

Agile software architecture

sketches

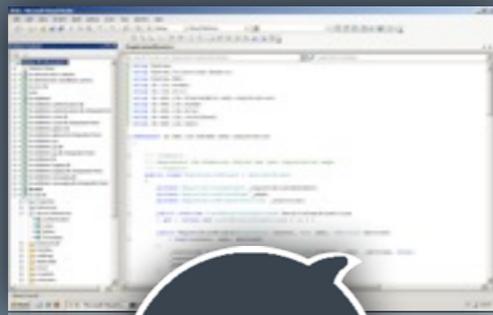


Simon Brown
@simonbrown



Jersey, Channel Islands

I help software teams understand
software architecture,
technical leadership and
the balance with agility



I code too

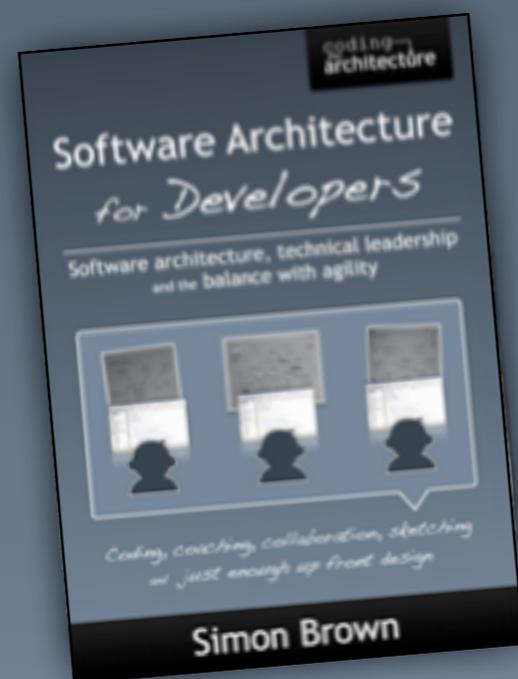


Software architecture needs to be more accessible



Training

In-house and public courses



Book

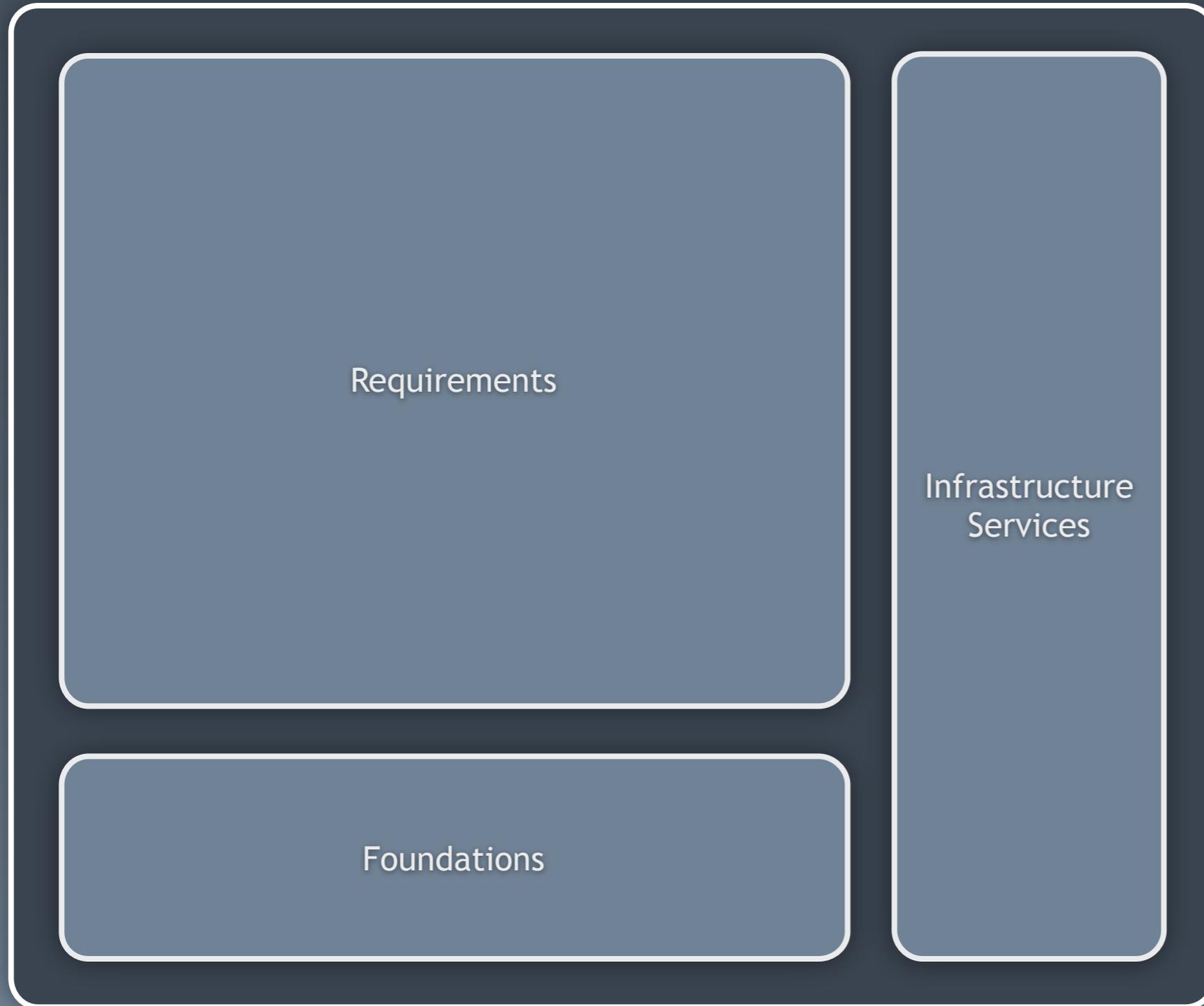
leanpub.com



Speaking

Conferences and user groups

What is architecture?



As a noun...

Structure

The definition of something in terms of its components and interactions

As a verb...

Vision

The process of architecting, making design decisions, providing guidance, etc

Architecture vs design

Architecture represents the
significant decisions,
where significance is measured
by **cost of change**.



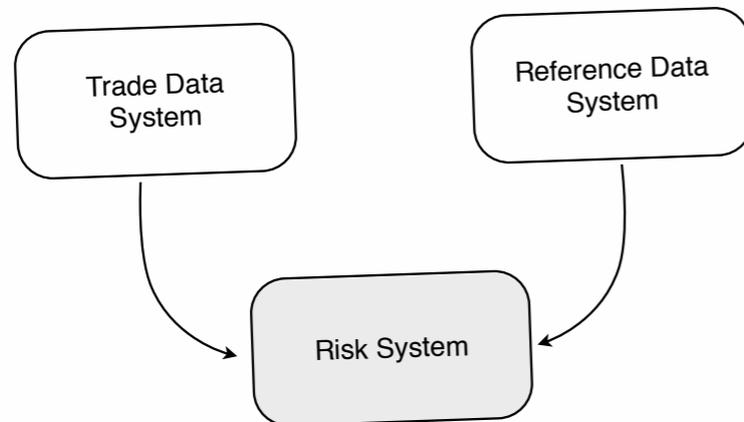
Grady Booch

*Can you refactor
it in an afternoon?*

Risk System

1. Context

A global investment bank based in London, New York and Singapore trades (buys and sells) financial products with other banks (counterparties). When share prices on the stock markets move up or down, the bank either makes money or loses it. At the end of the working day, the bank needs to gain a view of how much risk they are exposed to (e.g. of losing money) by running some calculations on the data held about their trades. The bank has an existing Trade Data System (TDS) and Reference Data System (RDS) but need a new Risk System.



1.1. Trade Data System

The Trade Data System maintains a store of all trades made by the bank. It is already configured to generate a file-based XML export of trade data at the close of business (5pm) in New York. The export includes the following information for every trade made by the bank:

- Trade ID
- Date
- Current trade value in US dollars
- Counterparty ID

1.2. Reference Data System

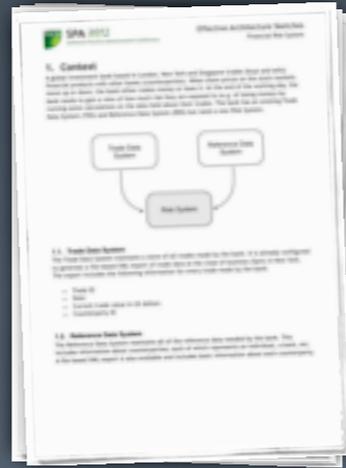
The Reference Data System maintains all of the reference data needed by the bank. This includes information about counterparties; each of which represents an individual, a bank, etc. A file-based XML export is also available and includes basic information about each counterparty.

Financial risk system

Iteration 1 (~90 minutes)



Groups of 2-4

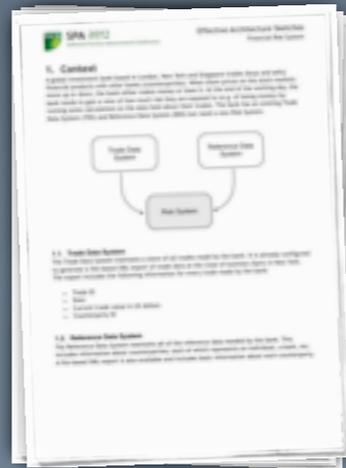


Requirements

Iteration 2 (~90 minutes)



Groups of 2-4

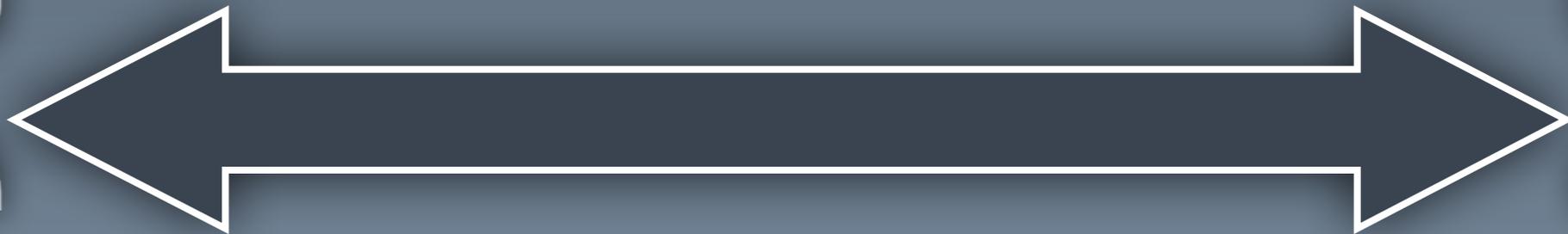


Requirements



Feedback and guidance

What's been **challenging**
about the exercise so far?



Challenging?

Level of detail

↳ where to stop

Who is the audience - different backgrounds

Implementation

- easy to get bogged down in detail

Type of diagrams

Notation

Documenting assumptions

⑦ Challenging

Needed to ask questions / make assumptions

Temptation to focus on detail

↳ when do we stop?

How much detail?

Talked about more than the diagrams

What notation? - boxes
- arrows

⑩ Challenging?

Verifying our own assumptions

Expressing the solution

- communicating it in a clear way

- use of notation

- easy to mix levels of abstraction

- how much detail?

What's been challenging about the exercise?

People expect to present their designs and therefore

**information is still
stuck in their heads**



Review the diagrams

*3 things we like
about the diagrams*

*3 things we think would
improve the diagrams*



I m prove

NO ANNOTATION
ON FLOWS

SHOULD USE
MORE
COLORS

POST ITS
CAN FALL
OFF

what does
colour
mean?

MIXES
DIFFERENT
LEVELS OF
DETAIL

NOT SURE OF
TRANSITION
BETWEEN
DIFFERENT
DIAGRAMS -

CONFLICTING
LEVELS OF
DETAIL IN
PRESENTATION

What about
the different
arrows?

Objects vs
actions

WHY ARE
SOME
LINES
PINK?

WHAT DO
THE SHAPE
MEAN?

UML IS GOOD,
BUT NOT
EVERYONE KNOWS
IT

WHAT DO
LINES RE-
PRESENT?
(DATA? CONTROL
DEP.?)

what
shape
mean

Not sure 😞
what this
IS ↘

DIFFERENT
LEVELS IN
SAME
DIAGRAM

ARE THE
ARROWS THE
RIGHT WAY
ROUND?

Lack of sheep
hearts, colour etc
PISH! 😊

Who here uses **UML**

on a **regular basis?**





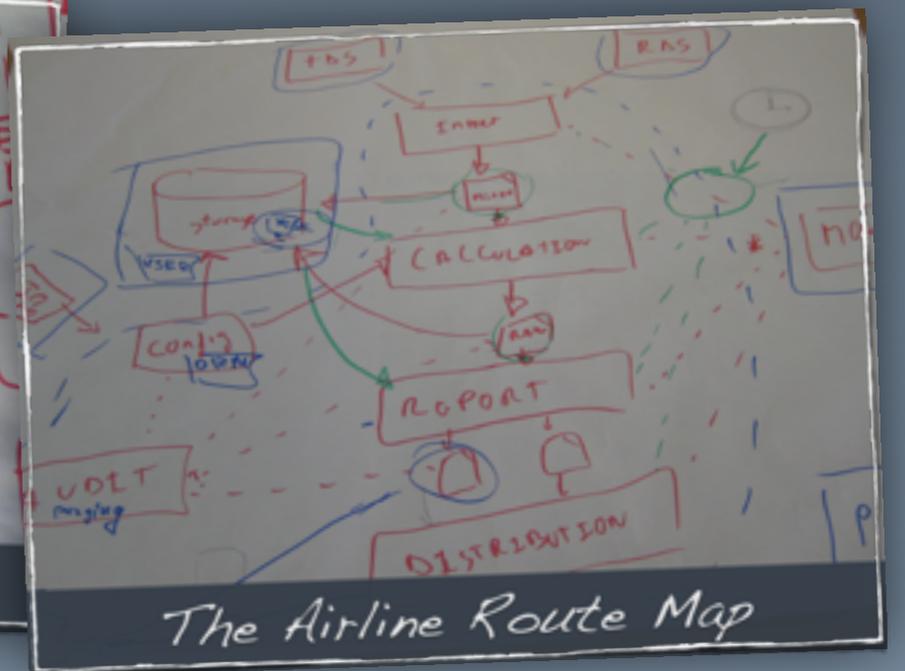
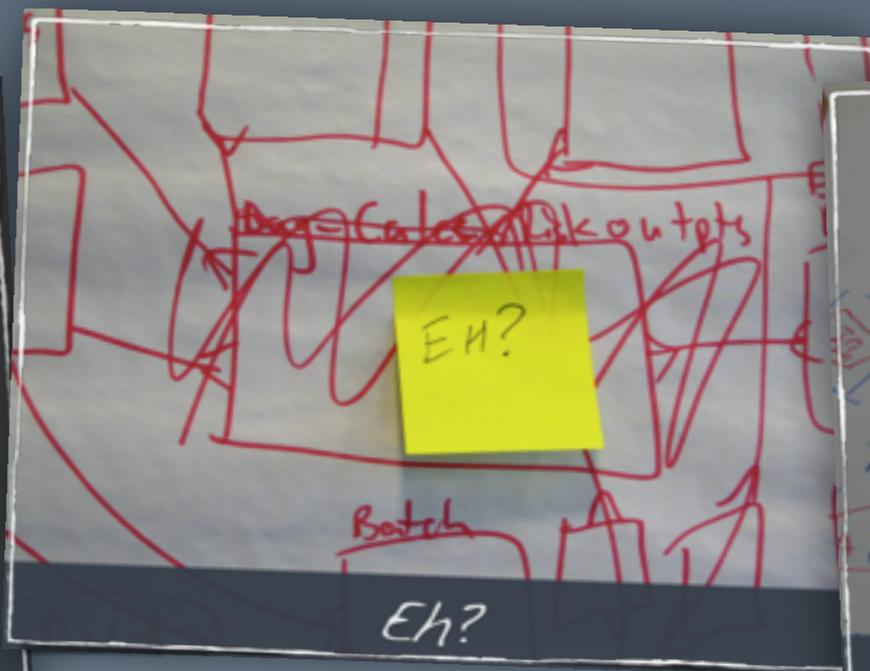
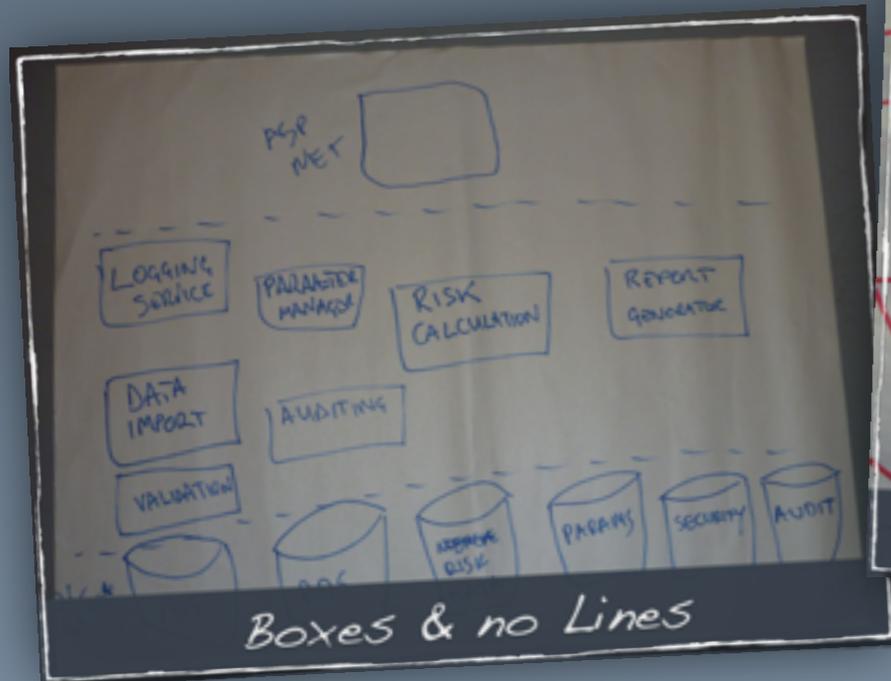
9 out of 10 people
don't use UMI

(in my experience)

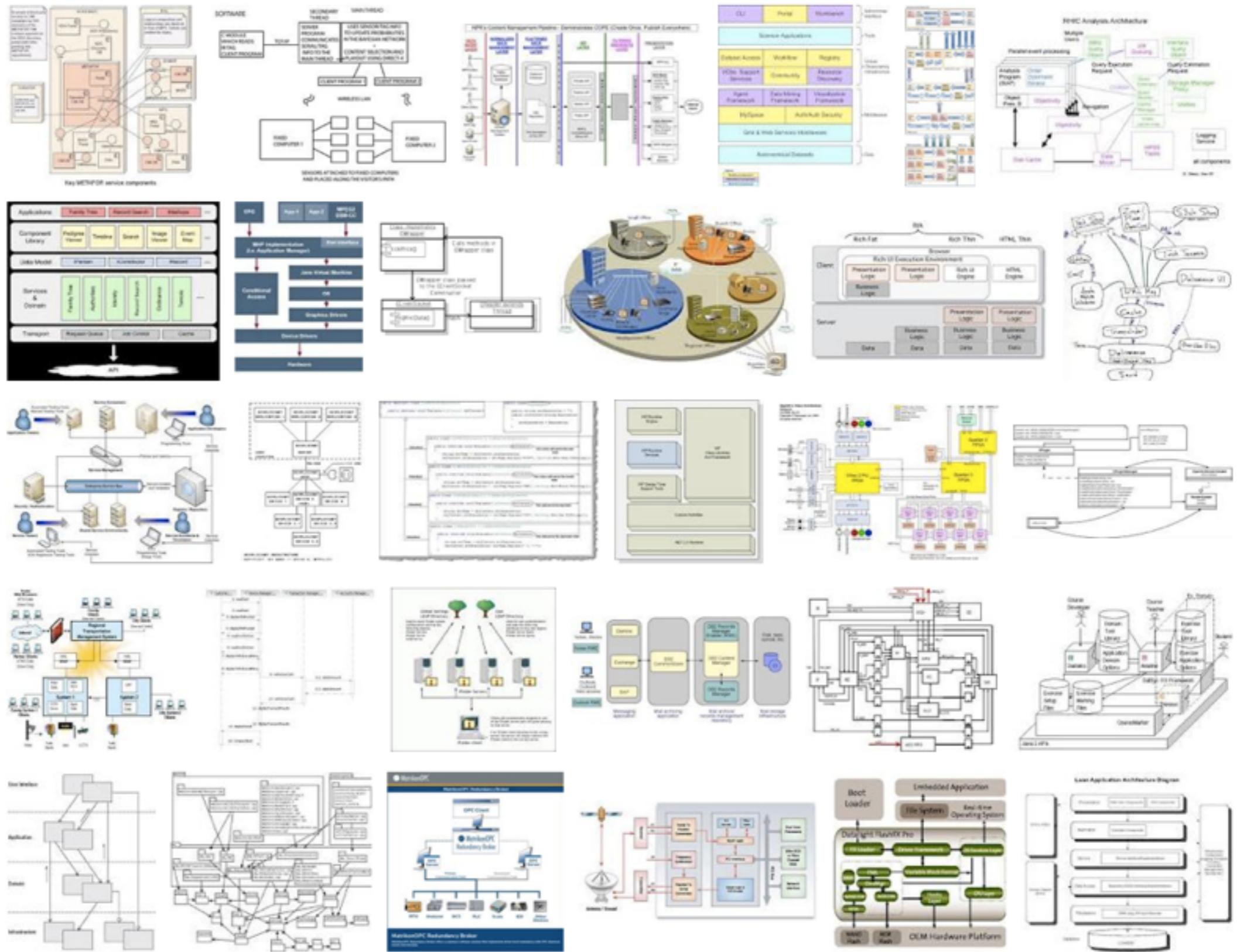
We can visualise our process...

