

TrendMiner - Online Trainings

Recording and slides Difficulty: intermediate



1. Best practices on searches

- i. Value based search
- ii. Similarity search

2. Working with search results

- i. Filter data
- ii. Compare results
- iii. Monitoring

3. Searches - Tips and Tricks

- i. Combining AND & OR conditions
- ii. Find short spikes below indexing resolution
- iii. Other TrendMiner search options

4. Contextualisation of process data

- i. Annotate past process conditions
- ii. Monitor future process conditions
- iii. Create process overview on dashboard

5. Creating fingerprints to monitor your process

- i. Capture recurring patterns (e.g. grade transitions)
- ii. Compare bad patterns with fingerprint
- iii. Analyse deviations



6. Correlation analysis with RE

- i. Find correlating tags (for multiple events)
- ii. Setting filter expression
- iii. Annotate and monitor correlating events

7. Methods of correlation analysis in TrendMiner

- i. Influence factor analysis incl. time shift
- ii. Non-linear correlations in Scatter plots
- iii. Comparison table

8. Tips & Tricks with the Tag builder

- . Creating new tags by formula and aggregations
- ii. Calculating the slope of a tag
- iii. If-Statements

9. Continuous Process Monitoring

- i. Dashboard tiles: TrendHub, Monitoring and Value
- ii. Monitoring production volume of last 24 h
- iii. Monitoring process oscillations

10. Pre-processing data for relevant analysis

- i. Filter
- ii. Reducing noise
- iii. Removing process outliers

11. Contextualisation of process data

- i. Context Items from search results and monitoring
- ii. Gantt Chart
- iii. Dashboard: Monitoring and Context Item counter

12. Correlation analysis with Fingerprint

- Creating and editing a Fingerprint
- ii. Deviations analysis with Recommendation Engine
- iii. Monitoring deviations

13. 3 Ways to Compare Past Process Changes

- . Aggregation, Context Items creation and search
- ii. Layering and Comparison Table
- iii. Fingerprints and monitoring

14. Tips & Tricks with Time Tags

- i. Calculate a cumulative production over 24h
- ii. Improved DashHub tiles
- iii. Sending a monitor at a fixed time

15. Layers

- . Comparing Specific Time Periods
- ii. Comparing Batches
- iii. Layers in TrendHub Beta



16. 4 Use Cases with the Tag Builder

- i. Maximum of a set of tags
- ii. Data Pre-processing
- iii. Temperature variations analysis
- iv. Nested Formulas

17. DashHub Dashboards

- i. ContextHub View Count Tile (Event Counter)
- ii. Current Value Tile
- iii. Monitor/Alert Tile
- iv. TrendHub View Tile

18. Searches – Value Based Search

- i. VBS Basics
- ii. Combining AND and OR Conditions
- iii. Minimum Search Result Durations
- iv. Anomaly Detection

19. Searches – Accessing Undiscovered Information

- i. Similarity Searches
- ii. Area Searches
- iii. Monitors
- iv. Cross-Asset Value Based Search

Optimizing and Improving Production 20.

- Using Tag Builder for Yield Calculations • •
- Leveraging Searches, Filters, and Compare Table to Check
- Product Performance • • •
- Creating Fingerprints and Deviation Monitors to Streamline th Process

Three Special Tags which will Improve your 21. TrendMiner Experience

- Determine the Percentage of Time when the Process is **.**
- Producing Product Kappa
- Determine the Daily Pump Throughput using a Special Tag ||, |||.
- Determine and Locate Events that Exceed an Optimal Time Threshold

Control your process better than you ever dreamed 22.

- Create a Gantt Chart with flowrate anomalies and include it 1. Dashboard • •
- Create a monitor to show in the dashboard the risk of anome ||. |||.
- Current value & TrendHub view tile to show the trends and current values of the variables of interest.
- External content tile Display the PFD of the process (sharepo iv.

Root cause analysis: Detecting the undetectable 23.

