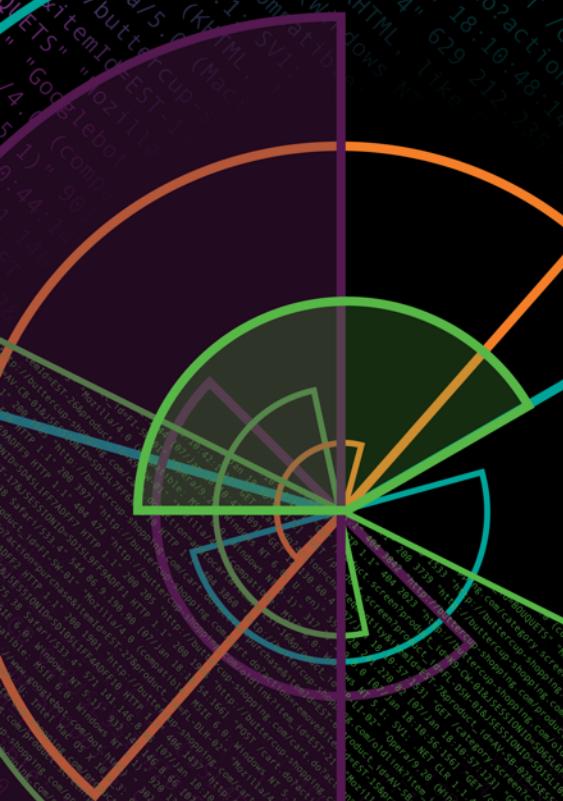


# Process Mining Using Splunk @ Porsche

Porsche uses Splunk to analyze live data from the Porsche Connect Platform to identify business processes. Mining and analyzing these processes provides valuable insights for management, business owners and the operations team.



# Now Speaking



**VISWATEZ REPAKULA**

IT Project Manager, Porsche



**MARTIN SENEBALD**

Data Analytics & Cloud, COCUS AG

# PORSCHE

## General Introduction

**23.5 billion € in  
Sales**

**30,000  
Employees**

246,375 cars sold



# COCUS – Digital Solution Provider

- Founded in 2000, COCUS is now a medium-sized enterprise with offices in Germany, Switzerland and Portugal
- Core experiences in the sectors of telecommunication, tourism, media, automotive and transport & logistics
- Differentiated market experience and connectivity know-how as basis for the Internet of Things and Industry 4.0

> 120  
employees

4 locations  
In 3 countries

1 Company



**Internet of Things**  
New business opportunities  
by connected things



**Blockchain**  
Focus on transparency &  
security



**Data Analytics**  
Valuable utilisation of  
information



**Information Security**  
Trusted security for  
innovation

# Splunk @ Porsche

## Users

- 500+ Splunk users

## Universal forwarders

- 800+ installed

# Log data volume

- 300+ GB per day

“ Data science is the profession of the future. However, it is *not sufficient* to focus on data storage and data analysis. The data scientist also needs to relate data to processes. At the same time, process analysis professionals need to learn how to incorporate data from the IT systems into their work.”

Prof. Wil van der Aalst | <http://processminingbook.com/foreword.html>

What's the  
problem?

