

## Key Contribution

- Establish the theoretical foundations for using personal goals as foundations for creating understandable interfaces enabling people to manage and control stores of personal data from pervasive computing sensors;
- Design and evaluate a software framework that integrates wellbeing sensors and goals for user control over personal data;
- Design and evaluate the user interface with mechanisms enabling people to efficiently manage and control personal data over long term.

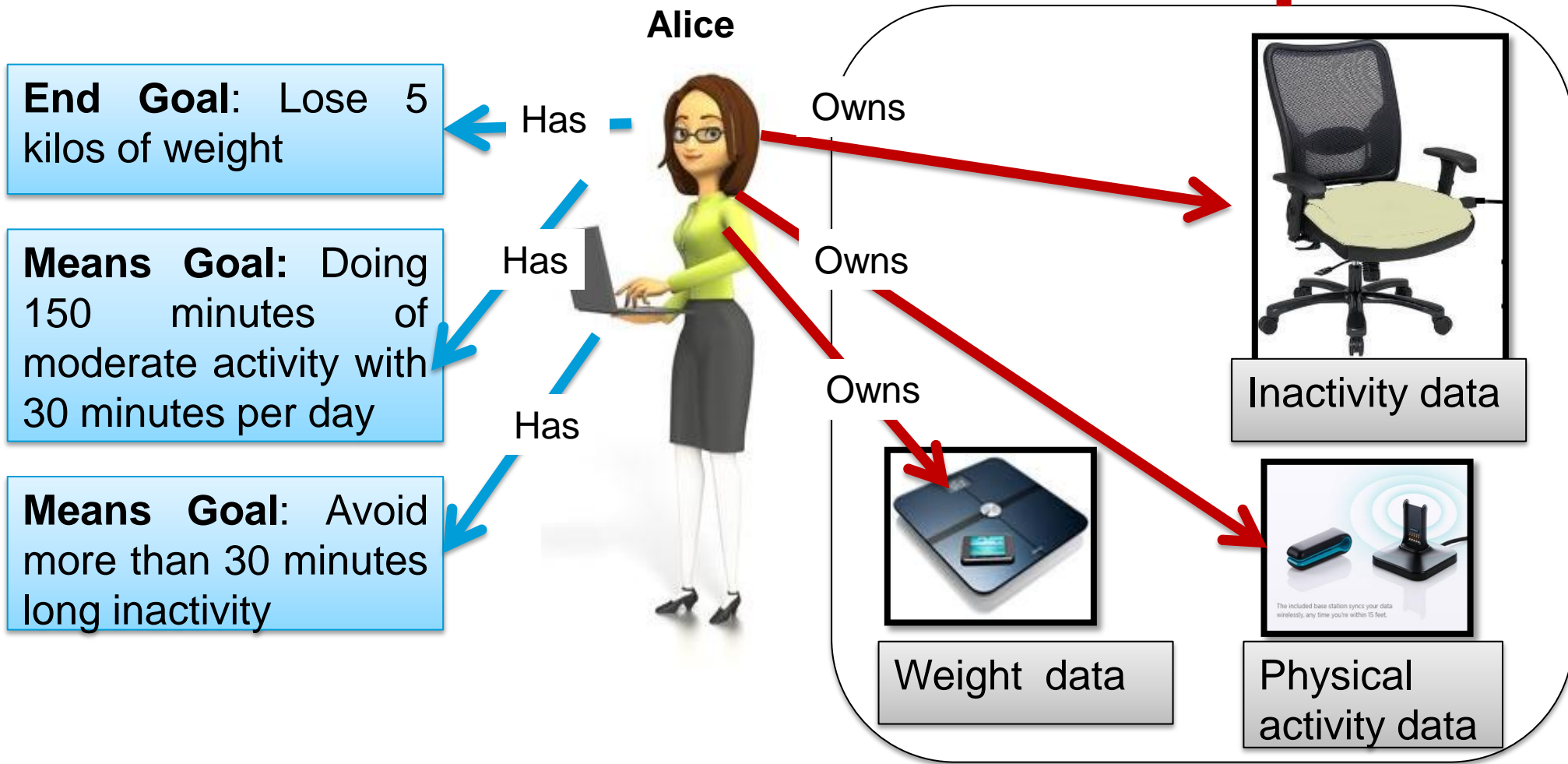


Fig 1. Integrating personal data and goals in pervasive computing environment.

