# PROCESSING AND VISUALIZATION OF PSYCHOLOGICAL DIAGNOSTIC DATA

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## MOTIVATION

- The evaluation of psychometric tests relies on norms which give meaning to the raw results
- Norms are often **missing or of poor quality**
- Collaboration with Rehabilitation Center Kladruby
- The final aim is to **create new norms** based on the population of patients at Rehabilitation Center Kladruby
- The size of the population is significant both in the context of the Czech Republic and Europe

## PROCESS

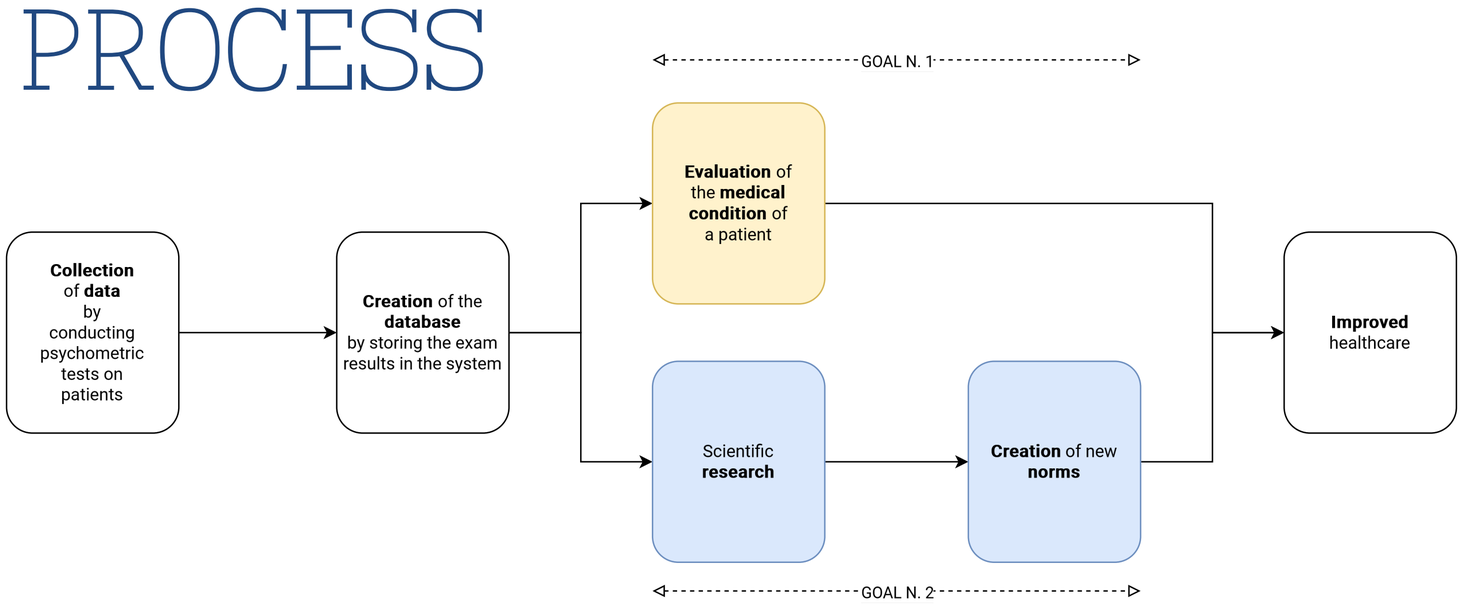


Fig. 1: Steps in the process of healthcare improvement for patients with spinal cord or brain injury

## GOAL 1

Facilitating the evaluation of patients' medical conditions at R. C. Kladruby

1. Evaluation of condition using both raw and weighted scores based on existing norms

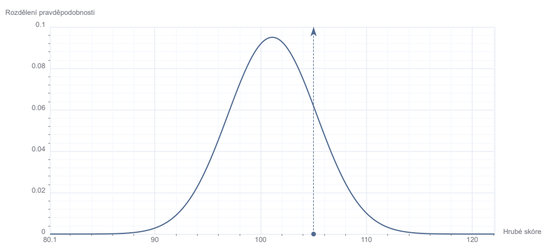


Fig. 3: Performance of patient in comparison to norm defined by mean and standard deviation

