HOW CAN WE USE EXISTING TECHNOLOGIES FOR PHYSICAL ACTIVITY AND HEALTHFUL EATING INTERVENTIONS?

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HOW CAN WE USE TECHNOLOGY TO SPEED THE PACE OF BEHAVIORAL RESEARCH?

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Outline

- The Problem

- Testing commercial apps

- Commercial products as "Hacks"

- Agile Science

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- The Problem

- Testing commercial apps

- Commercial products as "Hacks"

- Agile Science

We want interventions that are:

- Evidence-based

- Cost-effective

- Tailored

- Easy to disseminate

- Promote maintenance

500,000th App Accepted on App Store

| 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |

Conceive of a study

Gather Pilot Data

Submit Grant

Receive Funding

Conduct the study

Submit publications for review

In less time than it takes to complete a standard R01, the app store has gone from nonexistent to over 500,000 apps.

Who's doing which piece?

- Evidence-based
- Promote maintenance
- Tailored

- Cost-effective
- Easy to disseminate
- Tailored?

Academia

Industry

What to do?

- New methods for fast efficacy testing?

- Partner w/ business and use their data?

- Create new methods for development?

- Other strategies?

What to do?
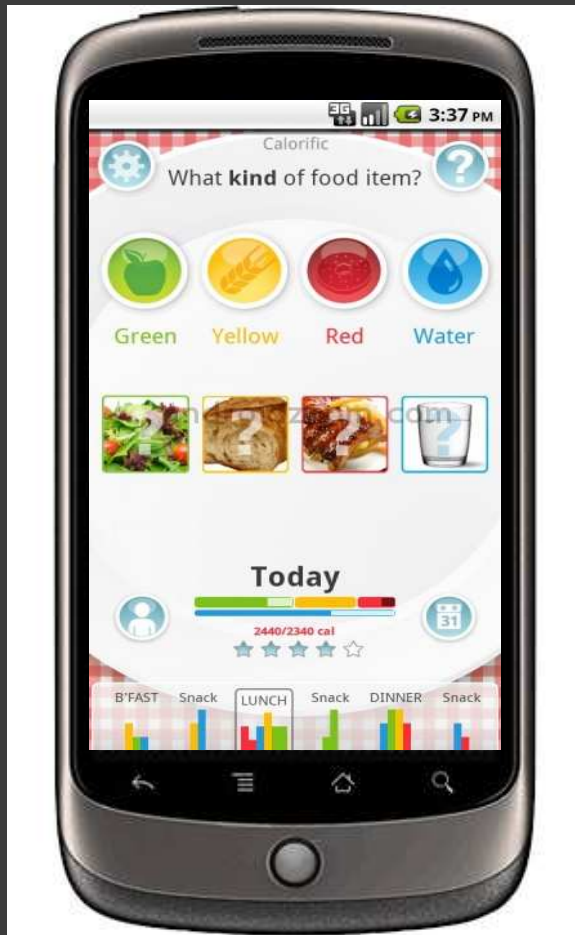
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- Partner w/ business and use their data?

