Mobile and Agile: Why can’t they get along?

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These slides contain the following animated pieces. They will not show up in the pdf version of the slides. To see the animations, visit http://www.screencast.com/t/rj78xaJS8dlx. You can navigate to the target slide and play the video.

Slide 6: words from a user/stakeholder of a desktop app.

Slides 30-36: clips from Unity environments we are using.

Slide 42: a Unity hospital that caught our eye. Independently, my group is also interested in apps in hospital settings and are considering our hybrid approach in this new domain.

Slide 47: using FSP/LTSA (a formal modeling tool) to derive the specs for a NPC manager in Unity.
Talk Outline

• My group’s use of Agile on desktop apps.

• New focus on mobile apps presents a roadblock.

• Promising results using *hybrid* simulation.
My Group’s Foundation

2-4 week cycles
Social Networking Example

Figure 2. Actors (roles, agents and positions) in the GA system

Figure 3. Goal/task elicitation in the space of alternatives for a physician opening a new practice (SR)

Figure 4. Dependency relationships in the GA system (SD)

We are enjoying the story about the kid who became president. What do you think would be the most fun thing about living in the White House?

Here's what your classmates wrote:

Annie wrote: I would have fun watching video of Amy and having fun!!!!!! We would have fun in the house.

Most of all, I would have fun every day in the house.

Candace wrote: I think it would be fun to live in the White House. I would 

Write your response to the blog here:

Send to blog Quit
Agile Is No Problem

1. Adequate access to end-users.

2. Controlling context is not an issue.
All good so far
Talk Outline

• My group’s use of Agile on desktop apps.

• New focus on mobile presents a roadblock.

• Promising results using hybrid simulation.
New Focus On Mobile

3 years of field work to get HCI requirements!
Decision To Tackle “Trips Gone Bad”

Three problems:

a. Memory, e.g., forgetting where you are going.

b. Loss of Focus, e.g., distracted.

c. Anxiety, e.g., get lost and won’t be able to get help.
3 More Years?

Lots of great ideas in the group on how to mitigate the 3 issues.
Agile Is A Problem

1. Getting end-users to field sites is a problem.

2. Controlling testing context is a problem.
Let me give you a context sampler of public transportation.
Stations can be chaotic
Buses can be crowded and noisy
Buses are delayed
Social Distractions

Loitering Youth Disrupt Downtown
Posted on May 5, 2010 by kendallrfield

Loitering youth cause problems for downtown area.
Asking For Help
Time of Day
How To Control Context In Testing?
Person-Centric As Well
Talk Outline

- My group’s use of Agile on desktop apps.
- New focus on mobile presents a roadblock.
- Promising results using *hybrid* simulation.
Two Simulation Projects That Inspired Me

• Behavioral visualization in KAOS.

• Interactive simulation in Scenebeans.
Hung Tran Van, Axel van Lamsweerde, Philippe Massonet, Christophe Ponsard. Goal-Oriented Requirements Animation. In Proc. RE’04: 12th IEEE International Requirements Engineering Conference
Our Approach: Hybrid Simulation

User explores space

Guides user

Sensor data (simulated)
We can drop the user into context of our choosing.
Our Goal: Build up simulated Eugene context

Test our apps in 3 areas:

a. Memory, e.g., forgetting where you are going.

b. Loss of Focus, e.g., distracted.

c. Anxiety, e.g., lost and don’t know what to do.
First Attempts Using Google Street View

Google Street View

Segue to Bus Simulator

GPS Feeds

Bus Simulator
Switched To Game Engine
Building Infrastructure

Station built from Unity, Buildings from warehouse

Straight from warehouse
Controlling Time Of Day
Distractors

Sources

Behavior

Figure 11 – SceneBean Architecture
Getting To The Bus
At The Station
Bus Weirdness
GPS and time-of-day: no problem.

Accelerometer: working on it. Focus on sit-down and stand-up.

 Ambient noise: no problem.

Photo capture: thinking about it.
The Hard Question

User tests in HS space

Sensor data (simulated)

Guides user

User tests in real space

Sensor data

Guides user

Same?
3 Studies So Far

1. Explore real and virtual *without* phone. Memory test at end. Rough equivalence.


3. Disembark bus using phone reminders. Preliminary results are promising in HS.

4. To Do: rerun one or more of 3 year field studies in HS. Compare results.
Physical exertion is missing (including heat/humidity).

Would like more natural dialog system.

HS is (too) safe:
  • More likely to carry out dangerous activities in HS, e.g., ignore traffic.
  • Less anxious about getting lost in HS.
Will This Work For You?

We have no graphics artist in the group. Rely on Google Warehouse and mixamo.

We paid for an on-site Unity workshop – 1 day at $1500.

We have one Java/JavaScript programmer in charge of the Unity-HS + Android interface.
If You Happen To Have Some Graphic Art Resources
Formalizing Obstacles

A. van Lamsweerde, E. Letier Handling Obstacles in Goal-Oriented Requirements Engineering
From Obstacles In Solution Space To Goals in HS Space
From Kaos To Operational Specs
Formalizing Behavior
Patterns Seem Promising

const T = 1  // Number of NPC to draw from
const K = 3  // Max on stage at any one time
const N = 2  // Max on stage at any one time

SITE_MANAGER = (open → close → SITE_MANAGER).

CONTROL = (open → OPEN[0]),

OPEN[i:0..N] = (when (i<N) enter[i..K]->OPEN[i+1] | when (i>0) exit[i..K]->OPEN[i-1] | when T close->CLOSED[i]),

CLOSED[i:0..N] = (when (i>0) exit[i..K]->CLOSED[i-1] | when (i==0) allAreOut → CONTROL).


||ACTORS = (NPC1 || NPC2 || NPC3).
||SITE = (ACTORS || SITE_MANAGER).
||SITE_SYSTEM = (SITE || CONTROL).

fluents IN[j:1..K] = <enter[j],exit[j]>
assert SITE_IS_EMPTY = [](allAreOut → !IN[1..K])


• Fickas, S., Sohlberg, M., Lemoncello, R., Where Am I: How Travelers With A Cognitive Impairment Ask For And Use Help, In Workshop on User Modeling and Adaptation for Daily Routines: Providing Assistance to People with Special and Specific Needs , part of *Conference on User Modeling, Adaptation and Personalization*, June 2010


• Fickas, S. Clinical Requirements Engineering. Invited paper at *the 27th International Conference on Software Engineering* (Extending the Discipline track), St. Louis, May 2005


Thanks