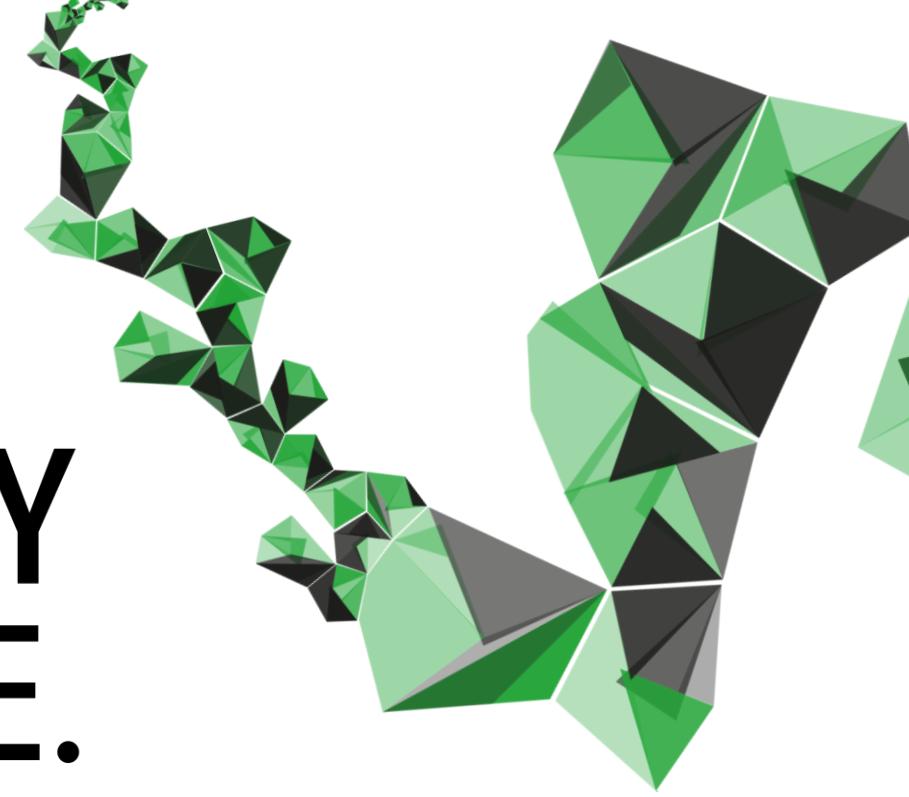


# UNIVERSITY OF TWENTE.

## SPOTTING GOOD PEOPLE ANALYTICS

NINE TIPS AND TRICKS.





# STATEMENTS

„Recognise company crises and critical developments in human resources at an early stage and take appropriate action.“ (\*)

„People Analytics is evidence-based decision-making. Great potential!“

„You can improve the employee experience, recruit the right talent and reduce the fluctuation rate in a targeted manner.“ (\*)

„My job is to prevent what you are proposing.“ (Frank Bsirske, former head of ver.di)

„Scepticism about such software is still widespread in Germany at present.“ (\*\*)

(\*) von <https://www.personio.de/hr-lexikon/people-analytics/#1>

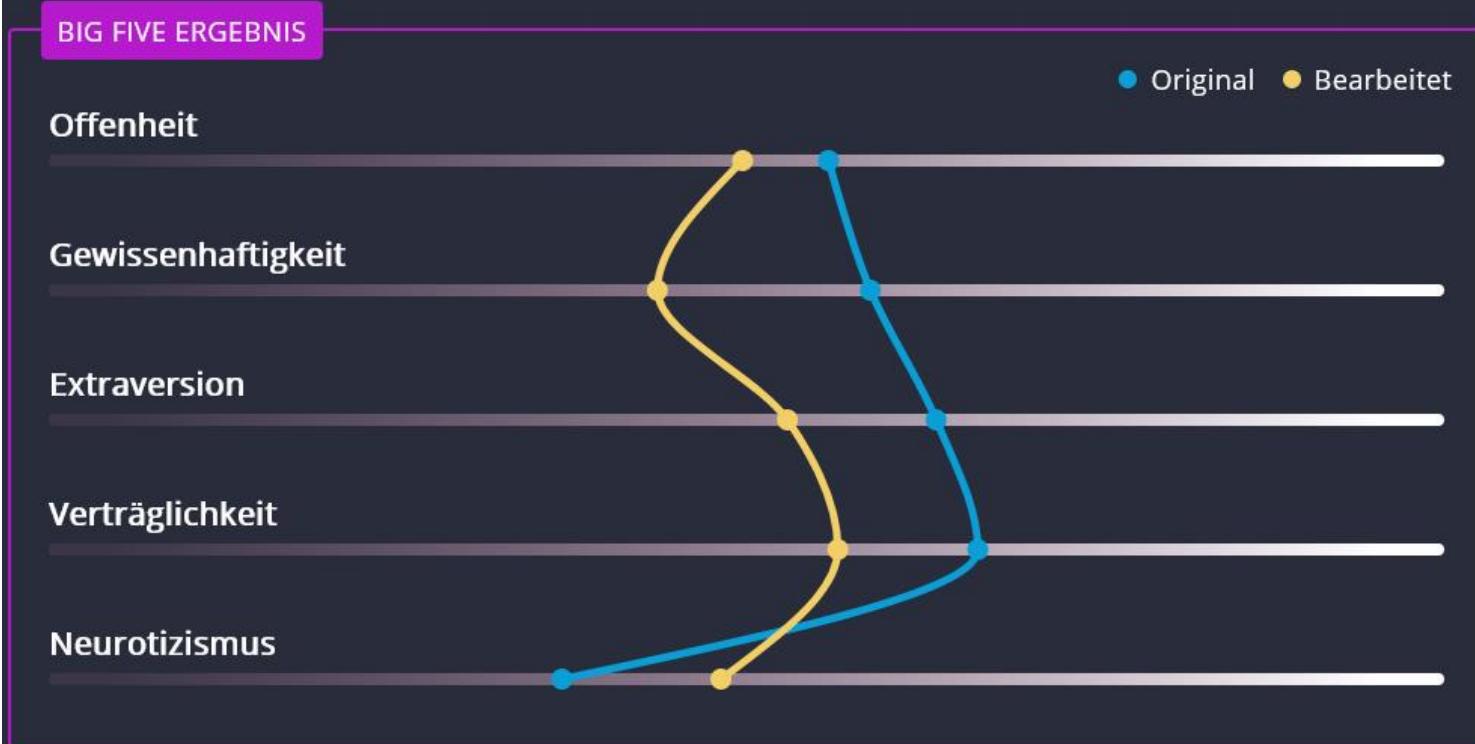
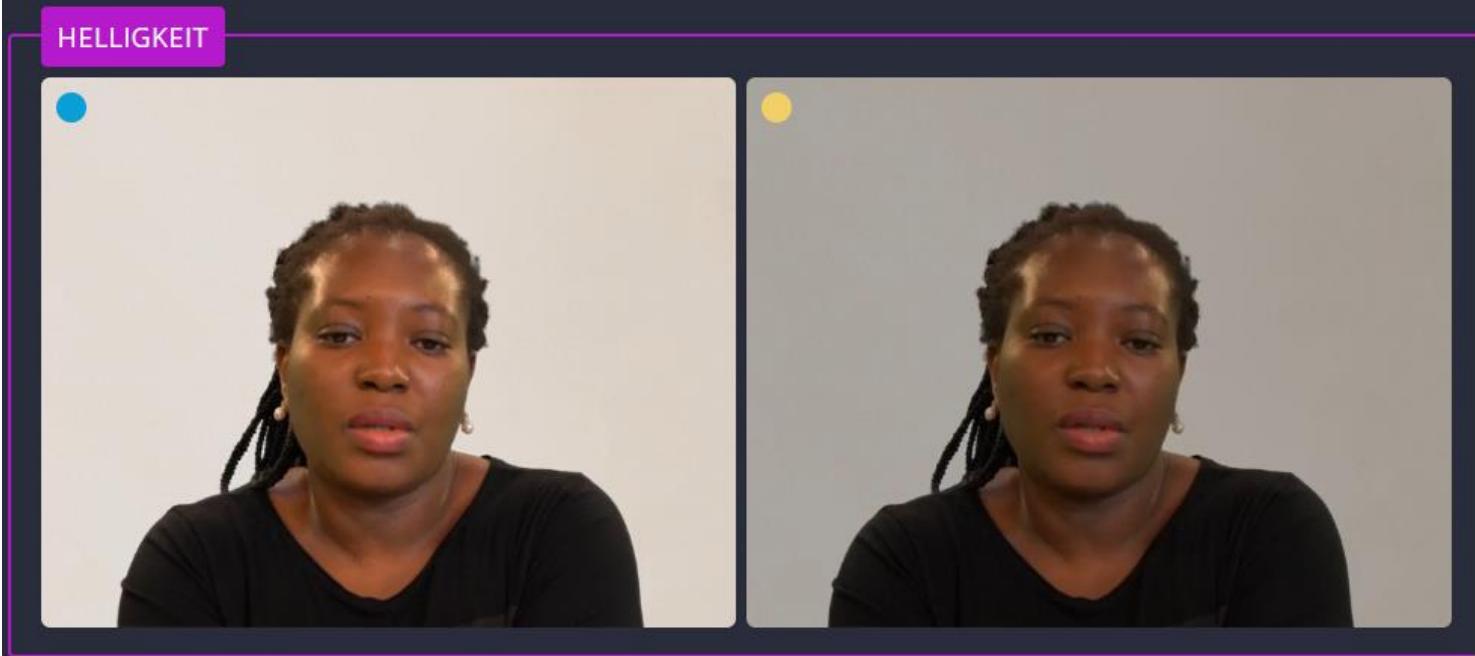
(\*\*) <https://interaktiv.br.de/ki-bewerbung/>