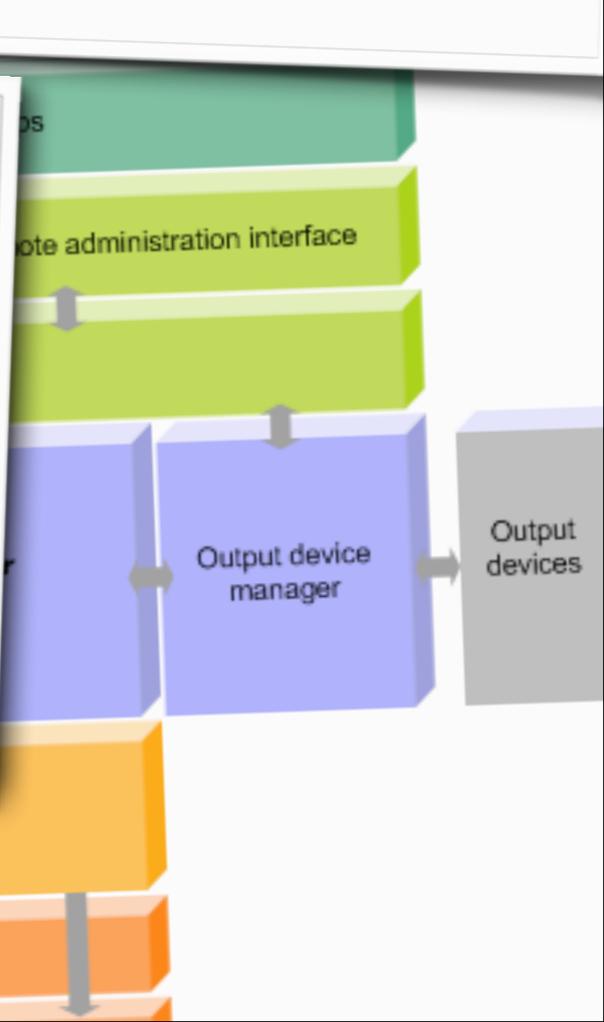
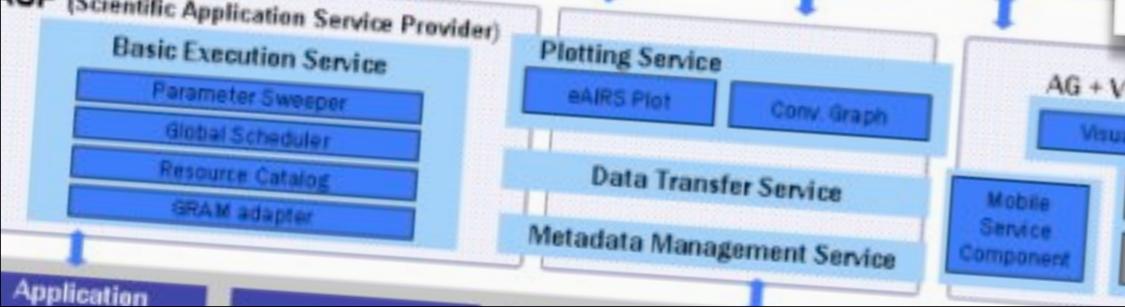
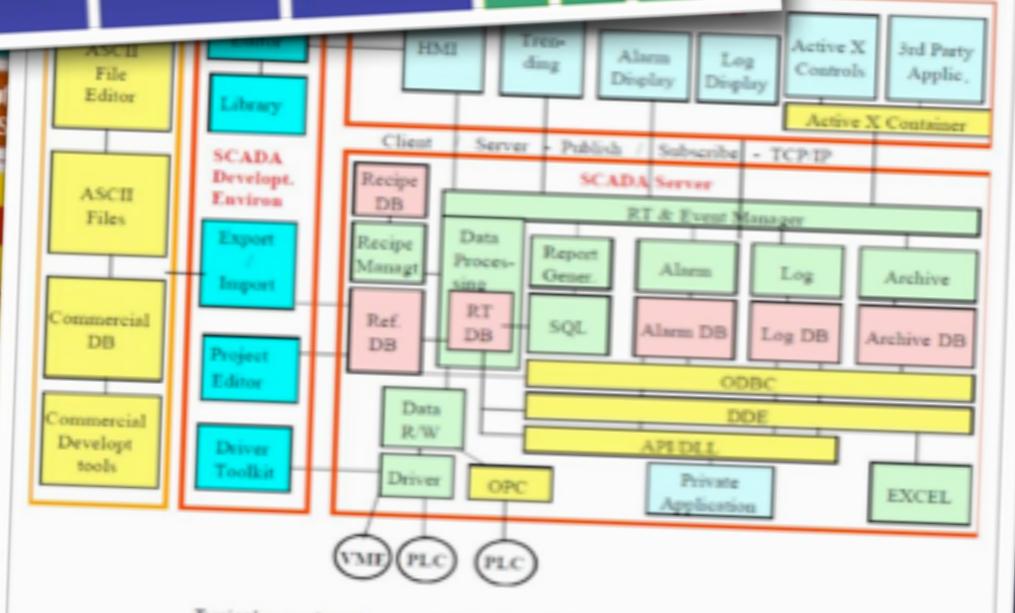
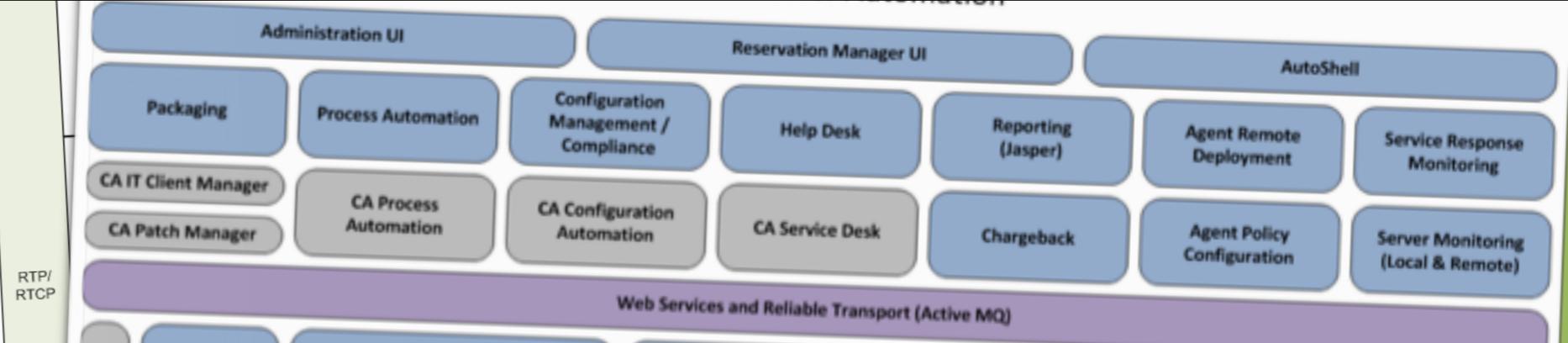
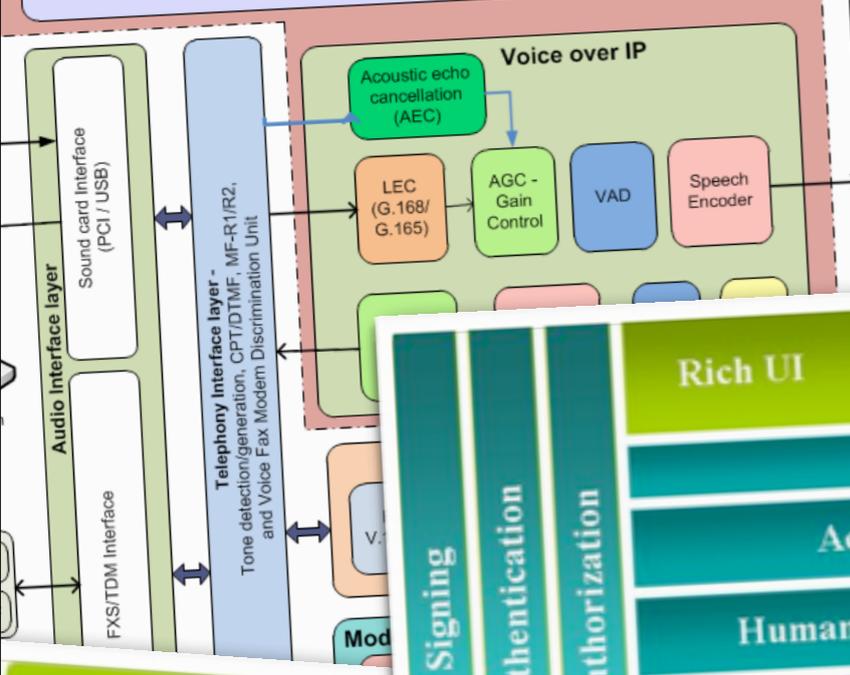
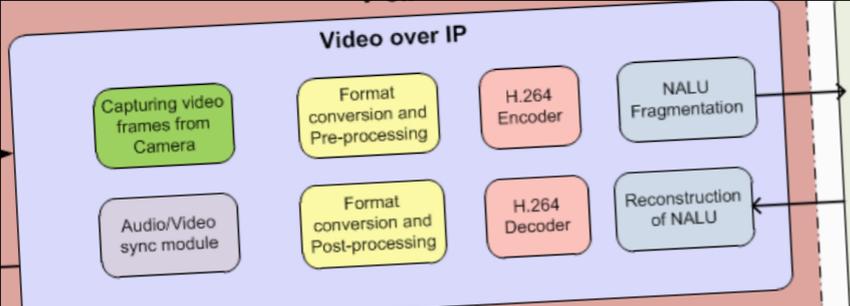


...but not our software!



Page 7



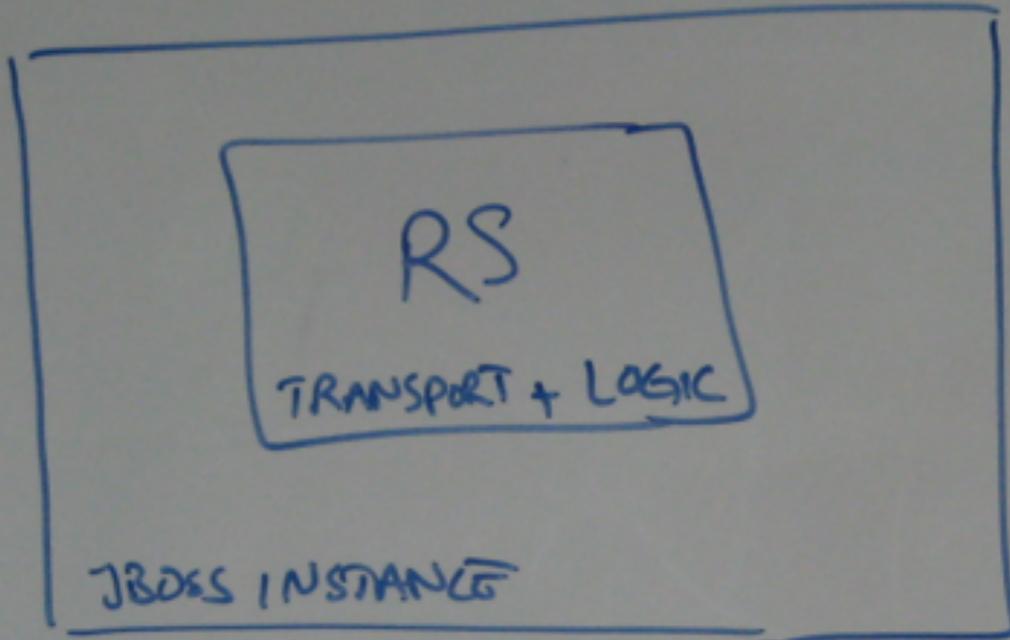


Are these

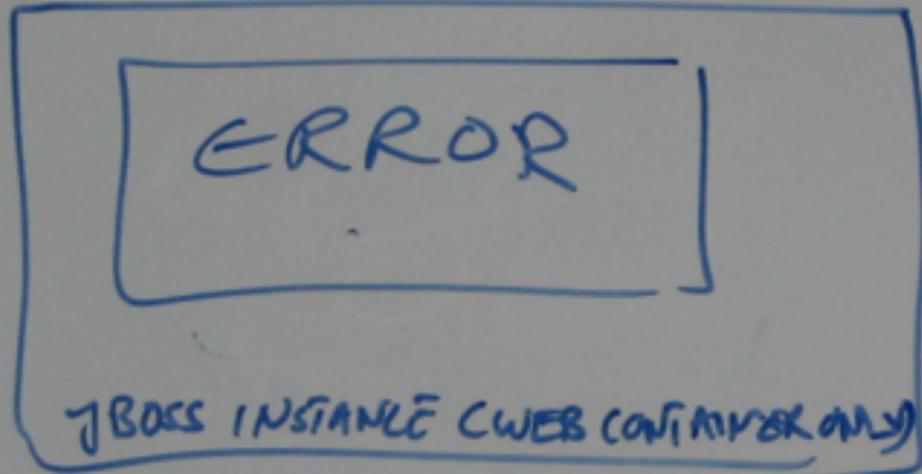
effective

sketches?

UNIX BOX

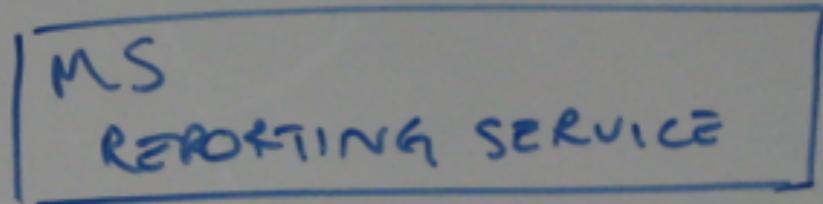
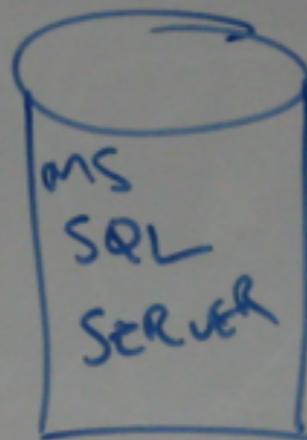


JBoss Instance



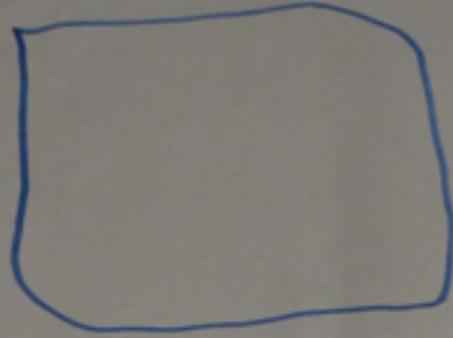
JBoss Instance (Web Container Only)

WINDOWS BOX



The Shopping List

ASP
NET



LOGGING
SERVICE

PARAMETER
MANAGER

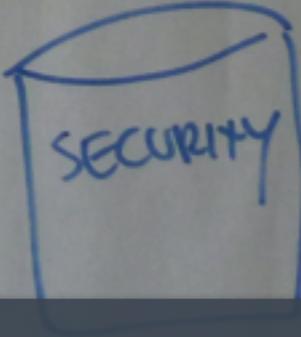
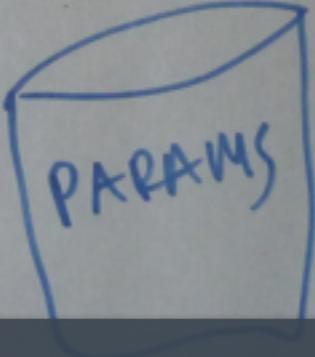
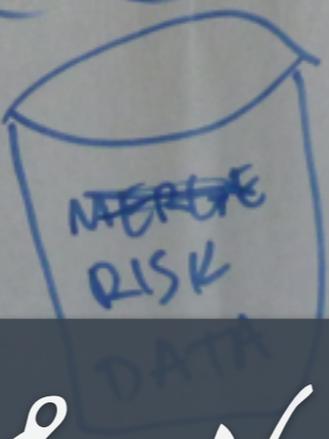
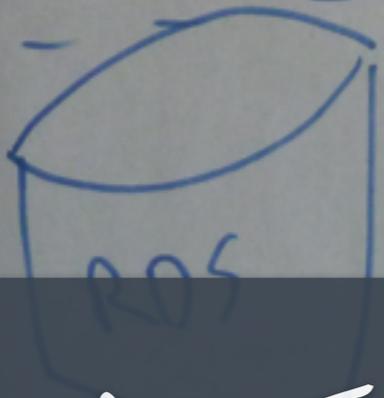
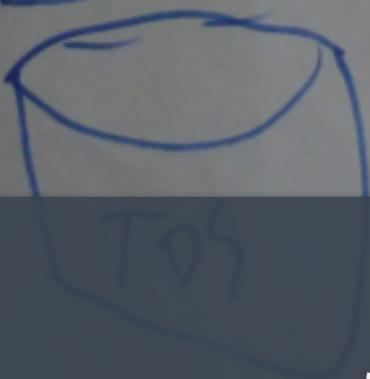
RISK
CALCULATION

