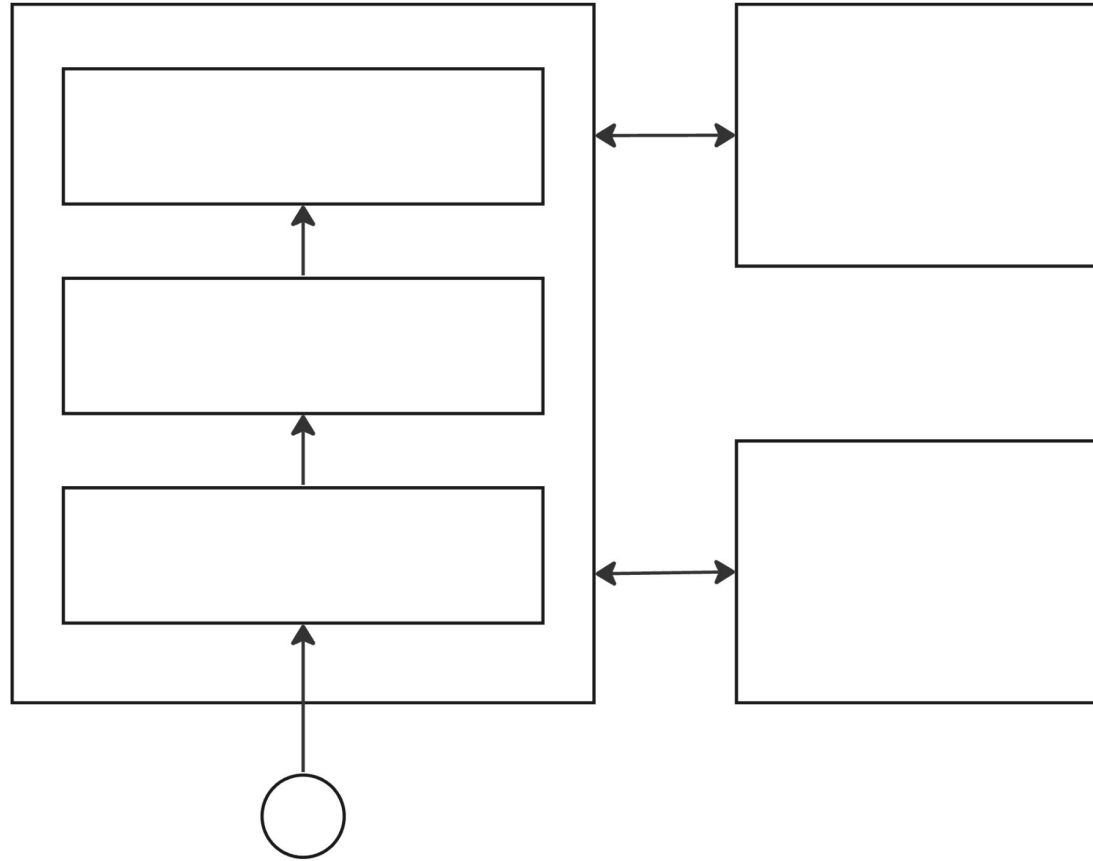
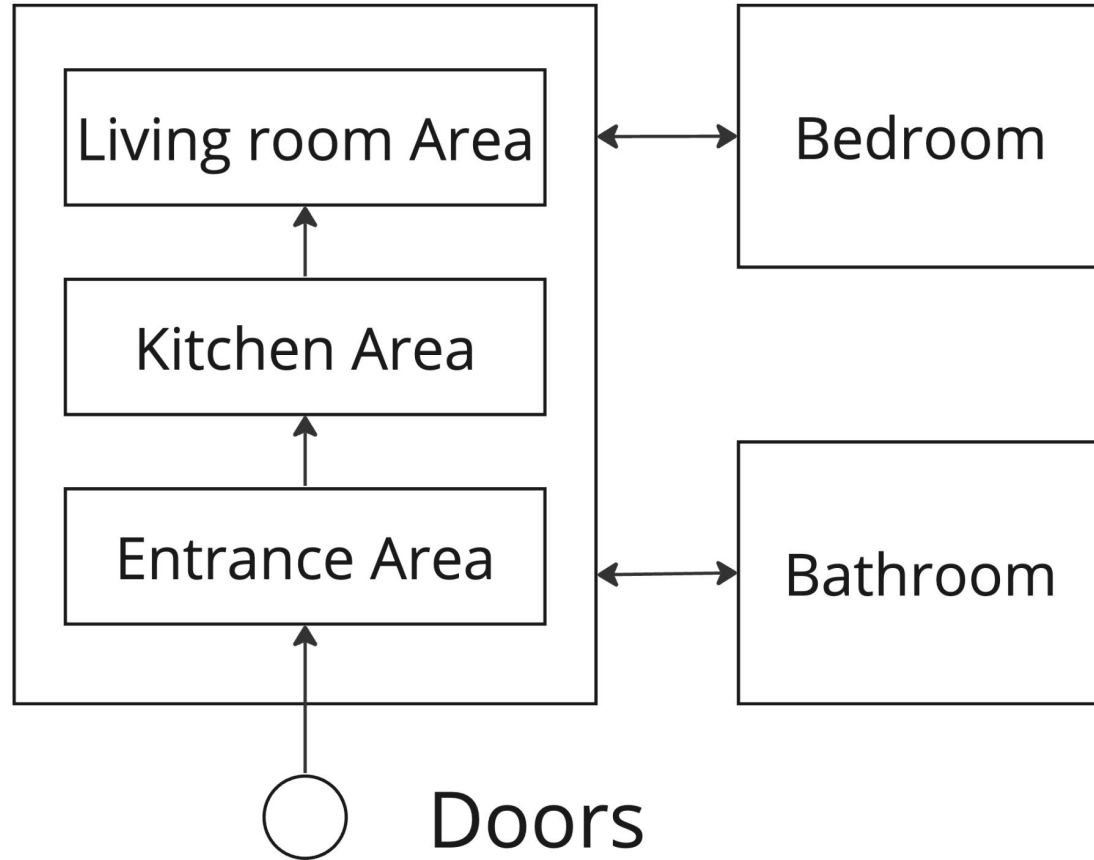