You want to use **People Analytics** to make data-driven Human Resources decisions.

*and then...*

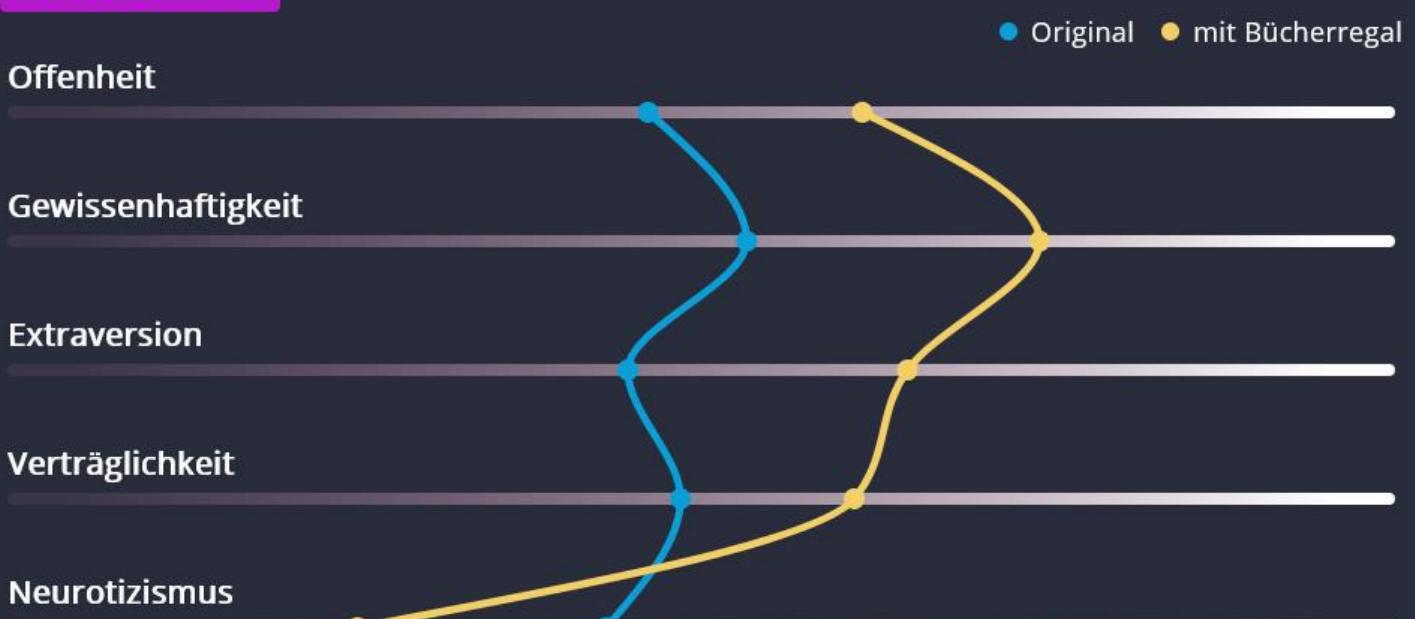
[https://interaktiv.br.  
de/ki-bewerbung/](https://interaktiv.br.de/ki-bewerbung/)



## HINTERGRUND



## BIG FIVE ERGEBNIS



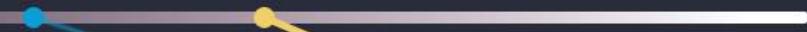
## KOPFTUCH



## BIG FIVE ERGEBNIS

Offenheit

● Original   ● mit Kopftuch



Gewissenhaftigkeit



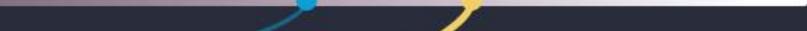
Extraversion



Verträglichkeit



Neurotizismus



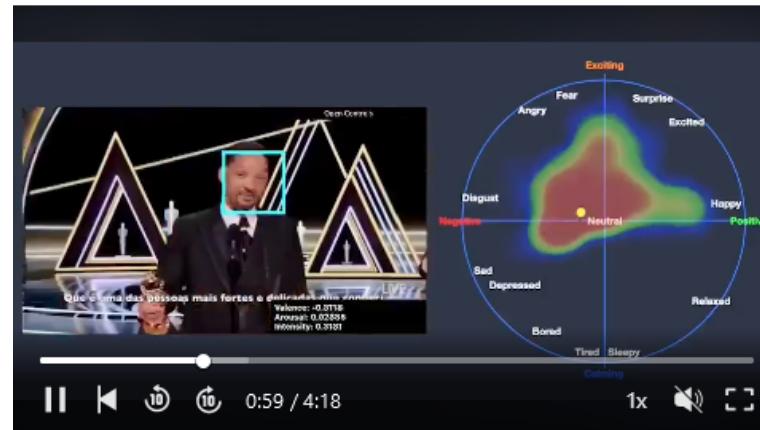
Dirk Wunder • 2.  
Vice President Corporate Marketing | Brand Obsessed | Digital...  
8 Std. • Bearbeitet •

+ Folgen

(Vom 31.03.2022)

#ArtificialIntelligence evaluates emotional posture and mood in real time based on facial variation in a heat map. Imagine being in a difficult video conference and you are able to analyze now beside the talk the real mood and emotion of your customer or who else...

