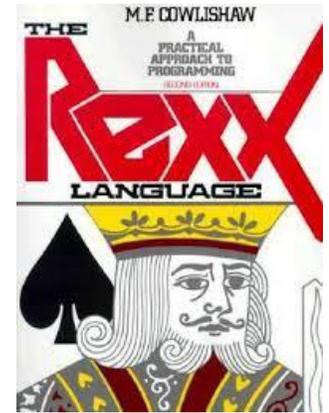


REXX, Python and Flutter

Experiences from an EU Project

M. Beer, 2022

mike@mindcoa.ch



Agenda

- Project Context
 - Components
 - Functional Overview
 - Development Process & Tools
 - Challenges
- 
- A large, solid red curved shape that starts from the bottom right corner and curves upwards and to the left, extending towards the center of the slide.

Project Context





Ageing Well in the Digital World



ABOUT
PROJECTS
STAY UP TO DATE
AAL FORUM
GET IN TOUCH

ACTIVE ASSISTED LIVING

Supporting the development of innovation designed to improve quality of life for older people since 2008

[Learn more about AAL legacy](#)



AAL is a European programme funding innovation that keeps us connected, healthy, active and happy into our old age.

AAL Programme supports the development of products and services that make a real difference to people's lives – for those facing some of the challenges of ageing and for those who care for older people if they need help.

<http://www.aal-europe.eu>

mental health in occupational settings

<https://mhealthinx.eu/>



[Home](#) [Objectives](#) [Partners](#) [The Concept](#) [Design Process](#) [News](#) [Contact](#)

