coding {the} architecture

# The conflict between agile and architecture

*Myth or reality?*

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I help software teams understand

# software architecture, technical leadership and the balance with agility

(I code too)

Training


Book


Speaking

What is

agile?

# What is architecture?

*As a noun...*

## Structure

*The definition of something in terms of its components and interactions*

*and*

*As a verb...*

## Vision

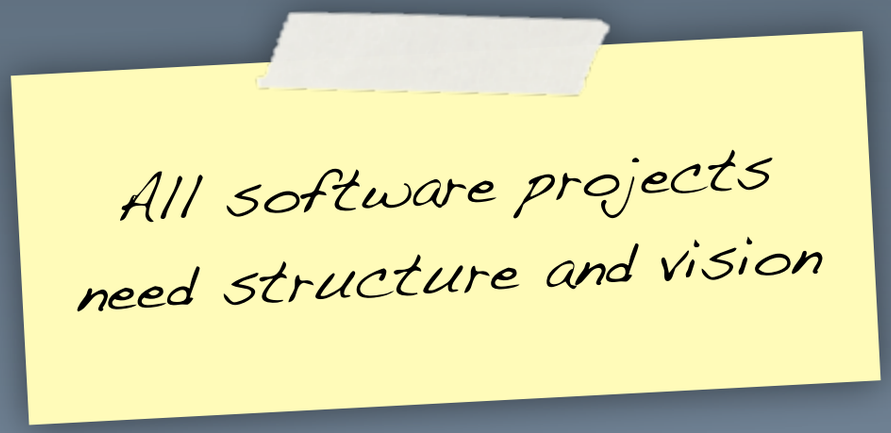
*The process of architecting, making (significant) design decisions, etc*

# The conflict between agile and architecture

*Myth or reality?*

# Myth

There is no conflict between agile and architecture



# 1. A conflict in team structure

vs

Dedicated
software architect

Single point of responsibility for the technical aspects of the software project

Everybody is a
software architect

Joint responsibility for the technical aspects of the software project

Big up front design

and analysis paralysis

Waterfall

UML

I’m a

software

architect

Ivory Tower

PowerPoint Architect

Architecture Astronaut

# Software development is not a relay sport


AaaS ... architecture as a service

# Architects?

We don't need no stinkin’ architects!


Small teams of generalising specialists, everybody does everything

With agile, there is often a perception that you must have self-organising teams

# 2. A conflict in process


VS

```
/// <summary>
/// Represents the behaviour behind the ...
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public class SomeWizard : AbstractWizard
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    private DomainObject _object;
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    public SomeWizard()
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    ...

}
```

## Big up front design

Requirements capture, analysis and design complete before coding starts

## Evolutionary architecture

The architecture evolves secondary to the value created by early regular releases of working software

The conflict relates to the desired

# approach

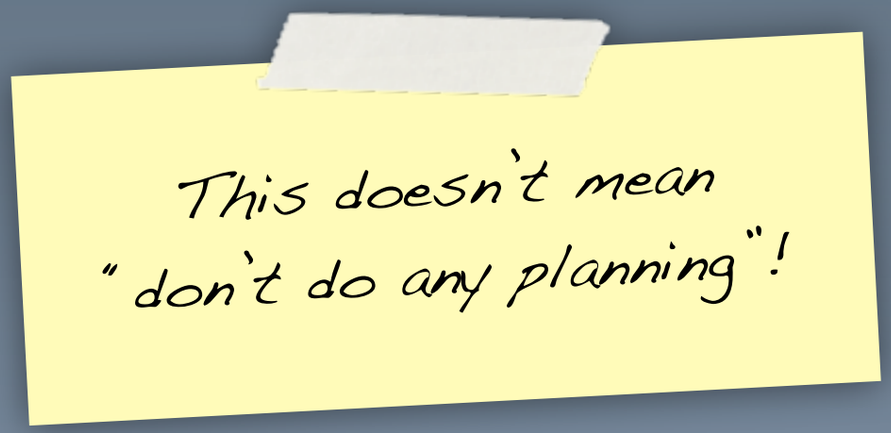
Moving fast, embracing change, delivering value early, getting feedback

vs

Understanding everything up front, defining a blueprint for the team to "follow"

