HBase Concrete Architecture

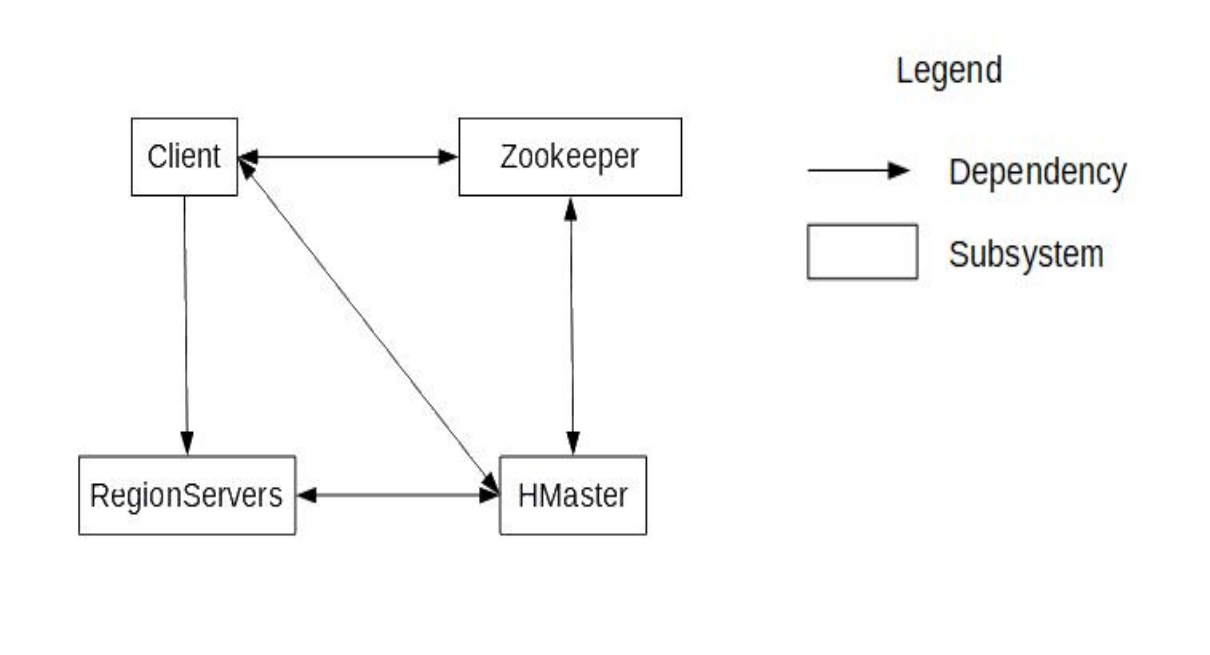
Team5Star

Daniel McVicar - 213027479
Rafay Sheikh - 213033451
Daniel Fortunato - 216796443
Adham El Shafie - 212951018
Yahya Ismail- 213235403

OVERVIEW OF PRESENTATION

1. Subsystem Overview
2. Subsystem Derivation Process
3. Subsystem Focus - regionserver
4. Architectural Analysis
5. Concurrency Analysis
6. Use case and Lessons Learned

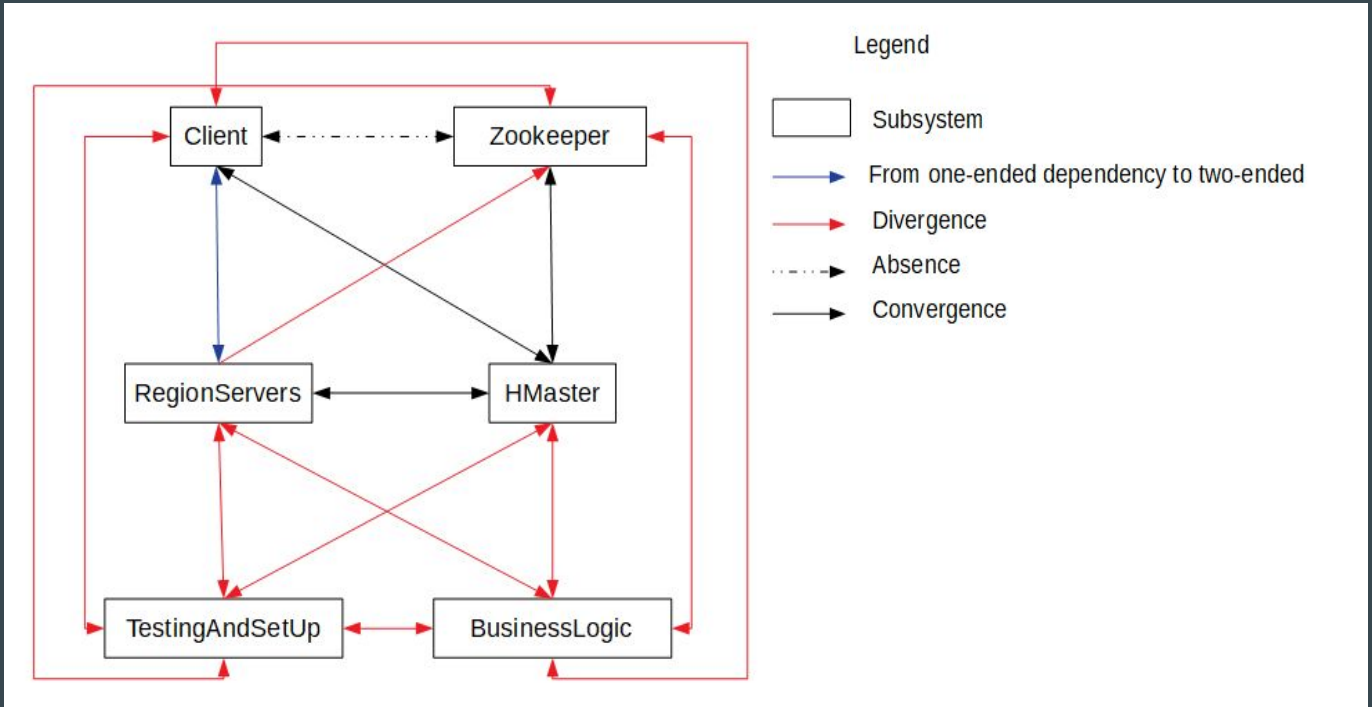
Subsystem Overview - Conceptual Model



Conceptual Architecture - Simplified to emphasize on dependency between subsystems

