

Thinking in UI

@pavanpodila



QuickLens



The UI

Key Differentiator

The UI

- Confluence of Sciences and Arts
- Computer Science + Human factors + Design
- Evolutionary Instincts: **RED** is alert, error

Evolution



No UI

Punch Cards

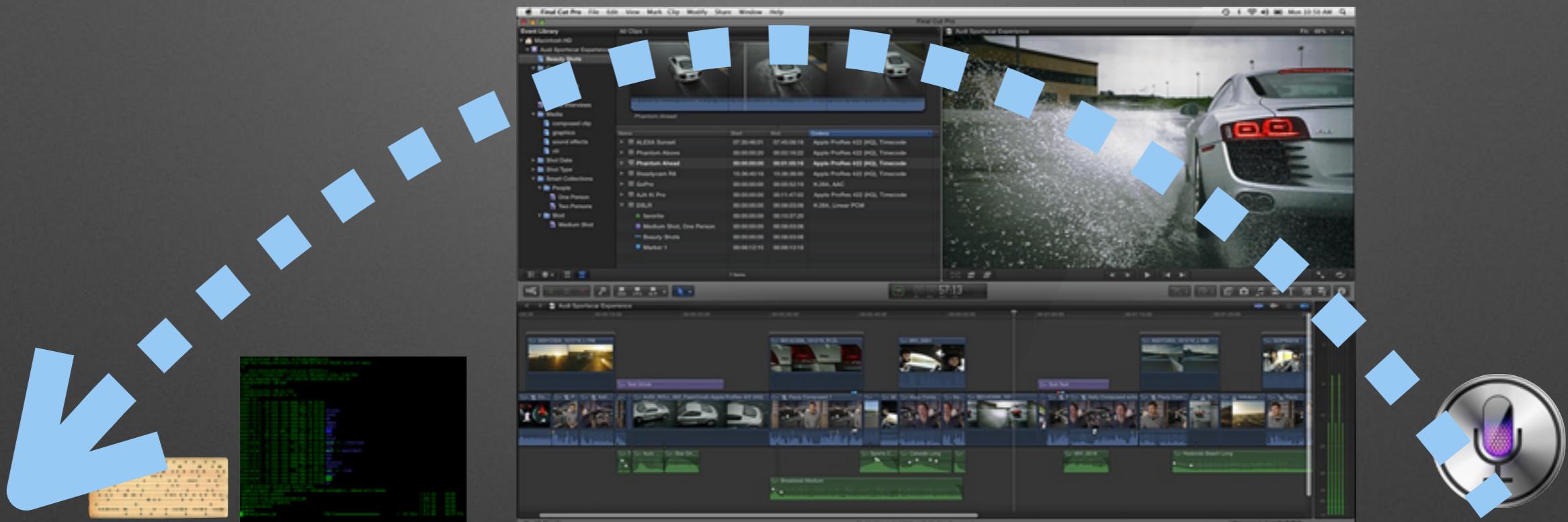
Command Line

Graphical User Interface

Zero UI



Evolution



No UI

Punch
Cards

Command
Line

Graphical User Interface

Zero UI

Evolution

Graphical User Interface

No UI

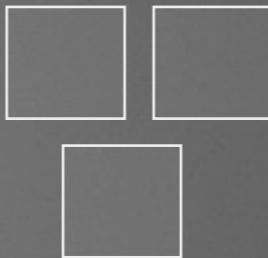
Punch
Cards

Command
Line

Zero UI

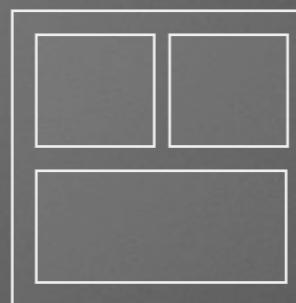