Porsche  
Connect – lot of  
dots



# Major challenges



# Identify a single Customer Interaction



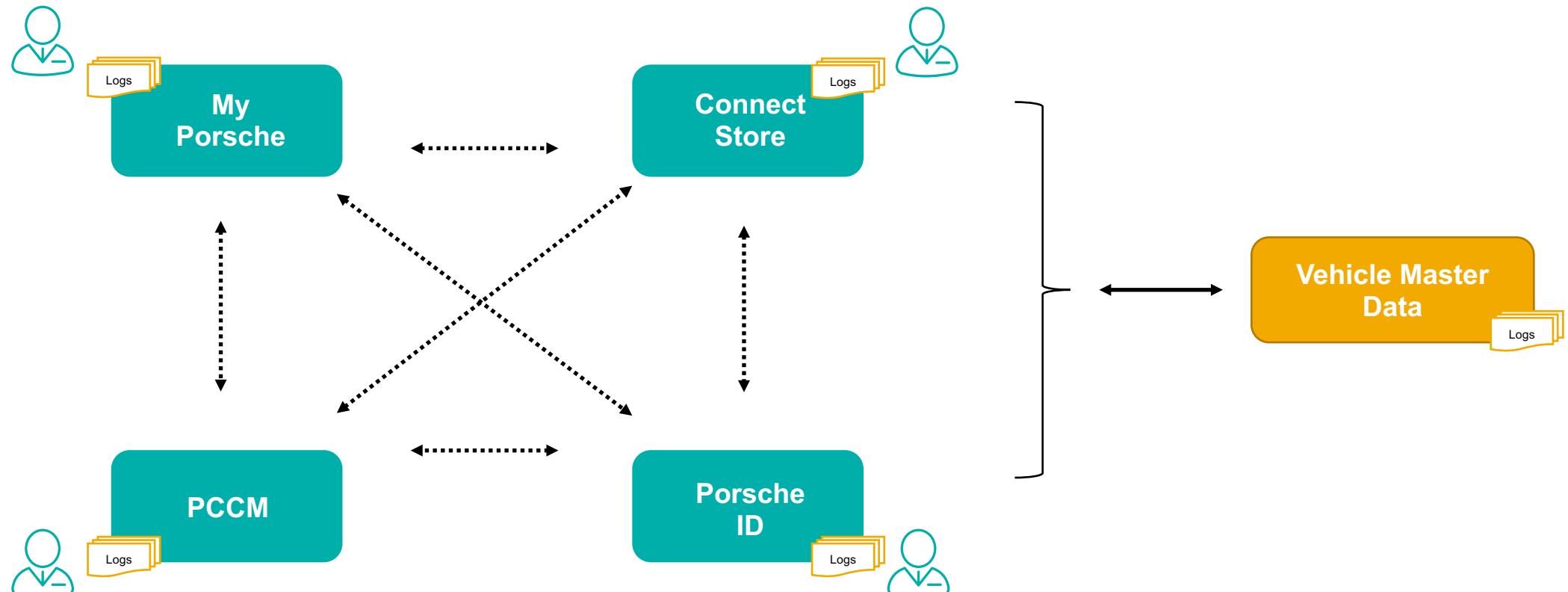
# Track critical Interactions



# transform Technical Insights to Business Impact

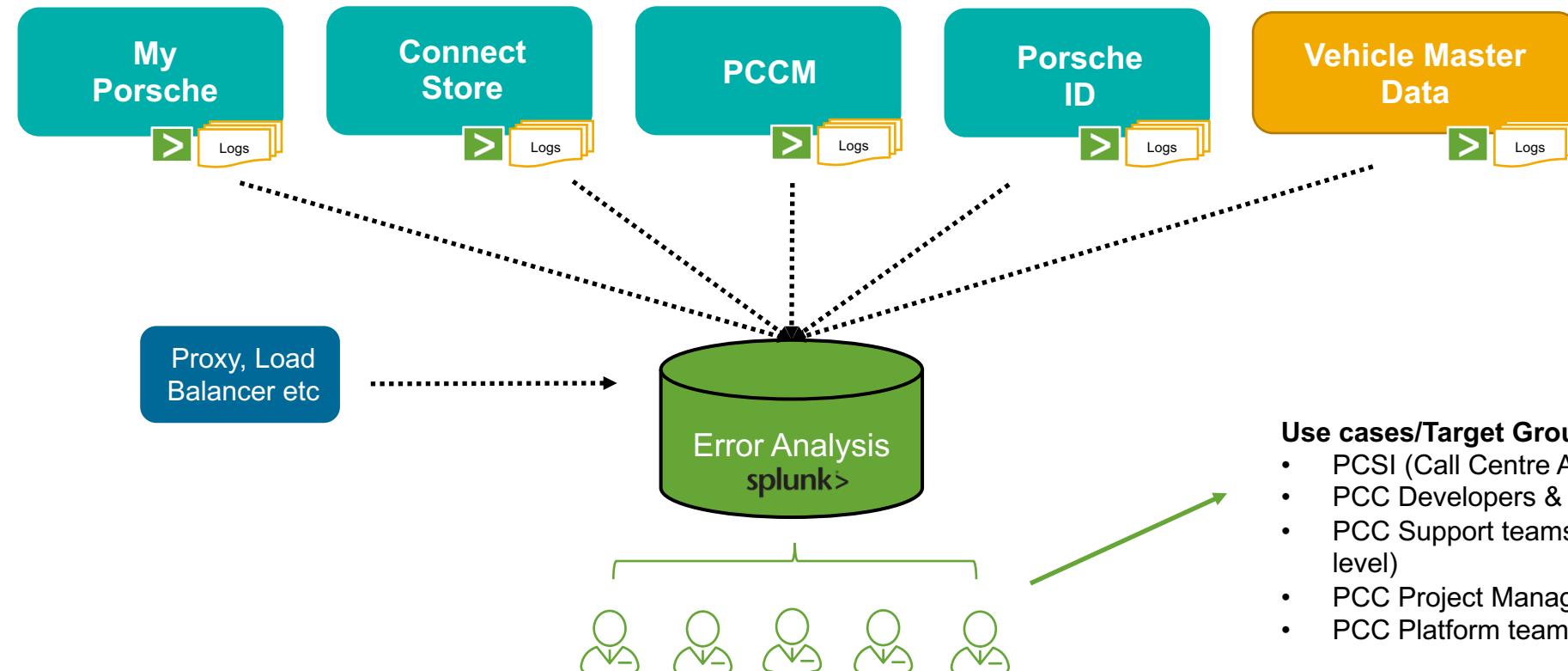
# Porsche Connect: Challenges

What were the challenges before implementing Splunk?



# Porsche Connect: Splunk

Solution, integration and benefits for teams



## Use cases/Target Groups:

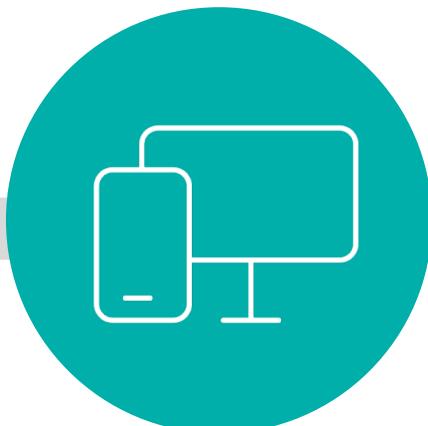