- Correlation of a single event and multiple events: find a com Ι. root cause of similar anomalies • •
 - Annotate and list the anomalies in a ContextHub view.
- Build a dashboard as reporting tool - Include trend with the cause analysis and details of the anomalies.
- IV. Share the dashboard with colleagues to spread the knowled



he			Hub-Discover Production Data Insights ough Advanced Searches Searching for Optimal Operating Ranges Advanced Batch Recipe Transition Analyses Analyzing Pressure Variability Across Batches
<mark>d of</mark> t in a			team synergy, save time and energy-The b Method What Admin rights are? Define and annotate historical and future events of interest? Create ContextHub views Create a Dashboard to follow up and manage the registered anomalies
naly point)	26.	Take i. ii. iii.	your formulas to the next level Add upper and Lower Limits to any Trend Calculate % difference Formula and Visualize on focus chart Predict the amount of time remaining before a tank is almost empty
nmon root dge.	27.	Maste i. ii. iii.	ering anomaly detection and follow up Convert durations to a new variable Monitor and send email warnings for events shorter than a defined duration Contextualize independently short and long events



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28. Statistical reporting tricks- Track the dangers of climate change

- i. Get the last 3 months CO2 emissions
- ii. Detect and assess high emissions periods
- iii. Get daily emissions report of the last month

29. Craft and Adopt your golden batch

- i. Identify ideal profile based on multiple calculations
- ii. Detect and track deviations from the ideal profile
- iii. Visualize, comment and approve deviations

30. Daily production & Automatic reporting

- i. Daily production as a new variable: Continuous rolling, as peaks, linear interpolated & stepped.
- ii. Autogenerated event reports: Every shift, all the events.

31. Detecting anomalies and creating soft sensors in ML Hub



- Learn essential ML Hub skills and techniques
- Master anomaly detection and soft sensors in MLHub
- Elevate data analysis in MLHub



TrendMiner Searches - Best practices

Title	TrendMiner Searches – Best p
Difficulty:	Intermediate <u>(Youtube</u> course
Prerequisites:	Adding tags, navigate in time
Content:	Focus on Value Based and Sir
Sessions EMEA	<u>Slides, Recording</u>
Session GER	<u>Slides, Recording</u>
Session US	<u>Slides, Recording</u>



practices on searches

for beginners)

e, saving & loading a view

imilarity Search



TrendMiner Searches – Working with search results

Title	TrendMiner Searches – Workir
Difficulty:	Intermediate <u>(Youtube</u> course
Prerequisites:	Adding tags, navigate in time
Content:	Use searches to filter your da
Sessions EMEA	<u>Slides, Recording</u>
Session GER	<u>Slides, Recording</u>
Session US	<u>Slides, Recording</u>



ng with search results

for beginners)

e, saving & loading a view, doing a search

ata, compare results and monitor your process



TrendMiner Searches - Tips & Tricks

TrendMiner Searches - Tips ar
Intermediate <u>(Youtube</u> course
Adding tags, navigate in time with search results
Learn Tips & Tricks and think c
<u>Slides, Recording</u>
<u>Slides, Recording</u>
<u>Slides, Recording</u>





and Tricks

for beginners)

e, saving & loading a view, doing a search, working

a little outside the box to step up your search game



Contextualisation of process data

Contextualisation of process data
Intermediate (Youtube course for beginr
Adding tags, navigate in time, saving a 2020.R1 or higher
Contextualising process events like bo spec production to be used for visual
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>

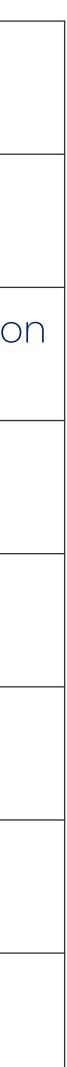




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& loading a view, doing a search, recommended TrendMiner version

atches, operational or maintenance periods as well as in- or offalization of process conditions and dashboarding.