1

Decompose



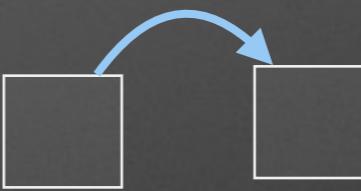
2

Structure



3

Communication



4

Single Thread



1

Decompose

2

Structure

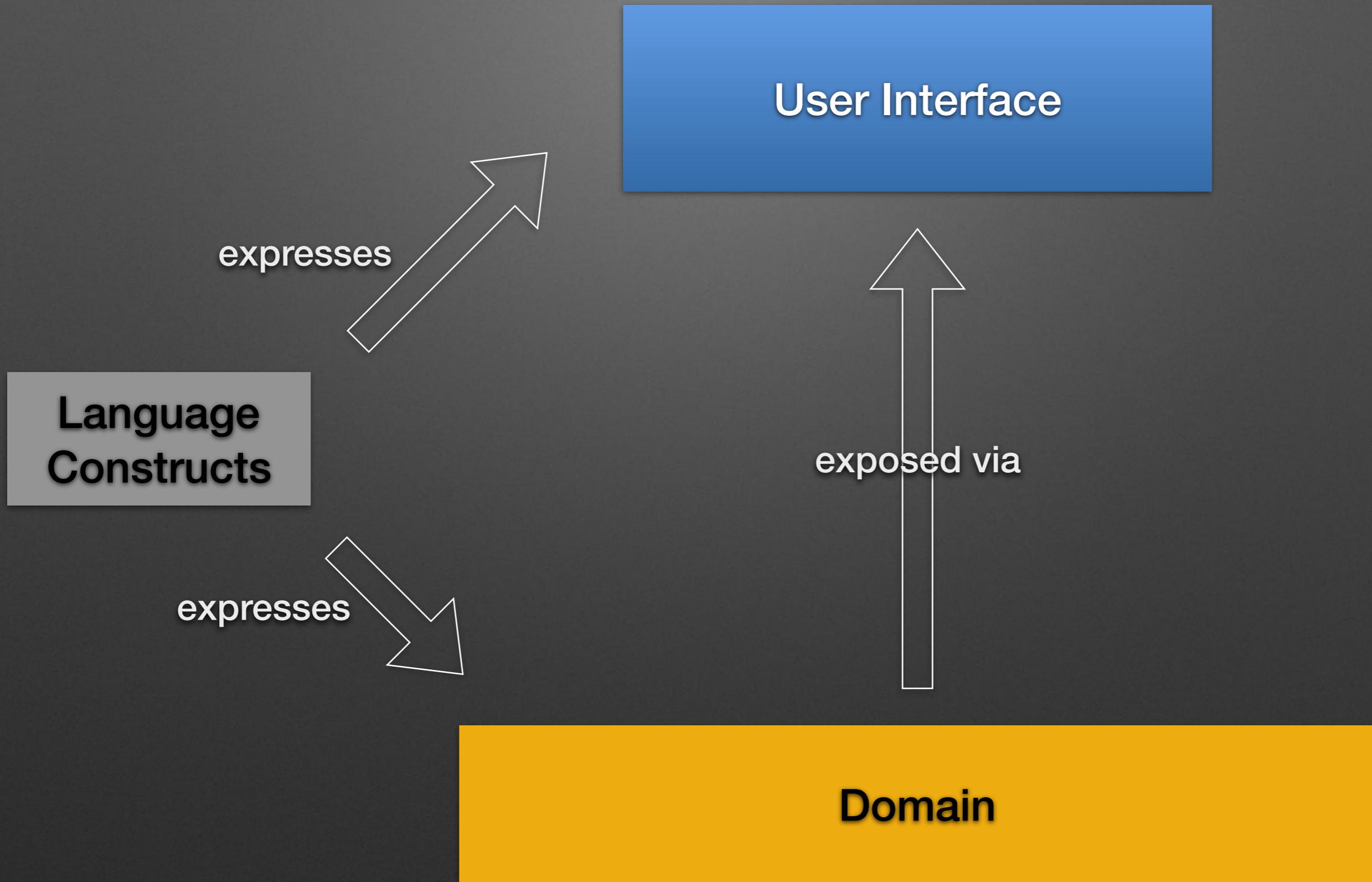
3

Communication

4

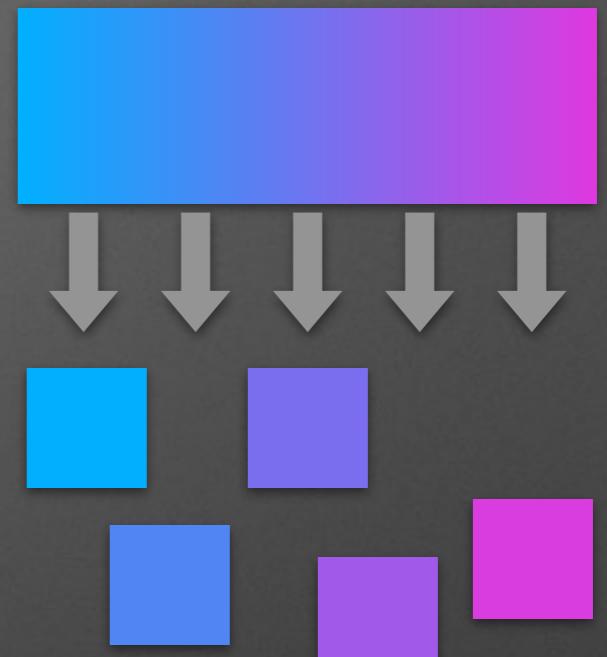
Single Thread

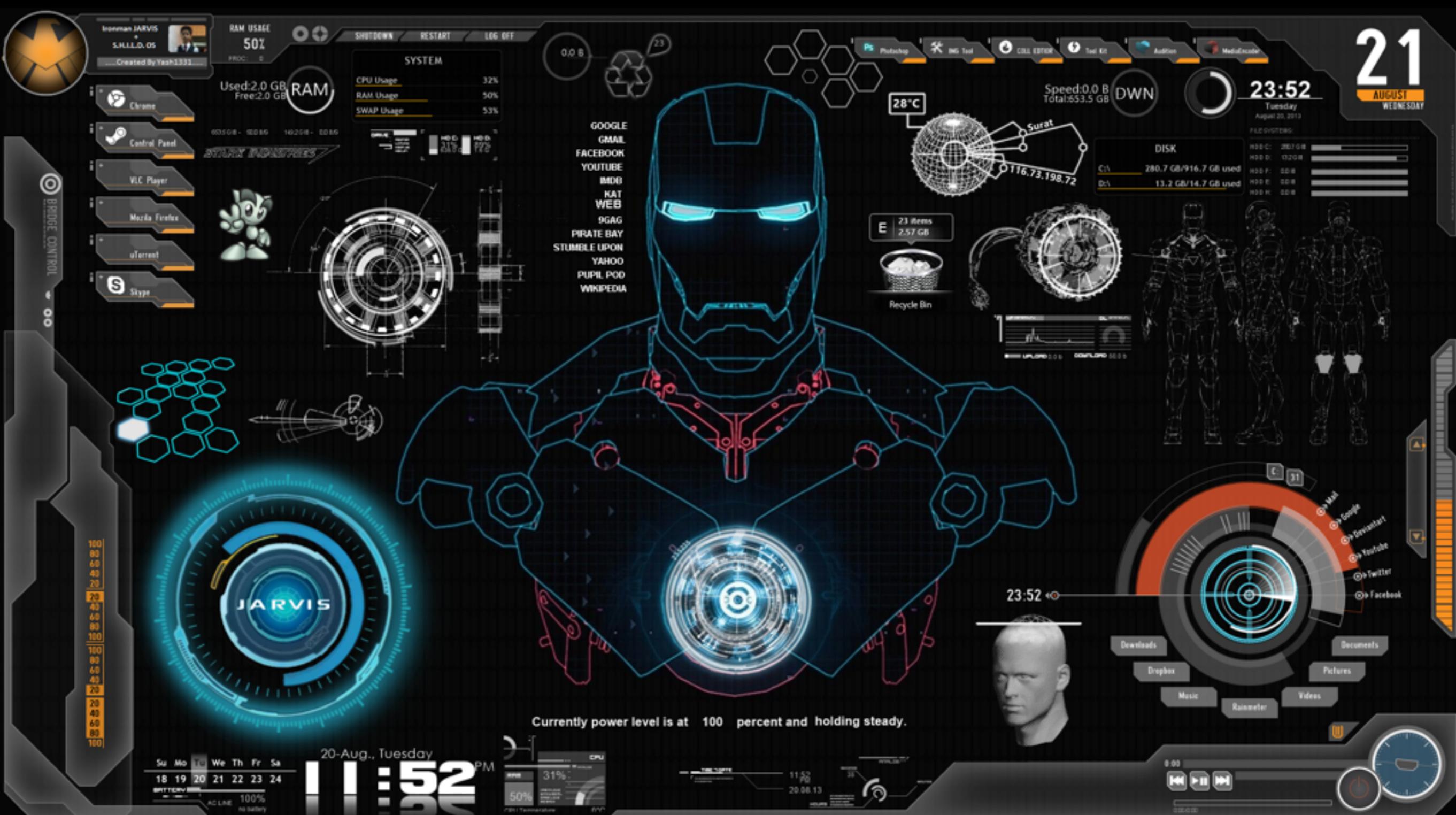
Abstractions



Decompose

- Break down into individual components
- <geek-speak>
Fourier transform on your
HiFi mockups
</geek-speak>







LEMON



GREEK
YOGURT
2%



GIN



MINT

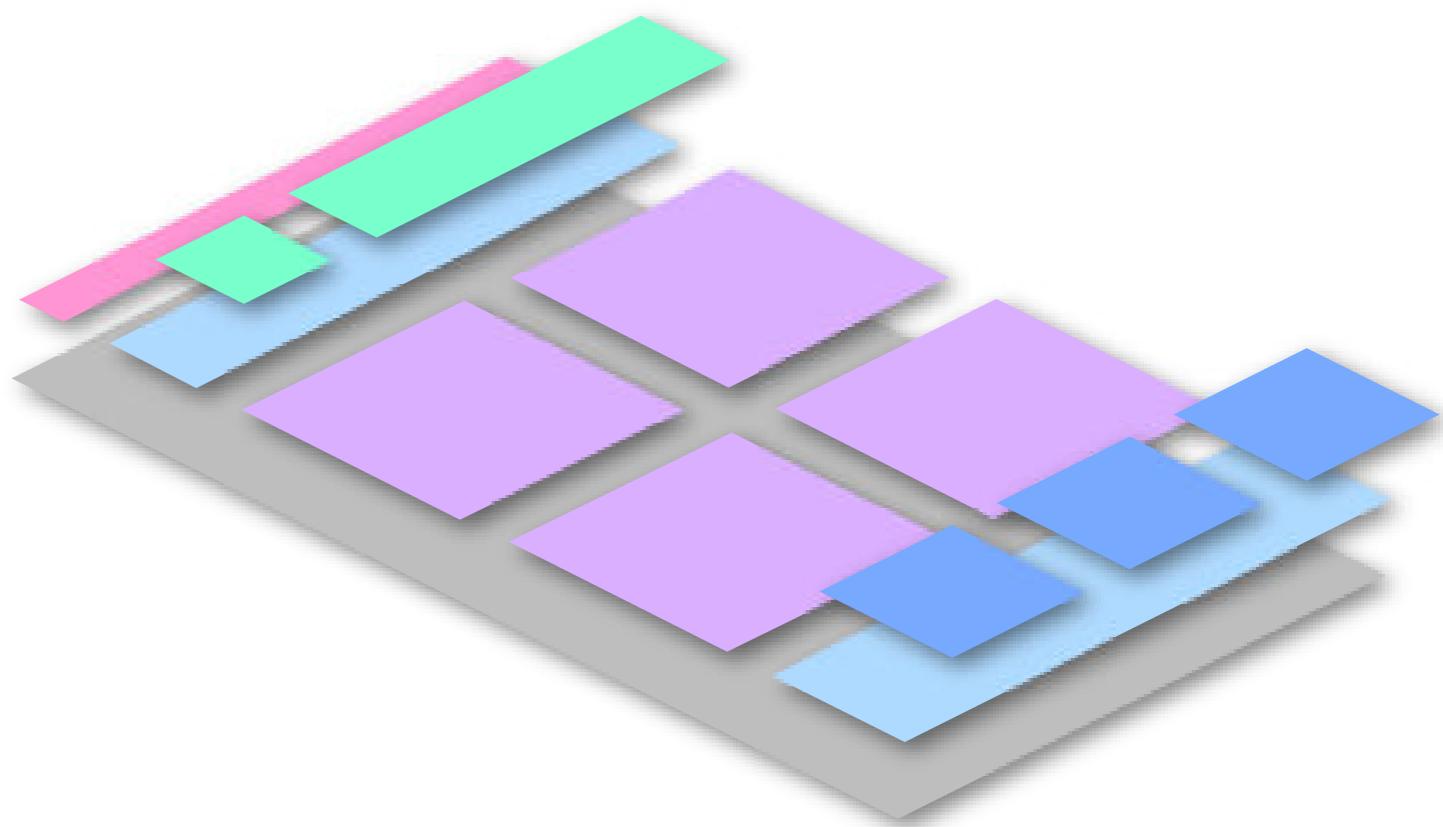
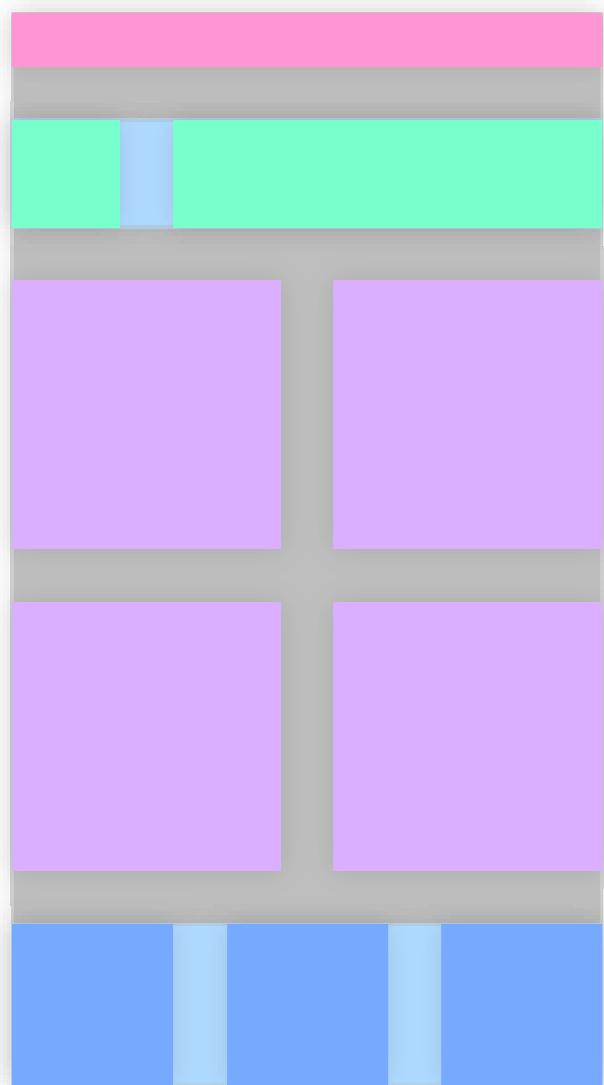