- PCSI (Call Centre Agent)
- PCC Developers & Testers
- PCC Support teams (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> level)
- PCC Project Managers
- PCC Platform team

# Process Mining ➤ Connecting the dots



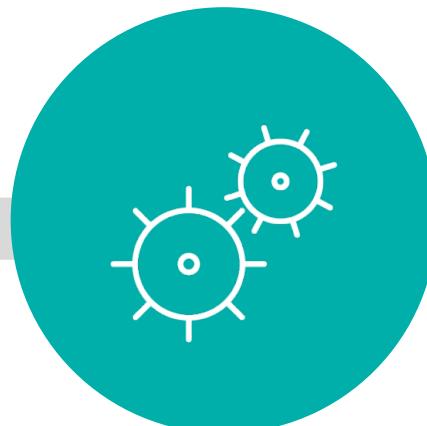
# Process Mining

# Leveraging Data to understand Processes



## Logging

# Our Services / Systems generate Data



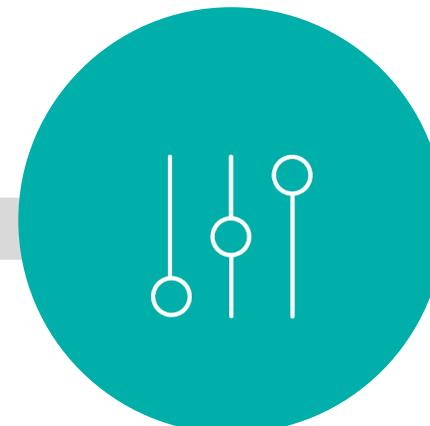
# Splunk

We store (log)  
them into Splunk  
(like a logbook)



