PSA
PROFESSIONAL SOFTWARE ASSOCIATES, INC.

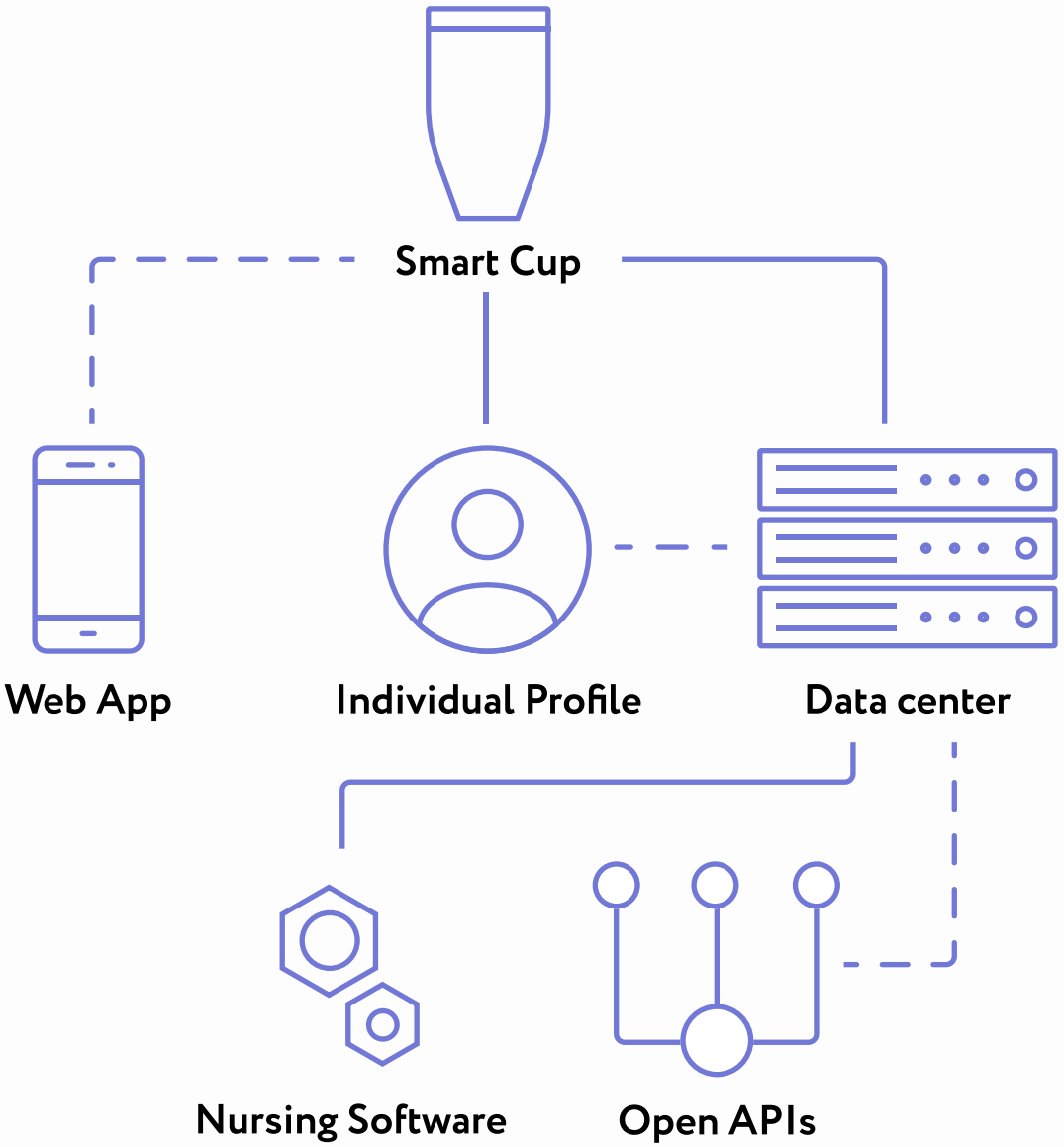
SMART CUP FOR HYDRATION MANAGEMENT

Datasheet

PROVIDING SOLUTIONS FOR TOMORROW – SINCE 1993

Project objective

Implement firmware including a range of drivers for a smart cup to provide fully-fledged functionality, top-tier performance, and reliable connectivity of system components. The product would automatically control sufficient and regular fluid intake in real-time. A tight project schedule was required to meet already approved deadlines for manufacturing and launching a smart cup.



Result

A FreeRTOS-based smart cup prototype showcases the effective operation of its core functions – real-time tracking of fluid intake, data transfer for server-based processing, and notifications to prompt a drink. Our client gained source code, binaries, test plan, and report of testing, and could rapidly seamlessly move to the production phase of a pilot batch and start trial operation.

Scope of work

- Instantaneous server synchronization establishment over IPsec GSM
- Business logic improvement to optimize real-world interactions
- Power management functionality implementation
- Firmware OTG update-modules implementation
- Drivers implementation. Actualization for GSM connectivity, sensor utilization, flash memory management, hardware components communication, and testing opportunities
- End-to-end performance and stability risk evaluation. RTOS migration efforts estimation

Activities

- Product investigation
- Firmware development
- Drivers implementation
- Test plan creation and execution
- Requirements specification creation
- Risk and efforts estimation

About the project

Technologies

- C++
- STM32L4
- GSM
- MEMS
- Flash
- SPI
- I2C
- UART
- DMA
- OTG
- FreeRTOS

Project size

- 2 Software Engineers

Duration

6 months