To provide a user-friendly, coherent and holistic mental health solution

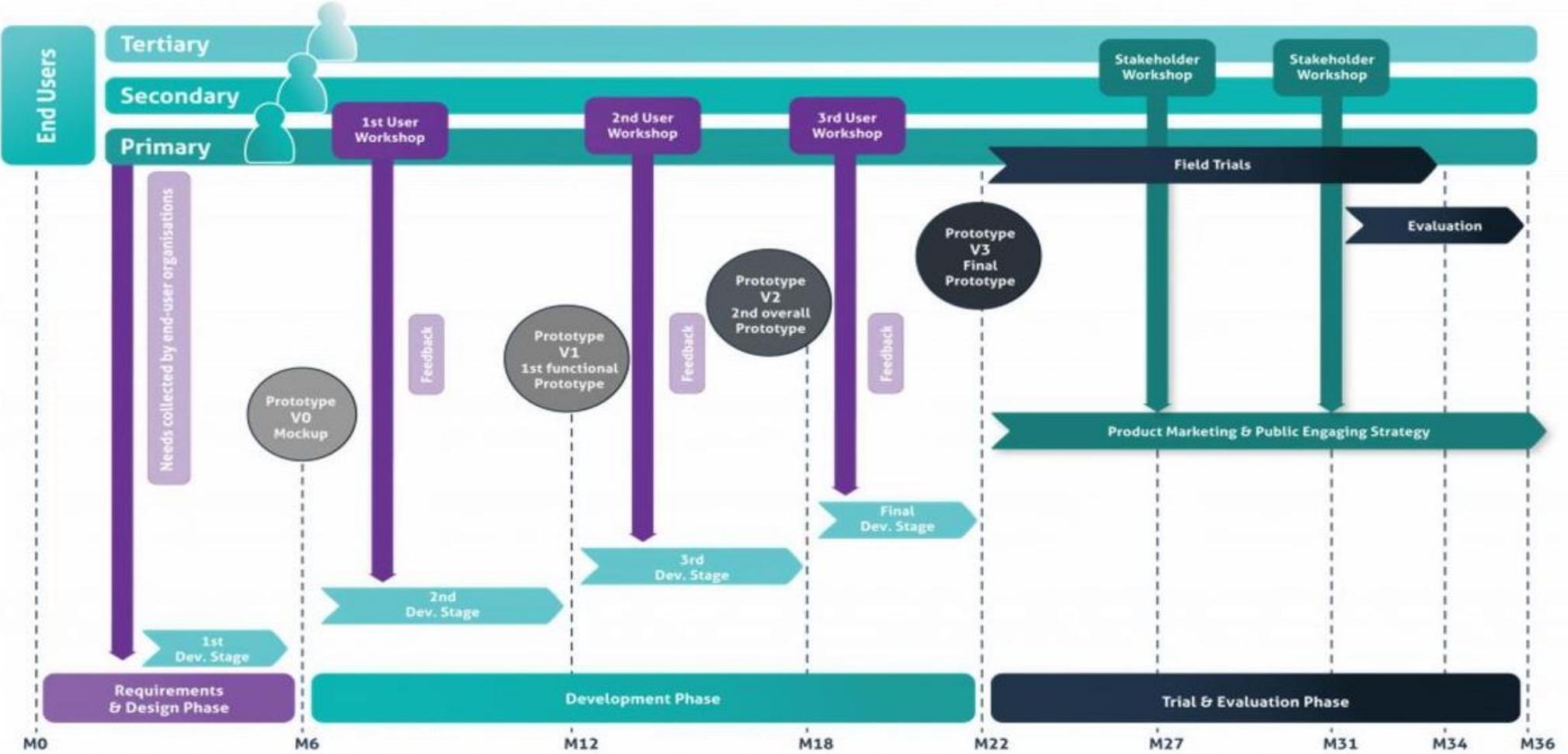


mHealthINX

International Partners



Project Stages



Components



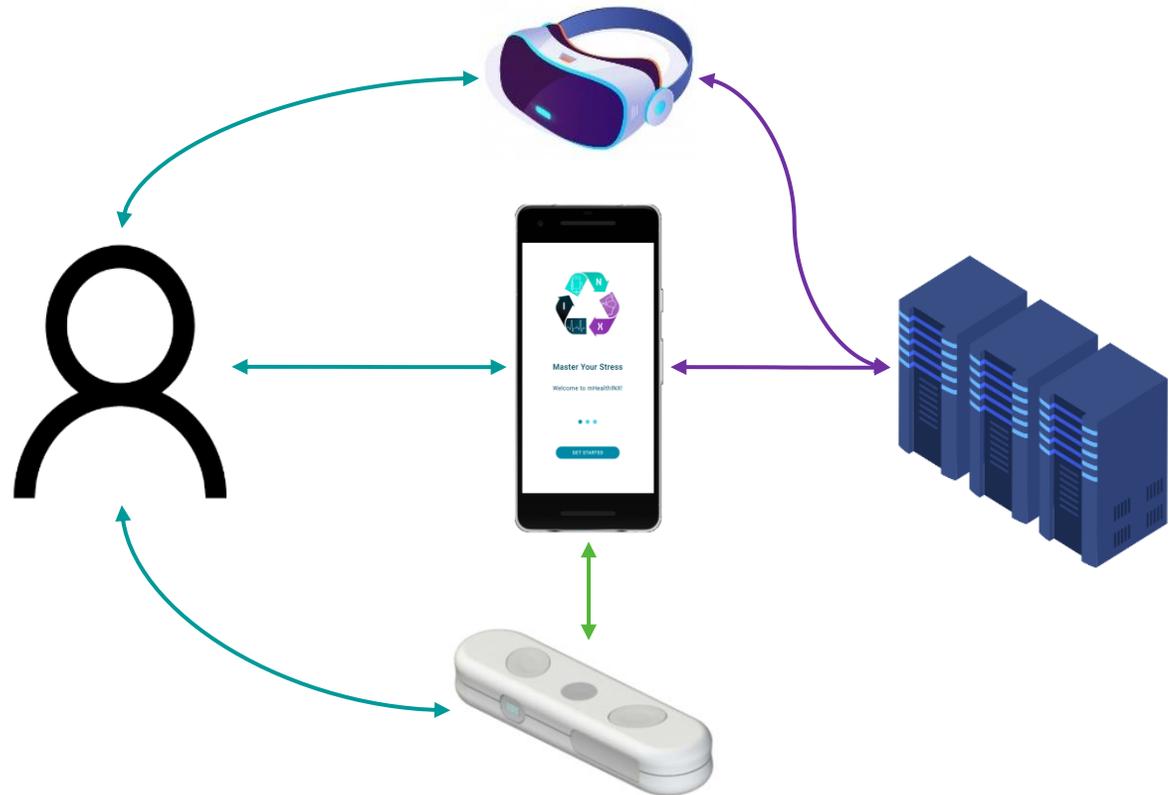
System Design

Frontend:

- App
- VR-Glasses
- Measurement device

Languages:

- EN
- DE
- NL



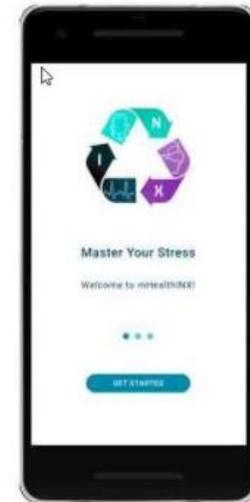
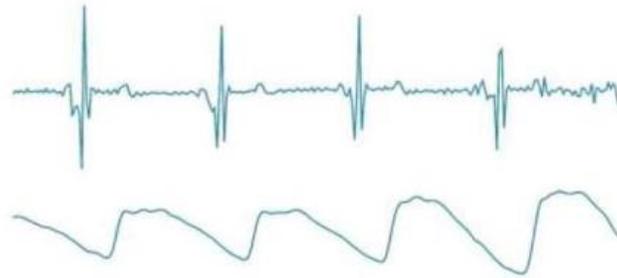
Virtual Reality

- Oculus Quest 2
- Relaxation & Mindfulness
 - Photospheres
 - Mindful walk
- Games & Exercises



Biosignal and Stress Measurement

- 2 minute measurement
 - ECG & pulse waves
- Heart rate variability
 - Reduced variability indicates stress