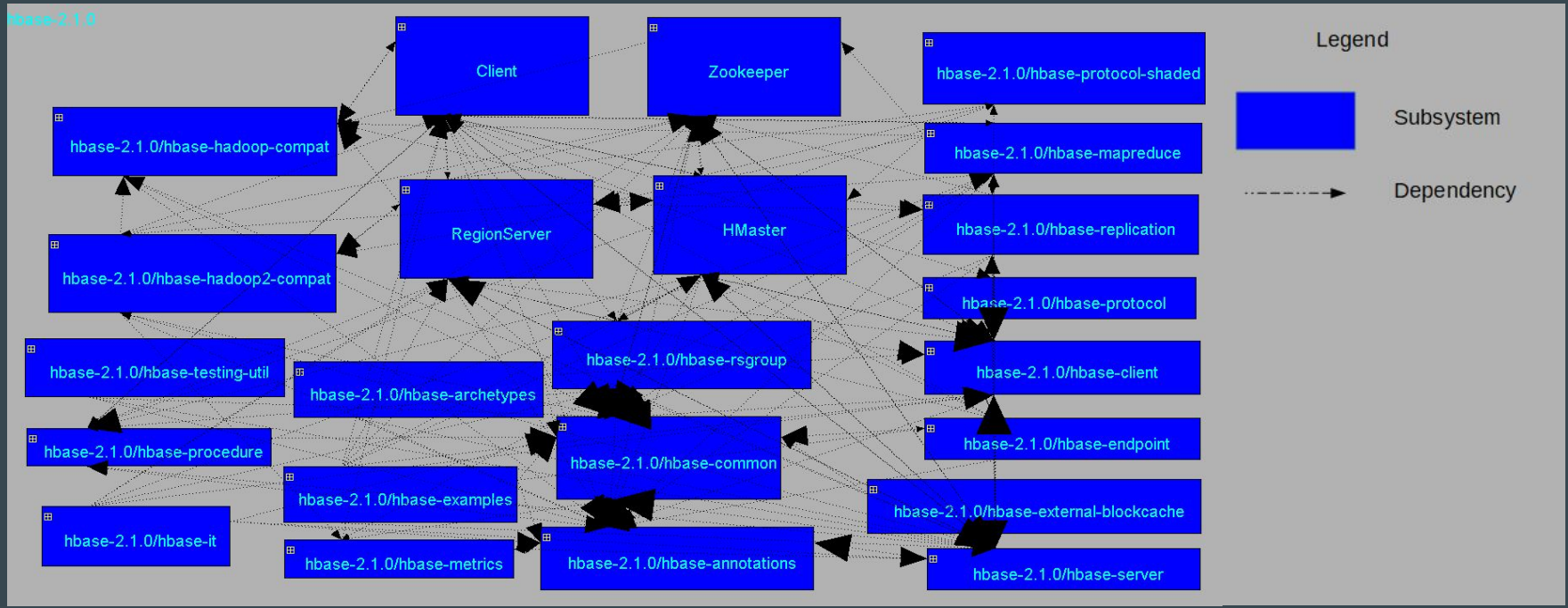
Subsystem Overview - Reflexion Model

Concrete Architecture - New additions to the subsystems as well as dependencies



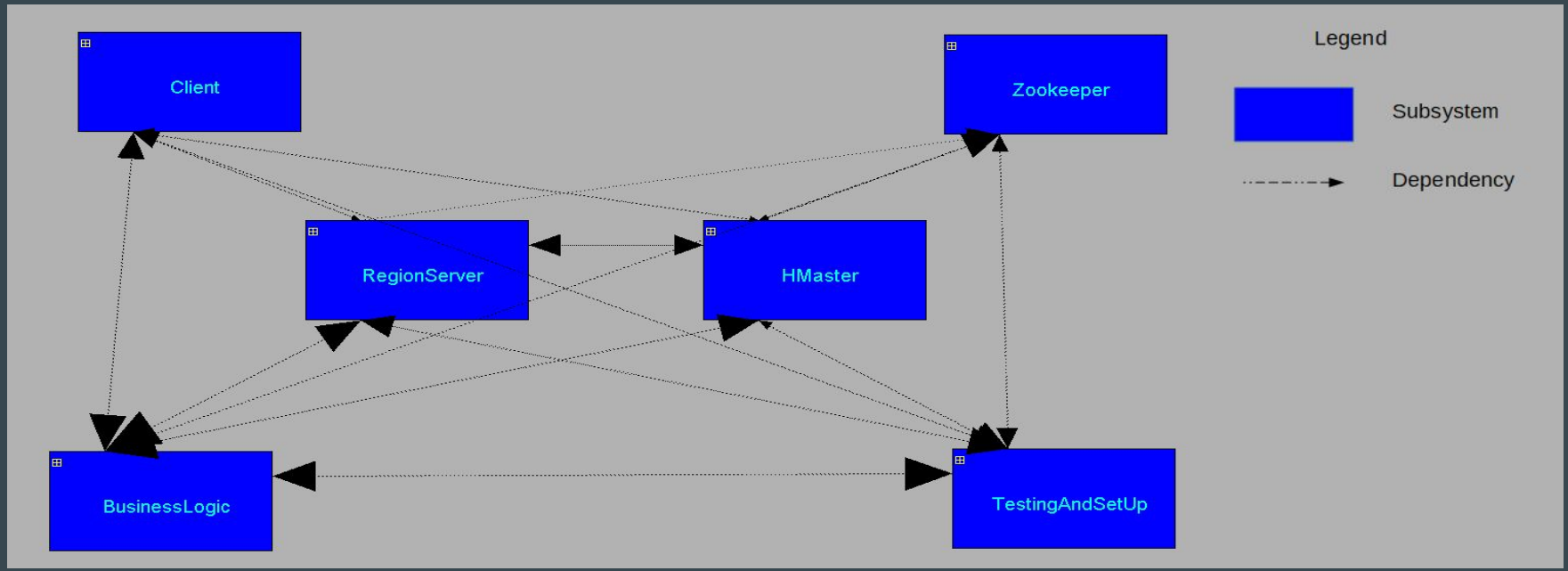
Subsystem Derivation Process - Step 1

Place all the directories that relate to our conceptual architecture in their respective entities

