Exploding Chickens

A full-stack card game

Radison Akerman, April 2023

Hi there, my name is

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Project Manager & SWE @ UIC CoE
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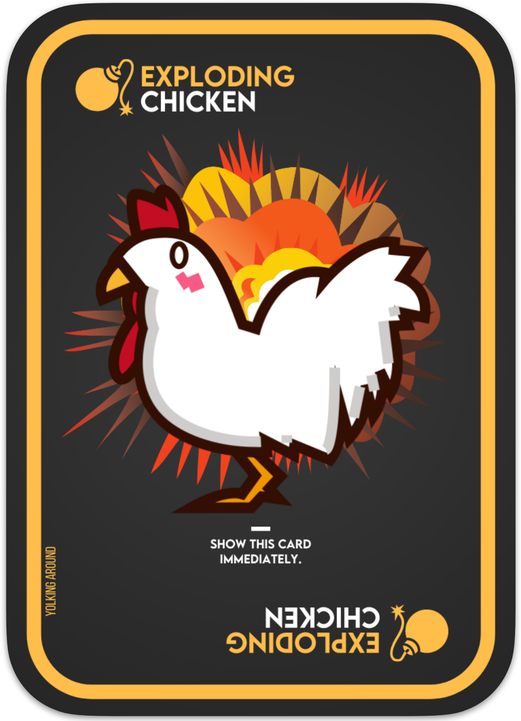
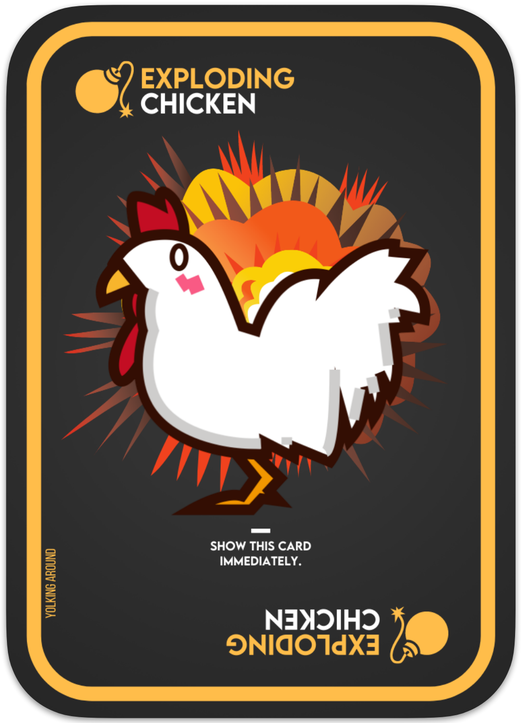
Draw Deck x52

Discard Deck x0



Exploding Chicken

Avoid this little guy at all costs. Once this card is drawn, you must use a defuse card to stop the ticking time bomb. If you don't have a defuse card, it looks like your time is up.



Exploding Chicken

```
if (card is drawn)
  if (player has defuse)
    plays defuse, places
    chicken back in draw deck
  else
    player explodes, removed
    from game permanently
```

Defuse Card

```
if (card is drawn)
  place card in players hand

if (card is played &&
player is exploding)
  discard card
  && prompt player to place
  chicken back in draw deck
  && advance turn
```

Shuffle Card

```
if (card is drawn)
  place card in players hand

if (card is played)
  shuffle draw deck
  && discard card
```

Shuffle Card

- Player wants to play card
- Sends “play-card” request
- Cascading validation phase
  - Is the player valid?
  - Is it their turn?
  - Do they have this card?
  - Can they play it now?
- Completes card action (randomize draw deck)
- Discard card
- Tell everyone what happened

