



INDYCAR Mobile Timing & Scoring

Final Project – TCO

Instructor / Advisor: Tim Altom

April 2011

IU School of Informatics (IUPUI)

David J. Craske (djcraske@iupui.edu)

IRB #1011003692



Project Inspiration (Problem Statement)

- In Sept. 2010, Verizon Wireless became official cellular service of INDYCAR
- Verizon would create Mobile Timing & Scoring applications for Android & Blackberry devices
- Application would not be created for iPhone
 - Feb 2011 – Verizon iPhone announced
 - Unknown if similar iPhone/iOS application will be created, and if so, would AT&T users be allowed to download & use the Verizon-created application?



Questions

- How usable would an iPhone-specific initial design of an INDYCAR Mobile Timing & Scoring be?
- Would the initial design enhance or detract from a user's perceived overall INDYCAR race “experience”?
 - At the event?
 - Watching race on television?
 - Device-only connection?



Literature Review Synopsis

- Prototype Purpose Considerations
 - Testing the application context & role in users' lives
- Mid-Fidelity Prototyping
 - Define “fidelity” and advancement of design software
- User-Centered Mobile Design Principles [1]
 - Six design categories for consideration
- Personal Sports Information Devices
 - Current/Previous devices; litigation rulings

Prototype

Initial Screen

Splash Screen

Schedule of Events

Event Activities

“Live” Activity

The screenshot shows a mobile application interface for an IZOD IndyCar Series event. It displays race data for three drivers: Will Power (ranked 4th) and Tony Kanaan (ranked 5th). Each driver's entry includes their name, race number, a 'PIT' button, and a table of lap times. The top of the screen shows the time as 12:48 AM and the carrier as AT&T.

Driver	Rank	Behind Leader	Behind Next	Last Lap - Lap	Best Lap - Lap
Will Power	4	0.1562	0.0066	0:25:2958 216.475	0:25:2716 216.528
Will Power	4	0.1647	0.0085	0:25:2801 216.455	0:25:2801 216.455
Tony Kanaan	5	0.1658	0.0011	0:25:2812 216.445	0:25:2812 216.445