# Mining

We “mine” the data to identify process traces



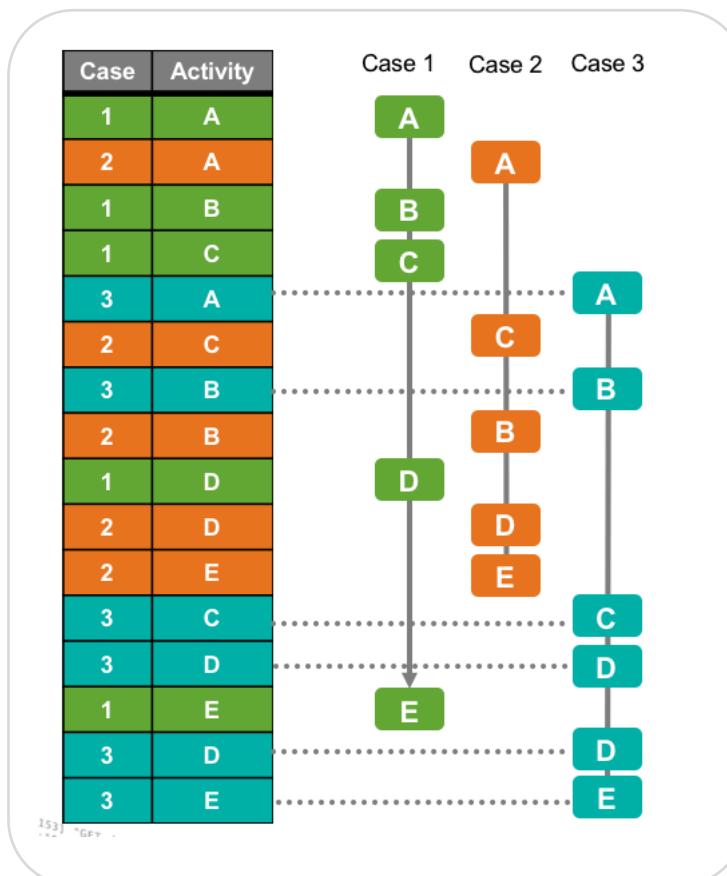
# Discover

## Discover a model of a process

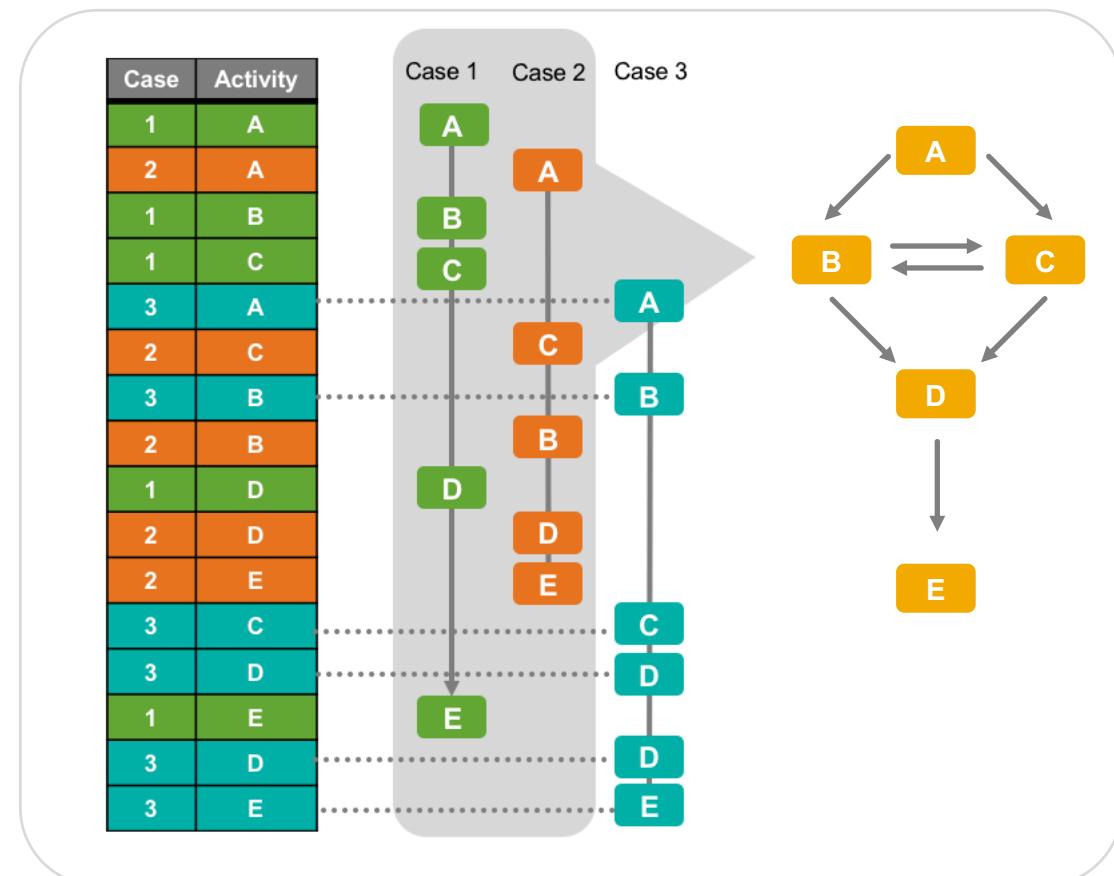
# Process Mining

How does it work?

