Sony Entertainment
Robot “AIBO” and
OPEN-R Architecture

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Sony Entertainment
Robot America (ERA)
Toward an era of autonomous robots

1990

Information Technology
Office/Personal Computer

Networking
CyberSpace

Robot Entertainment

Focus on Entertainment

1990

2000

? 

Autonomous Robot

R2D2/C3PO
Lt. Cmdr. Data
Astro-Boy
Doraemon

Bridge
Why “Entertainment”? 

- Effective way to get robots into the home
- This is Sony’s strength
  - Can take advantage of many different Sony properties
- Analogy to RoboCup itself
  - We are not here to watch actuators and cameras and sensors interact with a little orange ball…
  - We are here to watch some exciting entertaining soccer games!!!
Why “Legged”? 

- Creating an emotional and psychological bond between robots and humans is critical.
- It’s hard to have empathy with wheeled robots.
- Recent research suggests a deeper experiential psychological link:
  - “Mirror Neurons”
    - (Gallese V. & Goldman A, 1998)
OPEN-R Robot Architecture

- Many robots are built for ‘single-purpose’ jobs
  - Manufacturing, vacuuming (!)
  - Leads to increased costs
- Many robot researchers spend time ‘reinventing the wheel’, literally!
- A standard architecture reduces costs and encourages innovation
- Our proposal is called OPEN-R
Main OPEN-R feature: modularity

- Hardware and software modularity
Mutant AIBOs!

Courtesy: Boston Dynamics
Face Detection
Recent SONY innovations

- Developed SDR-4X based on OPEN-R
- Released freely available “OPEN-R SDK”
  - Available at [www.openr.org](http://www.openr.org)
- Face recognition, photos-via-email incorporated into latest commercial AIBO applications
- Developed Remote Processing
  - Enables nearby PC to share processing load
- Commercial AIBO-ware production continues
- Research continues at events like these
Sony Announcements

- 4th global OPEN-R SDK SIG will be held at RoboCup 2003 in Padova, Italy
  - Technical presentations by Legged League teams and Sony engineers
  - Interested in presenting?
- Show special for online AIBO purchases!
  - $65 off the purchase of a ERS-210A or ERS-220A
  - See Sony staff for a free e-coupon