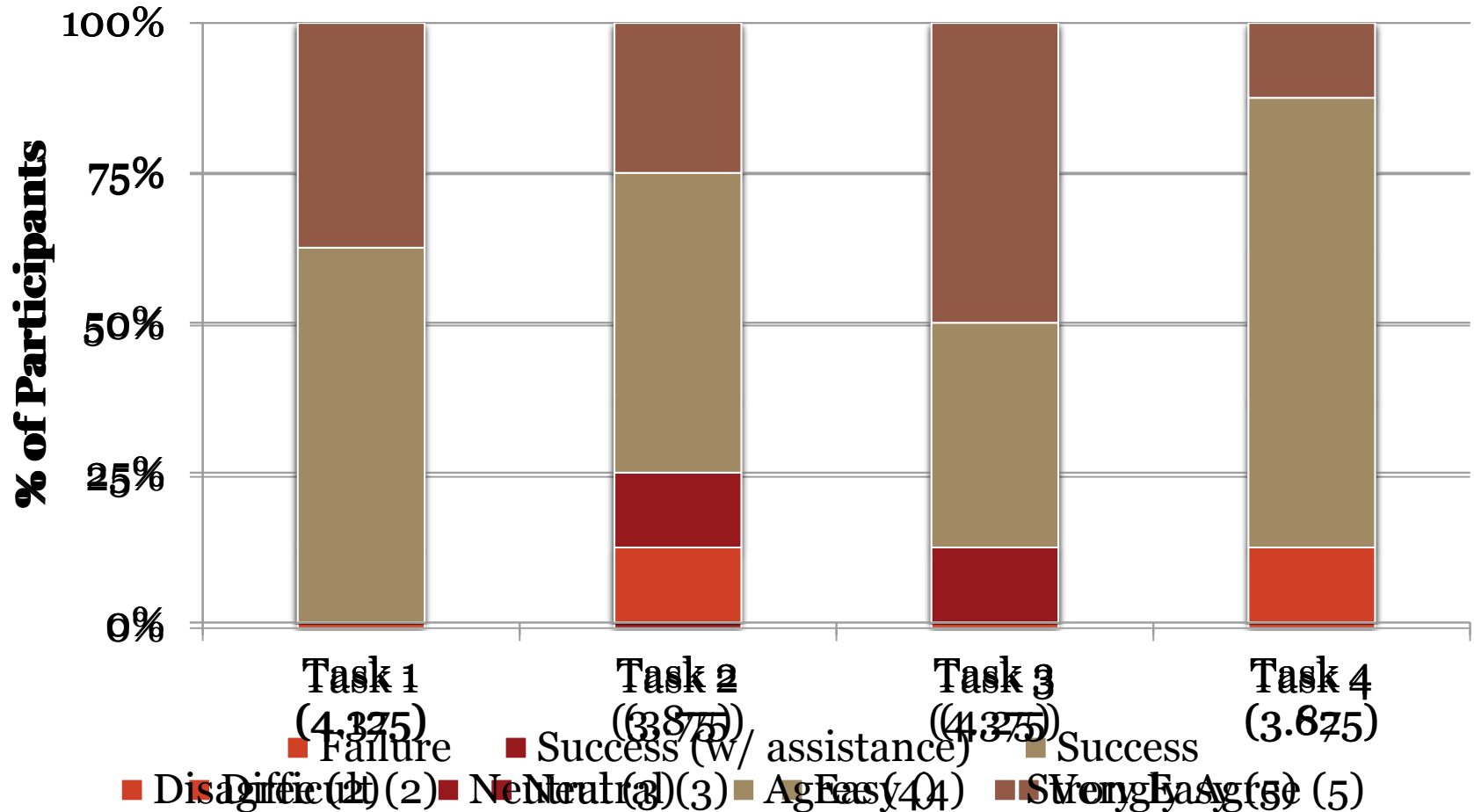


Project Methodology

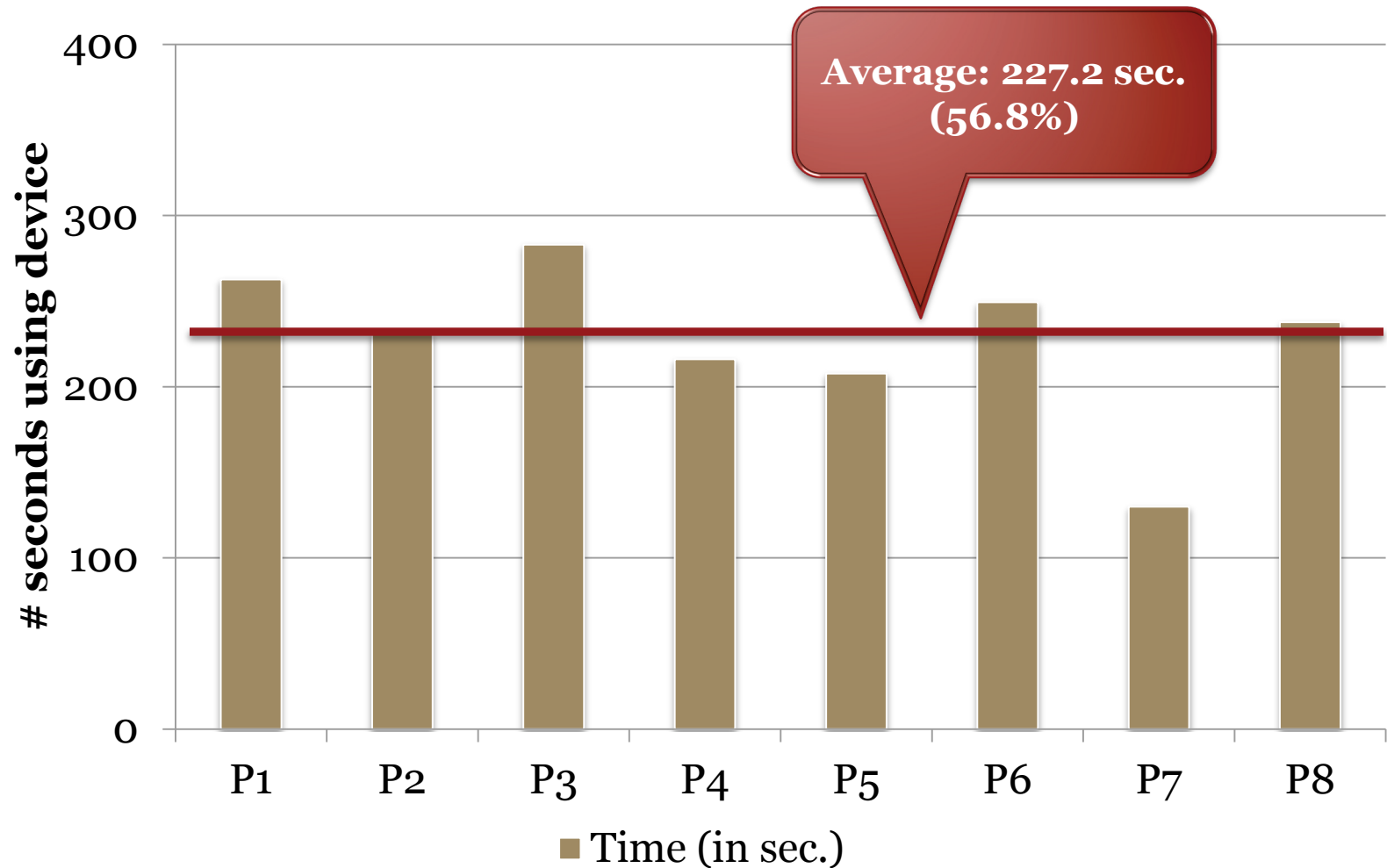
- Mixed-Method Approach
- Recruitment Process: Twitter
 - Questionnaire Link provided
 - Age, Location, Knowledge of racing & iPhone/iPod
 - 17 Candidates qualified, 8 candidates tested
- Testing Process
 - Four Scenario-Based Tasks: application functionality
 - Final In-Situ Task: interaction observation between application and television broadcast
 - Brief Interview Questions (Post-Task & Post-Test)
 - System Usability Scale (SUS) Questionnaire
 - Compensation: \$10 gift cards of choice