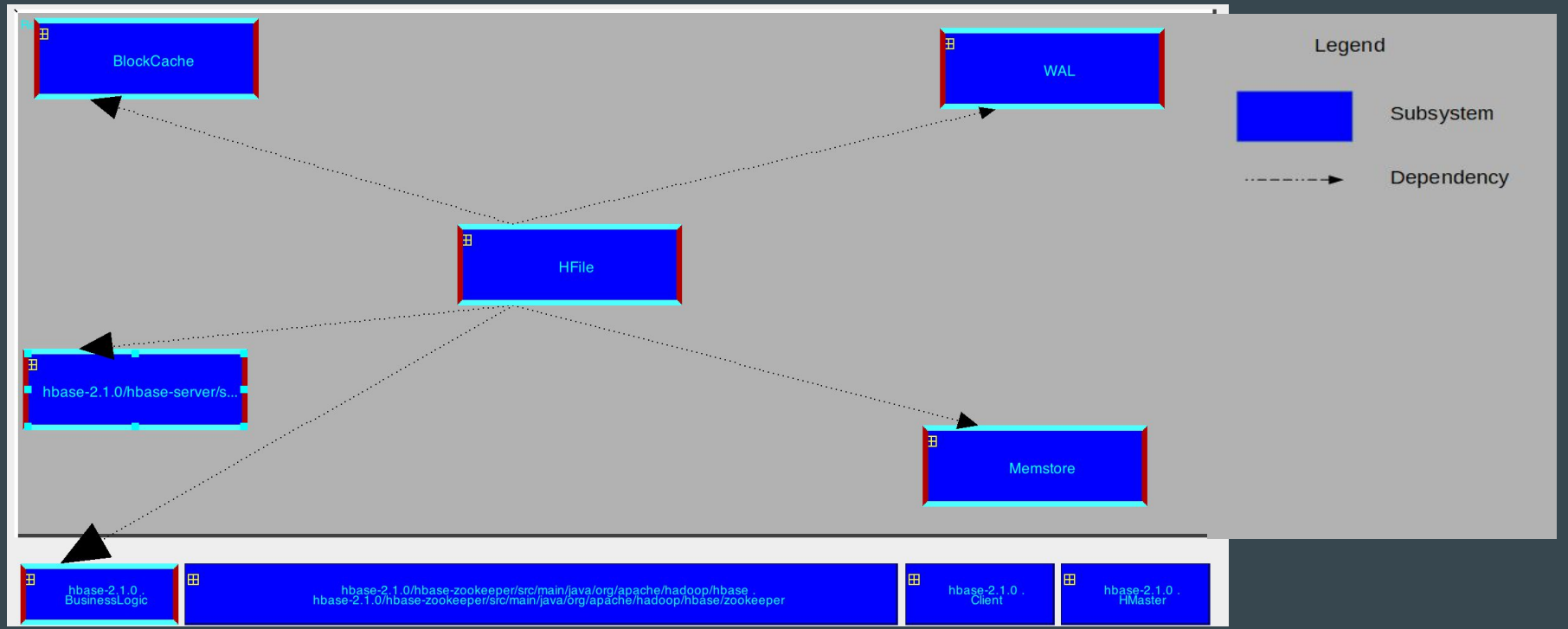


Subsystem Derivation Process - Step 2

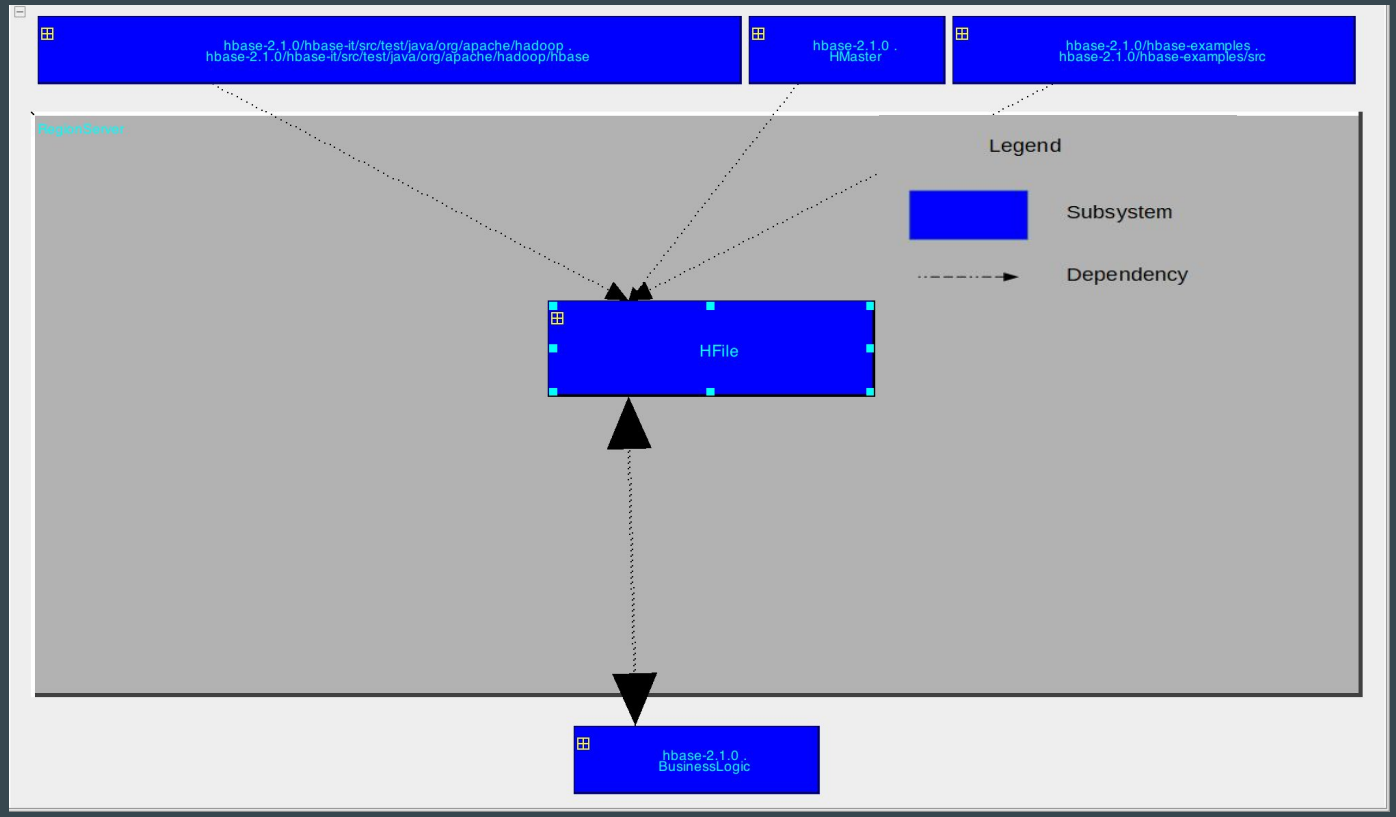
Research what the other subsystems did and place them in a matching directory name along with other subsystems that do similar processes