Credit to Rondinelli Morais



40 Kommentare • 3 Shares

Gefällt mir Kommentar Teilen Senden

Kommentar hinzufügen ...

Relevanteste ▾

Robert Peters • 3.+  
Expert bei Institut für Innovation und Technik (iit)  
1 Std. \*\*\*

An inspiring thought. Unfortunately, these systems lack the necessary reliability, as I was able to show for the **Büro für Technikfolgen-Abschätzung beim Deutschen Bundestag (TAB)**. (see article - in German: <https://www.bundestag.de/resource/blob/848996/b0a0e4dc737c35ee2626cdf2ffc8d31d/Themenkurzprofil-048-data.pdf>) Even a perfectly working system that recognizes faces and facial movements with a high degree of reliability is still no guarantee that AI systems can actually recognize human emotion. As the AI Now Institute puts it in a nutshell, "There remains little to no evidence that these new affect-recognition products have any scientific validity. (see report: [https://ainowinstitute.org/AI\\_Now\\_2019\\_Report.pdf](https://ainowinstitute.org/AI_Now_2019_Report.pdf))



There are many black sheep in the market of People Analytics...

You still want to make **data-driven** Human Resources decisions.

How can you recognise good people analytics?



# AGENDA

1. Motivation ✓
2. About People Analytics
3. Types of People Analytics
4. Nine Tips and Tricks



# ABOUT ME

**Dr. Joschka Hüllmann**

Assistant Professor at University of Twente (NL)

## Research Topics:

- Future of Work with new Technologies
- People Analytics and Algorithmic Management
- Analysis of Digital Traces
- Social Process Mining

Follow me on Twitter: [@johuellm](https://twitter.com/johuellm)

# ABOUT PEOPLE ANALYTICS

People Analytics is defined as:

Socio-technical systems and associated processes that enable data-driven (or algorithmic) decision-making to optimise people-related business outcomes.

# ABOUT PEOPLE ANALYTICS

People Analytics is defined as:

**Socio-technical systems** and associated processes that enable data-driven (or algorithmic) decision-making to optimise people-related business outcomes.

Socio-technical:

→ Not a simple IT artefact, but the combination of people, tasks and technology.

# ABOUT PEOPLE ANALYTICS

People Analytics is defined as:

**Socio-technical systems** and **associated processes** that enable data-driven (or algorithmic) decision-making to optimise people-related business outcomes.

Processes:

→ Use of the system over time, embedded in the company's activities.

# ABOUT PEOPLE ANALYTICS

People Analytics is defined as:

**Socio-technical systems** and **associated processes** that enable **data-driven** (or algorithmic) **decision-making** to optimise people-related business outcomes.

Data-driven:

→ The system and decisions are based on the collection and analysis of data.

# ABOUT PEOPLE ANALYTICS

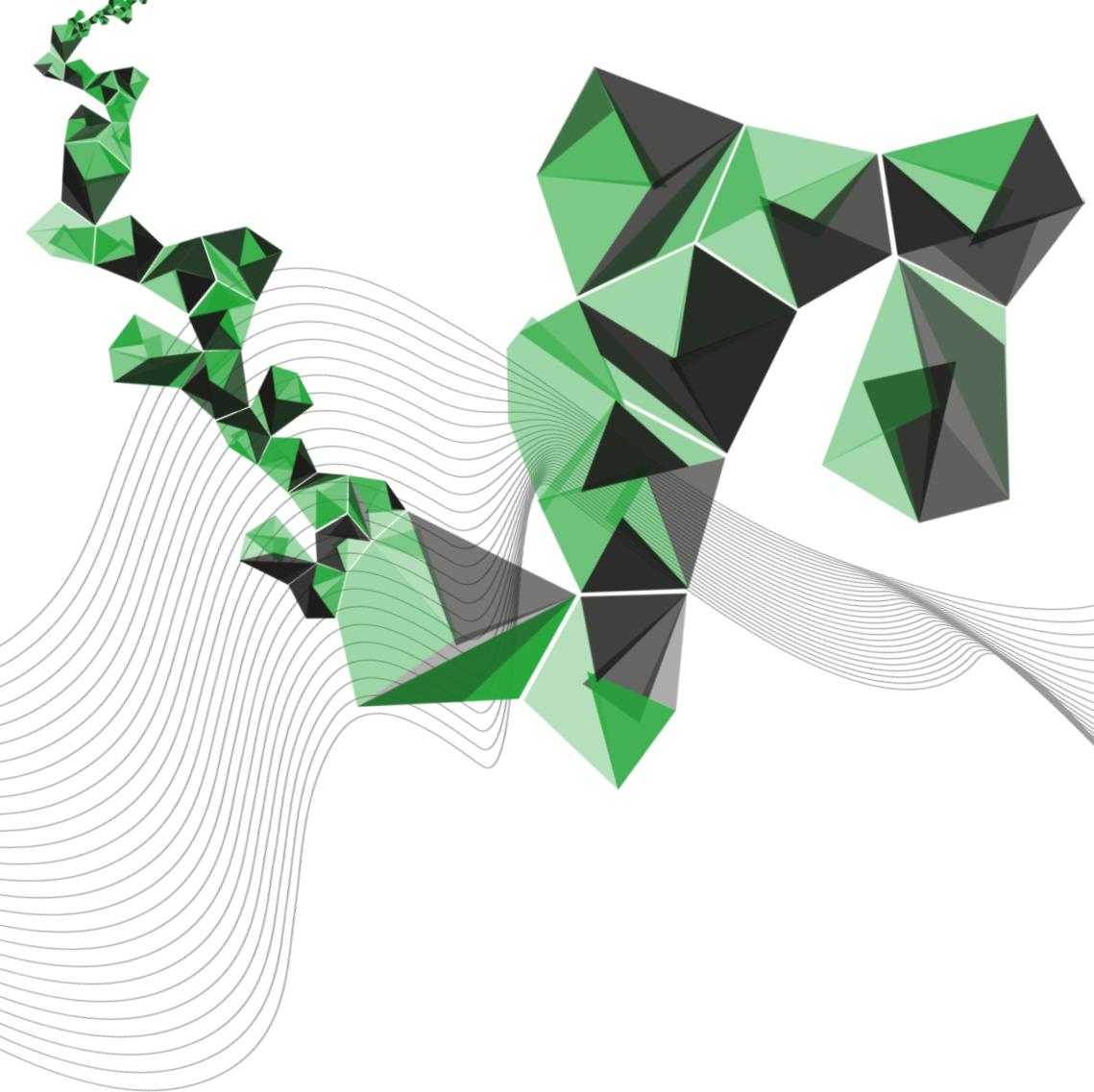
People Analytics is defined as:

**Socio-technical systems** and **associated processes** that enable **data-driven** (or algorithmic) **decision-making** to optimise **people-related** business outcomes.

People-related:

→ Data refers to people's behaviours and attitudes.

