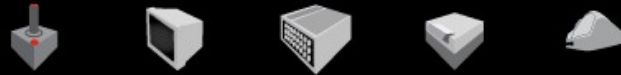


# Research and Educational Innovations in Computer Games

Walt Scacchi



GAME CULTURE & TECHNOLOGY LAB

and

California Institute for  
Telecommunications and  
Information Technology (Calit2)

# Computer Game Industry

Regional (Silicon Coast, CA)

70+ game companies in LA-San Diego area

Industry leading game companies in CA:

Electronic Arts, Blizzard Entertainment,  
Activision, THQ.

International (South Korea, Japan, China, etc.)

30% of South Koreans play computer games

Games currently 5% GDP; 2012 Goal, 10%

## Search

Name (ex. company name)

Street (bld#, suite# etc)

City/Town

State/Province

California

Zip/Postal Code

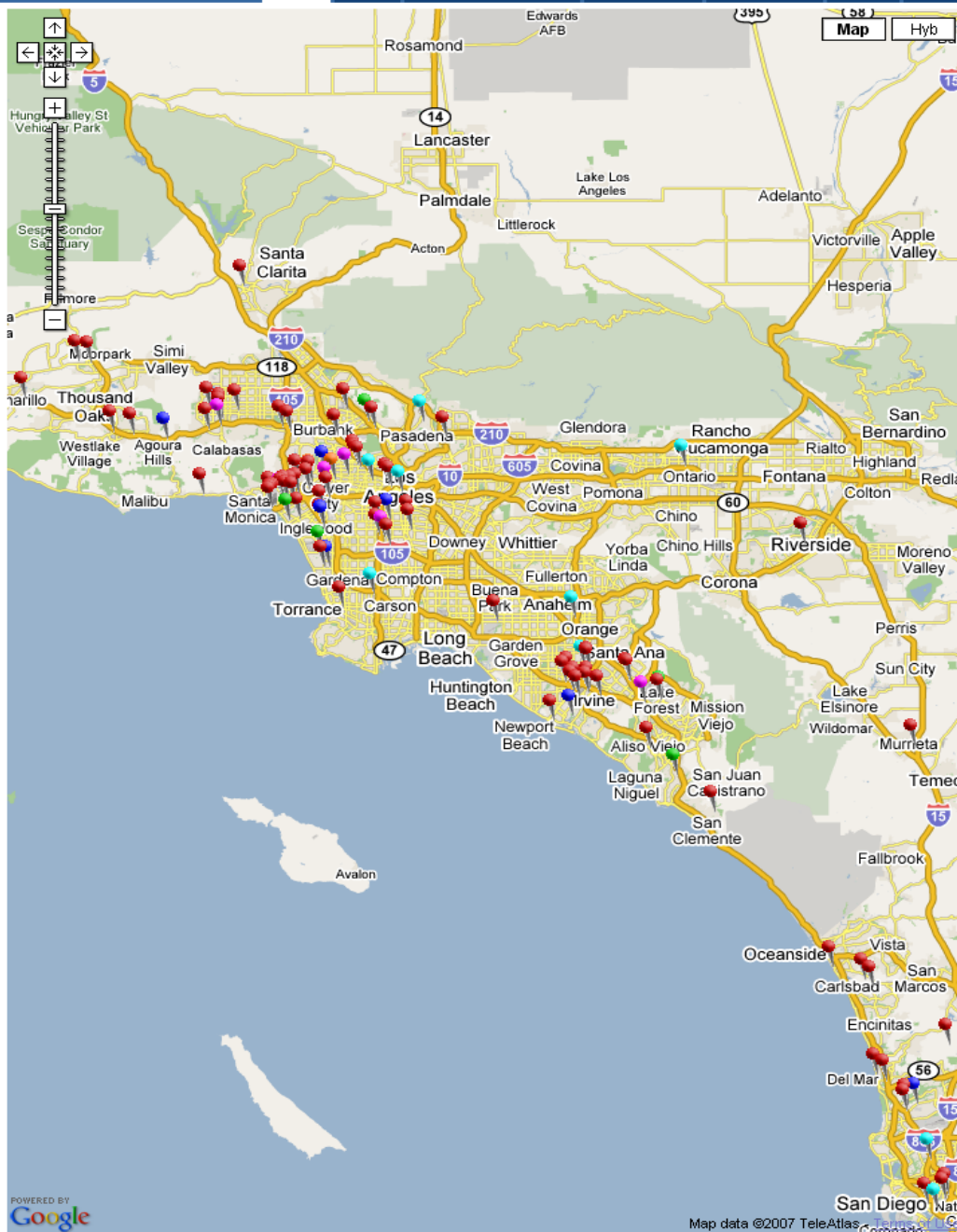
Country (select [all](#) [none](#))

- ☐ Tonga Islands
- ☐ Trinidad & Tobago
- ☐ Tunisia
- ☐ Turkey
- ☐ Turkmenistan
- ☐ Turks and Caicos Islands
- ☐ Tuvalu
- ☐ Uganda
- ☐ Ukraine
- ☐ United Arab Emirates
- ☐ United Kingdom
- ☒ United States
- ☐ Uruguay
- ☐ US Virgin Islands
- ☐ Uzbekistan
- ☐ Vanuatu
- ☐ Vatican City

Category (select [all](#) [none](#))