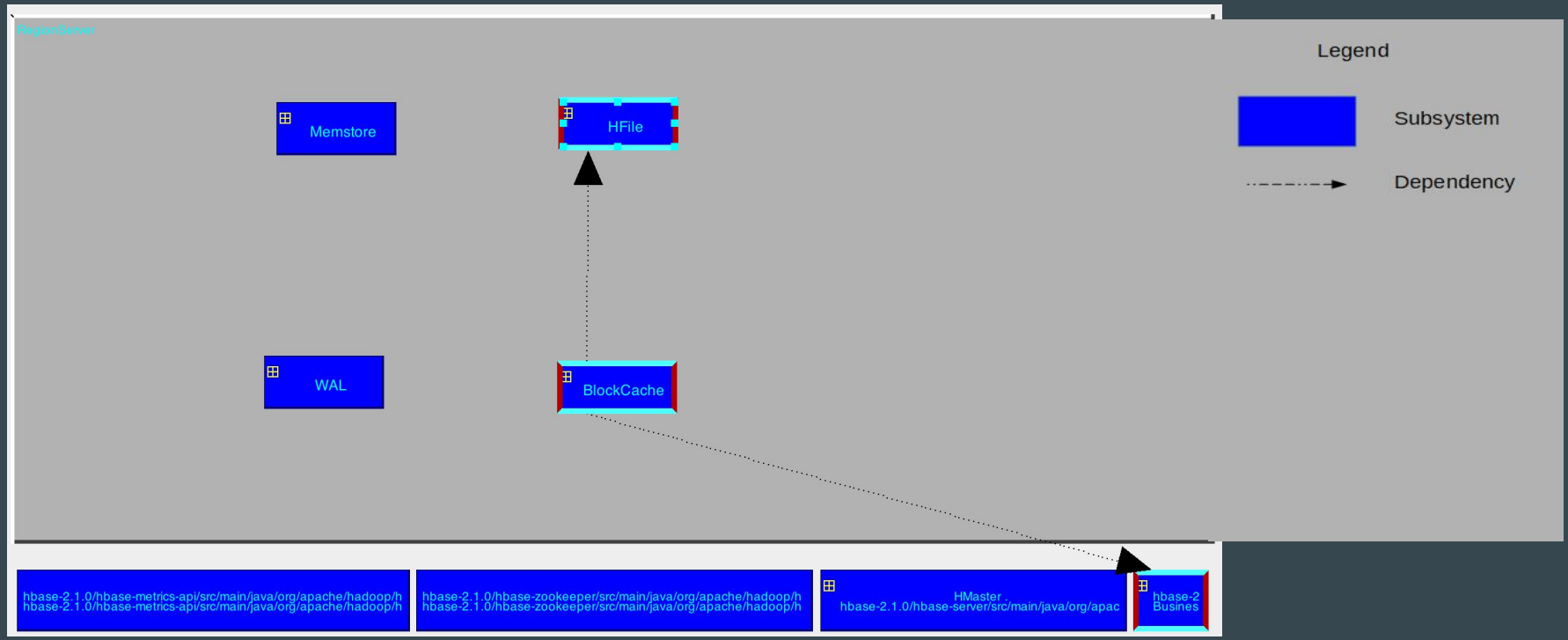
Subsystem Focus - Regionserver



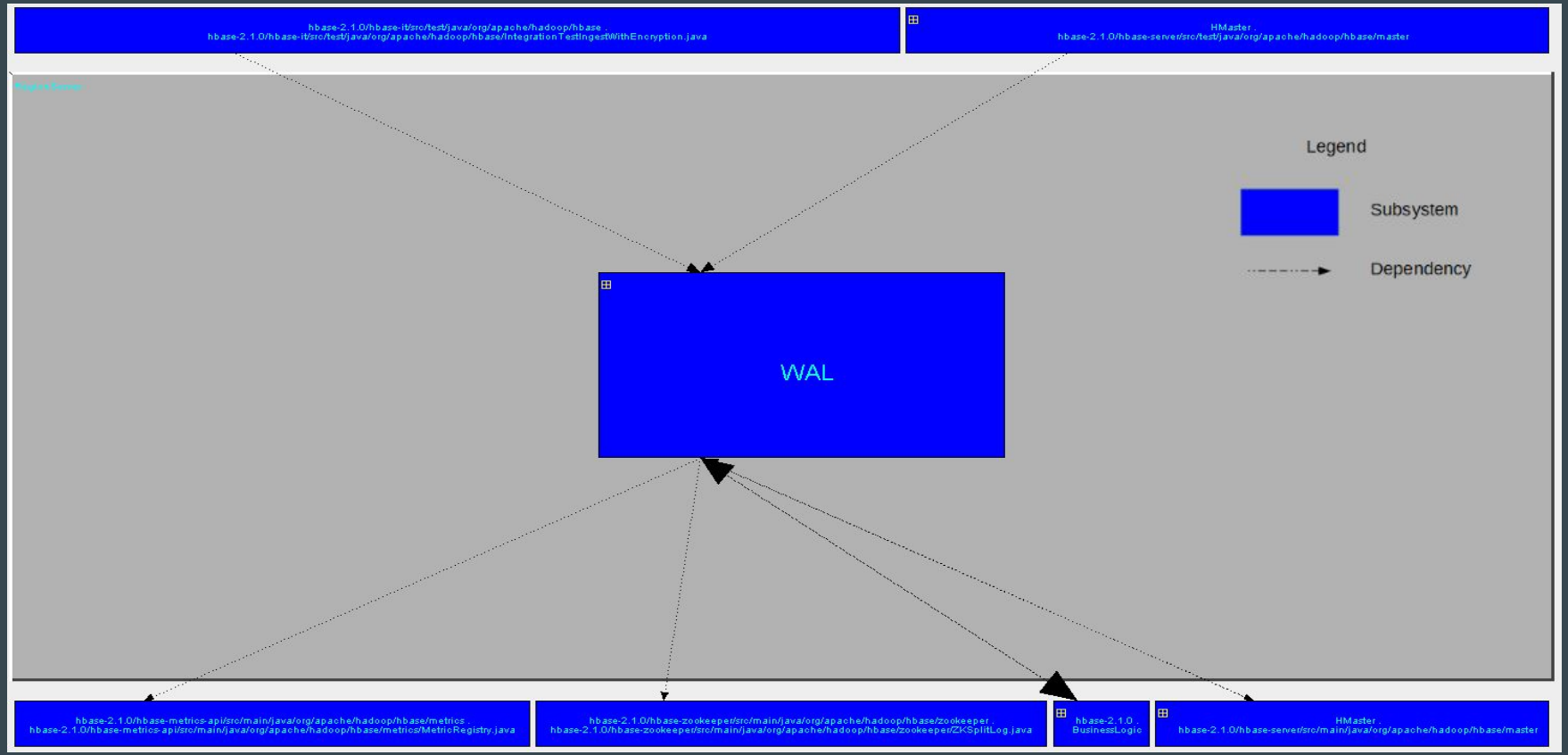
Region Server Detail - HFile