# **TYPES OF PEOPLE ANALYTICS**



# TYPES OF PEOPLE ANALYTICS

1. Goals	2. Data	3. Methods
Performance	Digital Traces	Clustering
Collaboration	Sensors (Hardware & Software)	Network Analysis
Recruiting und Retention	Surveys	Hypothesis Testing
On- and Offboarding	Pulse Surveys	Machine Learning (Video, Audio, Text)
Health and Wellbeing	Interviews	Thematic Discourse Analysis
Employee Experience / Engagement	HR Information Systems	Workshops
Compensation	Video/Audio Data	
Compliance	External Data Sets	
Learning and Development		
Long-term Workforce Planing		
Succession Planning / Talent Management		

# TYPES OF PEOPLE ANALYTICS

## Network and Collaboration Analysis

Innovisor  
Polinode  
Humanize Aware StarLinks  
ConnectedCommons TyGraph  
Cognitive Talent Solutions Worklytics  
Swoop Analytics TrustSphere  
Isaak

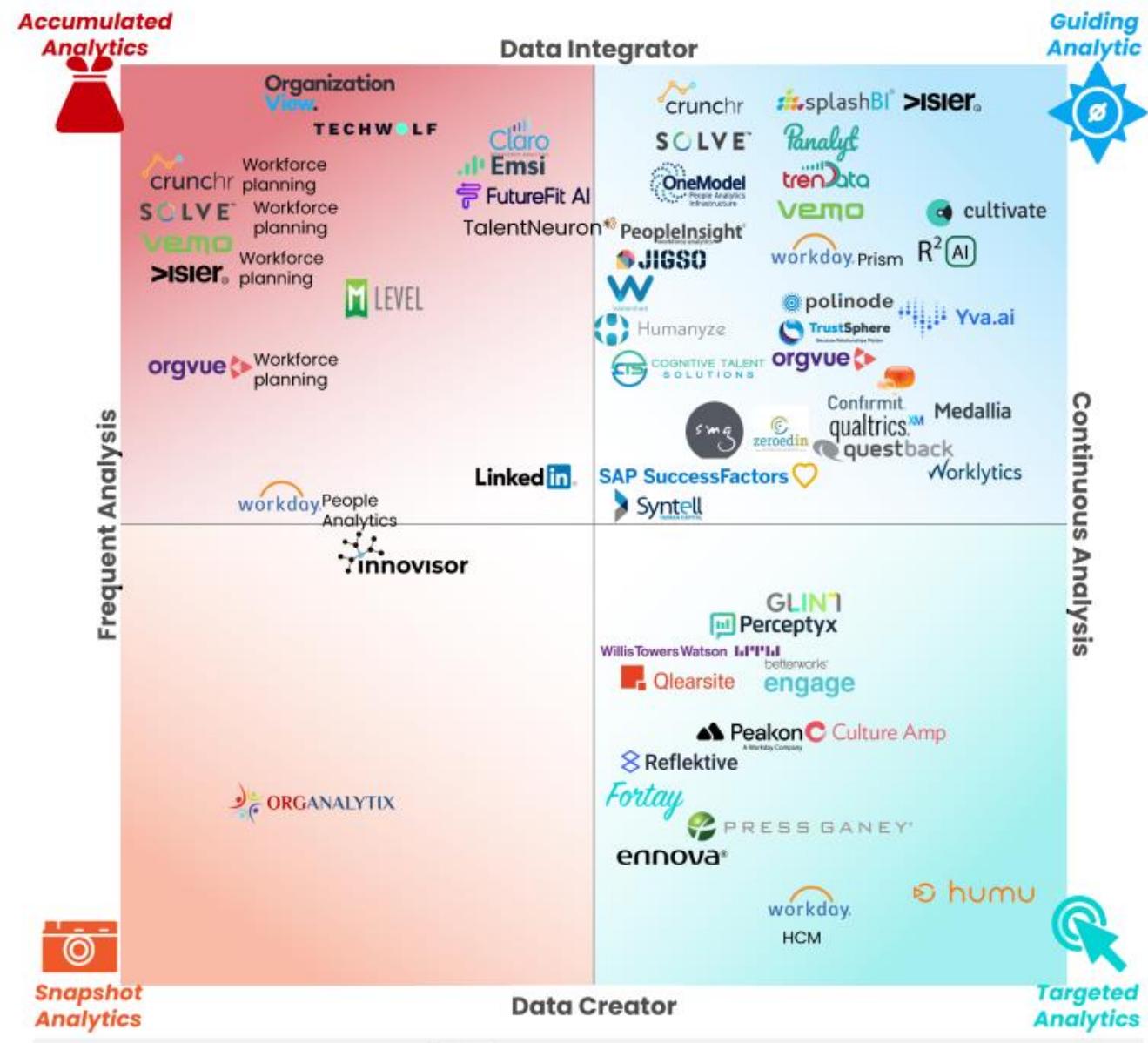
## Human Resources Analysis

MS Workplace Analytics  
Noventum HR Analytics CultivateAI  
Claro HireVue PeakOn QuantifiedCommunications  
SAP Success Factors Visier  
Pymetrics Synd Org Vitality Zoomi  
Workday Humu  
Ascendify Oracle HCM Glint Inc

## Surveillance

Interguard Software  
Teramind

# TYPES OF PEOPLE ANALYTICS



<https://redthreadresearch.com/pat-tool/>

# EXAMPLES

# Collaboration and Network Analysis

- Analysis of Digital Traces Fußspuren (e.g., communication log data)
- Estimate communication profiles and rankings
- **Goal:** Improve Collaboration
- **Validity:** Based on established research
- Added value is meagre.

SWOOP social network analytics

Personal Dashboard  
Frankie Swoopster  
Key Statistics

FROM YOU	POSTS 116	REPLIES 336	LIKES 447
TO YOU	116	336	447
REPLIES	272	272	472

Relationships

**SWOOP Persona**  
Your SWOOP Persona is based on analysing your interactions.  
Current profile: Engager

Category	From you	To you
Posts	116	
Replies	336	272
Likes	447	472

Interaction level: ★★★★☆  
What do you want to be?  
To sustain the "Engager" profile be sure that you try and match each Reply or Like you receive with one of your own.

**Network Map**  
Filter: Replies (radio button selected), Likes, Mentions, Notify/Dc, All, Strength (All): 100%  
Settings: Font: 14px, Zoom: 100%, Expand: 100%

**Give/Receive Balance**  
Give/Receive Balance measures if you are a giver or receiver of responses (replies or likes). A balanced score indicates healthy and productive participation.

**Most Engaging Posts**  
Most Engaging Posts are those that have attracted the highest number of responses (replies/likes).

Post ID	Post Content	Replies	Likes
1	Hi Joyce Cellem, We'd love for you to help us produce y...	28	25
2	We have ordered a set of red hoodies with SmartTool lo...	30	14
3	Here is the draft article for JustForFun. Is very favourabl...	7	17
4	The story is out. Will be in the paper on Monday.	11	9
5	Feedback from Wes Green at TelcoUS re sentiment.	11	8
6	Hi Joyce Cellem - we're working on a sentiment analysi...	10	9
7	Here's an video demo/overview of the sentiment analysi...	8	10
8	Reflecting on some recent Work2Gether prospect conv...	7	11
9	We're working on including an activity-based star rating...	9	8
10	Finally got the SmartTool User Community invitation lis...	7	10

**Activity By Time**  
Activity by Time shows the distribution of activities (post, reply or like) spread over the weekly cycle (Sunday through Saturday, by hour).

Activity Types: All

# Behavioral Analytics and Nudging

- Based on Richard Thaler's Behavioral Economics (Nobel prize 2017)
  - Analyse human behavior and manipulate it using small stimuli
  - **Goal:** broad, typically digital behavior
  - **Validiy:** yes, but nudges must be evaluated independently,

The dashboard displays various engagement metrics:

- Interagierte Nudges:** 61.4% (Aktuelle Programmwoche), +0.7% (Unterschied seit letzter Woche), 65.8% (Durchschnitt wöchentlich)
- Empfangene Nudges:** 843 (Gesamt empfangen)
- Aktive NutzerInnen:** 100.0% (Aktuelle Programmwoche), 0.0% (Unterschied seit letzter Woche), 100.0% (Durchschnitt wöchentlich)

The line graph shows Nudge engagement over time, peaking around week 51 of 2021.