EXPLODING CHICKEN
SHOW THIS CARD IMMEDIATELY.
EXPLODING CHICKEN
DEFUSE
DUCK... DUCK... DEFUSE!
X6
STOP AN EXPLODING CHICKEN AND PUT IT BACK IN THE DECK.
DEFUSE
ATTACK
YEET A CHAIR
X4
FORCE THE NEXT PLAYER TO TAKE TWO TURNS.
ATTACK
SEE THE FUTURE
YOU'RE A WIZARD, HARRY!
X5
VIEW THE NEXT THREE CARDS IN THE DRAW PILE.
SEE THE FUTURE
SKIP
CUT THE LINE AT THE BANK
X4
SKIP YOUR TURN TO THE NEXT PLAYER.
SKIP
REVERSE
LAND THE BACKFLIP 180
X4
FLIP THE TURN ORDER AND END YOUR TURN.
REVERSE
SHUFFLE
PRODUCE A FIRE EDM MIX
X4
TAKE THE DECK AND SHUFFLE IT. PUT THE DECK BACK.
SHUFFLE
FAVOR
ASK YOUR PROFESSOR WHAT'S ON THE EXAM
X4
ASK A PLAYER FOR A FAVOR IN THE FORM OF A CARD.
FAVOR
RAINBOW CHICKEN
PAIR TWO OF THIS KIND TO ASK FOR A FAVOR.
RAINBOW CHICKEN
CHICKTIONARY
cat hat bat
PAIR TWO OF THIS KIND TO ASK FOR A FAVOR.
CHICKTIONARY
SURFING CHICKEN
PAIR TWO OF THIS KIND TO ASK FOR A FAVOR.
SURFING CHICKEN
WILD CHICKEN
PAIR TWO OF THIS KIND TO ASK FOR A FAVOR.
RAINBOW CHICKEN
HOT POTATO
1/1
DROP A STEAMING HOT POTATO ON A GOOD FRIEND
X1
PASSES THE TURN ON TO THE NEXT PLAYER. ONLY PLAYABLE WHEN AN EC IS DRAWN.
HOT POTATO
FAVOR GATOR
1/2
BECOME LOW-KEY
X2
STOP THE FAVOR OF ANOTHER PLAYER. THE PLAYER MUST GIVE YOU ONE CARD.
FAVOR GATOR
SCRAMBLED EGGS
1/2
START BREAKFAST OFF WITH A TOAST
X2
DUMP EVERYONE'S HAND INTO A POT AND RE-DEAL THE ENTIRE DECK.
SCRAMBLED EGGS
SUPER SKIP
1/3
LEAP YOUR WAY OUT OF A STICKY SITUATION
X3
SKIPS TURN(S) WITHOUT HAVING TO DRAW A CARD.
SUPER SKIP
SAFETY DRAW
1/4
SWERVE AROUND THE TRAFFIC CONE
X4
ENDS YOUR TURN BY DRAWING THE FIRST CARD THAT IS NOT AN EXPLODING CHICKEN.
SAFETY DRAW
DRAW FROM THE BOTTOM
1/4
PULL OUT ONE OF THE LARGE BOXES
X4
END YOUR TURN BY DRAWING A CARD FROM THE BOTTOM OF THE DECK.
DRAW FROM THE BOTTOM

Demo

Type in your web browser...

rakerman.com/link/demo

Scalable and fast

Room for expansion

Easy to understand

Where do you start?

Maximize compatibility

Quick to develop

Real-time communication

> Web Browsers

Functional Programming v1 & v2

Object Oriented Programming v3

Web Browsers

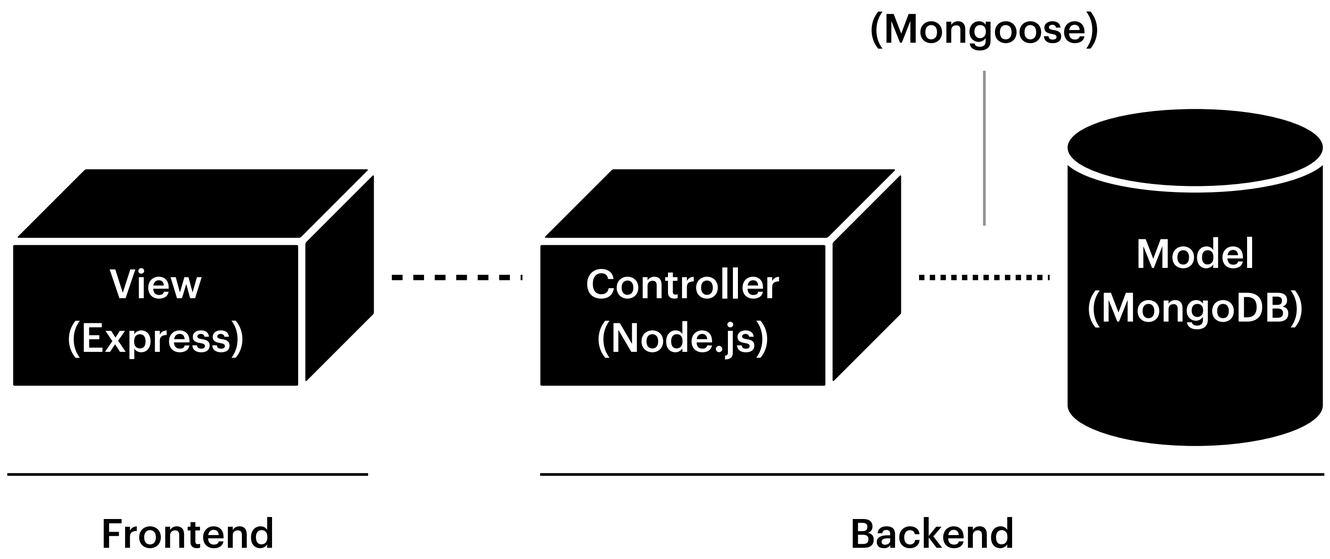
> Functional Programming v1 & v2

Object Oriented Programming v3

v1.0.0

An unorganized first attempt (that works)