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Testing Commercial Apps (Examples)
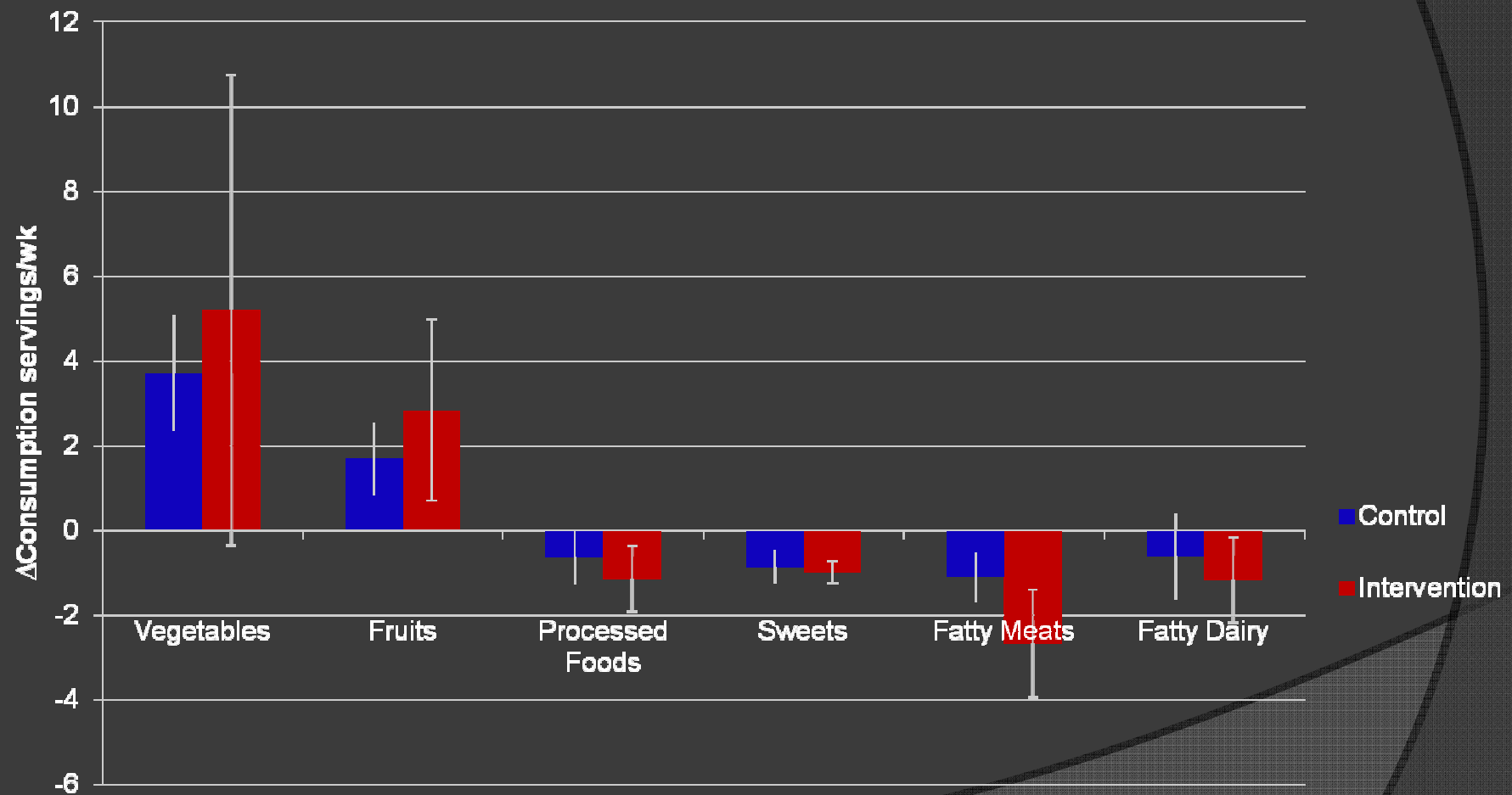
Calorific

