



Animation in a Peripheral Display:

Distraction, Appeal, and Information Conveyance in
Varying Display Configurations

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What is a peripheral display?



The
Weather
Channel



People are opportunistically able to
examine these displays

Not suitable for mission critical matters

Example systems



InfoCanvas



Informative Art



Digital Family Portrait



Dangling String



Kandinsky



Tickers

Animation

- Minimally use motion or animation, especially not continuous [Maglio & Campbell, CHI '00]
- Animations may minimally impact users of certain tasks [McCrickard et al Interact '03]
- Guidelines for motion-based techniques [Bartram et al Intl JnrI HCI '03]
- Change blindness [Intille Ubicomp '02]

Introducing bluegoo

- Created to explore issue of animation in peripheral displays
- Create a level of visual interest
- Collage-based system:
 - What's Happening [Zhao & Stasko, AVI '02];
Notification Collage [Greenberg & Rounding, CHI '01]
CollageMachine [Kerne, CHI Extended Abstracts '97]
- Run on second / third display, lobby display

RSS



Auto accident snarls traffic on connector

RSS



Auto accident snarls traffic ~~on~~ connector



Image library

auto



accident



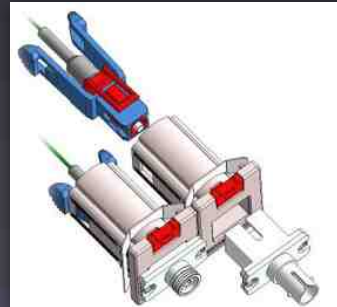
snarls



traffic



connector



from story

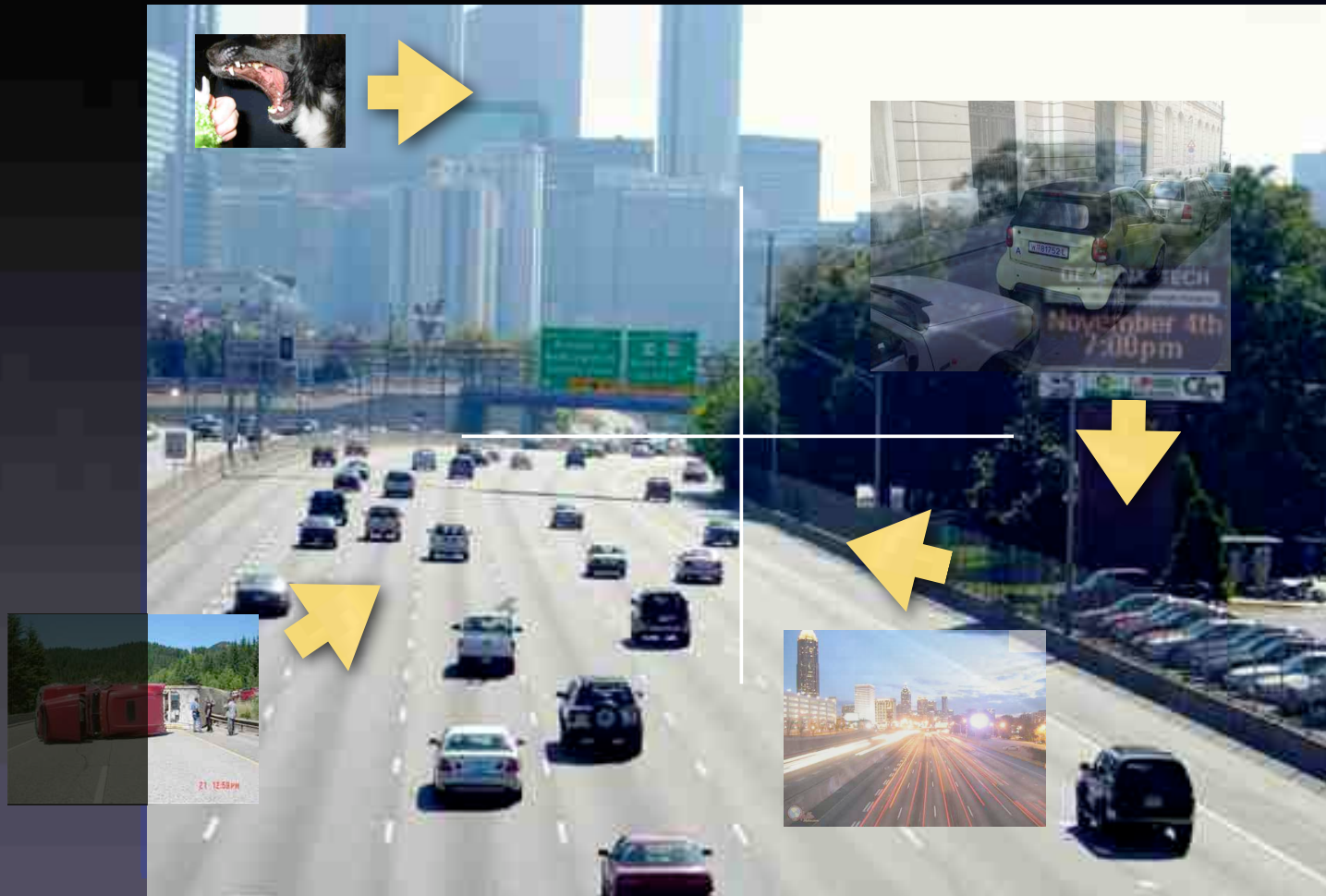




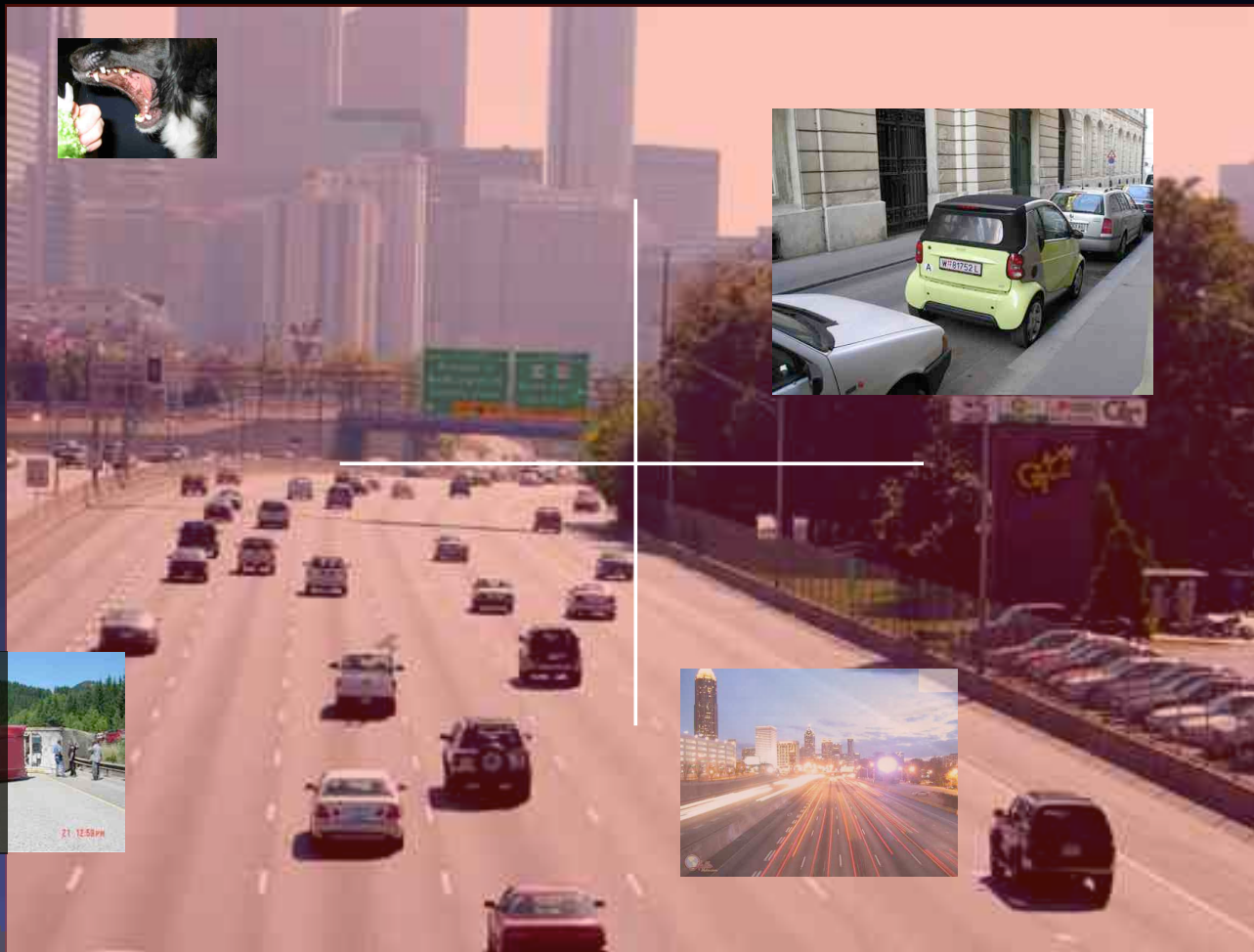
image placement / scaling



opacity / translation / scaling



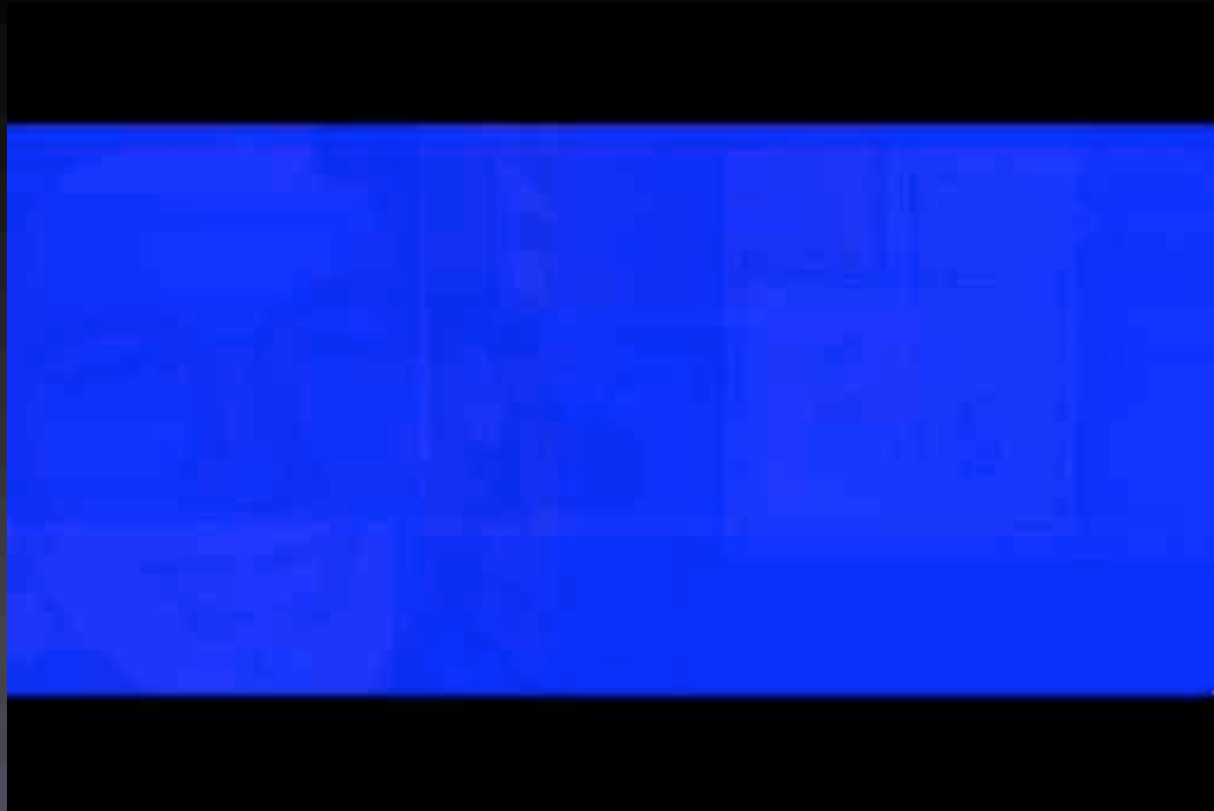
background color



textual cues



Demo



Research Questions

- Can animation provide increased visual appeal in peripheral displays?
- Does that animation necessarily also increase distraction?
- Can people infer the topic matter of the kind of collages?