## Why we need user control

- Enable users to decide what personal data to store over long term
- Help users control the management of their long term data
- Ensure users' right to control external access to their data
- Enable users to view and understand the information stored and inferred by the system
- Ensure users' right to be forgotten

## Personal Wellbeing Goals

Personal goal setting and monitoring can help people achieve behaviour change and achieve a healthy lifestyle. We distinguish lifelong goals as:

- End Goals:** Long term goals; the changes occur slowly. For example, losing 5 kilos of weight, reducing LDL cholesterol.
- Means Goals:** Short term goals; each goal is intended to serve an End Goal. For example, avoiding inactivity, walking 10,000 steps.

Each end goal may have several means goals.

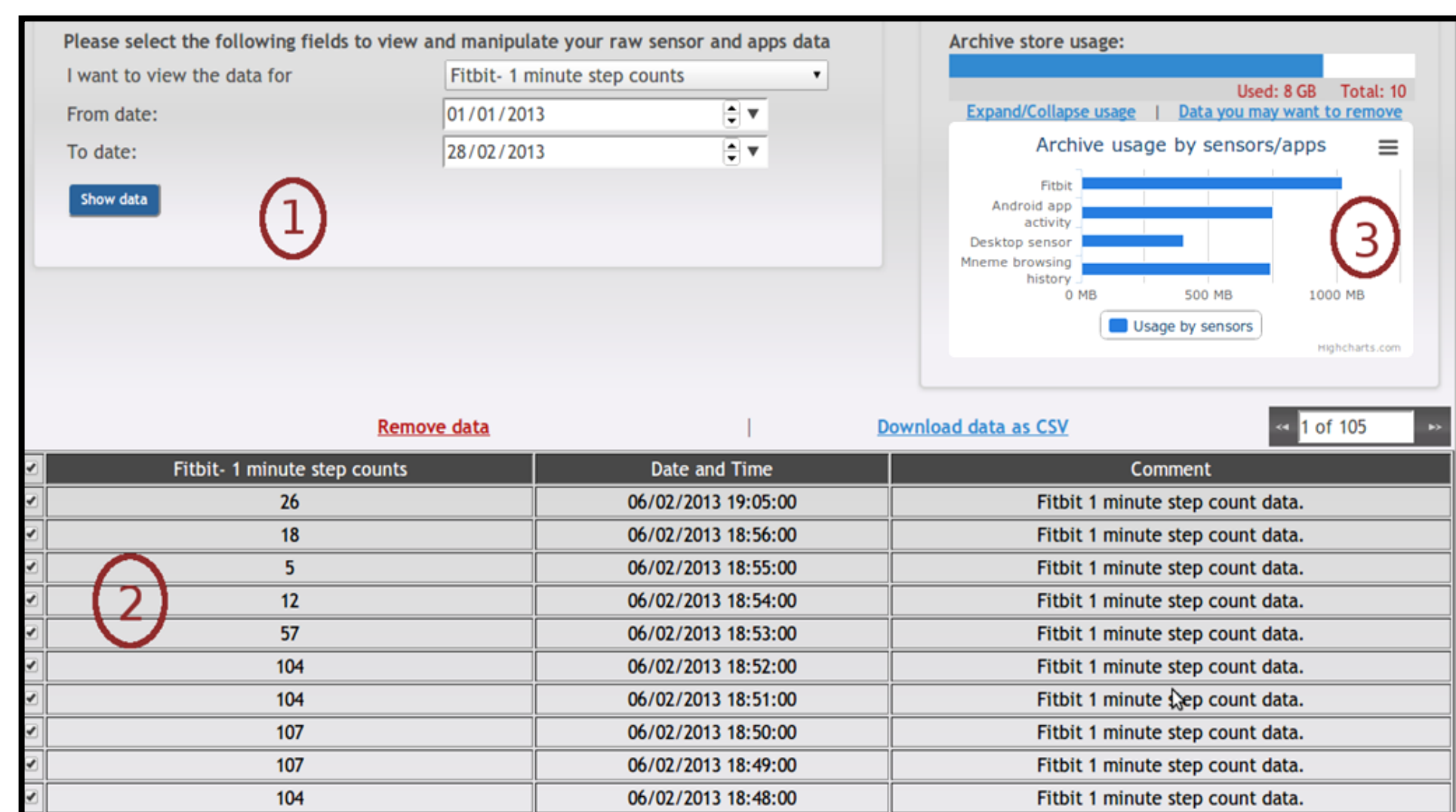


Fig 4. Archive Browser – View and manage fine grain sensor data (e.g., 1- search window, 2-Fitbit 1 minute step count data, 3-showing storage usage by different sensors)

## Future Work

- Evaluate the system and associated interfaces in a field trial
- Develop the essential foundations for infrastructure and interfaces for user control over personal long term sensor data.