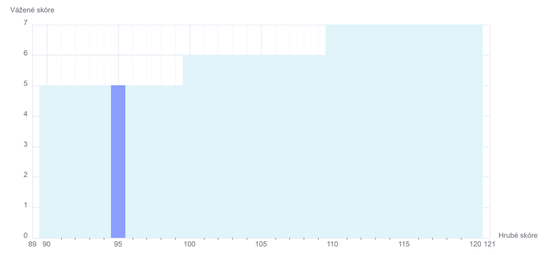


Fig. 4: Performance of patient in comparison to norm defined by score intervals

2. Comparison with reference group. Based on age, sex, premorbid education, diagnoses etc.

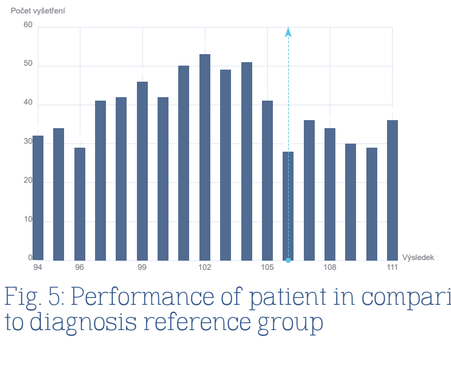


Fig. 5: Performance of patient in comparison to diagnosis reference group

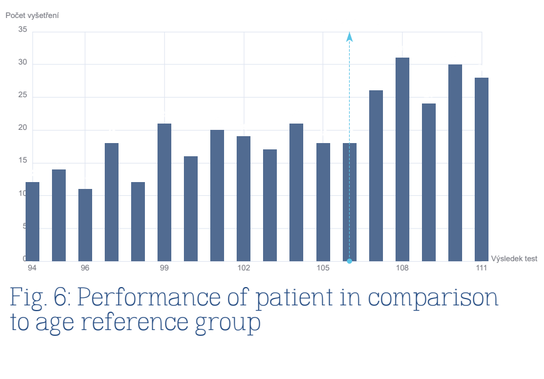


Fig. 6: Performance of patient in comparison to age reference group

3. Historic development of a patient's condition

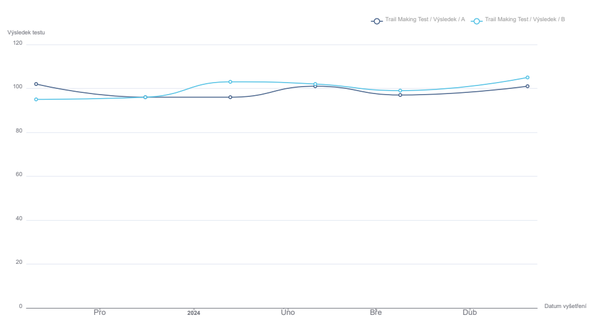


Fig. 7: Development of the raw score of a single patient in a single test

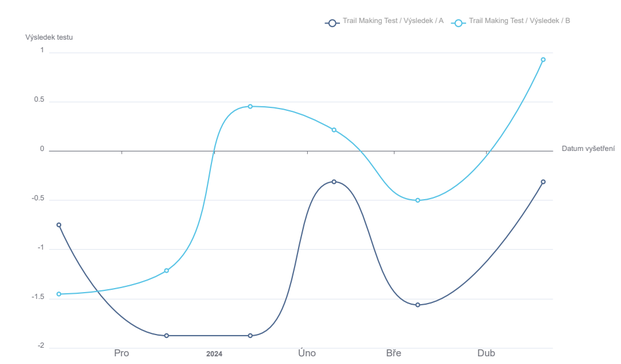


Fig. 8: Development of the weighted score of a single patient in a single test

## SOLUTION

Information system based on 3 layer client server architecture

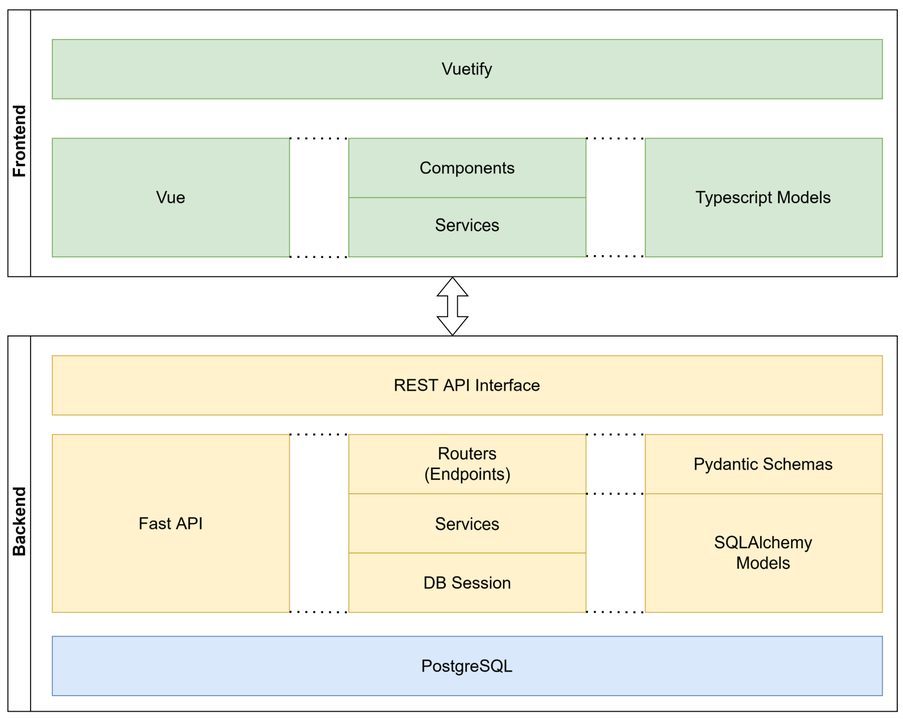


Fig. 2: Architecture of the system

## GOAL 2

- Exporting data for further analysis and research
- The data are intended to be utilized by students of medical and psychological fields as the foundation for their final theses
- Eventually creating new norms

| Patient code | Date of examination | Age at day of examination | TMT A | TMT B |
|---|---|---|---|---|
| P001 | 2023-12-03 | 34 | 100 | 101 |
| P001 | 2023-01-03 | 34 | 102 | 103 |
| P001 | 2023-02-03 | 35 | 97 | 102 |
| P002 | 2024-02-01 | 28 | 98 | 99 |
| P002 | 2024-03-01 | 28 | 101 | 100 |
| P003 | 2024-04-20 | 44 | 96 | 96 |
| P004 | 2021-01-18 | 31 | 102 | 103 |

Tab. 1: Data matrix representing the results of a test of all the patients in the database

| Patient code | Sex | Date of birth | Premorbid education | F20.1 | F20.2 | F20.3 | Amnesia | Apraxia |
|---|---|---|---|---|---|---|---|---|
| P001 | M | 1984-12-03 | Elementary | YES | NO | NO | YES | NO |
| P002 | F | 1999-03-15 | Secondary | NO | YES | YES | YES | NO |
| P003 | M | 1954 | Tertiary | NO | YES | NO | NO | YES |

Tab. 2: Data matrix representing all the patients in the database and their parameters

Excel@FIT 2024

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RÚ Kladruby