

# Human-Computer Interaction Research Opportunities for Aging In Place

Anind K. Dey

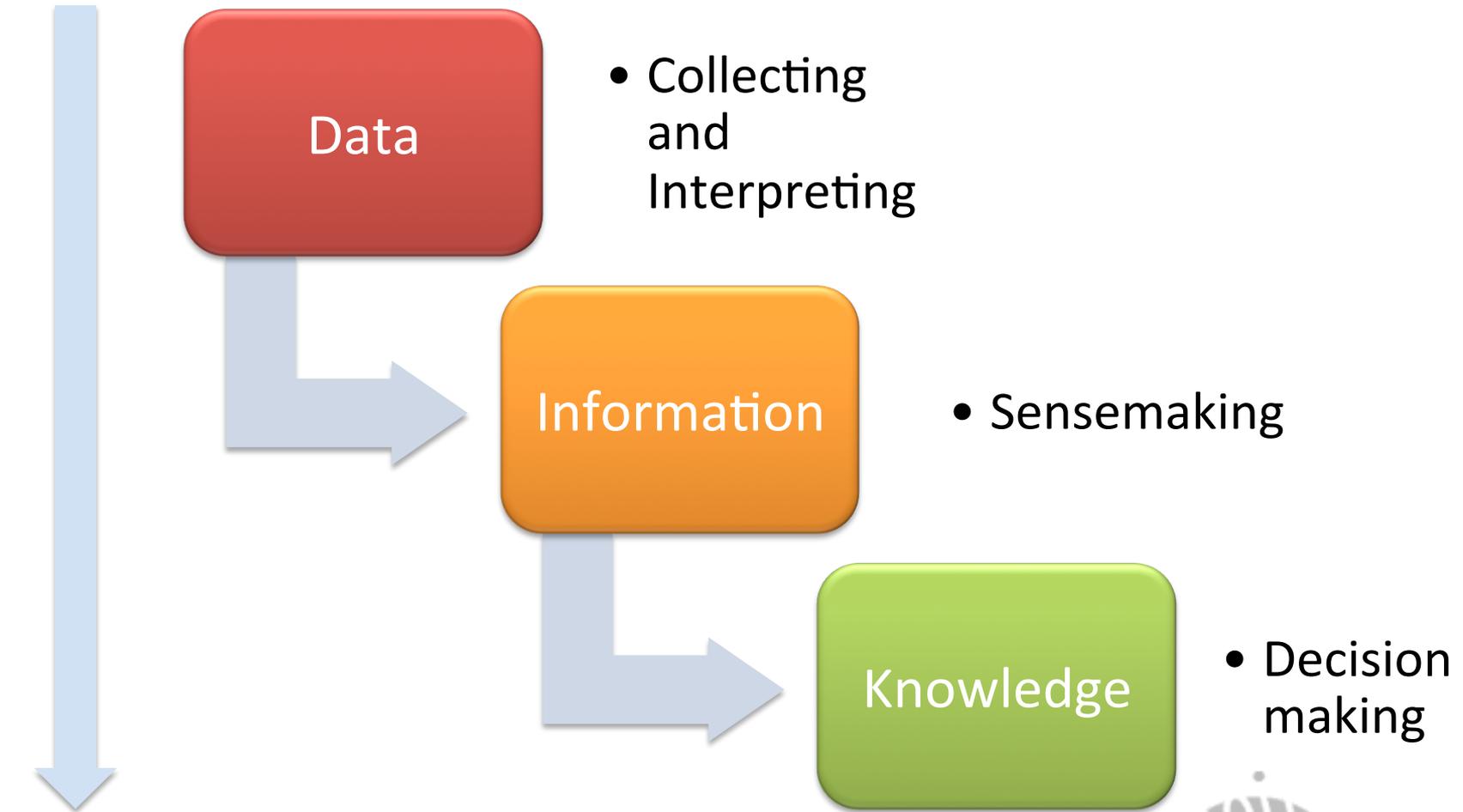
Charles M. Geschke Chair & Director  
Human-Computer Interaction Institute  
Carnegie Mellon University



