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| <b>Title</b>          | Blue Academy - HR Tool for Job to Applicant Matching - Informational Whitepaper  |                           |                      |                                |
| <b>Description</b>    | <p>This document is for intended audiences only and describes the core data flow and data model which forms the foundational core of our Automated HR Matching functionality.</p> <p>The document highlights the most important aspects of how our service is used, which benefits it provides for HR functions and which core data will be generated for the users of our services.</p> <p>Target audiences are:</p> <ul style="list-style-type: none"> <li>• Management</li> <li>• HR specialists</li> <li>• Recruiting specialists</li> <li>• Technical specialists</li> <li>• Project members</li> </ul> |                           |                      |                                |
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## Problem to be solved

### Intro

People analytics has emerged as the joint top trend in the [Deloitte 2018 Global Human Capital Trends](#) report. This shows that people analytics has now properly arrived and develops from a trend to effective usage within the very first cases. Almost half (47 percent of 11.000) of this year's respondents say that their organizations are deeply involved in automation projects, with 24 percent using AI and robotics to perform routine tasks, 16 percent to augment human skills, and 7 percent to restructure work entirely.

In May 2018, new features and developments were presented to the audience at the UNLEASH show in Las Vegas. Further reinforcement also came with the publication of the [HR Open Source \(#HROS\) Future of Work Report](#) which highlighted that people analytics is now regarded as a foundational capability by HR professionals themselves. This argues well for data-driven decision making to become the norm within HR.

### What are the key objectives of HR?

A desired state is a HR department which is thinking three steps ahead of the companies leaders and connects the dots across the organization, also to acquire talents proactively and manage the relationship to their employees. In any well-thriving company HR cannot be a mere support organization but needs to be a strategic part of growth. This goal leads to the following primary HR functions:

- Recruiting the right external candidates for the internal demands in the fastest time possible
- Knowing the internal skills and cultural landscape to make valuable decisions
- Setting up individual growth plans for employees to make a valuable contribution to strategic company goals.

Excerpt from HR Open Source 2018:

Are practitioners managing or influencing these initiatives today, or if not, will they be three years from now.



Today, main areas of HR Engagement with connection to personalized data are already:

- People Analytics
- Workforce Planning
- Organizational Wellness
- Leadership development
- Culture Initiatives

## What is the challenge of HR?

In order to be able to fulfill the given requirements, the main challenge of today's HR departments is having the right knowledge about internal demands and external offerings. Furthermore productivity and employee engagement are increasingly pressing issues for companies in order to keep the right people within the organization.

## How can this be addressed?

With people analytics perfectly placed to provide more insights in these areas and the ability to drive meaningful change, there will be a massive rise of applications within the field of data-driven decision making across the global HR Domain.

The foundation of any good decision making is having the right information at hand. For HR the most valuable information is connected to the people that are in the company. This means, tools

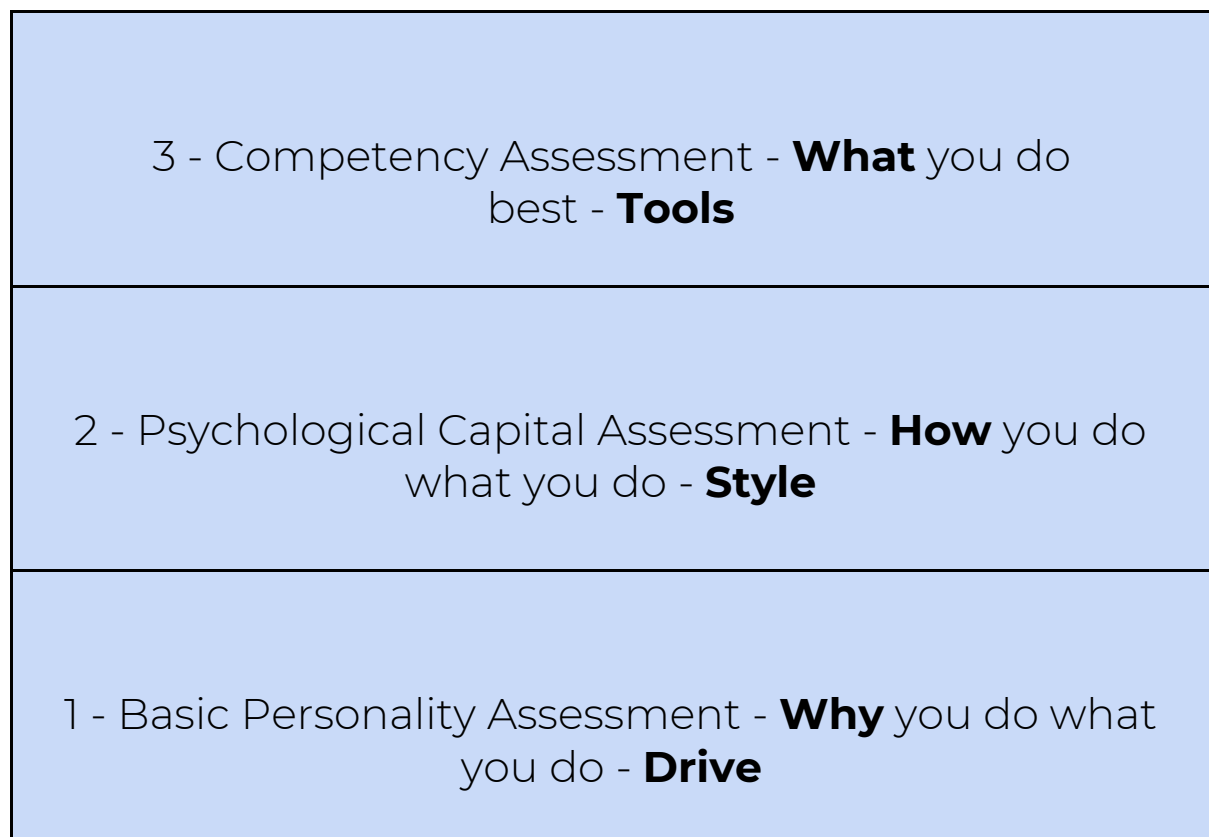
and services that provide meaningful insights on individuals as well as the general mood of the workforce will contribute to an improvement of the HR function in general.