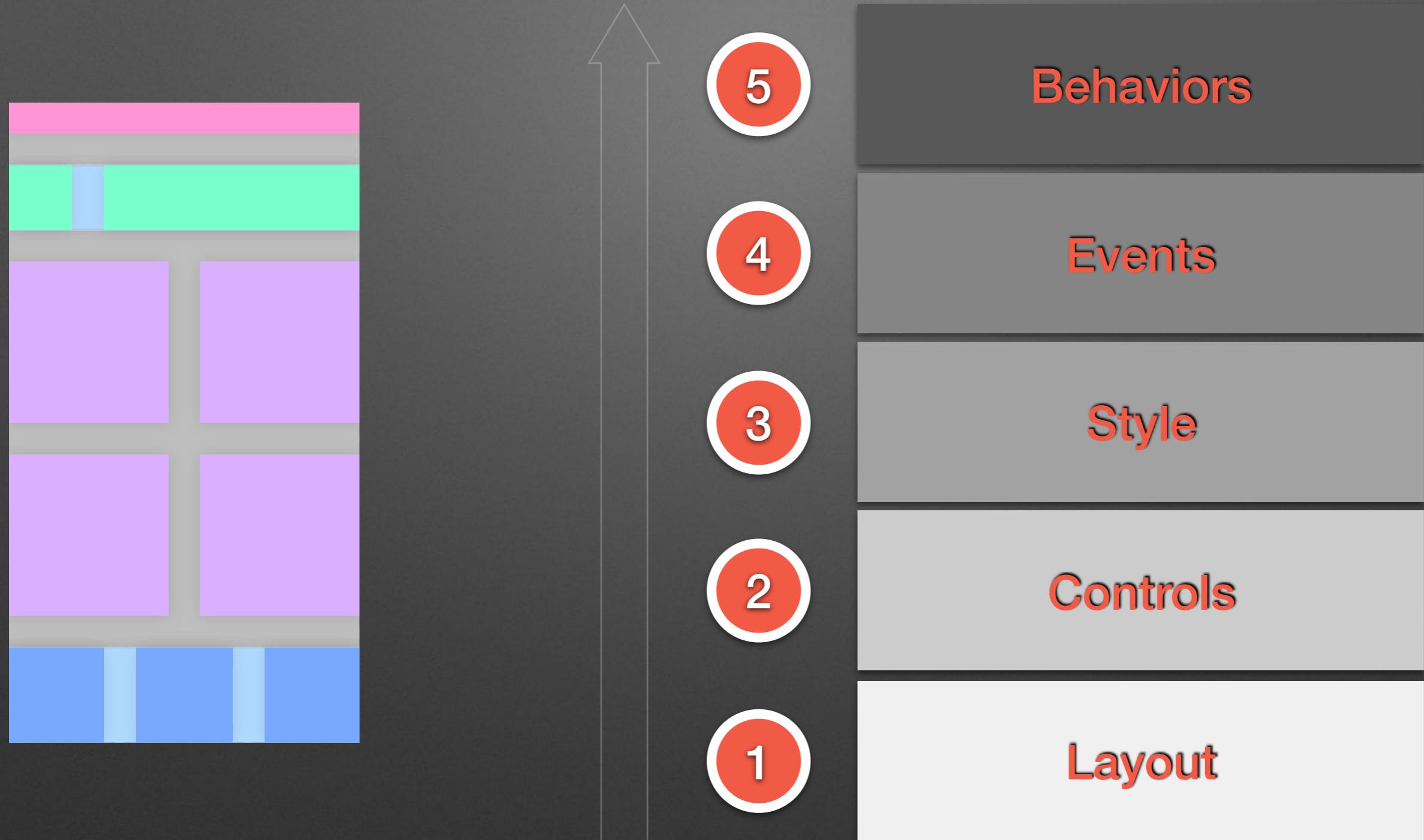
SIMPLE
SYRUP



FRESNO
CHILI
JAM







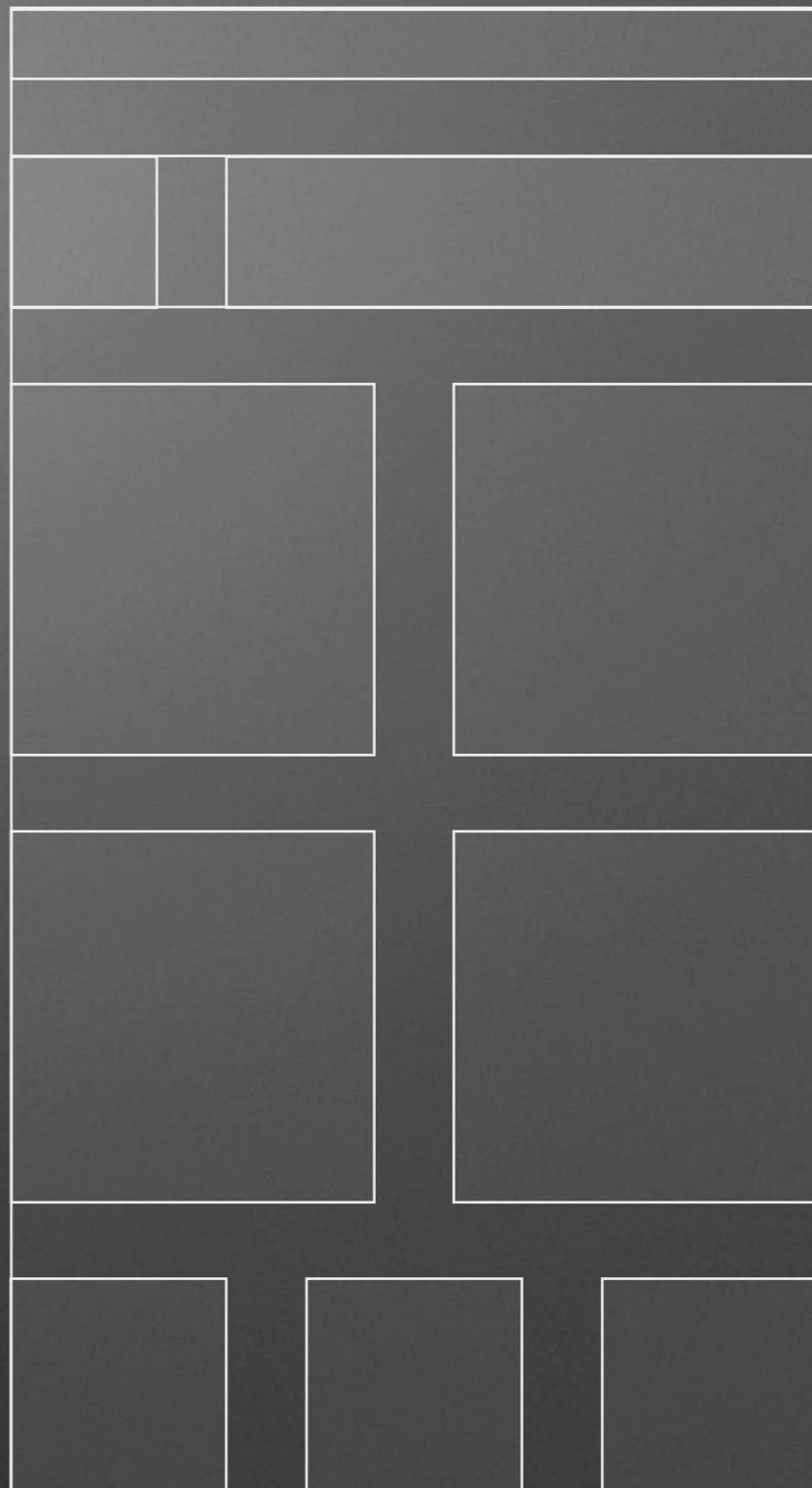
Behaviors

Events

Style

Controls