# Responding to change over following a plan

Manifesto for Agile Software Development, 2001



Modern software development teams often seem afraid of doing

analysis

No

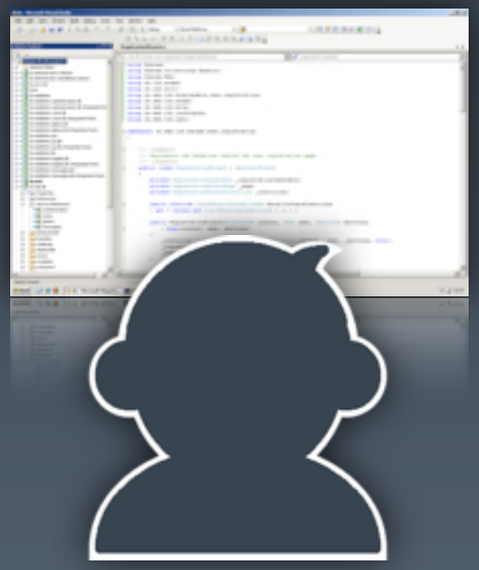
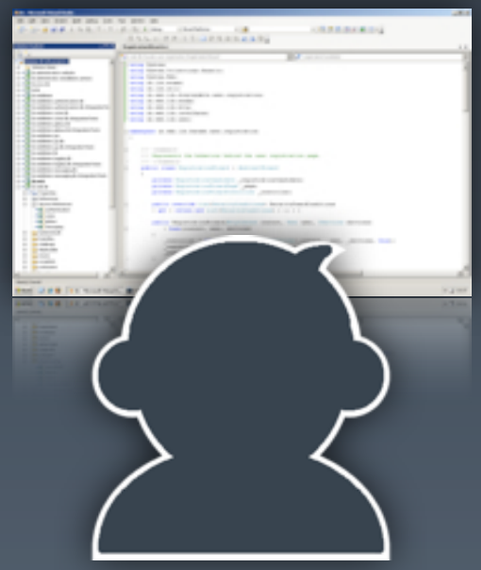
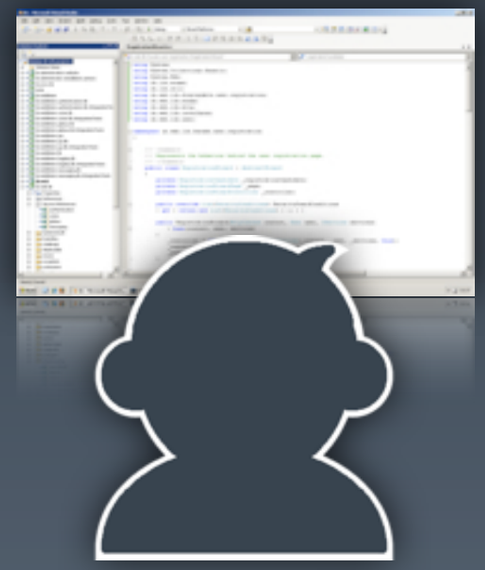
design up front

We don't need
software architecture;