Mindfulness Bell
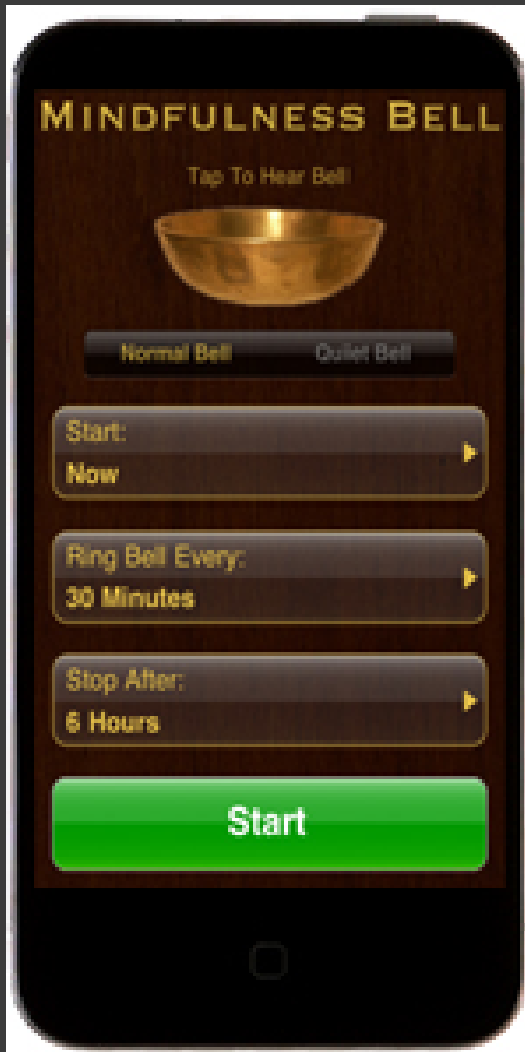
Calorific Test

- See full details at tonight's poster session (C-89).

- Compared this app to custom apps we developed focused on PA (see other poster tonight; C-156).

- 8-week study with 36 participants (older adults, naïve to using smartphones)
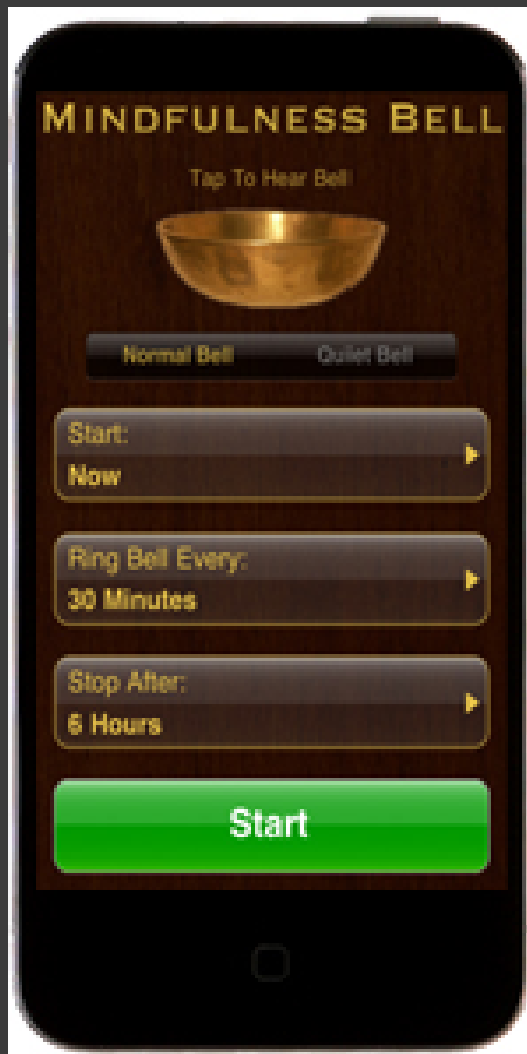
Calorific Results

Mindfulness Bell Test

- ◉ RCT comparing
  - Mindfulness training (conducted by Shauna Shapiro) and Mindfulness Bell App
  - Assessment-only control

- ◉ Population: College students

- ◉ 8-week study with approximately 20 per arm

Mindfulness Bell Preliminary Results

- No differences with any variable measured including:
  - Mindfulness practices
  - Stress
  - Subjective Happiness
  - Self-compassion
  - Physical Activity
  - Healthful Eating

Key findings from both

- Apps we tested did not indicate much utility (though, definitely could be due to sample size)

- Both apps changed repeatedly during the intervention trials
  - 4 updates for Calorific
  - 2 for Mindfulness Bell, one including name change; it used to be called Zen Reminder