# Lots of *data* collection devices



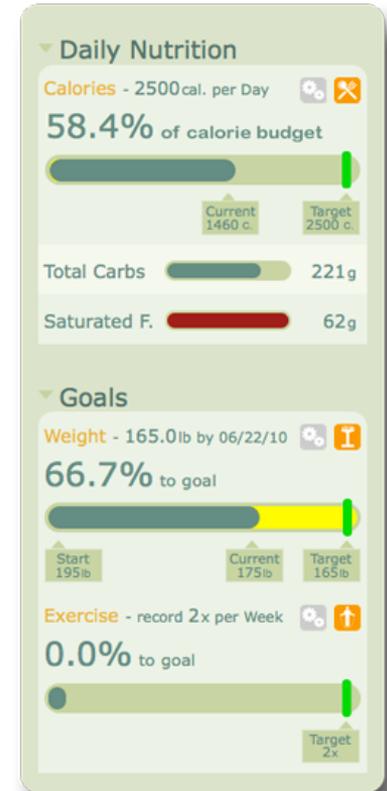
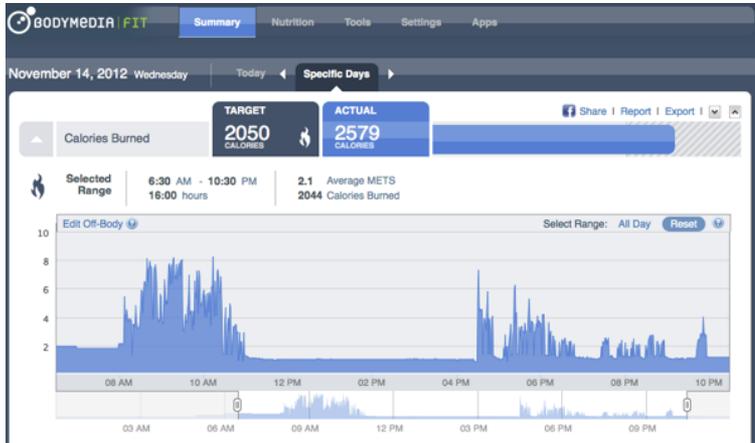
# Opportunity: Make Data Actionable



Value



# Most of what we get is data



Today's activity breakdown (excluding sleep)

