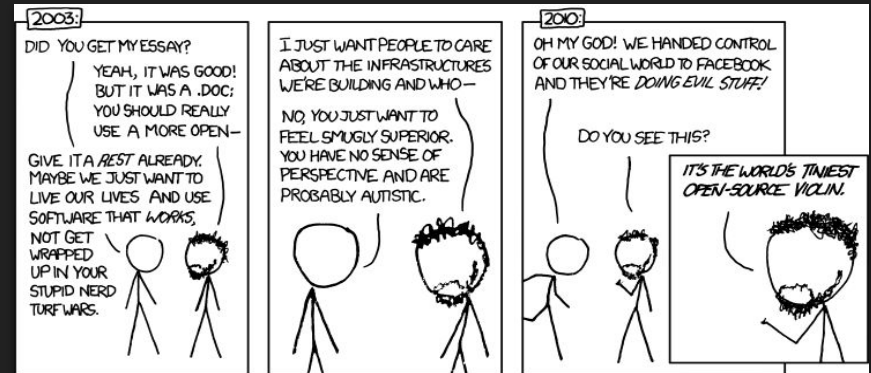# Software Architecture

By Austin Schuh (971), Wes Hardaker (1678), Marshall Massengil (900), Alex Y (254)

What is software architecture?

- Outcomes and stakeholders

  - Defining success criteria

  - Not just limited to "software people"...

- Higher level structure of a project

  - Not just robot projects

  - People, Process, & Technology

https://xkcd.com/743/

Over Architecting

"I would not give a fig for the simplicity

on this side of complexity, but I would

give my life for the simplicity on the

other side of complexity." ~ Oliver

Wendell Holmes

Over Architecting

- Good architecture gets out of the way

- Scope, time, cost. Pick 2

  - Rule of pi

- What are you not solving?

 - Simple robot, simple code

Over Architecting

- 80 : 20 rule. You should be 80% planned. 20% chaos.

- Simple works for processes too. Bug and work tracking.

- YAGNI

  - Uncertainty in requirements. Robots change (and should

    change)!

- Empowerment.

Managing a project for success

- Management Structure

  - Students

  - Mentor(s)

- Task breakdown

  - How will you meet criteria

    for success?

- Deadlines

  - Prioritization

- Inter-team and inter-project

  communication

  - Progress and goals

- Future use

  - Documentation

Who are you writing it for?

- Can they use it without asking questions?

- Are they happy with the results?

- **<u>ALL</u>** of them?
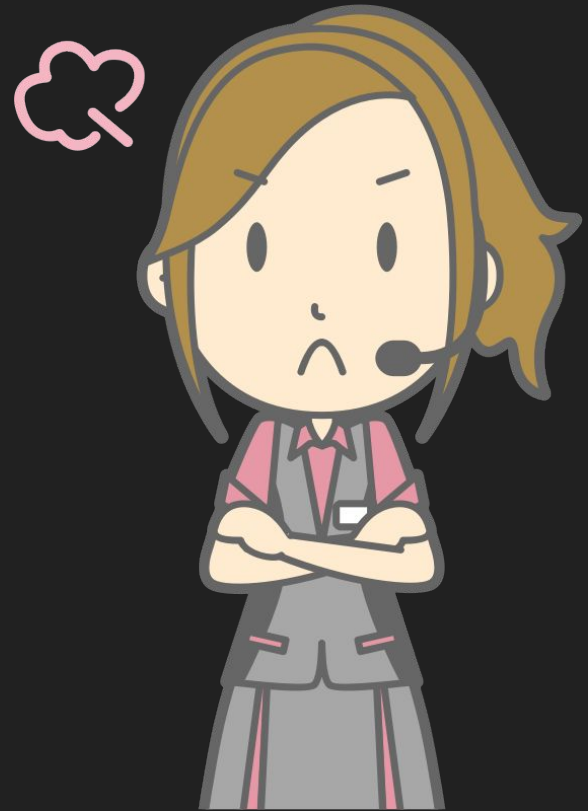
How are you going to measure success?

- Measuring happiness alone doesn't work!

- Measure your success

    - Measure when things go right

        - (Robots score, data entry was accurate, …)

    - Measure when things go wrong

        - (Robot hit a wall, data transfer corrupted records)

-
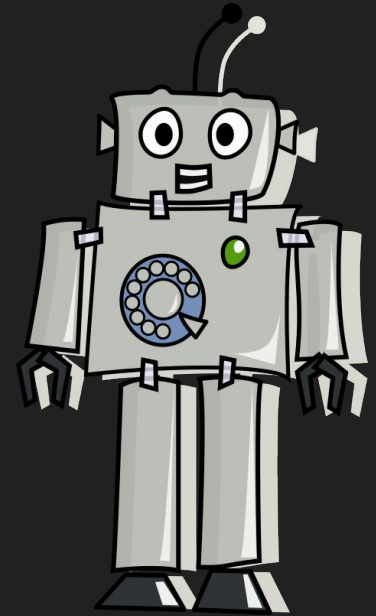
Write reusable Code

- Don't rewrite everything every year

- Compartmentalize and modularize your code

    - What's the purpose of each code group?

    - What are the interfaces to your code?

- But don't over-architect!!!
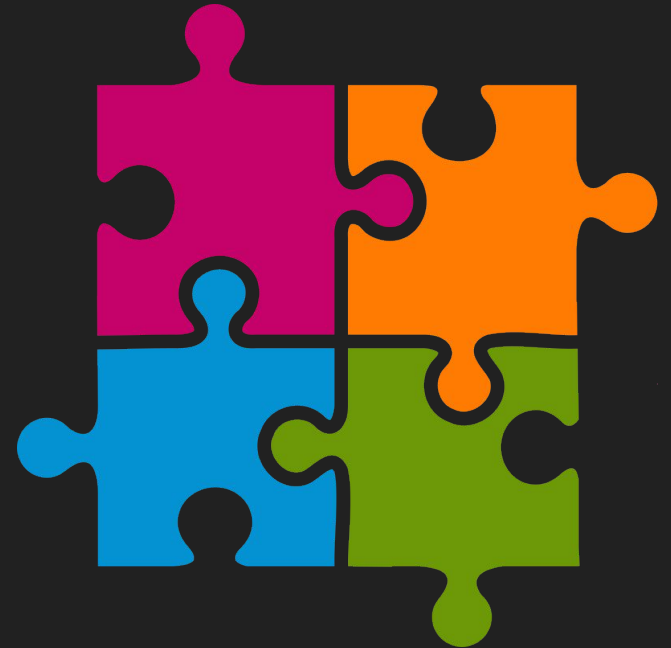
Closing/Recap

- Have a software architecture

- Don't over-architect

- Define what success is before you start

- Manage your project and team for success

- Know that your code will work

- Iterate, iterate, iterate (fail faster)