- Full-stack web application
  - Node.js — an asynchronous event-driven JavaScript runtime geared towards scalable network apps
  - MongoDB — a NoSQL document-oriented database
    - Mongoose as an ODM (Object Data Modeling)
  - Handlebars — HTML templating language
  - Socket.io — real-time, bidirectional communication


(Mongoose)
View
(Express)
Controller
(Node.js)
Model
(MongoDB)
Frontend
Backend

Game

Cards

```
_id
action
assignment
position
pack
```

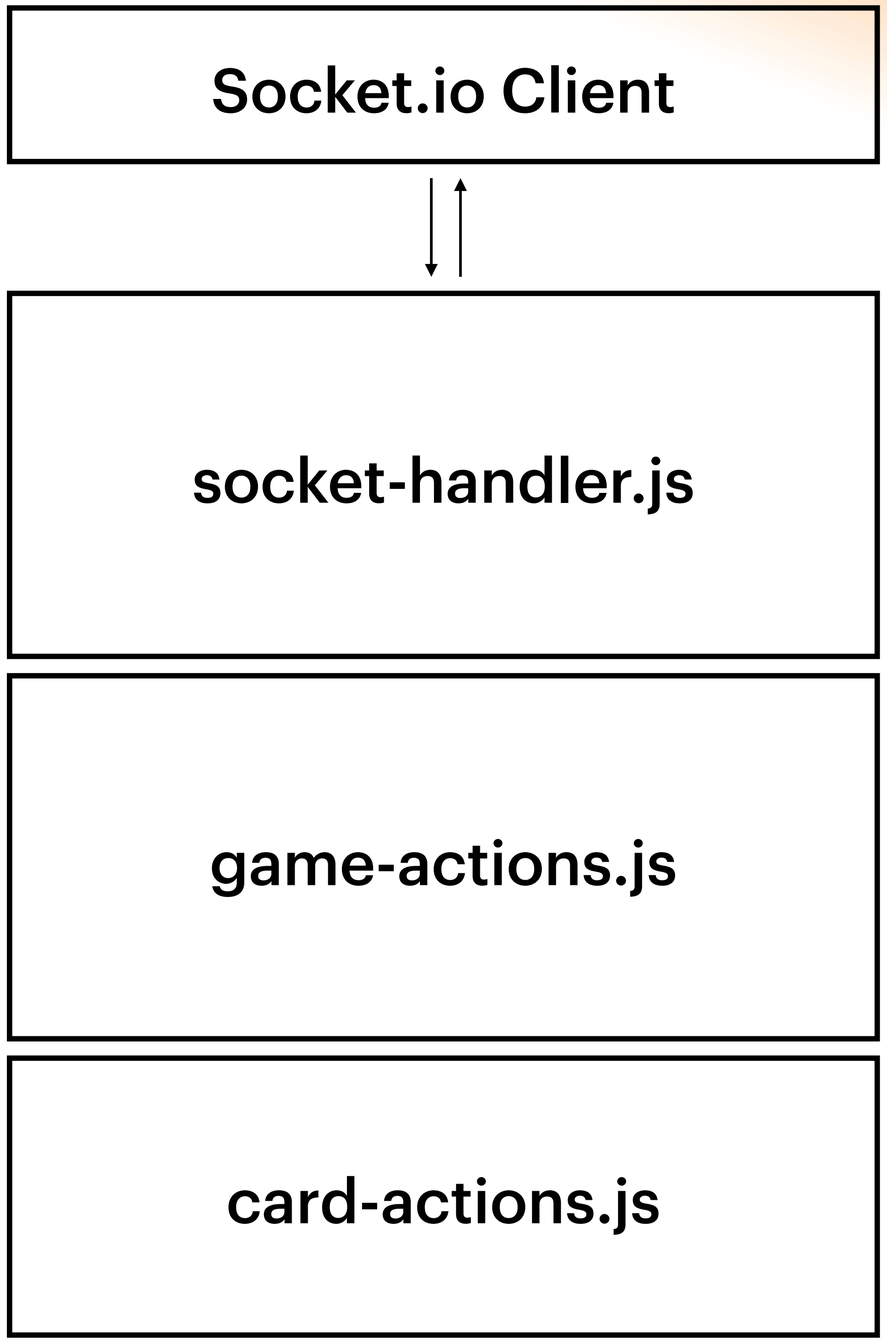
Players

```
_id
nickname
avatar
seat_position
wins
sockets_open
is_host
is_dead
```

Events

```
_id
tag
req_player
target_plyr
related_key
related_value
```

Misc data...



