

Towards Semantic Web: Seamless Integration of Services and Devices for the FRUCT Community

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Introduction

- Exponential growth of amount of information created by people
- Exponential growth of applications and web-services number
- Exponential growth of different devices number, including sensors, RFIDs, etc.
- K.Ashton, "That 'Internet of Things' Thing," RFID Journal, 2009.

Problem Statement

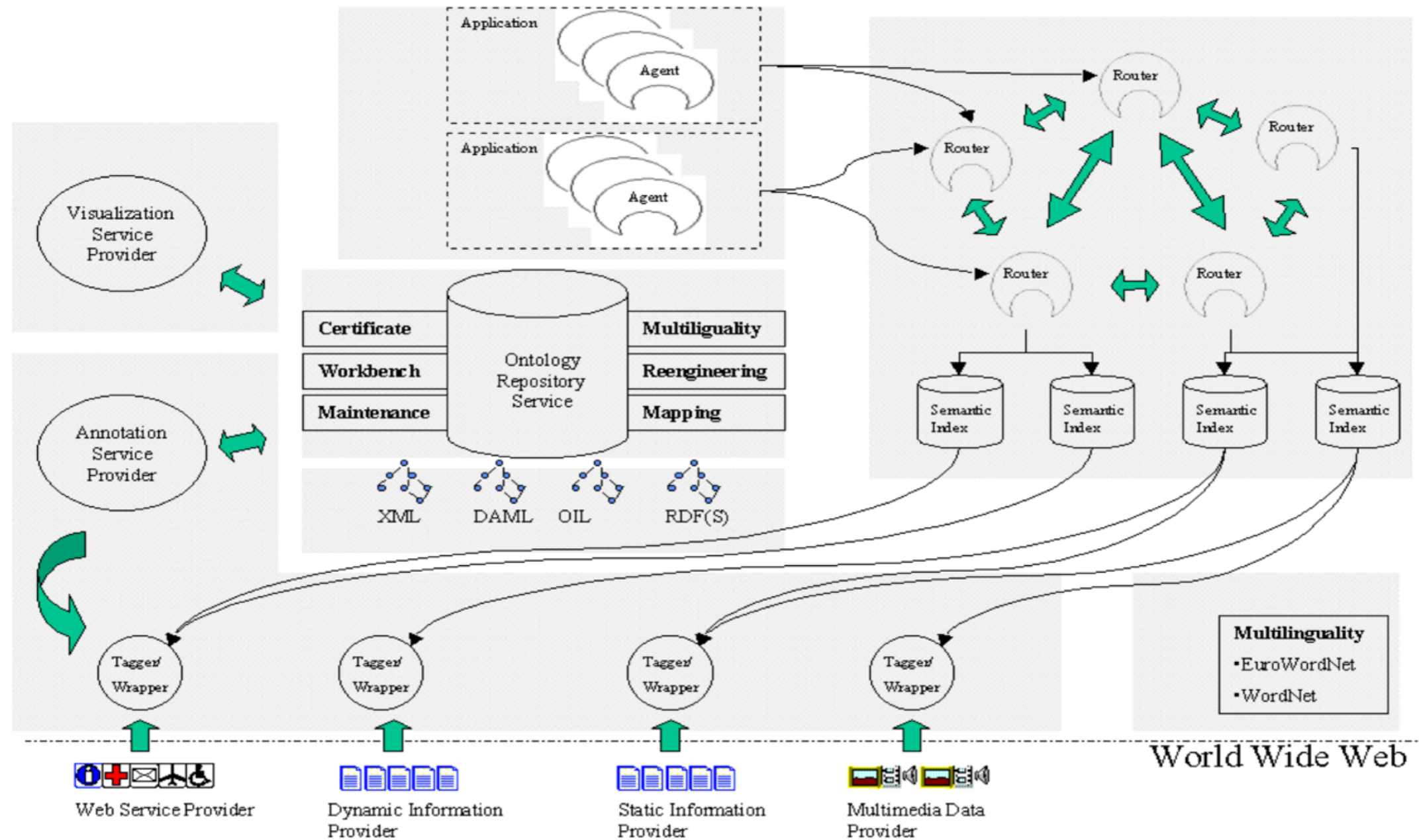
- Highly diverse heterogeneous environment
- A lot of different dissimilar services, applications, devices
- Necessity to provide an interaction and automatic integration between them