VR: Photosphere



Game

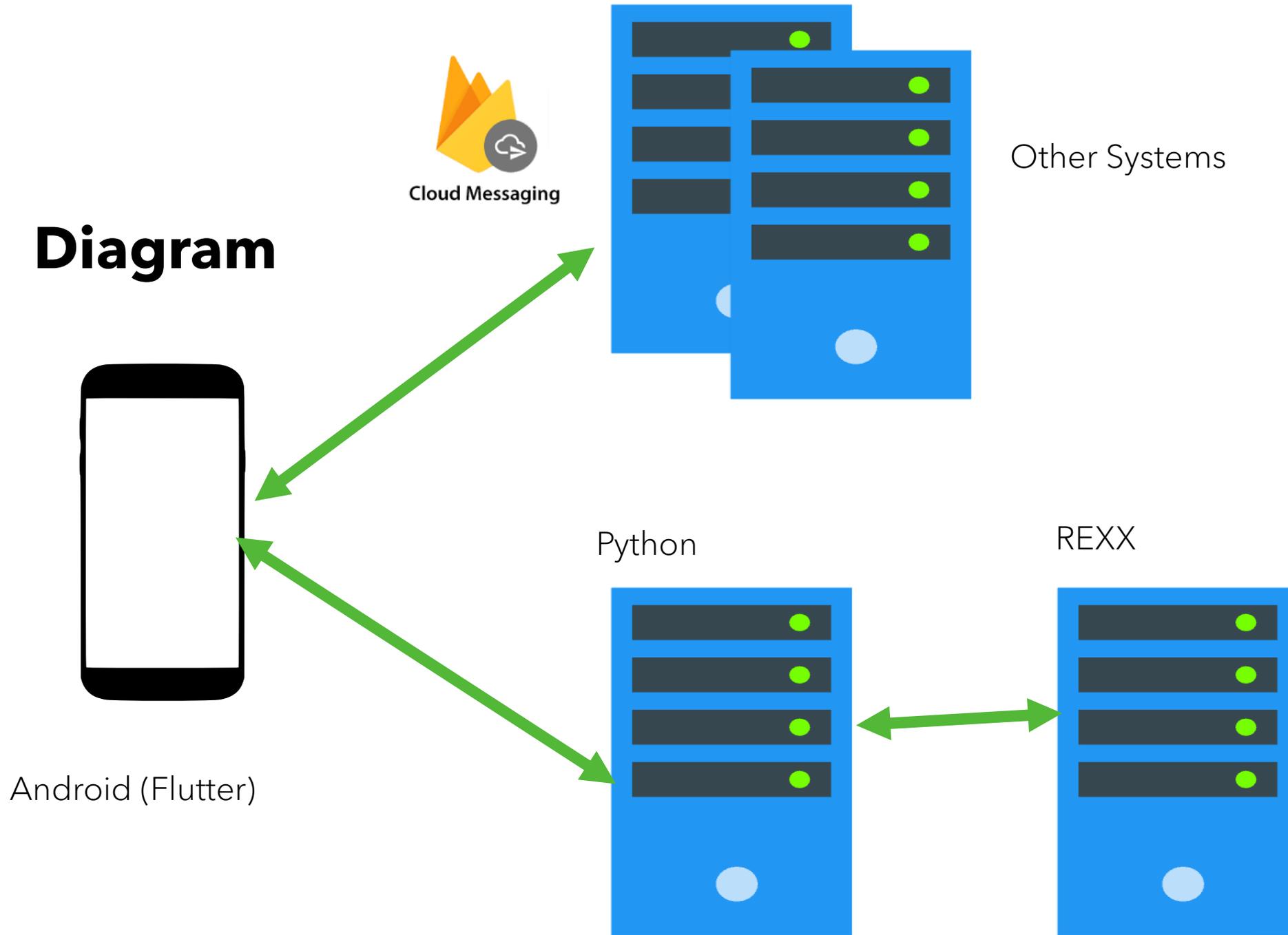


Backend

- **Services**
 - Google
 - Firebase Notifications
 - MedRecord
 - User Management
 - Questionnaires
 - AIT
 - Processing of Stress signals (HRV)
 - Suggestion engine for interventions
 - Notifications
 - VR backend
 - mindcoa.ch
 - Processing logic
 - interventions



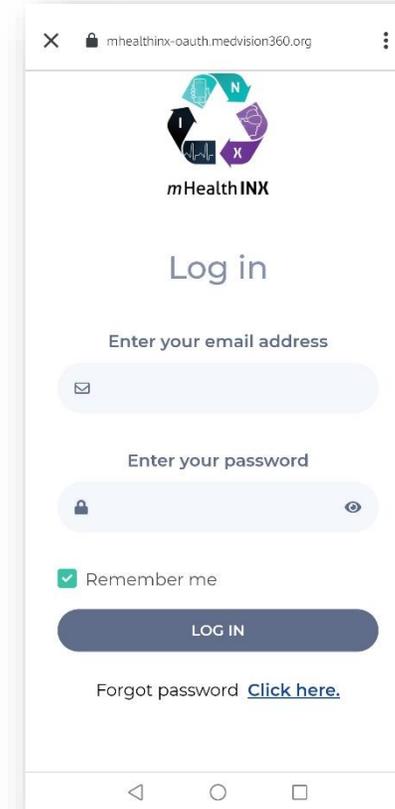
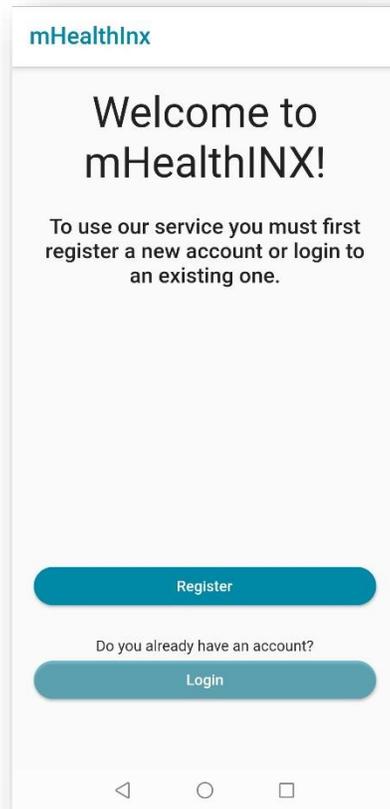
Diagram