Shuffle Card

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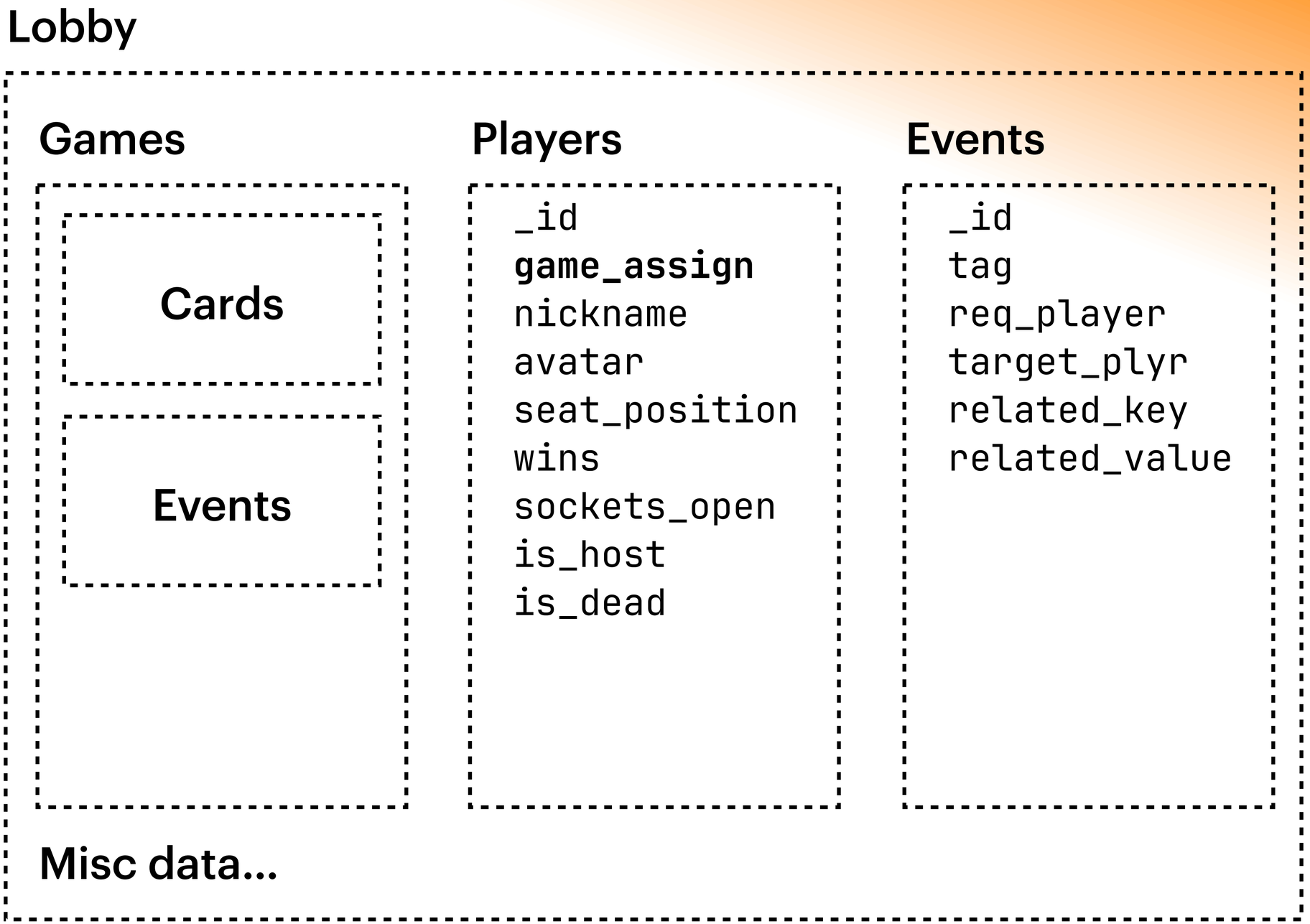
- Completes card action (randomize draw deck)
- Discard card
- Tell everyone what happened

v1.1.7 Code Review

v2.0.0

A segmented second attempt (much, much cleaner)

- Same web stack (Node.js, MongoDB, Handlebars, Socket.io) + Vue.js + Auth0
- Mocha + Istanbul — Backend tests, code coverage
- Shared repository model
- Issues and features request tracking in Github
- New Lobby abstraction

