

# Fan Coil and Advanced Control in IW

Carnegie Mellon University  
Center for Building Performance and Diagnostics  
Dec. 11. 2007

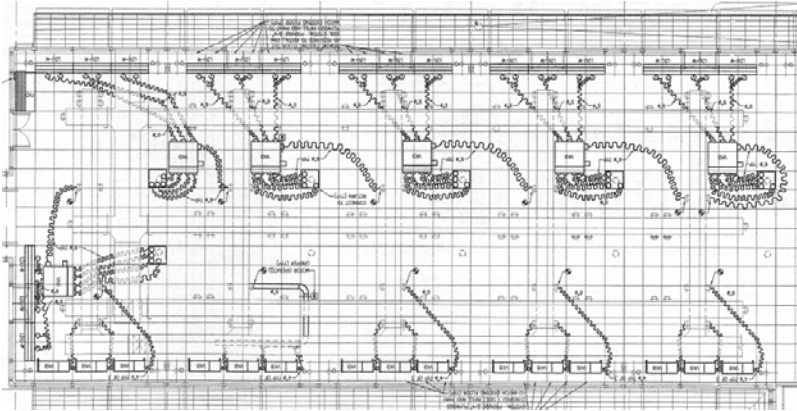
David Archer, Yun Gu, Viraj Srivastava, Hongxi Yin

# Project Description

- **Description:**

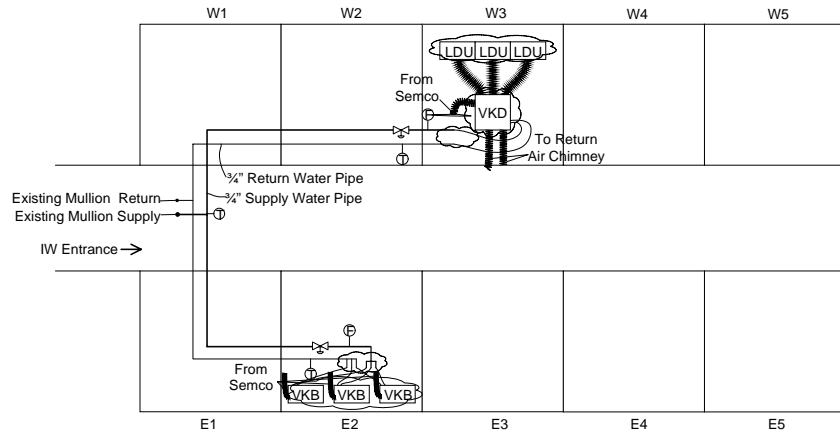
New installed fan coil units and control instrumentations will provide a test bed for demonstration of the benefits of comfort, energy and operation cost of advance control and user communication over the indoor thermal environment
- **Purpose:**
  - maintain comfort conditions
  - reduce the cost of operation
  - provide occupant interaction with the temperature control interface

# Project Scope and Pilot Study



**Fan Coil Units in 10 IW South Zone Offices**

- 3 distinct type of LTG underfloor fan coil units
- 4-pipe coils and 5 speed fan
- Siemens control instruments
- Dedicated Siemens controller and control instruments for each room



**Fan Coil Units in 2 IW South Zone Offices for Pilot Study**

- Select room E2 and W3 for pilot study
- Install as LTG fan coil as 2 pipe system, connecting with existing mullion water supply and return
- Data acquisition hardware and control software purchased from National Instrument and other commercially available instruments
- Dedicated control for each room

# Where We Stand

## Finished Work:

- Preliminary Design
- Fan Coil Procurement
- Engineering Design
- Pilot Study Design

## Next Step Work:

- Fan Coil Installation  
Commissioning and Performance  
Testing
- Operation and Research  
Experiments

## Where we stand:

- Installing fan coil units in 2 IW south zone offices for pilot studies
- Preparing and installing control hardware for pilot studies
- Programming control, data acquisition and analysis software

# Added Components

- Cisco IP Phone will provide communication between office occupant and fan coil, mullion and lighting operation and control system, including:
  - Real time data display e.g. environment parameters, control settings, energy consumptions;
  - Occupant control/override functions;
  - Report to facility management/operator functions;
  - Occupant satisfaction survey functions.
- Fan coil units by Broad Air Conditioning Co
  - Electro-static particle removal
  - Activated carbon VOC and odor removal