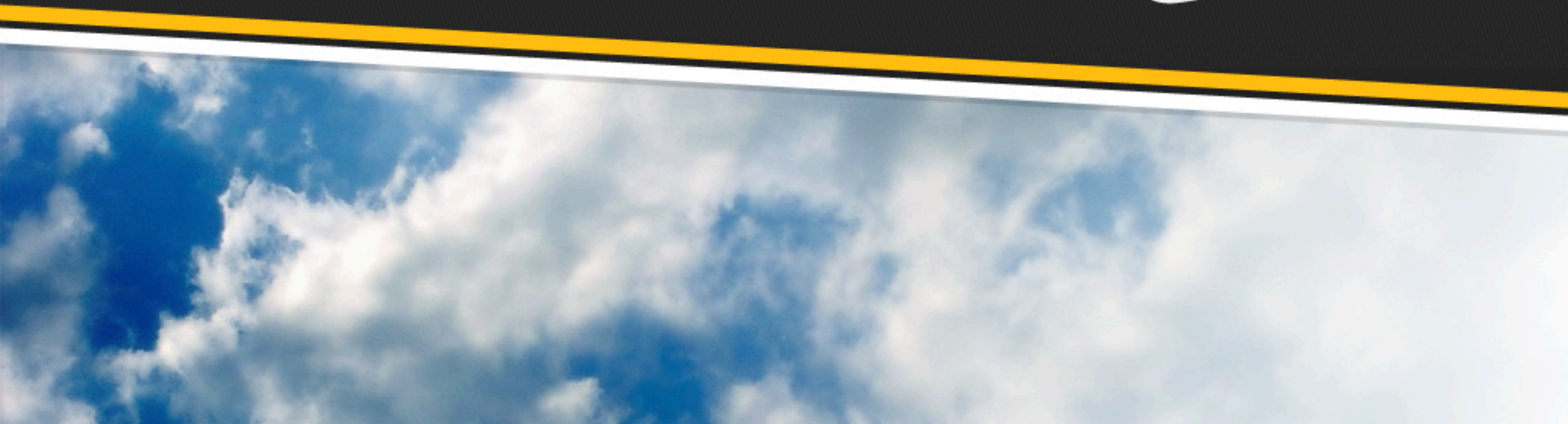


# Component-based Flash Game Architecture

Michael Plank

Austria - not Australia :)



Menu

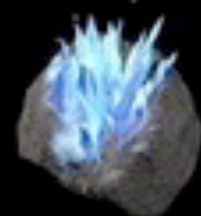
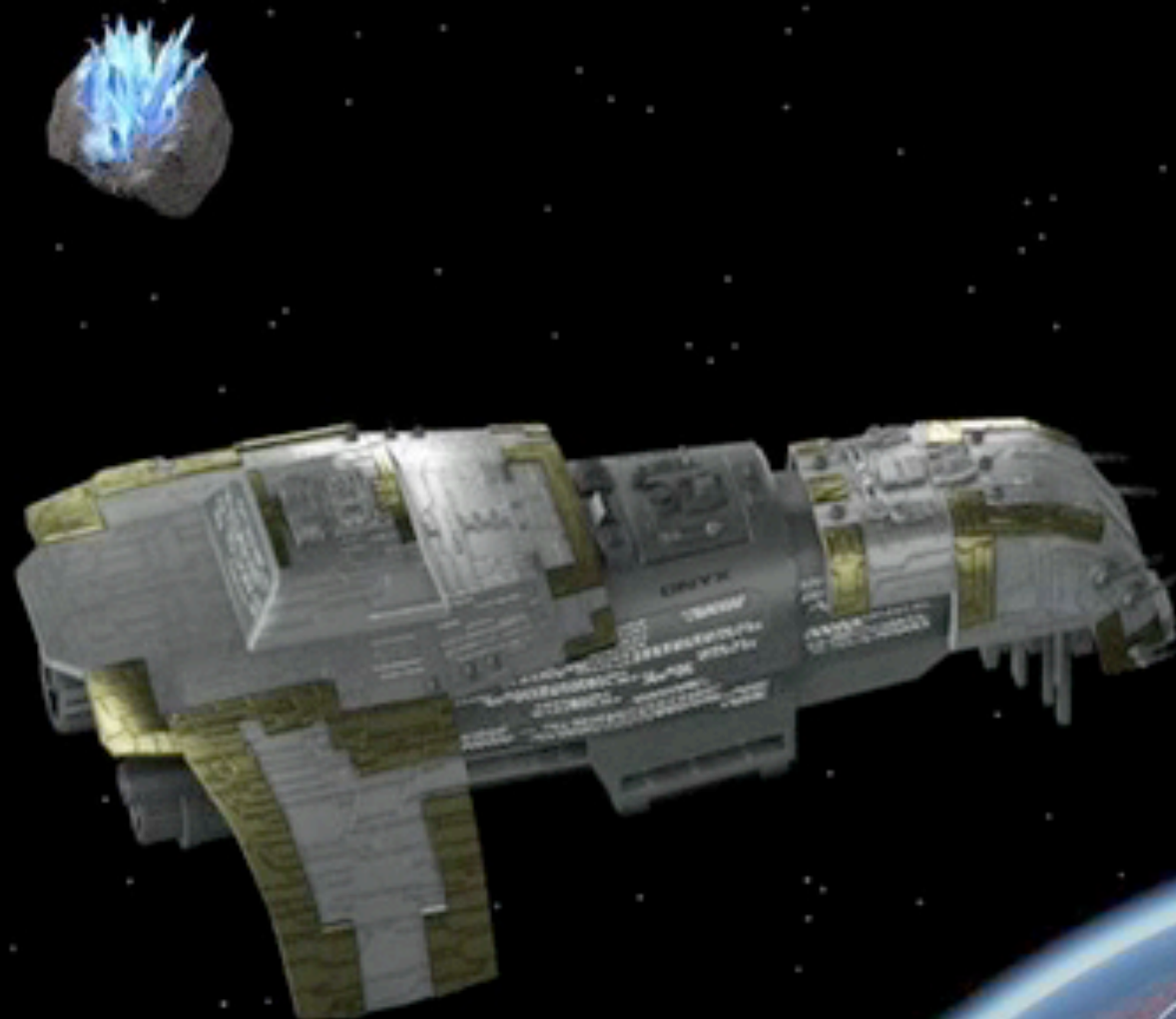
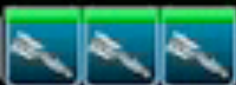
12896.3

★ 92  
★★

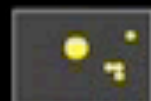
⚙️ 2

0:02:11

A



Build Apis





# Delta Strike



components, components, components, ...

# Delta Strike



components, components, components, ...

# Delta Strike



components, components, components, ...



# Delta Strike

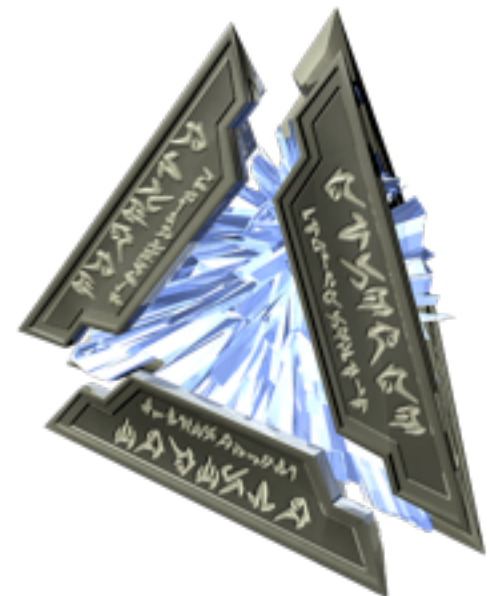


components, components, components, ...

# Welcome

## Component-based Flash Game Architecture

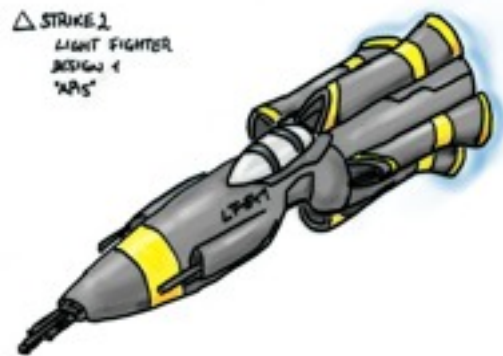
- What are components?
- Why components?
- Engines?
- Future?



