

Improvements to the Orient Motion Capture System

Martin Ling, University of Edinburgh

7th Workshop in Speckled Computing, 11th December 2008

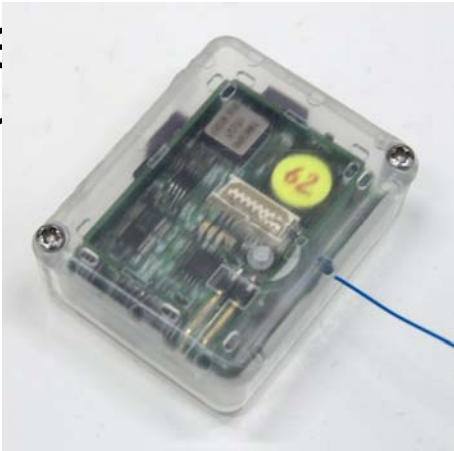


Overview – the Orient capture system

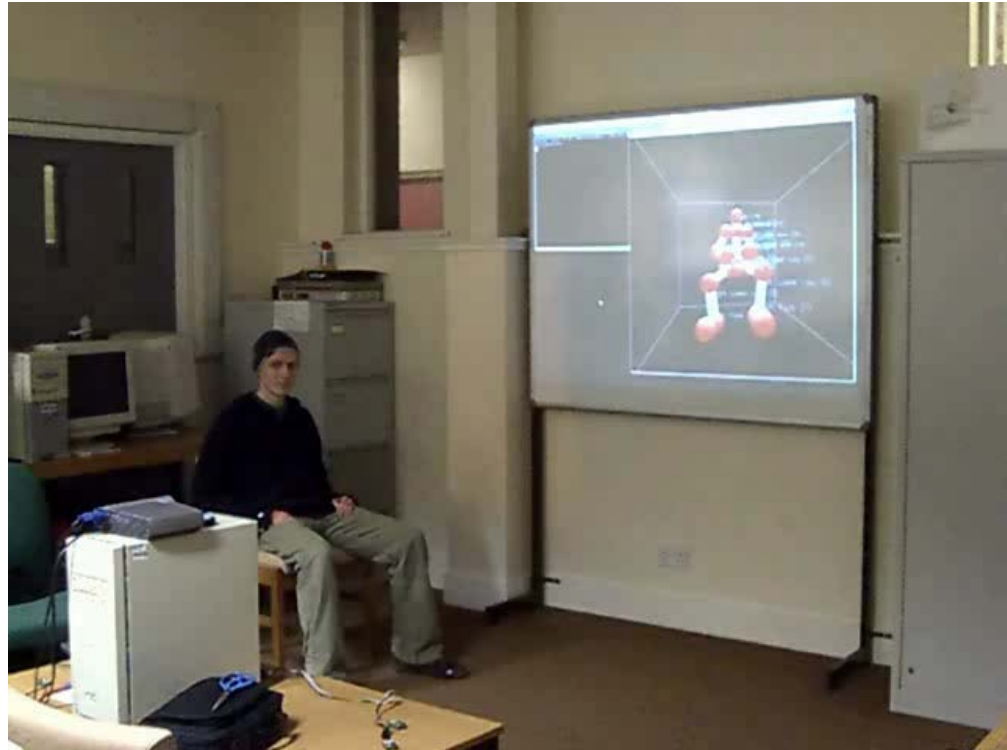
- The Orient system and how it works
- Achievements and benefits
- Review of project progress
- Production of Orient-3 hardware
- Basestation and PC software development
- New hardware and software for mobile use
- Questions
- In-depth talks

What is the Orient capture system?