► The Event log

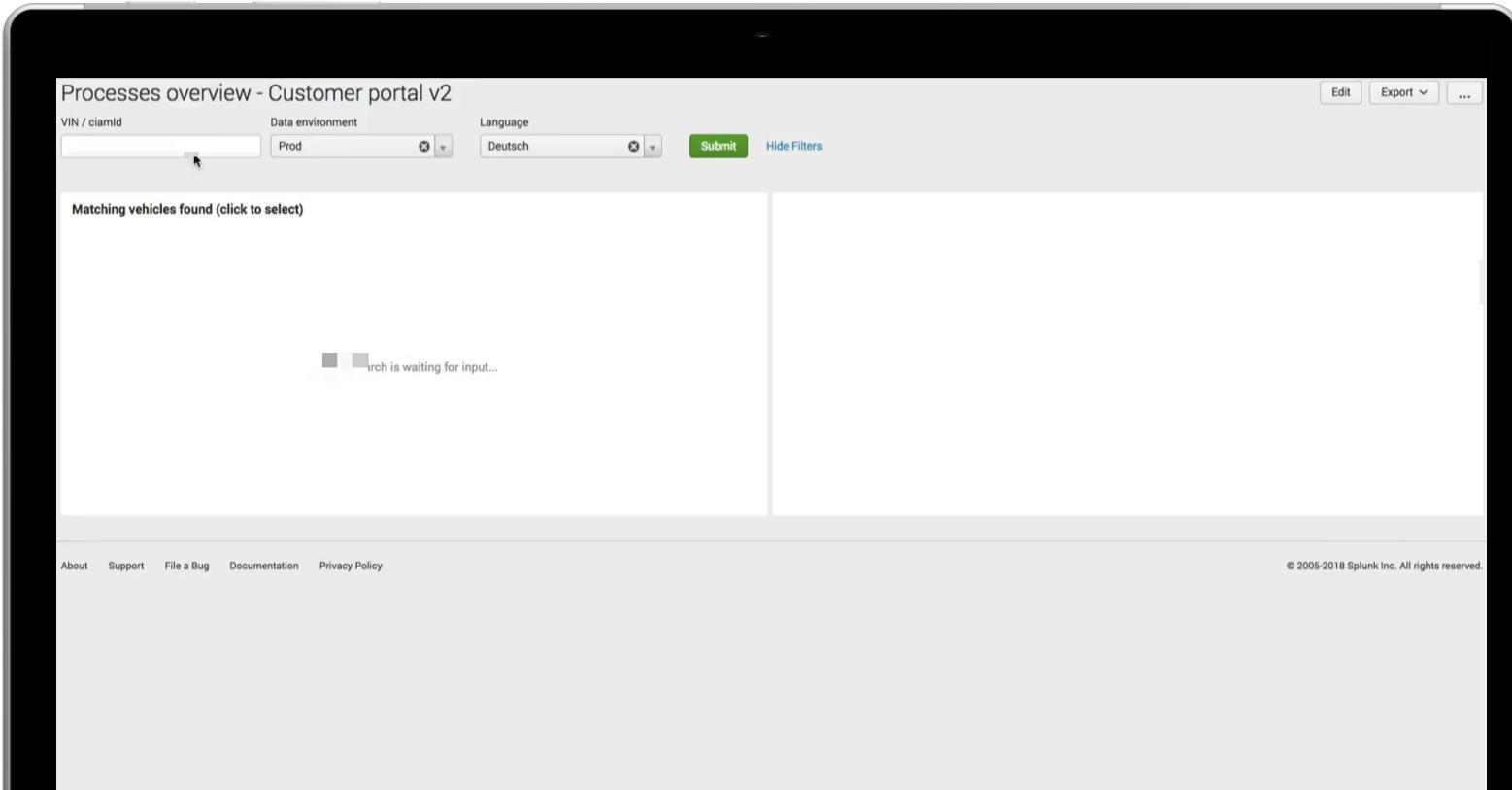


► The Model



# Process Mining

## Porsche Connect – connecting the dots

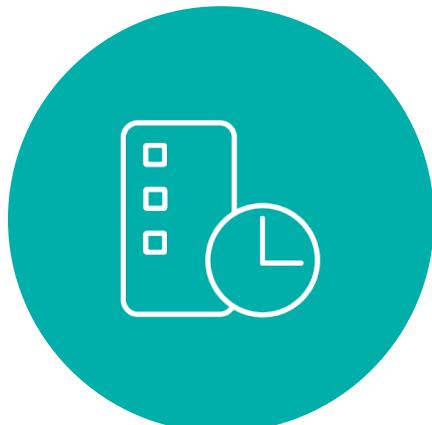


### ► Process Dashboard

- Used by Process Owners, Service Managers & Support Teams
- Immediate Insight of known processes also for non IT Personal
- Information Service Owners can relate to