## Goals as Foundations for User Control in Personal Lifelong Data Stores

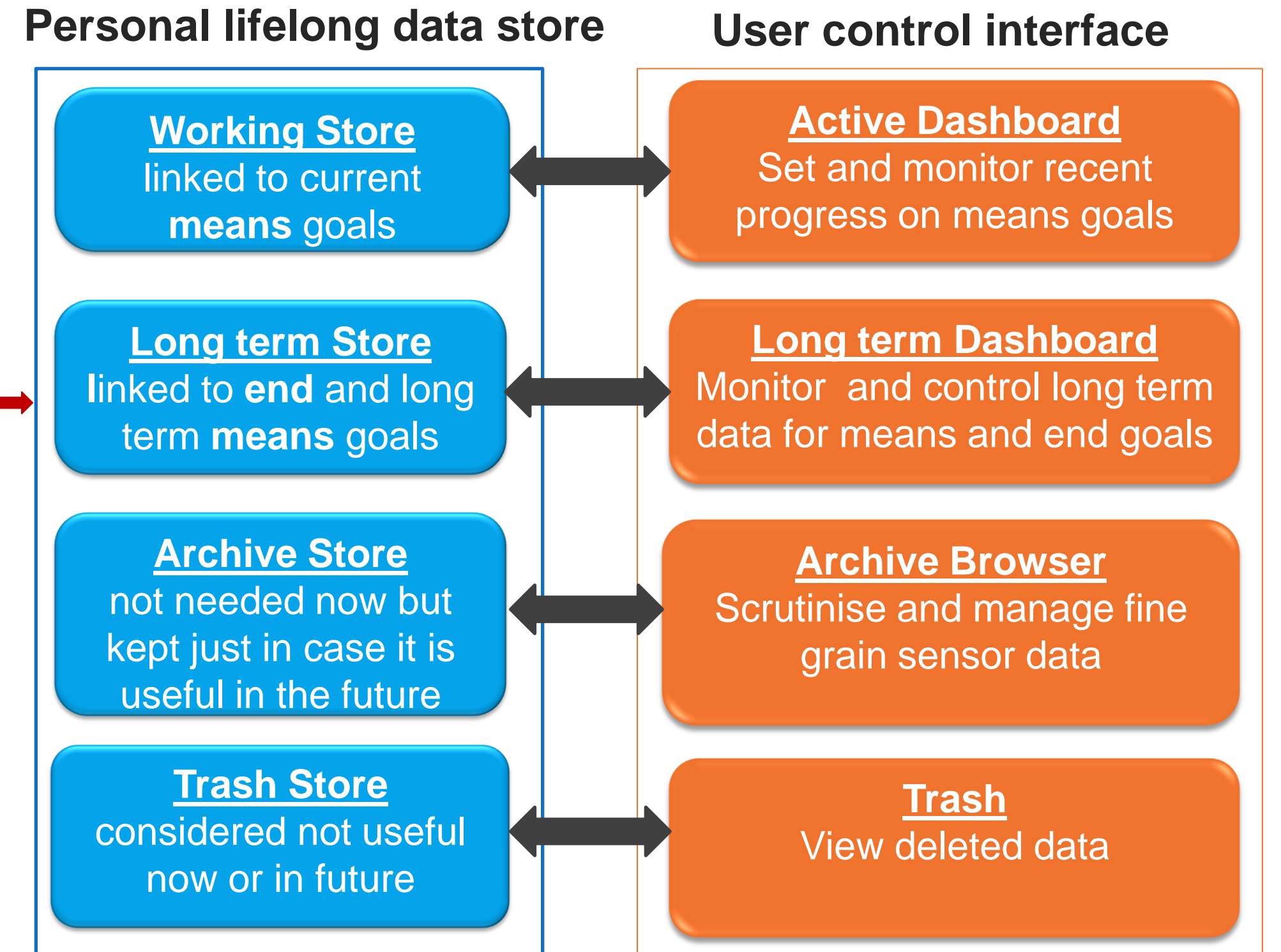


Fig 2. Storage architecture for personal lifelong data in pervasive computing environment. Each storage level is managed in terms of means and end goals and has an associated user control interface.