Functional Overview

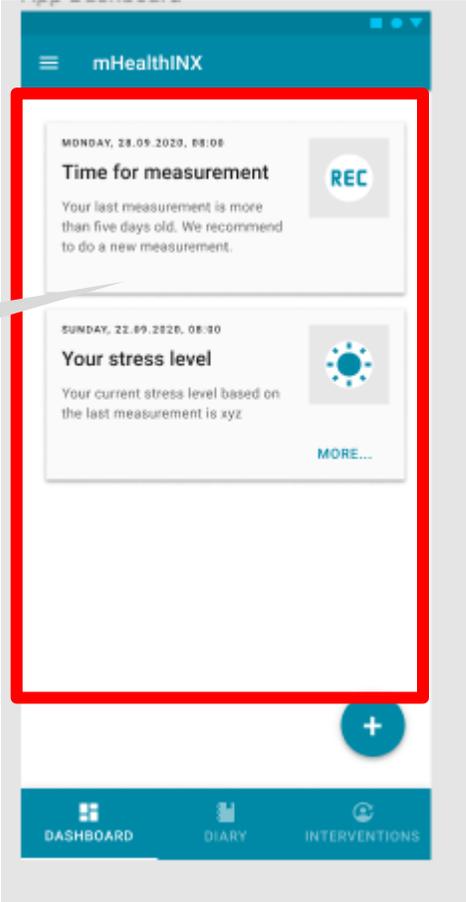


Onboarding, Registration, Login

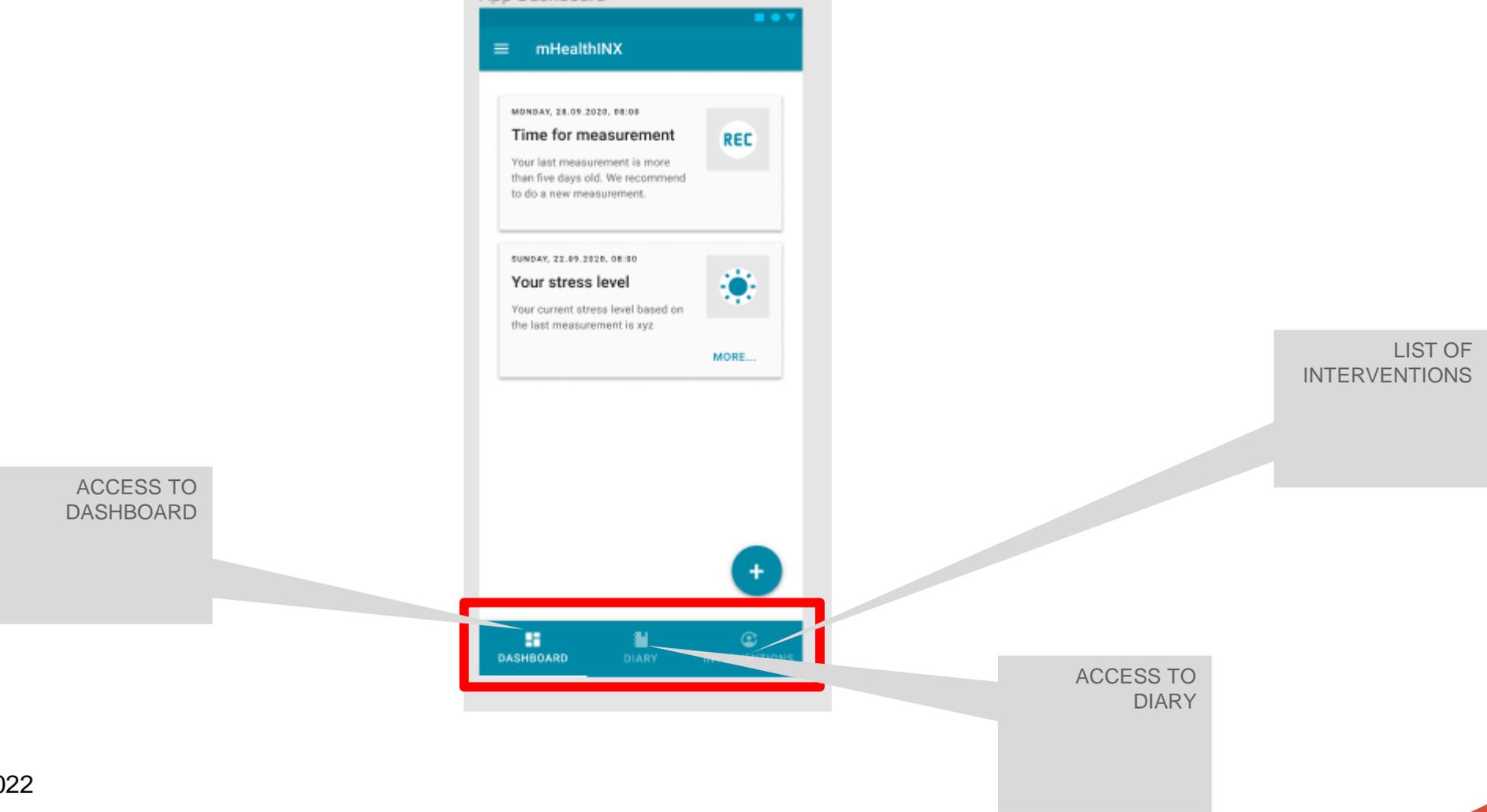


APP USER INTERFACE: INFO / WORK AREA

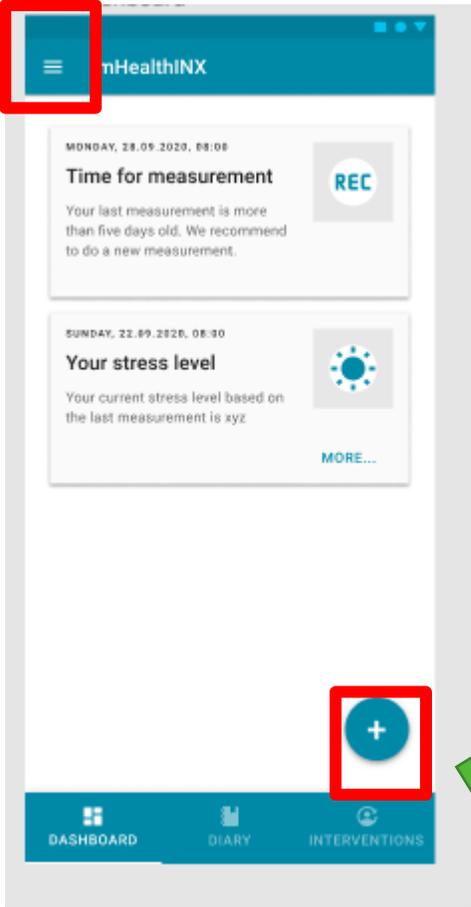
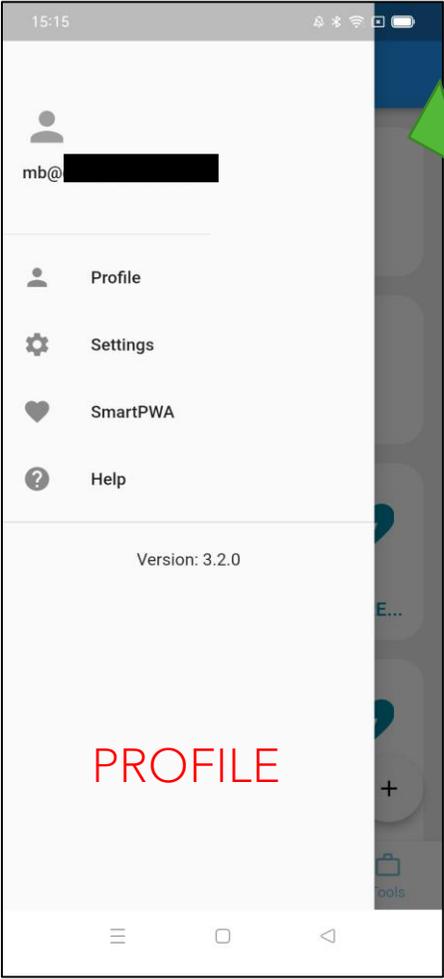
