

# Modeling and Simulation in Robotics Workshop

Breakout Summary Slides

Team 1

Breakout 3

# Slide 1: Consensus Thinking

- Identify areas where M&S will have the largest impact in robotics – can we incentivize work on these areas?
  - Funding agencies
  - (Forced) Collaborations between M&S and Robotics researchers
  - Setup a virtuous cycle – encourage healthy competition across different simulators (maybe we need a “caffe” for simulators)
  - Grand challenges
- More education on multi-body dynamics and core areas for M&S
  - Not just machine learning (we should not forget physics)
  - Bridge across areas – educate software engineers on numerical methods and other relevant techniques for M&S and mechanical folks on software practices
- Rapid dissemination of knowledge across the field – models, tasks, etc.
- Can modeling & simulation alleviate ethical concerns on robotics?
  - Interpretability

## Slide 2: “Somewhat contentious” Ideas

- “Modularity” can be brittle – architect your simulations to be scalable
- Learn lessons from the video game community – how to build a vibrant industry with limited tools

## Slide 3: Odds and ends, out there thoughts, fun stuff

- Enter your handful of thoughts here

# Cheat Sheet Slide

- Breakout Themes, “M&S in Robotics” workshop:
  - Breakout 1: Panoramic view of opportunities  
[a time to dream]
  - Breakout 2: What’s stopping us from getting there  
[the reality check]
  - Breakout 3: Pragmatic suggestions for moving forward  
[what funding organizations, the robotics community,  
or other vested parties can/should do]

- Breakout session, things to keep in mind
  - You have 25 mins to generate your three slides
  - Select a scribe to generate your three slides
  - Decide who will present your slides in plenary
  - Do not argue within team for more than 2 mins about an idea. Move it to “Slide 2” and proceed
  - Generate diverse/original/out-there ideas
- Plenary session, things to keep in mind
  - Each team has 5 mins to present its slides
  - We seek to collect as many original ideas/points of view/opinions as possible
    - Settling contentious issues not a priority
  - Use open-floor discussion to add to what the teams have presented
  - Limit your remarks to one to two minutes. Give others an opportunity to speak. Keep it fun, keep it friendly