- ☒ Developer: Other (31)
- ☒ Developer: PC Games (913)
- ☒ Game Attorney (24)
- ☒ Game Audio (18)
- ☒ Game Charity (0)
- ☒ Game Consultant (18)
- ☒ Game Designer (15)
- ☒ Game Distribution (11)
- ☒ Game Financing (6)
- ☒ Game Level Design (5)
- ☒ Game Magazine (6)
- ☒ Game Marketing (23)
- ☒ Game PR (11)
- ☒ Game Recruiter (9)
- ☒ Game Store (12)
- ☒ Game Testing (15)
- ☒ Game Writer (6)
- ☒ Gaming Website (13)

**Search**



# Game industry facts

*Players: >60% male, average age, 33 years old. (Entertainment Software Association)*

*Game development costs:*

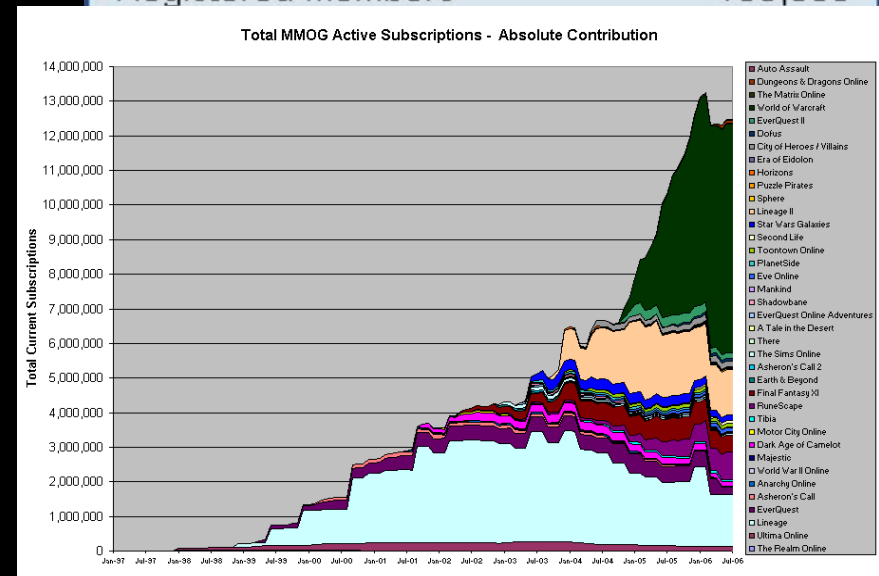
\$400K, 1994; \$10M, 2005;  
\$15-25M, 2010 (ESA)

*Game application areas:*

military training, corporate training, health care, real estate, manufacturing, etc.

*Growth areas: MMOGs, mobile games, education, scientific research, alternate reality games*

| CSports.net Stats      |             |
|------------------------|-------------|
| All-time Player Names  | 625,564,007 |
| Active Players         | 22,547,342  |
| Player Hours Today     | 2,655,571   |
| Players Online Now     | 51,836      |
| Servers Online Now     | 39,756      |
| Modifications Recorded | 3,259       |
| Maps Recorded          | 726,140     |
| Registered Members     | 183,606     |



# UC Participation in Game Research and Education

## Game faculty in UC System

Berkeley (3), Davis (1), Irvine (>10), Los Angeles (3), Merced (1), Riverside (1), Santa Barbara (3), Santa Cruz (3), San Diego (>10), San Francisco (1).

## Game faculty interests at UCI and UCSD:

Anthropology, Biomedical Engineering, Communications, Computer Science, Earth Systems Sciences, Education, Electrical Engineering, English, Film and Media Studies, History, Informatics, Physics, Software Engineering, Studio/Visual Arts

# UCI GameLab Research Partners and Sponsors



# Game Research: Open Source Game Software Development

The most successful OSSD projects obtain sustained exponential growth in their innovation frontier.

Computer game software development is the #1 application area (and #2 overall) for Open Source Software development (OSSD) projects.

Growing number of commercial computer games now ship with tools for creating OSS game “mods”

Future game development will increasingly depend on global OSSD practices and components.



# Science Learning Games for Informal Science Education

Physical interaction environment: *DinoQuest* at the Discovery Science Center (Santa Ana, CA)

- Life-size dinosaurs (T. Rex, Argentinosaurus)
- Family-based problem-solving and collective learning in physically embodied game play environment

- Game progress tracked via user-controlled IR wand that activates embedded electronic media

Online science games: *DinoQuest Online*

- Addresses CA science education standards for K-6 grades

- Interoperates with *DinoQuest*

- Designed for internationalization

- Developed by UCI GameLab

DSC planning new SLG exhibits through 2010  
>\$60M investment

- DSC seeking development of network of SLG-base science centers and exhibits

- OC, CA, US, Korea, Mexico, Turkey





# Game-Based Science

Games can employ advanced scientific models, simulations, visualizations

- Global Climate Systems Science game engine

- Nanotechnology-based “incredible machines”

- Plasma fusion energy generation quest

- Supply chain/infrastructure transformation quest

Game environments can become platforms for experimentally interacting with emerging scientific models and domains of expertise

# Game Research Opportunities

UC could partner with a network of regional science centers to create a venue for informal science education via online science learning games and physical interactive exhibits.

UC could lead the development of OSS games focusing on multi-discipline, internationalized educational outreach and public engagement

UC could pioneer R&D for game-based science

UC has the opportunity to lead the development of the Web 3.0: *The Game Web*



GAME CULTURE & TECHNOLOGY LAB

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