Semantic Web

- Semantic Web — an attempt to combine a lot of the disparate technologies and provide a possibility for an automatic integration of the heterogeneous services and applications
- XML, RDF, RSS, FOAF, Microformats
- Bad examples:

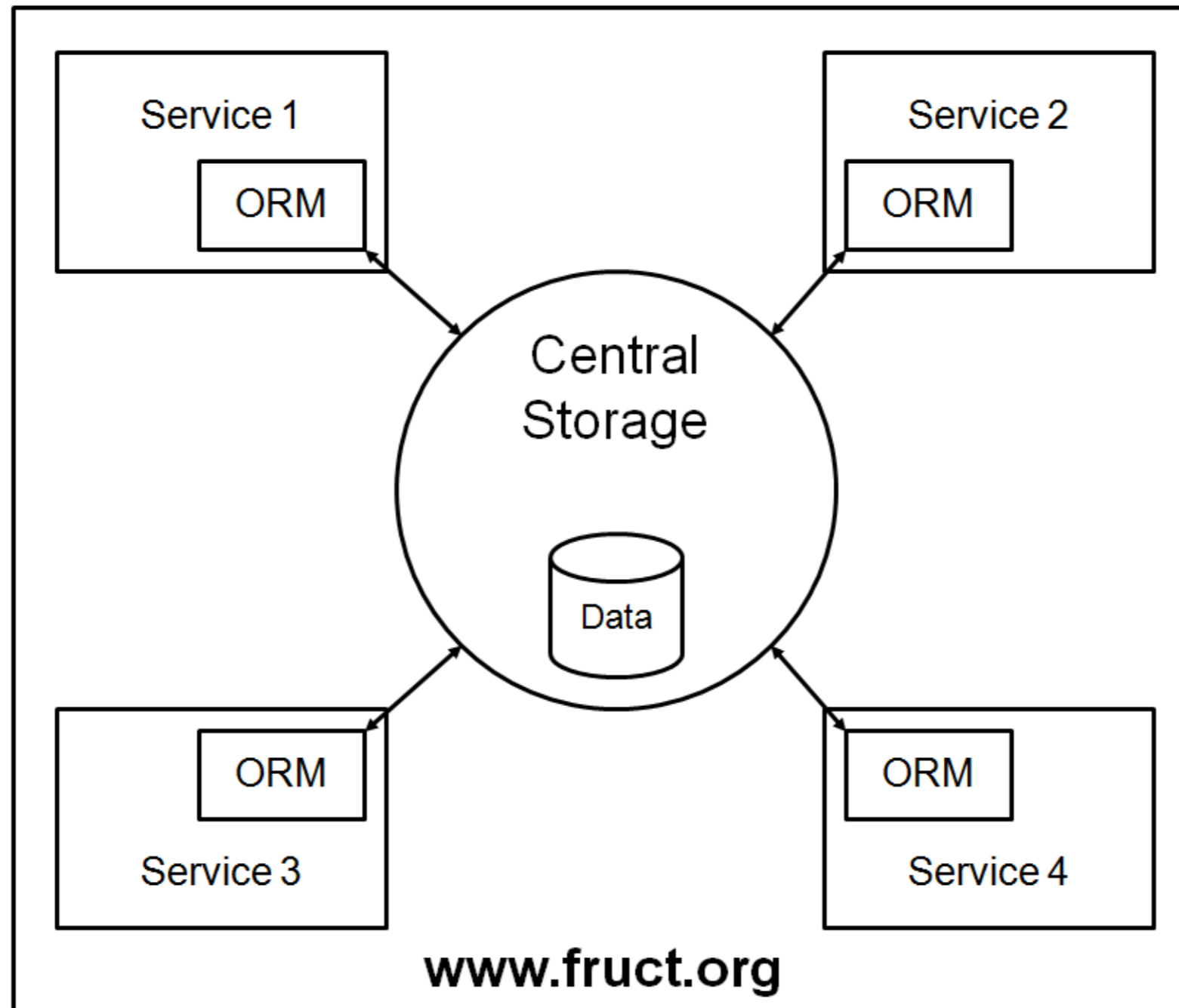


Semantic Web

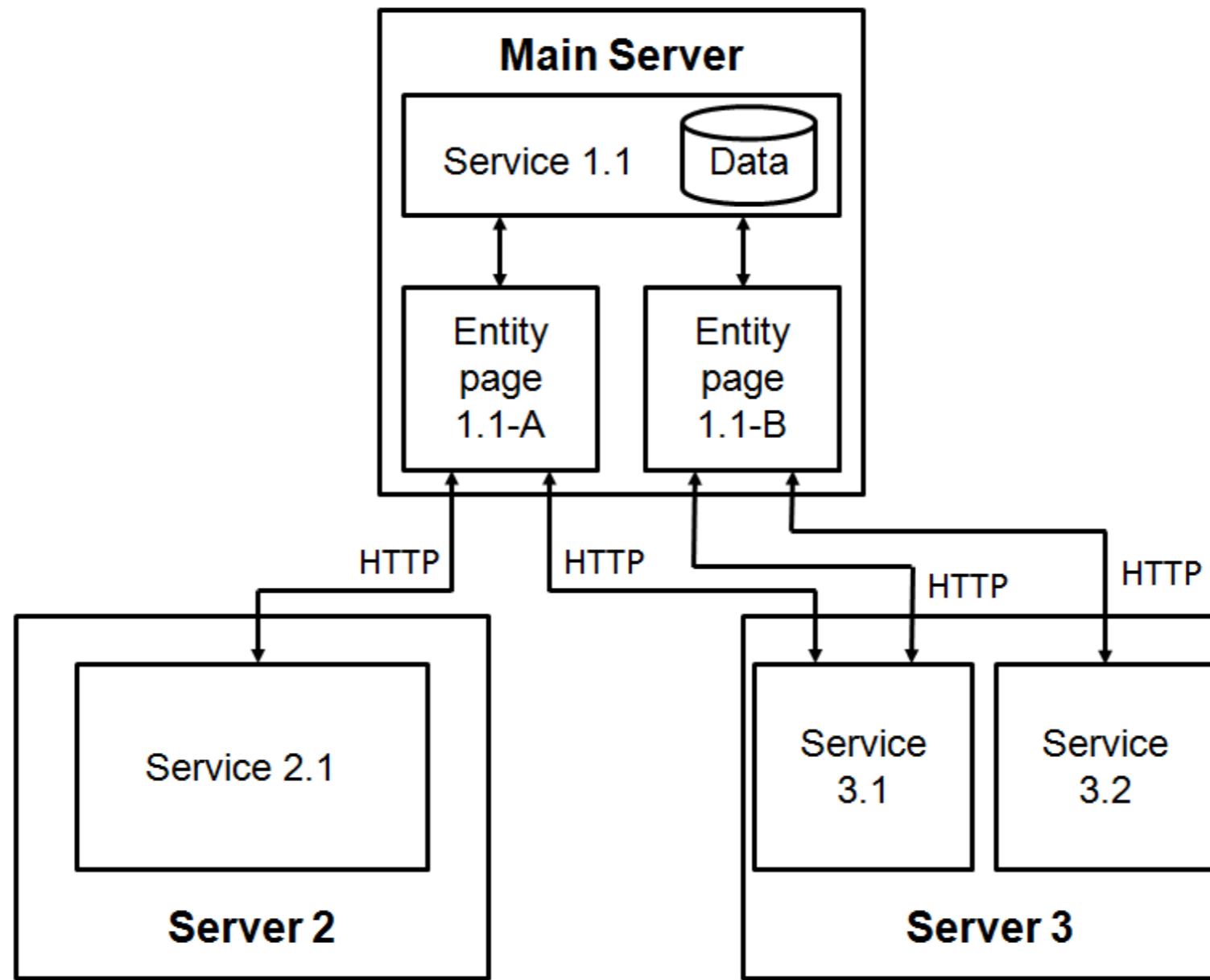


- I. Herman, "An Introduction to Semantic Web (Tutorial)," 17th International World Wide Web Conference, 2008.