Architecture in Games Development

Szymon Sirocki







Pawn Stars (2009)

History, A+E

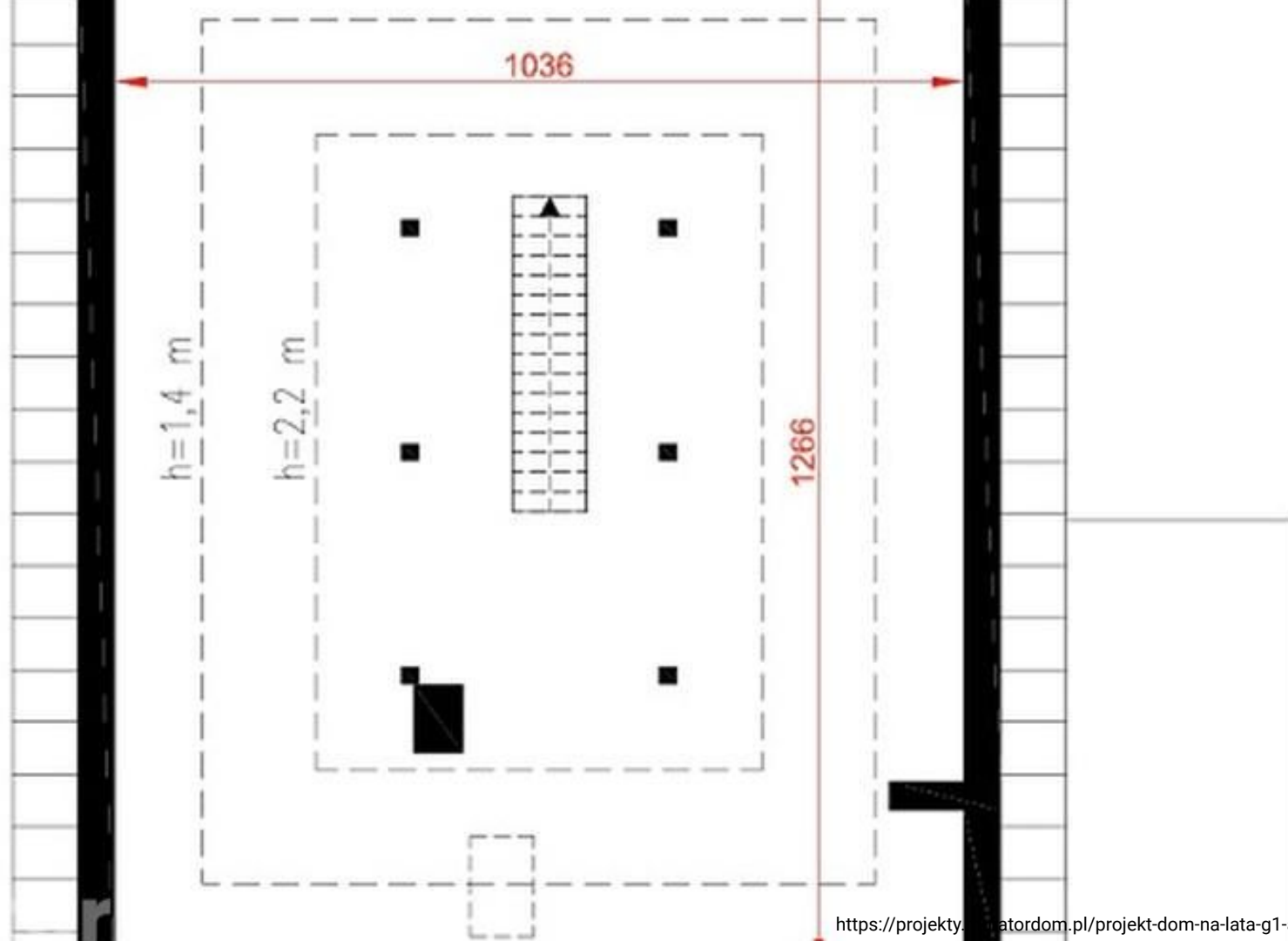


murator

<https://projekty.murator.pl/projekt-dom-na-lata-g1-a116g1-32591>







What is **architecture**, actually?