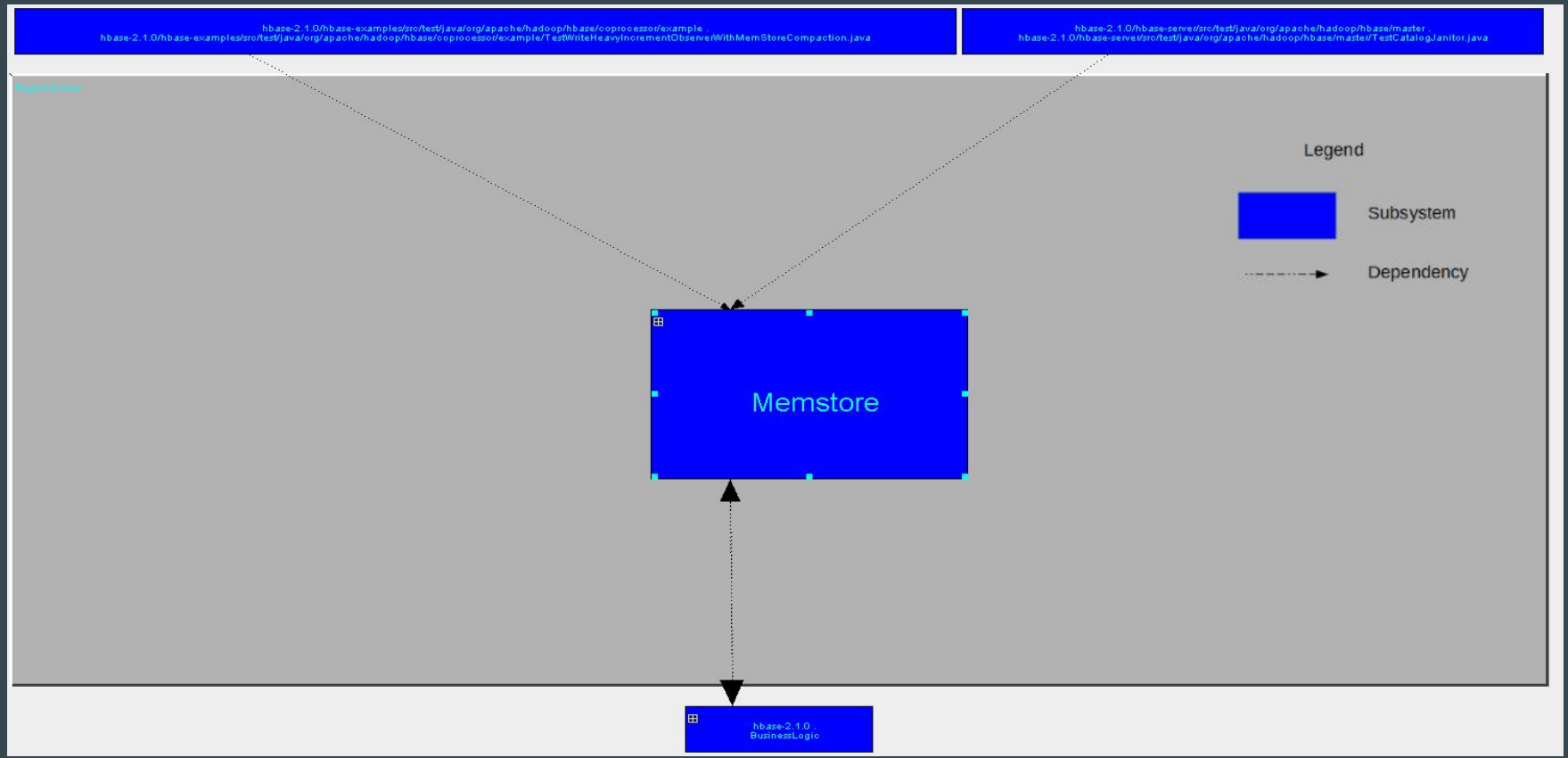
Region Server Detail - Blockcache



Region Server Detail - WAL



Region Server Detail - Memstore