## BA Psychological Data Model

The Blue Academy personality data model is the most complete profile of a human being in the workplace, enabling the following core use cases.

1. sophisticated job matching
2. personalized growth-plans
3. internal cultural measurements

The three layers of our model are as follows:



Each layer assesses a different part of a person to get a broad understanding of the characteristics of the individual.

Following data model is at the core of each individual model:

## 1 - Basic Personality Assessment

Our basic personality assessment provides a scale for assessing the big five dimensions of personality. The data model of the output of the assessment is structured as follows:

| 01 --- PERSONALITY ASSESSMENT SAMPLE DATA         |                         |                         |                    |                            |                      |
|---|-------------------------|-------------------------|--------------------|----------------------------|----------------------|
| Attribute / Dimension                             | Openness to experience  | Conscientiousness       | Extraversion       | Agreeableness              | Neuroticism          |
| Low characteristic (1)                            | consistent/<br>cautious | easy-going/<br>careless | solitary/reserved  | challenging/<br>detached   | secure/<br>confident |
| High characteristic (10)                          | inventive/curious       | efficient/organized     | outgoing/energetic | friendly/<br>compassionate | sensitive/nervous    |
| Target profile average for sample role technician | 7                       | 6                       | 4                  | 6                          | 2                    |
| Applicant for technician 1                        | 2                       | 4                       | 7                  | 7                          | 8                    |
| Applicant for technician 2                        | 8                       | 5                       | 3                  | 2                          | 4                    |
| Applicant for technician 3                        | 6                       | 6                       | 5                  | 9                          | 9                    |
| ...   |                         |                         |                    |                            |                      |

## 2 - Psychological Capital (PsyCap)

Positive psychological capital is defined as the positive and developmental state of an individual as characterized by high self-efficacy, optimism, hope and resiliency.

PsyCap has positive correlation with desired employee attitudes, behaviors and performance.

Research found strong, significant, positive relationship between PsyCap and desirable attitudes (e.g. satisfaction, commitment, and well-being), behaviors (e.g. citizenship) and performance (self,

supervisor rated, and objective) and a negative relationship with undesirable attitudes (e.g. cynicism, stress, anxiety, and turnover intentions) and behaviors (e.g. deviance).