~~Why?~~

~ % whoami_



Szymon Sirocki

friends call me **Simon**

11 years in game dev

Game, Tools, Back-end, IT, Architecture

Developer, Leader, Architect, ex-CTO



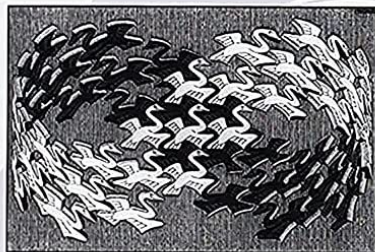
The Hobbit: An Unexpected
Journey (2012)

Warner Bros; NLC; MGM

Design Patterns

Elements of Reusable Object-Oriented Software

Erich Gamma
Richard Helm
Ralph Johnson
John Vlissides



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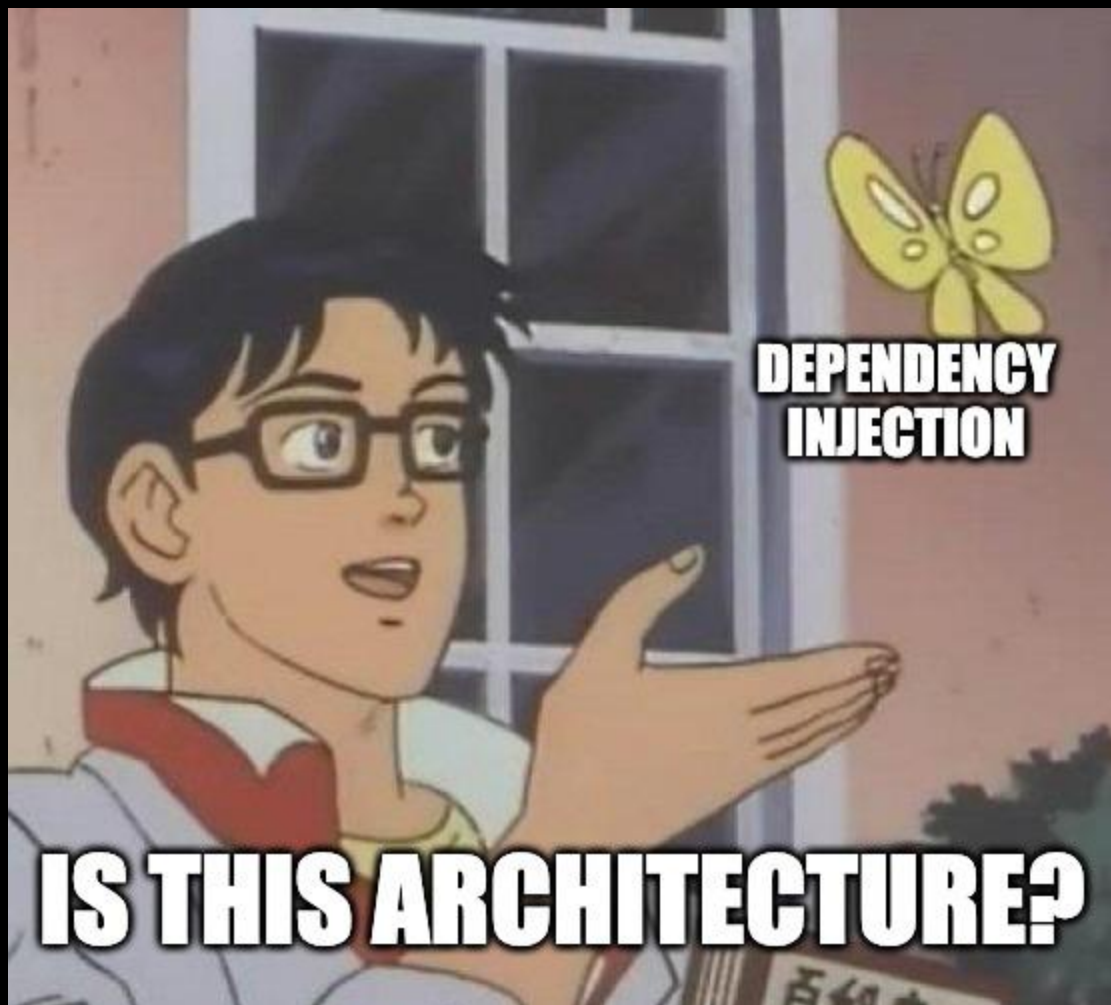
Foreword by Grady Booch



ADDISON-WESLEY PROFESSIONAL COMPUTING SERIES

Singletons

- There is only one instance of itself.*
- The time of creation is unknown.