Creating fingerprints to monitor your process

Creating fingerprints to monitor your p
Intermediate (Youtube course for beginr
Adding tags, navigate in time, saving a TrendMiner version 2020.R1 or higher
Are you using fingerprints to their full p product transition, and golden batche dynamics or perform a root cause an
<u>Slides, Recording</u>
<u>Slides, Recording</u>
<u>Slides, Recording</u>
<u>Slides, Recording</u>



process

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& loading a view, doing a search, layering, recommended

potential? Capture recurring patterns such as process start-ups, nes through fingerprints to compare certain events, monitor proces nalysis to avoid deviations from the ideal profile.

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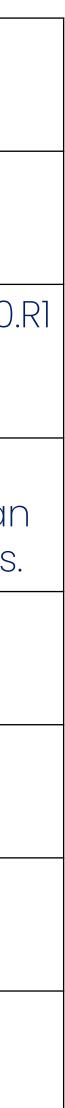
Correlation Analysis 1 – Recommendation Engine

Title	Correlation analysis with Recommenc
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving or higher. Please search for tags with s beginning of the training.
Content:	Correlation does not necessarily imply further analysis. Learn how to automa be done with the recommendation er
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recording</u> s
Session ES	<u>Slides, Recordings</u>



dation Engine

- & loading a view, doing a search, layering, TrendMiner version 2020.R1 starting with TM-TSP-*, if not available please let us know at the
- ly causation but it can be a good indicator and starting point for atically search for correlating tags and find early indicators. This can engine for one or multiple events up to 1 h before an event happens.



Correlation Analysis 2 – Further methods

Methods of correlation analysis in Trer
Intermediate (Youtube course for beginr
Adding tags, navigating in time, saving 2020.R1 or higher. Please search for tag please let us know at the beginning of
Next to the Recommendation Engine & layers. Learn how to check for correl scatter plots and compare key statist
<u>Slides</u> <u>Recordings</u>
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>



endMiner

- ng & loading a view, doing a search, layering, TrendMiner version ngs starting with TM-TSP-*, TM-HEX-* and TM-GRA*, if not available of the training
- TrendMiner has additional ways to check correlations between tag elations between tags by the influence factor analysis, visualisation tics between multiple layers of one tag in this training.

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Tips & Tricks with the Tag builder

Title	Tips and tricks with the Tag Builder
Difficulty:	Intermediate (<u>Youtube</u> course for beg
Prerequisites:	Adding tags, navigate in time, saving a 2020.R1 or higher
Content:	Besides learning how to create new to handy tips and tricks on how to work w calculating the slope of a tag, nesting of a set of tags.
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session ES	<u>Slides, Recordings</u>





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& loading a view, doing a search, recommended TrendMiner version

tags based on formulas or aggregations, we will also show some with the tag builder to solve some very common use cases, such c g formulas such as IF-statements or determine the maximum value

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as e

Continuous Process Monitoring

Title	Continuous process monitoring
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2020.R1 or higher. TrendMiner basics ar
Content:	Next to functionalities for root cause c of options to keep track of the current shows the latest data including upper conditions or simply keep track of the
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session ES	<u>Slides, Recordings</u>
Content: Session EMEA Session GER Session US	2020.R1 or higher. TrendMiner basics Next to functionalities for root cause of options to keep track of the curre shows the latest data including up conditions or simply keep track of t <u>Slides, Recordings</u> <u>Slides, Recordings</u>

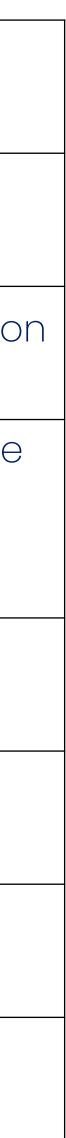




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& loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on YouTube.

analysis covered in previous trainings, TrendMiner offers a multitude nt state of your process. Learn how to create a view that always er and lower limit, how to get notified about critical process product volume of the last 24 h.