- For both, we received very positive feedback that they "worked" (i.e., the feedback often reported in the app store ratings)

Implications

- Apps are often changing so quickly that they may easily change during your trial

- Good reviews do not necessarily translate to behavior change

- Regardless of outcomes, apps offer a very quick "hack" for testing behavioral ideas

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- **Commercial products as "Hacks"**

- Agile Science

"Hacking" behavioral science

- Quick tests of commercial apps
  - Already discussed

- Designing Health Behavior Change Interventions Class
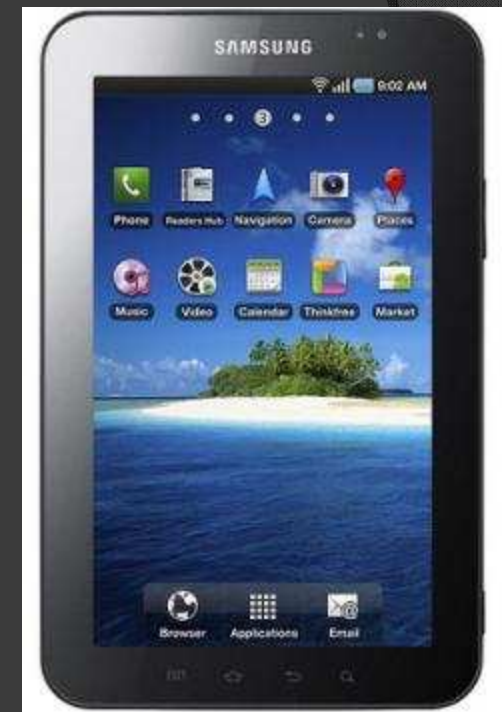
- Data visualization "hack"