INFO / WORK
AREA



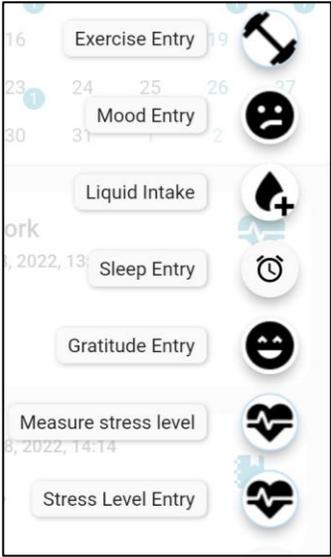
APP USER INTERFACE: MAIN FUNCTIONS



APP USER INTERFACE: ADDITIONAL FUNCTIONS



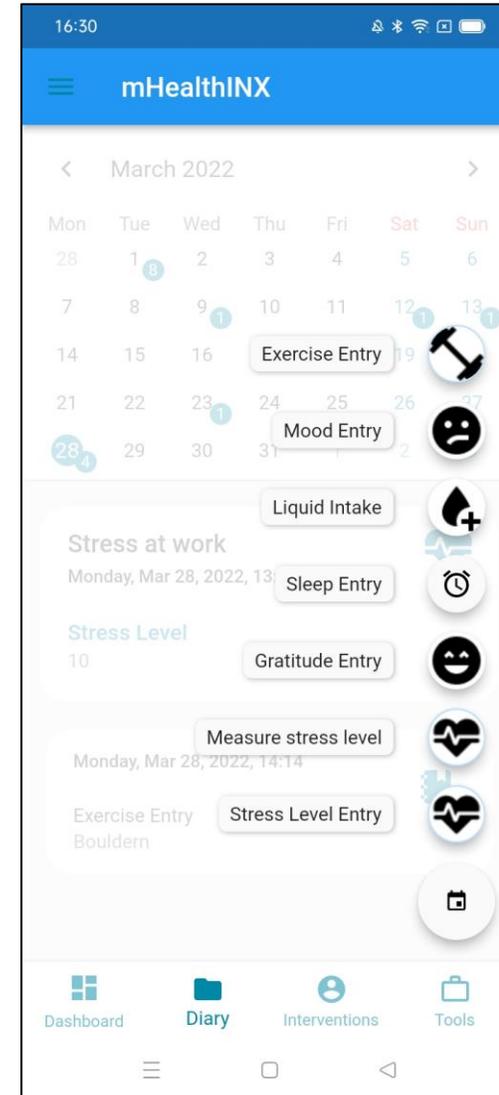
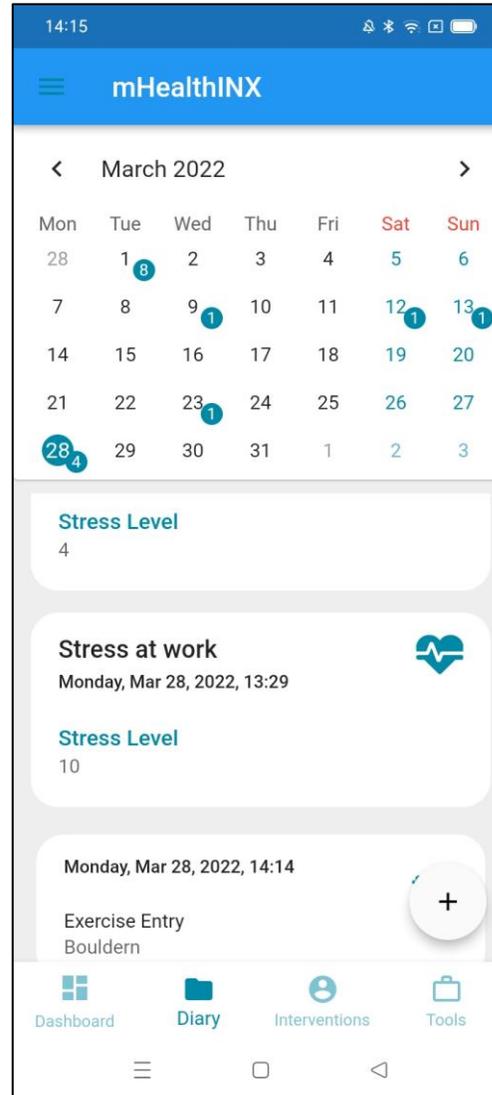
NEW ENTRIES