REPORT
GENERATOR

DATA
IMPORT

AUDITING

VALIDATION



Boxes & No Lines

FUNCTIONAL VIEW

File Retriever

Scheduler

Auditing

Reference Archiver

Risk Assessment Processor

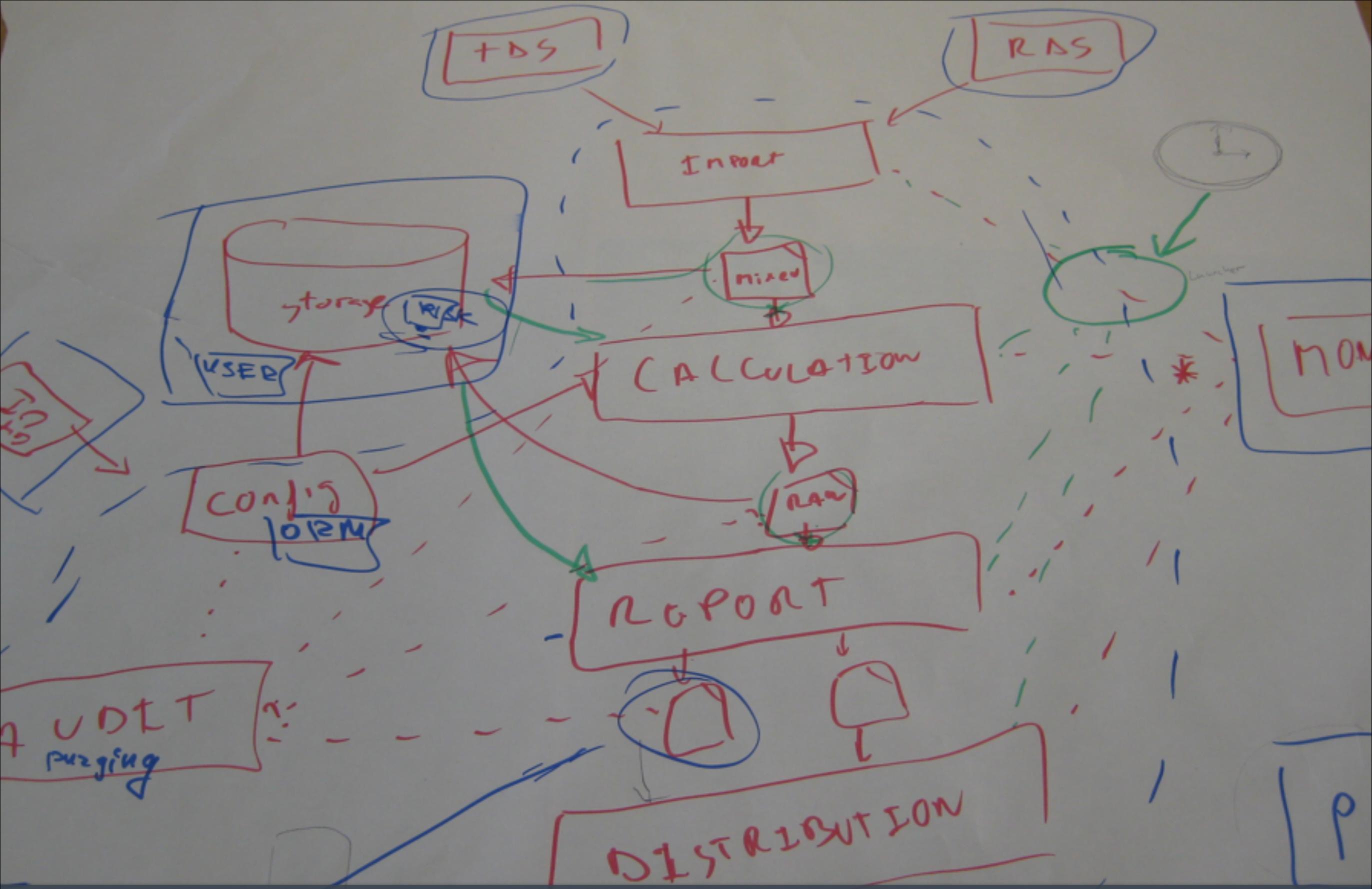
Risk Parameter Configuration

Trade Archiver

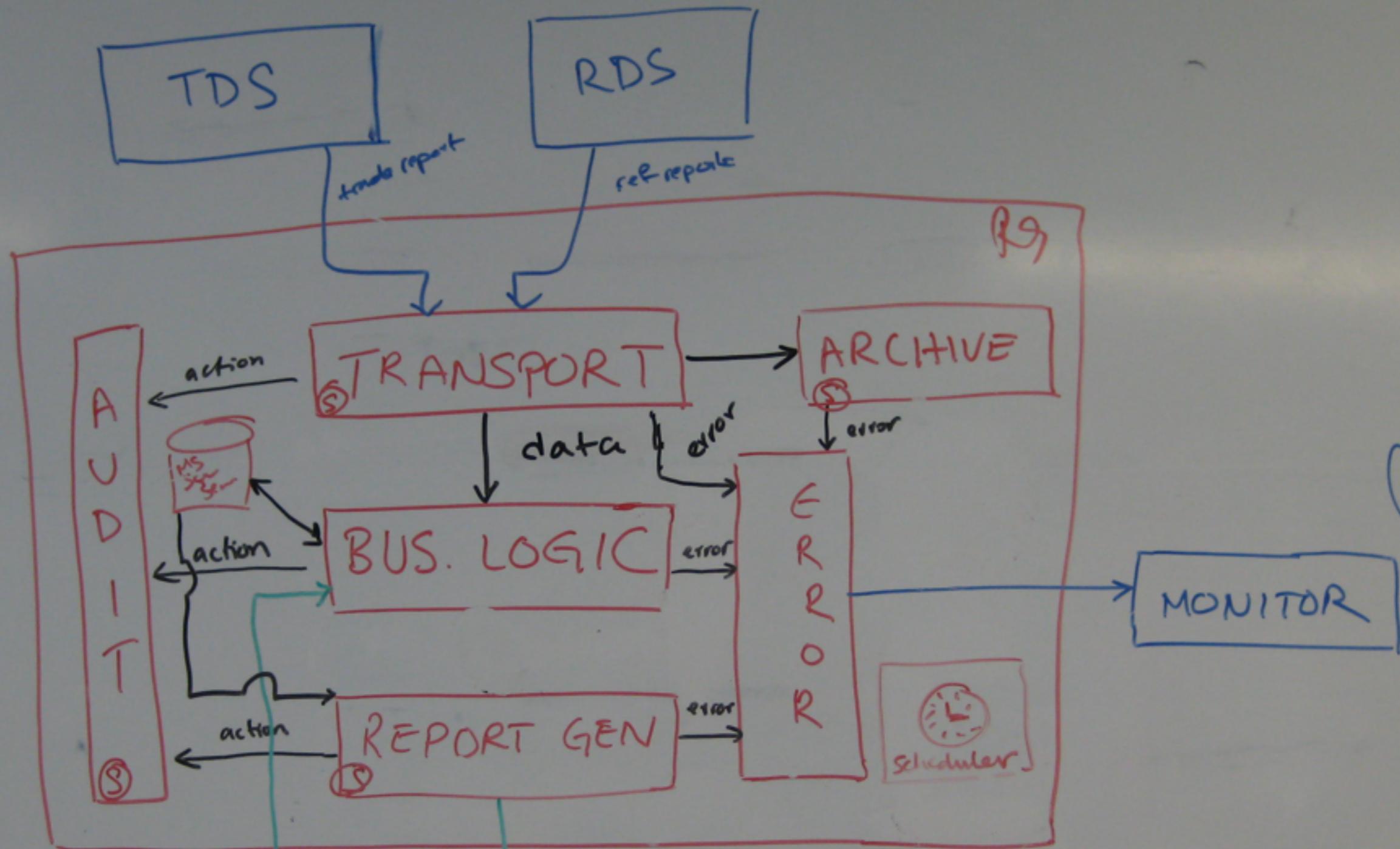
Report Generator

Report Distributor

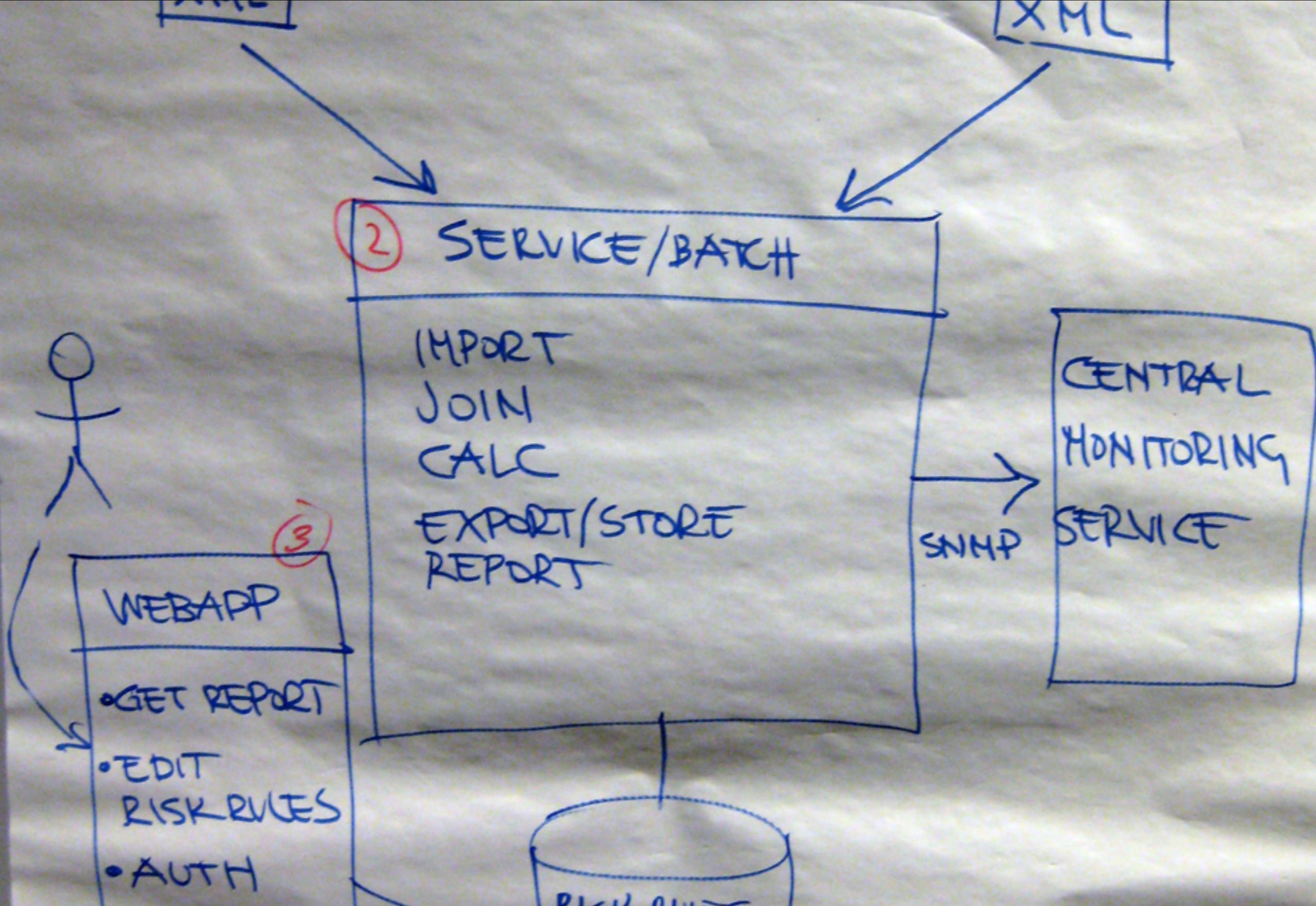
The Functional View



The Airline Route Map

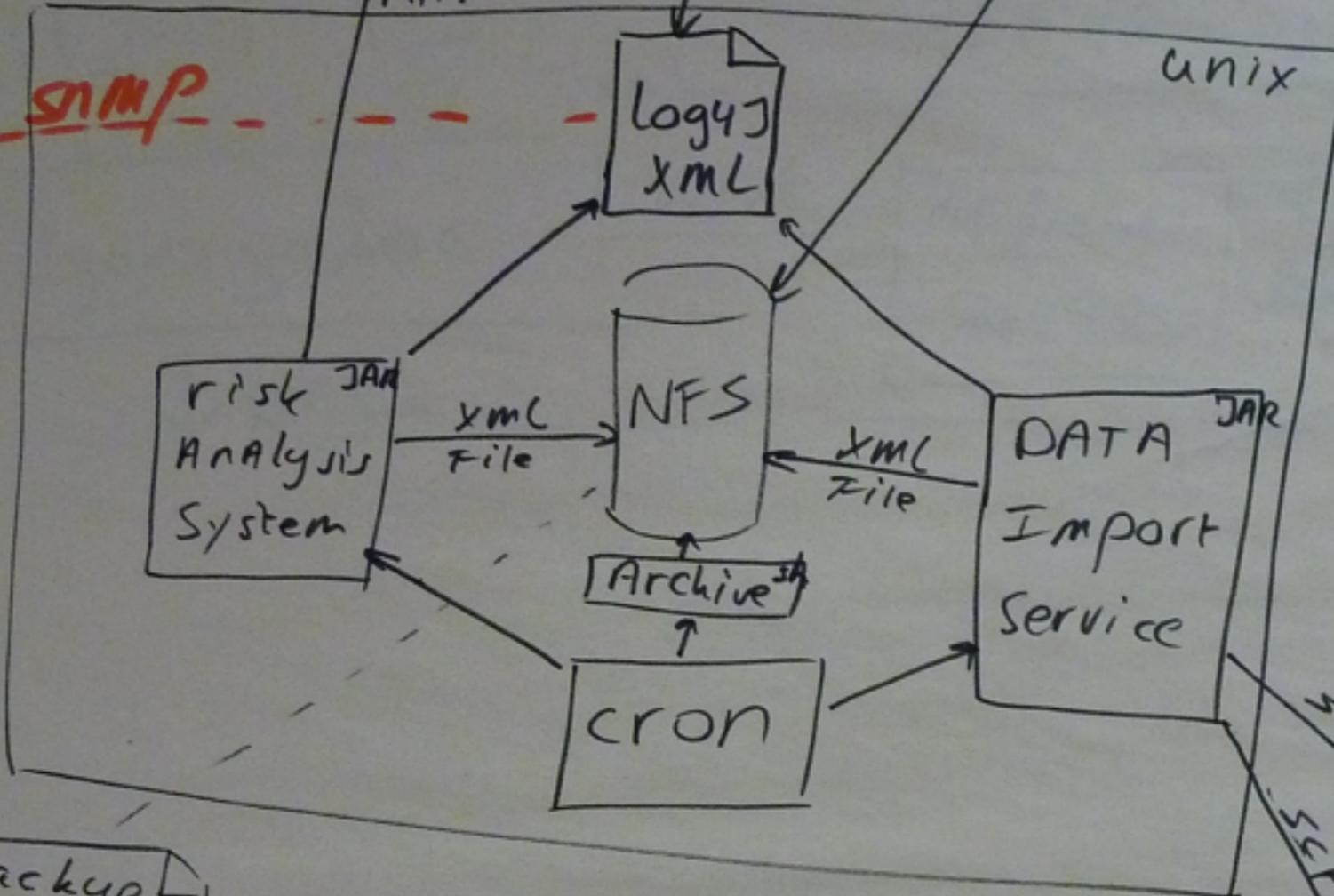
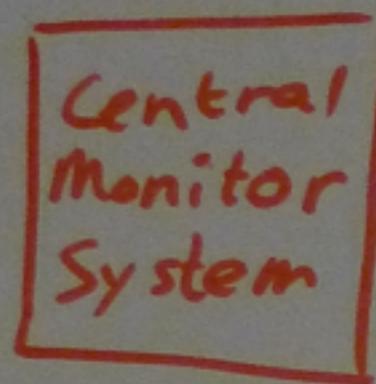
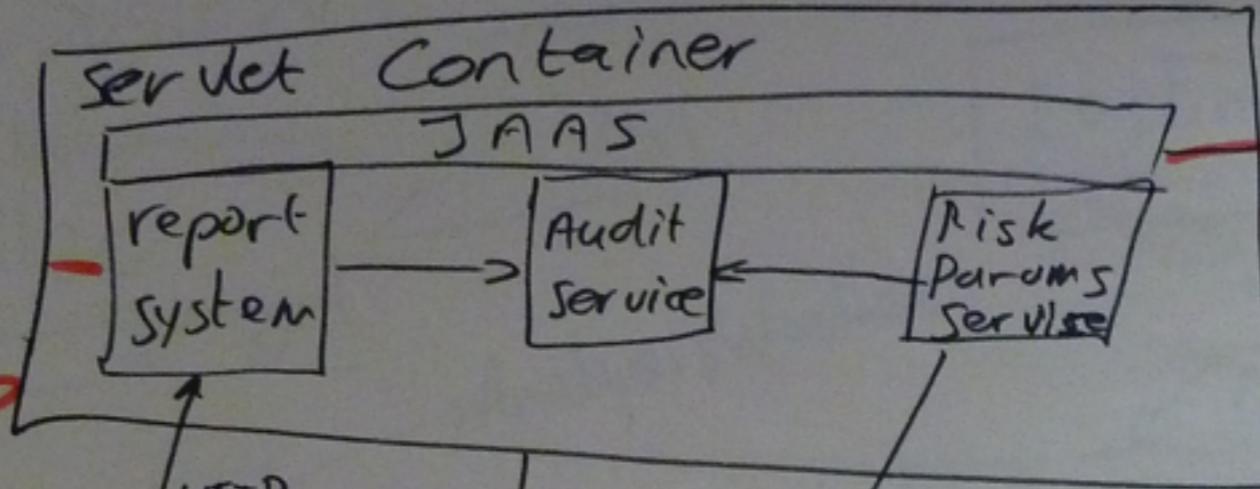
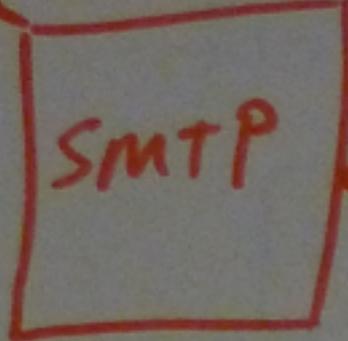


Generically True



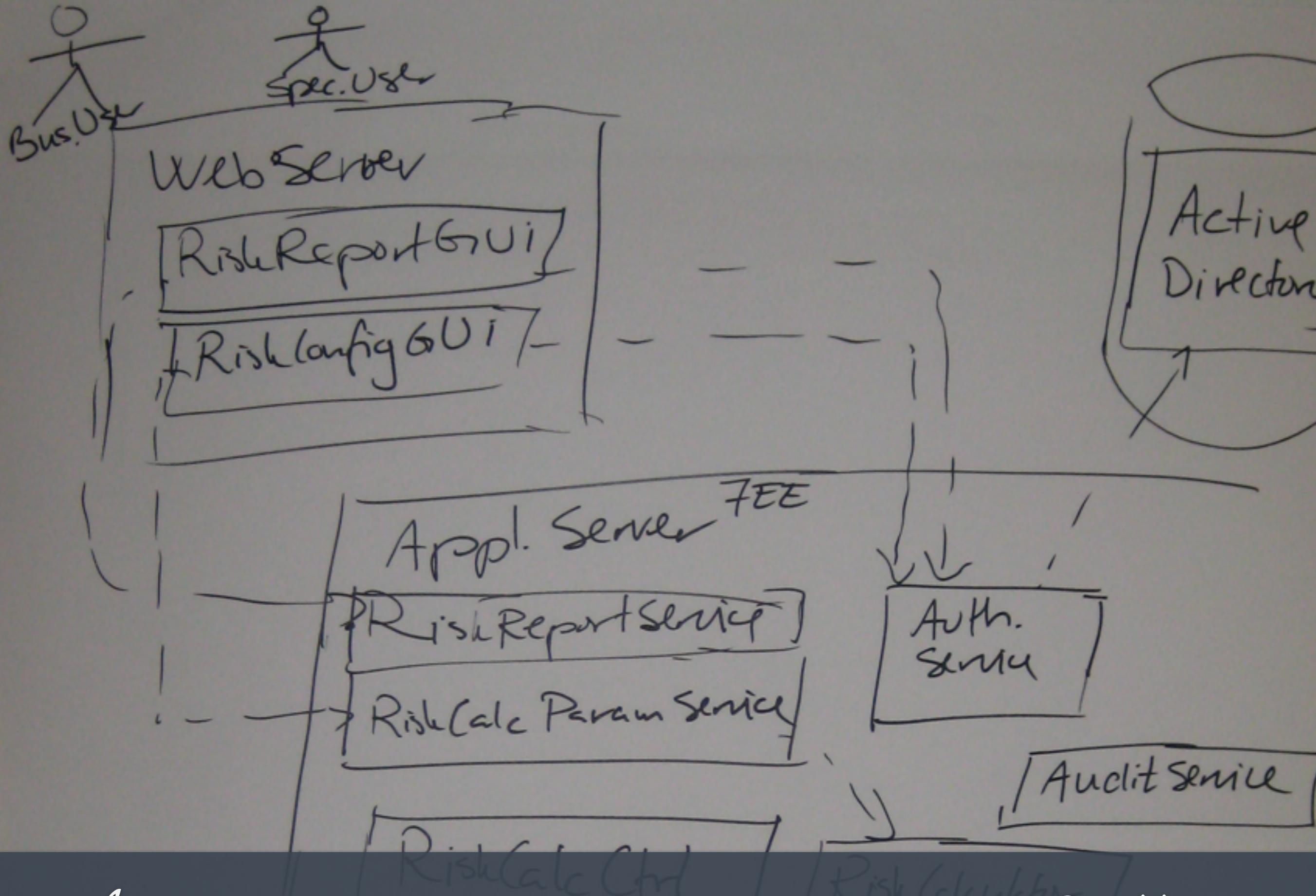
The Technology Deferral

Services (Corporate)