Designing Health Behavior Change Interventions

- Grad level class → evidence-informed interventions
  - theory, qualitative research methods; survey selection and development; experimental design, and prototyping (see McClain poster tonight on prototyping)
- Key focus is on identifying assumption/hypotheses and then devising the most rapid way of testing that assumption via a prototype
- Key preexisting technologies that foster "hacking"
  - Gmail (Free SMS from a computer)
  - Apps (e.g., Handcent SMS for automating text sends)
  - Twitter/Facebook (easy for quick polls on ideas)
  - Google Docs
  - Bit.ly
- See "hacks" at http://www.slideshare.net/DesigningHealth/
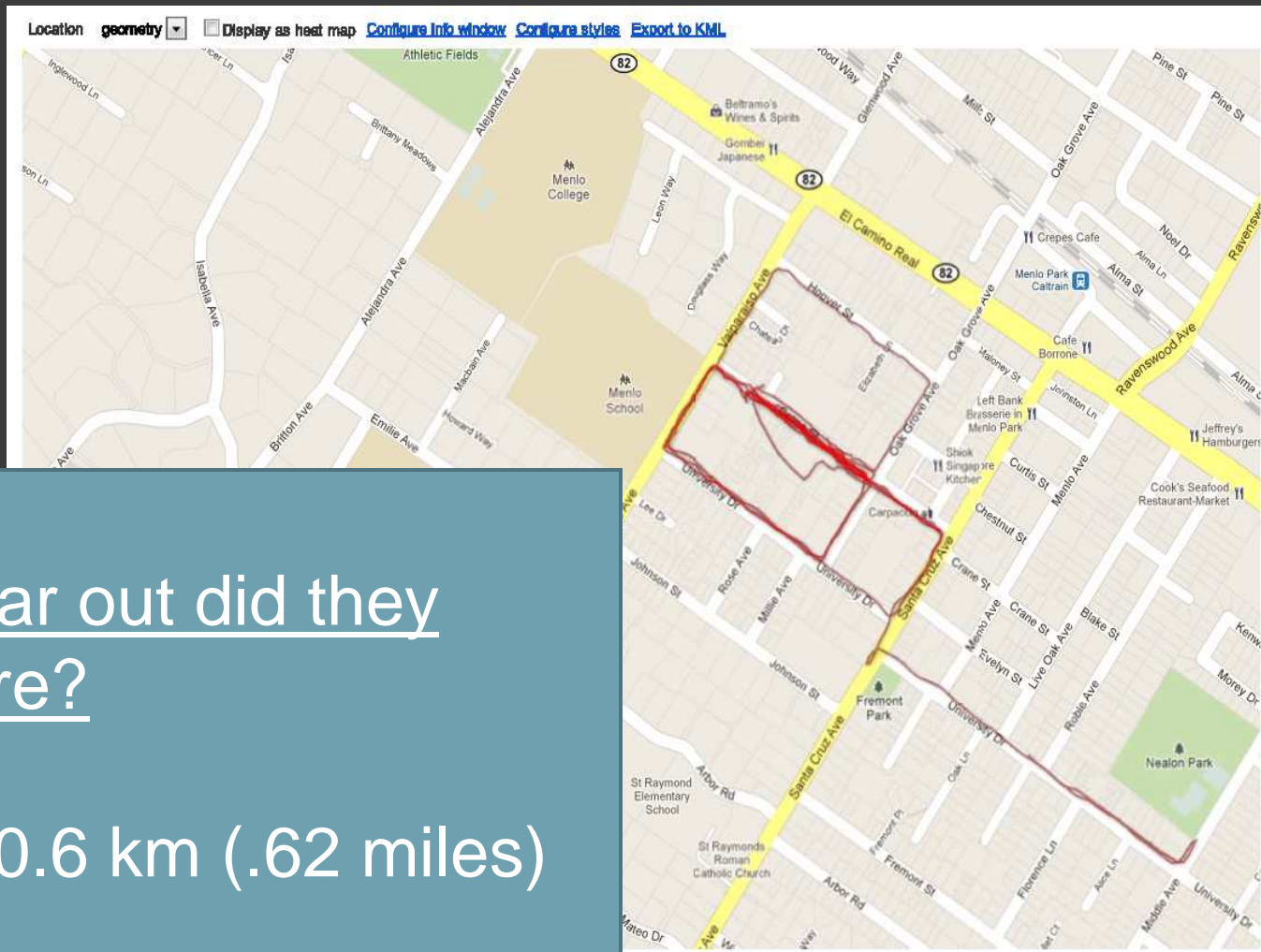
The Stanford Healthy Neighborhood Discovery Tool