Diary

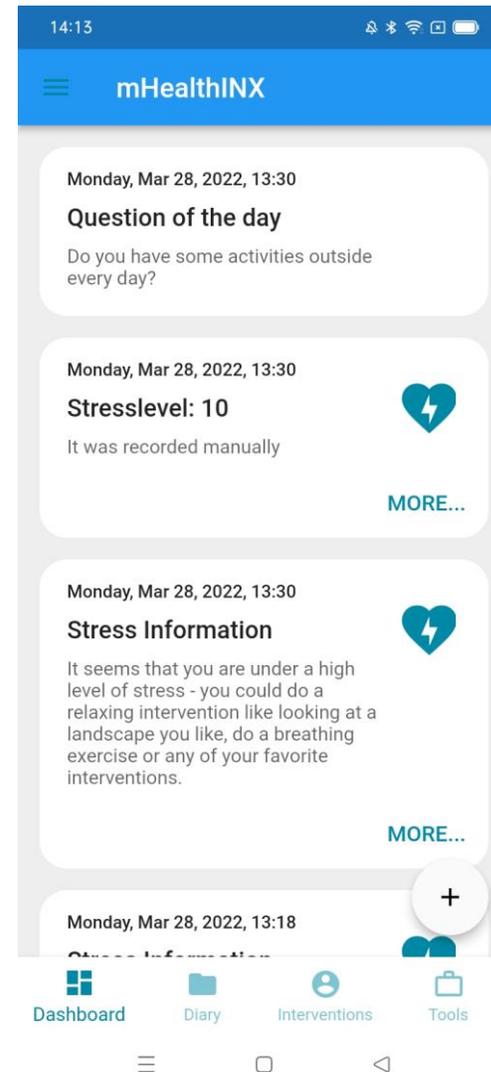
- Categories

- Exercise
- Mood
- Liquid consumption
- Sleep
- Gratitude journal
- Stress Measurement
 - Objective
 - subjective