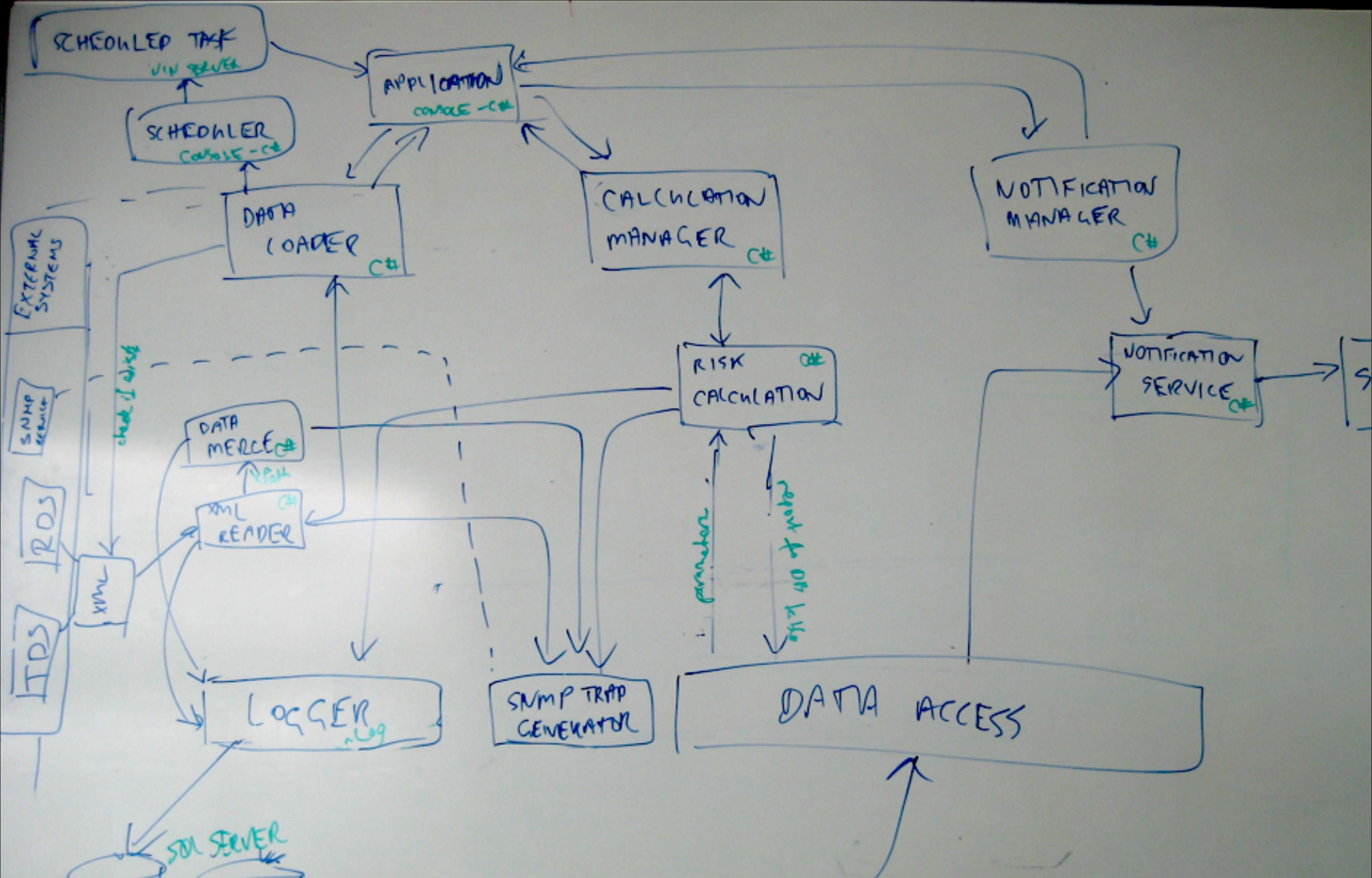


- backup
- RAID
- writable only for process owner

Missing Details

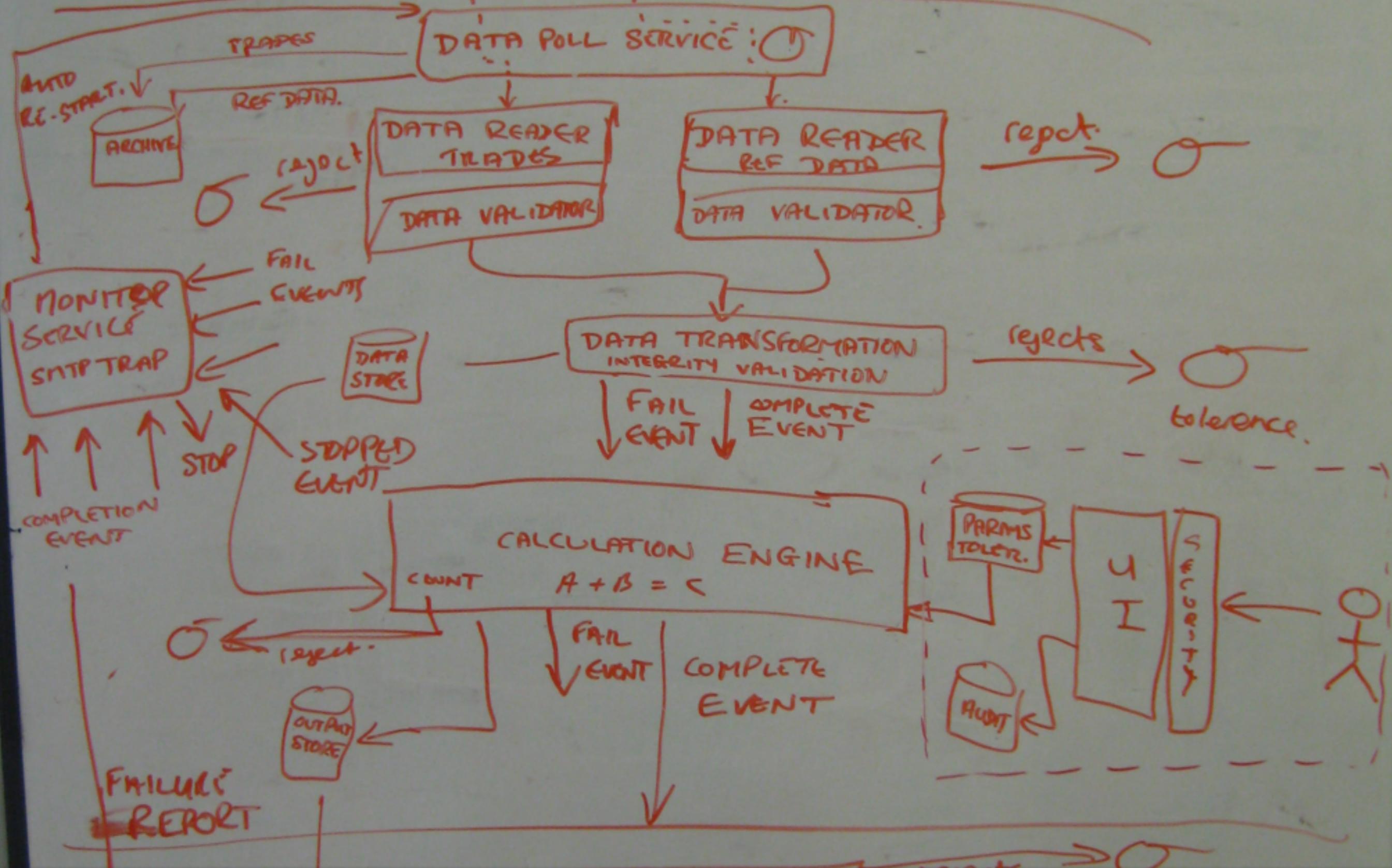


Assumptions are the mother of all ...

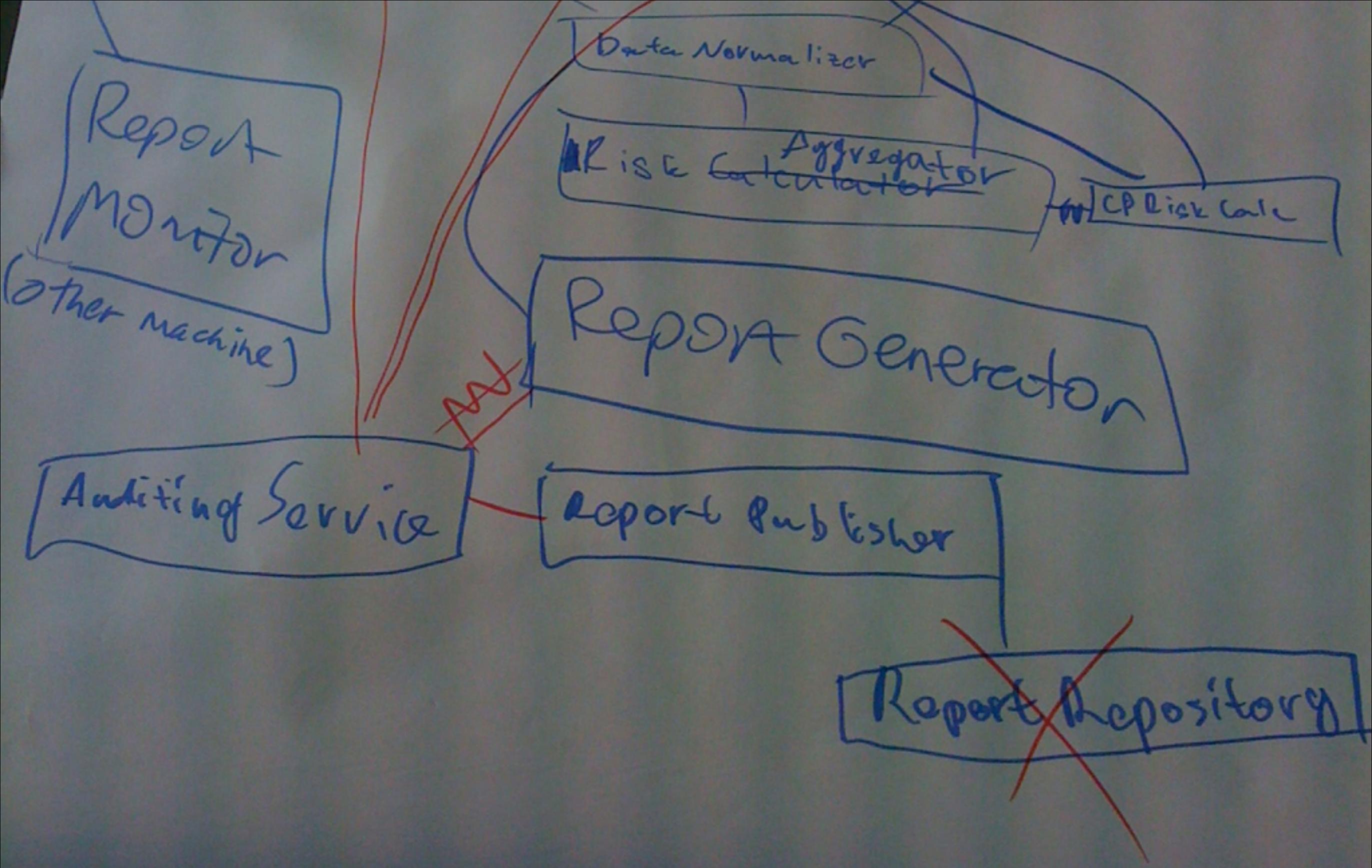


Homeless Old C# Object (HOCO)

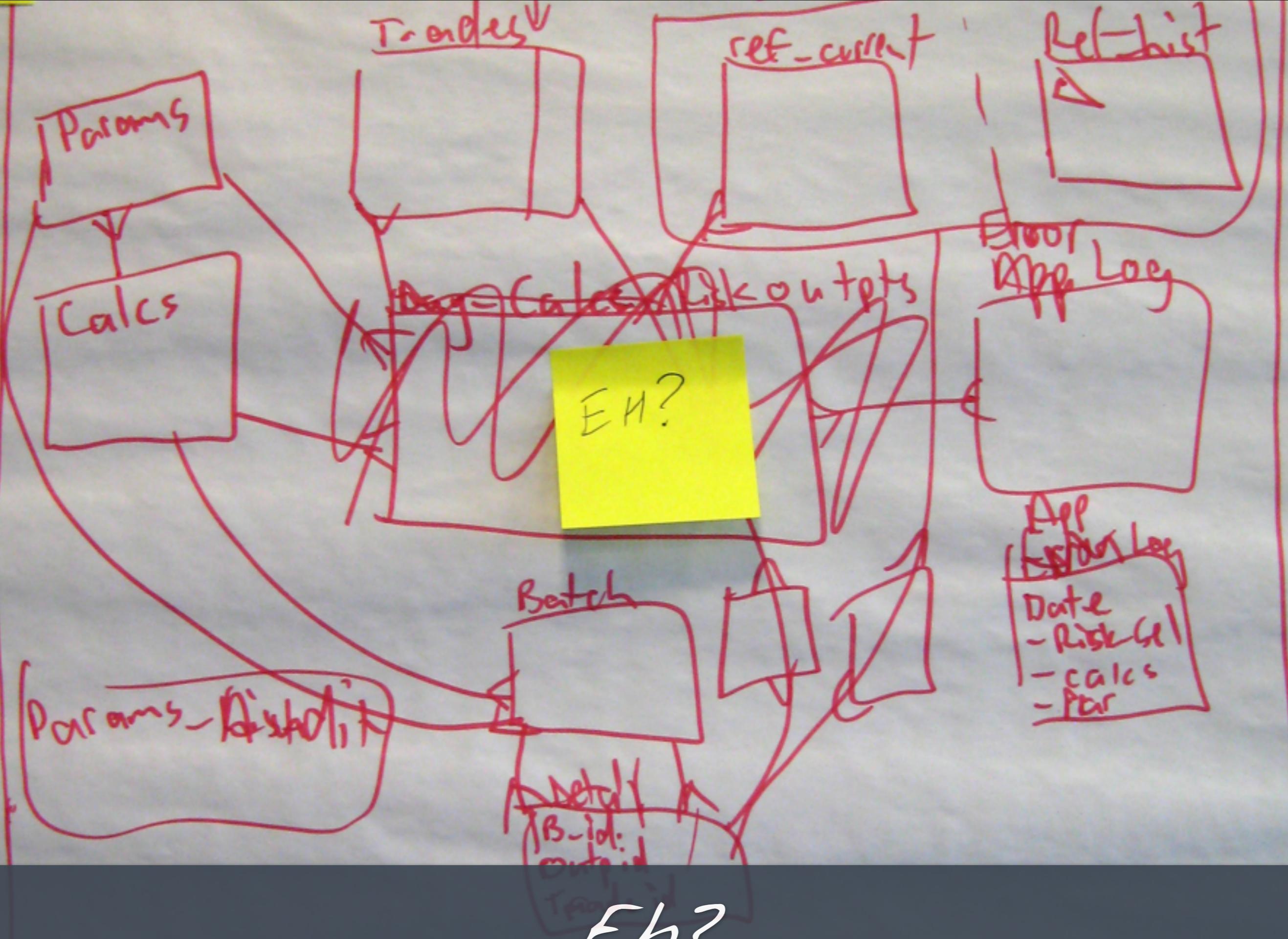
PHYSICAL SECURITY



Choose your own adventure



Should have used a

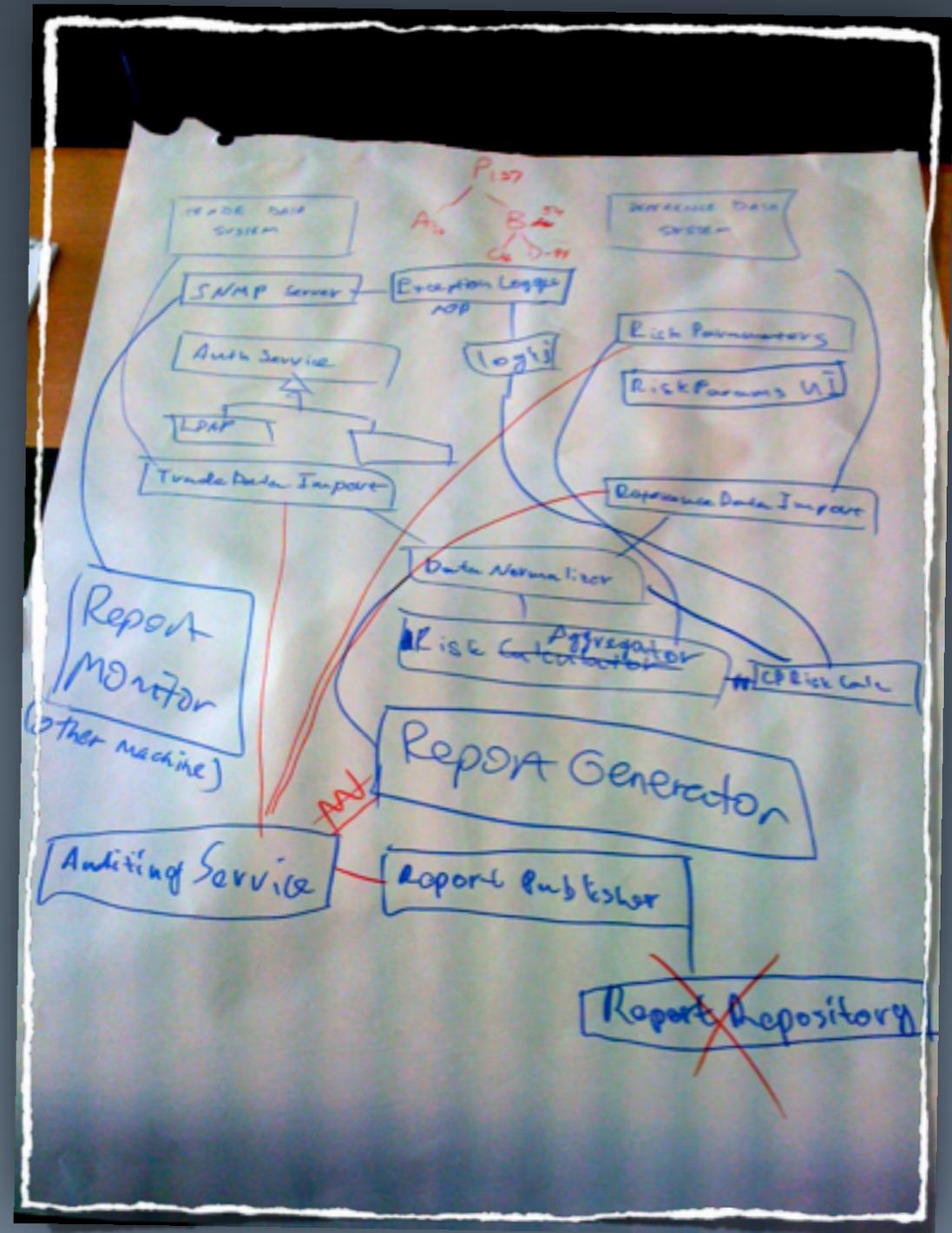


EH?