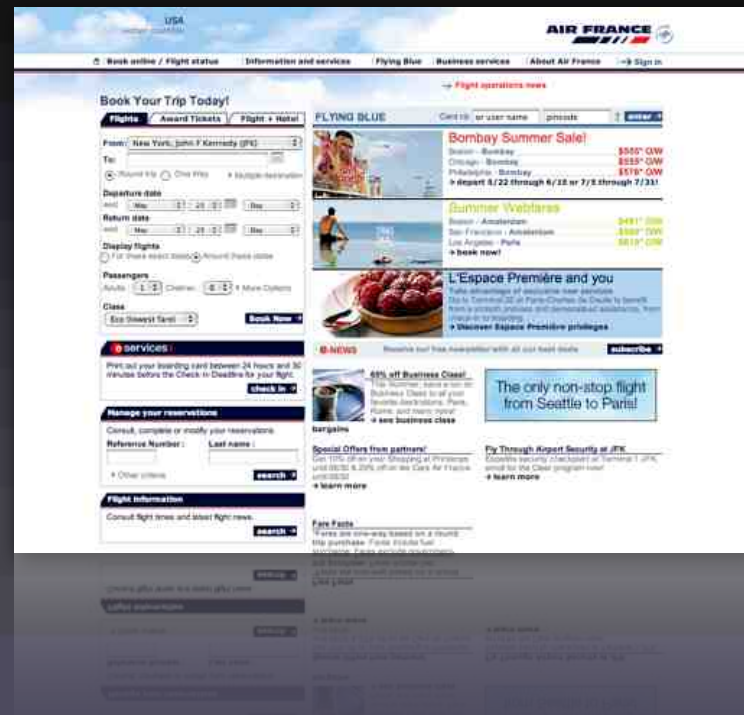
Evaluating peripheral displays is difficult

Study Design



Primary task

- Air France's U.S. Web site
- Flight departures
- Airfares
- Policies
- \$50 incentive





Secondary task

- Eight Bluegoo collages
- Appr. 18 minutes
- Ended on black screen



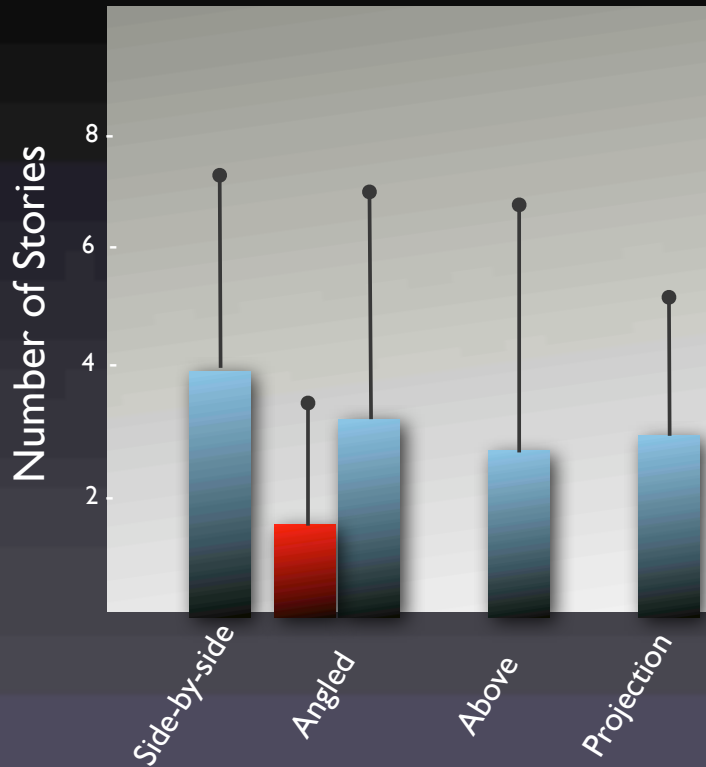
Study Design

	motivated	non-motivated
side-by-side		
angled		
projection	\$20 + \$50	\$50
above		