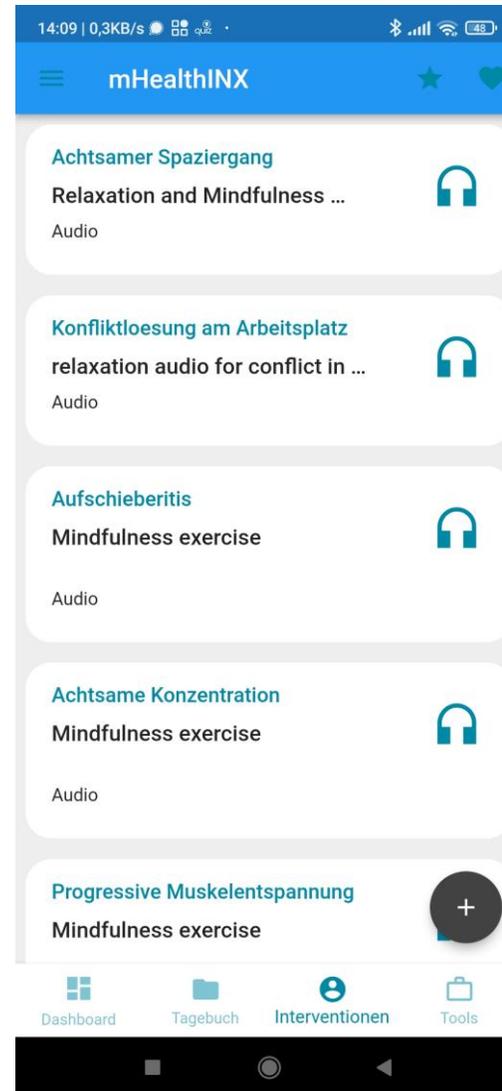


Dashboard

- Information
- Motivation



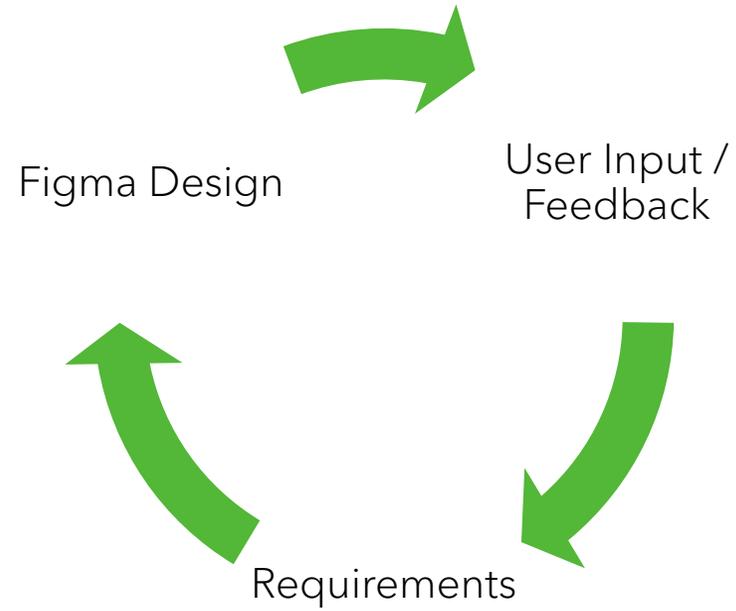
Interventions



Development Process & Tools

A large, solid red curved shape is positioned in the bottom right corner of the slide, curving from the bottom edge towards the right edge.

User Involvement



Frontend

Tools

Flutter

Github

Codemagic

Backend Communication

- HTTPS calls to Application Servers / Services

App Backend

Application Server

- Gets called from Frontend
- Provides Interventions
- Calls MC backend
- API calls exposed to other parties
- → SWAGGER / OpenAPI

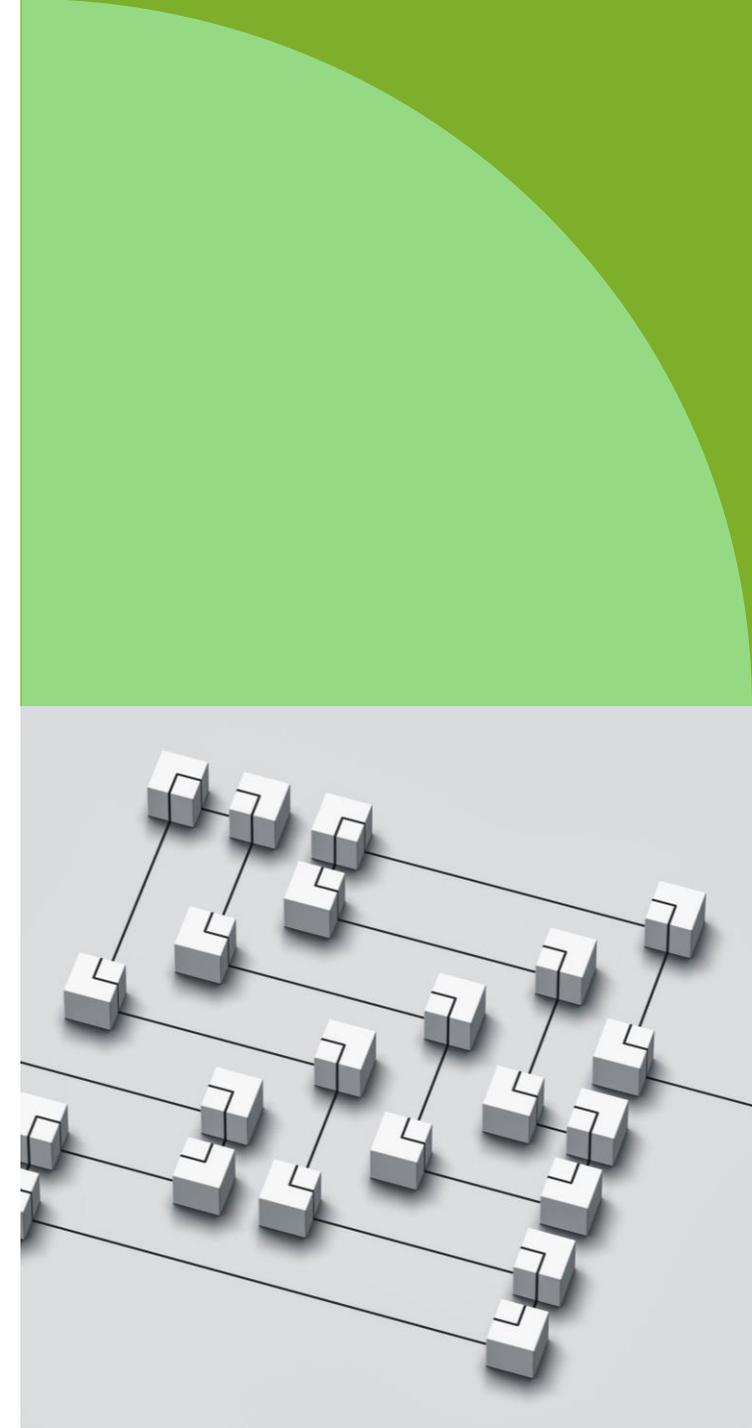
Backend

- „Legacy“ system with >1000 REXX functions/modules
- Framework for psychological apps
 - Apache
 - Regina
 - MARIADB
- APIs used in this project by App Server only

