



# **MQP Interests 2005-2006**

by Emmanuel Agu



## Outline of Talk

- My Target: 3-4 MQPs for the year
- Two areas:
  - Graphics on mobile devices
  - Location-aware computing



# Mobile Graphics

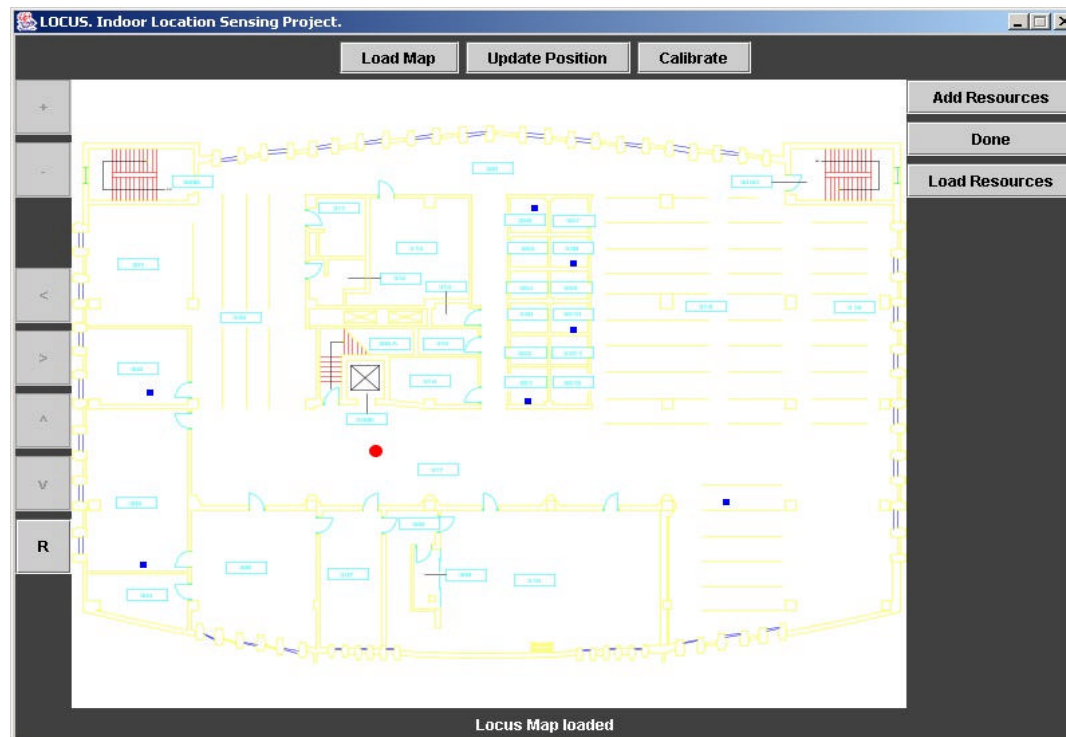
- Mobile devices: no GPU, FPU
- **Solution:** Software shaders E.g swShader
- **Project 1: Compare S/W to H/W shader**
  - How much power is expended? Tool: *PowerSpy*
  - How much slower?
  - Meta effects on full applications. E.g. Quake?
- **Project 2: Open Source GLUT for ES**
  - New OpenGL ES for mobile devices (subset of OpenGL)
  - A few OpenGL ES implementations
  - No GLUT for mobile devices
  - Implement/port!!
  - Already Open source GLUT called freeglut

- **Project Idea 3: Ray tracer on mobile Device**
- **Thrust: Speed/Power trade-offs in Ray Tracer**
  - Write/port ray tracer to PDA
  - Consider speed-power trade-offs for
    - Varying scene complexity
    - bounding volumes,
    - BSP trees
    - Culling
    - Shading models
    - Texturing
    - Noise functions, etc

# Location-aware computing

- **Previously:**

- GPS does not work well indoors
- Developed Locus: Indoor location estimation engine
- Locus uses radio map, signal strength matching
- Developed/developing applications (e.g Visitor tours)





# Location-aware computing

- **Project 1: Outdoor location estimation**

- No outdoor support in Locus yet
- Integrate Locus (indoors) with GPS (outdoors)
- Also explore GPS-less techniques
- New techniques use city-wide signal strength databases. E.g. [www.wigle.net](http://www.wigle.net)

- **Project 2: ATC laptop tracking using Locus**

- ATC currently loans out laptops
- Develop user tracking application on WPI using Locus



## Contact/More info

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