

Discovering and analyzing business processes

Prof. Dr. Martin Matzner



Process analysis

- **Software selection**
 - **Understanding of current processes ...**
 - ... is basis for evaluating different software tools
- **Compliance**
 - **Understanding of current processes and rules ...**
 - ... is basis for checks
- **Process design**
 - **Understanding of current processes ...**
 - ... is basis for identifying improvement potentials

Why *Process Mining*?

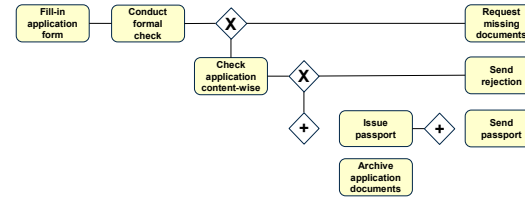
Motivation

- **Starting situation:** “Conventional” process analyses
 - Process Discovery: What is the as-is process?
 - Process Analysis: What are current problems?
- **Problems** w.r.t. costs & quality
- **Approach:** event-based data analyses
 - *“Let the process speak for itself”*



Event-Logs

Data transformation



Data transformation



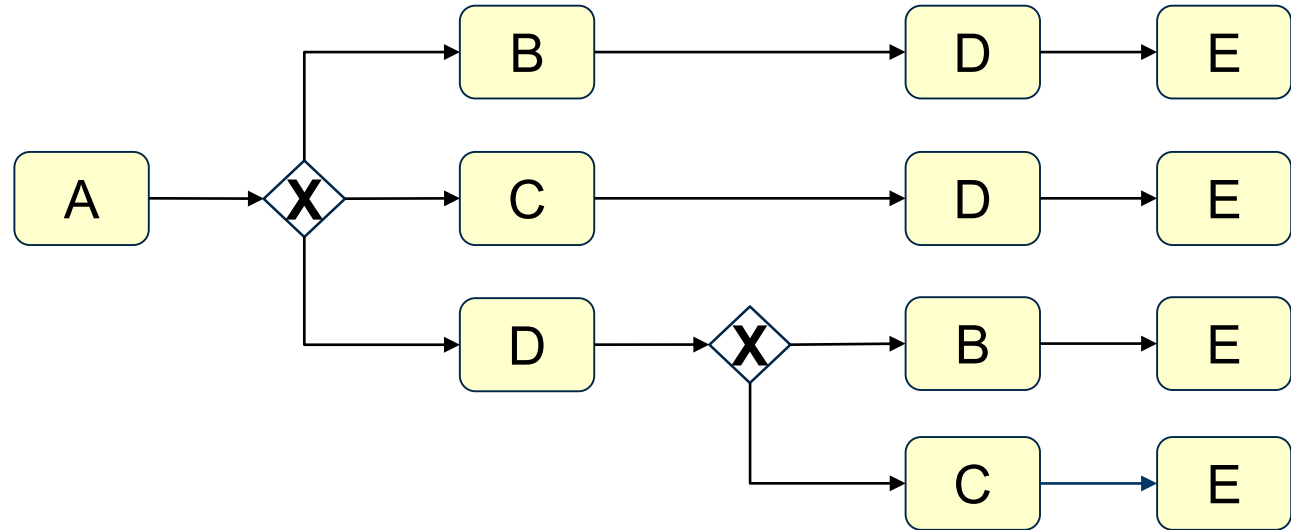
Applicant	Event type	Timestamp
Jane Doe	Application received	2019-06-15 11:45
Richard Roe	Application received	2019-06-15 12:13
Jane Doe	Formal review of application	2019-06-16 16:20
Jane Doe	Application received	2019-06-16 16:27
Richard Roe	Formal review of application	2019-06-17 14:48
Richard Roe	Content check of application	2019-06-17 14:56

Case	Event type
Jane Doe	Application received – Formal review of application – Application rejected
Richard Roe	Application received – Formal review of application – Content check of application