we do TDD

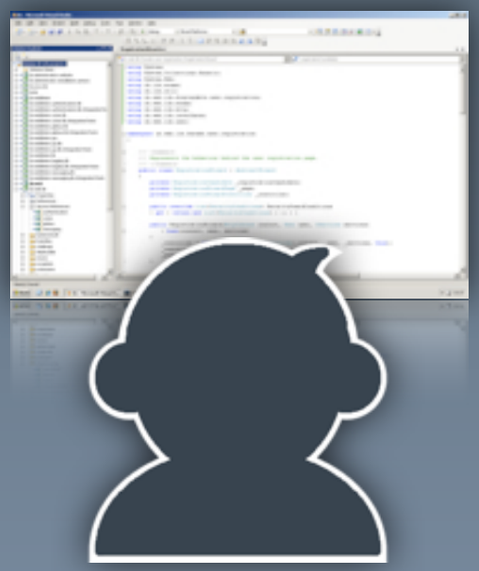
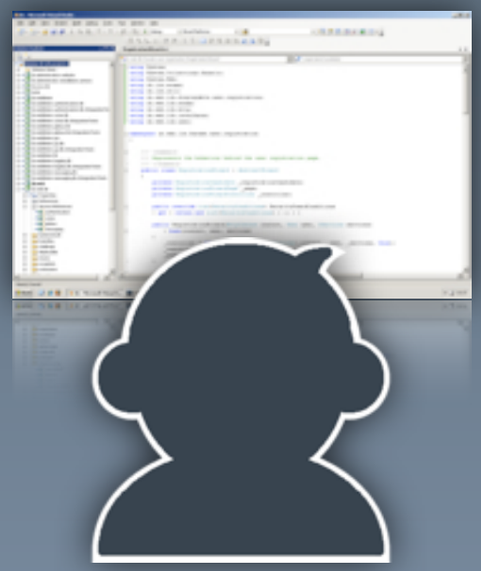
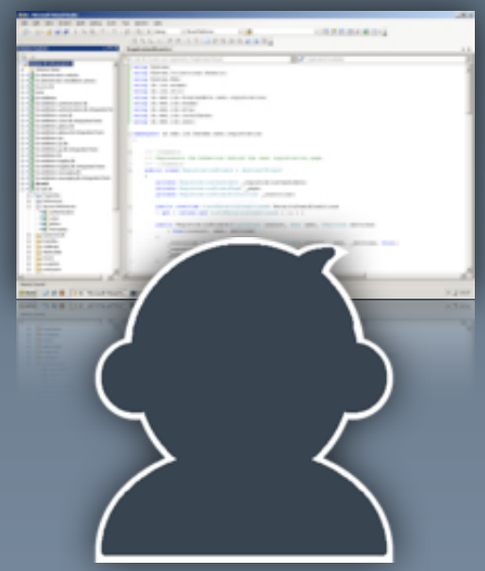
*Agile* software team

The result of the conflicts?

# Chaos!

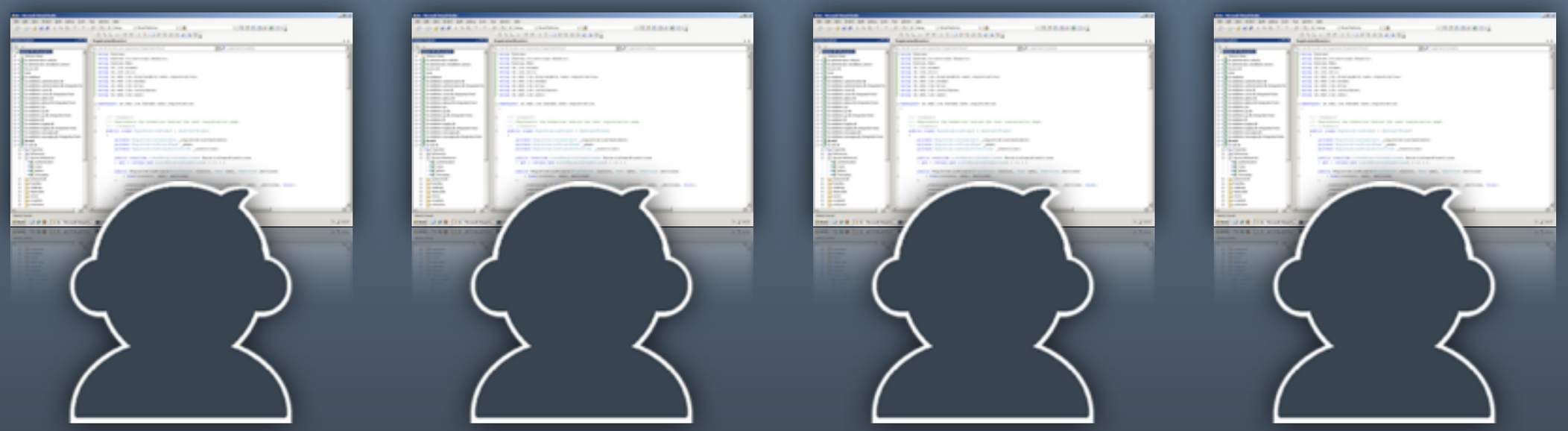
Does the team understand what they are building and how they are building it?