太陽の勇者ファイバード(1991)
s1 e3

Sunrise; ANN

Dependency injection
is a \$ 25 term
for a 5 cents idea

James Shore



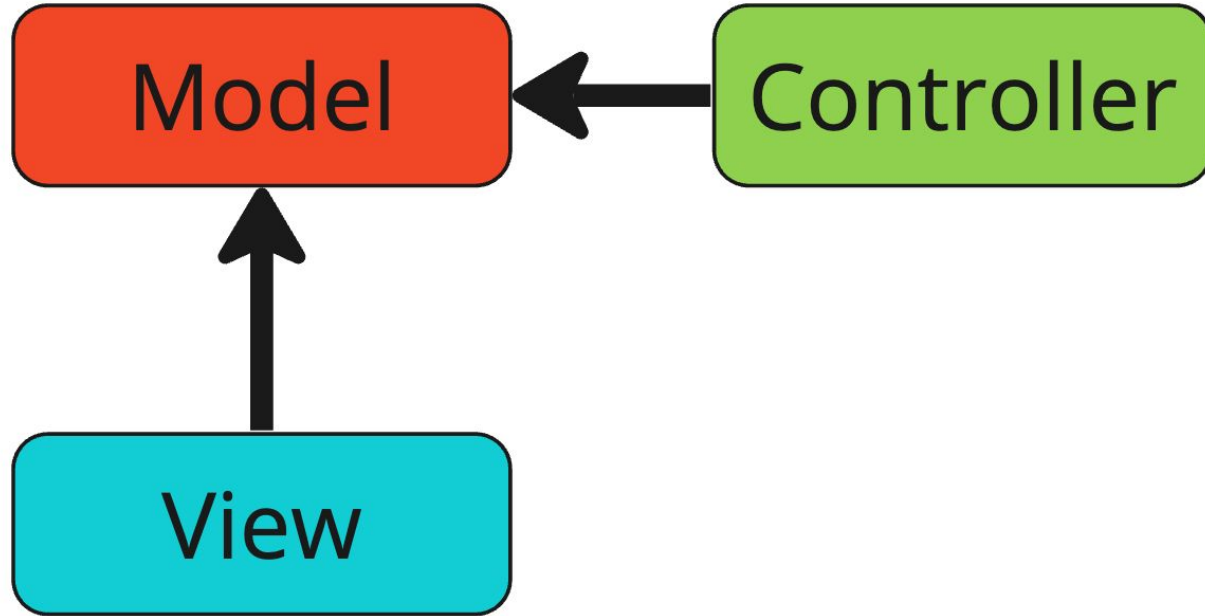


Implementation Pattern



Architectural Pattern

MVC



MVC

MVP

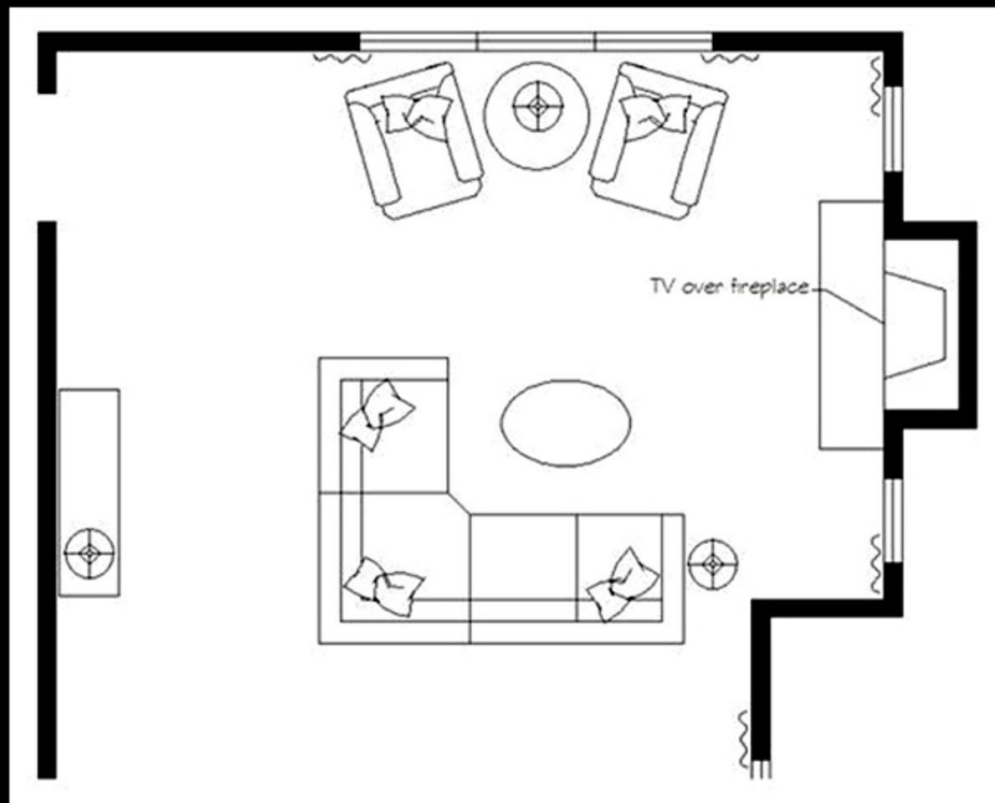
MVVM

**They're the same
picture.**

ECS

- Entities are represented by ID
 - Entities are assigned components
 - Systems work on components
-
- Like MVC relates to view - ECS relates to entities in gameplay.

We are arriving somewhere





Welcome To
Architectural Styles

YOU'LL BE A FAN FOR LIFE

Big ball of mud