# Agenda

## Design

- Game production
- Pre, Pro, Post



## Development

- Intro to components
- Engines
- Multiplayer



## Future

- Visual CBGD





# The Team

## Design

- Andrezej Kozlowski

## Coding

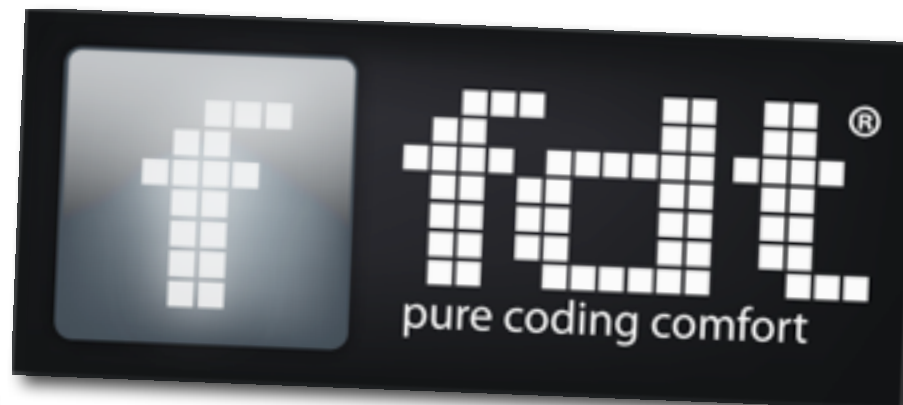
- Alex Seifert
- Michael Plank



# About me

## Michael Plank

- Austria (no kangaroos)
- Computer Science (MSc)
- FDT Evangelist, Developer @ Powerflasher (Germany)
- Book



# Design

## Game Production

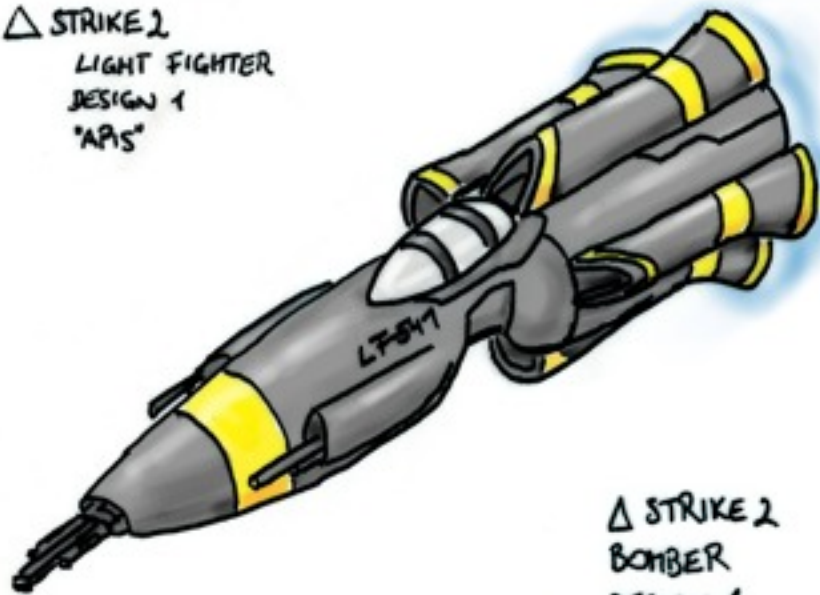
Story ➡ Concept art ➡ Production



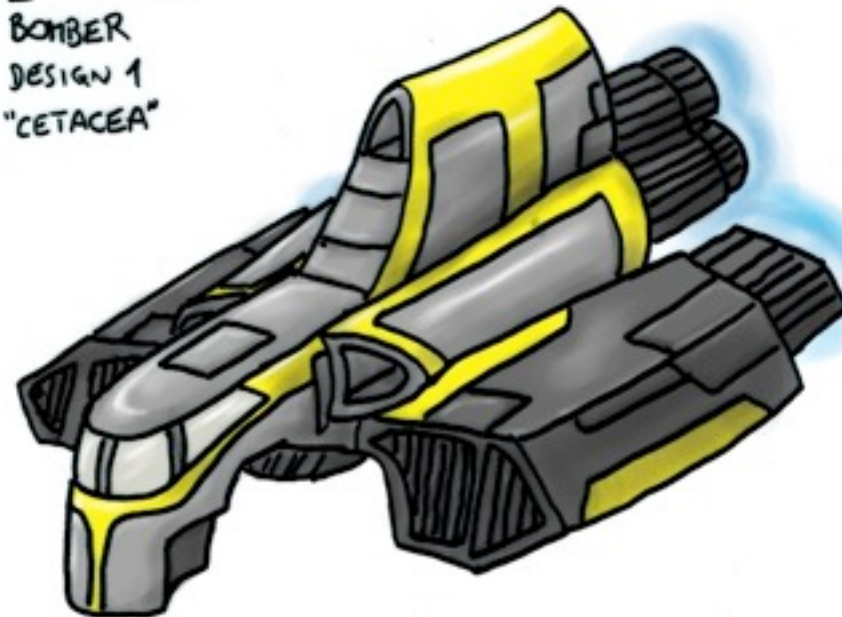
# Design

## Concept Art

△ STRIKE 2  
LIGHT FIGHTER  
DESIGN 1  
"APIS"



△ STRIKE 2  
BOMBER  
DESIGN 1  
"CETACEA"