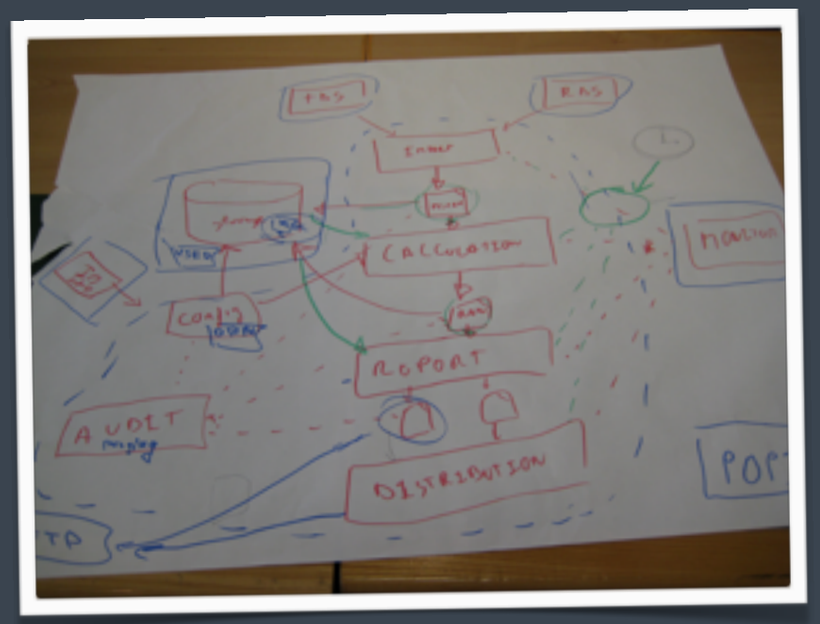





No defined structure,
inconsistent approaches,
big ball of mud,
spaghetti code, ...
STOP
Slow, insecure, unstable, unmaintainable,
hard to deploy, hard to change,
over time, over budget, ...