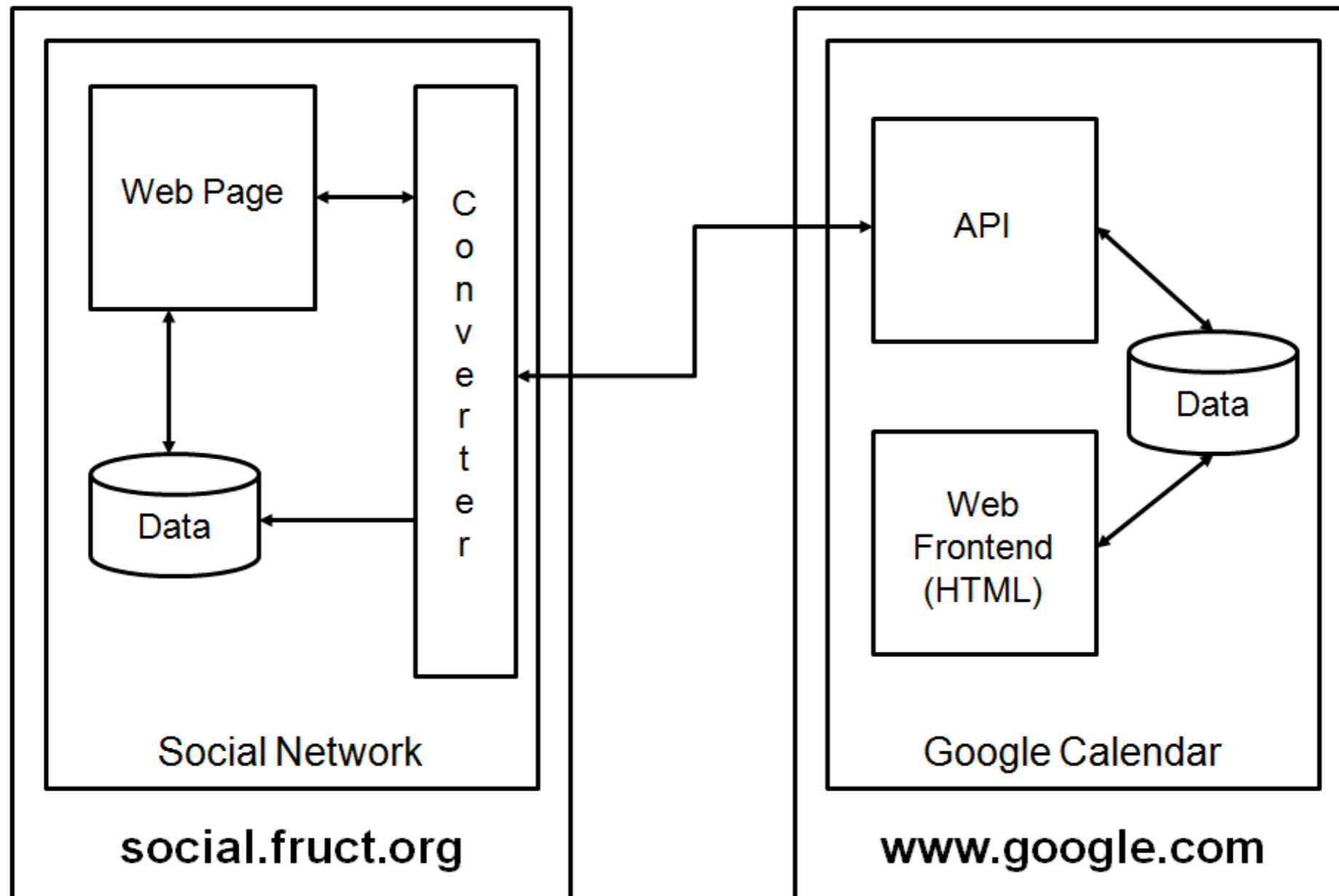
I. Usage of Central Node



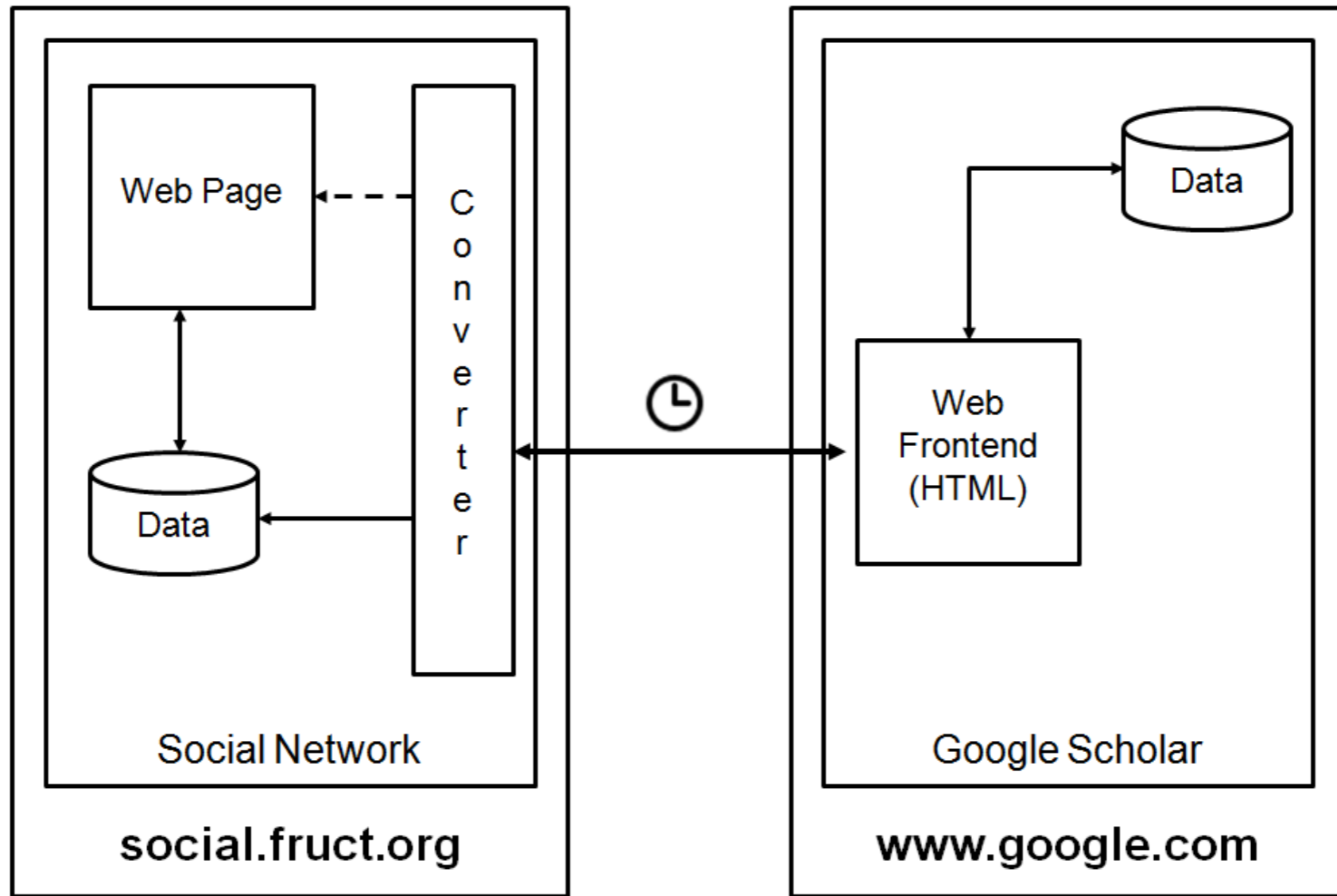
II. Real-time Remote Data Access



III. Recurrent Remote Data Access



IV. Reply Parsing from Remote Server



Semantic Web Way for Integration of Devices

- Concept «Internet of Things»
- Software services and hardware devices interaction and integration problem
- Semantic web approaches application seems to be right direction