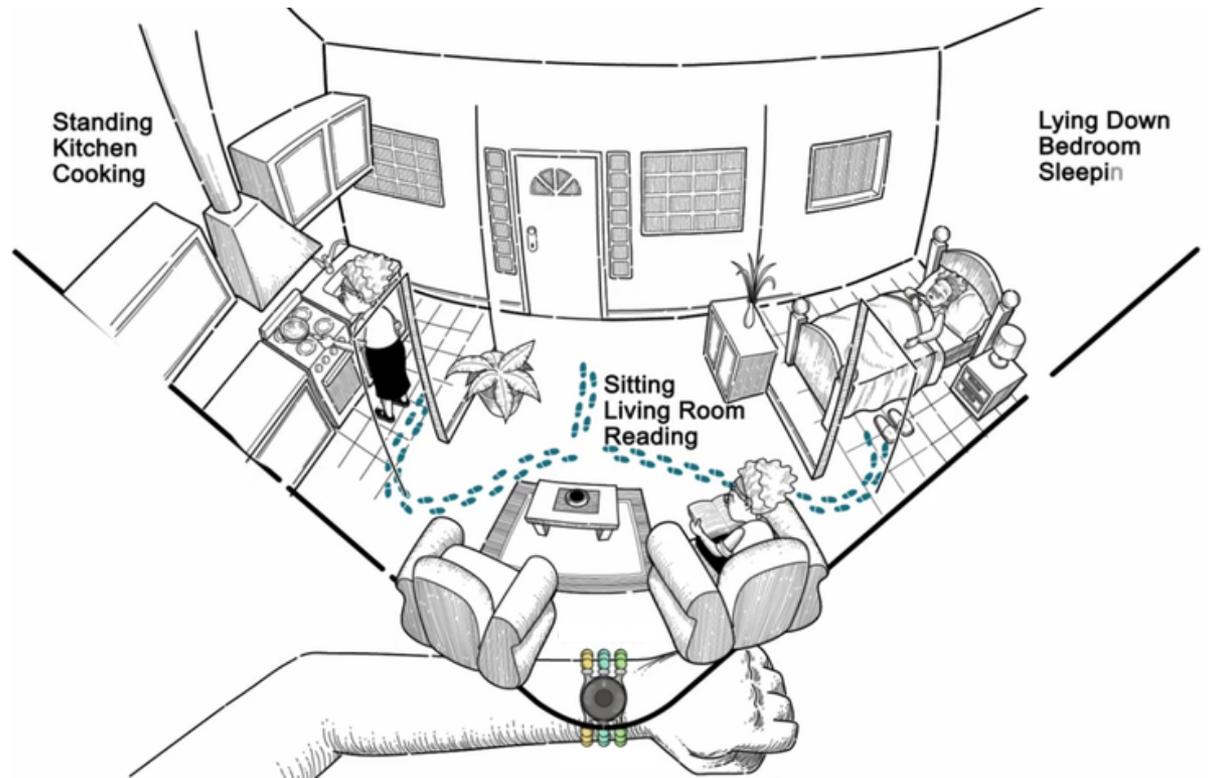


Name: Tiffany Sreelaker	Hours Work: 22.2 hours per day	Meals Logged: 5.7 meals per day
Gender: Female	Age: 27	Weight checked: 2.7 per week
Weight: 148.2 lbs	Height: 5'6.0 inches	
BMI: 21.29		

	TARGET	DAILY AVERAGE	TARGET
► CALORIES BURNED	2560	2566	
► CALORIES CONSUMED	2060	2061	
► CALORIE BALANCE	500	505	You are on a weight loss trend
► PHYSICAL ACTIVITY	1:30	2:25	
► NUMBER OF STEPS	10000	6126	
► SLEEP DURATION	8:00	6:09	



# Issue: Data is a proxy



# Opportunity: New interfaces

Google finance   Example: "CSCO" or "Google"

**Company** Google Inc. (Public, NASDAQ:GOOG) [Watch this stock](#) Find more results for **GOOG**

**Summary**  
**576.11 +15.05 (2.68%)** Range 569.02 - 579.80 Mkt cap 185.42B Shares 321.52M  
 52 week 433.63 - 642.96 P/E 21.93 Beta 1.19  
 Open 570.22 Div/yield - Inst. own 63%  
 Vol / Avg. 2.66M/2.86M EPS 26.30

Real-time: 3:56PM EDT  
 NASDAQ real-time data - Disclaimer  
 Currency in USD

**Compare:**    Dow Jones  Nasdaq  MSFT  YHOO  AAPL  AOL  BIDU  DMD  NOK

**Zoom:** 1d 5d 1m 3m 6m YTD 1y 5y 10y All 🔍

Mar 15, 2011 13:02 Price: 564.07 Vol: 05.18k

Volume (thous / 2min)

MACD(12,26,9,2m) MACD:-0.18 EMA:-0.1 Divergence:-0.08

BIAS(20,2m) BIAS:-0.06

CCI(20,2m) CCI:-51.16

Recent quotes

Symbol	Price	Change	%
BIDU	123.99	+3.49	
GOOG	576.11	+15.05	
AAPL	339.32	+8.65	
NOK	8.40	+0.12	

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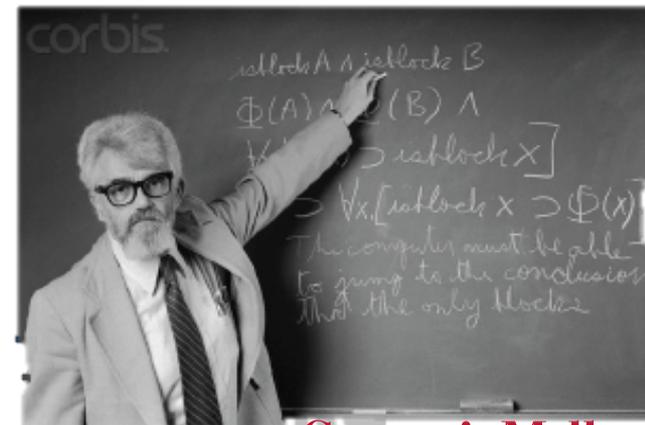
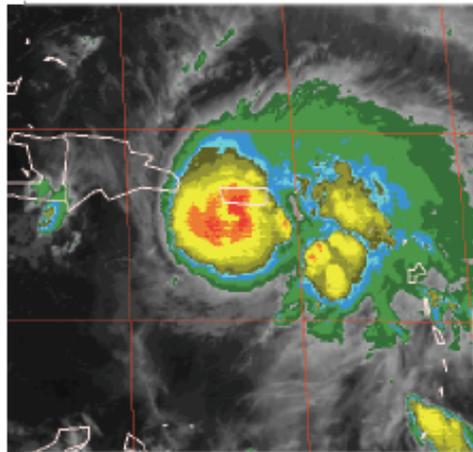
Volume delayed by 15 mins.