Preprocessing data for relevant analysis

Preprocessing data for relevant analy
Intermediate (Youtube course for beginr
Adding tags, navigate in time, saving a 2020.R1 or higher. TrendMiner basics ar
Learn in this online training how to pre by reducing noise, removing outliers in conditions. In this training we will focus troubleshooting.
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>



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& loading a view, doing a search, recommended TrendMiner versid are covered in the 'TrendMiner Training' available on <u>YouTube.</u>

eprocess your data ensuring comparability of analyzed data sets in your process data and filtering data based on a specified time c us on creating filters and using the tag builder to enable meaningfu

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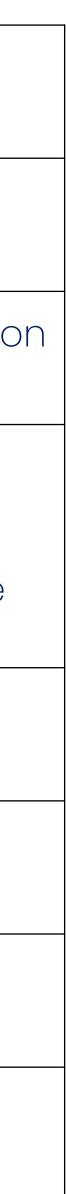
Contextualization of process data

Title	Contextualization of process data
Difficulty:	Intermediate (<u>Youtube</u> course for beginn
Prerequisites:	Adding tags, navigate in time, saving 2020.R1 or higher. TrendMiner basics a
Content:	Sometimes looking at numbers and tr additional contextual information car context items to your trends both ma incident. We will focus on adding con data to the analysis being performed
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session ES	<u>Slides, Recordings</u>





- & loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on **YouTube.**
- trends just isn't enough to complete an investigation, some n make all the difference. Learn in this online training how to add anually and automatically to improve the overall knowledge of an ntextual data to our continuous processes to add more qualitative



Correlation Analysis with Fingerprints

Title	Correlation Analysis with Fingerprints
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2020.R1 or higher. TrendMiner basics ar
Content:	Fingerprinting is a great tool to captur could also use Fingerprints to perform to use fingerprinting to determine the avoid deviations from the ideal profile
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session ES	<u>Slides, Recordings</u>



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& loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on YouTube.

are and to compare recurring process events. But did you know you n a root cause analysis? In this training you will learn how e cause of a batch process anomaly and how to set up a monitor to θ.



3 Ways to Compare Past Process Changes

Title	3 Ways to Compare Past Process Change
Difficulty:	Intermediate (Youtube course for beginne
Prerequisites:	Adding tags, navigate in time, saving & loa or higher. TrendMiner basics are covered
Content:	Using past process data is a great way to cover three different ways you can leverage the future. For this training you will learn h
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session ES	<u>Slides, Recordings</u>



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bading a view, doing a search, recommended TrendMiner version 2020.R² d in the 'TrendMiner Training' available on <u>YouTube.</u>

o figure out how the current process might behave. In this training we will age previous process changes to have more success in the present and in how to use ContextHub views, compare tables, and fingerprints.

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Tips & Tricks with Time Tags

Title	Tips & Tricks with Time Tags
Difficulty:	Intermediate (<u>Youtube</u> course for beg
Prerequisites:	Adding tags, navigate in time, saving a 2021.R1 or higher. TrendMiner basics are
Content:	The new TrendMiner versions have Time a tag through year, month, day, and h ways to get more out of your process you will create TrendHub and DashHu
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session ES	<u>Slides, Recordings</u>



ginners)

& loading a view, doing a search, recommended TrendMiner version re covered in the 'TrendMiner Training' available on <u>YouTube.</u>

me Tags shipped with the installations. These Time Tags show time as hour tags. These discrete time tags can be used in many different s data and display KPIs and metrics in useful ways. For this training ub views to display interesting insights.





Title	Layers – Comparing Against Historic F
Difficulty:	Intermediate (Youtube course for begin
Prerequisites:	Adding tags, navigate in time, saving 2020.R1 or higher. TrendMiner basics a
Content:	Every process has its own quirks that a process to its own historic data is the periods. In this training we will cover h layers as tools for analysis and comp
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session ES	<u>Slides, Recordings</u>
Session FR	<u>Slides, Recordings</u>



Periods

- y & loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on **YouTube**.
- affect how it behaves in certain conditions. Comparing each e best way to find differences and similarities between time how to overlay different time periods as layers and how to use those parison.