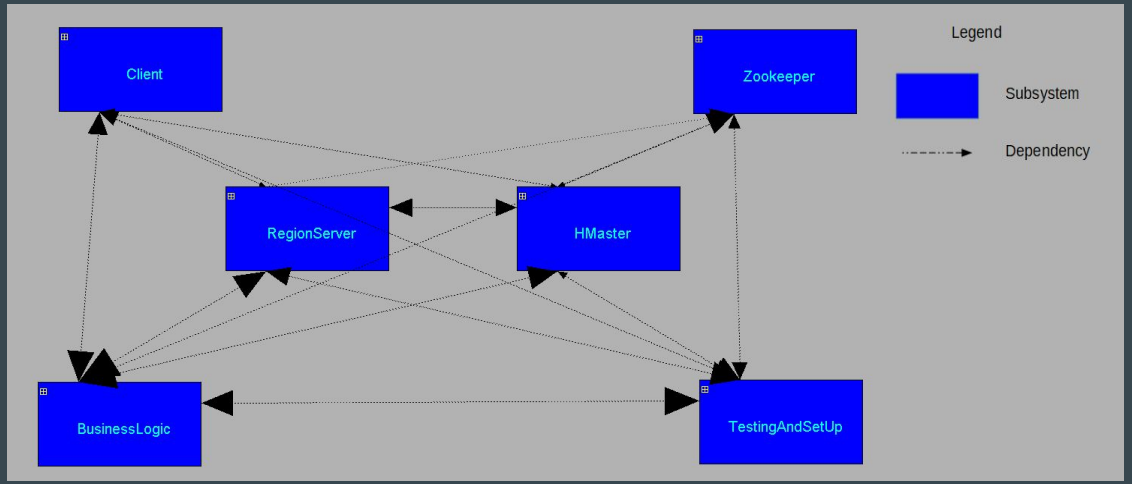


Architecture Analysis - Hbase

- Layered and Master/Slave Architecture.

- New *TestingAndSetUp* Subsystem.

