

# Demo Cheat Sheet

## RESEARCH@INTEL DAY DEMONSTRATIONS AND POINTS OF INTEREST

Intel has its finger on the pulse of global innovation and through its collaboration with partners and academia; the company pulls it all together here to demonstrate break-through research touching on the innovation and challenges ahead for energy efficiency, science, healthcare and mobile and visual computing:

- **Visual Computing** -- Programming everyday computers for best graphics and real time visual computing
- **Wireless** -- Ultra-fast and smarter technology for shrinking wireless world
- **Health** -- Connecting people and information for better health and healthcare
- **Environment** -- Better the environment through smarter computer energy consumption
- **Life Sciences** -- Scientific discovery with academia for long term research breakthroughs

Here's a guide to help you explore:

### Visual Computing and Tera-scale:

#### **“Smart Car” Using Computer Vision to Recognize and Track Objects for Driver Assistance and Safety**

Map Location: F

Ct is an Intel research effort focused on extending C/C++ to help mainstream programmers efficiently create highly-parallelized and scalable software that takes full advantage of Intel's current multi-core and future tera-scale processors. We show how Neusoft & Intel created a Ct proof-of-concept demo for a “smart car” that uses computer vision to track objects for driver assistance.

#### **Intelligent Photo and Video Search**

Map Location: F

Tera-scale processors will give devices the ability to understand the contents of visual media. The Intel China Research Center is developing techniques for the computational perception of people, objects, scenes, and events and is a leading participant in National Institute of Standards (NIST) competition on media mining. We demonstrate our latest results, with performance optimized for using many threads on many cores.

#### **200 Gb/s Integrated Silicon Photonic Transmitter**

Map Location: F

Intel's Silicon Photonics research vision is to use CMOS manufacturing to produce integrated optical devices that provide the advantages of optical I/O with substantial cost, size, and power savings. This demo features a prototype integrated silicon photonic test chip that can deliver data rates exceeding 200 gigabits per second. Our researchers plan to scale such devices to over one terabit per second.

## **Environment (marked with Sunflowers at each demo)**

### **Platform Power Management (PPM)**

Map Location: D

Platform power management is an area of research that redefines the behavior and power management of Intel platforms with the goal of significantly reducing power consumption. A key mechanism underpinning PPM is the continual monitoring of changes in platform operation and aggressively powering down portions of the system that are not in use. As an example, with straightforward changes to existing platforms we can demonstrate reductions in power of more than 30%. In re-designed platforms of the future, we expect to reduce power consumption by 50% or more. PPM will benefit the full range of Intel products including ultra mobile, laptop, desktop, servers, and Tera-scale.

### **Common Sense Environmental Sensing**

Map Location: H

Citizens are often motivated to seek information. The Common Sense team is developing prototypes of mobile environmental sensing platforms that empower individuals and communities to gather, analyze, and share information in order to influence environmental policy. We will present our prototype and the results of our current deployment on street sweepers in San Francisco.

## **Health:**

### **Enabling biomedical research and getting results: Gait Analysis System for Older People**

Map Location: C

There is a long standing need within the biomedical research community to rapidly develop systems which allow researchers to investigate hypothesis either in the lab or a home environment. BioMOBIUS™ Research Platform represents a closely integrated combination of low cost hardware and software components which can be used by a wide variety of users, including those with a limited technical knowledge, to build research tools in an expeditious fashion. SHIMMER in combination with the BioMOBIUS software environment provides researchers with a significant set of capabilities to investigate some of the key conditions which affect older people, such as falling injuries. These demos will introduce you to how BioMOBIUS provides the key technology capabilities to facilitate the development of a state of the art gait analysis system which in helps to reveal the key factors in people's gait, determining their risk of falling. In the longer term it is hoped that breakthroughs will help to improve the quality of life for older people and to reduce a significant burden on the healthcare system.

## **Mobility: Carry Small, Live Large**

### **World's first embedded balanced antenna for Digital TV**

Map Location: D

As demand for mobile-friendly digital entertainment grows, the anticipation of Digital TV to fuel mobile use is growing. In this demo, Intel showcases the world's first balanced antenna design to integrate Digital TV reception into a laptop computer. Research focused both on the antenna radiation performance as well as its noise rejection to enable the reception of DTV signals at 470MHz-860MHz UHF band.