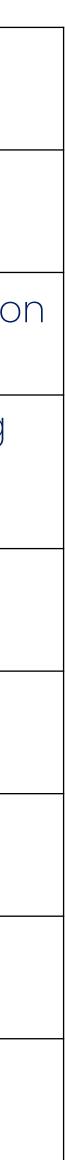
4 Use cases with the Tag Builder

4 Use cases with the Tag Builder
Intermediate (Youtube course for beginr
Adding tags, navigate in time, saving a 2021.R1 or higher. TrendMiner basics are
In TrendMiner you can build your own Builder. In this training, we will work on of formulas and aggregations to ana
<u>Slides, Recordings</u>





- & loading a view, doing a search, recommended TrendMiner version re covered in the 'TrendMiner Training' available on **YouTube**.
- personalized tags using a range of operators available in the Tag 4 use cases, and you will see how you can apply different types alyse your process.



DashHub Dashboard

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Title	DashHub Dashboard
Difficulty:	Intermediate (Youtube course for begin
Prerequisites:	Adding tags, navigate in time, saving a 2021.R1 or higher. TrendMiner basics are
Content:	DashHub is your control center where create a personalized Dashboard to k main process parameters.
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides</u> , <u>Recordings</u>
Session US	<u>Slides, Recordings</u>
Session ES	<u>Slides, Recordings</u>
Session FR	<u>Slides, Recordings</u>



nners)

& loading a view, doing a search, recommended TrendMiner versid re covered in the 'TrendMiner Training' available on <u>YouTube.</u>

e you can oversee multiple aspects of your process. Learn how to keep count of specific events and monitor the current value of you

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Searches – Value Based Search

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Searches – Value Based Search
Intermediate (Youtube course for beginn
Adding tags, navigate in time, saving a 2021.R1 or higher. TrendMiner basics are
Searches are a powerful tool in the Tre empowered to find even the most ob find anomalies, optimal performances
<u>Slides, Recordings</u>





- & loading a view, doing a search, recommended TrendMiner version re covered in the 'TrendMiner Training' available on **YouTube**.
- rendMiner toolkit. Using Value Based Searches, any user will be oscure occurrences in their data. Learn how to leverage this tool to es, and other useful information in your historized data.



Searches – Accessing Undiscovered Information

Searches – Accessing Undiscovered Ir
Intermediate (Youtube course for beginr
Adding tags, navigate in time, saving a 2021.R1 or higher. TrendMiner basics are
Last month we presented the Value B training, we will explore the other sear might not be as obvious but give a di
<u>Slides, Recordings</u>
-



Information

- & loading a view, doing a search, recommended TrendMiner version re covered in the 'TrendMiner Training' available on **YouTube**.
- Based Search, which covers Boolean condition searches. In this rch options to take advantage of your historian data in ways that ifferent perspective.



Optimizing and Improving Production

Title	Optimizing and Improving Production
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2021.R1 or higher. TrendMiner basics are
Content:	Journey with us as we explore a proce create product yield tags and leverage process. Finally, learn how to create Fi
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session ES	<u>Slides, Recordings</u>
Session FR	<u>Slides, Recordings</u>



- & loading a view, doing a search, recommended TrendMiner version re covered in the 'TrendMiner Training' available on **YouTube**.
- ess optimization use case together. Learn how to utilize formulas to ge statistics across multiple operating periods to improve your ingerprints and set up automatic monitoring for future deviations.