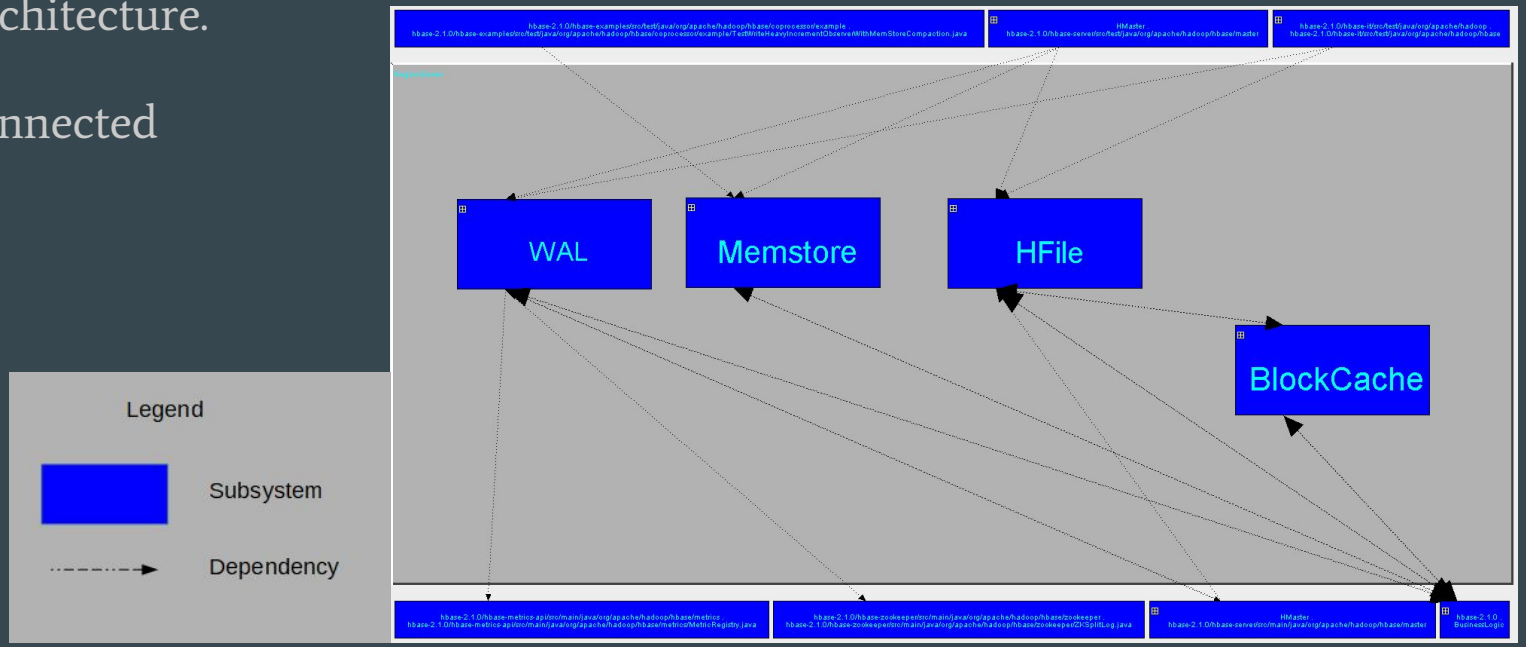
- New *BusinessLogic* Subsystem.



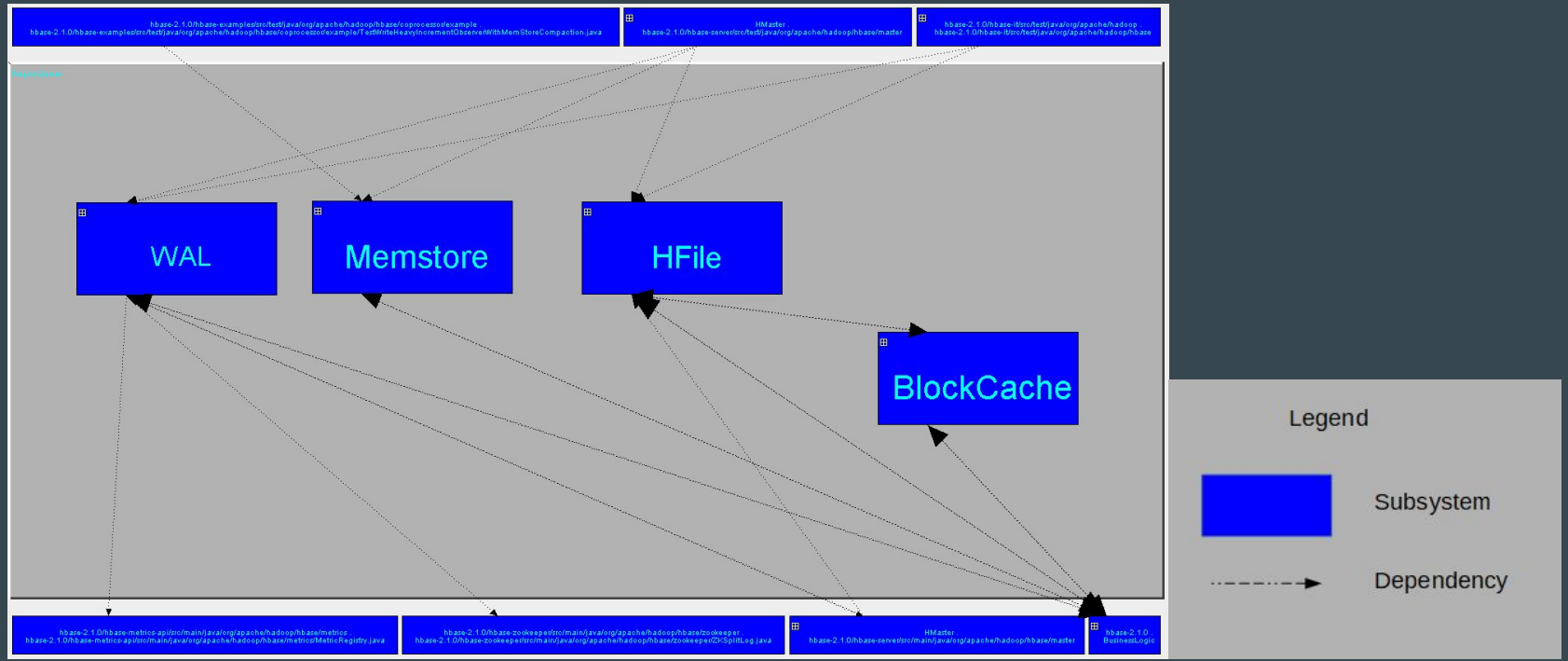
Architecture Analysis - Regionserver

- Layered Architecture.