- Adding another keyword just blurs the picture.
- Controller and Controller mean different things based on context.
- There is a Manager of Managers.
- But only some of them.
- Improvements are applied in a patchwork manner.
- No precise flow of control.

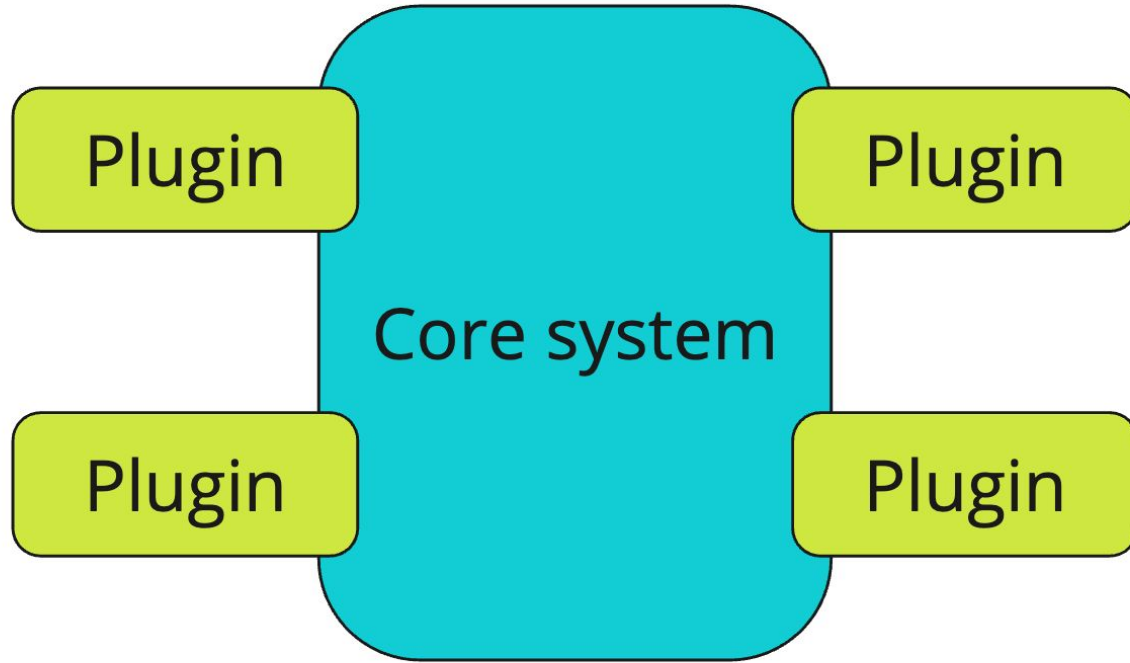
An architectural style is a
**coordinated set of architectural
constraints** that restricts the roles
(...) of architectural elements and
the allowed relationships among
[them] (...)

Roy Thomas Fielding

Architectural Styles and the Design of Network-based Software Architectures

The holy trinity of architectural styles.