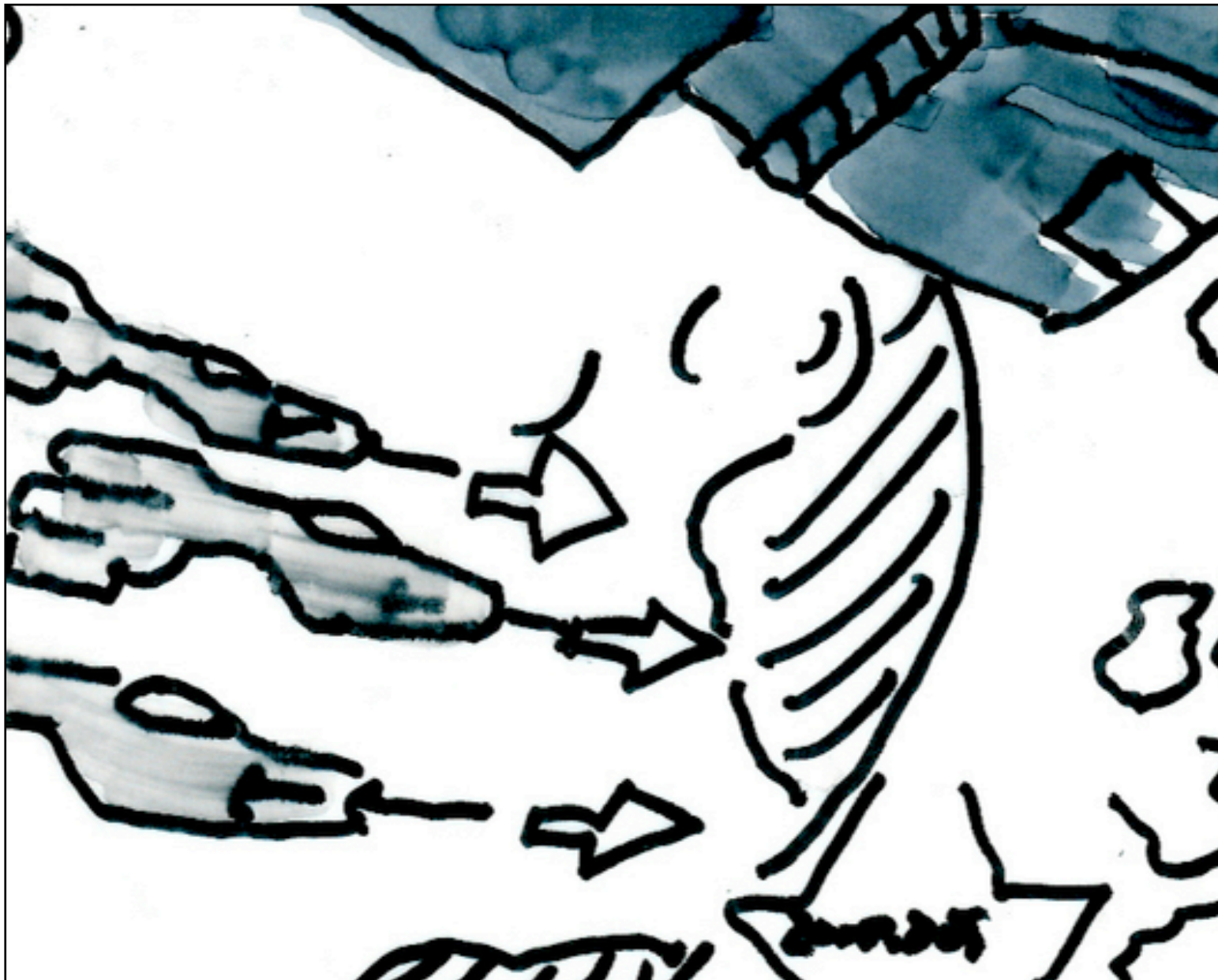


△ STRIKE 2  
MEDIUM FIGHTER  
DESIGN 1  
"DASYATIS"



# Design

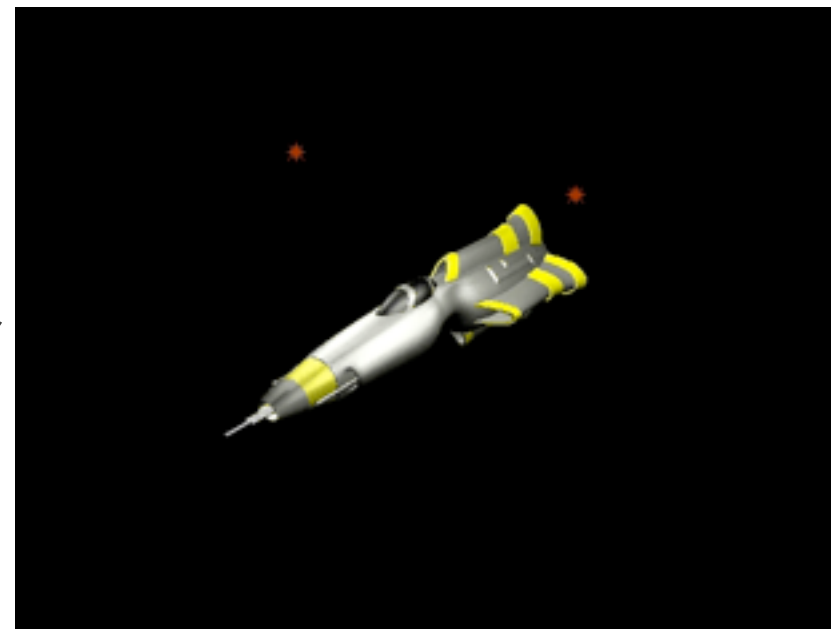
## Animated Story Board



# Design

## Preproduction, Production, Postproduction

△ STRIKE 2  
LIGHT FIGHTER  
DESIGN 1  
"AP5"





# Design

## Preproduction, Production, Postproduction

Δ STRIKE 2  
BOMBER  
DESIGN 1  
"CETACEA"



# Component-based Game Development (CBGD)

## The Idea

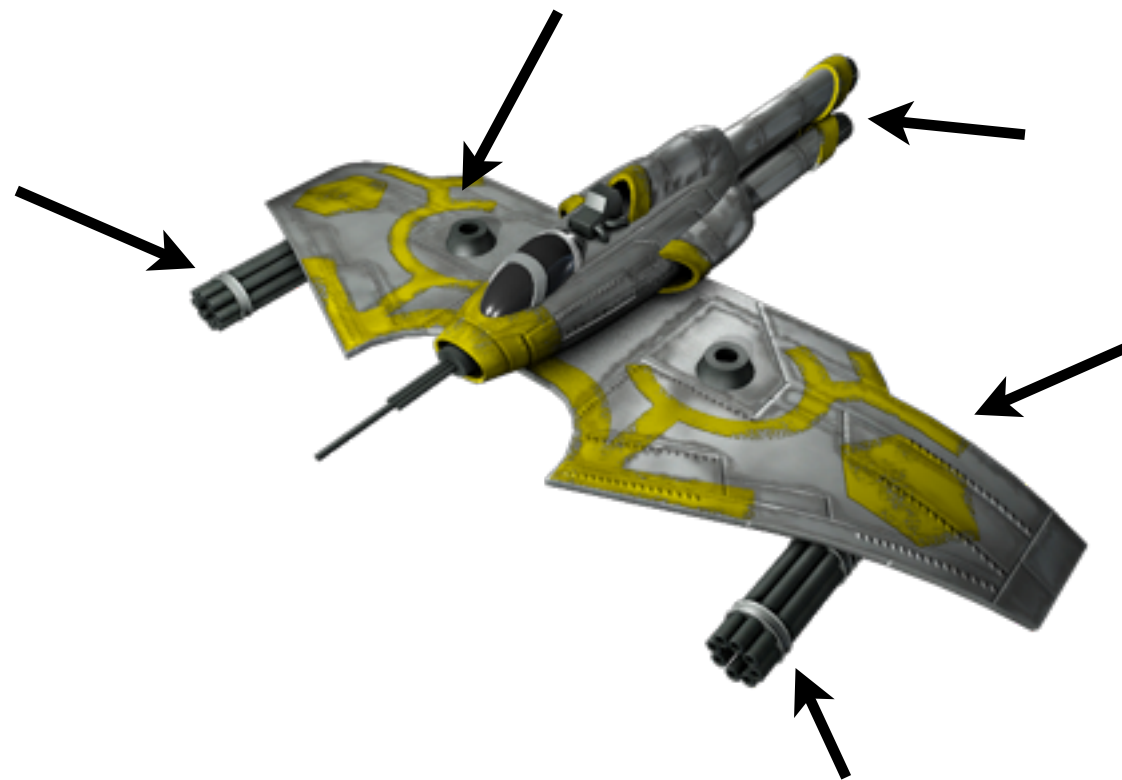
- Small pieces/bricks > components
- „There is no spoon“ - No classic objects
- Aggregate components to build something bigger



