



**December 20-21, 2013  
Homestead-Miami Speedway**

**DRC Trials Competition: 7:00 AM to 6:00 PM**  
**DRC Robotics Expo: 9:30 AM to 5:00 PM**  
**Food Concessions: 7:00 AM to 7:00 PM**

Seventeen teams from the United States, China, Japan, and Korea will participate in the DARPA Robotics Challenge (DRC) Trials at Florida’s Homestead-Miami Speedway from December 20-21. The event is a test of some of the most advanced robots in the world, competing to prove the feasibility of using robots to assist humans when natural and man-made disasters strike. Robots from each team will attempt to complete the challenge that DARPA set: perform eight tasks related to disaster response in the quickest time and with the least human intervention possible.



This outdoor event is free and open to the public. Spectators will gain an understanding of what the current state of robotics is and see demonstrations of other exciting robots at the DRC Expo occurring alongside the DRC Trials.

**Spectators Are Encouraged to Sign Up for a Chance to Win a Picture with a Robot!**

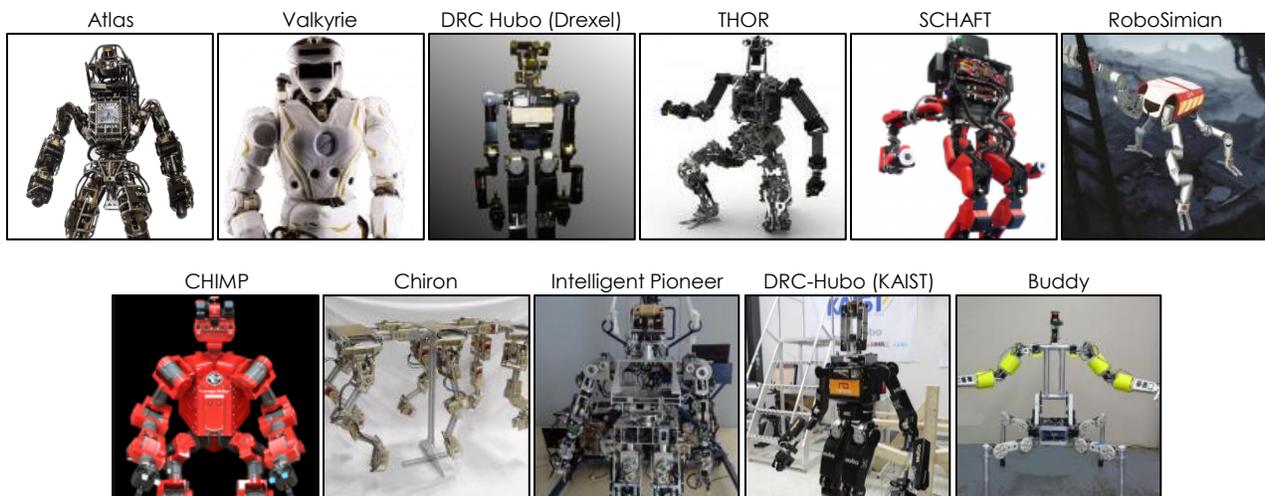
- <http://www.theroboticschallenge.org/spectators>

**Media Interested in Covering Onsite or Remotely Are Requested to Register with DARPA in Advance**

- <http://www.theroboticschallenge.org/media>
- Please direct queries to [outreach@darpa.mil](mailto:outreach@darpa.mil).

**Can’t Attend the DRC Trials? We have Resources for Remote Viewers**

- [www.theroboticschallenge.org](http://www.theroboticschallenge.org): Updates, photos and videos posted on the DRC website
- [www.twitter.com/darpa](https://twitter.com/darpa): Follow #DARPADRC for the latest updates
- [DARPA TV on YouTube](http://www.darpa.gov/darpatv): Live webstreaming of the event tasks (active Dec. 20-21 only)



More information about the DARPA Robotics Challenge is available online at [www.theroboticschallenge.org](http://www.theroboticschallenge.org).

# Background on the DARPA Robotics Challenge (DRC)

## What is the DRC?

The DRC is a competition of robot systems and software teams vying to develop robots capable of assisting humans in responding to natural and man-made disasters. It was designed to be extremely difficult. Participating teams are collaborating and innovating on a very short timeline to develop the hardware, software, sensors, and human-machine control interfaces that will enable their robots to complete a series of challenge tasks selected by DARPA for their relevance to disaster response. Three sequential DRC events place equal emphasis on hardware and software:

- the Virtual Robotics Challenge occurred in June 2013 and tested software teams' ability to effectively guide a simulated robot through three sample tasks in a virtual environment;
- the DRC Trials occur December 20-21, 2013 at the Homestead-Miami Speedway, where teams will attempt to guide their robots through eight individual, physical tasks;
- the DRC Finals will occur at the end of 2014 and will require robots to attempt a circuit of consecutive physical tasks; the winning team will receive a \$2 million prize.

## What Is the DRC Trying to Achieve?

Robots have the potential to be useful assistants where humans cannot safely operate, but despite the imaginings of science fiction, robots of today are not yet robust enough to function in many disaster zones nor capable enough to perform the most basic tasks required to help mitigate a crisis situation. The goal of the DRC is to generate groundbreaking research and development in hardware and software that will enable future robots, in tandem with human counterparts, to perform the most hazardous activities in disaster zones.

## How Will DARPA Characterize Success?

Because disasters are so unpredictable in their manifestation and effects, the type of robots DARPA envisions to aid in these situations must be adaptable. They require four key capabilities to be effective:

- mobility to maneuver in the degraded environments typical of disaster zones;
- dexterity to manipulate and use a diverse assortment of tools designed for humans;
- ability to be operated by humans who have had little to no robotics training;
- partial autonomy in task-level decision-making based on operator commands and sensor inputs.

The DRC Trials will test all of these capabilities, but primarily mobility and dexterity. The DRC Finals will deliver a more robust and demanding test of all four capabilities.

## What Results Might the DRC Deliver?

Imposing and unusual as the robots competing in the DRC Trials might seem, they will move slowly through the tasks. Like a one-year-old child beginning to walk and interact with the world, there will be stumbles and falls. When DARPA's Grand Challenge first tested driverless vehicle technology in 2004, the competitors got off to a shaky start. However, there was extraordinary improvement in the year leading up to the second challenge in 2005, and today autonomous vehicles are legal in several states and many companies include elements of the technologies in their vehicles. DARPA expects that the DRC Trials will similarly mark the beginning of an historic transformation in robotics.

By the time of the DRC Finals at the end of 2014, we expect the robots will demonstrate roughly the competence of a two-year-old child, giving them the ability to autonomously carry out simple commands such as "Clear the debris in front of you" or "Close the valve." The robots will still need to be told by human operators which tasks to chain together to achieve larger goals, but DARPA's hope is that this demonstration will show the promise disaster response robots hold for mitigating the effects of future disasters.