- Four Disconnected Subsystems.

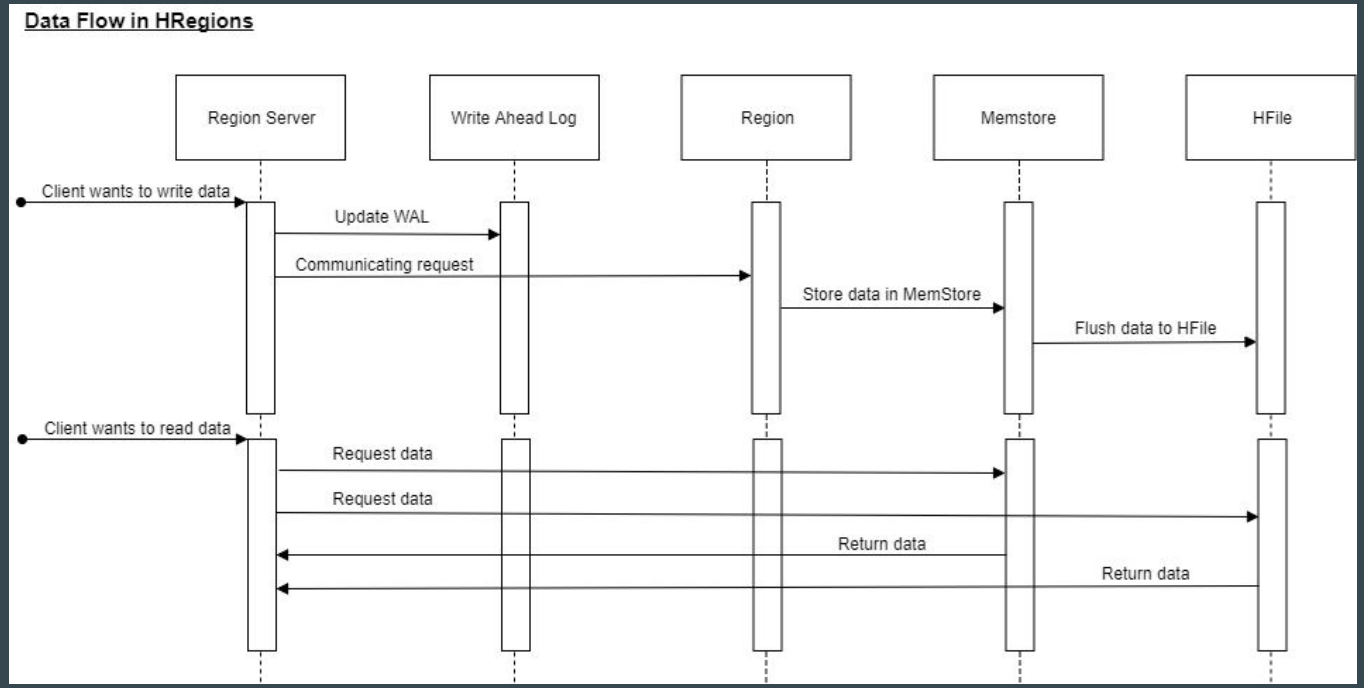


Concurrency



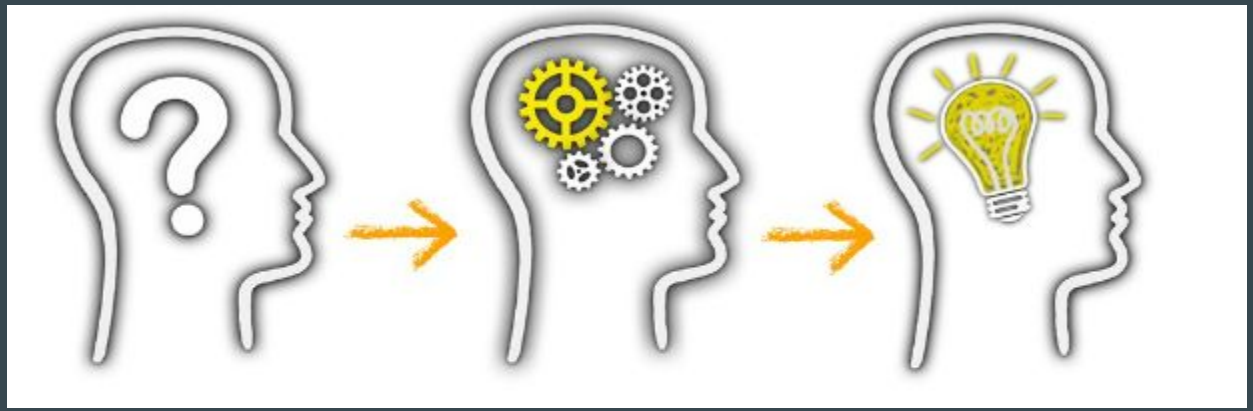
Use Case

Basic Read and Write operations in HRegions is demonstrated here



Lessons Learned

1. Extracting concrete architecture is **REALLY** hard
2. Many hidden subsystems appear (notably Business Logic)
3. Conceptual subsystems can have components spread throughout the code hierarchy
4. You could devote two months to this exercise and keep learning new interesting things



Closing

HBase is a complex and delicate system of interwoven components, more so than any of us originally imagined!