# Component-based Game Development (CBGD)

## Example - Spaceship

- Weapon
- Drive
- Armor
- Health
- Visualisation

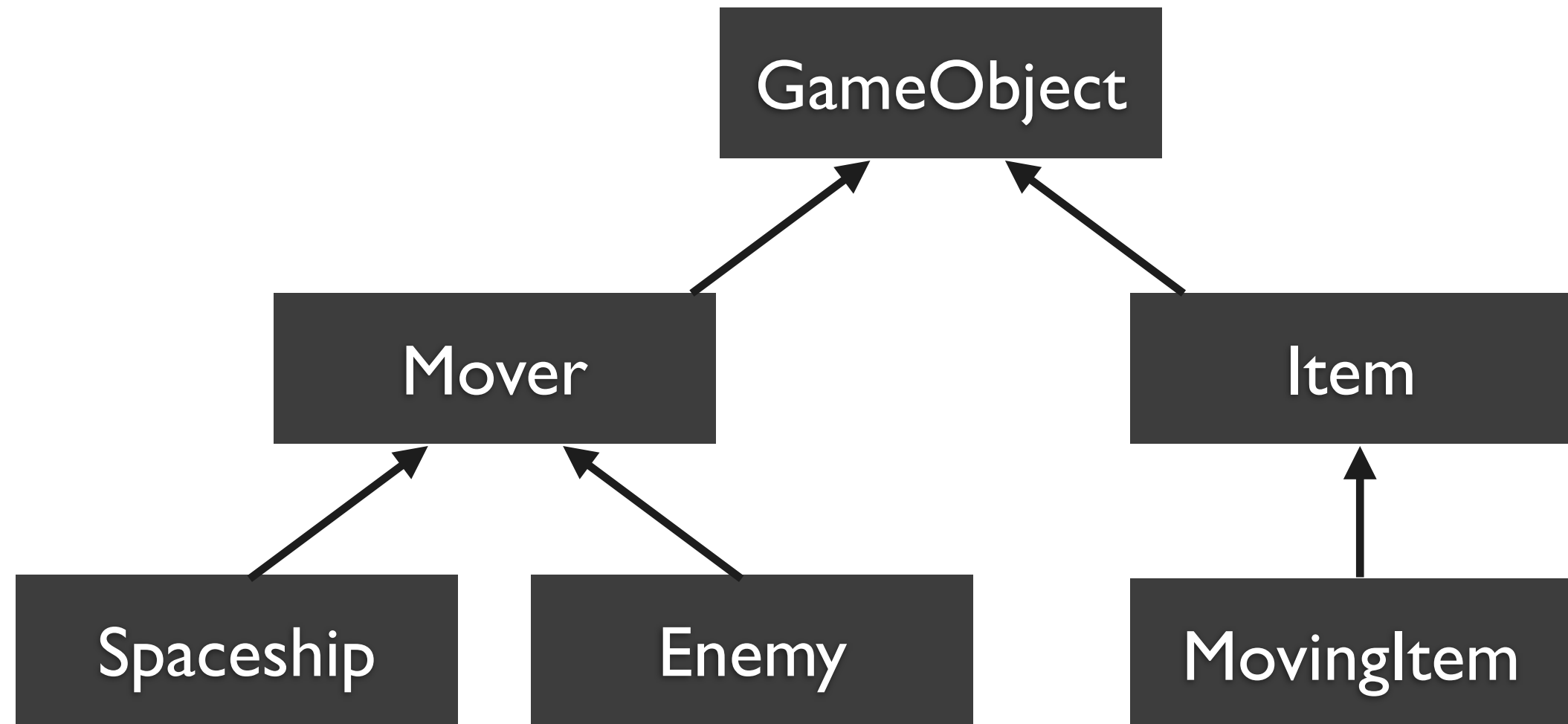




# Why CBGD?

## Inheritance-based vs. component-based

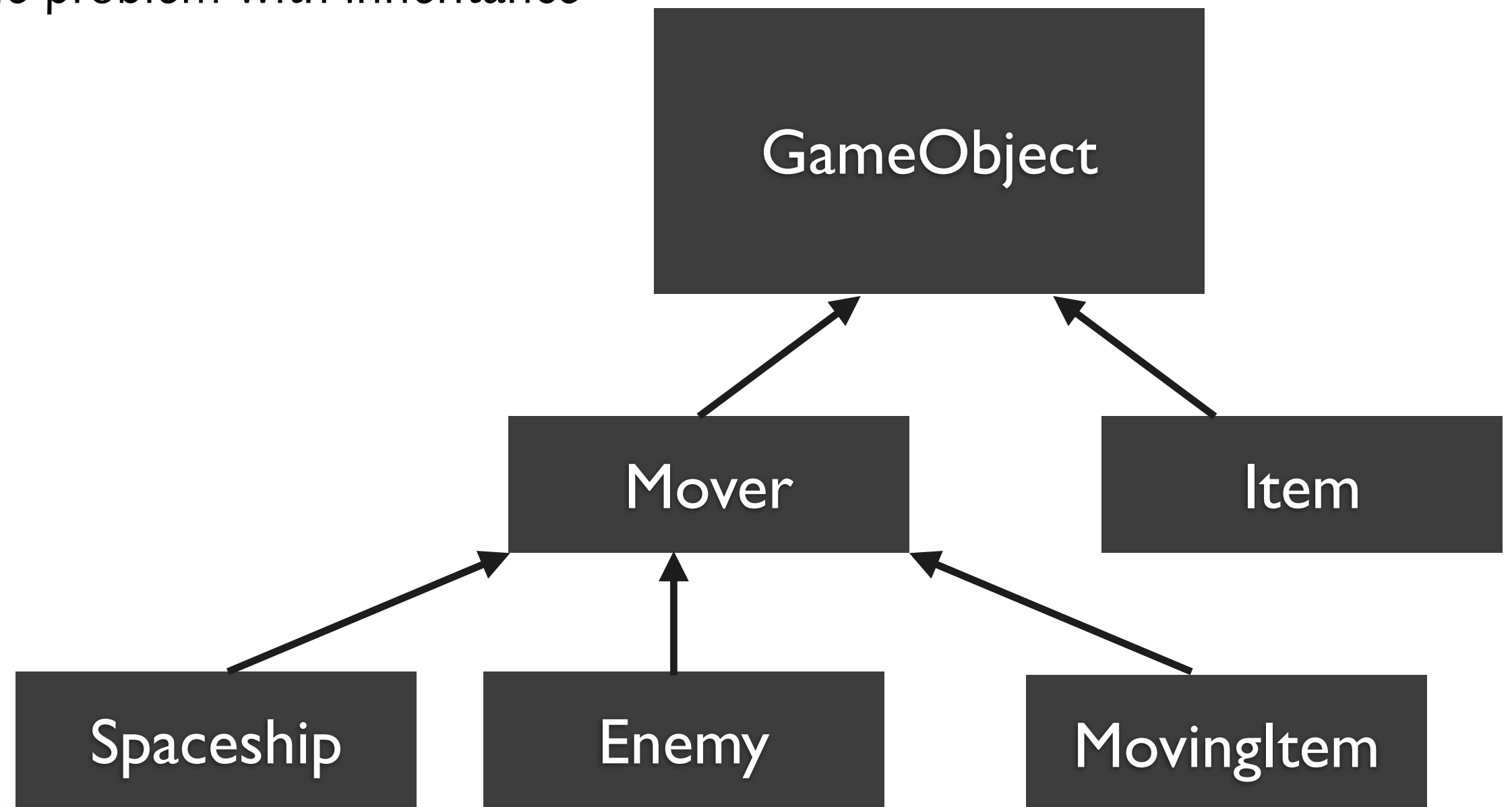
- The problem with inheritance



# Why CBGD?

## Inheritance-based vs. component-based

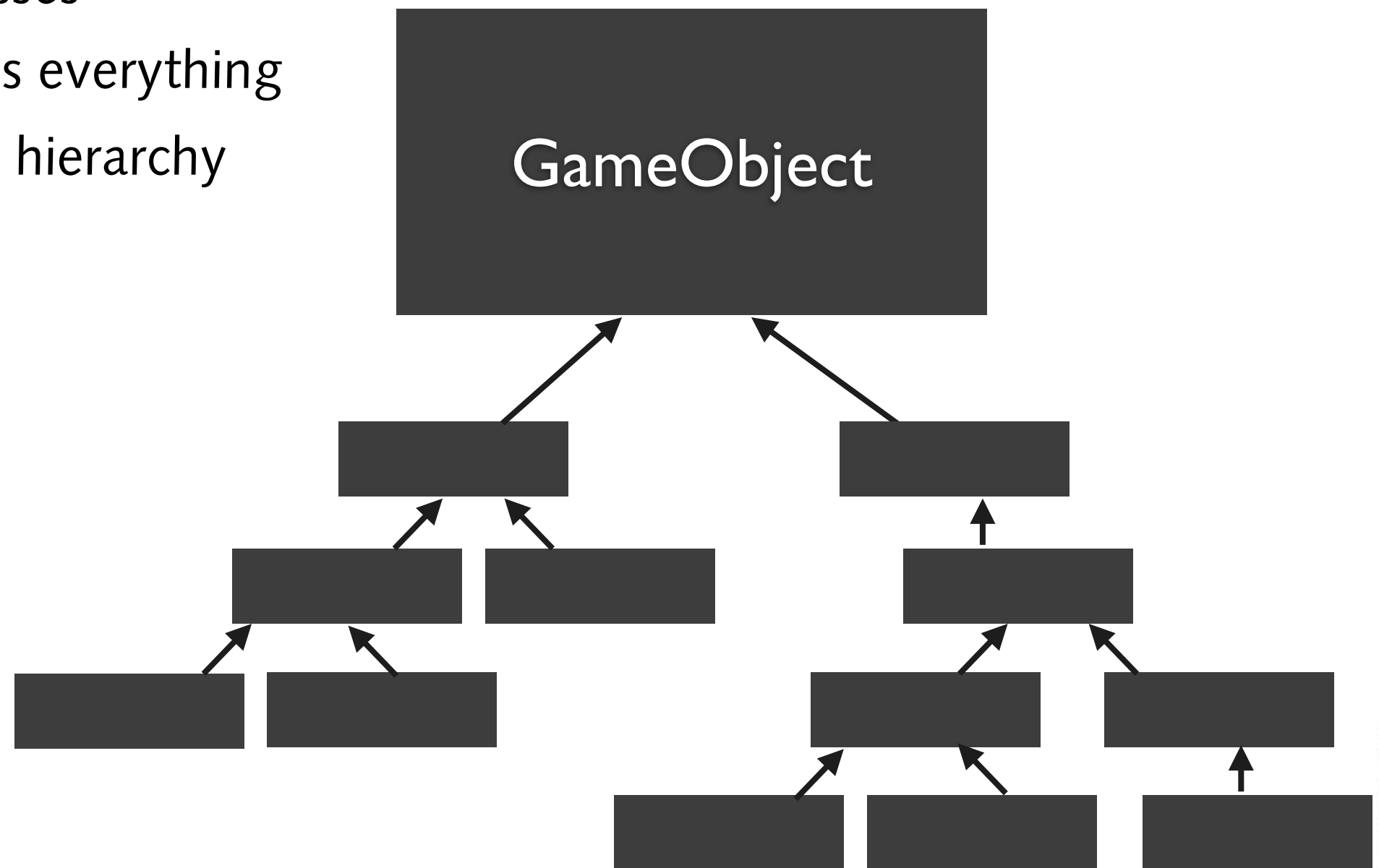
- The problem with inheritance



# Why CBGD?

## Inheritance-based vs. component-based

- Bloating base classes
