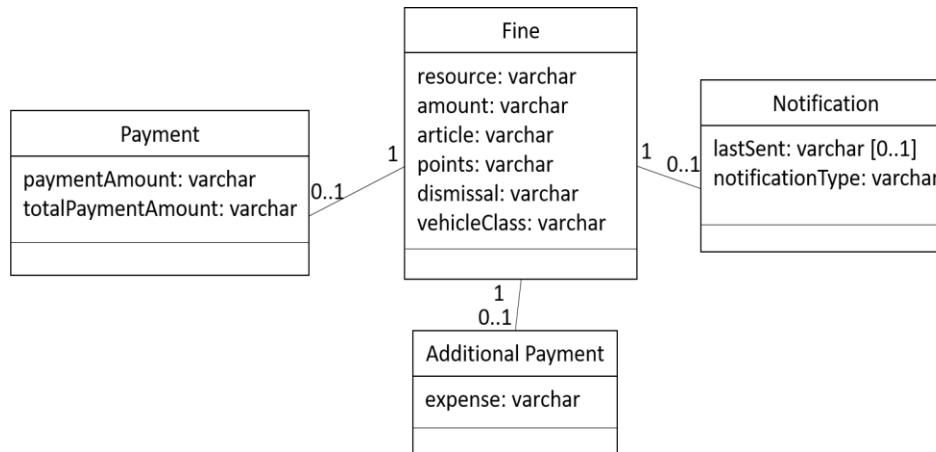
Discovering Data Models from Event Logs

Dorina Bano

Chart 19

Evaluation & Conclusion

- Two real-life event logs:
 - RTFM (Road Traffic Fine Management event log) [1]
 - Sepsis event log [2]



Discovered Data Model from RTFM event log

Discovering Data Models from Event Logs

Dorina Bano

Chart 20

[1] <https://doi.org/10.4121/uuid:270fd440-1057-4fb9-89a9-b699b47990f5>

[2] <https://doi.org/10.4121/uuid:915d2bfb-7e84-49ad-a286-dc35f063a460>