Making Apps Scale with CDI and Data Grids

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Platform Architect for Data Grids and NoSQL

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Who is Manik?

- Architect at JBoss, by Red Hat
- Expert group member, JSR 107
- Spec lead, JSR 347
- Founder, Infinispan

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Infinispan Data Grid Platform

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Writing a modern WebApp
Part 1: CDI

- Standards-based
  - Part of Java EE 6
- No additional libraries needed
  - Just deploy in a Java EE compliant environment
- All classes are components
- Built-in dependency injection
- Type-safe, compile-time checking

Writing a modern WebApp
Part 2: Errai

- Rich-client framework
- EE6 in the browser
- Based on GWT, compiles Java to JavaScript
- Compatible with CDI

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- Distributed in-memory data grid

- Often used as a performance boost for databases

- Also used as a NoSQL key/value store
- Mature: been in active development for over 3 years

GNU LGPL cc

Infinispan

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Scalability

Scalability

- Always on world
- Mobile devices, global reach
- Cloud

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Some thoughts on scalability

- Horizontal vs. Vertical Scalability
- Scale out and back in
- Again, cloud!

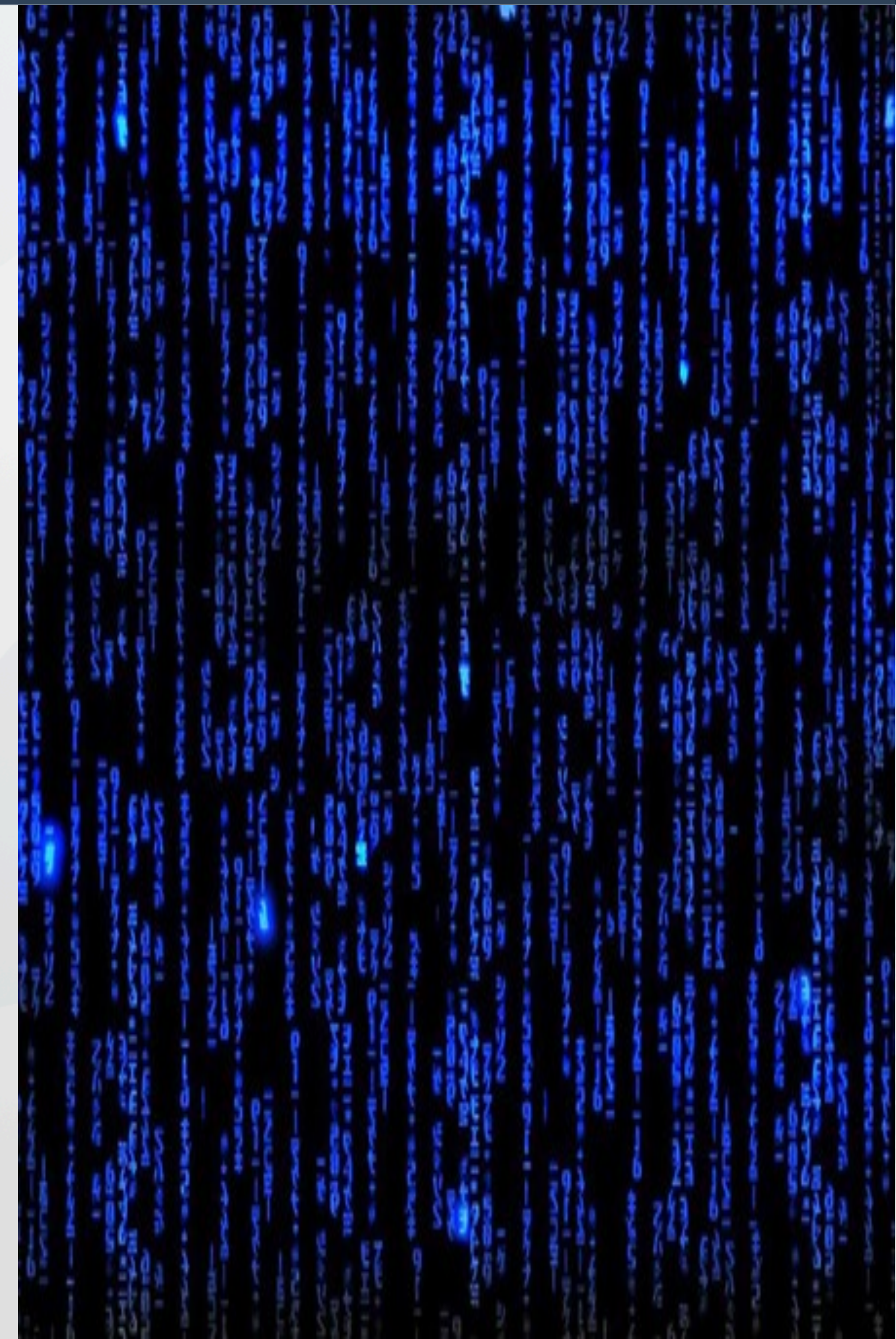# Scalability and data storage

- RDBMSs
- NoSQL
- Data Grids

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Data Grids

What Are They?