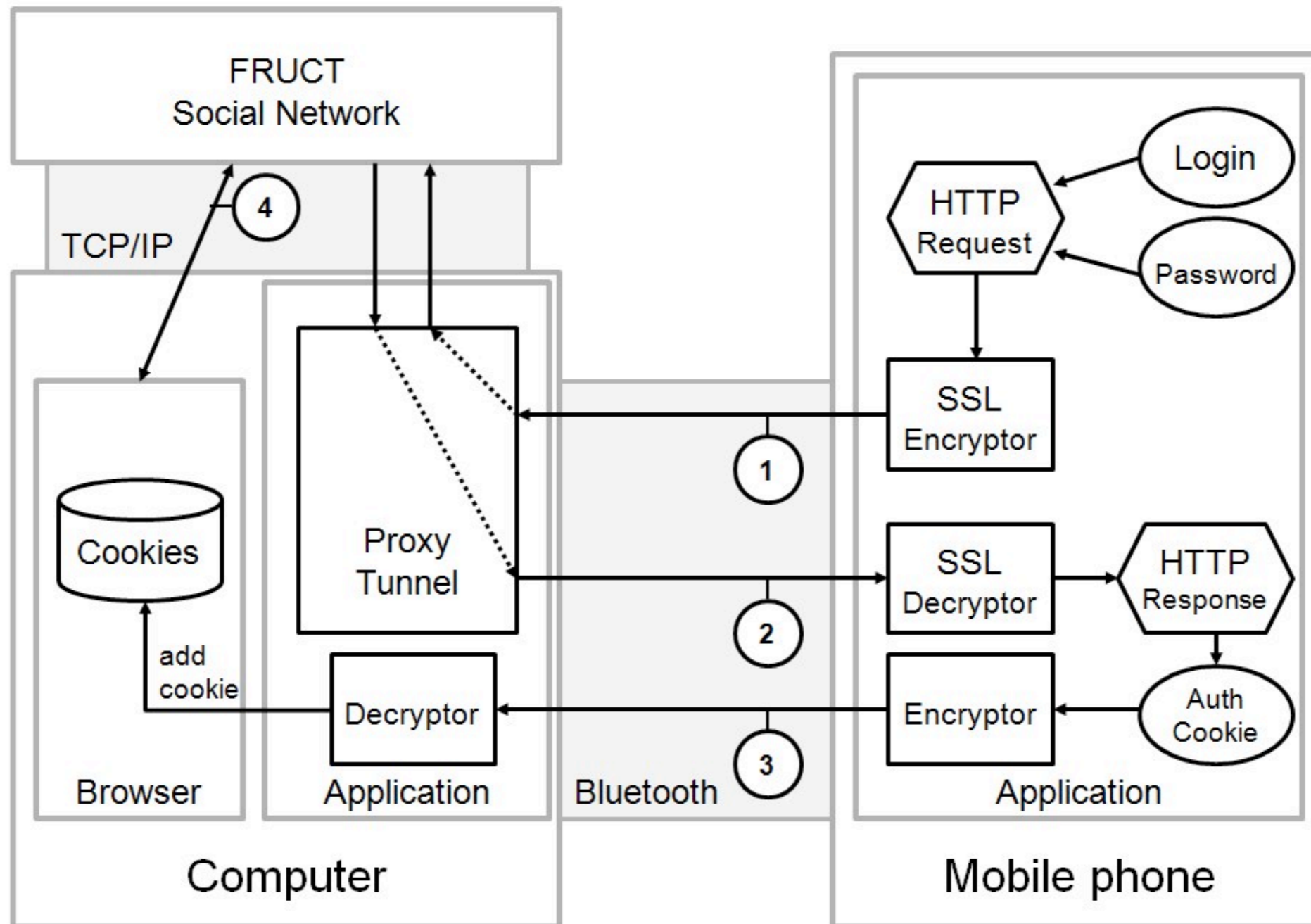
Enhanced Authorization for FRUCT Web Resources

- Standard login and password authentications has many issues with security and usability
- Alternatives: graphical passwords, biometric identification, wireless authentication
- Wireless authentication is most perspective authorization method