- A network of sensor devices or

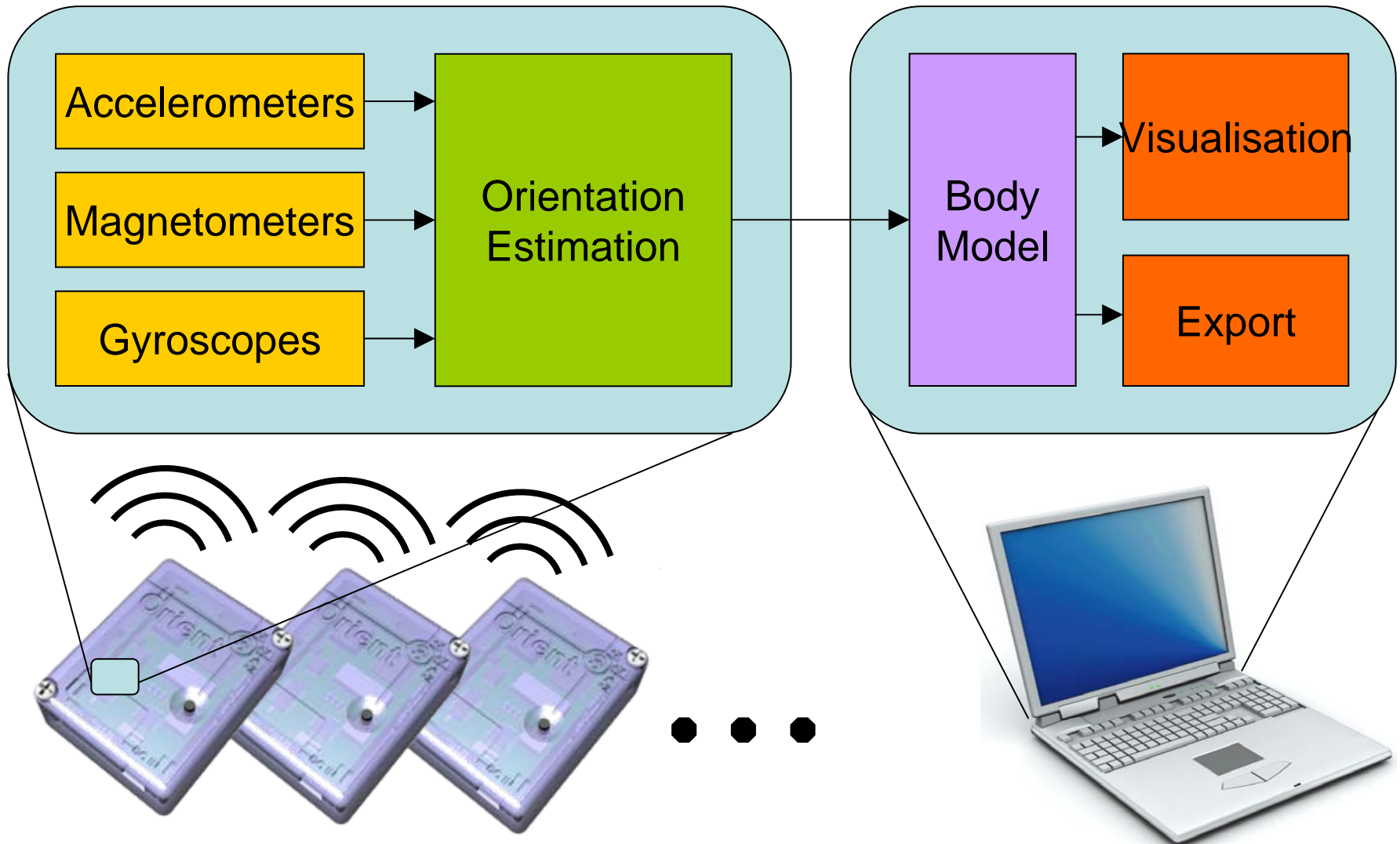


- Worn on the body:



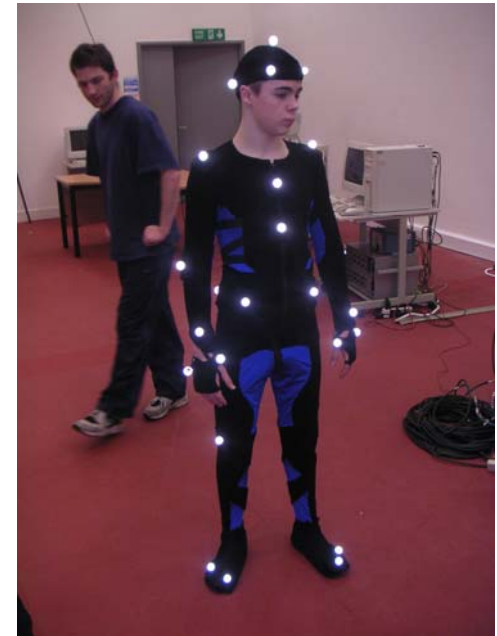
- That let you do this...