- GameObject does everything
- Huge inheritance hierarchy

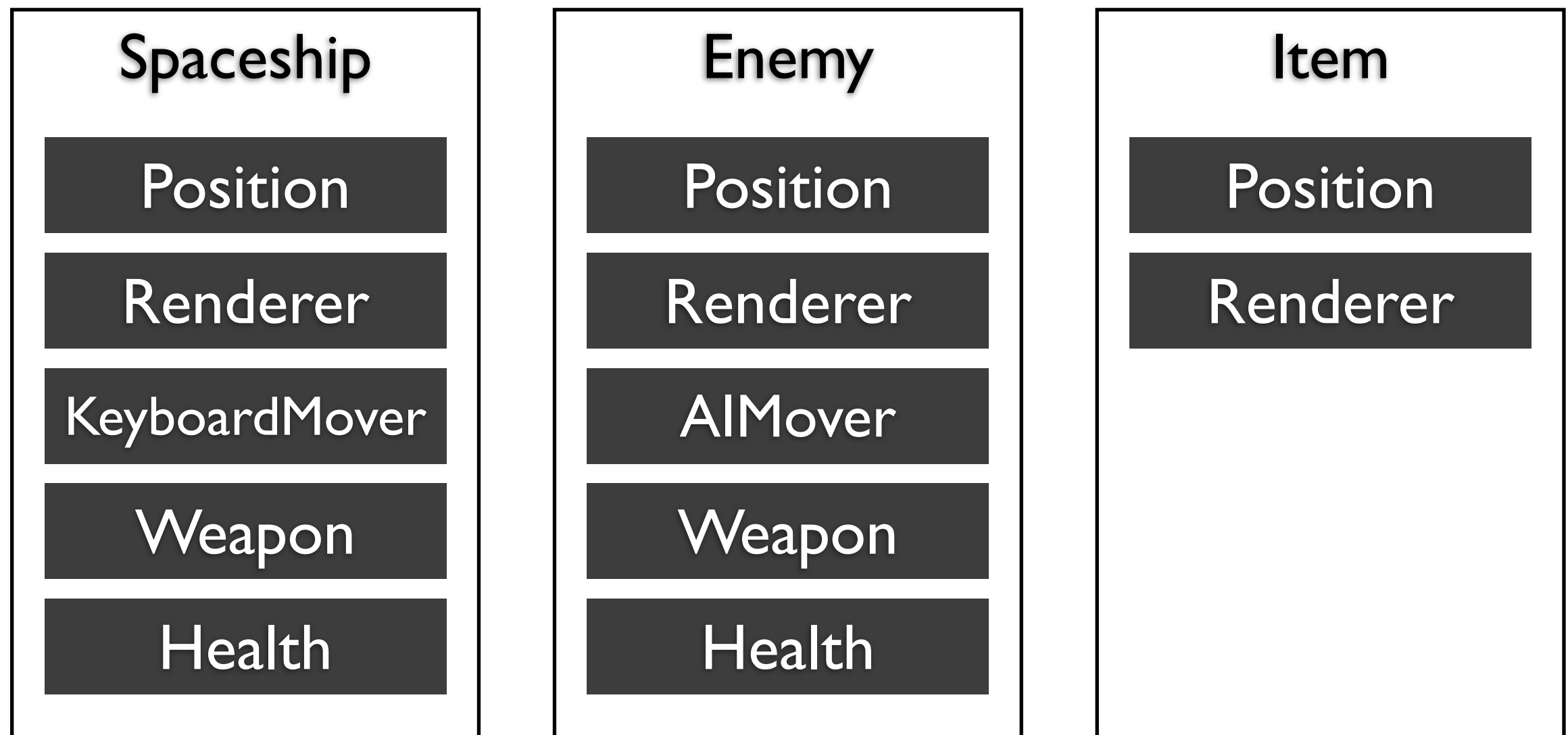




# Why CBGD?

## Inheritance-based vs. component-based

- Assembling components is easier



# CBGD - Programmers point of view

## What is a component?

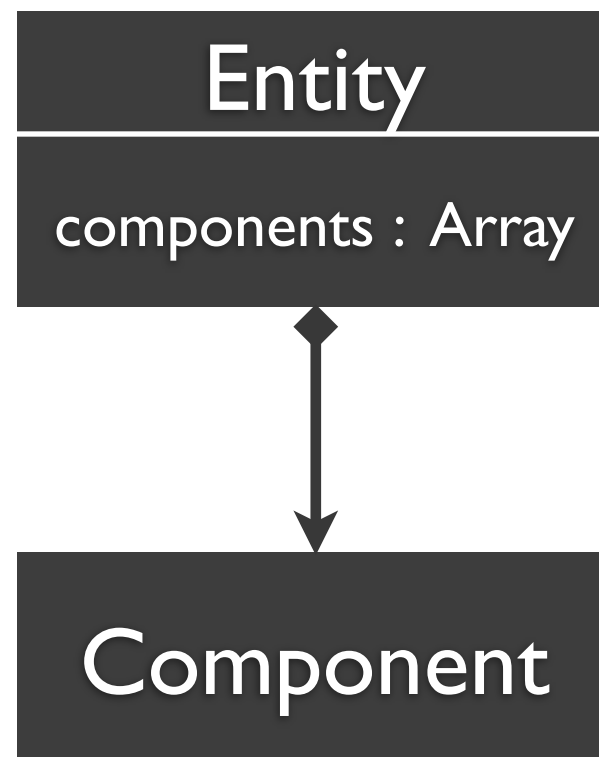
- A small class
- Single Responsibility Principle (SRP)
- Base Class **Component** or Interface(s) **IComponent**
- Life cycle functions - onCreate(), onDestroy(), ...