Evolution of Distributed Caches

Well-known pattern to boost data access performance and scalability

Clustered by nature

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Standards

JSR 107

"Temporary Caching for the Java Platform"

JSR 347

"Data Grids for the Java Platform"

By **2014**, at least **40%** of large organizations will have deployed one or more in-memory data grids.

SOURCE – Predicts 2012 – Cloud and In Memory Drive Innovations in Application Platforms
Gartner 2012

Putting it all together

- Scalability and high availability is very important
- Data Grids help achieve this
- CDI is a common programming model for Java EE
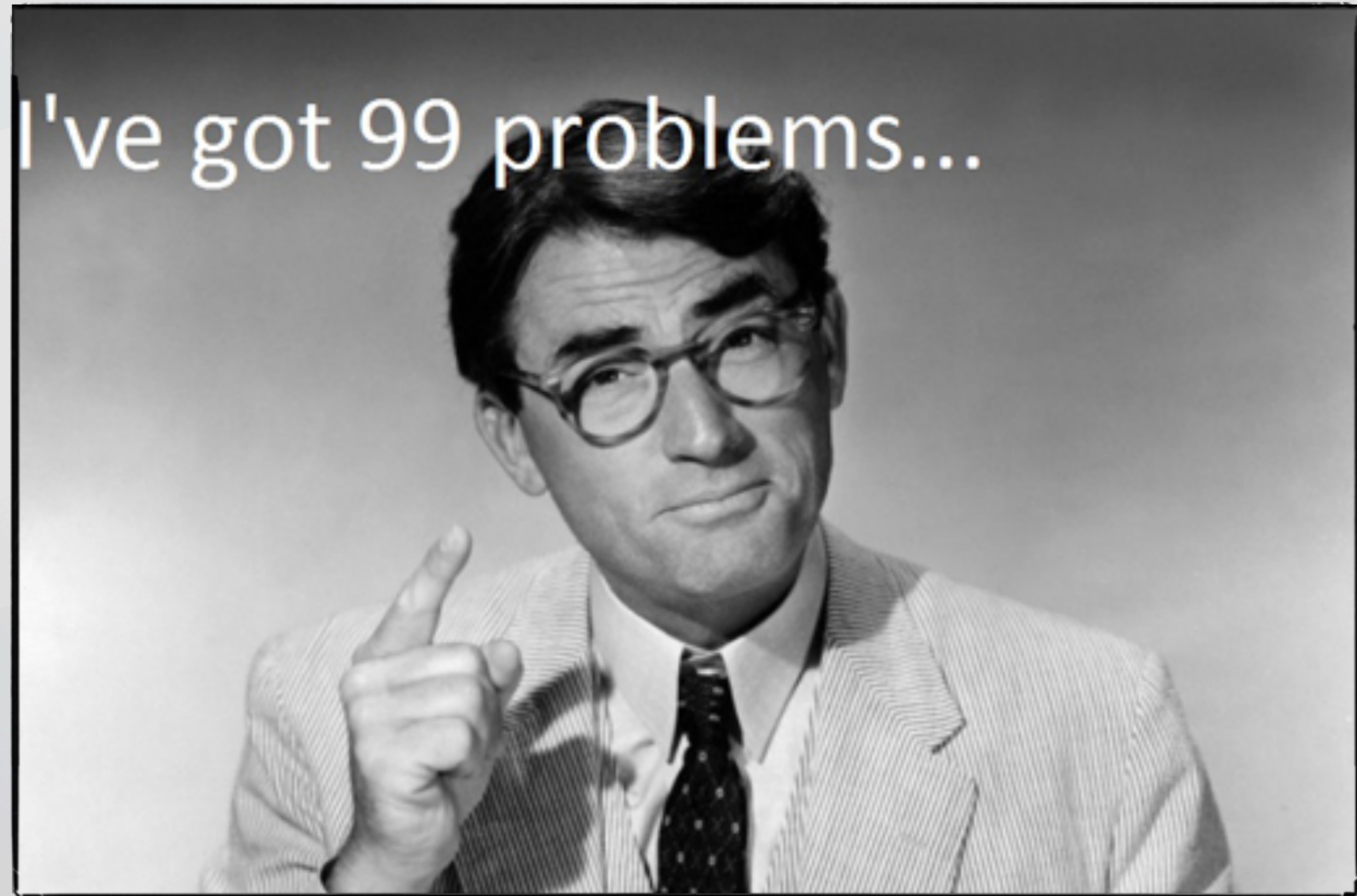- With CDI, using data grids can be easy