Plug-in (microkernel) architecture



Plug-in (microkernel) architecture in games

+1



-100



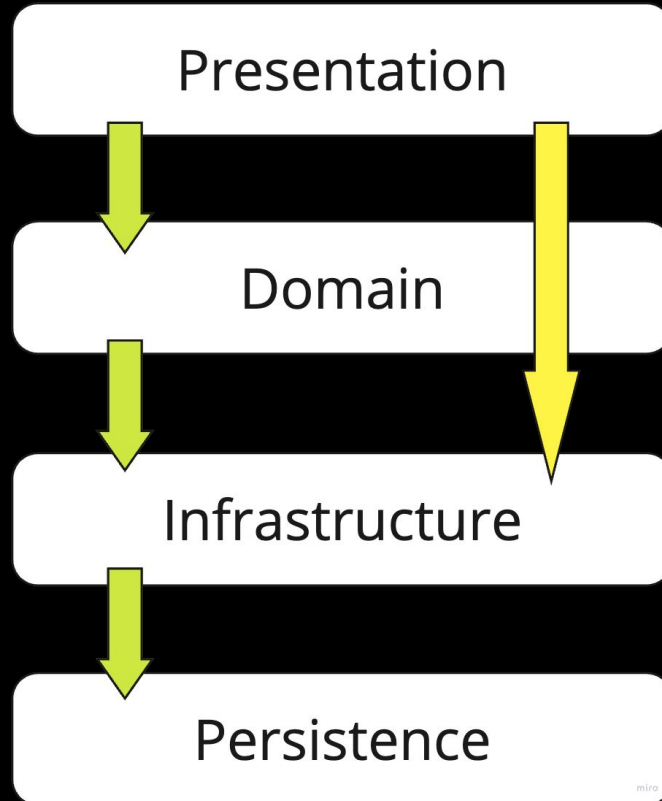
42

+5%

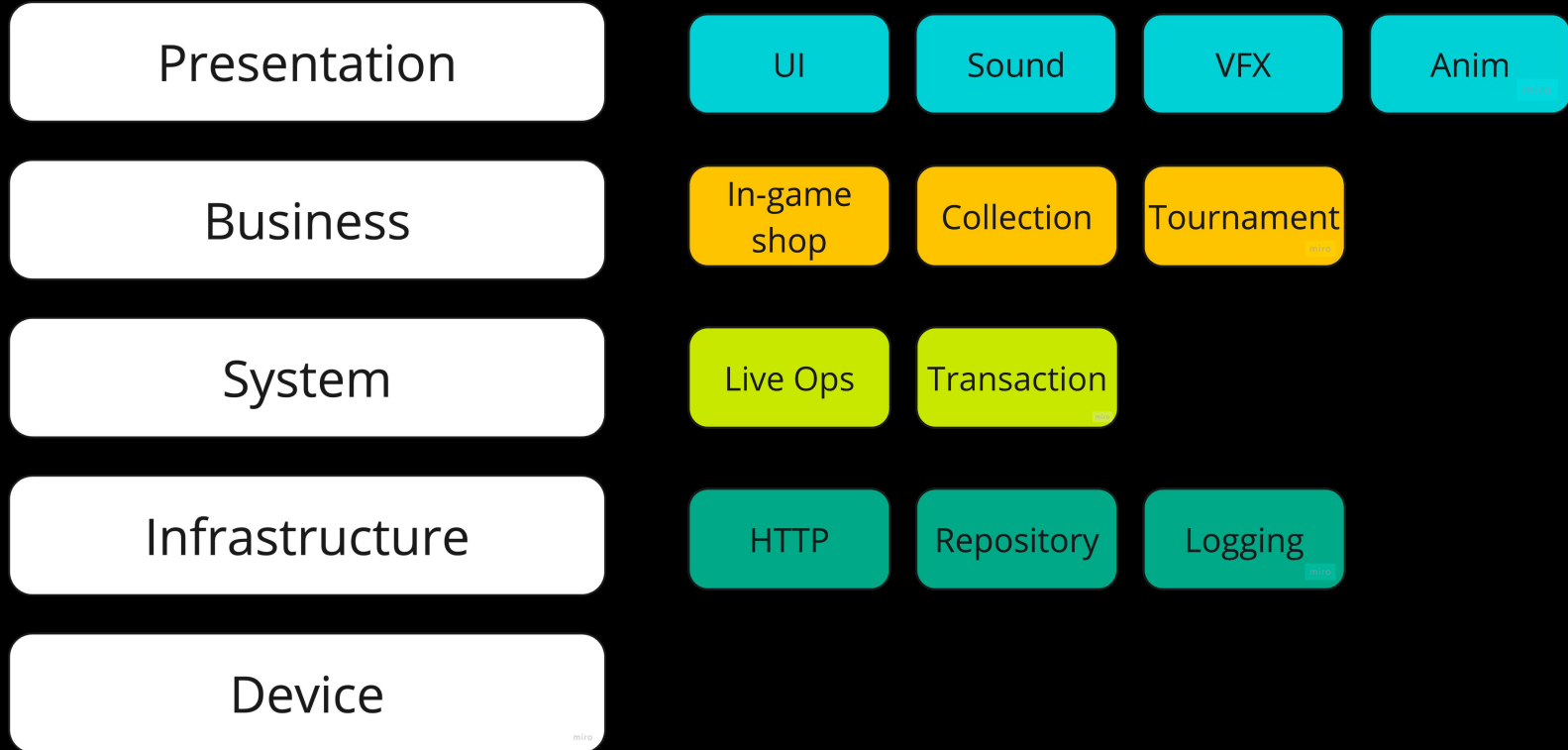


Achievement unlocked

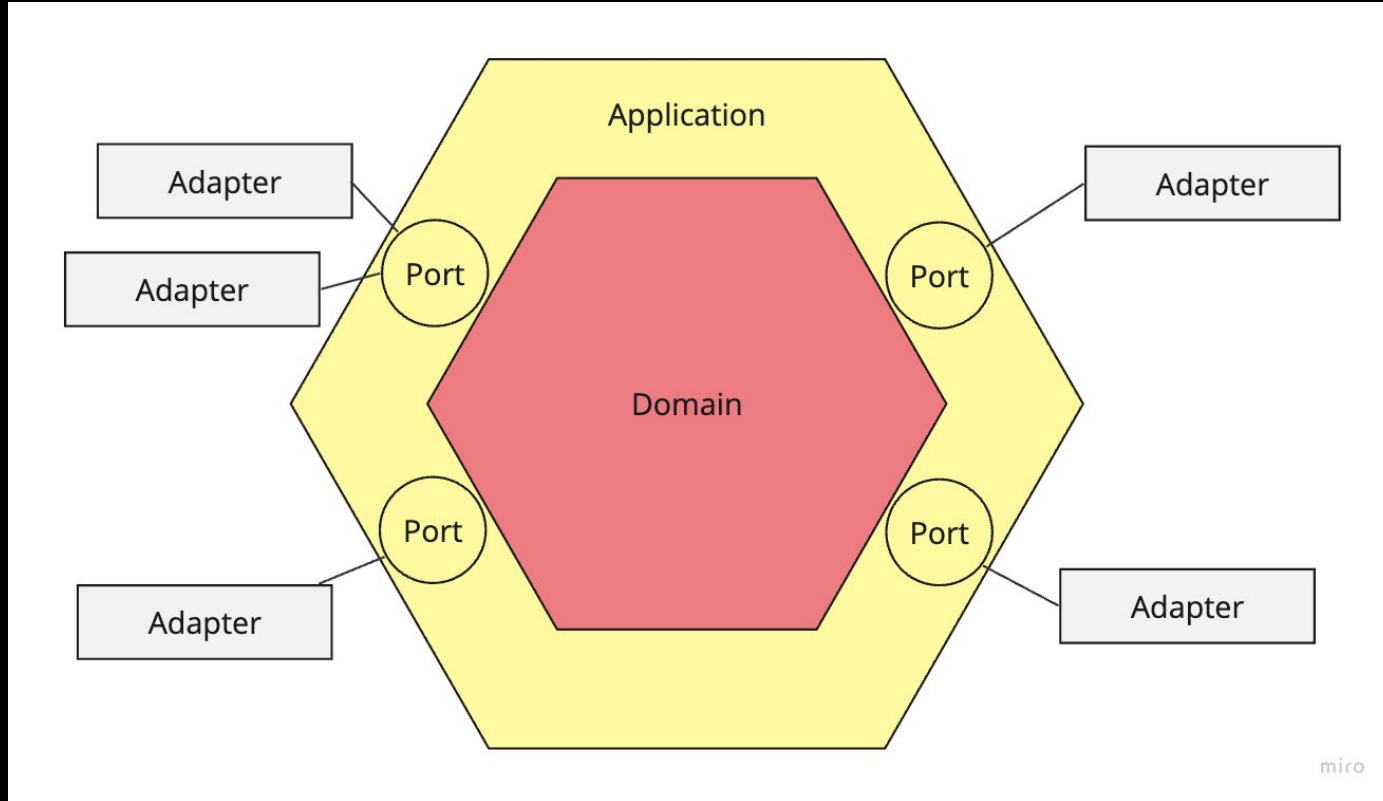