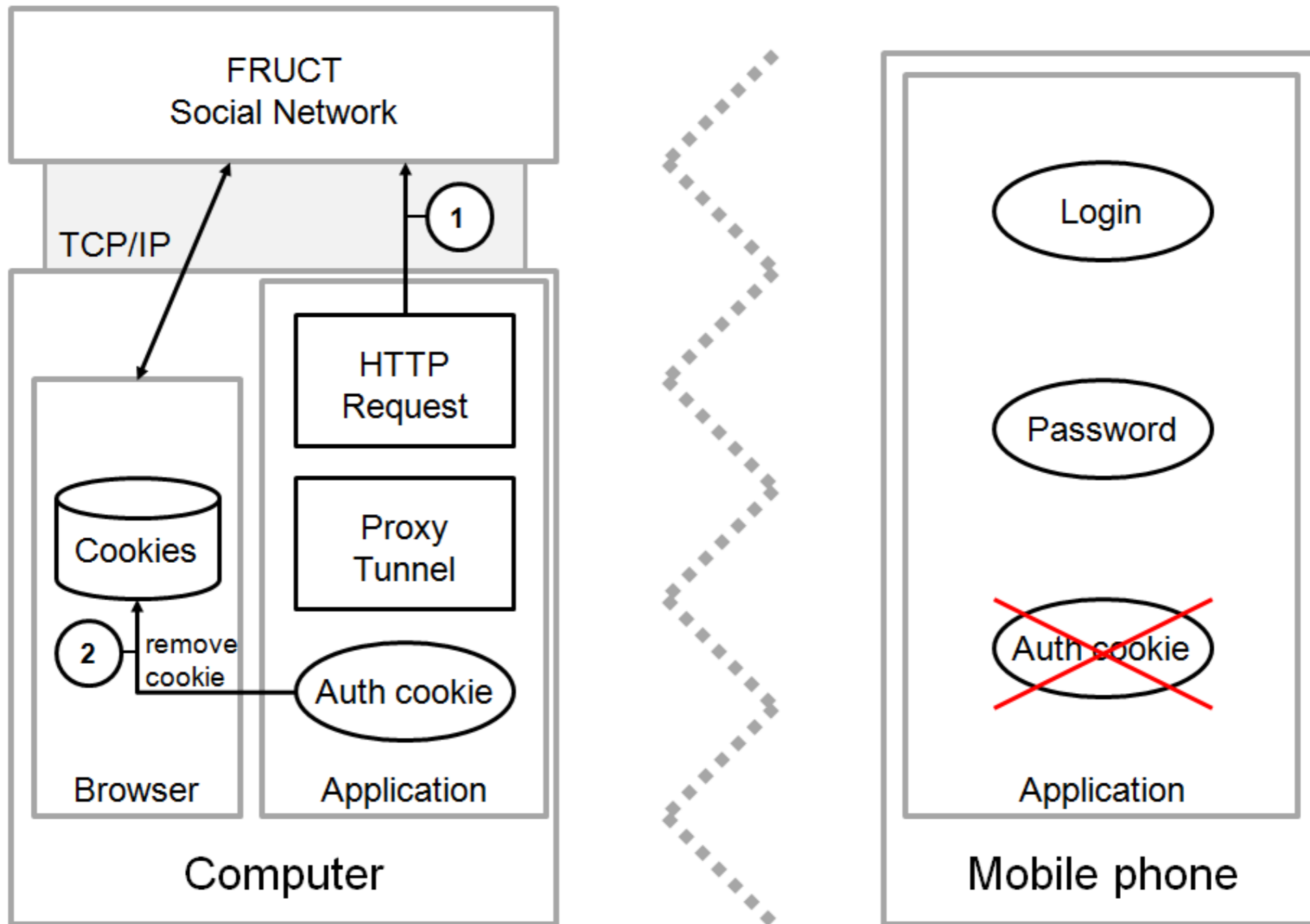
Proposed Solution

- Access to resource depends on proximity of your mobile phone to your computer
- User does not enter any critical data such as password on computer
- Not necessary to change server side
- Not necessary to use special expensive hardware, only mobile phone needed

Connection Moment



Disconnection Moment



Conclusion

- Scalable modular architecture for building complex software and hardware systems
- FRUCT community web services integration (including external services)
- Semantic Web way used for integration of web services with hardware-based solution for enhanced authentication
- Partial solution will be presented at FRUCT Demo section at 18:00