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The WebApp

- Reads stock prices from a REST service
- Renders this using Errai, updating your browser periodically
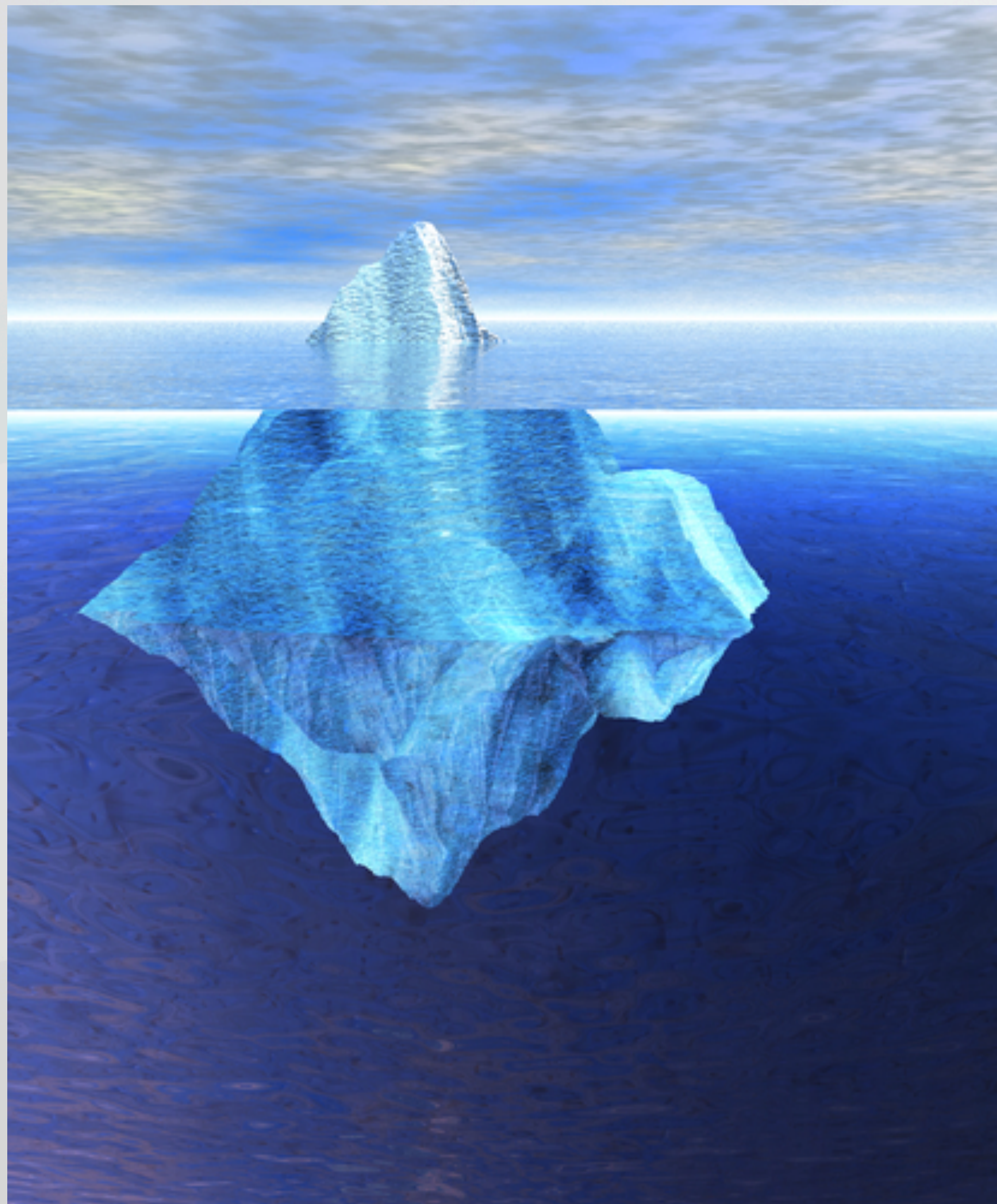- All wired together using CDI

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Problems

- Does this scale?
- REST calls slow?
- Clustered?

I've got 99 problems...