The data model of the output of the assessment is structured as follows:

| 02 --- PSYCHOLOGICAL CAPITAL SAMPLE DATA          |                                      |                                    |                              |                             |                               |                       |
|---|--------------------------------------|------------------------------------|------------------------------|-----------------------------|-------------------------------|-----------------------|
| Attribute / Dimension                             | Hope                                 | Efficacy                           | Resilience                   | Optimism                    | Psychological Capital Average | Psychological Capital |
| Low characteristic (1)                            | low will-power, path-way-generation  | not confident about own abilities  | low acceptance & resistance  | negative attitude & outlook | low capital                   | low capital (4)       |
| High characteristic (10)                          | high will-power, path-way-generation | very confident about own abilities | high acceptance & resistance | positive attitude & outlook | high capital                  | high capital (40)     |
| Target profile average for sample role technician | 8                                    | 8                                  | 7                            | 7                           | 7.5                           | 30                    |
| Applicant for technician 1                        | 6                                    | 5                                  | 5                            | 6                           | 5.5                           | 22                    |
| Applicant for technician 2                        | 5                                    | 6                                  | 4                            | 8                           | 5.8                           | 23                    |
| Applicant for technician 3                        | 8                                    | 7                                  | 9                            | 7                           | 7.8                           | 31                    |
| ....  |                                      |                                    |                              |                             |                               |                       |

### 3 - Competencies Assessment

Within the BA Competency Assessment Tool, the competencies are categorized into four critical domains.

1. Social / Communicative  
e.g. "Acquisition"
2. Expertise / Methods  
e.g. "Diagnostic Information Gathering"
3. Personal  
e.g. "Credibility"
4. Activity  
e.g. "Creative Drive"

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All competences are labeled with a trainability index and rated on a scale from 1 to 10 per individual. Competencies can be applied directly to support the personal development and matching of an individual to a job profile.

Our competence model consists of the following unique attributes:

| Competences collection               | Trainability (1-10) | Scale |
|--------------------------------------|---------------------|-------|
| Acquisition                          | 7                   | 1-10  |
| Adaptability                         | 7                   | 1-10  |
| Advisory                             | 8                   | 1-10  |
| Analytical abilities                 | 3                   | 1-10  |
| Attention to communication           | 7                   | 1-10  |
| Building Collaborative Relationships | 7                   | 1-10  |
| Capacity                             | 6                   | 1-10  |
| Career orientation                   | 6                   | 1-10  |
| Client orientation                   | 7                   | 1-10  |
| Commercial awareness                 | 7                   | 1-10  |
| Commitment                           | 7                   | 1-10  |
| Communication                        | 8                   | 1-10  |
| Conception                           | 6                   | 1-10  |
| Conflict resolution                  | 7                   | 1-10  |
| Conscientiousness                    | 3                   | 1-10  |
| Consistency                          | 6                   | 1-10  |
| Cooperation                          | 7                   | 1-10  |
| Creative drive                       | 5                   | 1-10  |
| Creativity                           | 3                   | 1-10  |
| Credibility                          | 6                   | 1-10  |
| Decision making                      | 7                   | 1-10  |
| Delegation                           | 8                   | 1-10  |
| Diagnostic Information Gathering     | 6                   | 1-10  |
| Diligence / Thoroughness             | 5                   | 1-10  |
| Discipline                           | 6                   | 1-10  |
| Drive                                | 4                   | 1-10  |
| Effects anticipation                 | 3                   | 1-10  |
| Eloquence                            | 6                   | 1-10  |
| Empathy                              | 5                   | 1-10  |
| Employee development                 | 7                   | 1-10  |
| Empowerment                          | 7                   | 1-10  |
| Entrepreneurial Orientation          | 5                   | 1-10  |
| Execution                            | 6                   | 1-10  |
| Experimentation                      | 6                   | 1-10  |

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|                                |   |      |
|--------------------------------|---|------|
| Expertise                      | 7 | 1-10 |
| Flexibility                    | 6 | 1-10 |
| Focus                          | 7 | 1-10 |
| Goal oriented leadership       | 7 | 1-10 |
| Helpfulness                    | 7 | 1-10 |
| Holistic thinking              | 6 | 1-10 |
| Humour                         | 4 | 1-10 |
| Influencing Others             | 7 | 1-10 |
| Initiative                     | 6 | 1-10 |
| Innovative spirit              | 4 | 1-10 |
| Integration capacity           | 5 | 1-10 |
| Interdisciplinary knowledge    | 7 | 1-10 |
| Interpersonal Awareness        | 4 | 1-10 |
| Judgement                      | 6 | 1-10 |
| Knowledge orientation          | 6 | 1-10 |
| Loyalty                        | 6 | 1-10 |
| Managing change                | 7 | 1-10 |
| Managing performance           | 7 | 1-10 |
| Market knowledge               | 8 | 1-10 |
| Mediation                      | 7 | 1-10 |
| Methodical approach            | 7 | 1-10 |
| Mobility                       | 7 | 1-10 |
| Normative/ethical setting      | 5 | 1-10 |
| Objectivity                    | 6 | 1-10 |
| Openness for change            | 5 | 1-10 |
| Optimism                       | 5 | 1-10 |
| Oral communication             | 6 | 1-10 |
| Organisation                   | 6 | 1-10 |
| Persistence                    | 5 | 1-10 |
| Personal Credibility           | 6 | 1-10 |
| Persuasive Communication       | 7 | 1-10 |
| Planning                       | 7 | 1-10 |
| Presentation                   | 7 | 1-10 |
| Problem solving                | 7 | 1-10 |
| Professional recognition       | 7 | 1-10 |
| Project management             | 8 | 1-10 |
| Providing motivational support | 6 | 1-10 |
| Quick wittedness               | 2 | 1-10 |
| Relationship management        | 7 | 1-10 |
| Reliability                    | 7 | 1-10 |
| Representation                 | 7 | 1-10 |
| Responsibility                 | 7 | 1-10 |
| Results orientation            | 8 | 1-10 |