Layout



Content

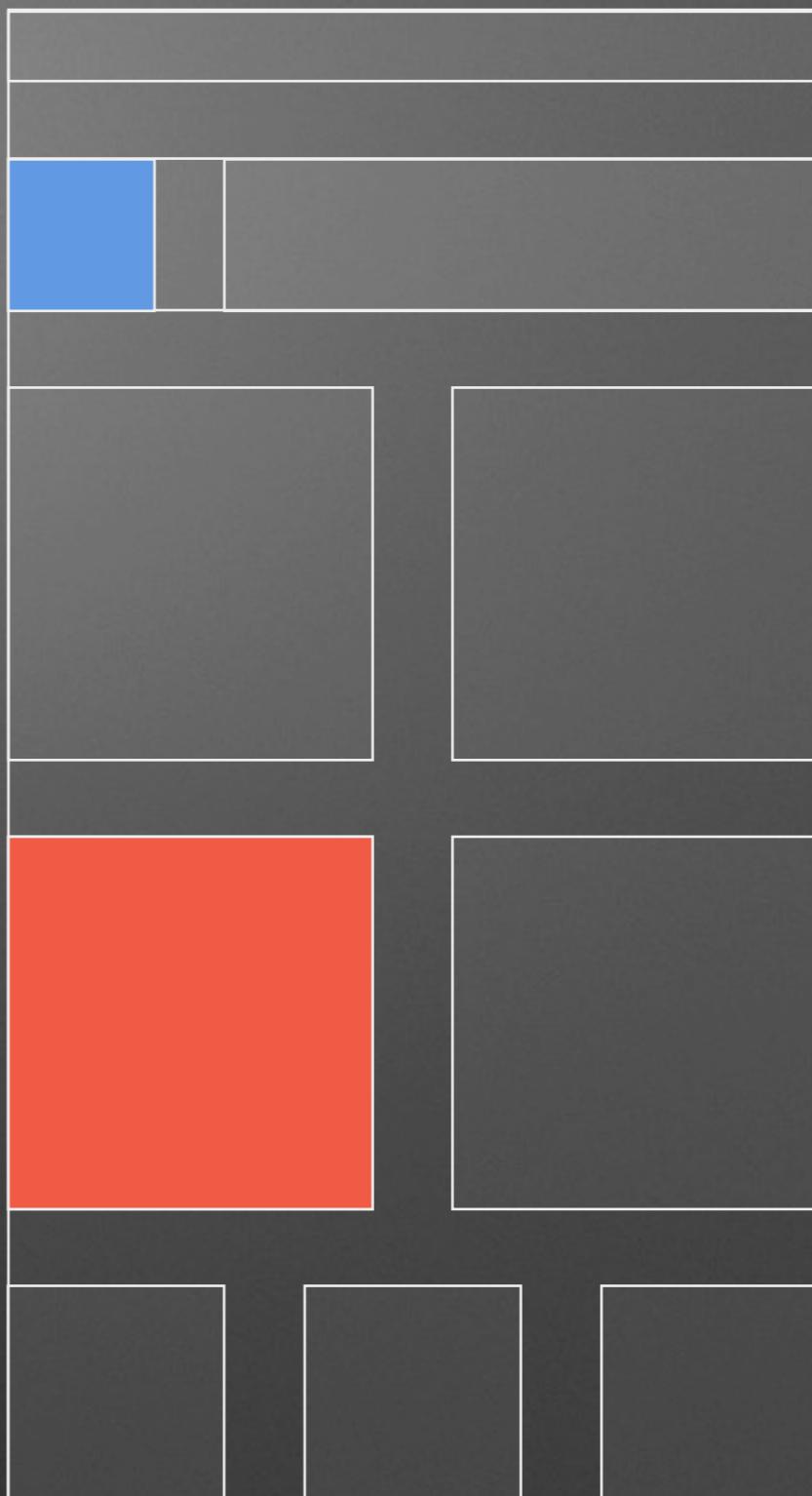
Behaviors

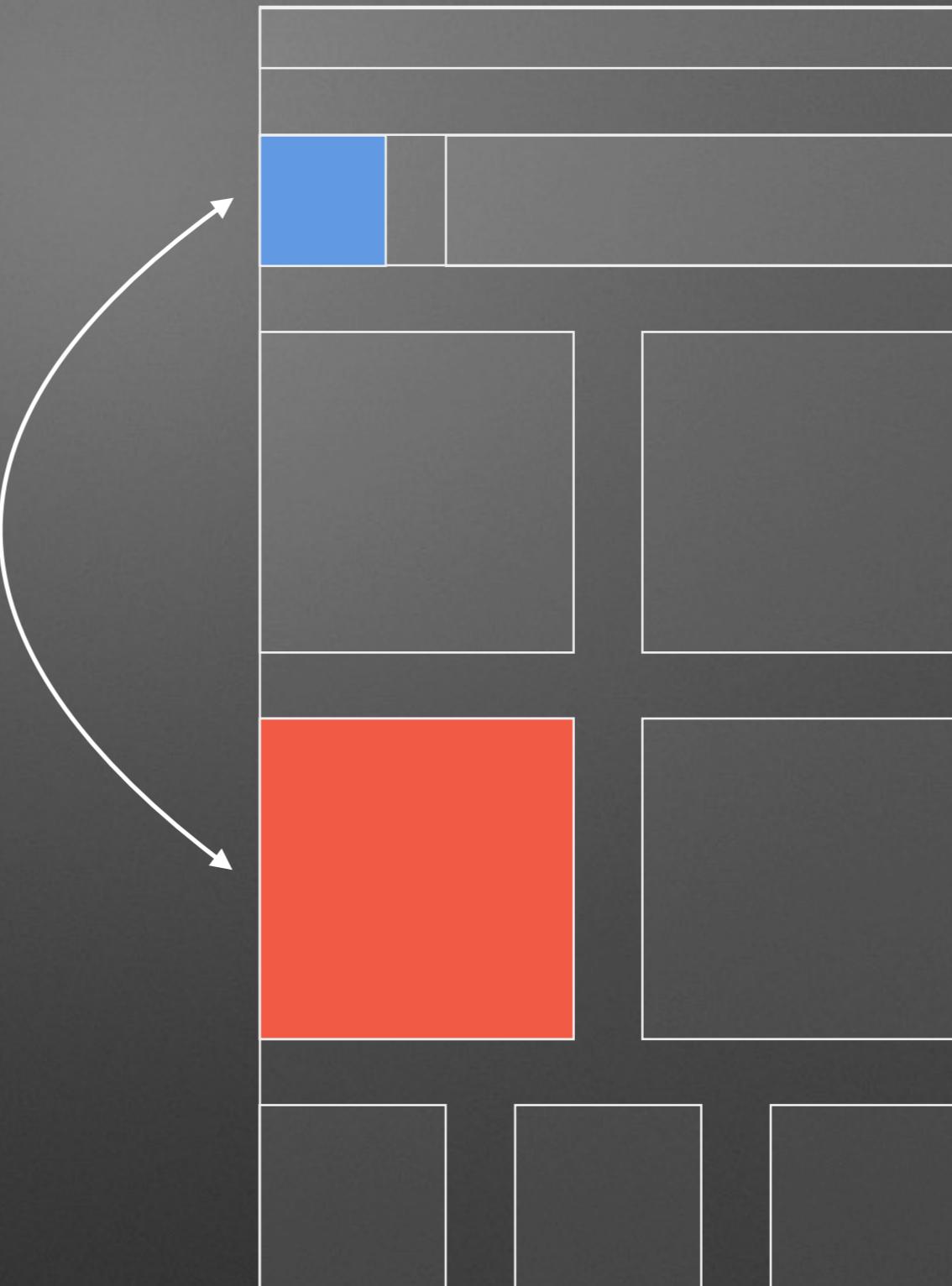
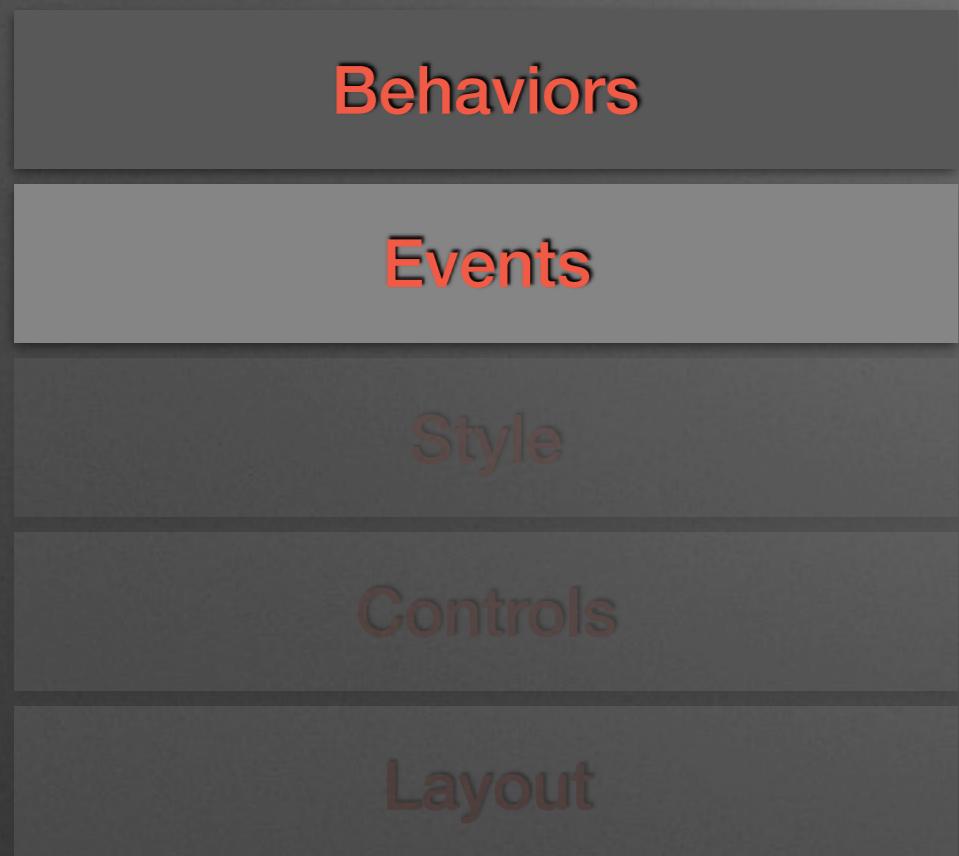
Events