How it works



Achievements and benefits

- World first:
 - Completely wireless, full-body tracking in real time through a single mobile receiver.
- Major advantages over conventional tracking:
 - Works anywhere
 - No post-processing
 - No routine data loss
 - Fits anyone
 - Wearable under clothing
 - Lower cost for similar results



Orient-X hardware development

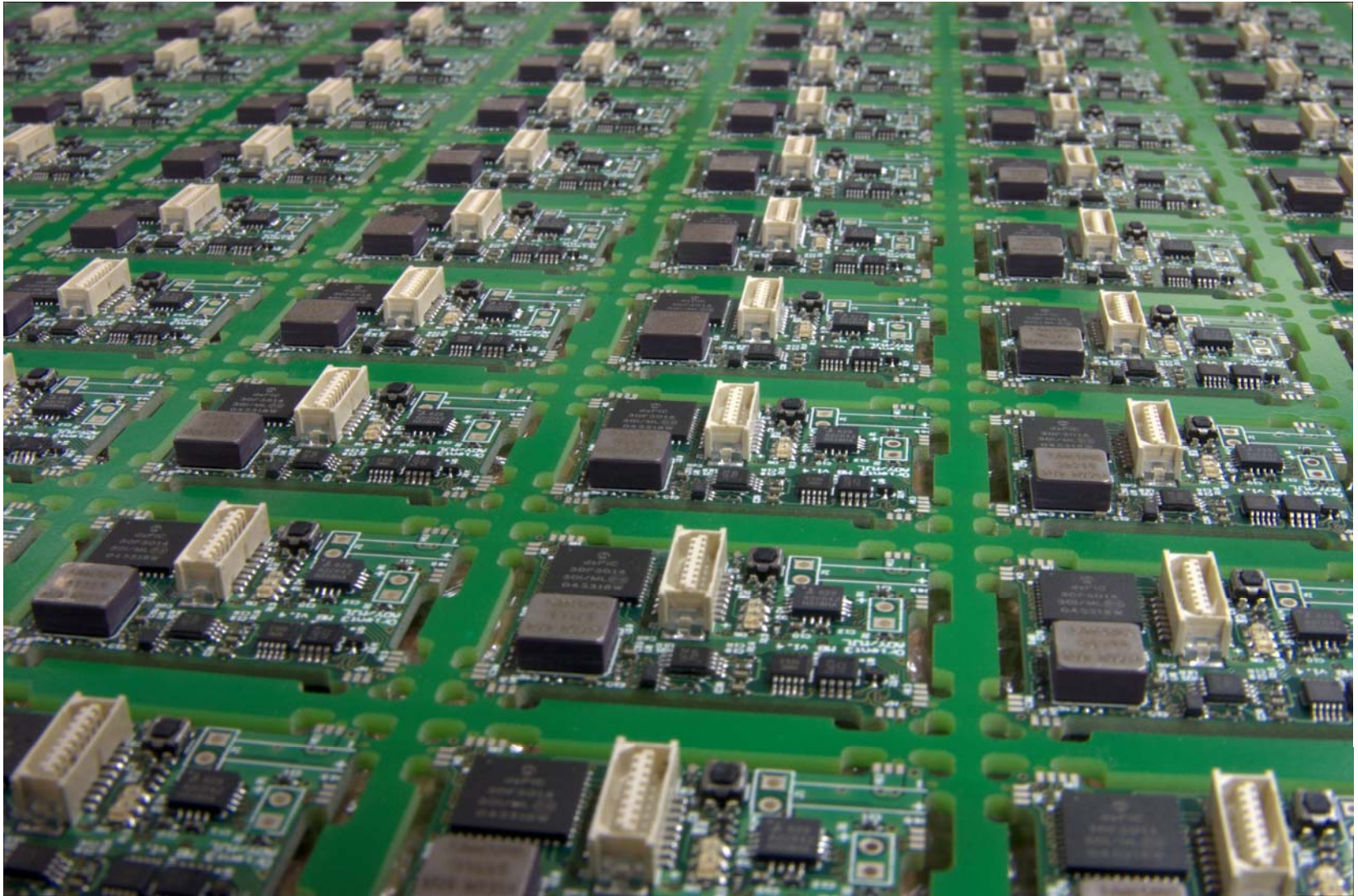


- Orient-1: Proof of concept (2005)
 - Demonstration of simple wireless inertial tracking without gyros.

A. D. Young. *Distributed posture tracking*. 4th Workshop in Speckled Computing.
- Orient-2: Demo system (2006-7)
 - Completely wireless, realtime, full-body tracking system.

A. D. Young, M. J. Ling & D. K. Arvind. *Orient-2: a realtime wireless posture tracking system using local orientation estimation*. EmNets 2007, Cork, Ireland.