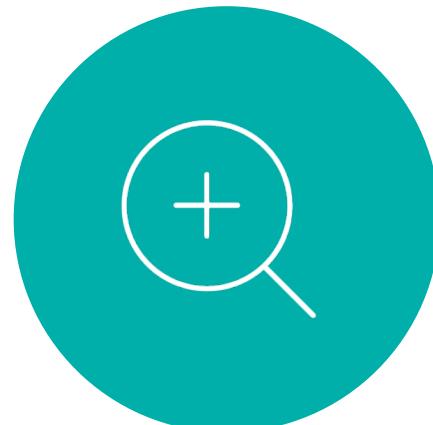
# Under the Hood

# How is it done in Splunk?



# Event types

# Identifying process steps



# Custom Search Command

To build the  
eventlog/  
processlog



# Splunk KV Store

A fast data storage to hold the process data

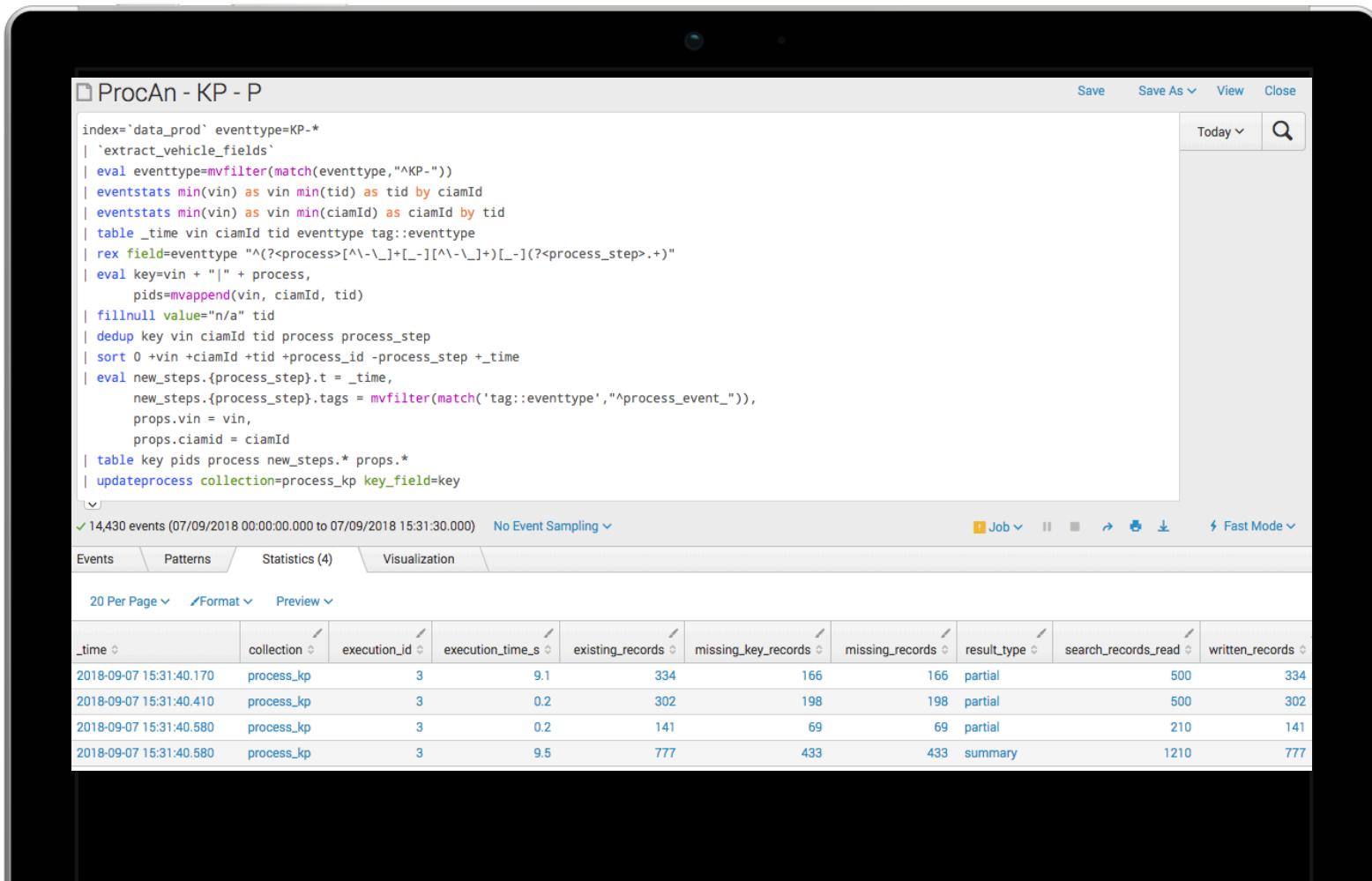


# Custom Vizualisation

# Using SVG & JS

# Under the Hood

## How is it done in Splunk?



The screenshot shows a Splunk search interface titled "ProcAn - KP - P". The search bar contains the following SPL command:

```

index='data_prod' eventtype=KP-*
| `extract_vehicle_fields`
| eval eventtype=mvfilter(match(eventtype,"^KP-"))
| eventstats min(vin) as vin min(tid) as tid by ciamId
| eventstats min(vin) as vin min(ciamId) as ciamId by tid
| table _time vin ciamId tid eventtype tag::eventtype
| rex field=eventtype "(?<process>[^\\-\\_]+[_-][^\\-\\_]+[_-](?<process_step>.))"
| eval key=vin + "|" + process,
  pids=mvappend(vin, ciamId, tid)
| fillnull value="n/a" tid
| dedup key vin ciamId tid process process_step
| sort 0 +vin +ciamId +tid +process_id -process_step +_time
| eval new_steps.{process_step}.t = _time,
  new_steps.{process_step}.tags = mvfilter(match('tag::eventtype','^process_event_')),
  props.vin = vin,
  props.ciamid = ciamId
| table key pids process new_steps.* props.*
| updateprocess collection=process_kp key_field=key

```

The search results table shows the following data:

_time	collection	execution_id	execution_time_s	existing_records	missing_key_records	missing_records	result_type	search_records_read	written_records
2018-09-07 15:31:40.170	process_kp	3	9.1	334	166	166	partial	500	334
2018-09-07 15:31:40.410	process_kp	3	0.2	302	198	198	partial	500	302
2018-09-07 15:31:40.580	process_kp	3	0.2	141	69	69	partial	210	141
2018-09-07 15:31:40.580	process_kp	3	9.5	777	433	433	summary	1210	777

- ▶ Example Search to gather process steps in KV Store
- ▶ This runs periodically to update the list of gathered processes

# Key Takeaways What did we gain?

- End to End Insight of Processes running across different systems
  - Service and Business Performance in a meaningful way



# Next Steps

What management is waiting for



- ▶ **Adding more processes**
  - Not only for Porsche Connect
  
- ▶ **New Visualization**
  - Completely JS based as Splunk Supported Custom visualization
  - With D3 as data format input

```
product_id=fe2-sw-01  
product_id=kx11w74_0  
p_shoutcast_com_w-01  
&SESSIONID=d055Lrt_dMzg2pt1qW  
HOSTNAME=j-29055Lrt_dMzg2pt1qW  
-SD8SLBFFADP-FE38E5  
SURPRISE&J  
SPLUNK-CONF18
```

# Q&A

**Viswatez Repakula, Porsche AG**  
**Martin Senebald, COCUS AG**

# Thank You

Don't forget to rate this session  
in the .conf18 mobile app



# Backup



**splunk®**

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Viswatez Repakula. IT Project Manager. Porsche AG

Martin Senebald. Unit Manager Data Analytics & Cloud.

# COCUS AG