Programmwoche: 2022 - 3

Below the dashboard is a screenshot of the loyee.io newsfeed interface, showing announcements, events, and a live stream.

loyee.io

Hi Desiree-Jessica

Startseite

Auswertung

Hast du Fragen?

Report - Nudges

Report - Umfrage

Abmelden

Announcements

Events

All Hands Live Stream

Kategorie

% an positiven Interaktionen

Nora Albers

Product update from the design team

G Suite

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# Survey und Pulse Surveys

- Typical Employee Surveys
- Pulse: small & continuous (Sentiment-) queries
- **Ziel:** broad
- **Valid:** typically based on established scales from psychological research
- Risk that negative results are identified

## Team Zufriedenheit

96% ↑ 4%



## Team Leistung

88% ↑ 4%



Modul	Status
-------	--------

Vertrauen	<span style="color: green;">● Fertig</span>
-----------	---

Verantwortung	<span style="color: green;">● Fertig</span>
---------------	---

Achtsamkeit	<span style="color: green;">● Fertig</span>
-------------	---

Kommunikation	<span style="color: orange;">● Ausstehend</span>
---------------	--

Resilienz	<span style="color: red;">● Gesperrt</span>
-----------	---

Motivation	<span style="color: red;">● Gesperrt</span>
------------	---

Emotionale Intelligenz	<span style="color: red;">● Gesperrt</span>
------------------------	---

Selbstwirksamkeit	<span style="color: red;">● Gesperrt</span>
-------------------	---

## Deine Persönlichkeitsanalyse

### Persönlichkeit

Verträglich und extravertiert



Deine höchsten Ausprägungen hast du in Verträglichkeit und Extraversion.

[Erfahre mehr](#)

### Rolle

Macher:in

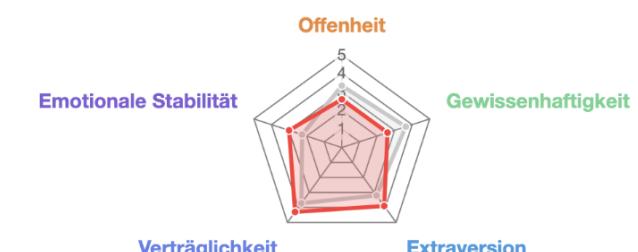


Macher:innen geben gern den Ton an.

[Erfahre mehr](#)

## Persönlichkeit

Du Durchschnittswerte



### Werte

Holistisch

Das Wohlergehen der Menschen ist ganz vorne an. Du liebst die aller Lebewesen.

[Erfahre mehr](#)

### Bevorzugungen

Konstruktiv

In einem Team sollst du mal was sagen, sollst konstruktiv Meinung äußern.

[Erfahre mehr](#)

### Verträglich

Deine höchste Ausprägung ist Extraversion.

Im Vergleich zu anderen Personen hast du hohe Ausprägungen von Verträglichkeit und Extraversion.

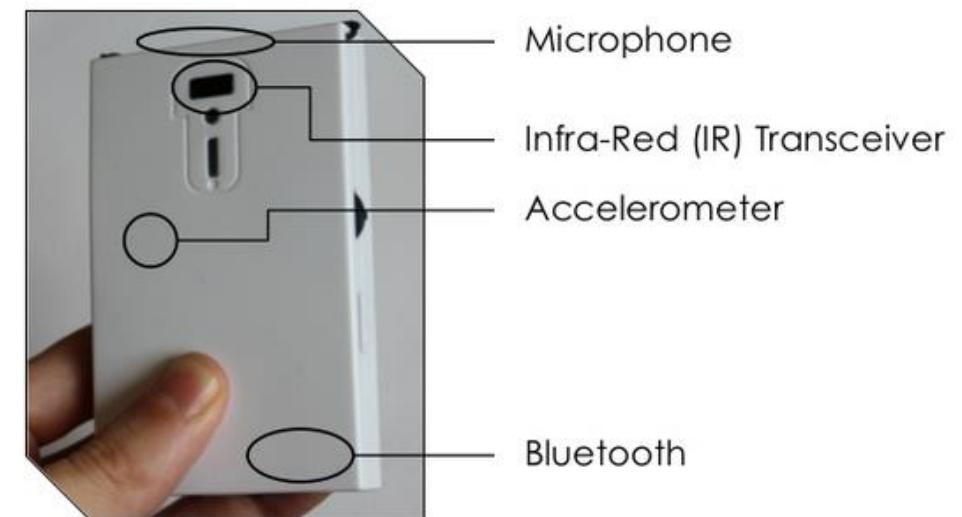
Im Vergleich zu anderen Personen hast du niedrige Ausprägungen von Gewissenhaftigkeit.

## Hardware Sensors

- Based on small sensors
- Coined by Ben Waber at MIT (2013)
- **Goal:** Spatial Office Layout and Design, Collaboration
- **Validity:** based on established research
- High efforts and costs



Sociometric Badge



# Employee Surveillance

- Surveillance disguised as People Analytics
- Arbitrary log on to employee's desktops
- **Goal:** Compliance and Performance
- **Validity:** works technically, but risks with regards to legal and organisational implications; value proposition questionable

Teramind - Risk

https://democompany.teramind.co/#/risk

take a guided tour

Risk

RISKY USERS 4 USERS 3 NEW 0 DROPPED

EMPLOYEE	CHANGE	RISK SCORE ▾
Demi Slappendel	▲	36
Elinor Silva	NEW	8
Vivian Depaul	NEW	4

RISKY RULES 3 RULES 2 NEW 0 DROPPED

RULE VIOLATED	CHANGE	RISK SCORE
PCI-DSS 3.2 - Do not store sensitive authentication data	▲	3
PII and drug name	NEW	1
PII and disease name	NEW	1

TRY TERAMIND

https://democompany.teramind.co

# AI-based Performance-Assessments (Gamification)

- Gamification and Competence-Assessments
- **Goal:** e.g., Coding- or analytics for assessing competencies and fit to team
- **Validity:** can work, but depends on type of assessment. For some there is evidence that it works, for some that it doesn't work. Case-by-case decision needed!

The image displays three mobile phone screens illustrating AI-based performance assessments, followed by a screenshot of a software interface for CodeVue.

- Mobile Phone Screen 1:** Shows a messaging interface between two users, Lucy and Sarah. Lucy messages Sarah about specs being late, and Sarah responds that she's annoyed. Lucy then says she can't control it. A "Select your response" section follows, with three options numbered 1, 2, and 3. Below this is a message from Lucy expressing empathy for Sarah's feelings.
- Mobile Phone Screen 2:** Displays a math puzzle titled "Level 9". It shows an addition operation "+ 10" and a result of "28". Five hexagonal buttons are arranged around the equation, containing the numbers 17, 18, 15, 14, and 10. The user needs to identify which number does not belong.
- Mobile Phone Screen 3:** Shows a "Level 15" challenge involving a grid of colored shapes (blue, purple, green) that must be moved to specific positions. The grid consists of several colored cells, each containing a small white shape.

**CodeVue - Standard Demo** interface:

- Header:** Arron Brown, Top Tier, Previous Candidate: May Richardson.
- Section:** Q2 Hello World, Easy, Time Limit: 15 minutes.
- Code Tab:** Shows C# code for a "Hello World" program.