|                       |   |      |
|-----------------------|---|------|
| Self Confidence       | 6 | 1-10 |
| Self management       | 8 | 1-10 |
| Self responsibility   | 7 | 1-10 |
| Sense of duty         | 6 | 1-10 |
| Social engagement     | 8 | 1-10 |
| Strategic Thinking    | 6 | 1-10 |
| Stress Management     | 7 | 1-10 |
| Teaching ability      | 6 | 1-10 |
| Teamwork              | 7 | 1-10 |
| Understanding         | 6 | 1-10 |
| Willingness to learn  | 6 | 1-10 |
| Written communication | 7 | 1-10 |

## Summary

Each individual assessment provides a unique benefit to the organization and the individual.

When used in conjunction the three models release synergies that are unparalleled compared to other models on the market.

In addition, the three layers could be extended to match your HR-individual case & situation if desired.

The BA 3-layer personality profile assesses multiple dimensions:

- **Time:** Presence personality and future potentials are covered. This provides benefits for development programs.
- **Personality:** Core personality traits are covered. This provides benefits for cultural alignment.
- **Potential:** Potential for personal development is covered. This provides benefits for keeping good employees in the company
- **Skills:** Applicable skill profiles are covered. This provides benefits for suitable job assignments.

## CORE USPs

Through applying this profile for an assessment of internal employees and external candidates HR departments can uncover yet unknown layers of informational depth to improve their core KPIs:

- # Number of successful hires
- # Number of satisfied internal customers
- Ø Average value of Employee satisfaction
- Ø Average Time to evaluate new hires

Our Profile is a substantial enhancement to standard CVs and provides insights that are hard to discover otherwise. People selection, people development and organizational evolution are accelerated by applying our solution in your daily business routines.

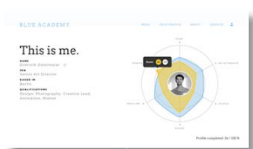
## BA Job-to-Applicant (BA J2A) Matching User Flow

Our J2A Matching functionality is the core use case we offer in the first instance starting by End of Q3/2018.

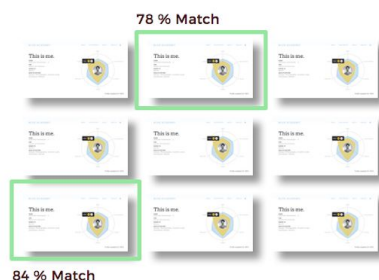
It provides HR departments with the possibility to create personality reference profiles for internal Job Roles which can be used to

1. **Match** external **candidates** based on the reference profiles.
2. **Create** sophisticated **personal development plans** for employees

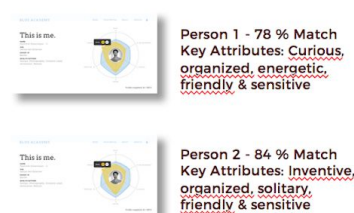
## 1. HR defines ideal employee profiles



## 2. AI assesses all applicants



## 3. HR receives 'best match' recommendations



*Feedback loop to improve company culture specific matching*

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Our core use cases consists of 6 simple steps to improve your hiring:

1. Create Company profile
2. Create Hiring Case for Job Role
3. Create Job Role(s) Reference Profile(s)
4. Evaluate incoming candidates
5. Receive best matching candidate overview and compare top candidates
6. Review profiles to get more info for the candidate interview

## BA Machine Learning Approach

**!Important:** This section is intended for more technically oriented people to understand our Machine Learning approach.

Machine learning is a technology that allows the automatic classification of complex data. This data must be known to follow certain rules, hence being classifiable, without the need to be able to describe these rules. Psychological models can show how personal values are interconnected but cannot describe the exact rules lying behind. Therefore they are an ideal use case to enhance results using machine learning technologies.