Style

Controls

Layout





Decomposing States

Type something...

Search

Text entered

A screenshot of a search interface. On the left is a white input field containing the text "angular". To its right is a red button with the word "Search" in white.

Hover on button

A screenshot of the same search interface. The red "Search" button has been hovered over, causing it to change color to orange-red.

Responsive



Type something... Search base / empty

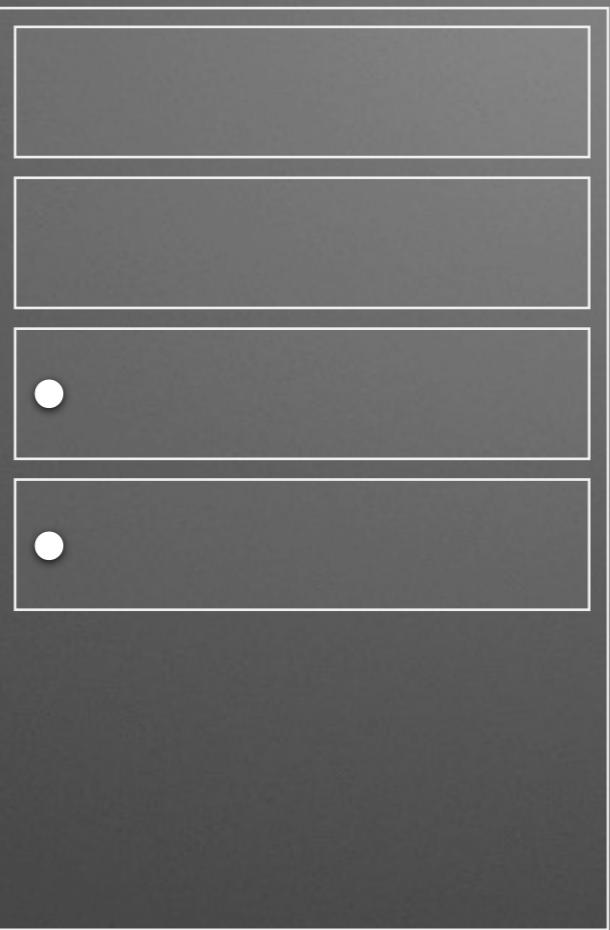
A screenshot of a search interface. The input field is highlighted with a blue border and contains the placeholder text "Type something...". To its right is a red button with the word "Search" in white.

Input focused

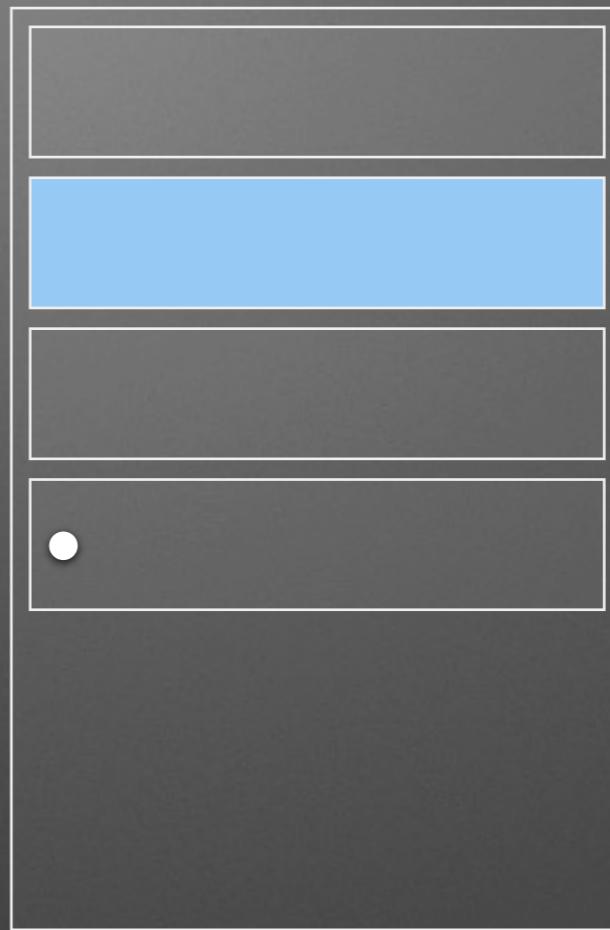
Type something... Search

No Text entered,
button disabled

You have
no emails



Some emails



Email selected



Swipe actions

1

Decompose

2

Structure

Components all the way!