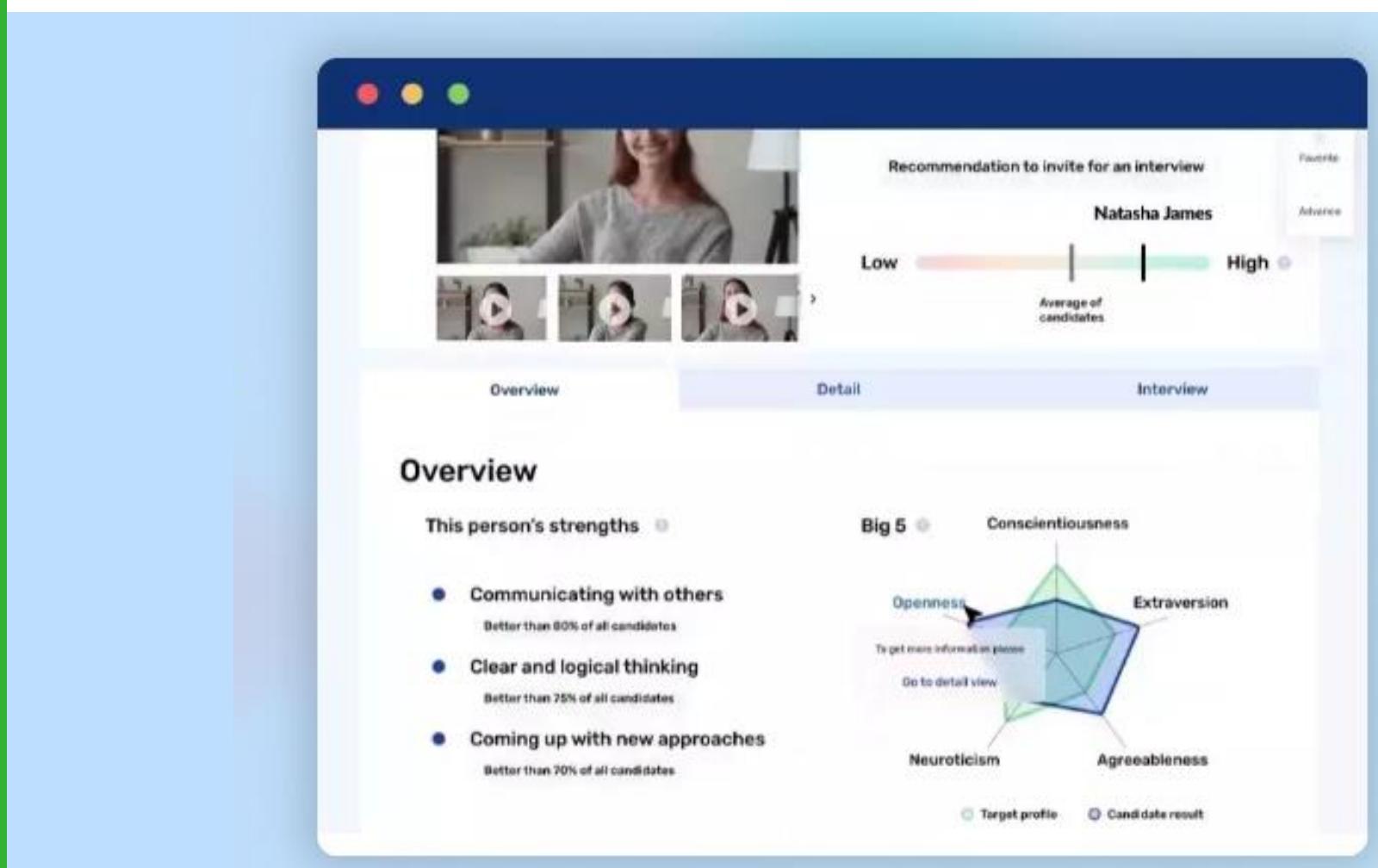
```
1 using System;
2 using System.IO;
3 using System.Collections.Generic;
4 using System.Globalization;
5 using System.Text;
6
7 public static class Program {
8     static void Main() {
9         CultureInfo _locale = null;
10
11         using (StreamReader reader = new StreamReader(Console.OpenStandardInput()))
12         {
13             while (!reader.EndOfStream)
14             {
15                 string cultureCode = reader.ReadLine();
16                 _locale = new CultureInfo(cultureCode);
17             }
18
19             if (_locale != null)
20             {
21                 switch (_locale.TwoLetterISOLanguageName)
22                 {
23                     case "fr":
24                         {
25                             Console.WriteLine("BONJOUR LE MONDE");
26                         break;
27                     }
28                     case "es":
29                 }
30             }
31         }
32     }
33 }
```
- Test Tab:** Tests (1000) and Playback.
- Language:** C#.
- Bottom Navigation:** Top Tier, Middle Tier, Bottom Tier, Unscored.
- Footer:** Response Time: 5:33, Code Similarity: Expected Range.

**Interview Scorecard:**

- View Report
- My Average Rating: None
- Question 2 Rating: ★★★★
- Status: Complete
- Average CodeVue Test Score: 100
- Average Question Score: 100
- Notes, Scores, Timeline tabs.
- My Recommendation: None.
- Done Evaluating button.

# AI-based Audio und Video Assessments

- Based on machine learning, e.g., Deep Convolutional Neural Networks
- **Goal:** broad, for example, fit to team
- **Validity:** doesn't work, clear evidence against it.  
(face recognition generally works, but not the link to personality or performance)



# Hypothesis Testing A/B Tests

- Find evidence for your intuition
- Correlative or causal designs are possible
- **Goal:** broad
- **Validate:** de-facto method of science
- Risks of errors during analysis or negative results

cable\_survey.sav [DataSet1] - IBM SPSS Statistics Data Editor

Visible: 10 of 10 Variables

	customer_id	inccat	reside	hometype	addresscat	service_type	service_usage
1	1979-OAPAUG	\$46 - \$100	2	Single-family	More than 15	Television	No service
2	1979-OAPAUG	\$46 - \$100	2	Single-family	More than 15	Telephone (la...	Other provider
3	1979-OAPAUG	\$46 - \$100	2	Single family	More than 15	Internet	Other provider
4	5932-UEOWY	\$46 - \$100	2	Single family	More than 15	Television	Service with c...
5	5932-UEOWY	\$46 - \$100	2	Single family	More than 15	Telephone (la...	Service with c...
6	5932-UEOWY	Under \$45	1	Condominium/...	More than 15	Internet	Service with c...
7	5923-SEERQ	\$46 - \$100	2	Single-family	More than 15	Television	No service
8	5923-SEERQ	\$46 - \$100	2	Single-family	More than 15	Telephone (la...	Other provider
9	5923-SEERQ	\$46 - \$100	2	Single-family	More than 15	Internet	Other provider
10	6940-TFFWO	\$46 - \$100	2	Multiple-Family	More than 15	Television	No service
11	6940-TFFWO	\$46 - \$100	2	Multiple-Family	More than 15	Telephone (la...	Other provider
12	6940-TFFWO	Under \$45	3	Mobile Home	More than 15	Television	Service with c...
13	8125-CLCWWR	Under \$45	3	Mobile Home	More than 15	Telephone (la...	Service with c...
14	8125-CLCWWR	Under \$45	3	Mobile Home	More than 15	Internet	Service with c...
15	8125-CLCWWR	Under \$45	3	Mobile Home	More than 15	Service with c...	...
16	9082-VEGIB	\$46 - \$100	2	Single-family	More than 15	Television	Service with c...
17	9082-VEGIB	\$46 - \$100	2	Single-family	More than 15	Telephone (la...	Service with c...
18	9082-VEGIB	\$46 - \$100	2	Single-family	More than 15	Internet	Service with c...
19	5925-XYDVY	\$46 - \$100	1	Single-family	6 to 15	Television	No service
20	5925-XYDVY	\$46 - \$100	1	Single-family	6 to 15	Telephone (la...	Service with c...
21	5925-XYDVY	\$46 - \$100	1	Single-family	6 to 15	Internet	Other provider
22	9544-WXCY	Under \$45	4	Single-family	Less than 6	Television	Other provider
23	9544-WXCY	Female	18-30 At least s...	Under \$45	4	Single-family	Less than 6 Telephone (la...
24	9544-WXCY	Female	18-30 At least s...	Under \$45	4	Single-family	Less than 6 Internet
25	8347-AKFLL	Male	46-60 College d...	Under \$45	2	Single-family	More than 15 Television Service with c...
26	8347-AKFLL	Male	46-60 College d...	Under \$45	2	Single-family	More than 15 Telephone (la... Service with c...
27	8347-AKFLL	Male	46-60 College d...	Under \$45	2	Single-family	More than 15 Internet Service with c...