Shared vision of

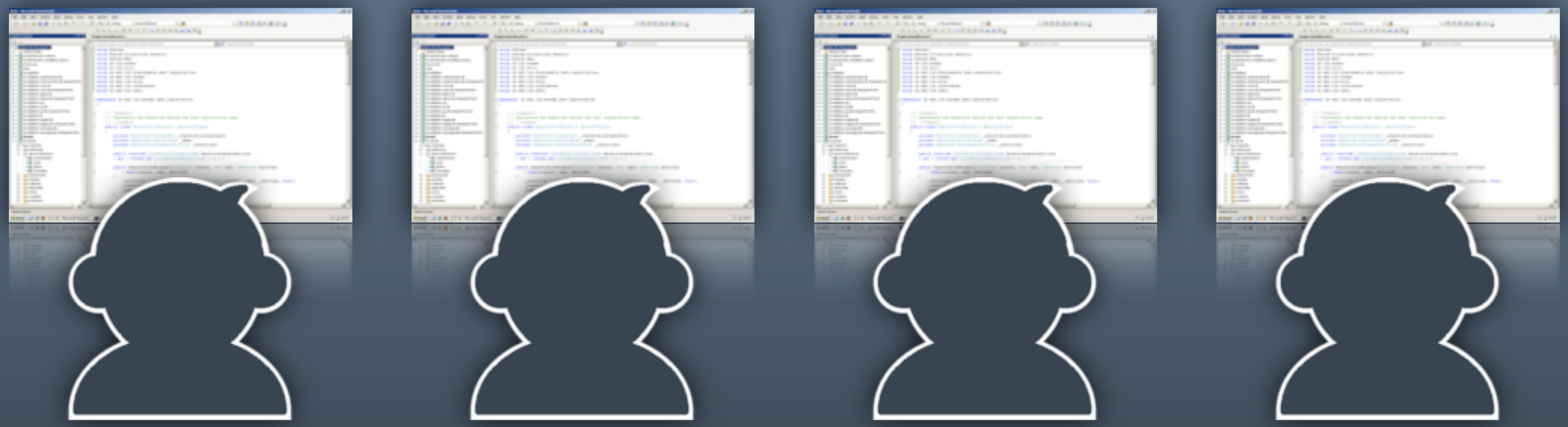
# TL; DR






Shared vision of

# WTF?!



# Software architecture in the 21st century

Let's agree
on some things

No defined structure,
inconsistent approaches,
big ball of mud,
spaghetti code, ...

Let's make the implicit,
explicit

# STOP

Slow, insecure, unstable, unmaintainable,
hard to deploy, hard to change,
over time, over budget, ...

Put some boundaries
and guidelines in place

Doe g it?

# 1. A conflict in team structure

vs

Dedicated
software architect

Single point of responsibility for the technical aspects of the software project

Everybody is a
software architect

Joint responsibility for the technical aspects of the software project

# Every software development team needs a master builder

Generalising

Specialist

## Depth

Deep hands-on technology skills and knowledge

Good software architects are master-builders

## Breadth

Broad knowledge of patterns, designs, approaches, technologies, non-functional requirements

...

Awareness of options and trade-offs

# The software architecture role

Dedicated
software architect

Single point of responsibility for the technical aspects of the software project

From chaos to self-organising

*Elastic Leadership* (Roy Osherove)
Chaos (command and control),
learning (coaching),
self-organising (facilitation)

Everybody is a
software architect

Joint responsibility for the technical aspects of the software project

# 2. A conflict in process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## Big up front design

Requirements capture, analysis and design complete before coding starts

## Evolutionary architecture

The architecture evolves secondary to the value created by early regular releases of working software