## Mneme: User Interfaces for controlling personal data

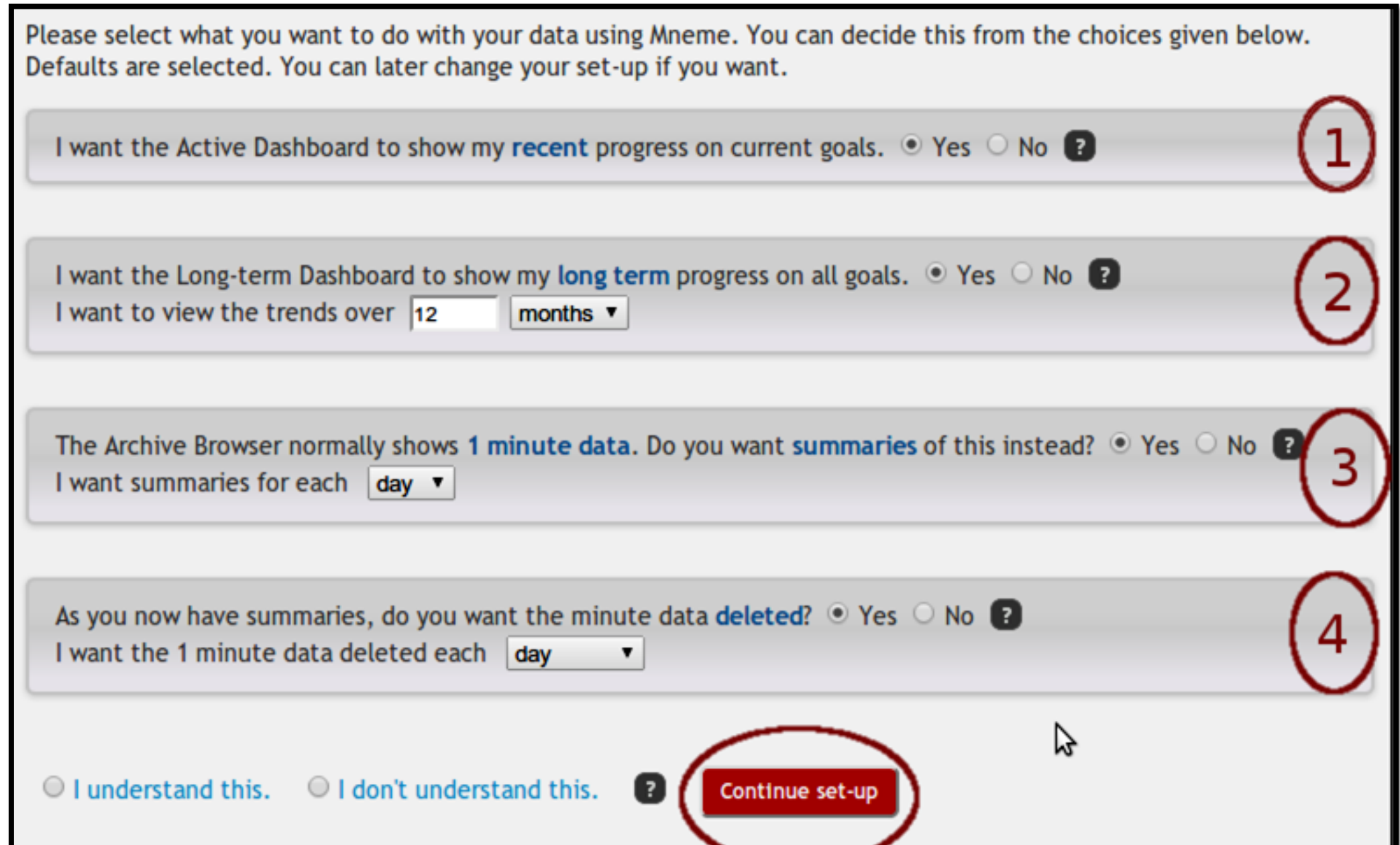


Fig 3. Interface to specify control preferences for selective storage and management of personal sensor data over long term (control preferences for 1-Working store, 2- Long term store, 3-Archive and 4-Trash)