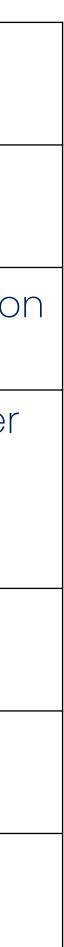
Three Special Tags which will Improve your TrendMiner Experience

Three Special Tags which will Improve
Intermediate (Youtube course for beginr
Adding tags, navigate in time, saving 8 2021.R1 or higher. TrendMiner basics are
In this online training, we will be explor insights into our process. We will work learn how to report on equipment utili determine how much longer than an
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>
<u>Slides, Recordings</u>



e your TrendMiner Experience

- & loading a view, doing a search, recommended TrendMiner version re covered in the 'TrendMiner Training' available on **YouTube.**
- ring more advanced ways of leveraging tag builder to gain deeper on 3 different use cases, and by the end of the training, you will lization, visualize daily averages/integrals for time series data, and optimal threshold a specific process event takes.



Control your process better than you ever dreamed of

Title	DashHub: Control your process better
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2022.R1 or higher. TrendMiner basics ar
Content:	DashHub is your control center where create a personalized Dashboard to k current value of your main process vo end your dashboard with a Process Fl
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>

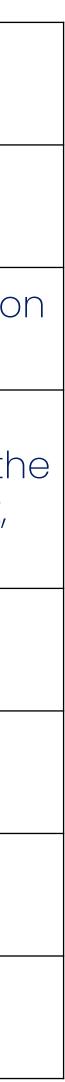


r than you ever dreamed of

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& loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on YouTube.

e you can oversee multiple aspects of your process. Learn how to keep count of specific events, their distribution over time, monitor the ariables and the correlations between them. And last but not least, Flow Diagram to provide a more holistic view of the plant.



Root Cause Analysis: Detecting the undetectable

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Title	Root Cause Analysis: Detecting the un
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2022.R1 or higher. TrendMiner basics ar
Content:	During this training, we are going to go relevant is it? And Why did it happen? Through similarity searches, diagnose in this session we will learn how to und
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>



ndetectable

- & loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on **YouTube**.
- go over the 2 most relevant questions for troubleshooting: How
- e engine, layers comparison, contextualize, dashboarding and more, derstand and leverage our manufacturing process in an easy way.



TrendHub – Discover Production Data Insights quickly Through Advanced Searches

Title	TrendHub – Discover Production Data
Difficulty:	Intermediate (Youtube course for beginn
Prerequisites:	Adding tags, navigate in time, saving 2022.R1 or higher. TrendMiner basics ar
Content:	Journey with us as we discover key ins formulas. Learn how to combine mult multiple calculation criteria. Finally, we analyze product transitions.
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>



a Insights quickly Through Advanced Searches

- & loading a view, doing a search, recommended TrendMiner versions in the 'TrendMiner Training' available on **YouTube.**
- isights within our production data through advanced searches and tiple parameters within searches, while applying filters for sorting by e will leverage advanced formulas in combination with searches to

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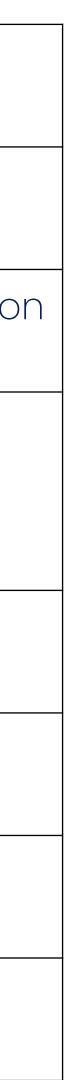
Seize team synergy, save time and energy – The ContextHub Method

Title	Seize team synergy, save time and en
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2022.R1 or higher. TrendMiner basics ar
Content:	Join and learn how to develop an effic knowledge. Discover how to automati tables, use context fields and approve visualizing, analyzing, and sharing know
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>



nergy – The ContextHub Method

- & loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on **YouTube**.
- icient method to take advantage of all the production experts' tically contextualize events, create Gantt Charts and informative als to enhance expert contributions. Create a dashboard for pwledge within the organization.



Take your formulas to the next level

Title	Take your formulas to the next level
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2022.R1 or higher. TrendMiner basics ar
Content:	Journey with us as we deep dive into visualization and troubleshooting. Lea variables displaying unrealistic values predict the amount of time remaining
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>



ners)

& loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on **YouTube**.