Task Results

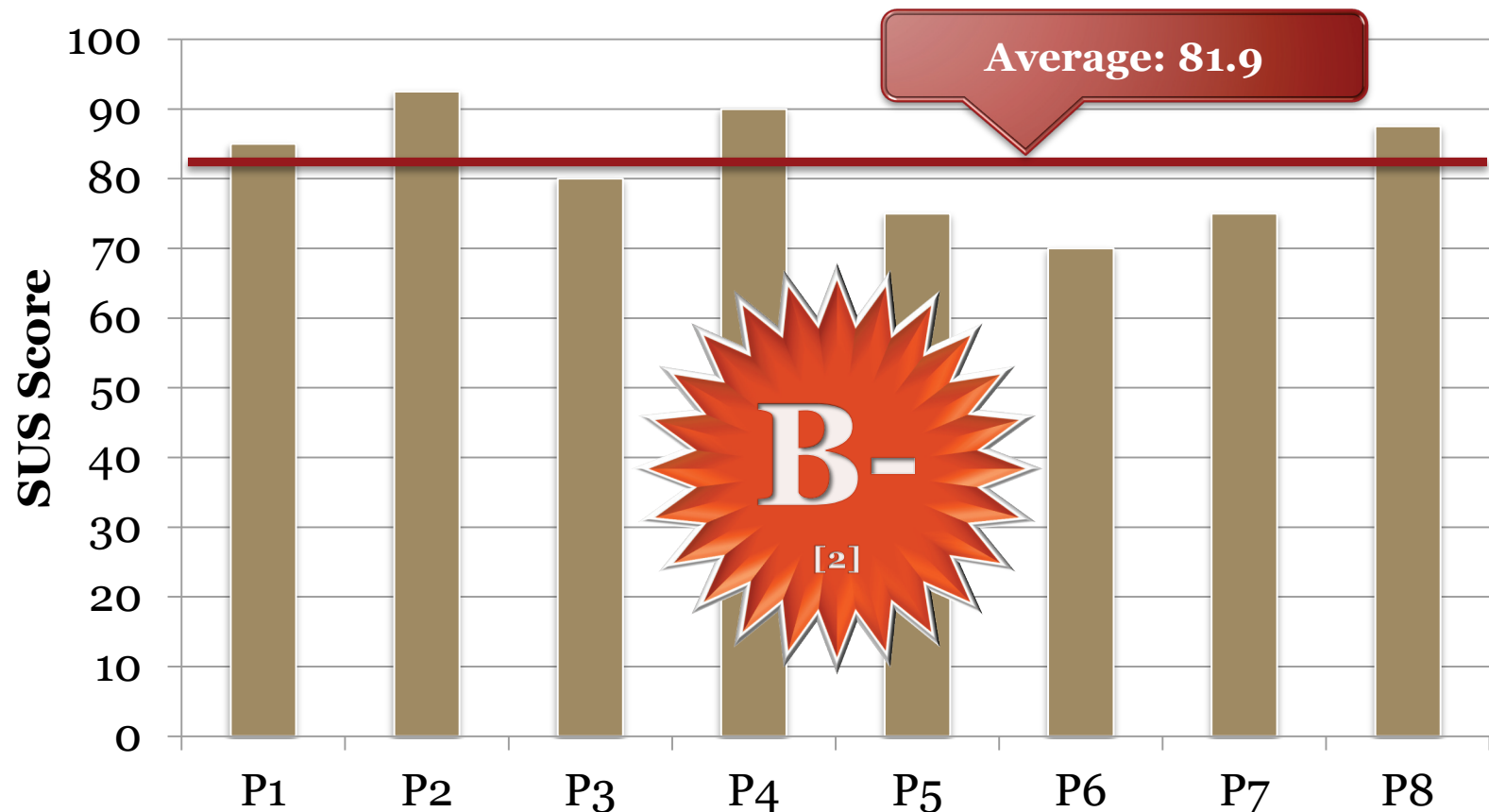
I am satisfied with the amount of time to complete ...



RealTime Results



System Usability Scale (SUS) Results



[2] Bangor, A., Kortum, P., & Miller, J. (2009, May). Determining What Individual SUS Scores Mean: Adding an Adjective Rating Scale. *Journal of Usability Studies*, 4 (3), pp. 114-123.



The Voice-of-the-Users

“Two Best Aspects” Summary

- Ease of Navigation
 - Current events listed in chronological order
 - Also use as season schedule
- Event Granularity
 - Practice, qualification, & race results in event-specific categories
- Readability / “Identifiability”
 - Fonts crisp to read
 - Users could put face to name & car number/color

“Two Worst Aspects” Summary

- Color Dependence
 - Not instinctual to indicate the “live” event using color only
- Limited Linear Movement
 - Arriving at one screen, only to go “back” to traverse app
- Excessive Scrolling
 - Size of event- & driver-specific icons



Questions ... to Answers

- How usable would an iPhone-specific initial design of an INDYCAR Mobile Timing & Scoring be?
 - SUS Average of 81.9 (B-) is slightly above average, but ample room for improvement
 - A good baseline application for future revisions
- Would the initial design enhance or detract from a user's perceived overall INDYCAR race "experience"?
 - At event? All 8 users – Positive experience
 - On television? 7 users – Positive experience
 - Potential Negatives: Possible data overload distracting, Users reviewing over 50% of time?
 - Device-only connection?
 - Relatively positive experiences. Select design improvements should have significant experience enhancement capabilities.



Project Conclusions

- **Prototype Improvements**
 - Add color-independent indicators for “Live” Event
 - Keep user moving “forward
 - Test during live event with live data
- **Personal Improvements**
 - Continue identifying and removing bias (pilot test)
 - Always design with accessibility in mind
 - Usability tests do not define test questions



Q & A