3

Communication

4

Single Thread

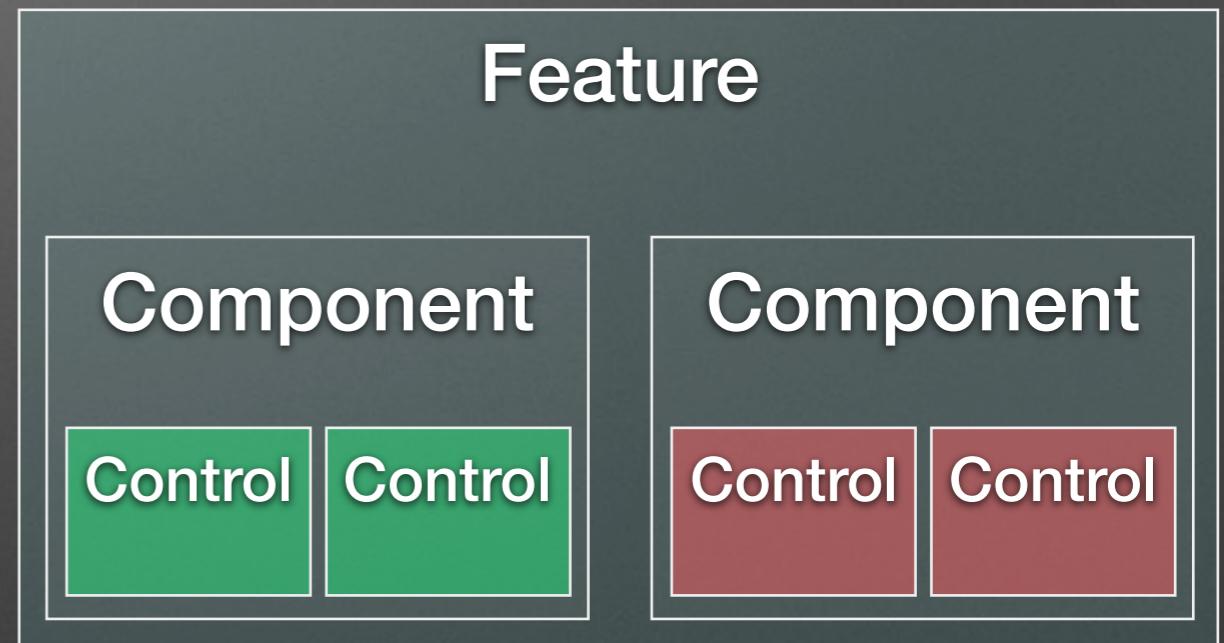
Feature

Component

Control

Controls, Components, Features

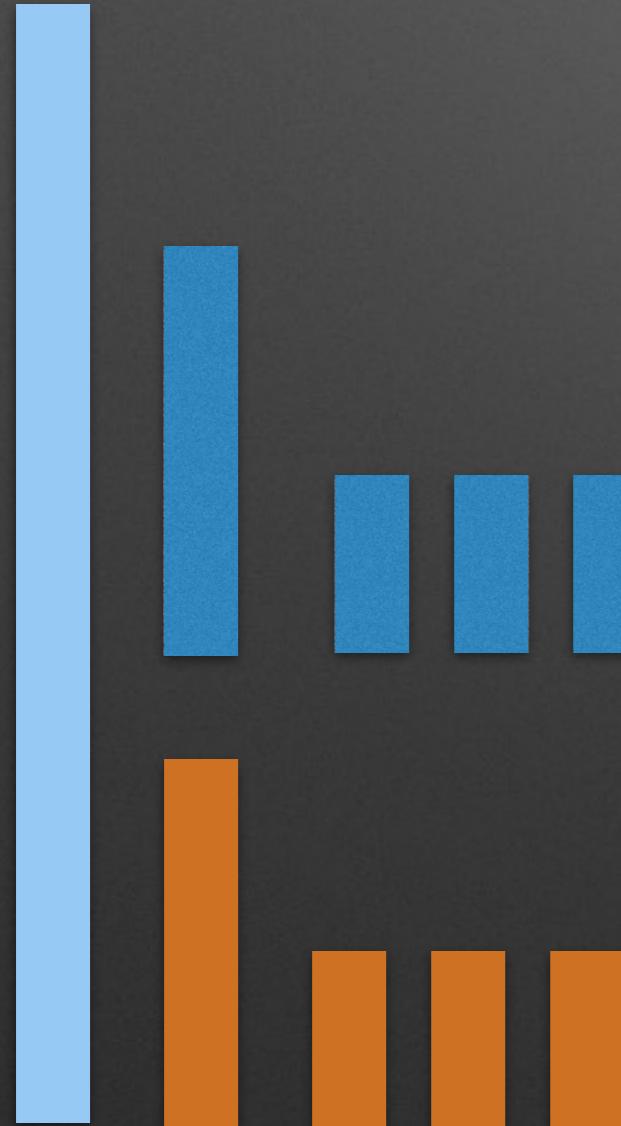
- The atomic pieces of the UI
- The right subset forms the ecosystem and vocabulary for manipulating the domain
- Components capture the domain workflow