# CBGD - Programmers point of view

## How do I aggregate components?

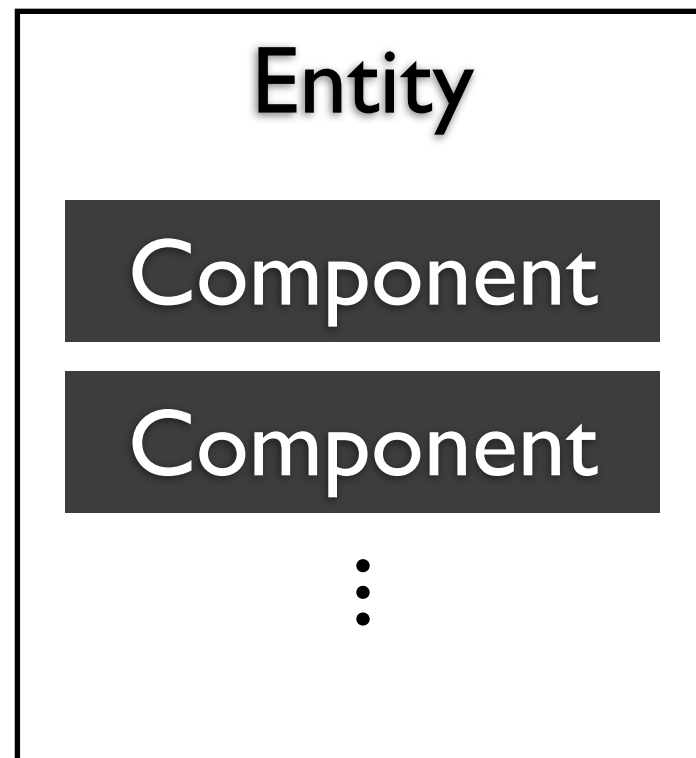
- Use composition
- Entity class aggregates components



# CBGD - Programmers point of view

## How do I aggregate components?

- Use composition
- Entity class aggregates components

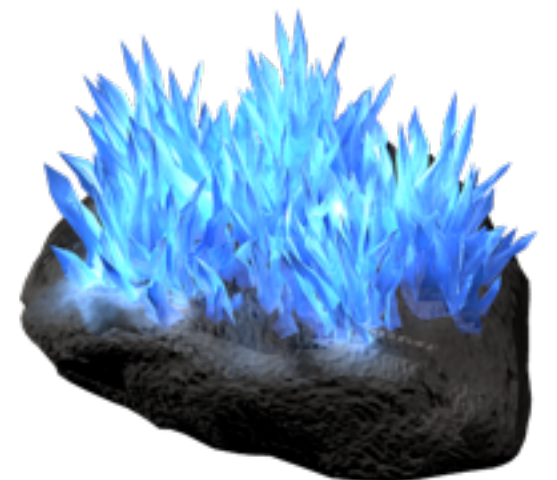




# CBGD - Programmers point of view

## Advantages of CBGD

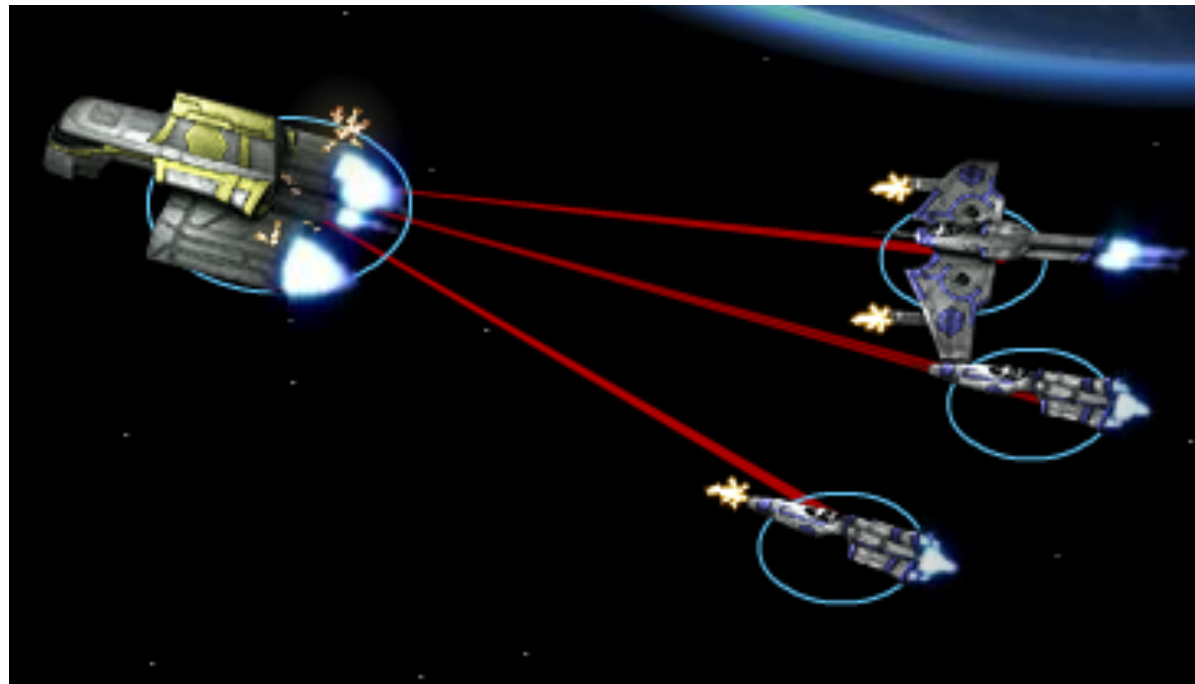
- No bloating GameObject base class
- Composition over inheritance (GOF)
- Simple inheritance hierarchy
- Flat hierarchy in entities
- Small classes



# Why CBGD?

## Inheritance-based vs. component-based

inheritance-based

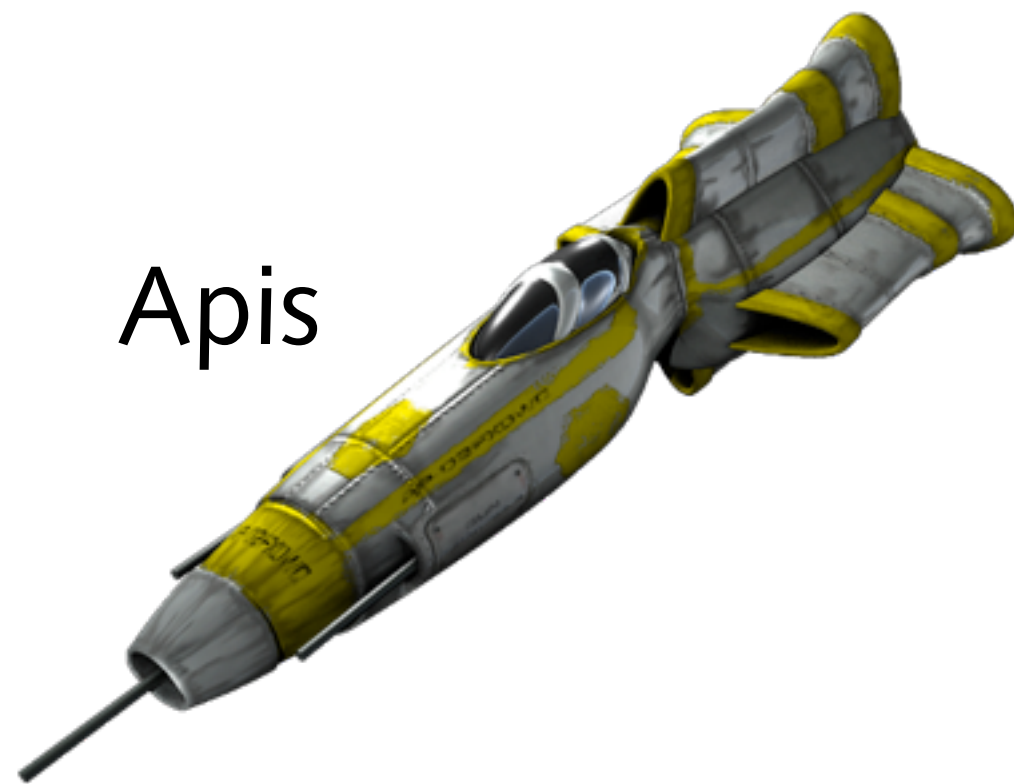


component-based

# CBGD Development

## Example

- A spaceship built from components



Apis

Spatial

Renderer

ClickMover

MachineGun

# CBGD Development

## Engines

- Create your own
- CBGE (AS2)
- pushbutton engine (AS3)