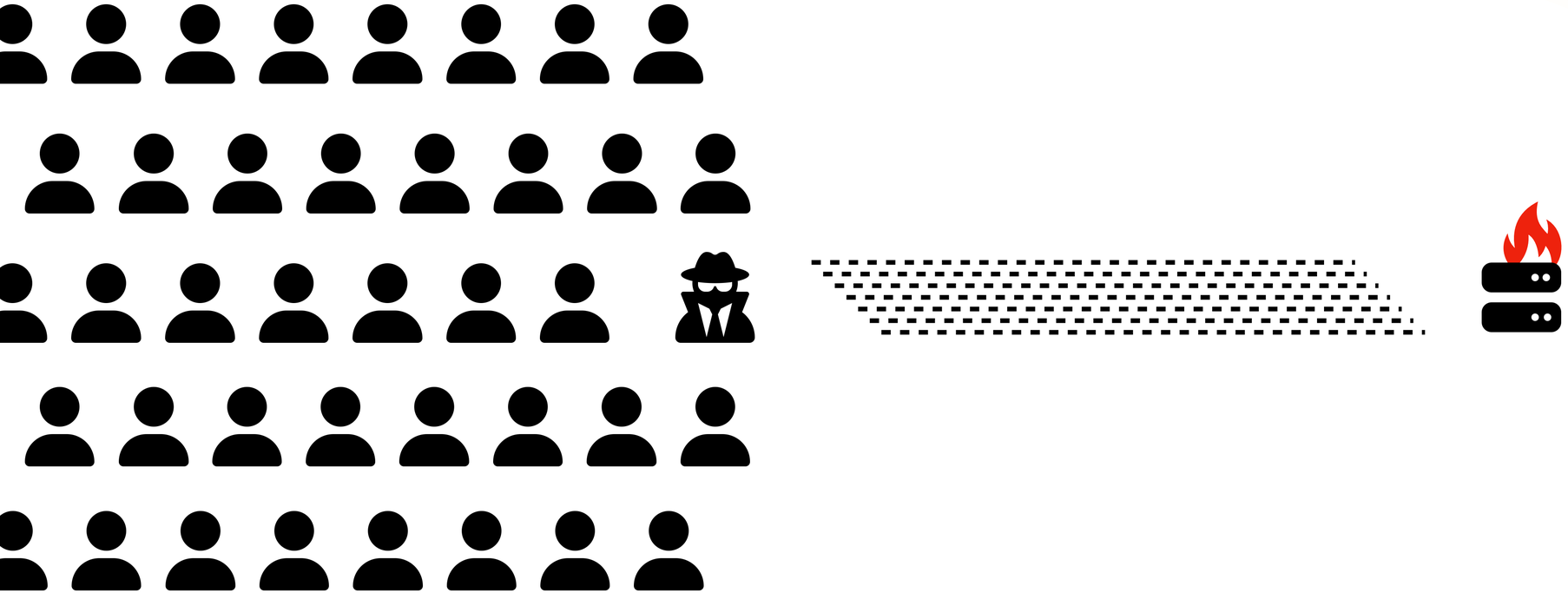

Lobby
Games
Cards
Events
Players
_id
game_assign
nickname
avatar
seat_position
wins
sockets_open
is_host
is_dead
Events
_id
tag
req_player
target_plyr
related_key
related_value
Misc data...