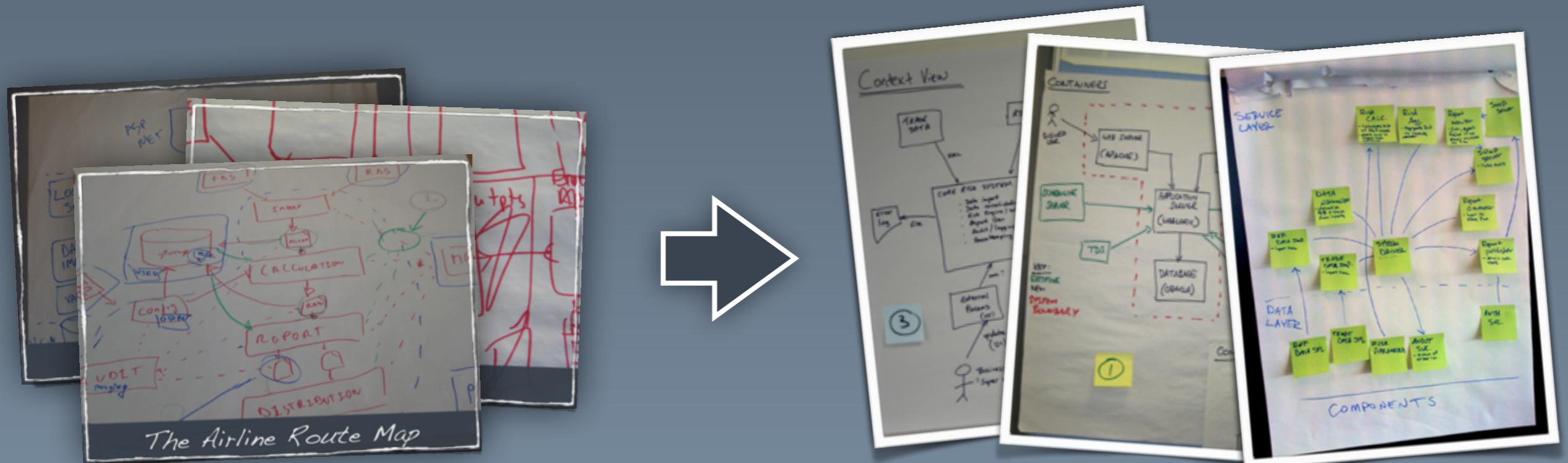


<http://www.flickr.com/photos/codingthearchitecture/sets/>

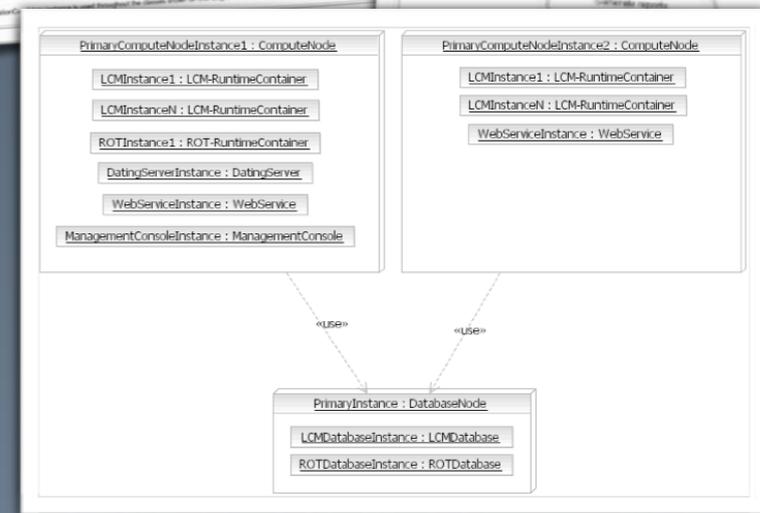
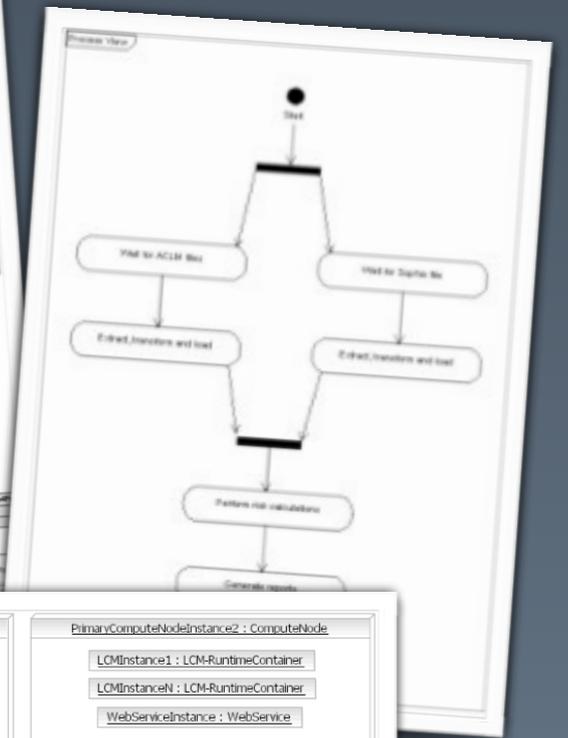
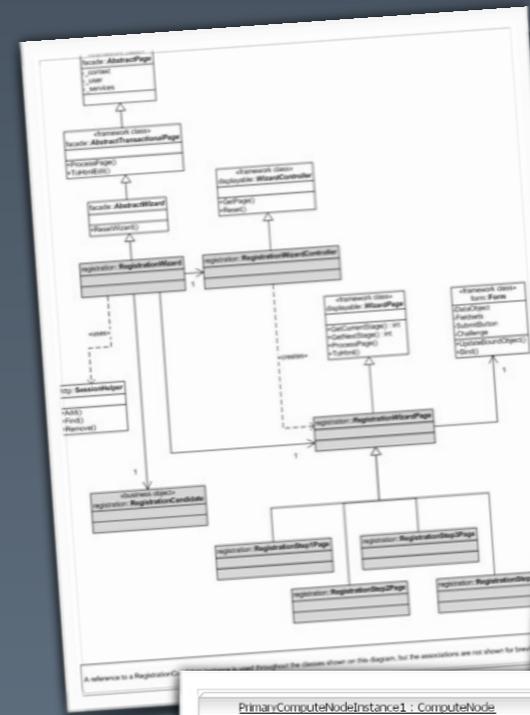
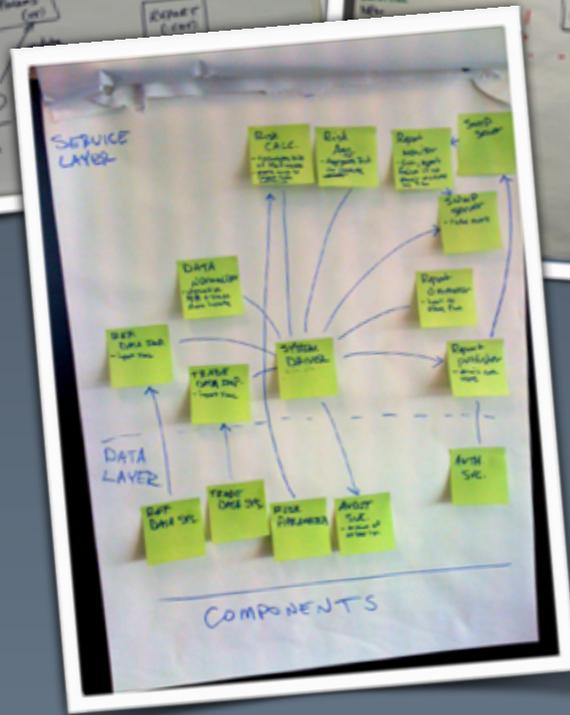
In my experience,
software teams
aren't able to
effectively
visualise the
software
architecture
of their systems



Moving fast (agility) requires
good
communication



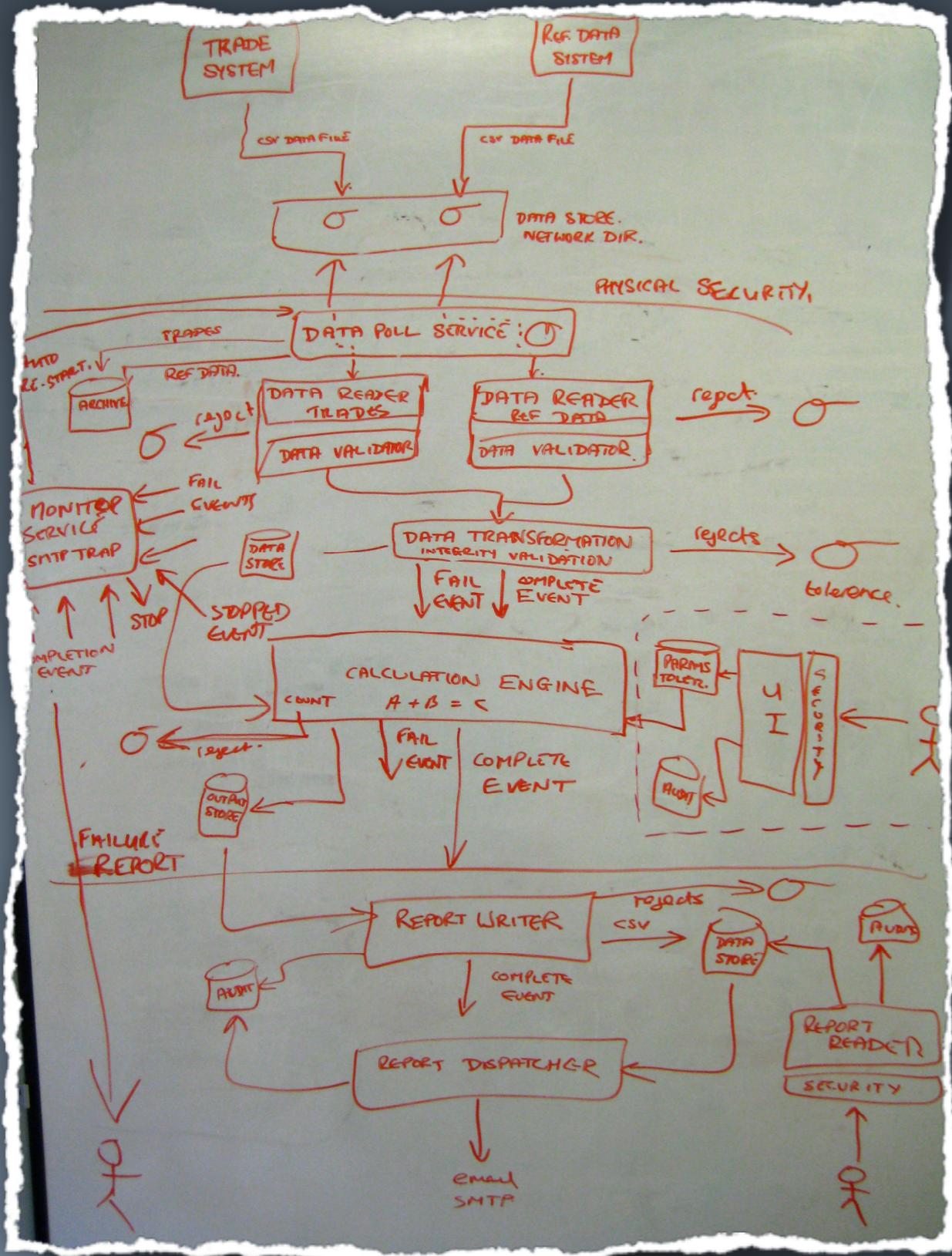
UML tool?



Whiteboard or flip chart?

It's usually difficult to show the entire design on a **single** diagram

Different **views** of the design can be used to manage complexity and highlight different aspects of the solution



Do the **names**
of those views make sense?

Conceptual vs Logical

Process vs Functional

Development vs Physical

Development vs Implementation

Physical vs Implementation

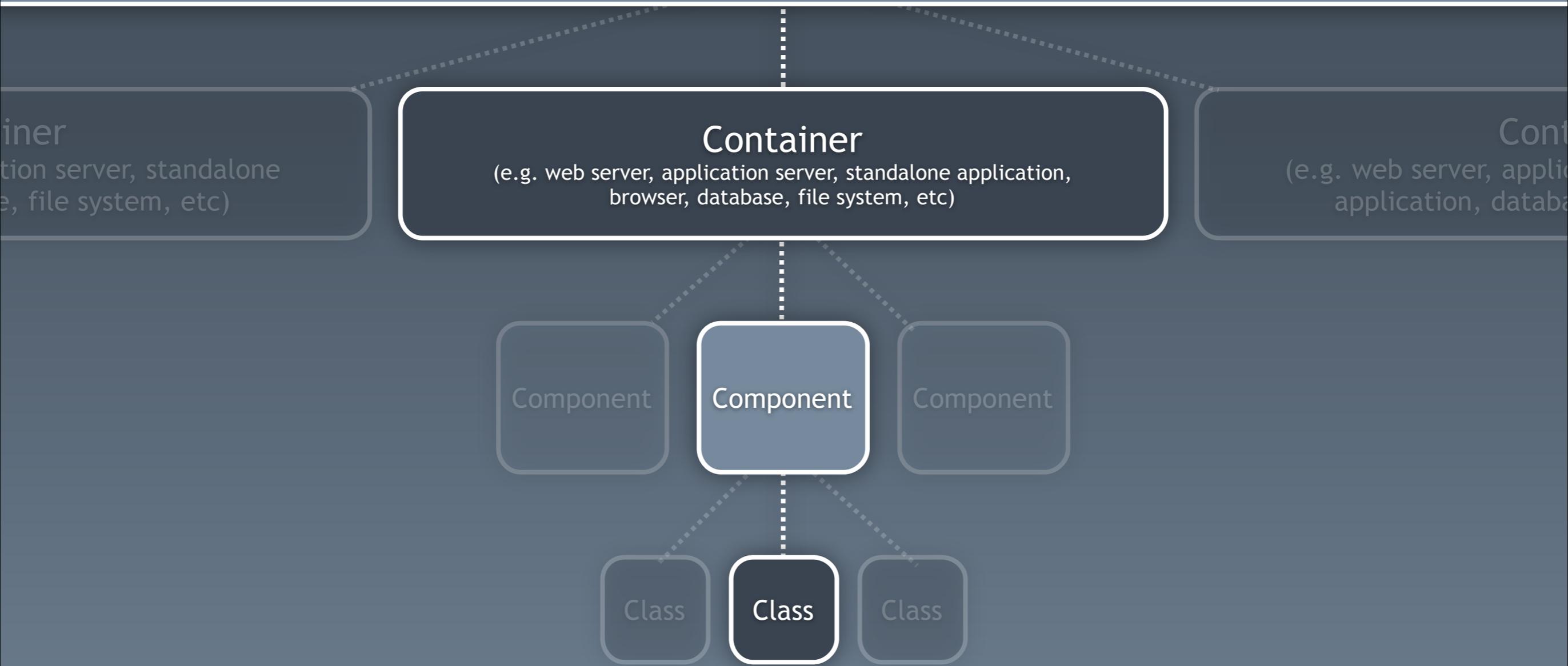
Physical vs Deployment

Would you

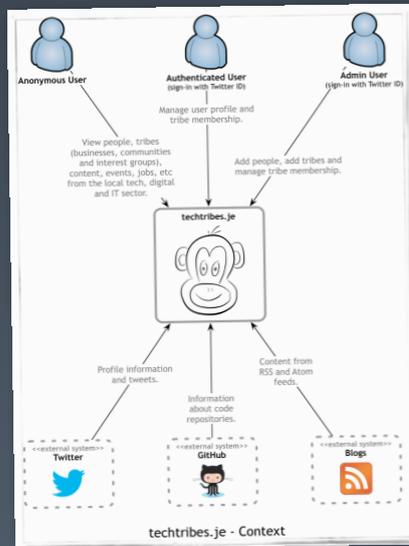
code

it that way?

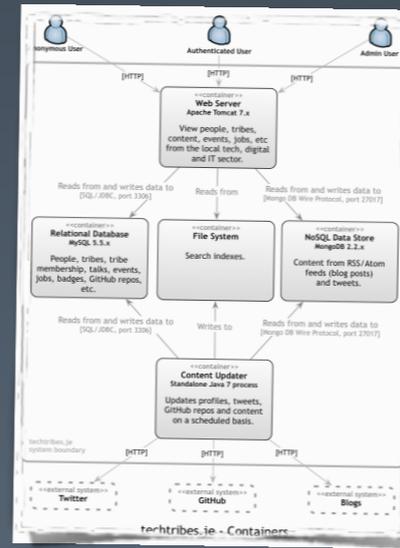
Software System



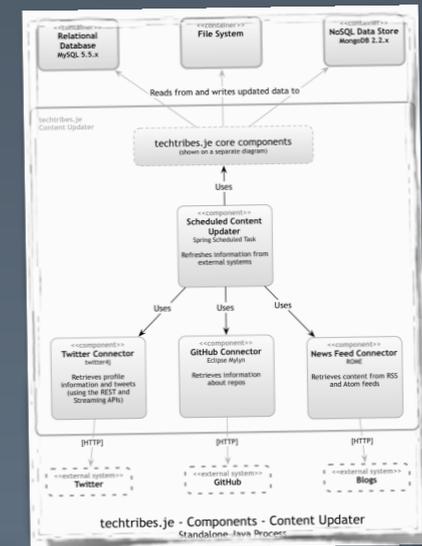
Agree on a simple set of **abstractions** that the whole team can use to communicate



1. Context

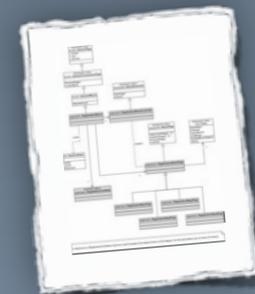


2. Containers



3. Components

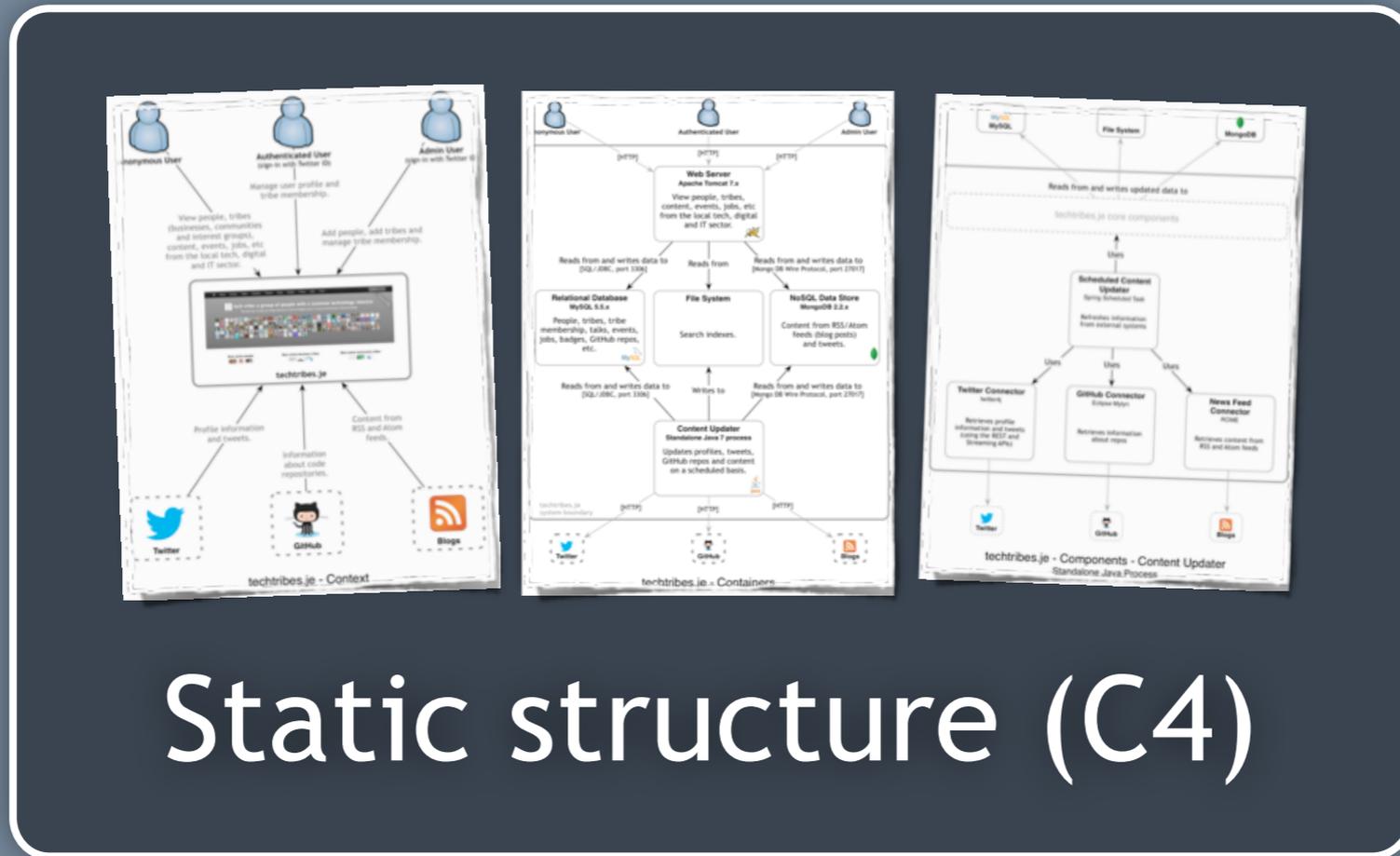
C4



4. Classes

Sequence & collaboration

Process & workflow



Static structure (C4)

