



# Carry Small, Live Large: Situational Awareness

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# Carry Small: More Powerful, yet Smaller Platforms



## A Vision of tomorrow's mobile device:

- Carry essential computational resources
- More compute & graphics power
- Anytime, anywhere connectivity
- Sensors to understand world around you
- Platform-wide power efficiency



# Live Large: Better Experience

## That Knows No Bounds...

- Enriches mobile experience seamlessly accessing nearby Devices, Networks & Services
- Overcomes small form factor limitations like the display or keyboard
- Understands, Anticipates and Simplifies what you do

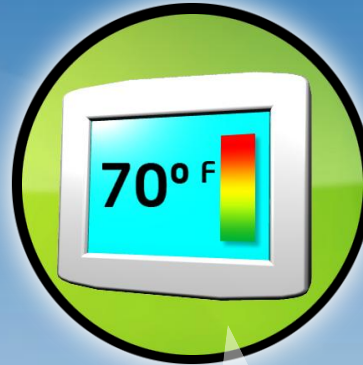


# Future Usages

Social  
Networking



Smart  
Environments



Wireless  
Display



Proactive  
Wellness



Adaptive UI

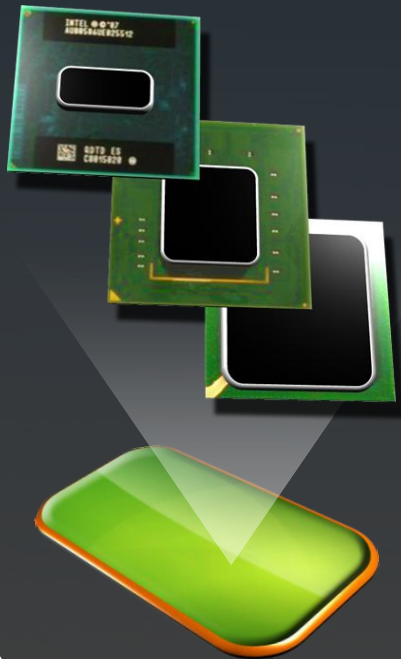


Mobile  
Augmented  
Reality



# Realizing the CSLL Mobility Vision

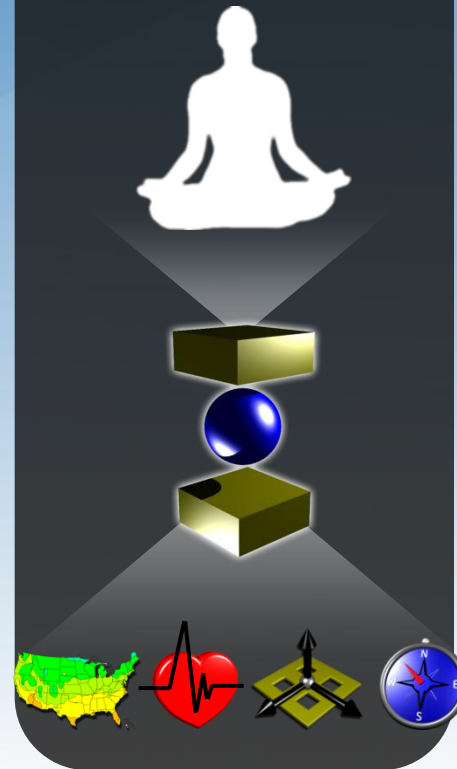
## Mobile Platforms and Architecture



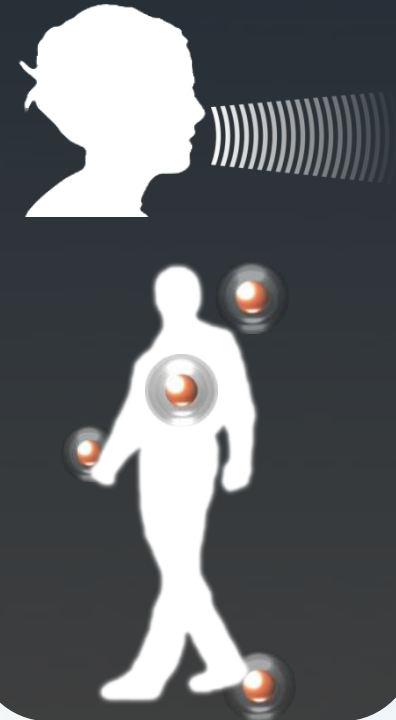
## Pervasive Connectivity



## Situational Awareness



## Human Computer Interaction



Security

Privacy

Reliability

Cost

Open Standards

# Making CSLL Real: What's the Technology?

# Anticipating What You Want



**Sensing**

**Inference**

**Guidance**

**Action**

**Goal: Valued and Personalized experience**

# Understanding

Who  
am  
I?

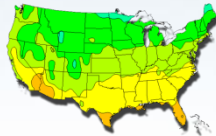
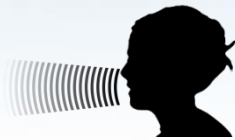
What do I  
like?

What  
am I  
up to?

What is  
happening  
around me?