## Market Research and External Data Sets

- Established market research with third party data sets, e.g., from LinkedIn
- **Goal:** external perspective, for example, find fitting recruits
- **Validity:** based on simple descriptive analysis or more advanced statistical designs

# The Rise of Analytics in HR

The era of talent intelligence is here

LinkedIn

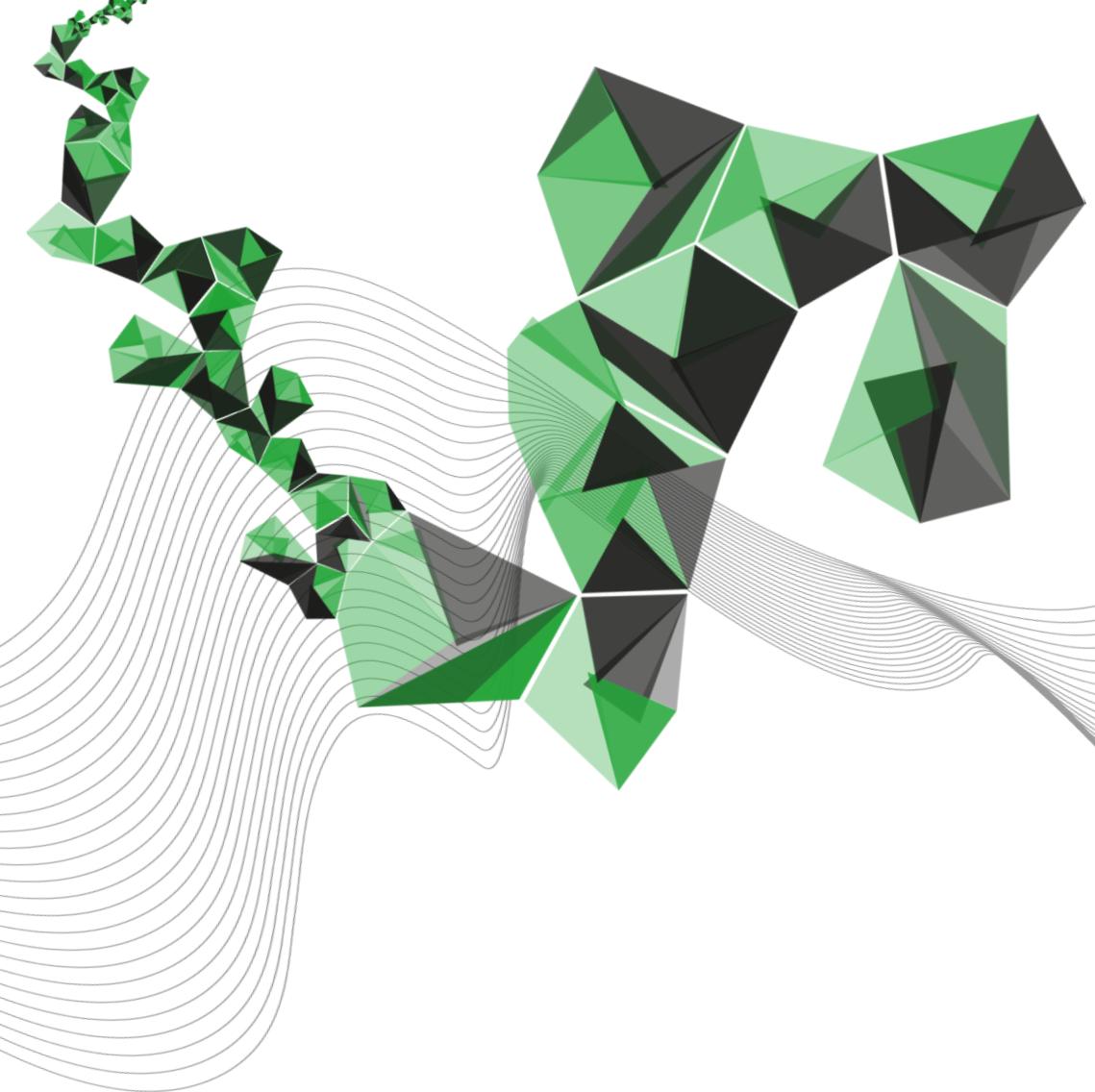


## Qualitative Approaches (Workshops, Interviews)

- These approaches sometimes are also considered People Analytics
- Systematic collection and analysis of qualitative data in workshops, interviews, ethnographies
- **Goal:** addressing complex and unstructured problems
- **Validity:** less „objective“ than quantitative analyses
- Further away from the „spirit“ of People Analytics



# SUMMARY



# SUMMARY

Example	Risks*	Added Value
Collaboration and Network Analysis	Low	
Behavioral Analytics and Nudging	Medium	
Surveys and Pulse Surveys	Low to Medium	
Hardware Sensors	Low	
Employee Surveillance	High	
AI-based Performance-Assessments (Gamification)	Medium	
AI-based Audio und Video Assessments	Very High	
Hypothesis Testing A/B Tests	Medium	
Market Research and External Data Sets	Low	
Qualitative Approaches (Workshops, Interviews)	Medium	

(\* risks, that it doesn't work!)