Infrastructure

Deployment

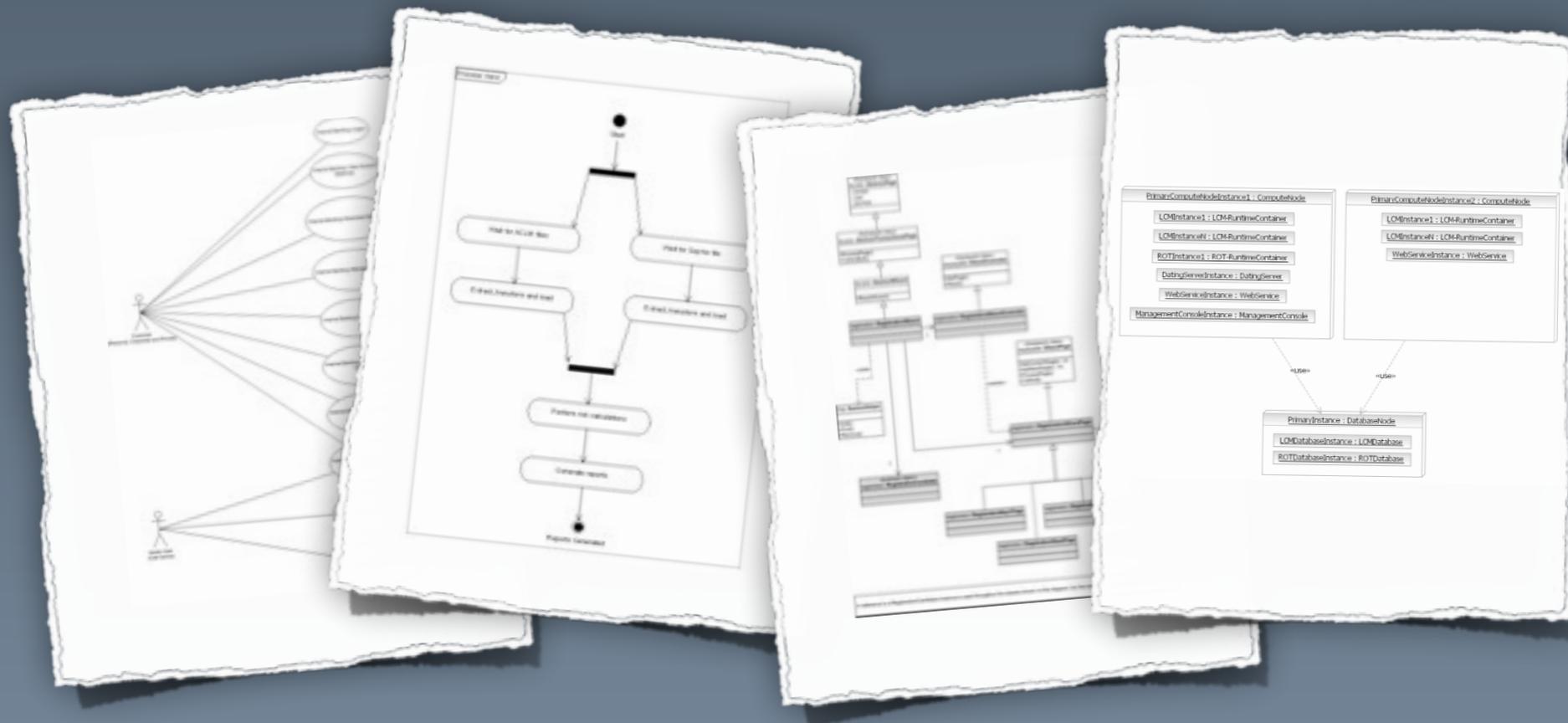
This **isn't** about
creating a standard

A common set
of abstractions

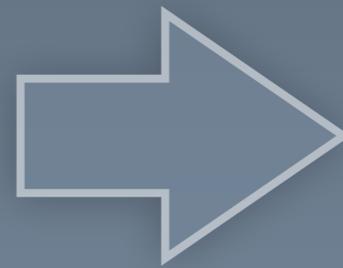
is more important than
a common notation

I do use UML

(e.g. activity, class, sequence, collaboration, state)



Think about the
target
audience



Non-technical

Semi-technical

Very technical



Most active people



Most active business tribes



Most active community tribes



News

@ C5 Alliance plans Microsoft events in Channel Islands

Channel Island cloud provider, C5 Alliance are organising two breakfast events in both Jersey and Guernsey, named 'Leveraging Microsoft Technologies for Regulatory Compliance'. The breakfast briefings are due to include demonstrations of the latest Microsoft technologies and how they are combined. The briefings will cover Microsoft CRM process driven forms, SharePoint Workflow & Collaboration and SQL Server Data Warehousing technology. C5 Alliance, who work with a number of clients, both financial and...

Posted Today

@ Jersey residents set to have choice in fibre broadband

Sure customers will soon be able to access Jersey's fibre network following the reaching of an agreement between Sure and JT that finalises the commercial arrangements for access to the network. The agreement means that JT has gone some way to fulfilling the second condition of the eight that were set out in the States of Jersey's funding arrangements for the network, as agreed by the Treasury Minister, Senator Philip Ozouf. "This is excellent news for our broadband customers who have been extremely pati...

Posted Yesterday

@ Logicalis Group taking over Jersey cloud provider

Logicalis Group, the International IT solutions and managed services provider, has announced the acquisition of Jersey's IConsult Limited, a privately owned Jersey company and provider of desktop and mail hosted solutions to the small medium businesses (SMB) market within the Channel Islands. Through their data facility in Jersey the company services over 800 users on the islands, mainly in the financial and professional services sectors. Their main offering is a hosted desktop solution, using primarily ...

Posted 18 Oct 2013

[More...](#)

Local events

2014 2013 2012

Ivan Nikkhoo - Growth Funding

Topics of discussion will be: Growth capital, Funding cycles, Investment decisions plus Valuation and exits. With over 29 years of industry experience in various senior capacities internationally, Ivan is a Managing Director at Siemer & Associates and a...

Pomme d'Or Hotel, St Helier, Jersey
29 Oct 2013 at 17:30

Tech Tribes Talks

The third set of Tech Tribes talks are ready to rock your world! After a very successful July event at the Royal Yacht we've decided to go back for our October talks. We have a great line up of speakers and we take great pleasure in inviting you to atte...

The Royal Yacht, St Helier
24 Oct 2013 at 17:30

The Internet of Everything and Gigabit Jersey

"The Internet of everything" Currently, there are an estimated 10 to 15 billion 'things' connected to the Internet and this is predicted to grow to 50 billion by 2020. How will this change our lives? What infrastructure will we need? What opportun...

The Grand Hotel, St Helier, Jersey
Tomorrow at 17:15

Talks by local speakers

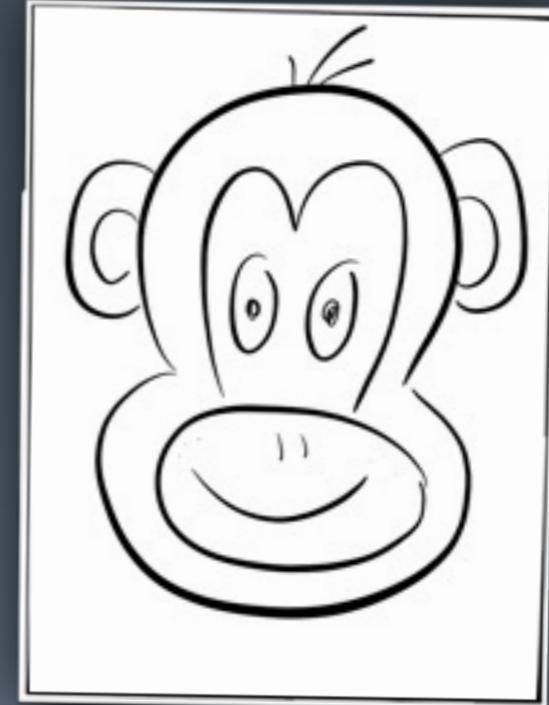
2014 2013 2012

Ted talk

Agile software

Software architecture and

techtribes.je



https://github.com/techtribesje/techtribesje



This repository Search or type a command Explore Gist Blog Help techtribesje

PUBLIC techtribesje / techtribesje Unwatch 5 Star 5 Fork 4

Source code for the techtribesje website — Edit

17 commits 1 branch 0 releases 3 contributors

branch: master techtribesje /

Tidied up some of the HTML page titles.
simonbrowndotje authored 12 days ago latest commit e62199dc1a

etc	Started to clean-up the web controllers.	a month ago
lib	Initial import into GitHub.	a month ago
techtribes-core	Cleaned up logging.	a month ago
techtribes-updater	Cleaned up logging.	a month ago
techtribes-web	Tidied up some of the HTML page titles.	12 days ago
.gitignore	Initial import into GitHub.	a month ago
README.md	Added a few more details about tech.	a month ago
build.number	Started to clean-up the web controllers.	a month ago
build.xml	Added tests for the RssController.	a month ago
license.txt	Initial import into GitHub.	a month ago
setenv.sh	Initial import into GitHub.	a month ago
techtribes.iml	Initial import into GitHub.	a month ago
techtribesje-context.png	Started to add information about repo and build script.	a month ago
techtribesje.ids	Initial import into GitHub.	a month ago
techtribesje.ipr	Initial import into GitHub.	a month ago
techtribesje.jws	Started to clean-up the web controllers.	a month ago

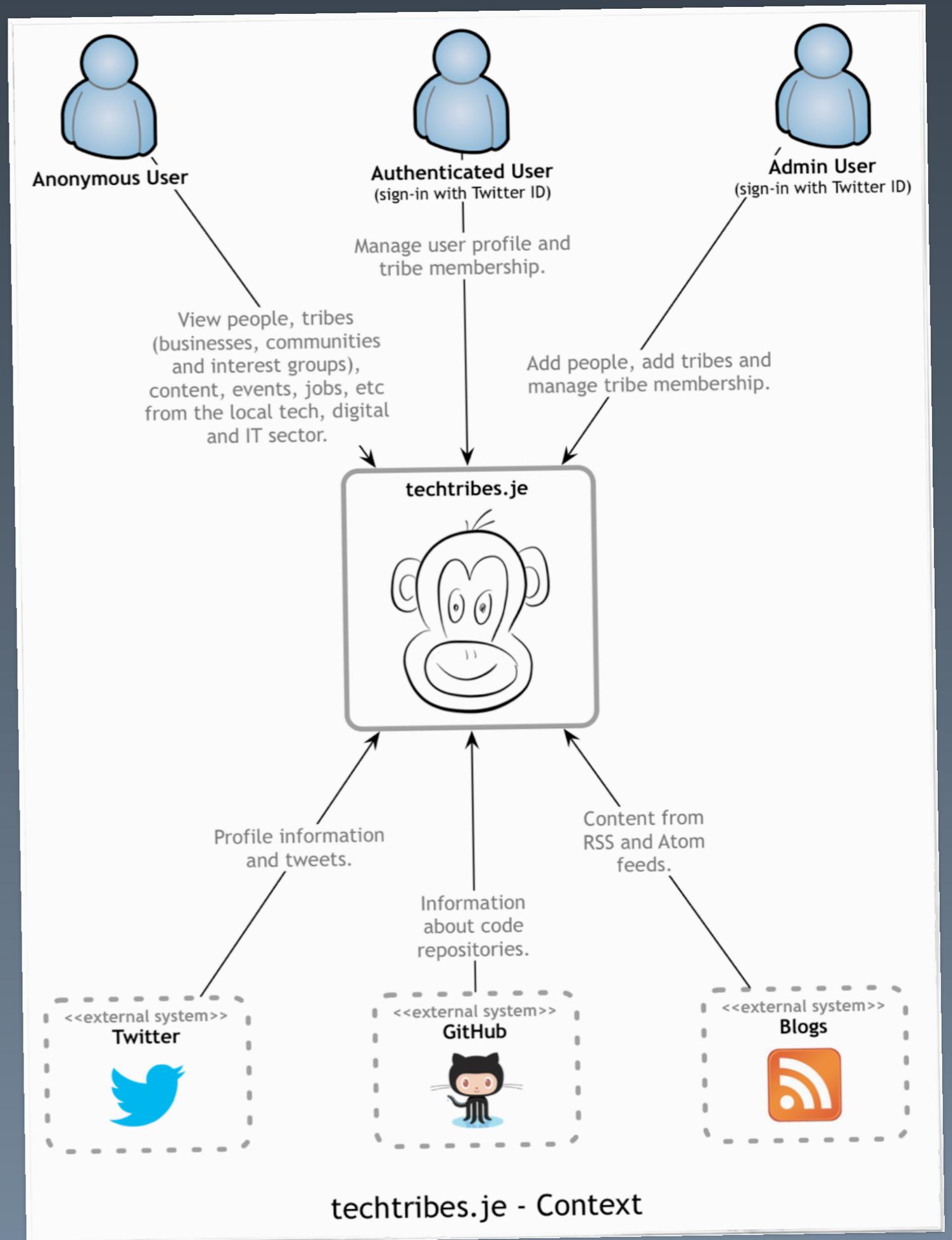
Code Issues 3 Pull Requests 0 Wiki Pulse Graphs Network Settings

HTTPS clone URL
https://github.com
You can clone with HTTPS, SSH, Subversion, and other methods.
Clone in Desktop Download ZIP

README.md

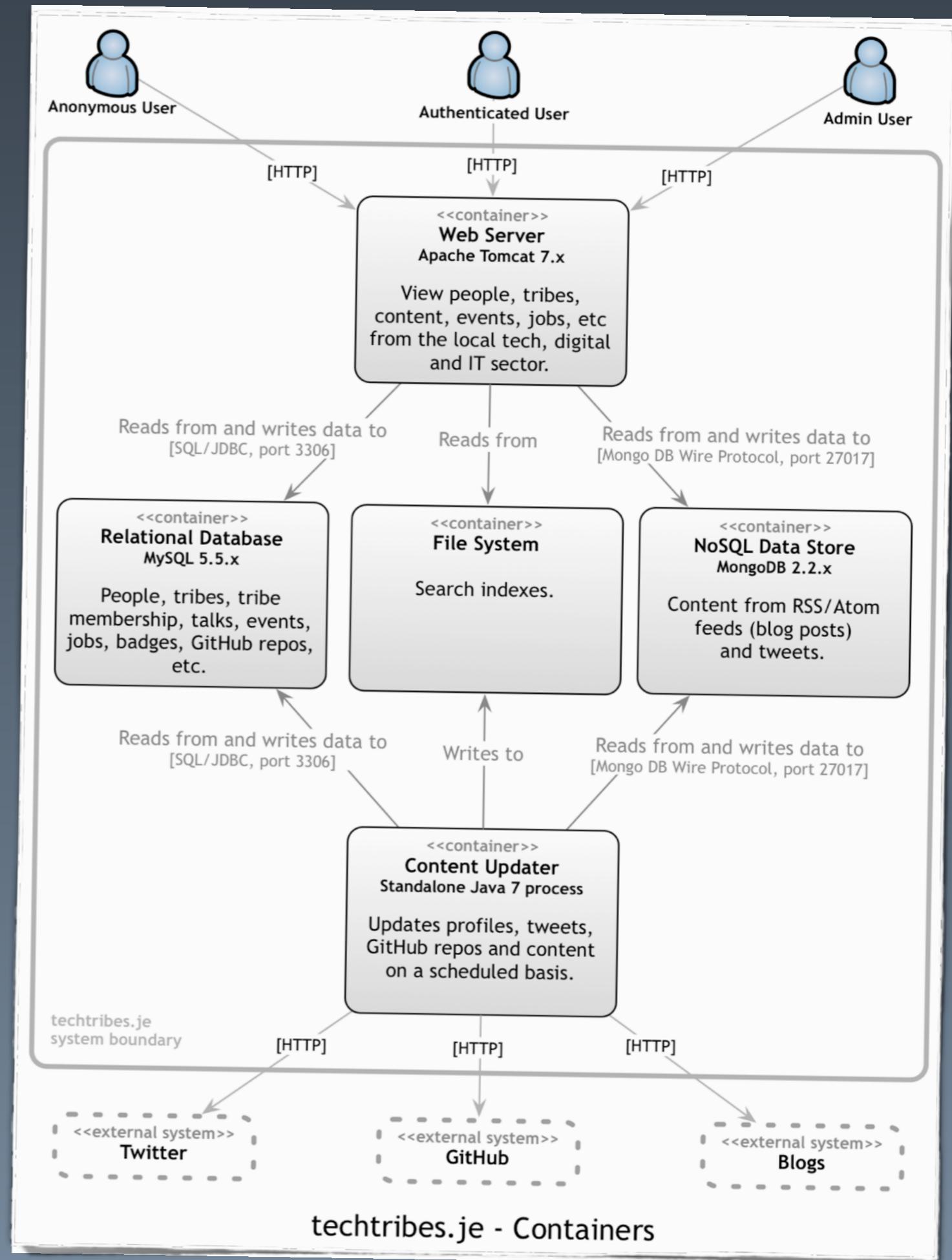
Context

- What are we building?
- Who is using it?
(users, actors, roles, personas, etc)
- How does it fit into the existing IT environment?
(systems, services, etc)



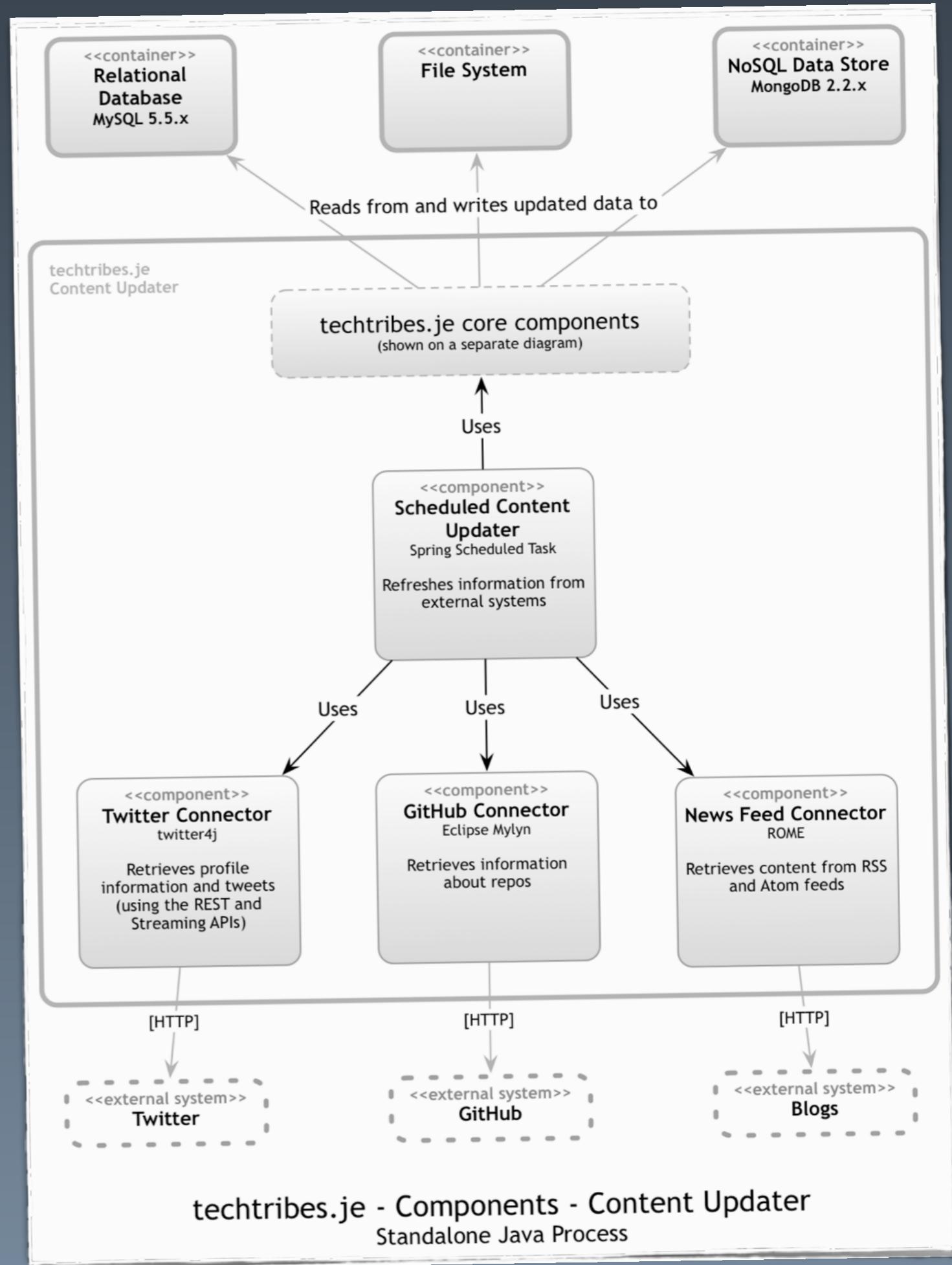
Containers

- What are the high-level technology decisions? (including responsibilities)
- How do containers communicate with one another?
- As a developer, where do I need to write code?