## **Real-Time Visual Mobile Object Recognition**

Map Location: D

Object recognition has been a grand challenge in computer vision for decades because it will let computers see the world the way humans do. This demo showcases a real-time object instance recognition system that recognizes whether an image contains an identical copy of an object the system has been trained to recognize.

## **Speech Interface for Creating Device Connections**

Map Location: D

Speech interfaces are particularly suitable for small mobile devices because of the limitation of the physical input and output channels. Intel researchers demonstrated a speech interface controlling the task of creating connections between two mobile devices and a wireless display with the goal of sharing resources and services. For example, consumers can speak commands in a natural manner to synch their mobile device with a large screen television to share recent photos of their children with grandparents.

## **Life Sciences - Exploration**

### **Personal Robotics at IR Pittsburgh: BarKeep**

Map Location: H

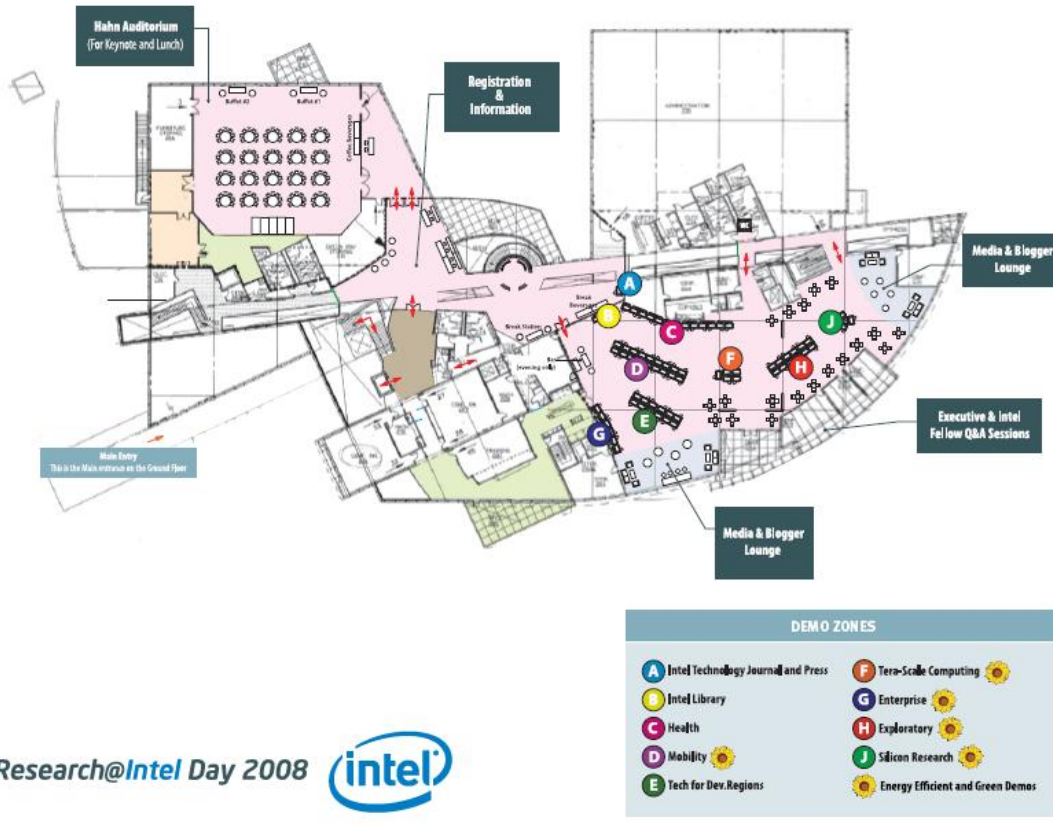
The Personal Robotics project aims to enable robots to perform useful tasks in unstructured home and office environments. BarKeep is an autonomous robot developed at IR Pittsburgh that demonstrates integrated perception, navigation, planning, and grasping for the task of loading mugs from a mobile Segway into a dish rack, using an anthropomorphic robot arm.

## **Silicon**

### **A Monolithic Optical Interconnect Platform**

Map Location: J

We demonstrate a low-cost, low-power, high-performance optical interconnect solution for high-speed I/O. These optical links, fabricated in a CMOS-compatible process, consist of monolithically integrated low-capacitance devices with demonstrated data rates of 20 Gb/s and are amenable to wavelength division multiplexing for further scaling..



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