# Opportunity: Trustworthy Interfaces

As algorithm or problem complexity increases, how do you develop trust in such systems?

- Intelligible systems
- Reputable systems
- Predictable systems



# Opportunity: Intention-Aware Interfaces

Need new user interfaces  
- for control/actuation

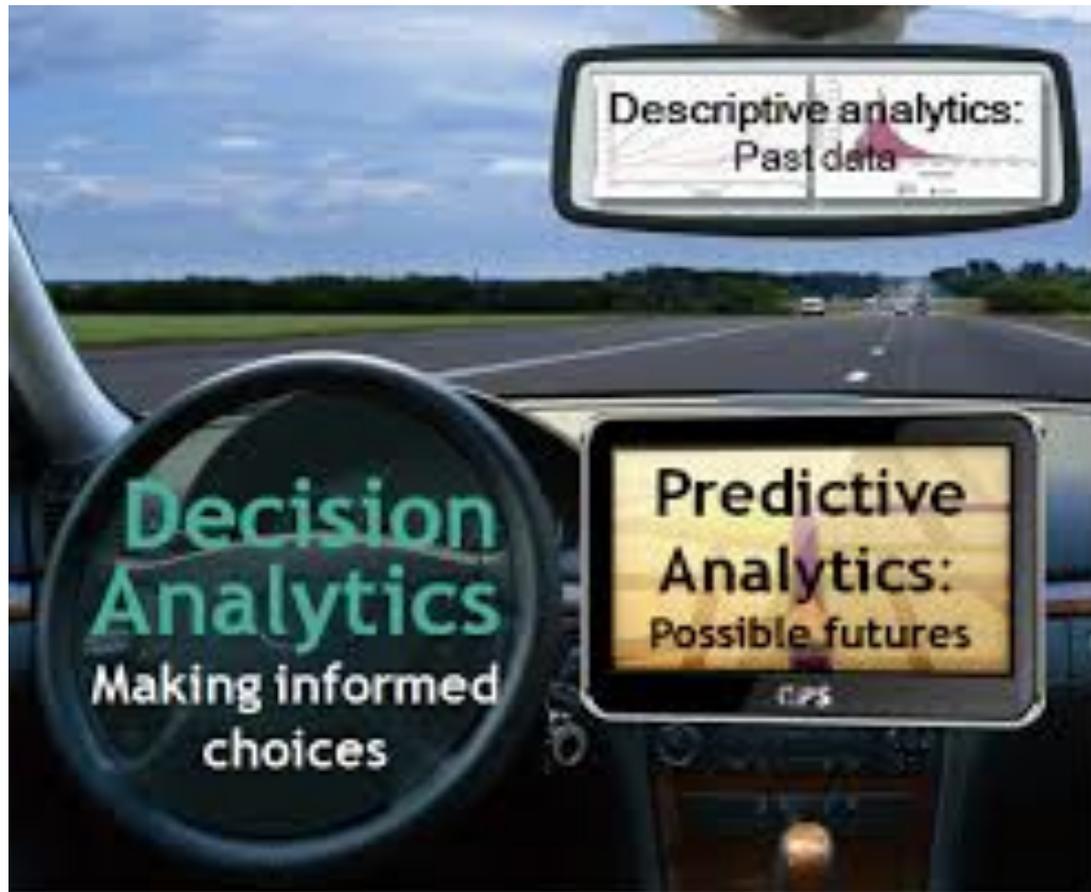


# Opportunity: Intention-Aware Interfaces

Need new user interfaces  
- for control/actuation



# Opportunity: Detection → Prediction





# Opportunity/Challenge: Value Proposition

Compelling apps really need data from a time when people are not compelled by these apps

- algorithms need an understanding of what is “baseline behavior” for an individual and that this is dynamic



# Opportunities: Roles

Technology often disrupts social balance

- Priv

- Mai



- Maintain personal independence

- Maintain identity