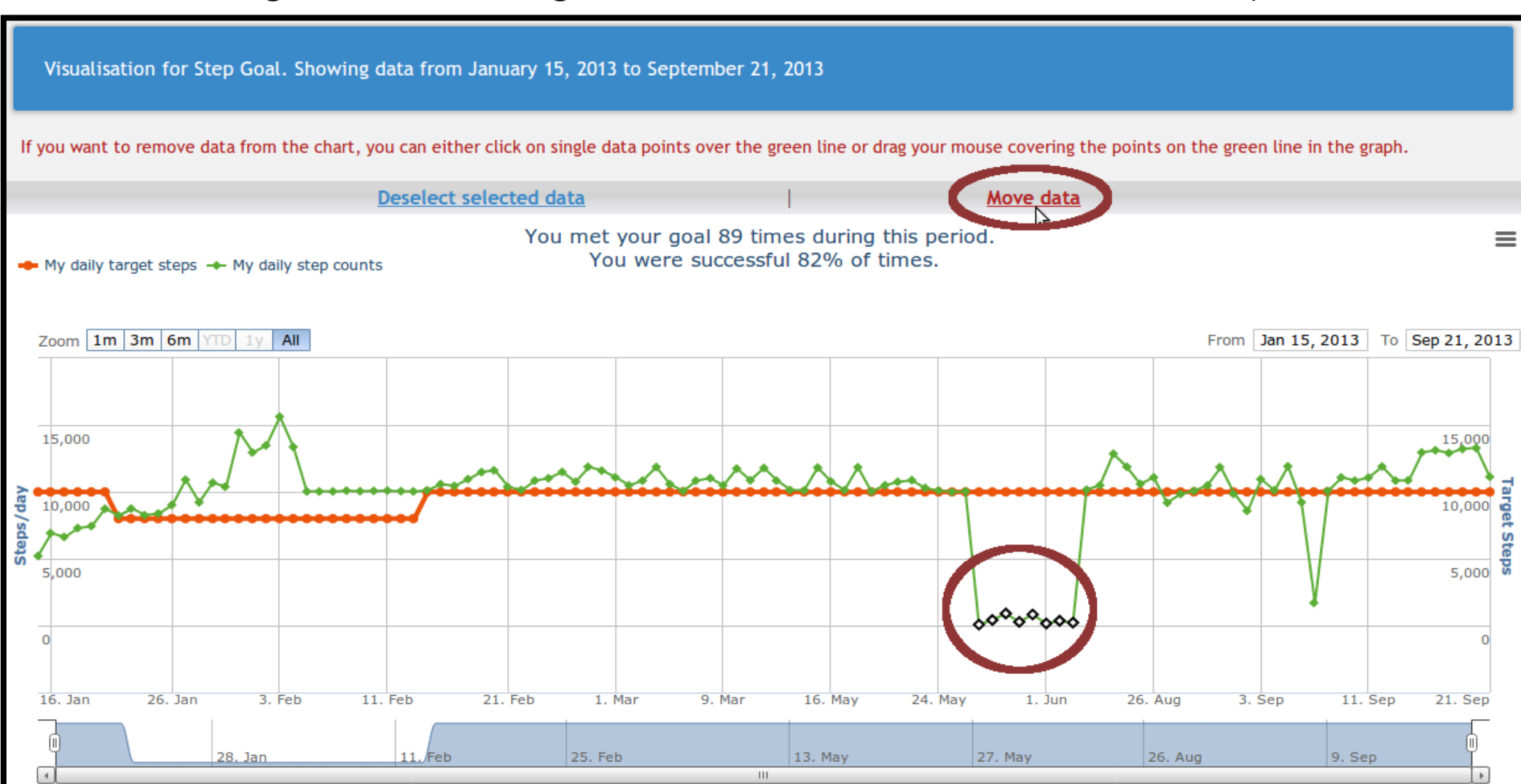


Fig 5. Long term Dashboard – View and manage Long term data for goals (Long term progress on daily step goals)

## References

- Barua, D., Kay, J., Kummerfeld, B., & Paris, C. (2011, November). Theoretical foundations for user-controlled forgetting in scrutable long term user models. In *OZCHI*, pp. 40-49. ACM, 2011.
- Barua, D., Kay, J., & Paris, C. Viewing and controlling personal sensor data: what do users want?. In *Persuasive Technology*, pp. 15-26. Springer, 2013.

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