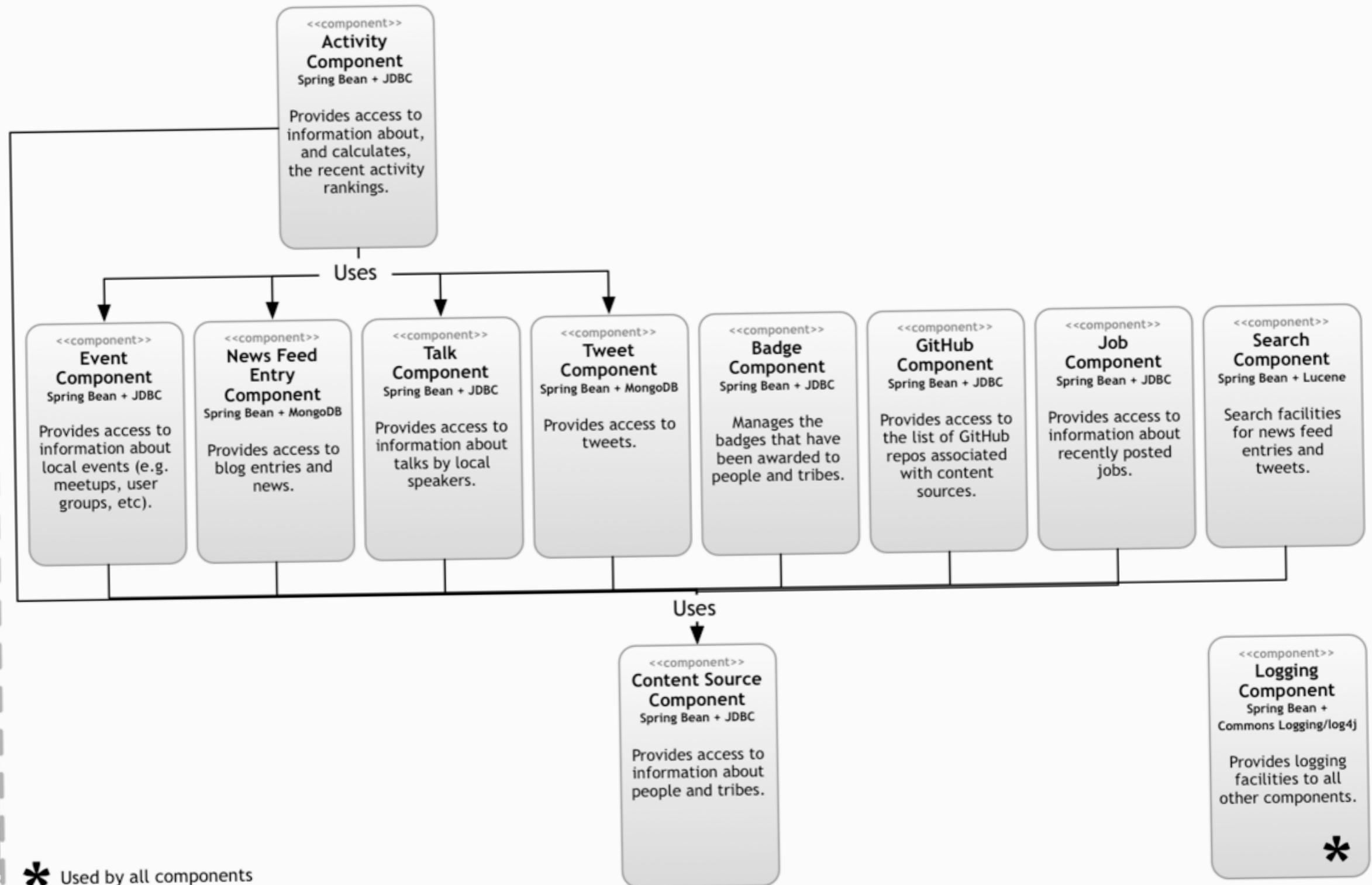


Components

- What components/ services is the container made up of?
- Are the technology choices and responsibilities clear?



Components



* Used by all components

Titles

Short and meaningful, numbered if diagram order is important

Lines

Make line style and arrows explicit, add annotations to lines to provide additional information

Layout

Sticky notes and index cards make a great substitute for drawn boxes, especially early on

Labels

Be wary of using acronyms

Colour

Ensure that colour coding is made explicit

Orientation

Users at the top and database at the bottom? Or perhaps “upside-down”?

Shapes

Don't assume that people will understand what different shapes are being used for

Keys

Explain shapes, lines, colours, borders, acronyms, etc

Responsibilities

Adding responsibilities to boxes can provide a nice “at a glance” view (Miller's Law; 7 ± 2)

Some tips for

effective sketches

Checklist

- I can see the solution from multiple levels of abstraction
- I understand the big picture (context)
- I understand the logical containers
- I understand the major components used to satisfy the important user stories/features
- I understand the notation, colour coding, etc used on the diagrams
- I can see the traceability between diagrams
- I understand the major technology decisions
- I understand the implementation strategy (frameworks, libraries, APIs, etc)

How would you

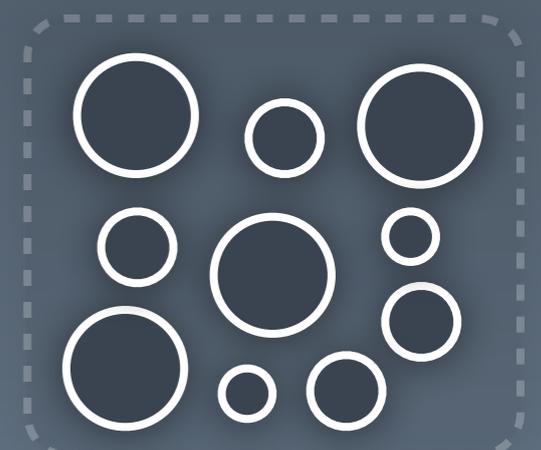
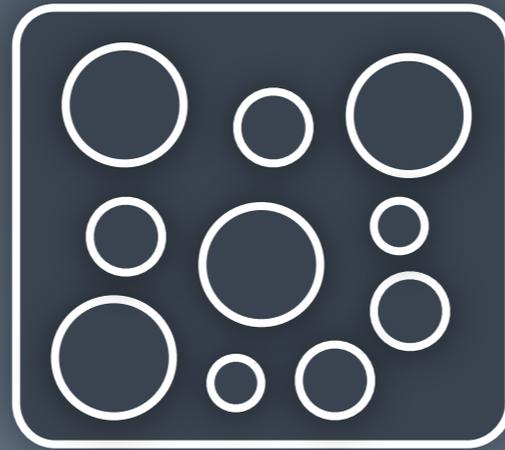
code it?

Sketches
in context

A good
architecture
enables
agility

Monolithic
architecture

Service-based
architecture
(SOA, micro-services, etc)



Something in between
(components)



Effective sketches

are an excellent way to

communicate

software architecture

*During the design process
and retrospectively*

Every
software developer
should know how to

sketch

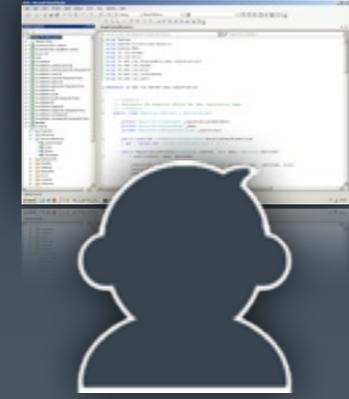
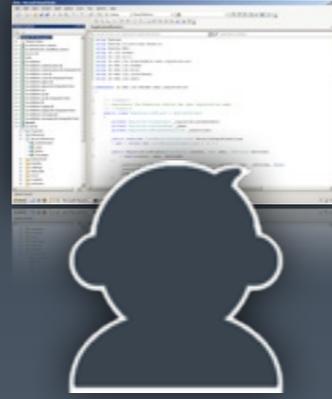
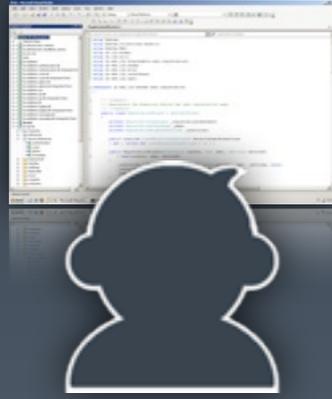


Architecture sketching

assists with having

better conversations



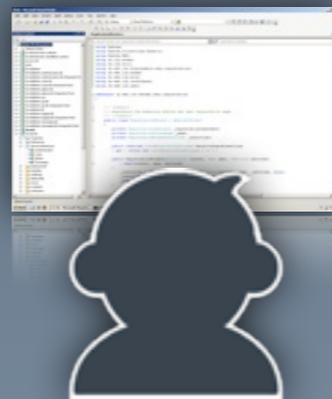


Architecture sketching

assists with

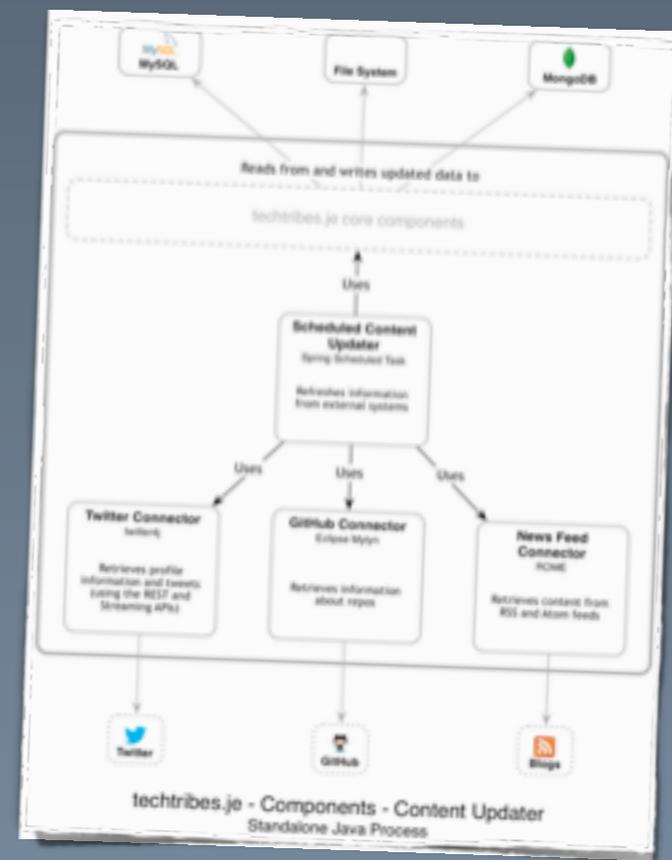
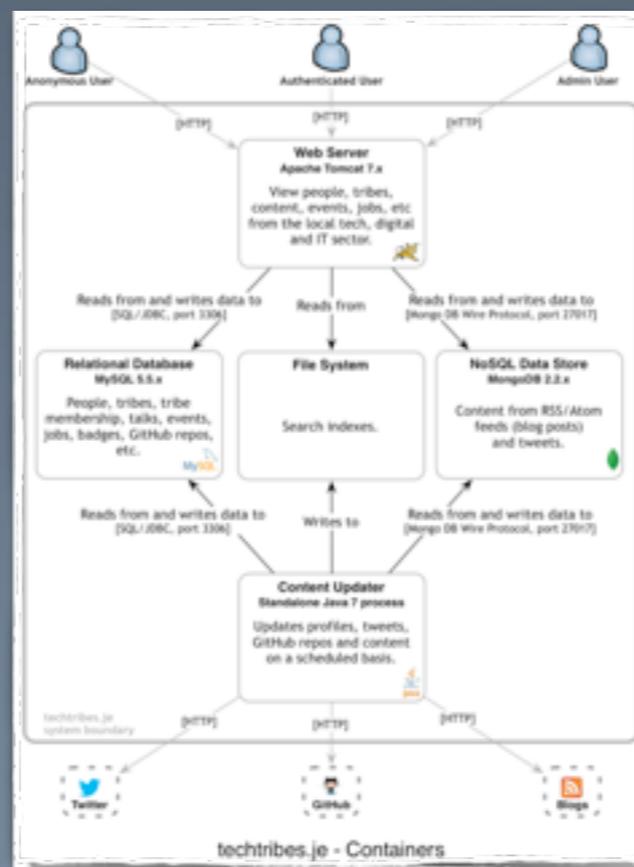
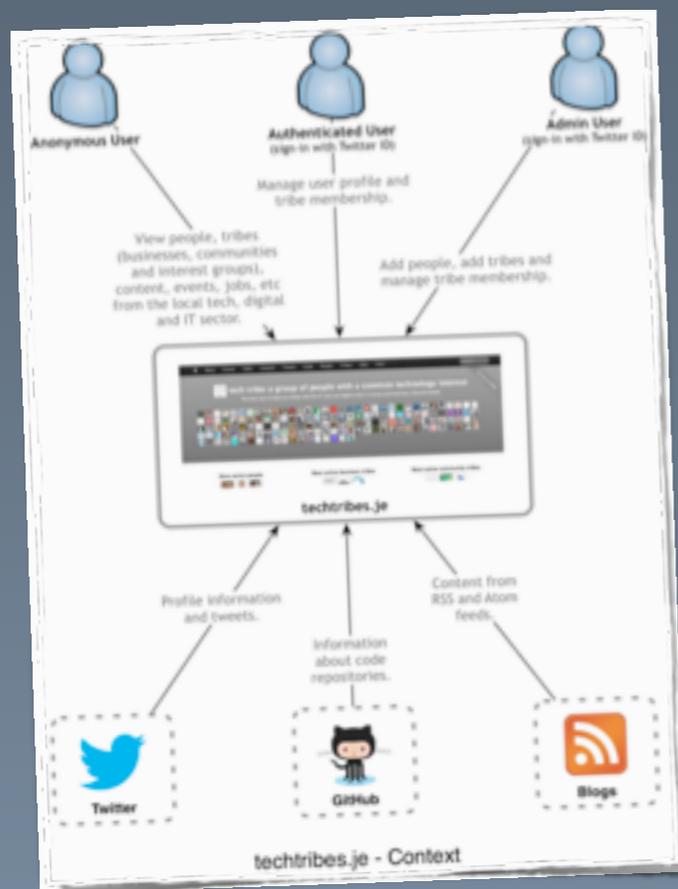
collective ownership

of the code



Pictures

are the simplest form of documentation

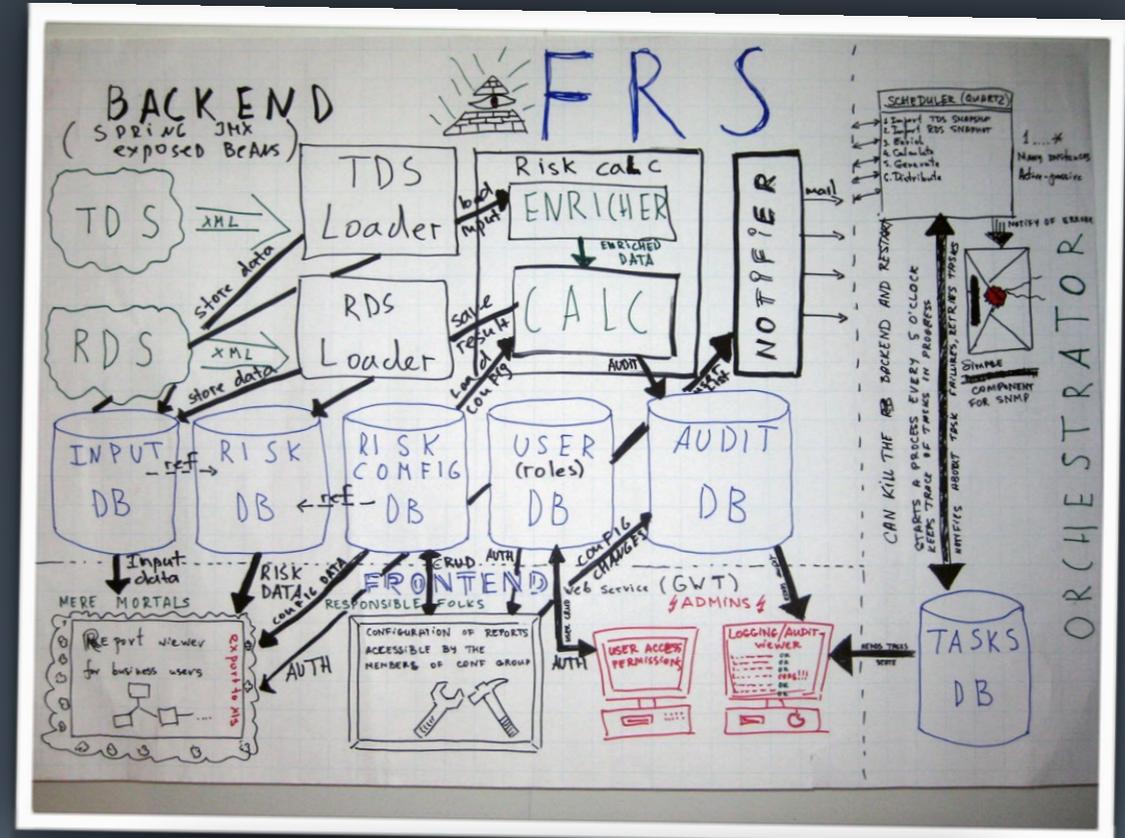
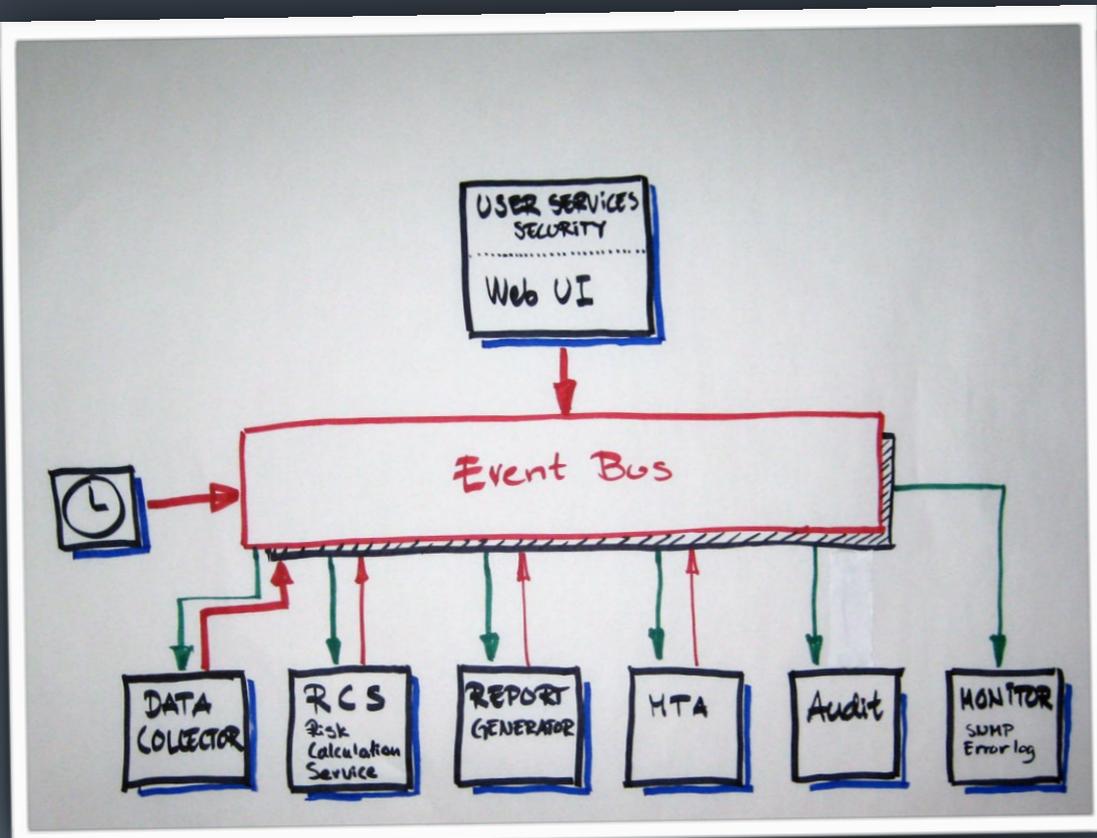


