UCI Computer Game Science
Patterns for Networked Games

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Why did Video Games Go Networked?

1) If you are playing on the same screen everyone can see that you are cheating, I mean, see your strategy.

2) It's hard to lug around your desktop computer to your friends' house every time you want to play a game.

3) People are social, from what I understand, I haven't actually talked to people.
On the Menu

1. What kind of Game are we making?
2. Planning for your Network Game.
3. Common technologies
4. GOLO Game Demo
5. Normalizing your Data
6. Solving some problems
7. Code Examples
What kind of game are we making?

1. Is the game head to head or Multi-player?
2. Is it turned based or real time?
3. Is it persistent or transient?
4. Is it location based, camera based, social networked?
5. How many players are you expecting?
1. Head to Head
2. Turn Based*
3. Transient – Matches end
4. Social network with notifications
5. Lots hopefully... 😊 two at a time.
Planning for your networked game

- **Connection Modality**
  - connection-based or connection-less

- **Interaction Modality**
  - Synchronous or asynchronous

- **Communication Type**
  - freeform-stream (Byte based) or fully-structured blocks (Command-Response)

- **Communication Configuration**
  - Peer to Peer or Master-Slave

- **Message Form(s)**
  - Text( XML/Json/?), Binary(Protobuf/?)
GOLO Case Study

- Connection less – REST interface
- Asynchronous*
- Command-Response
- Master-Slave
- JSON
GOLO Technologies

- Unity
- Linux Server
- Apache
- Mono
- MySQL

Unity Client
- Android
- iOS
- Web
- FB
GOLO Game Demo

Game Demo

https://www.puap.com/playgolo
Normalizing your data

http://support.microsoft.com/kb/283878

• Why is it important?
• What are the Benefits?
Normalizing your data

- Some cases are obvious some are not
- Caching data vs Calculating
- Joins and indices
- How do you keep GOLO game standings?
**GOLO Game Standings**

### Player 1 vs Player X as wins

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<tr>
<th>ID</th>
<th>Opponent 1</th>
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<th>Opponent 3</th>
<th>Opponent 4</th>
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### Player X vs Player Y (Normalized?)

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Examples

DB Examples

Code Examples
Some Terminology for Networked games

- TCP/IP
- Sockets
- Json/XML/Protobuf/Binary
- Schemas
- Normalization
- SQL
- REST
Questions?

What’s on your mind?