Basically we follow two main approaches in using machine learning to create the new standard of a job matching and recommendations:

## **Variant 1 - Matching to Template Profiles**

Using a Support-Vector-Machine algorithm, a hyperplane can be found that separates those vectors that are connected to a predefined template vector from those that are not connected. Vectors in the same cluster group as the template vector can be seen as "alike", and therefore profiled with a similar skill set as the template vector.

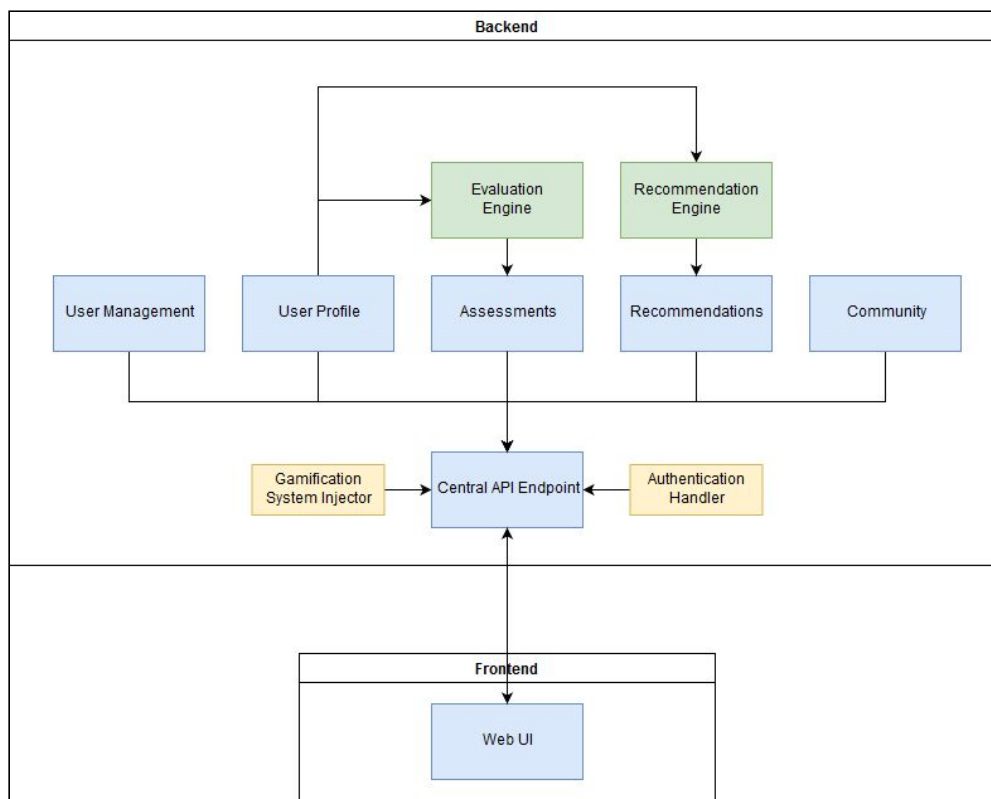
## **Variant 2 - Classifying into different Templates**

When it is not sufficient to classify any given vector as "alike" to a single template vector, more sophisticated techniques can be used to match a vector into the best fitting group out of a pool of predefined templates. This can be achieved using multi-layered artificial neural networks. These networks have one input node per dimension of the vector and one output node per predefined group. To connect the input nodes with the output nodes, the network needs to be trained, to learn what set of answers leads to what output group. For this learning process a lot of pre-classified training data is required to achieve reliable results. The advantage is then not only a better result with more sophisticated insights, but also the opportunity to give feedback to the network on which classifications were correct and which were not, leading to ever increasing precision.

For you we'd recommend an approach with Variant 2 due to the high number of specialists within the company pool.

## BA Technical Description

The following architecture diagram highlights the layout of our system components:



Our service can be consumed with the following methods:

- As web-application via our web front-end
- As stand alone system hosted by your company
- Consumed through our restful API either public through the cloud or private through the company IT

## Conclusion

Blue Academy supports your HR department and recruiting processes and objectives with the following activities:

- Blue Academy provides an extensive personality, capital and competences assessment model which provides insights on your company's own workforce and future talents
- Blue Academy provides an algorithm to match best talents on the market to your companies profiles
- Blue Academy provides a self-learning AI engine which improves the matching of talents to profiles and which improves the recommendations for employee developments plan based on acquired feedback within the case

## Contact

For questions and project inquiries interested parties can contact us:

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Get in touch to reserve your project seat.