# GENERAL PROBLEMS WITH PEOPLE ANALYTICS



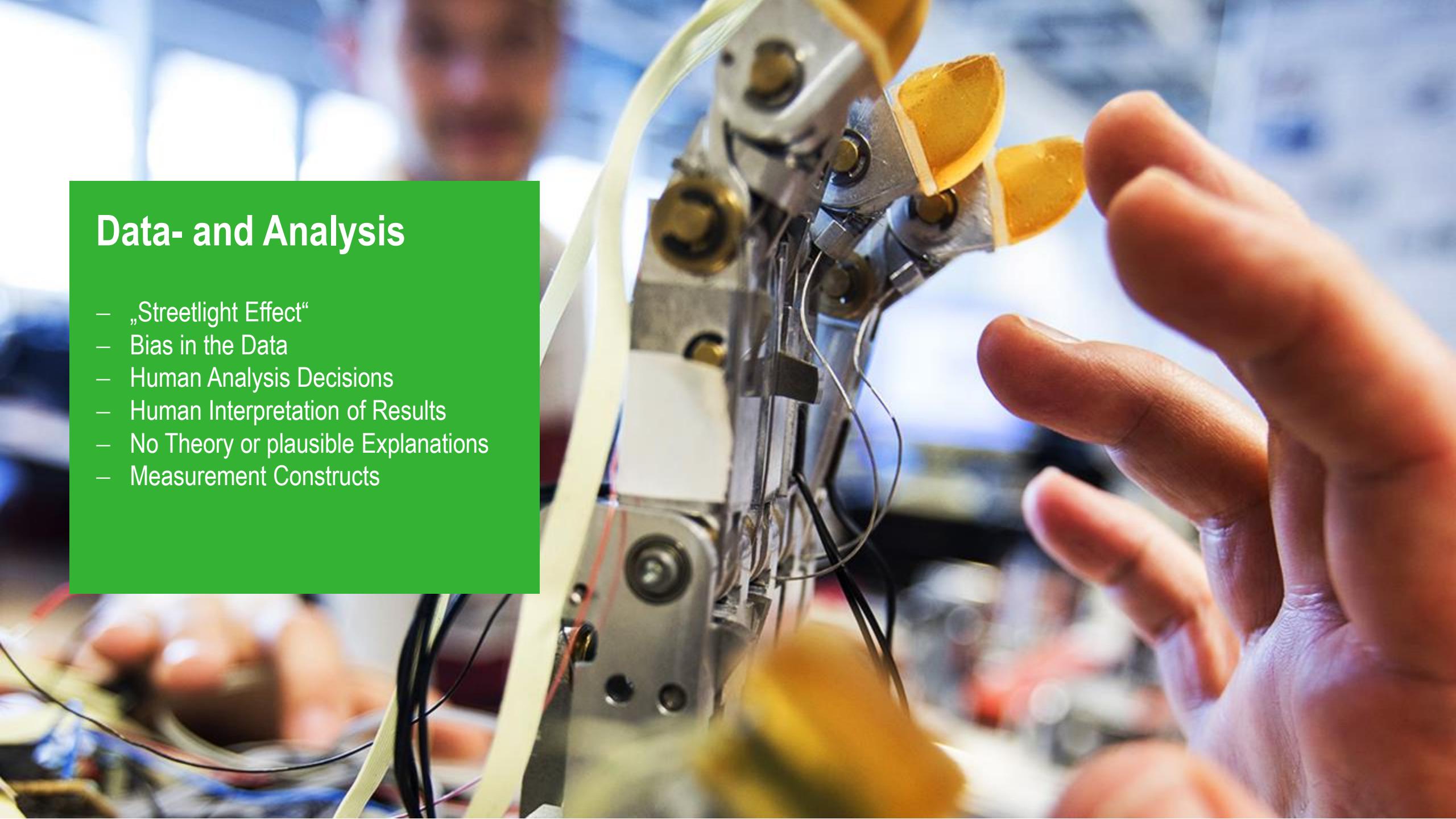
## Reduction of Reality

- No Truth
- Indicators without Context
- “Gaming the System”
- Impression Management



## Data- and Analysis

- „Streetlight Effect“
- Bias in the Data
- Human Analysis Decisions
- Human Interpretation of Results
- No Theory or plausible Explanations
- Measurement Constructs



## Legal and Ethics

- Data privacy
- Surveillance
- Discrimination
- Appropriation

## Technology

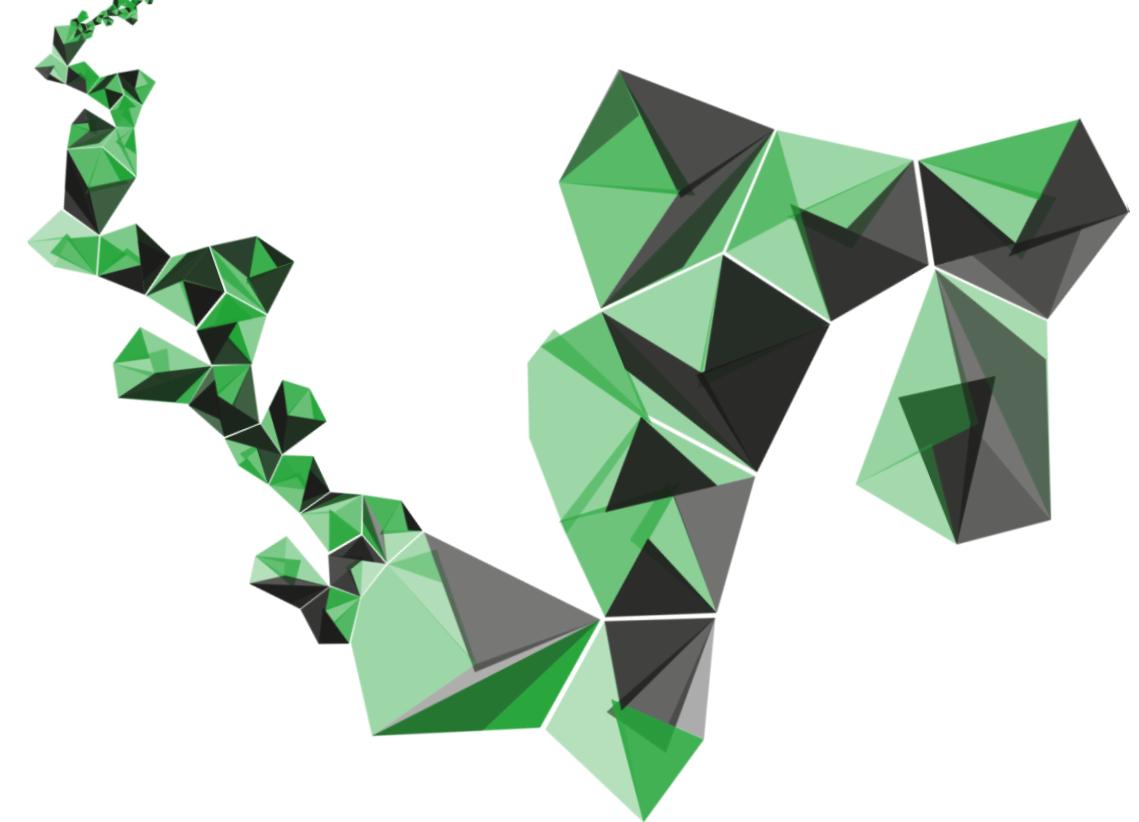
- Data extraction
- Sensors
- Survey-Software

## Organisational

- Change Management
- Acceptance and Resistance
- Cost-Benefits
- Limited Generalizability



# 9 TIPS AND TRICKS





# TIPS AND TRICKS

## 1. Choose low risk

- See previous summary.

## 2. Demand transparency from vendors

- Request information to methods and theory.
- Check evidence that product works.

## 3. Reflect on data origin

- Question the data generating process.
- Question causal relationships.
- Consider bias in the data.

# TIPS AND TRICKS



## 4. Choose low risk

- No AI-based Video or Audio Assessments!!
- No employee surveillance.
- Caution when using Nudging or gamified AI-assessments.
- Consider risk of negative result for surveys, hypothesis testing, & Co.

## 5. Establish controlling for People Analytics

- Continuously check whether value is actually being added.
- Adjust if needed.

## 6. Think about change management

- Talk with the employees.
- Live transparency.
- Develop trust.

# TIPS AND TRICKS



## 7. Consider reduction of reality

- Understand People Analytics as indicator, not as truth!
- Think about the context of data collection and analysis.

## 8. Recognize complementarity

- Don't avoid intuition and experience, but appreciate the complementarity between data and experience.

## 9. Ask experts

- Accept the multidisiplinarity.
- Bring domain and data experts together.
- Get external expertise if needed.

# UNIVERSITY OF TWENTE

THANK YOU

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University of Twente  
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Twitter: [@johuellm](https://twitter.com/johuellm)

“R2-D2, You Know  
Better Than To Trust A  
Strange Computer”