S I C

Structure

Know where to put



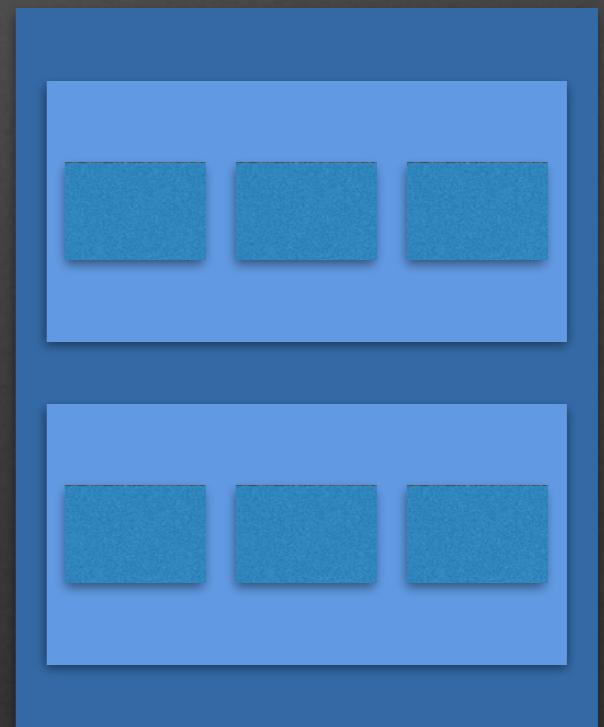
Isolation

Inputs + Outputs
A Unit



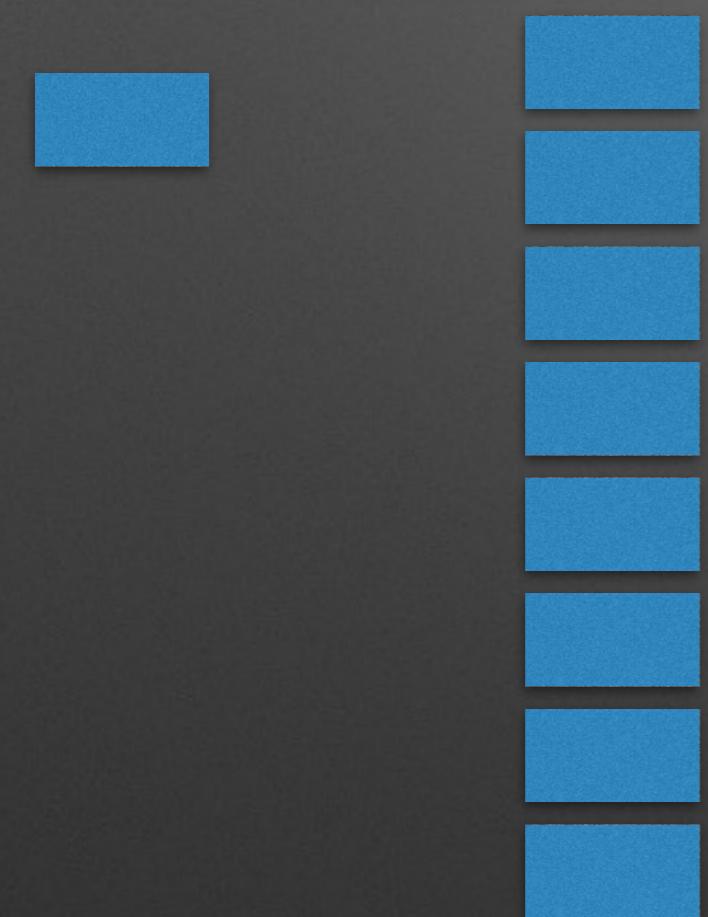
Composition

Build larger things

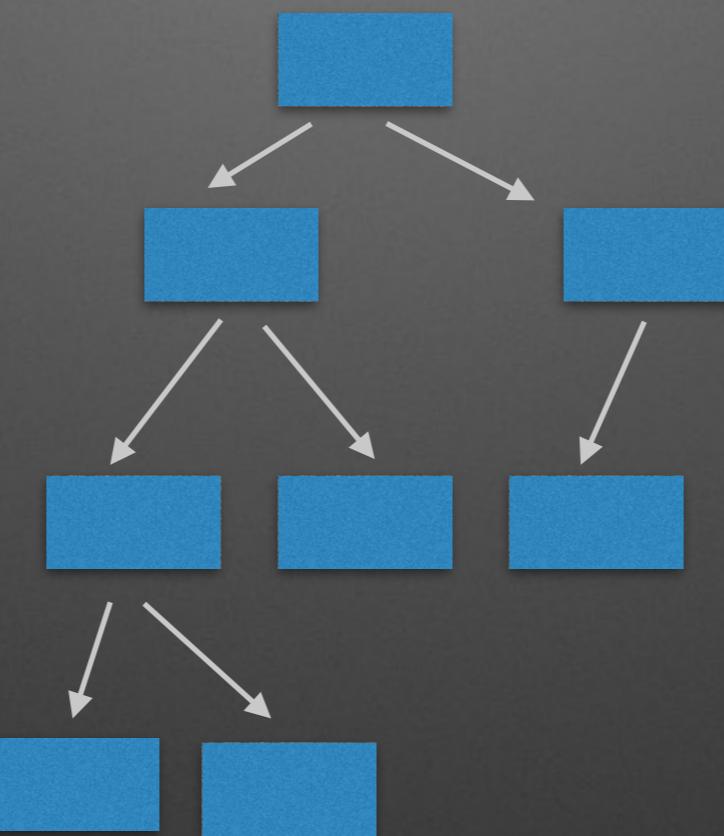


Follow the

Shape of Data

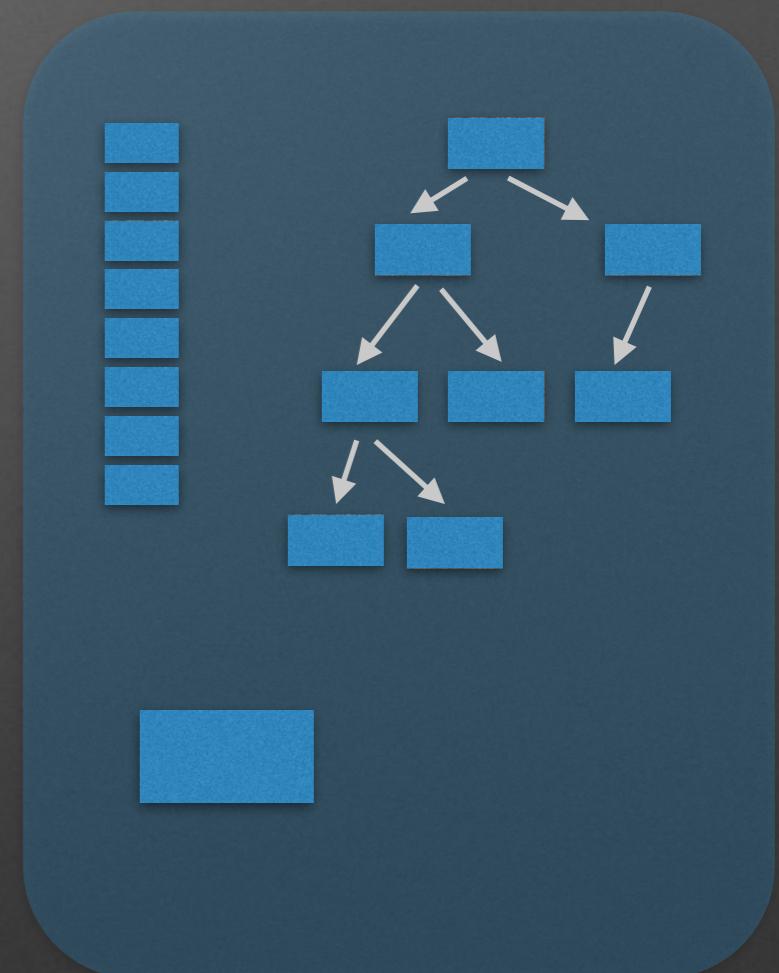


Scalar



List

Hierarchical



Composite

1

Decompose

2

Structure

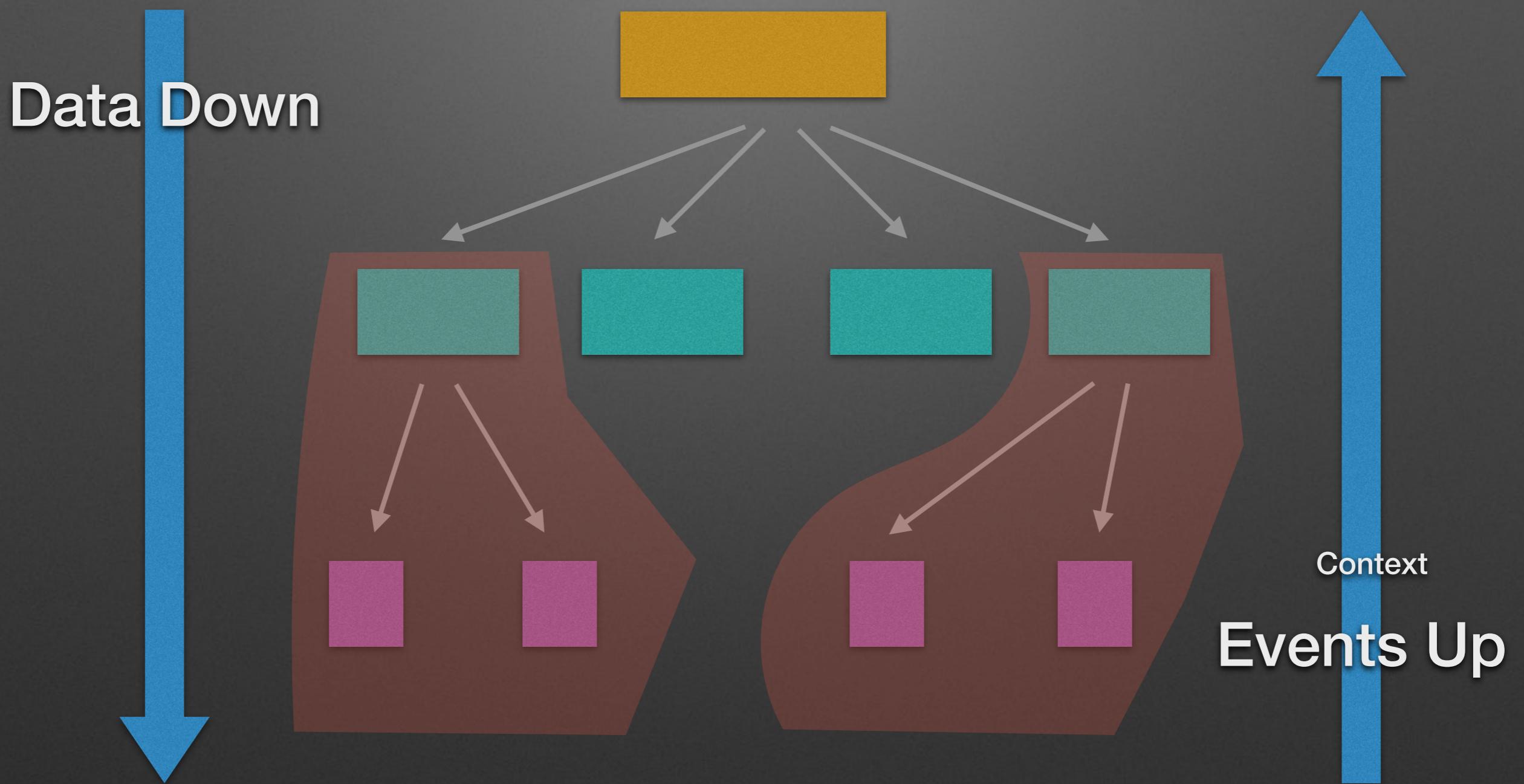
3

Communication

4

Single Thread

Information Flow



Information Flow

Callbacks

Promises

Streams

Events

Event Context

+

Ambient Context

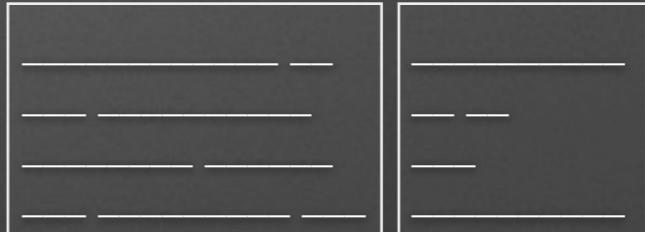
Services

DCI

MVC

Flux

Templates



1

Decompose

2

Structure

3

Communication

4

Single Thread

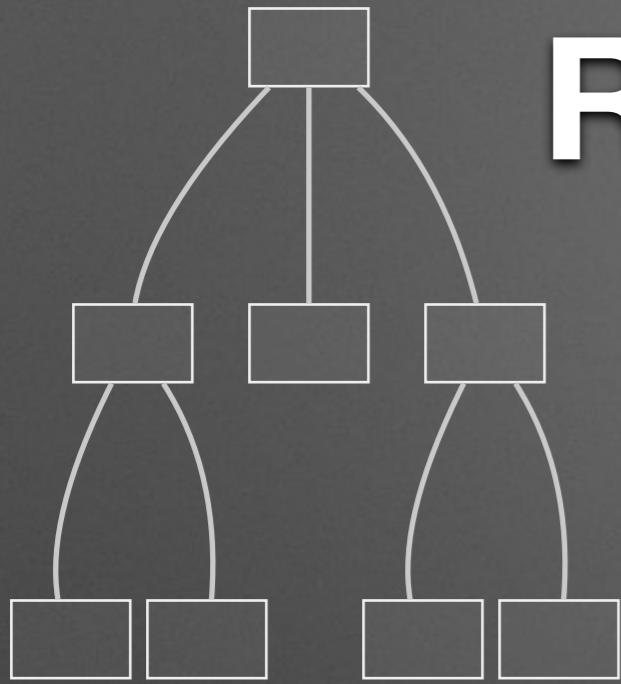
Single Threaded

Offload intensive work

60FPS = 16ms / frame

Lean event handlers



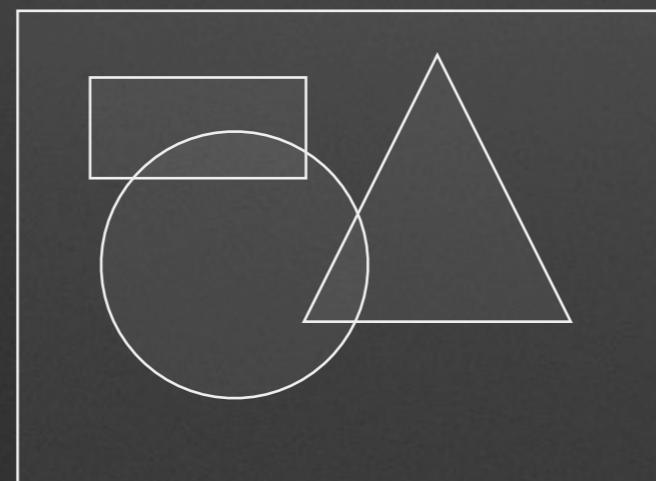