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Solutions

- Cache REST calls
- Expiration
- Clustering

- ... all using CDI

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JSR 107 annotations

- @CacheResult
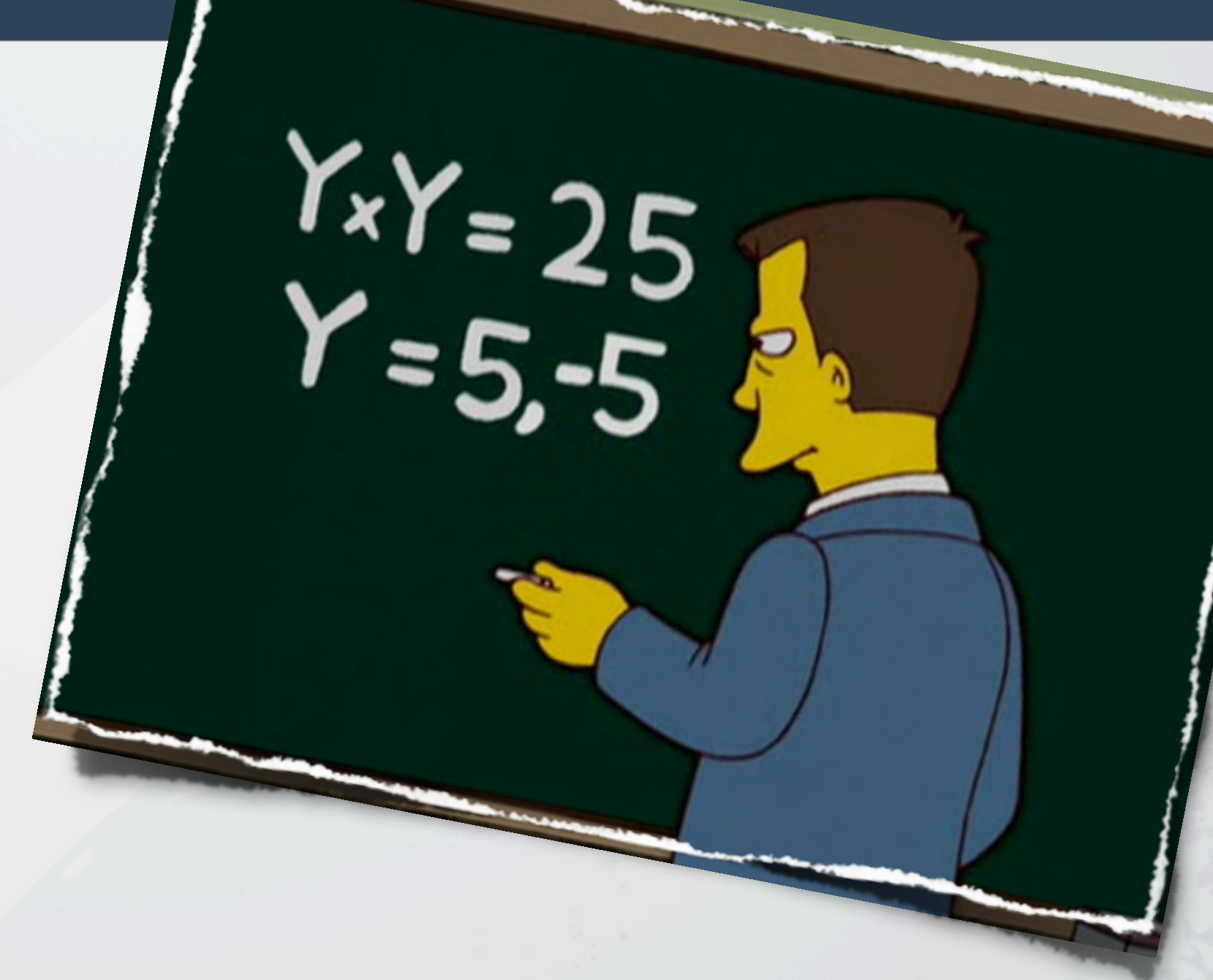- @CachePut
- @CacheRemove
- @CacheRemoveAll
- @CacheKey, @CacheKeyGenerator
- @CacheResolver

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Future work

- More annotations for data grids
- Querying
- Map/Reduce
- Code Execution

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Summary

- Why scalability is important
- Building a WebApp using CDI and Errai
- Adding a data grid to boost performance
  - All via CDI
- Additional JSR 107 annotations

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Want more?

Projects

Infinispan http://www.infinispan.org

Weld http://seamframework.org/Weld

Errai http://www.jboss.org/errai

JSRs

JSR 107 https://github.com/jsr107/jsr107spec

JSR 347 https://github.com/datagrids/spec/wiki

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