# CBGD Development

## Demo

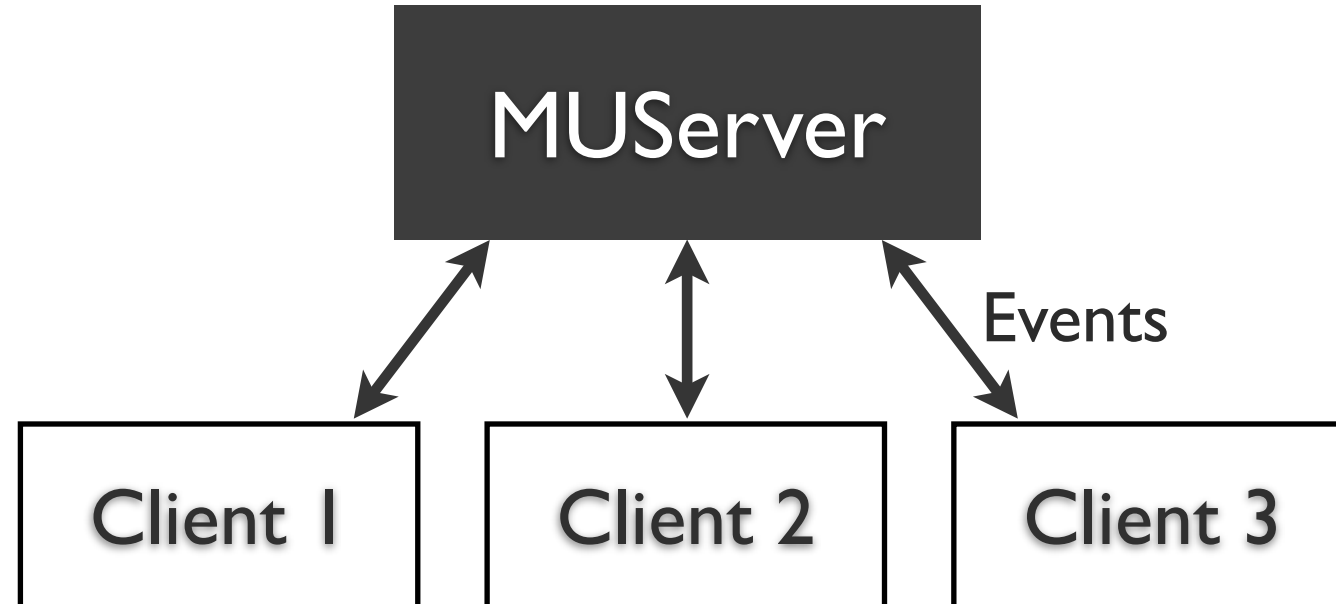
- A movable Apis using the pushbutton engine



# CBGD Development

## Multiplayer

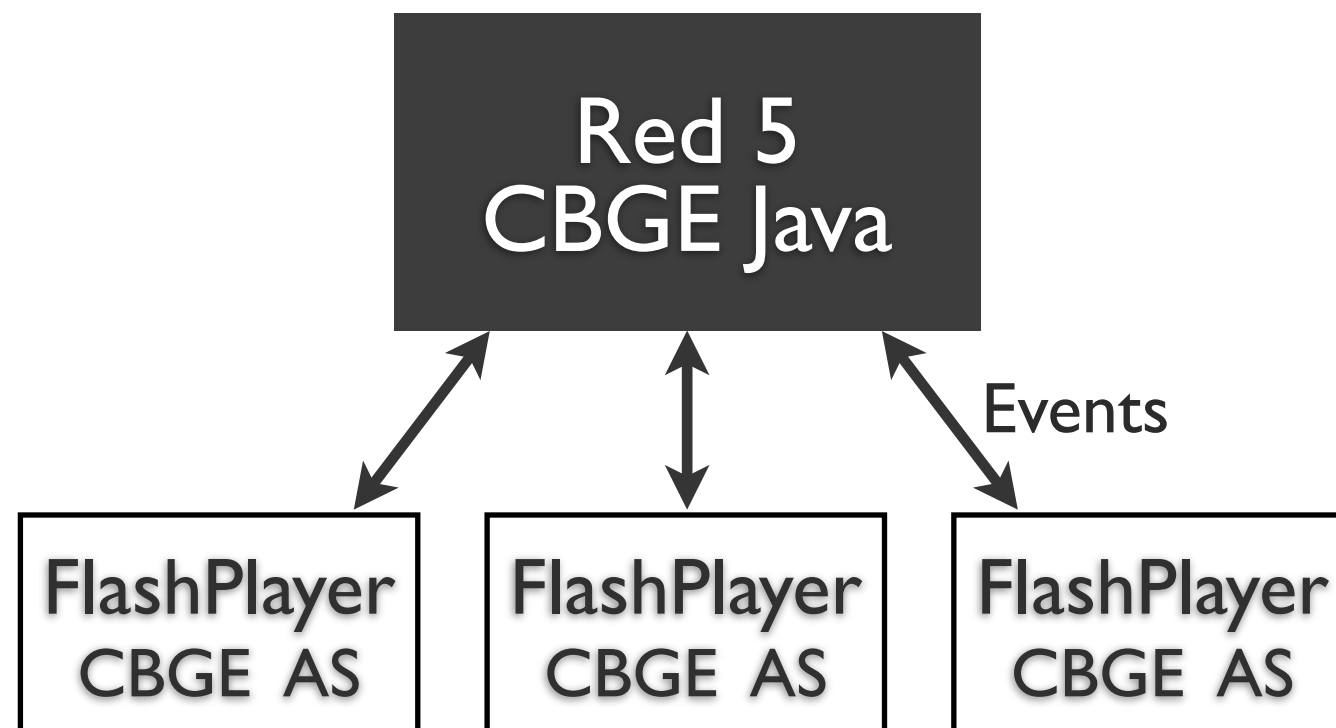
- Multiuser server (Red5, SmartFox, ElectroServer, ... )
- AFP protocol (binary)