Formula capabilities, allowing for quicker and more efficient data arn how to add upper and lower limits to any trend, cap process s, calculate percent difference between two process variables, and g before a tank is empty.



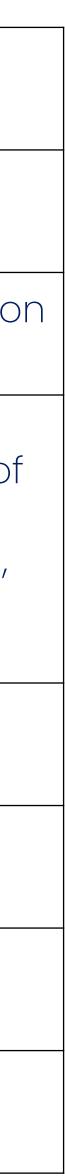
Mastering Anomaly Detection and follow up

Title	Mastering anomaly detection and foll
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2022.R1 or higher. TrendMiner basics ar
Content:	Join this training to learn how to mast You will discover how to convert the d the impact of the anomalies found. Finally, learn how to automatically mo broadening your detection methods.
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>



llow up

- & loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on **YouTube.**
- ter the detection and follow up of critical events. duration of certain events to a new variable, to visually keep track of
- onitor and contextualize anomalies shorter than a certain duration,



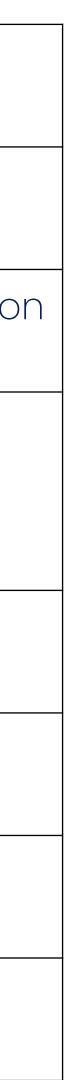
Statistical Reporting Tricks: Track the dangers of Climate Change

Title	Statistical Reporting Tricks: Track the D
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2022.R1 or higher. TrendMiner basics ar
Content:	Join this webinar to master statistical -Get the total consumption/emissions -Detect and assess high emissions pe -Get daily aggregations reports and c
Session EMEA	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session US	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>



Dangers of Climate Change

- & loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on **YouTube**.
- reporting and learn how to: ns of a certain period.
- eriods.
- check its evolution over time.



Craft and Adopt your golden batch

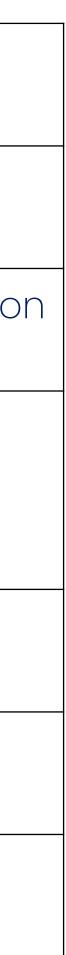
Title	Craft and Adopt your golden batch
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2022.R1 or higher. TrendMiner basics ar
Content:	Join this webinar and learn how to: –Identify ideal profile based on multip –Detect and track deviations from the –Visualize, comment and approve dev
Session ENG	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>



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& loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on **YouTube**.

ole calculations e ideal profile eviations



Daily production & Automatic reporting

	-
Title	Daily production & Automatic reportin
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving 8 2022.R1 or higher. TrendMiner basics ar
Content:	Join this webinar and learn how to cre -Daily production as a new variable: C -Autogenerated event reports: Every s
Session ENG	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>



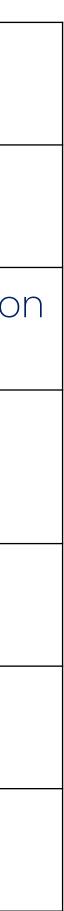
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& loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on <u>YouTube.</u>

eate:

Continuous rolling, as peaks, linear interpolated & stepped. shift, all the events that took place



Detecting anomalies and creating soft sensors in ML Hub

Title	Detecting anomalies and creating sof
Difficulty:	Intermediate (Youtube course for beginr
Prerequisites:	Adding tags, navigate in time, saving a 2022.R1 or higher. TrendMiner basics ar
Content:	Join this webinar ML Hub oriented and -Learn essential ML Hub skills and tech -Master anomaly detection and soft s -Elevate data analysis in MLHub
Session ENG	<u>Slides, Recordings</u>
Session GER	<u>Slides, Recordings</u>
Session SPA	<u>Slides, Recordings</u>



oft sensors in ML Hub

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& loading a view, doing a search, recommended TrendMiner version are covered in the 'TrendMiner Training' available on **YouTube**.

hniques

sensors in MLHub