Retained Mode

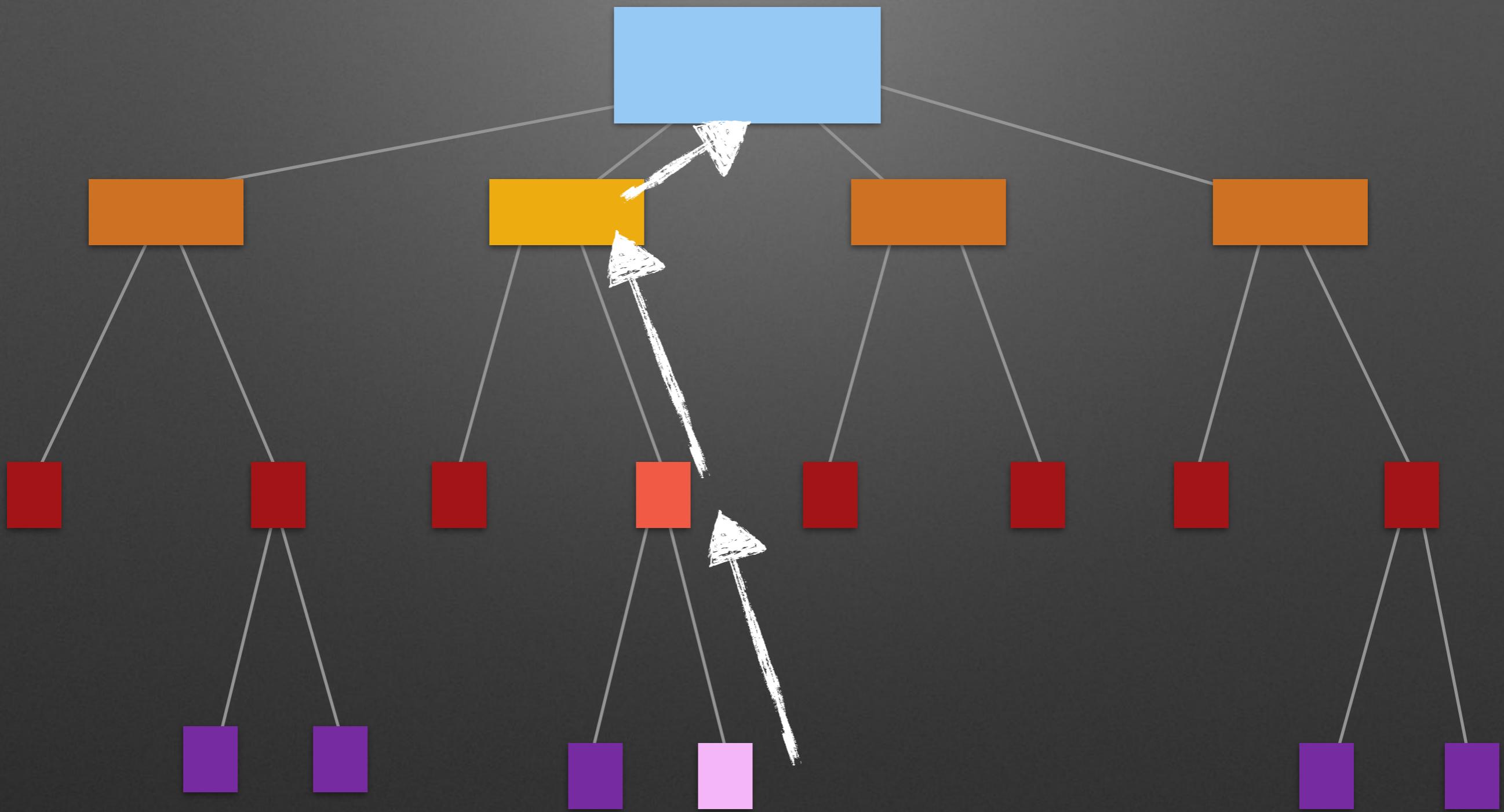
DOM, SVG

Immediate Mode

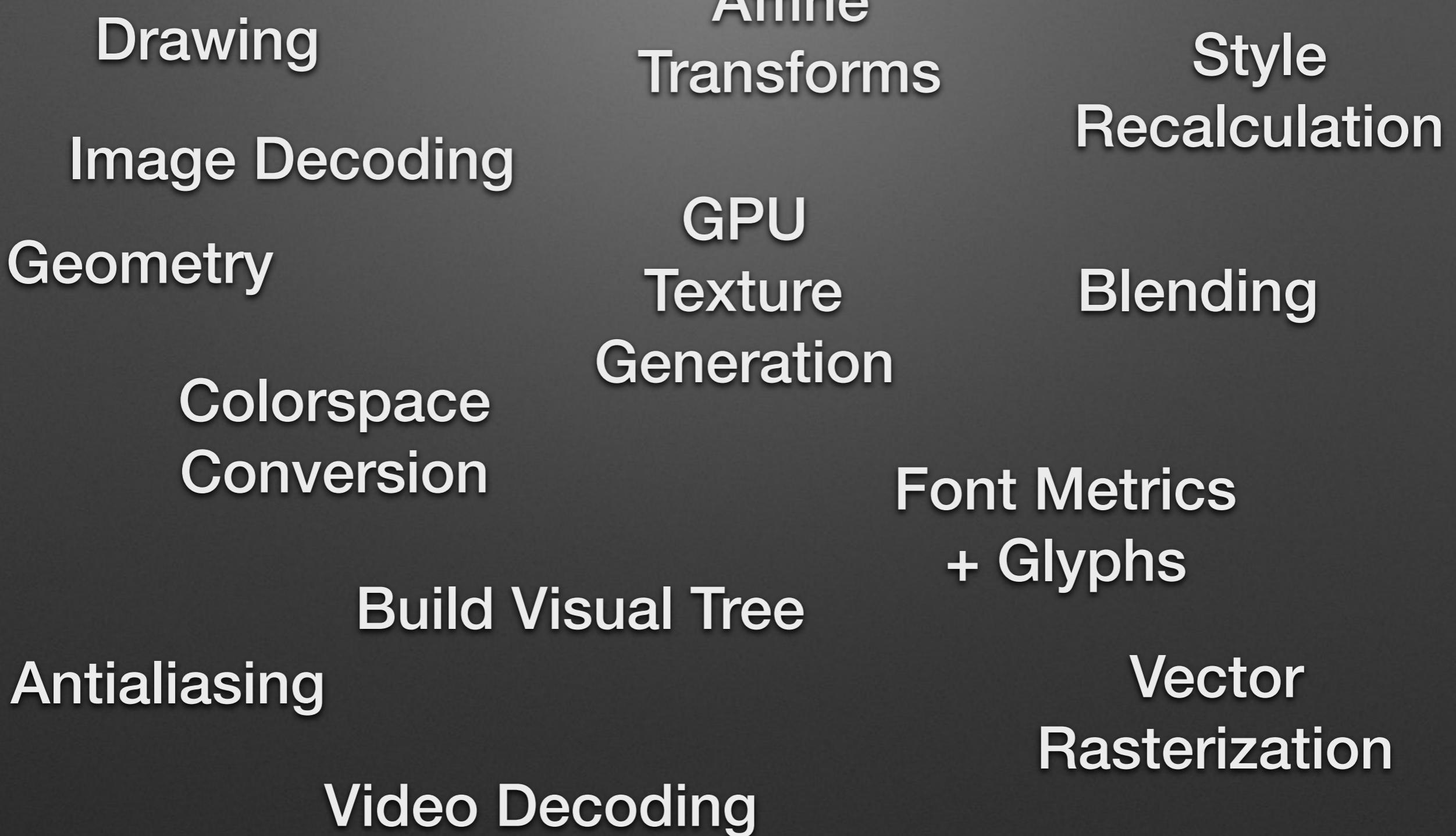
Canvas, WebGL



Visual Tree



Rendering the UI



Layout

Style
Recalculation

Build Visual Tree

Geometry

Font Metrics
+ Glyphs

Painting

Drawing
Image Decoding
Vector
Rasterization
Colorspace
Conversion
Antialiasing
Video Decoding

Compositing

Affine
Transforms

Blending

GPU
Texture
Generation

Animation

Performance

Perceived Responsiveness

Debouncing

UI Virtualization

Event Loop distribution

Lean Event-handlers

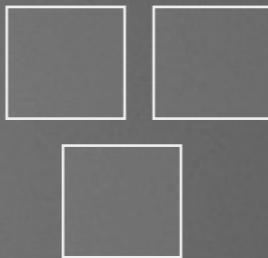
Render Optimization

Memory footprint

Latency

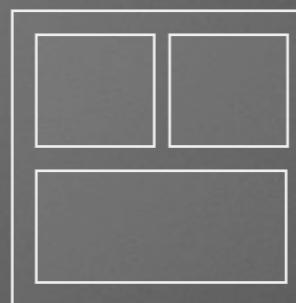
1

Decompose



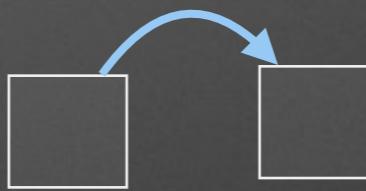
2

Structure



3

Communication



4

Single Thread



Thinking in UI

@pavanpodila



QuickLens