Layered architecture



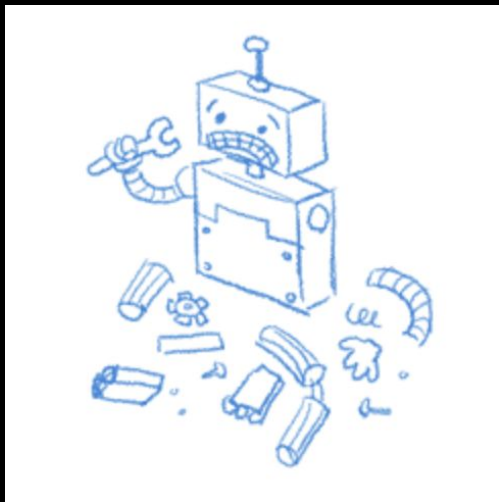
Layered architecture in games



Hexagonal architecture

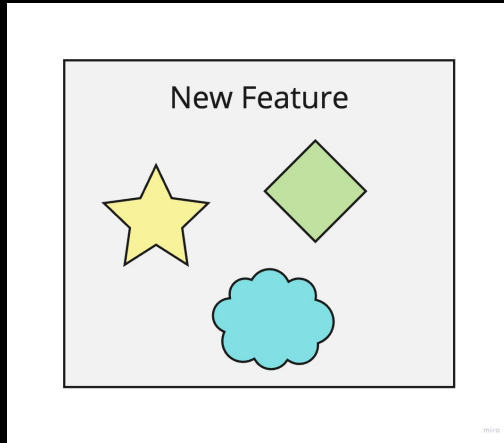


Hexagonal architecture in games



Unity

What do we do with this tools?