# How much up front design should you do?

*Big design up front?*

*Emergent design?*
*(or none, depending on your viewpoint!)*

Waterfall

RUP®
Rational Unified Process®

Extreme Programming

DSDM Atern

ScrumAlliance®
transforming the world of work

*Something in between?*

You should do

# “just enough”

*Isn't agile about being flexible and adapting to the context? :-)*

# What's important?

Significant decisions

Low-level details

Understanding the significant elements and how they fit together

Class and sequence diagrams covering every user story

Understanding how security will work

Defining the length of all database columns

*Just enough up front design to*

# understand the structure

of the software and

# create a shared vision

for the team

You need to

# identify and mitigate your highest priority risks

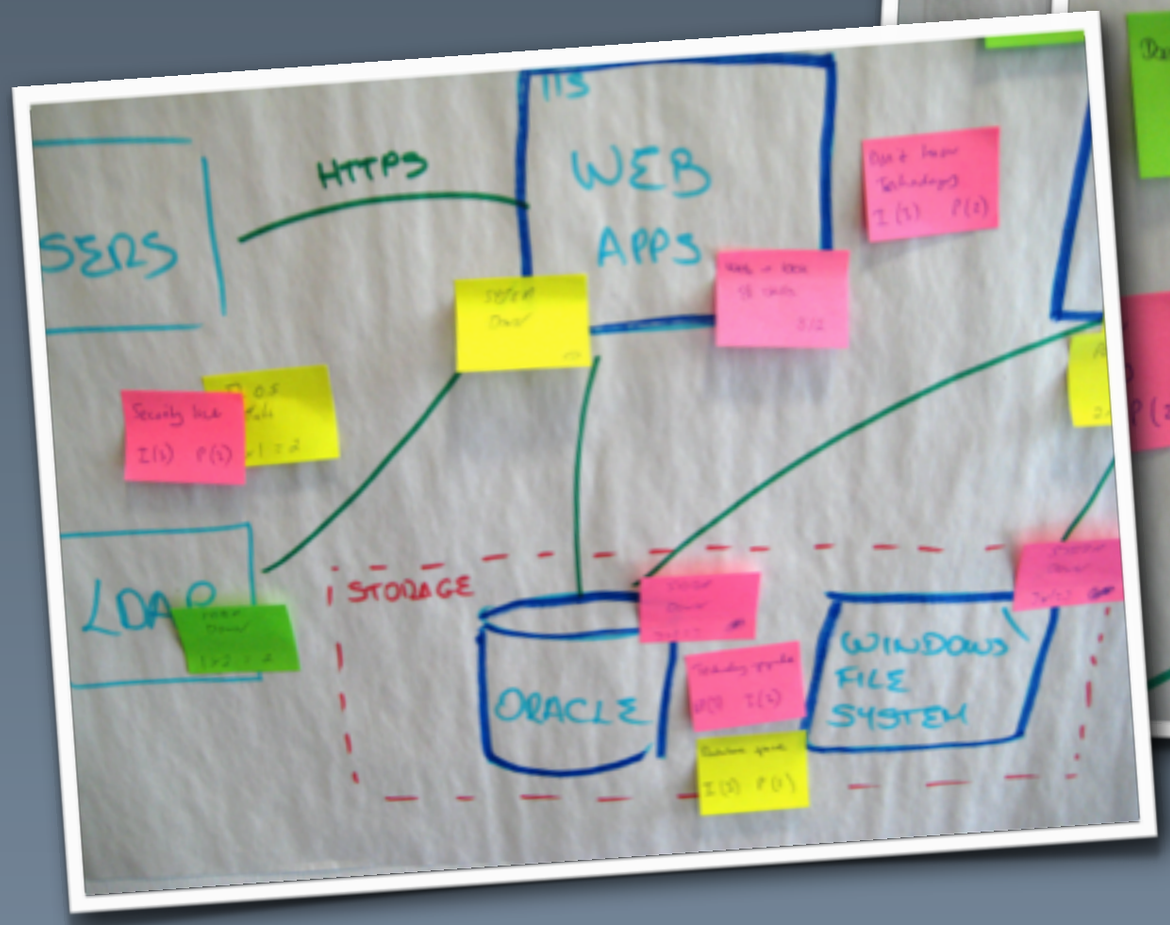
Things that will cause your project to fail or you to be fired!

Agile software projects do have risks, right? :-)