Architecture sketches

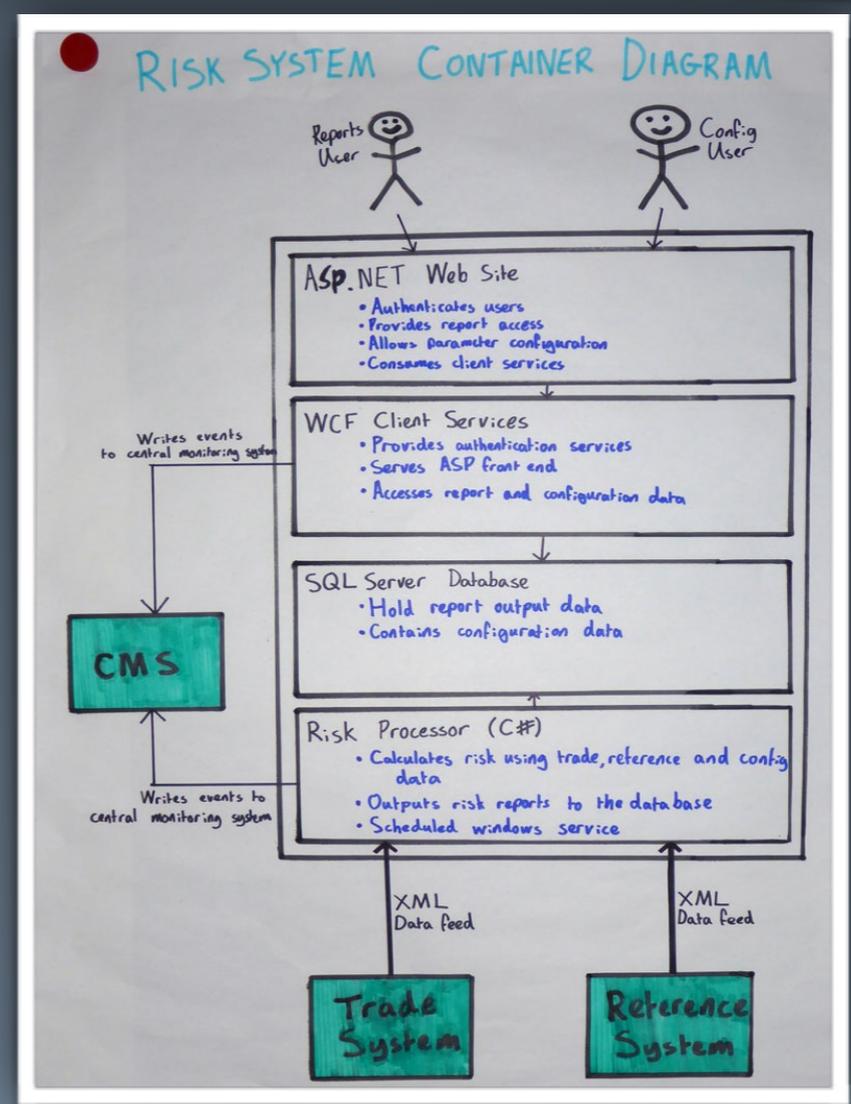
are not

comprehensive

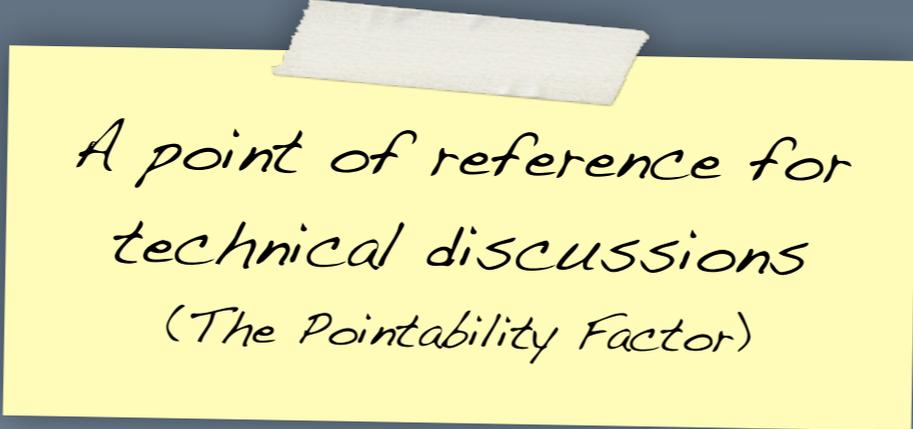
models



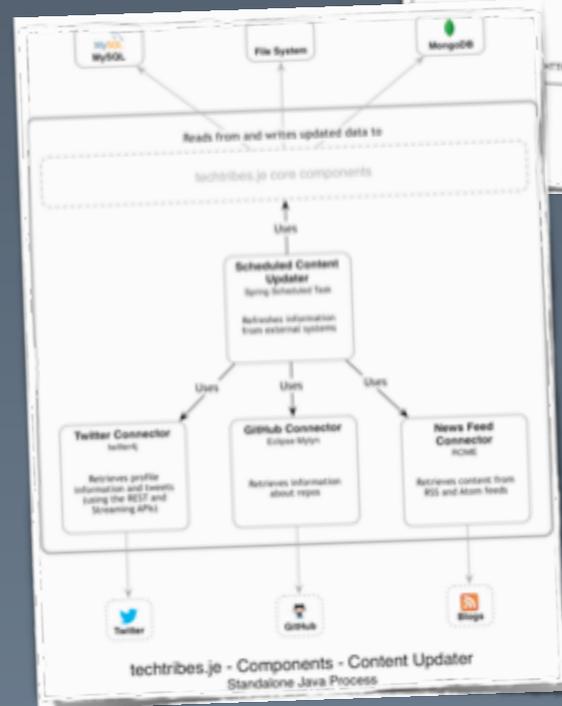
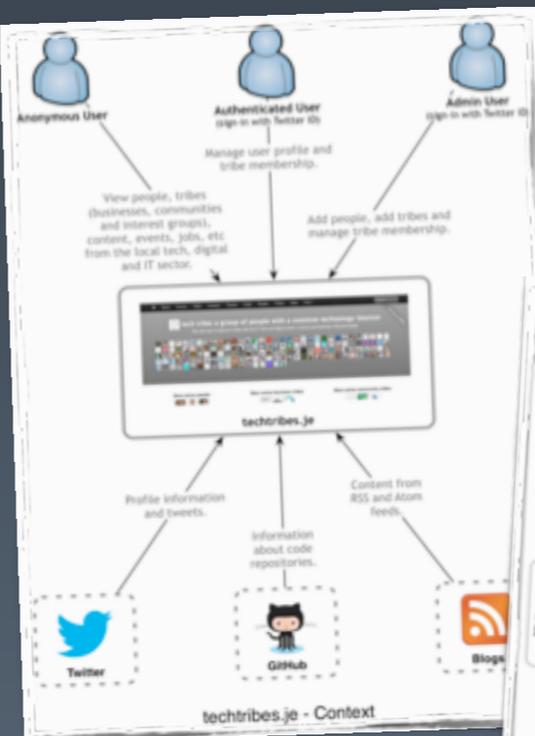
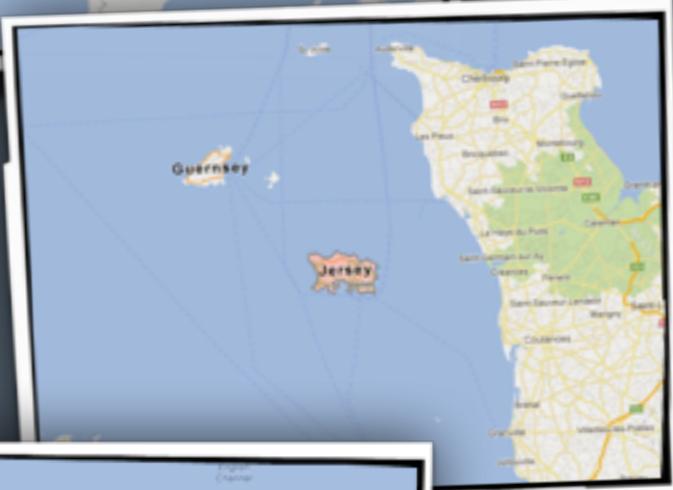
Architecture sketches are not art (although they can be!)



Leave your
sketches
on the wall



*A point of reference for
technical discussions
(The Pointability Factor)*



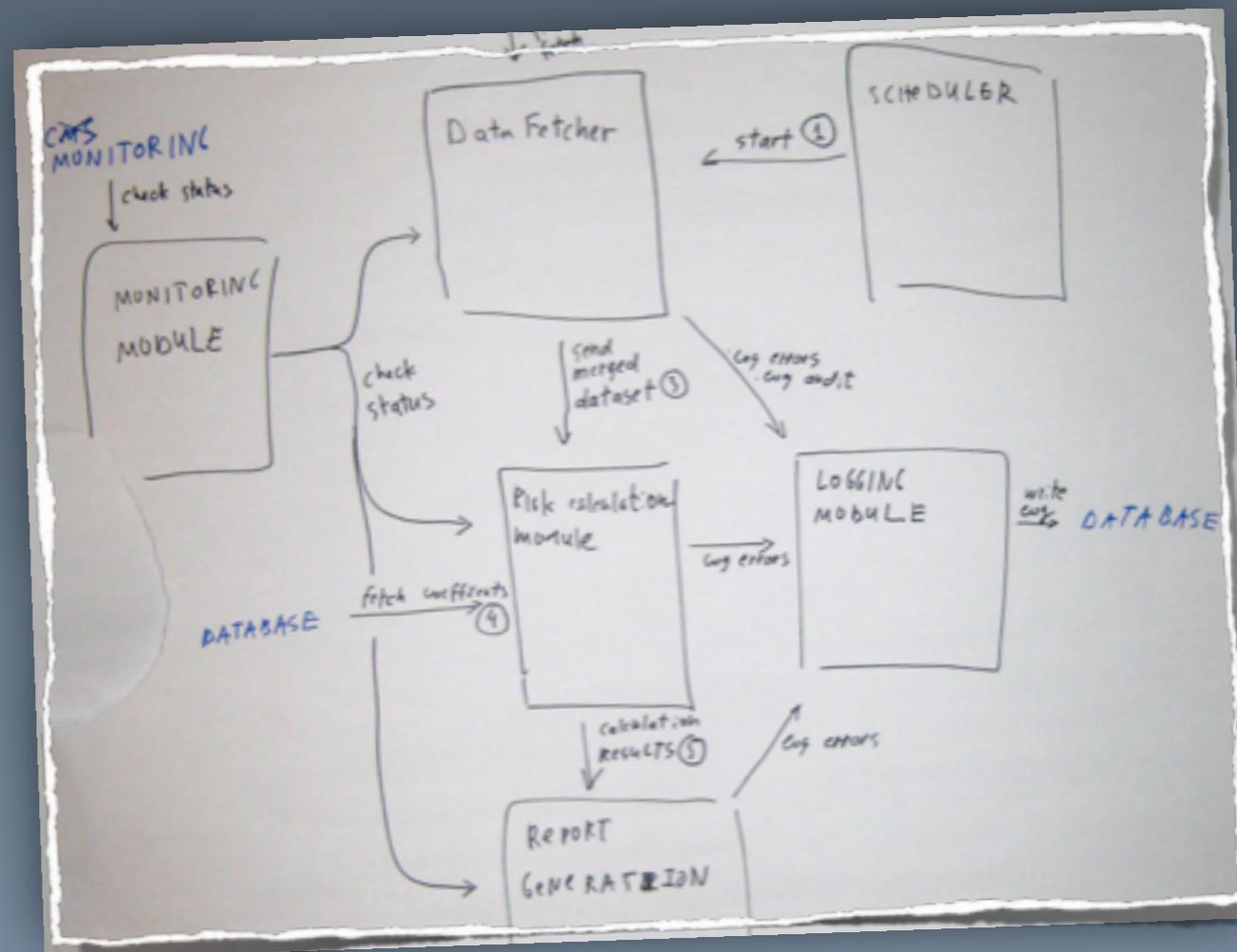
Sketches are maps that help a team navigate a complex codebase

Do whatever works for

you

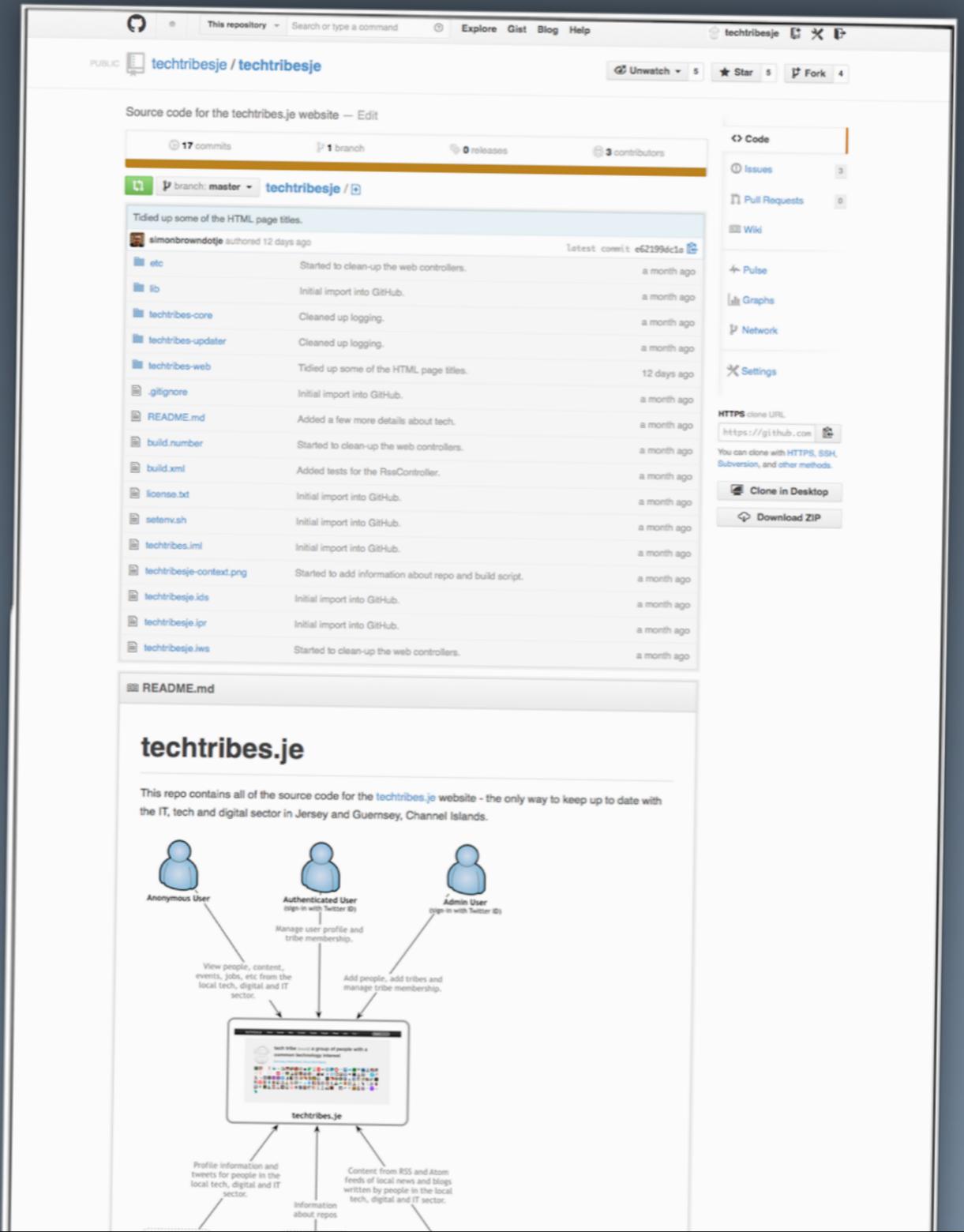
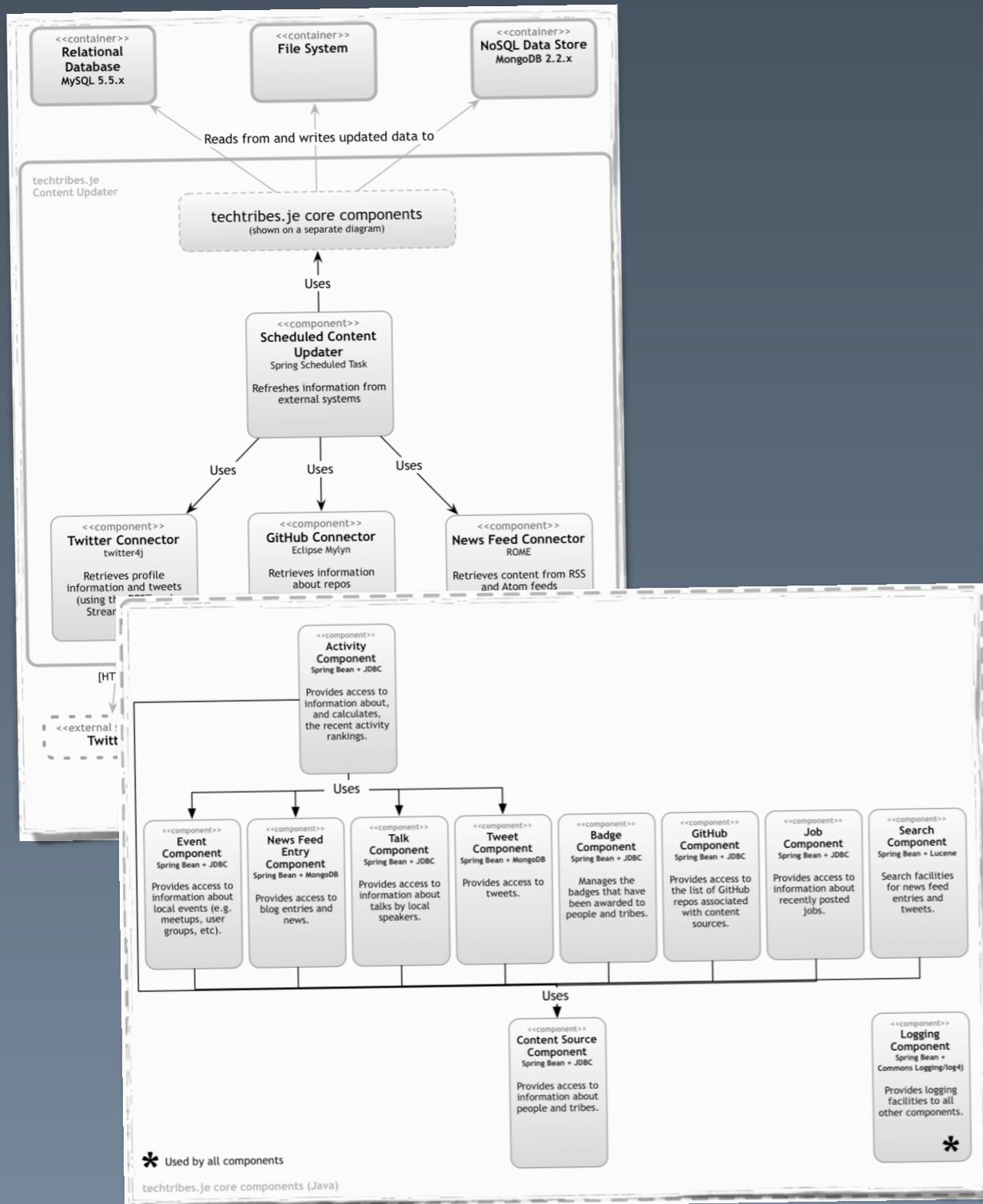
Abstraction

is about reducing detail rather than creating a different representation



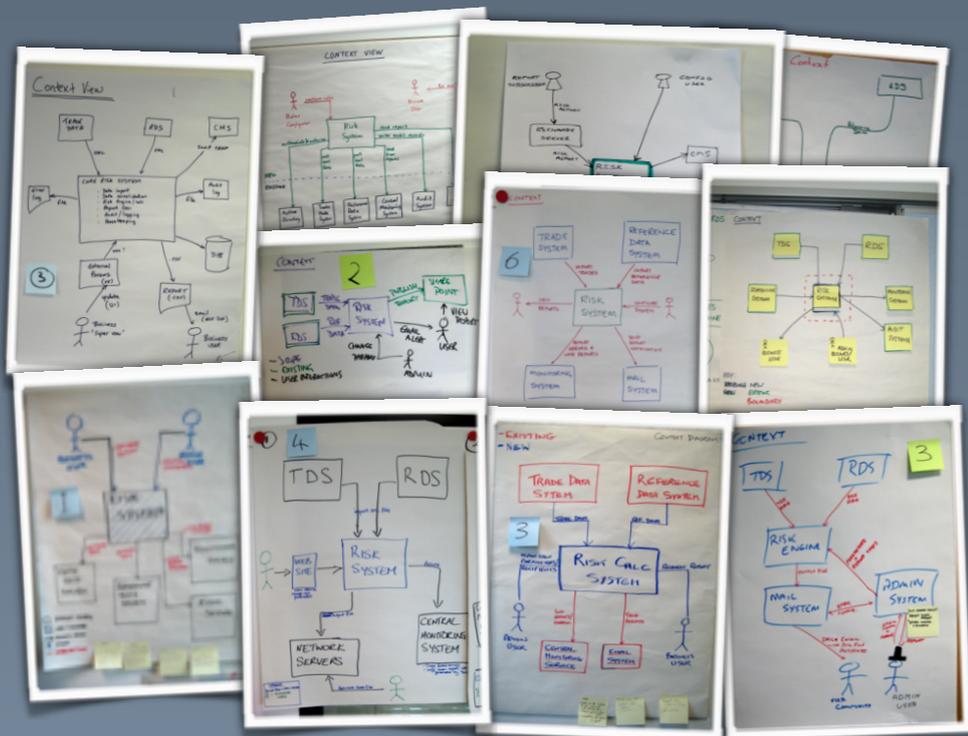
Does your code reflect the
abstractions
that you think about?

Does your code reflect the abstractions that appear on your software architecture diagrams?



Thanks

and happy sketching!



simon.brown@codingthearchitecture.com

@simonbrown on Twitter