- Orient-3: End user ready (2007-8)
 - Design refined to meet usability

Orient-3 Production

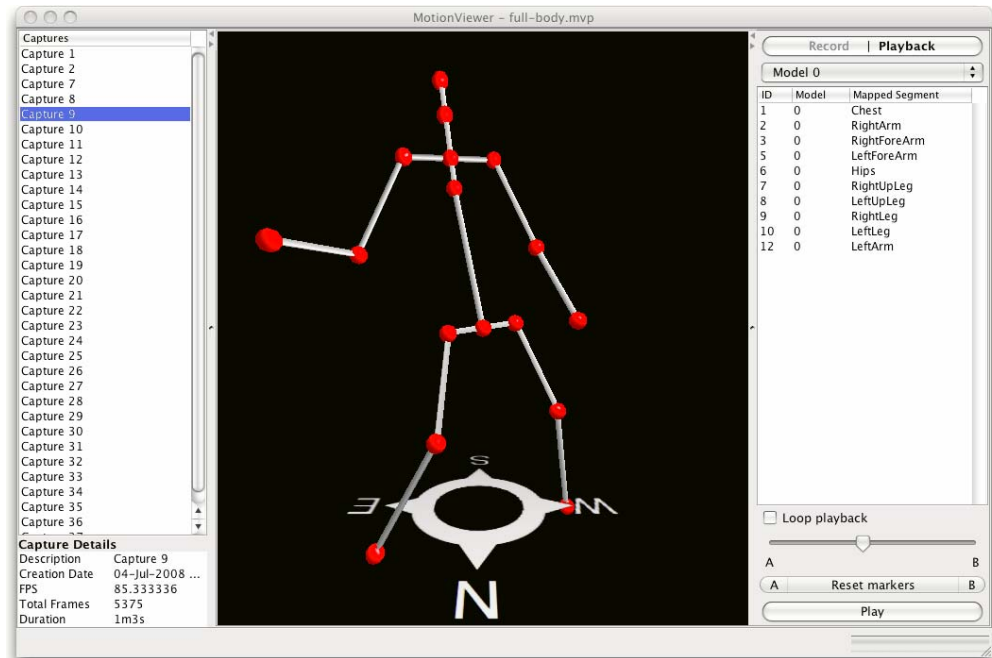


Speckled Computing



MotionViewer software

- Supports capture, visualisation and export of Orient motion data
- Plugin architecture supports extensions, e.g.
 - Export to animation packages
 - MotionBuilder (live)
 - BVH (industry standard)
 - Data analysis tools
 - Sports training
 - Gait analysis
 - Realtime control systems
- Cross-platform
 - Windows, Mac OS, Linux



- In development
 - Multi-user tracking
 - Absolute tracking support
 - Step tracking
 - Camera based

Basestation hardware

Version 1.0

- USB interface
- Bus powered
- Simple bridge



Version 2.0

- Bluetooth and USB interfaces
- Support for WiFi module
- Internal battery
- Charge from DC or USB
- MicroSD storage
- Pocketable
- Programmable