# Probability

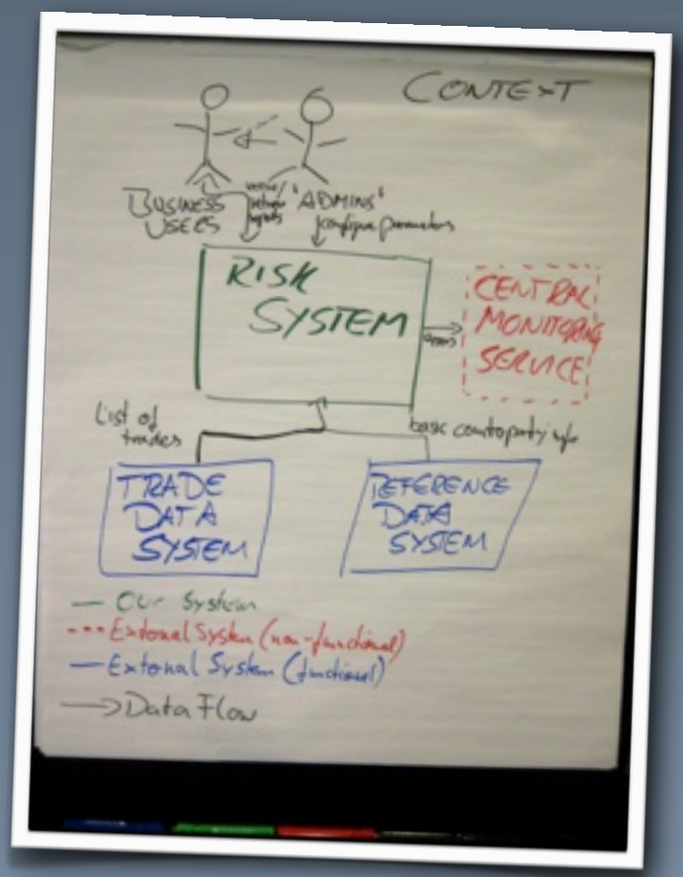
| Impact | Low (1) | Medium (2) | High (3) |
|---|---|---|---|
| Low (1) | 1 | 2 | 3 |
| Medium (2) | 2 | 4 | 6 |
| High (3) | 3 | 6 | 9 |


# Risk-storming


A collaborative and visual technique for identifying risk






# Effective software architecture sketches

The role



“just enough”
software architecture

Understand how the significant elements fit together

Identify and mitigate the key risks

Provide firm foundations and a vision to move forward


The process

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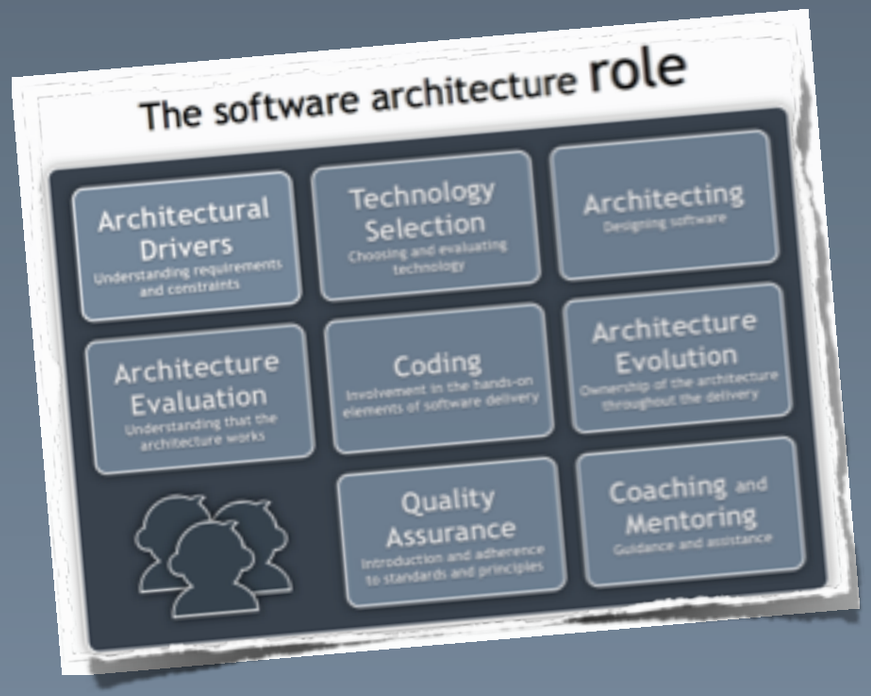
Is a collaborative and lightweight approach to software architecture

the **missing piece**

of the **jigsaw**?



# Many software development teams don't understand or practice "architecture"

If you're a developer who wants to contribute to the big picture – the high-level design of the systems you work on – you need to be able to communicate your ideas clearly for your peers to understand. In my experience, with myself included, developers are inherently lacking in this skill.

http://www.ntcoding.blogspot.co.uk/2013/02/improve-your-communication-skills-with.html

# We have a duty to *educate*

This is about scaling teams...

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