From Event-Log to Process Model

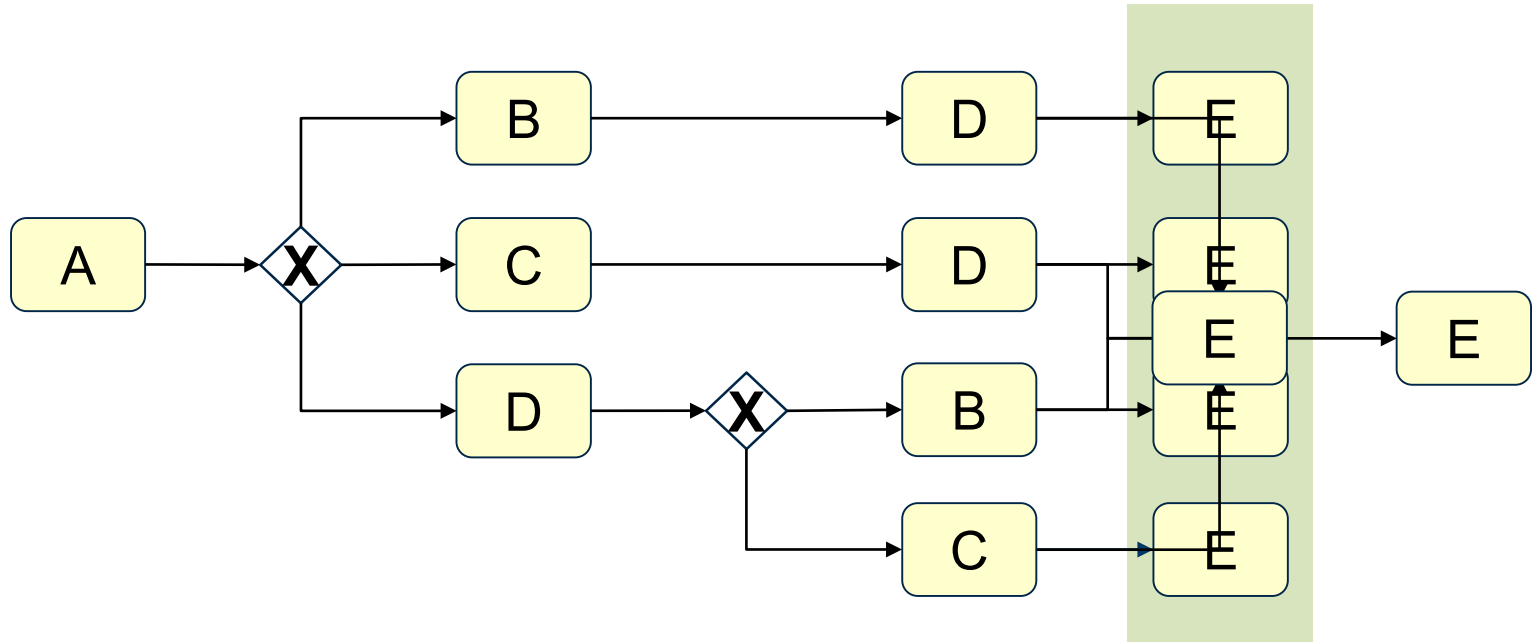
Example

Case	Events			
1	A	B	D	E
2	A	D	B	E
3	A	C	D	E
4	A	D	C	E



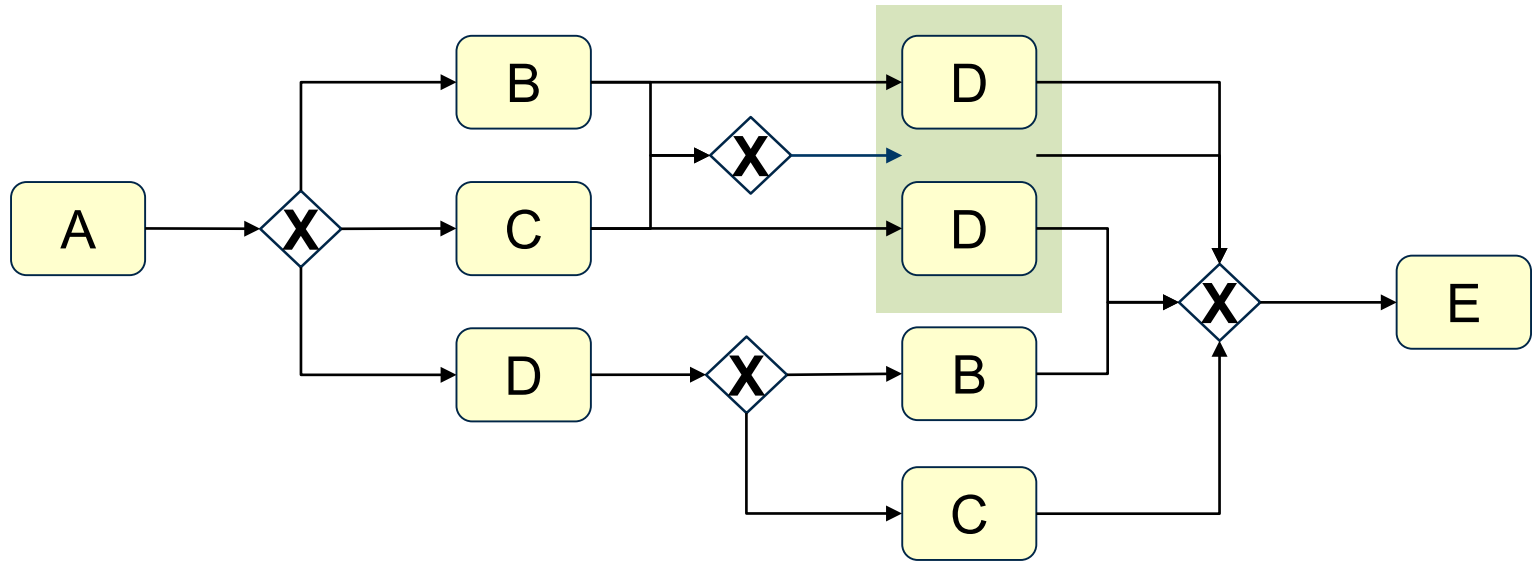
„Model improvements“

Example



„Model improvements“

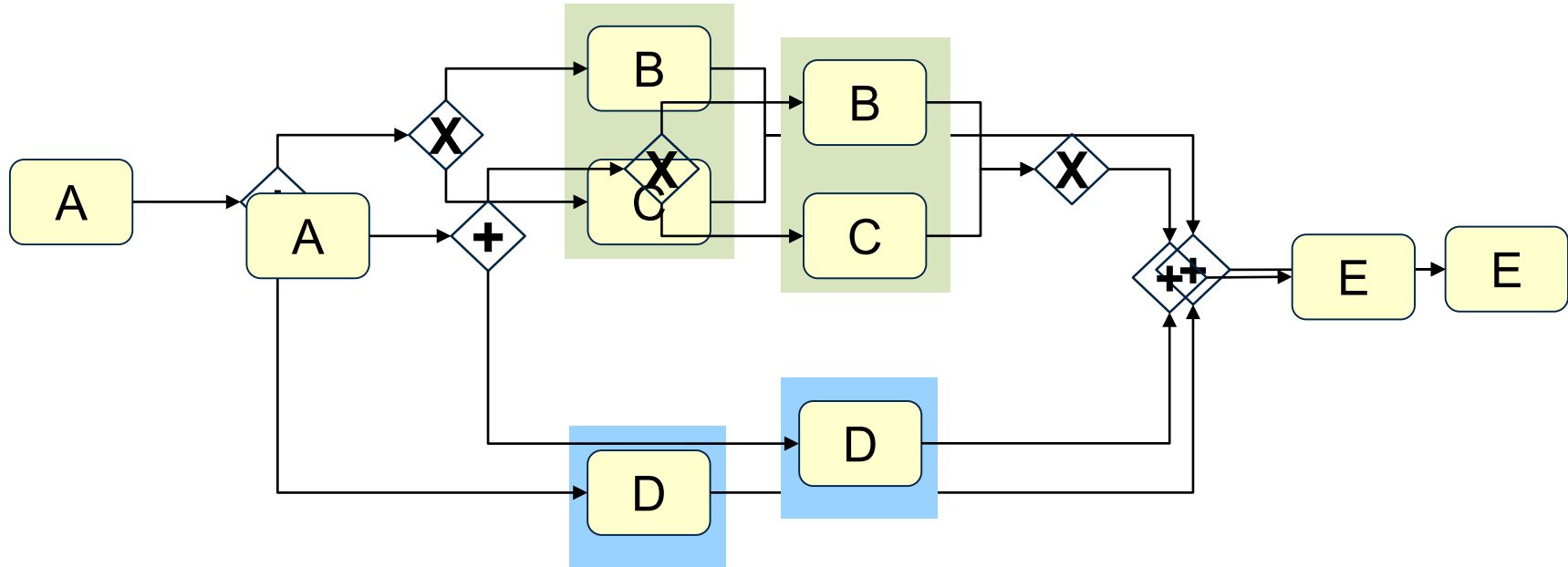
Example



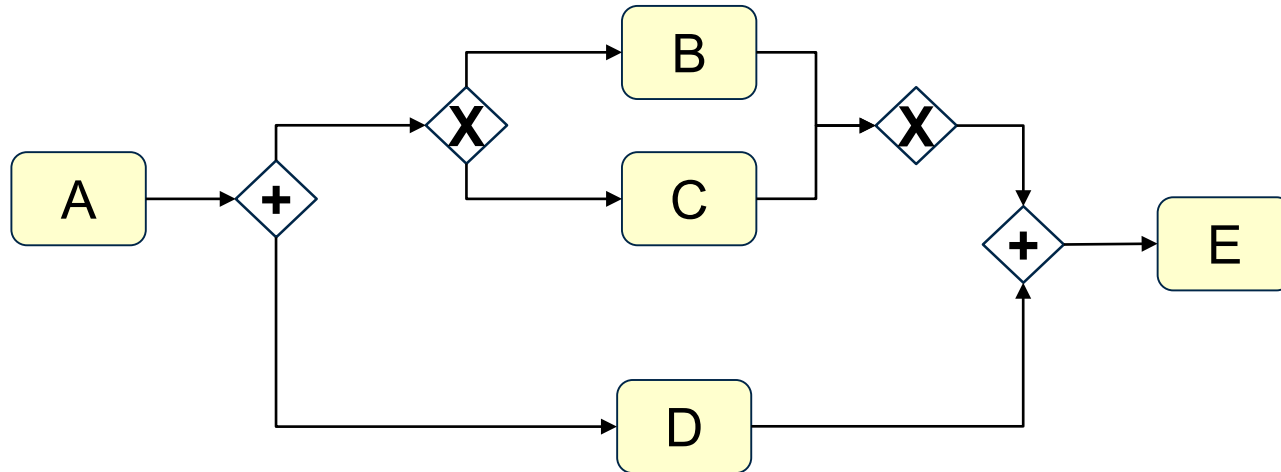


„Model improvements“

Example



„Discovered“ Process Example



Common challenges in process discovery

- Noise: "Incorrect" events/behaviour in the log
- Incompleteness: Missing events/behaviour in the
- Loops: The same activity being executed several times consecutively
- Parallelism: Two activities being conducted in parallel
- Source: W. v. d. Aalst 2011, p.144ff (Aalst, Wil van der. (2011). Process mining : discovery, conformance and enhancement of business processes.)

Prof. Dr. Martin Matzner

FAU Erlangen-Nürnberg
Institute of Information Systems
Chair of Digital Industrial Service Systems

<https://www.is.rw.fau.de/>

 @ismama