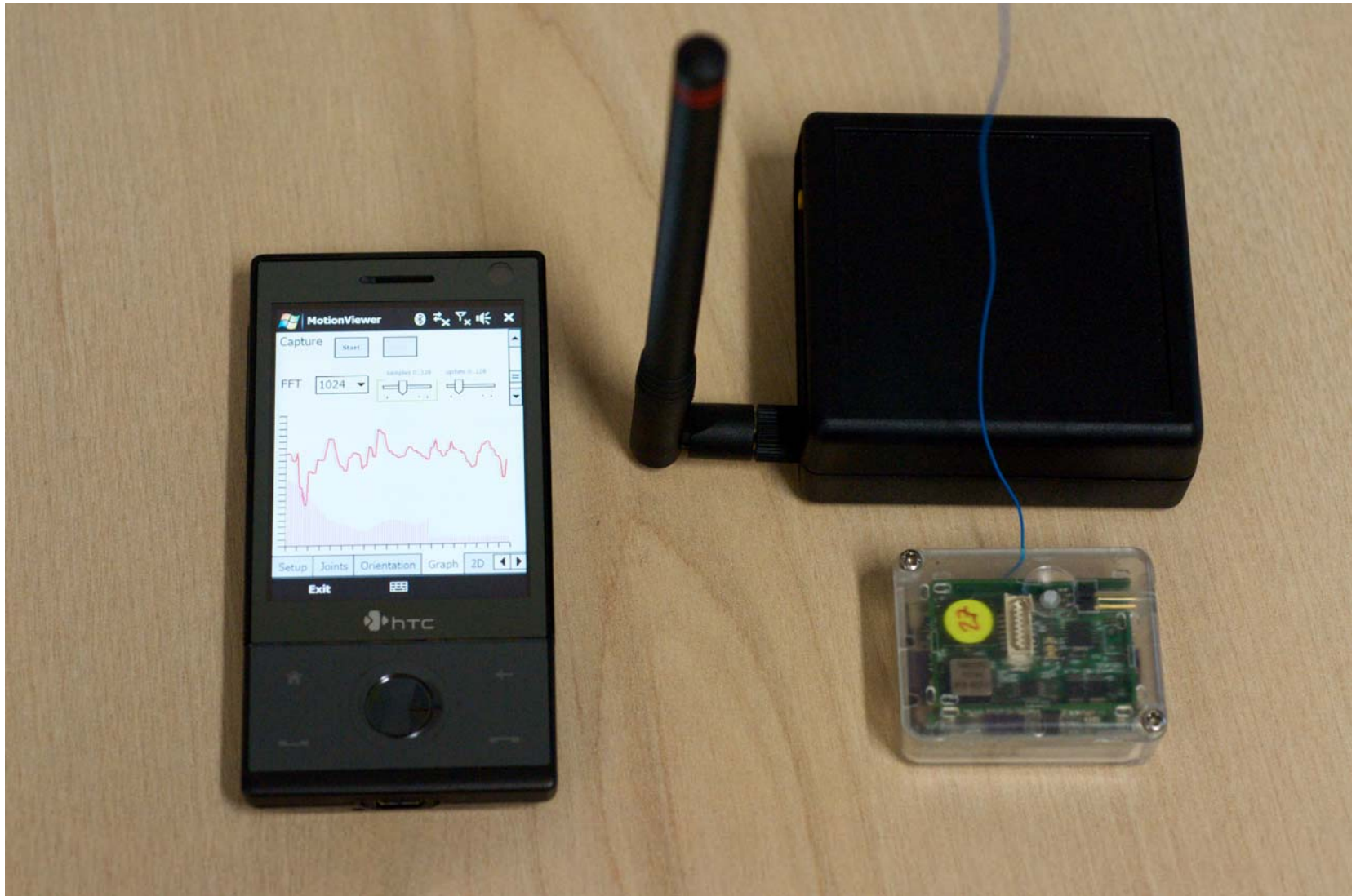
From a capture system in a suitcase...



+



...to a pocketable motion capture system.



Questions