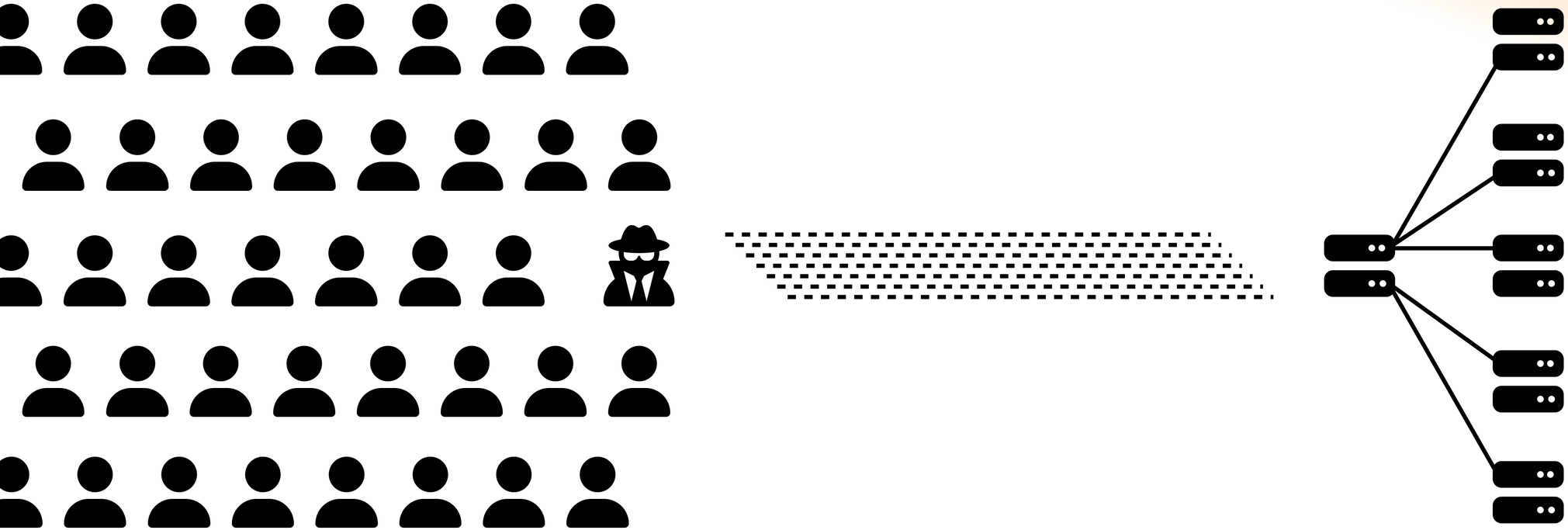
v2.0.6 Code Review

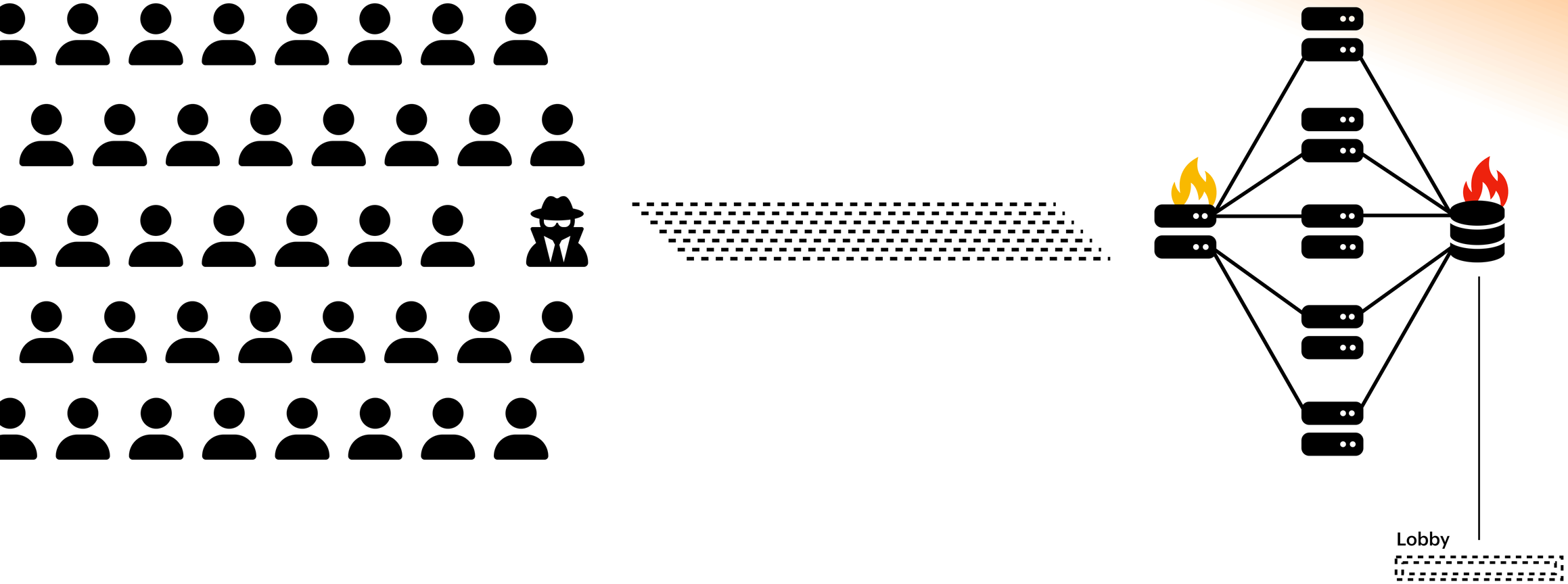
Web Browsers

Functional Programming v1 & v2

> Object Oriented Programming v3



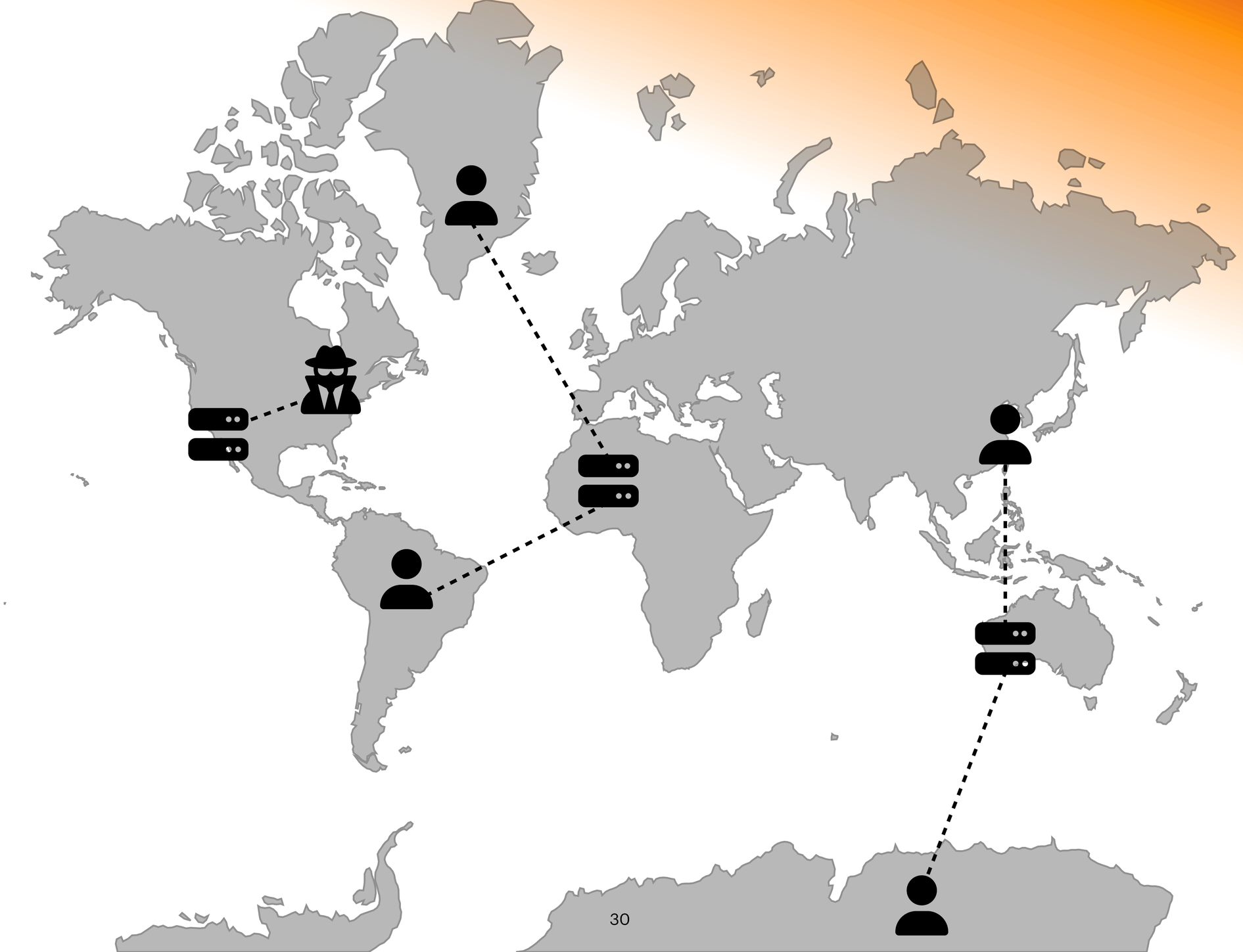


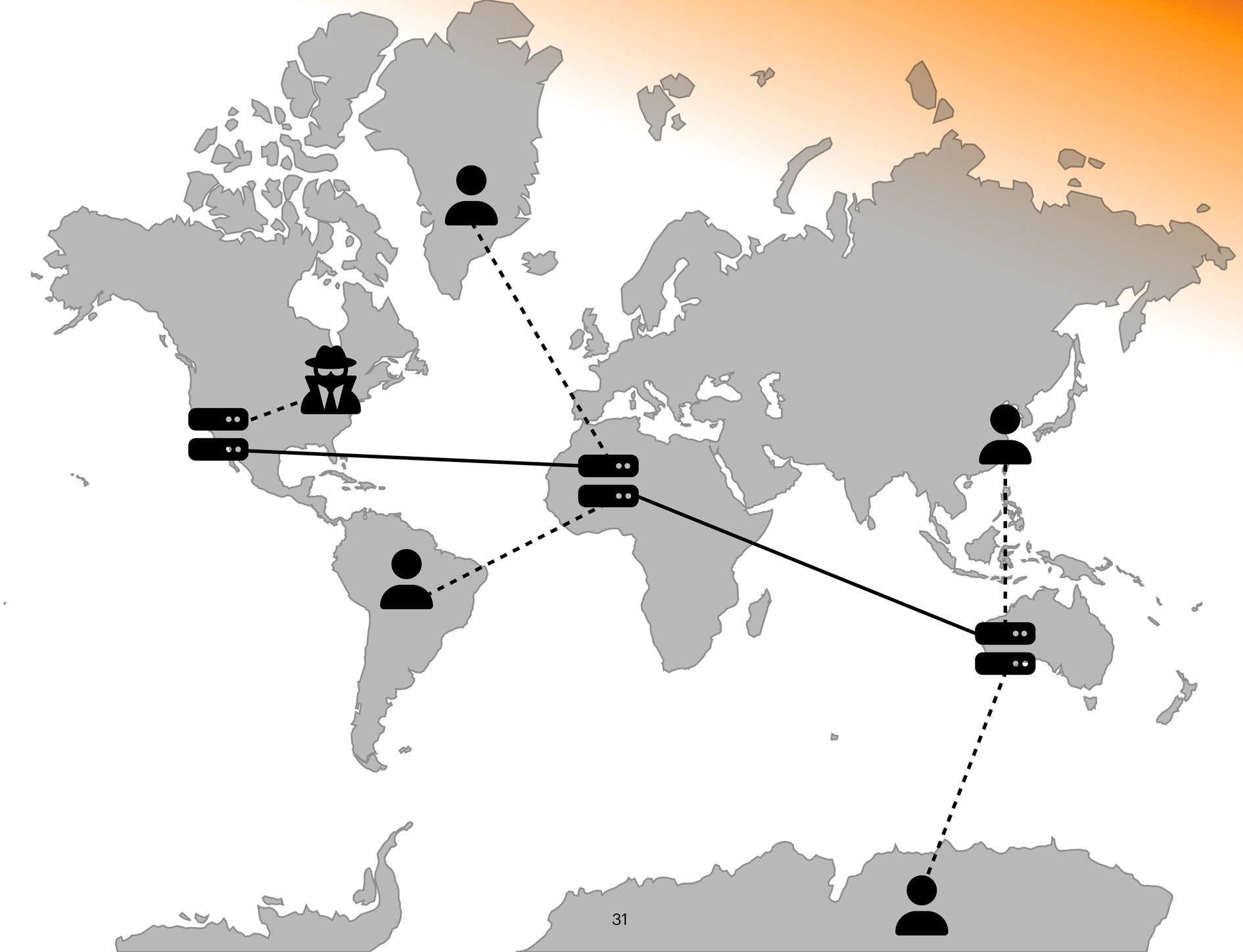

Lobby

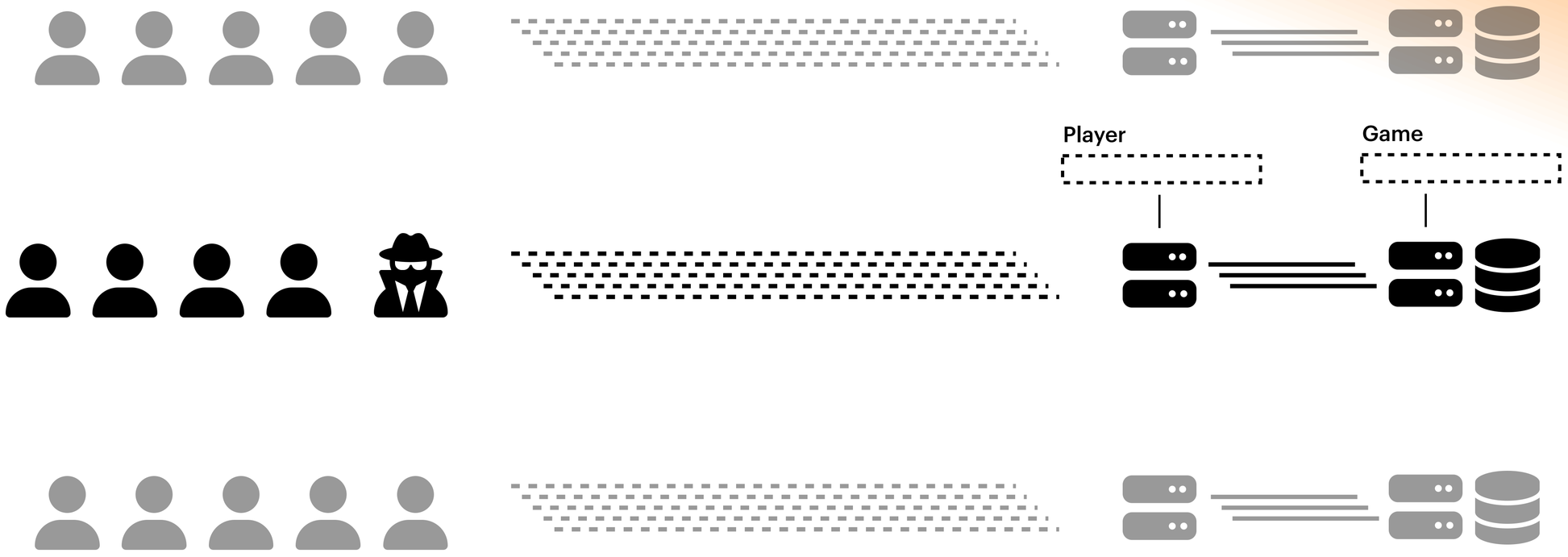
v3.0.0

A globally-distributed 3rd rework (here we go again)

- Same test coverage, lobby abstraction, and user interface
- Completely new web stack: Typescript (OOP) + Cloudflare Workers + Websockets + Nuxt + Auth0
  - State-of-the-art, lightweight & serverless = cheap
  - Ability to run ‘on the edge’, decentralized (worldwide)






Player
Game

Player
Lobby

Key Takeaways

- Do your research when picking a language
- Build a solid data structure
- Clearly define boundaries between parts of your project
- Give yourself room to build something better
- Visualize everything upfront

Questions

Slidedeck, links, past lectures

rakerman.com/publications