# CBGD Development

## Multiplayer in DeltaStrike

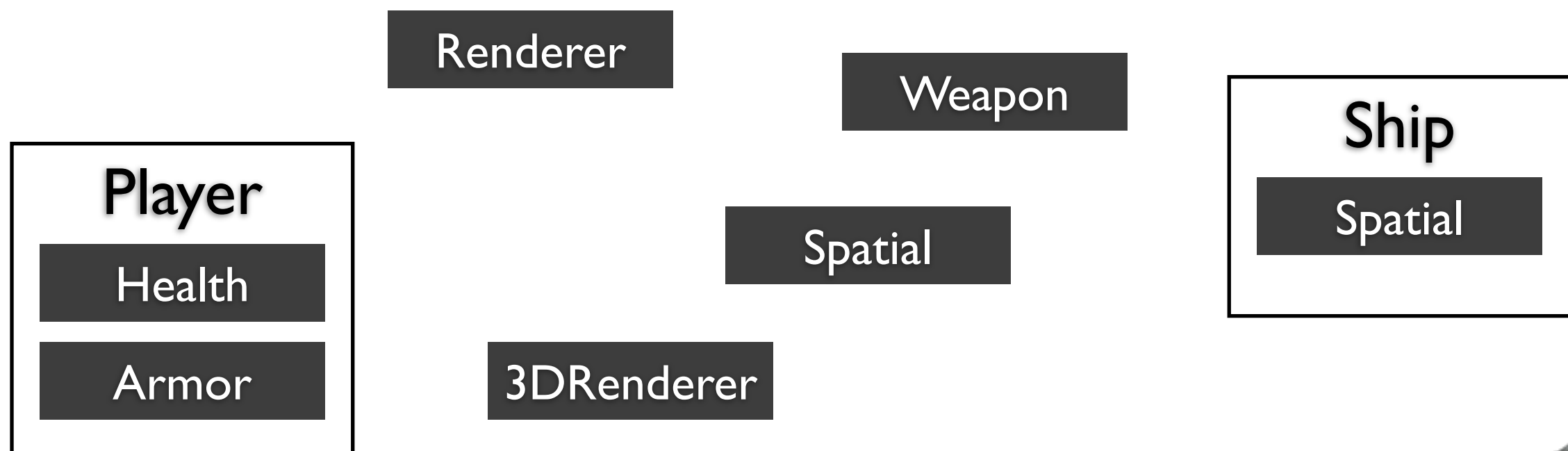
- CBGE on both client and server



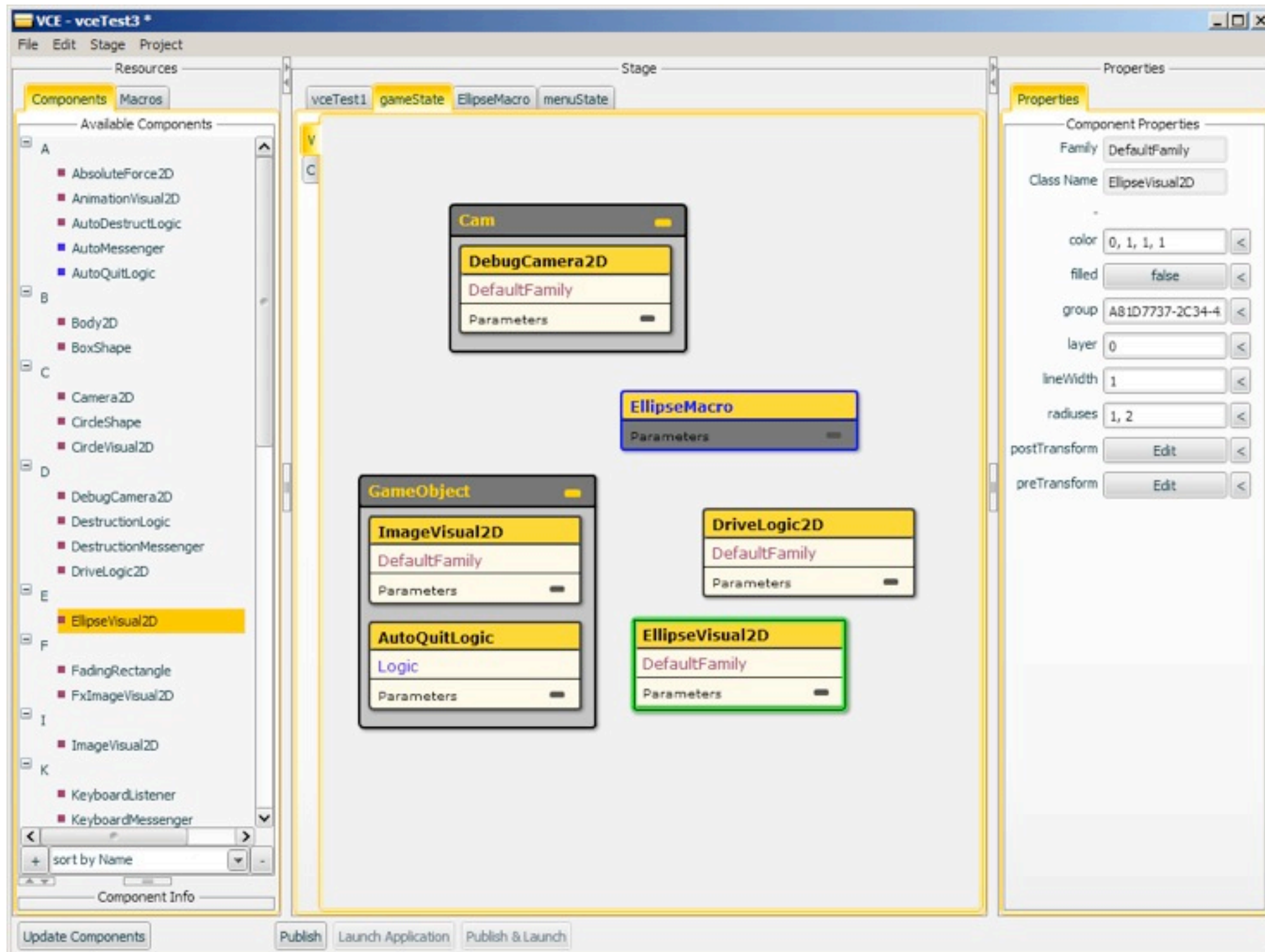
# Future of CBGD

## Visual component editing

- Drag and drop game development

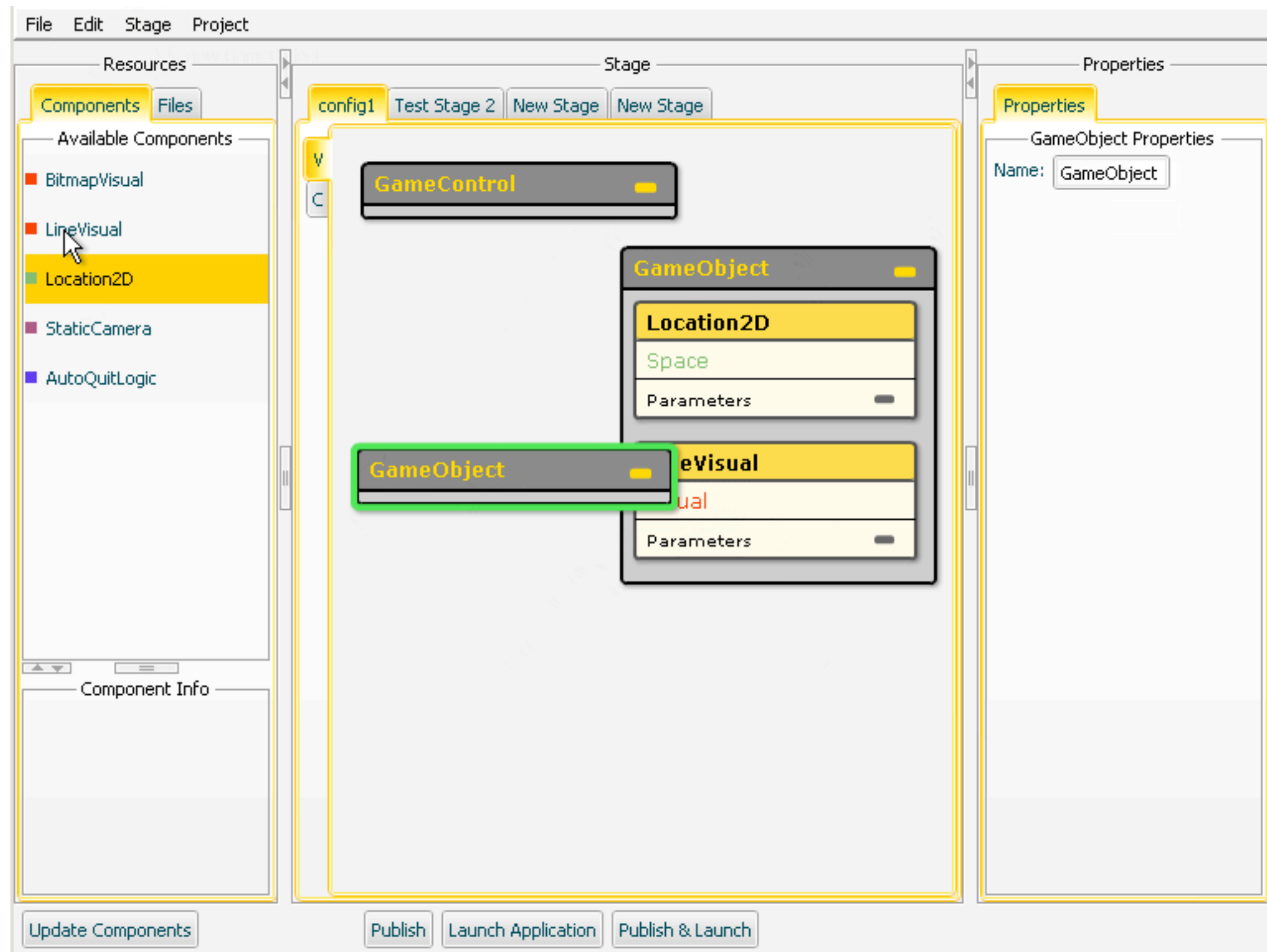


# Future of CBJD





# Future of CBGD





@Michael\_Plank



deltastrike.org