



The DART Project: Building Real Tools for Real People

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About DART

- Designer's Augmented Reality Toolkit
- Built on Macromedia Director
- Intended for use by designers and new media applications
- Supports entire design process
 - Prototyping -> Deployment
 - Can explore “what if?” in one environment

About DART

- Spectrum of AR tools

Custom GUI Tool

No Programming

DART

Library

Programming (C++)



Amire

ARToolkit

- Provides levels of development

- Drag and Drop
- Modifying existing components (Lingo)
- Creating new components (Lingo or C++)

DART for IAR?

- Supports people building app not the technology people
- Maybe in IAR there is handoff?
- Different requirements for industrial apps?
 - Multithreading
 - Low level graphics access
 - Custom hardware

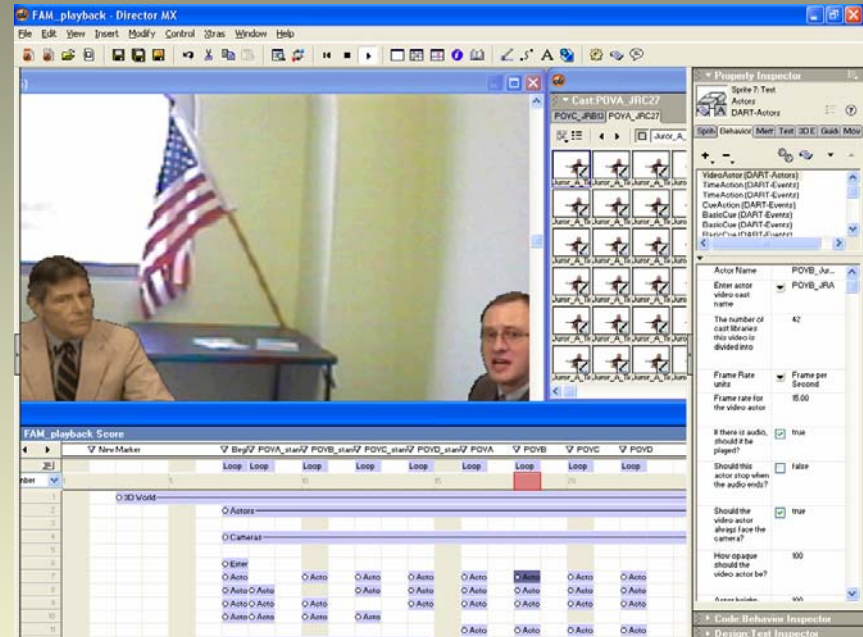
DART in an IAR Application

- Prototyping poultry processing system
- Communication issues due to automated inspection
- 60-180 birds a minute
- Dirty environment
- Laser projection on plate above chicken
- Creating prototype for experiments
- Using animatics