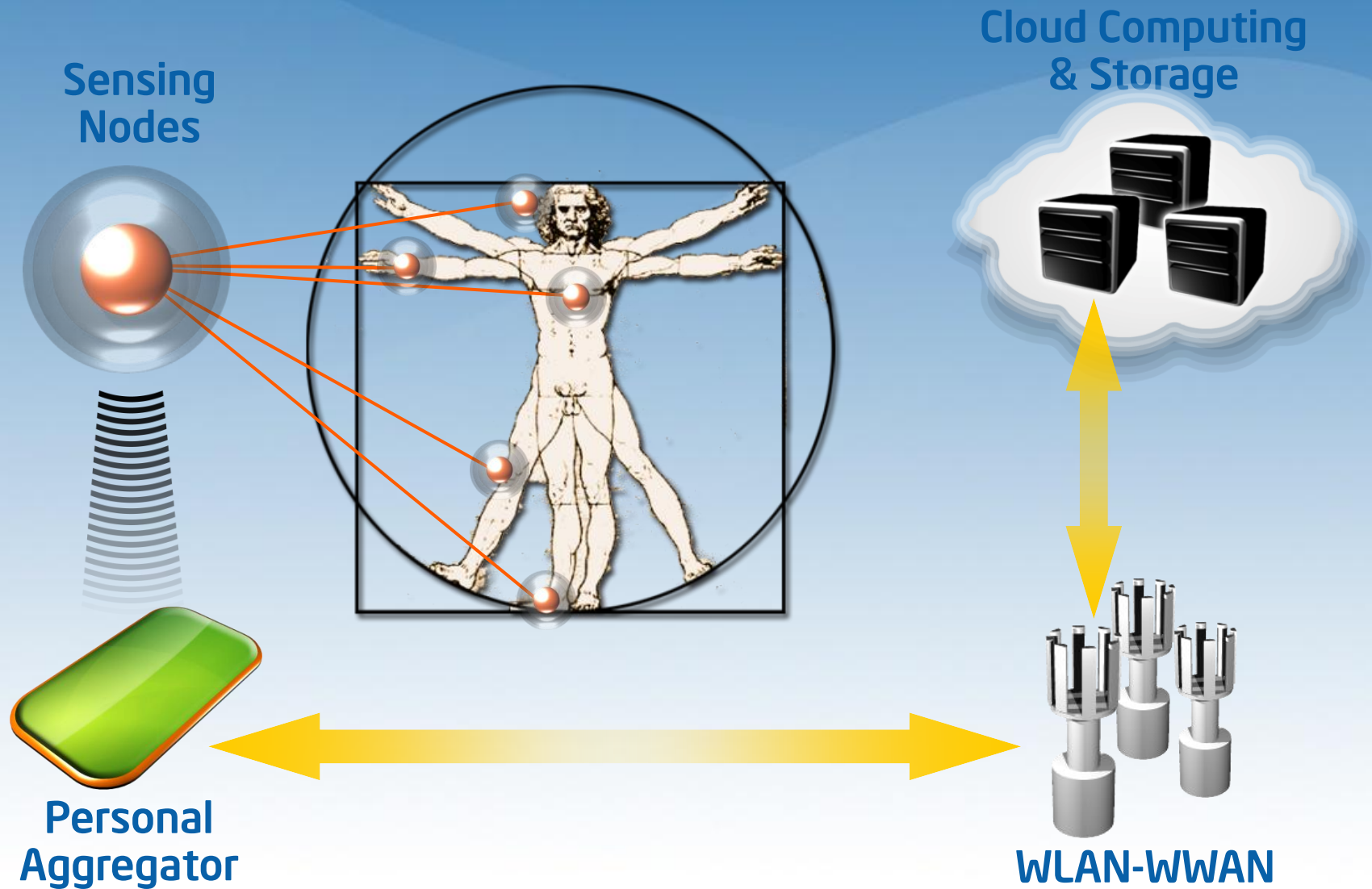
How  
am I  
Feeling?

Where  
am  
I?

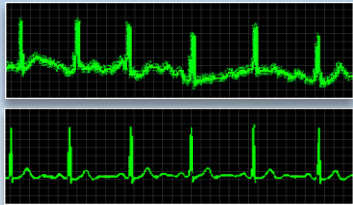
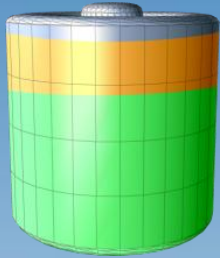




# System Architecture



# Architectural Challenges



**What to sense?**

**How to best sense it?**

**How to do sense making?**

**How to protect privacy?**

**How to best present results?**

# Research Prototype: Proactive Wellness

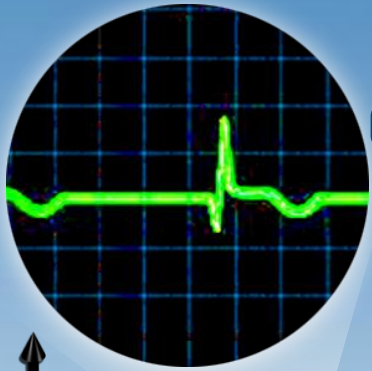
## Problem Statement

Can we enable consumers to better manage their health & wellness in their everyday life with mobile technologies?

## Research Activities

- Mobile continuous monitoring of multi-modal sensing (Heart Rate and activity via accelerometer) plus manual caloric intake log.
- Feature extraction (mean/min/max), Decision tree classification
- Prototype under pilot study

# Research Prototype: Proactive Wellness



Continuous  
ECG & Activity  
Sensing

Caloric Burn  
Analysis



Mobile  
Internet  
Device



GSM/GPRS



Wrist Blood  
Pressure



Weight



Diet

# Demo

# Long Term Data for Personal Wellness



Calories

Heart Rate

Blood Pressure

Weight

Activity Intensity

# Realizing the CSLL Mobility Vision

## Mobile Platforms and Architecture

- Performance
- Low Power
- Size
- Micro-architecture
- Identity



## Pervasive Connectivity

- 3G
- WiMax
- WiFi
- Wireless PAN



## Situational Awareness

- Sensing
- Learning
- Inference



## Human Computer Interaction

- Simple
- Unobtrusive
- Intuitive
- Personalized
- Composable
- Wearable



Security

Privacy

Reliability

Cost

Open Standards

# Question and Answer