- Harness technology to improve neighborhood designs for physical activity and healthful nutrition
- Engage seniors as auditors and advocates
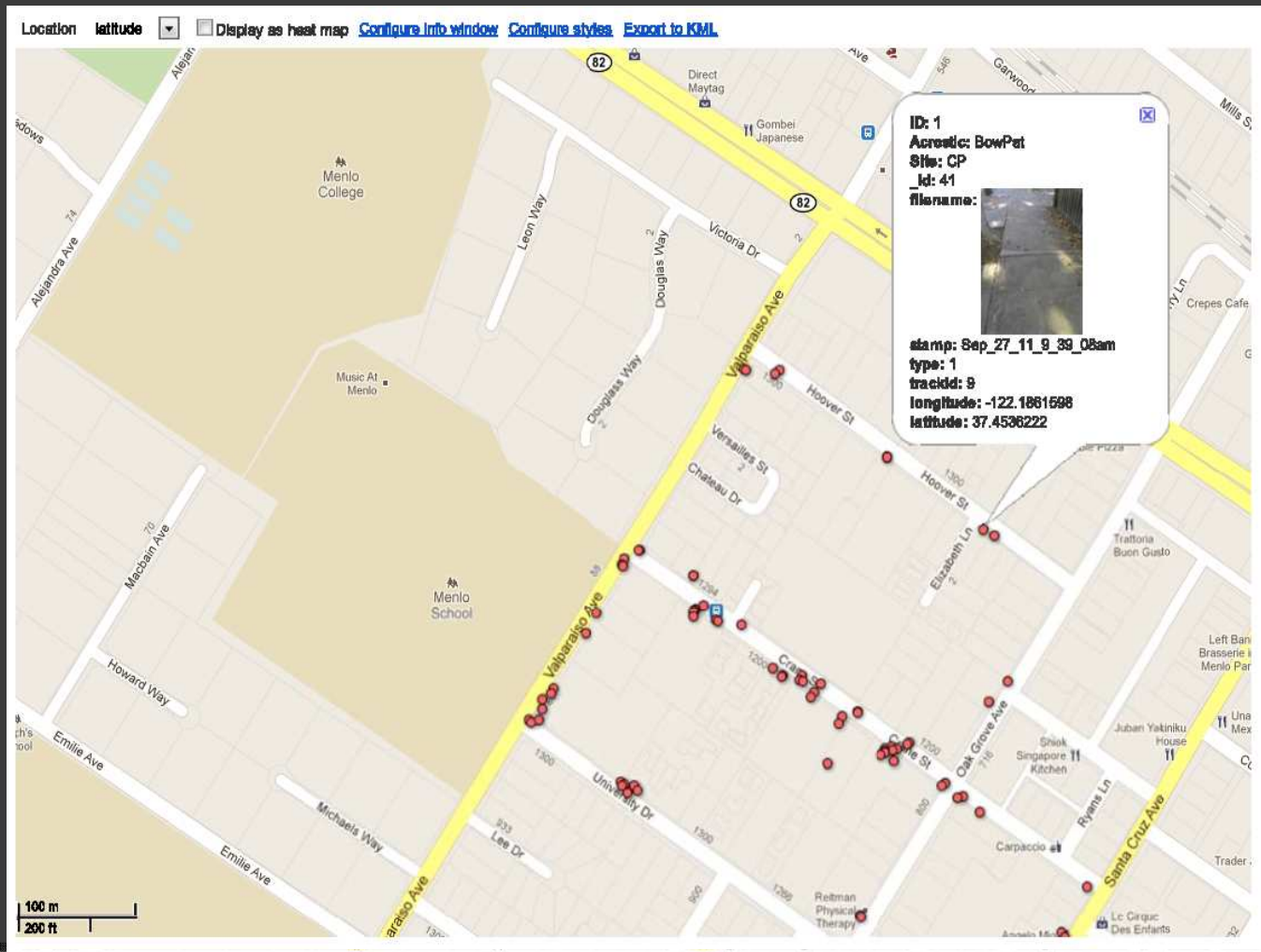- Crowd-sourcing

Data visualizations for policymakers

How far out did they venture?

1.0 ± 0.6 km (.62 miles)

Data visualizations for policymakers

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The Agile Manifesto (highlights)

- Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

- Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.

http://agilemanifesto.org/principles.html

The Agile Manifesto (highlights)

- Deliver working software frequently, from a **couple of weeks** to a couple of months, with a preference to the shorter timescale.

- Business people and developers must work **together daily** throughout the project.

We want interventions that are:

- Evidence-based

- Cost-effective

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Agile Science – beta

- Beyond efficacy and cost-effectiveness, time-effectiveness also needs to play a central role methods decisions.
- Key Principles
  - Utilize the fastest methods for getting funding, particularly when piloting.
    - Crowd-funding?
  - Utilize the most time-effective formative research methods
    - User Experience Design? (McClain, Hekler, et al poster, C-087)
  - Create, test, and iterate w/ Minimal Viable Products
    - "Hacks" (See Lean Startup book by Eric Reis)
  - Use a variety of dissemination channels
    - CHI 2012 Conference; Blogs? Wikis?
  - Use business to disseminate evidence-based work

We need to stop sacrificing good enough at the altar of perfection.

Reactions? Let's figure this out!

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