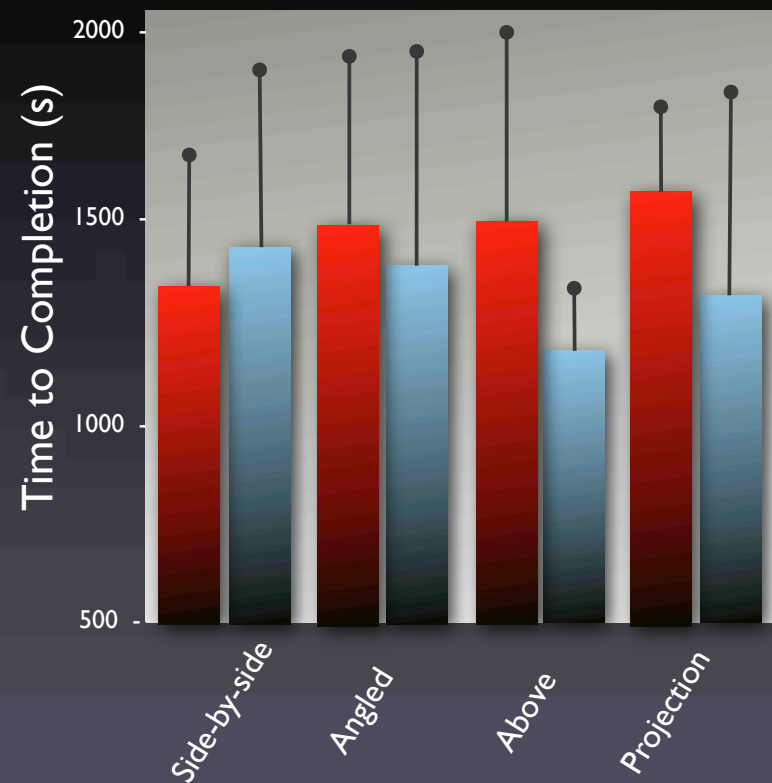
N = 32 (6 female), \$5 compensation

Results

Average Number of Recalled Stories



Average Time to Completion



 No Motivation
 Motivation

“Noticing the Secondary Display”



Angled Display Non-Motivated Condition
Number of Stories Recalled: 3, 2, 1, 0
Average: 2.75 out of 8

Information Conveyance Findings

	Mean	S	High	Low
China fears girl died of bird flu	4.8	1.8	8.0	1.5
Pope on the road to sainthood	3.9	2.4	9.5	1.0
Malaysia warned over pirated CDs	5.4	1.3	6.5	4.5
Internet phone calls on the rise	2.7	1.8	10.0	1.0
No trade deal at Americas summit	2.0	1.4	7.0	1.0

Qualitative Findings

- “I completely did not see it.”
- “The second display was not distracting because I was able to choose to not look at it when I didn’t want to.”
- “The fact that the display was opaque made it kind of fun--like ‘what’s going on here?’ It’s almost like a game and I could see it being fun in other domains.”

Discussion

- Low subjective ratings for distraction along with any significant difference in task completion time
- Visual interest is a mixed bag
 - Mean level of interest 3.6 out of 10
Motivated: 5.3 out of 10
Non-motivated: 1.6 out of 10
 - Wide-ranging responses from 9 to 2 for aesthetics
 - Terms: artistic(10), easy-on-the-eye (13), tranquil (13), disruptive (1)

Conclusions

- Animation *can* be used judiciously in large-scale, monitor-sized applications....
- Interview feedback and survey data indicate people find animation effects appealing
- Angled displays result in higher self-reported distractions

Future Work

- Combination of animation techniques
- Explore the ability to disregard animation in the periphery
- Evaluate a semi-motivated condition
- Effects of animation on angled displays



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Steelcase