A vertical stack of six rounded rectangular input fields. The third field from the top contains the text "New Feature". The fifth field from the top contains the text "Another Feature?" and a small blue cloud icon. The other fields are empty.

WHAT IF I TOLD YOU

THERE'S MORE TO ARCHITECTURE

The Matrix (1989)

Warner Bros

What it means **to be an architect** (...) [is] to ride the architect elevator across many levels, **aligning organization and technology** (...)

*Gregor Hohpe
The Software Architect Elevator*

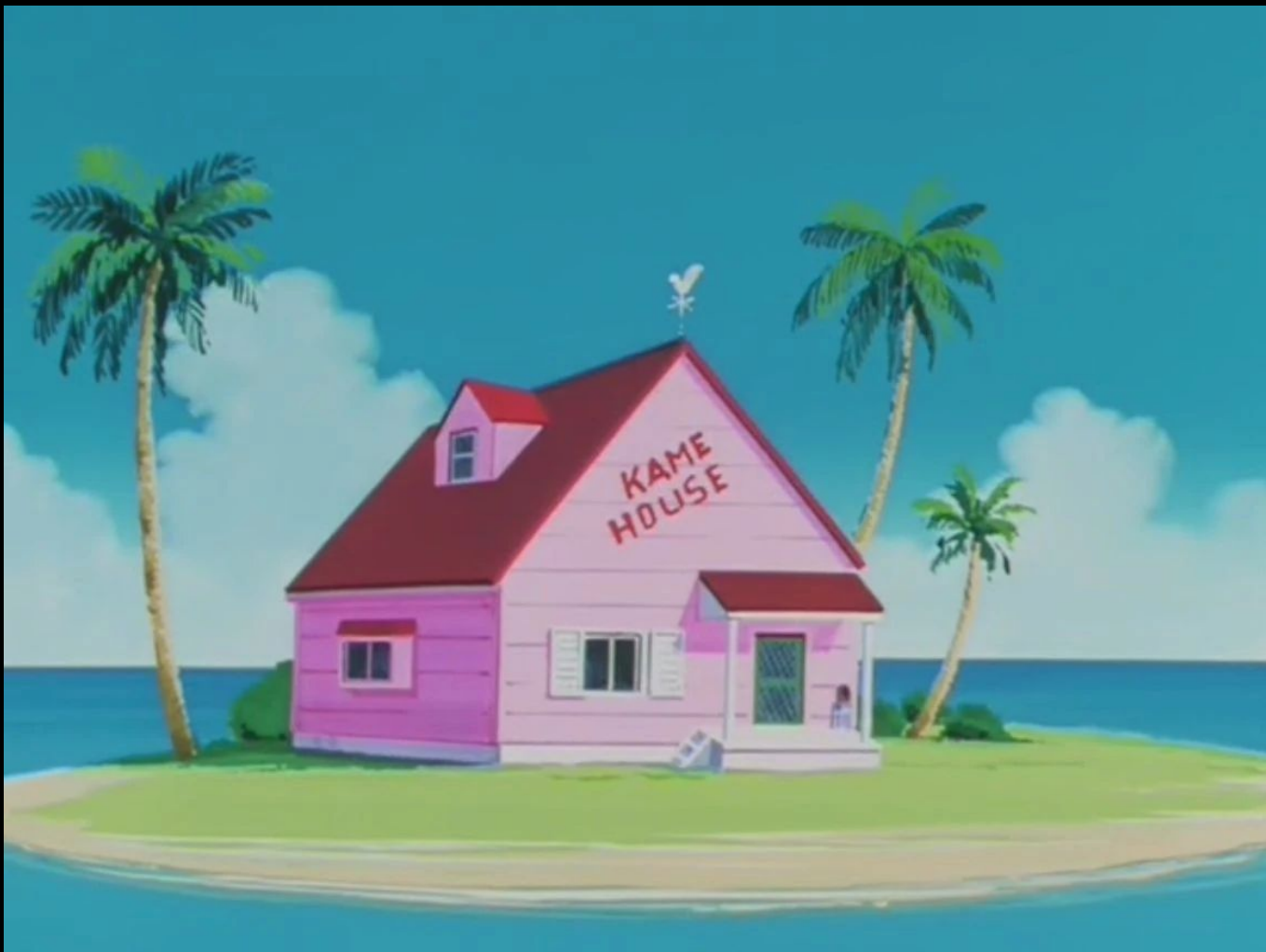
The game **is not** only the code

And so is not it's architecture

Why bother?

Programs must be
written for people to
read, and only
incidentally for
machines to execute.

Structure and interpretation of Computer Programs
Harold Abelson, Gerald Jay Sussman, Julie Sussman



Dragon Ball (1986)

Toei Animation; FNS

Thank you



codenamesimon



codenamesimon



szymonsirocki