Challenges - Part 1

Philosophical Issues

- Design vs technical implementation
waiting for user feedback can delay development
- Which function in which layer?
- Using Google functions (e.g. firebase)?
- Reliance on Code Generation (e.g. SWAGGER)
- „COBOL“-Style Indentation: Python, YAML vs. Free format



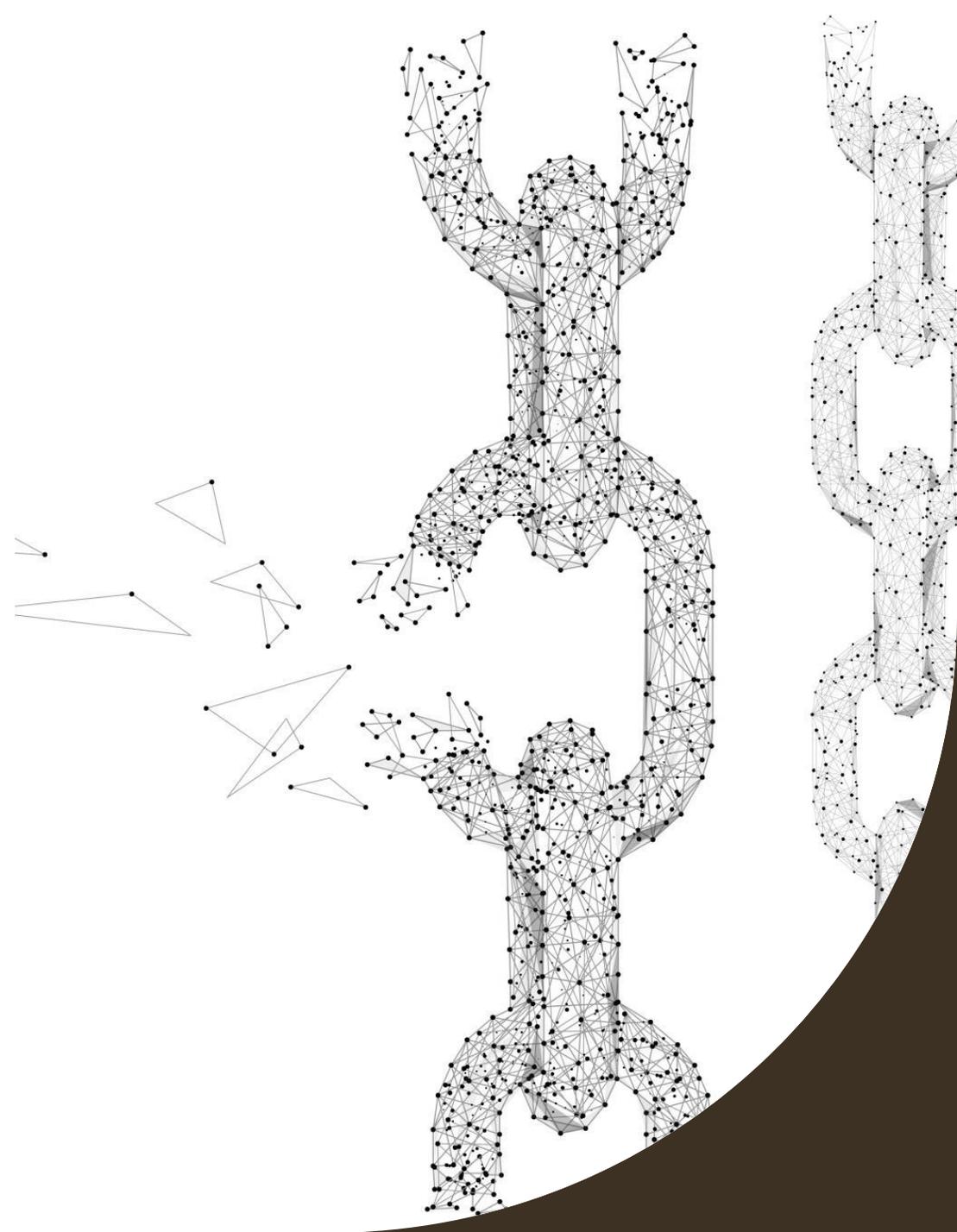
Challenges - Part 2

Calling conventions

XML vs JSON in general & with REXX

Strongly type language calling REXX - i.e.
STRING is not enough

Json NULL vs. Empty string



Challenges - Part 3

REXX in general

Rewrite Legacy code (REXX → PYTHON) ?

More Python than REXX programmers available

Perception of REXX as „dead language“

Performance: interpreted REXX too slow

Library & Package management

Challenges - Part 4

Missing functions



Math: SIN, COS, SQR,..



Statistics: MEAN,
STDDEV,..



Input processing:
pattern matching,
Hamming / Levenstein
distance

- APL-like vector operations - e.g.

$X = „1\ 2\ 3”$

Say $\text{sum}(x) \leftrightarrow +/X$

Sort vector, create index vector

COS of vectors

- List processing

REXX Wishlist / To Do

- Change perception of REXX within the programming community
- Easier interfacing to other tools (e.g. add REXX to Swagger Codegen)
- Package management (like REQUEST EXEC)
- Modernize REXX while preserving compatibility
- Performance

Thank you!

mike@mindcoa.ch

If you want to try the
app for free, send
me an email.