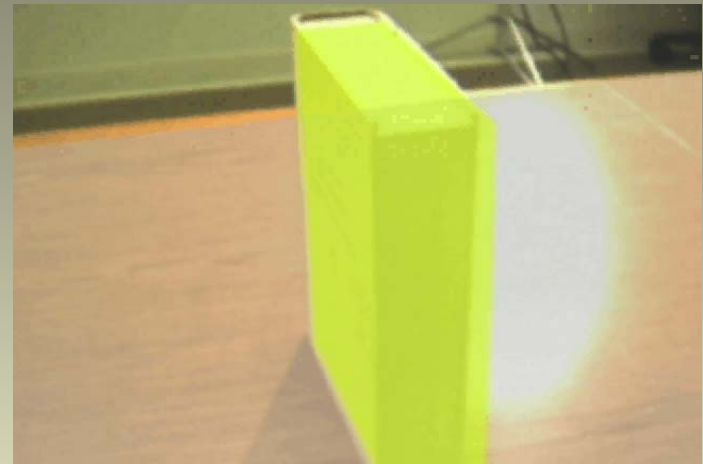
DART Prototyping Features

- Physical/ Virtual Objects
- Capture/Replay
- Animatics
- Wizard-of-Oz support

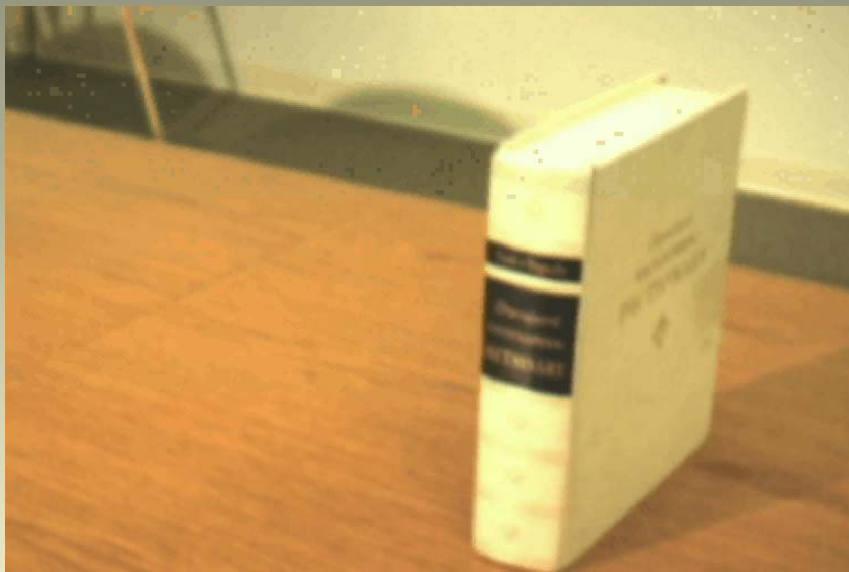


Physical/Virtual

- 3D Actors in experience
- Transform script places in world
- “Virtual” registered with scene
- “Physical” used for occlusion
- Integrated with physics engine
- Interface allows for use of “placeholder content”
- Rapid switching for testing



Physical/Virtual



ISMAR '05 Workshop on Industrial and
Augmented Reality

Capture/Replay

- Capture synched video and tracker data
- Replay in application
- Rest of application views as “live”
- Reduces challenge of *in situ* applications
- Abstract clocks allow for fine control of playback
- Useful in debugging as well as prototyping
- Can be used in final application as well
- Capture data for use in experiments
 - Visualizing data inside DART



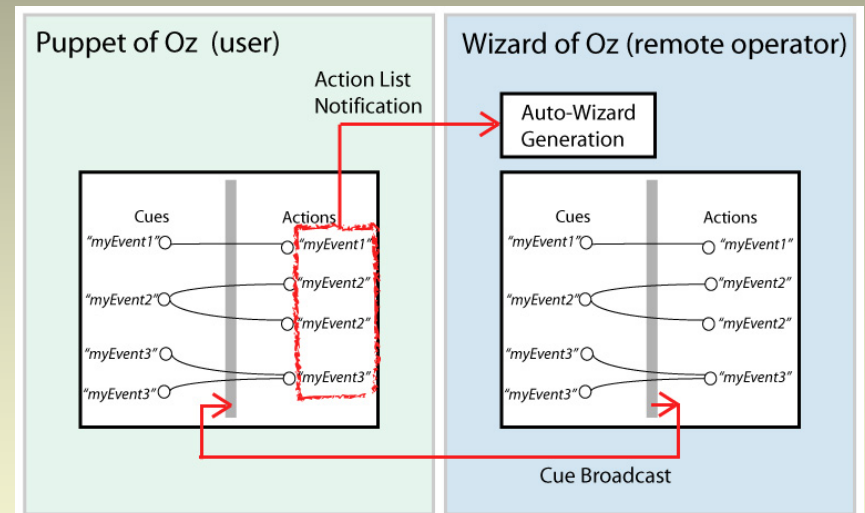
Sketching and Animatics

- Storyboards and animatics standard in film industry
- Allows for brainstorming and video prototyping
- Eliminate need for finished content early on
- Informal content more likely to be changed



Wizard of Oz

- Utilizes communication through broadcast to agents
 - Cue/action model
- “Wizard” application controls “puppet” application
- Just drop behavior onto any application
- Automatic WOz interface generation
- Custom interfaces possible too
- Cues can be sent locally as well as to puppet



Conclusion

- DART intended for designers
- Testing experiences and applications early and often
- Useful for prototyping IAR
- Informs the design of IAR focused tools
- Download at DART at www.cc.gatech.edu/dart