

DARPA

Grand Challenge



CASH PRIZE



Overview & Objectives

Col Jose Negron



Los Angeles to Las Vegas
www.darpa.mil/GrandChallenge

Purpose



- To inform you:
 - Grand Challenge overview and objectives
 - Why is DARPA pursuing this event?

Why the Grand Challenge?



- Inspire innovation
 - Catalyst for non-DOD partners—reach out to the Public / Enthusiasts
- Expand current thinking in technical areas
 - Behavior, Mobility, Sensing, Power, Communications and others
 - Take the “technical challenges off the table”
- Keys to success:
 - Teaming of functional Experts
 - Encourage partnerships with automotive/mechanics, computer/robotic experts but capture the motor sport “spirit”
 - IT CAN BE ACHIEVED
 - Integration of technology to address “current shortfalls”
 - Infuse new ideas and advance the technology to be used in the first generation of tactical autonomous robotic ground vehicles

Goal: Payoff to the Nation



- DIRECT transfer to national security
- LEAP technology forward :
 - Pushes technology for what can be possible
 - Autonomous off-road operations
 - Incentive for full system design vs enabling technology
- Capture Public Imagination:
 - Challenges the Enthusiast to participate
 - Captures Public awareness of what is possible
 - One of a kind event – similar to the Orteig prize which inspired Lindbergh to cross the Atlantic
 - Pushes the current talent pool
 - Stimulus to attract a wider range of participants
 - Looks beyond traditional defense resources

Grand Challenge Timeline



22 Feb 03 Apr 03 Jun 03 Oct 03 Dec 03 Jan 04 Feb 04 11-13Mar 04

13 Months

- 22 February 2003 – Participants Conference
- 1 April 2003 – Application Form Posted
 - www.DARPA.mil/GrandChallenge
 - Period from 1 April to 13 October (early is better)
- 13 October 2003 – Deadline for applications/technical paper
- 9-12 March 2004 – DARPATech (Technology Conference in Anaheim)
- 11-13 March 2004 – The Grand Challenge
 - 11 March – Ceremonial start at DARPATech
 - 12 March – Qualification Inspection & Demonstration
 - 13 March – Grand Challenge main event

Grand Challenge Characteristics



Current Technology

- **Autonomous Operation**
 - **Systems today require command uplink**

- **Adaptability**
 - **Systems today are tuned for their environments**

- **Tactical Cross-Country Velocity**
 - **Systems today cannot keep up with manned vehicles**

Grand Challenge

- ➔ **100% Autonomous**

- ➔ **Wide variety of terrain types**

- ➔ **Use speed as a discriminator**

Grand Challenge Concept



- Route completion requires multiple revolutionary achievements in autonomy
 - Mobility – Power, suspension, actuators, etc.
 - Sensing – Perceiving the environment
 - Behavior – Decision making and execution
- Prize is awarded for achieving autonomy across a range of technology capabilities

Grand Challenge Route



GRAND CHALLENGE AGENDA

Thursday 03/11/04:

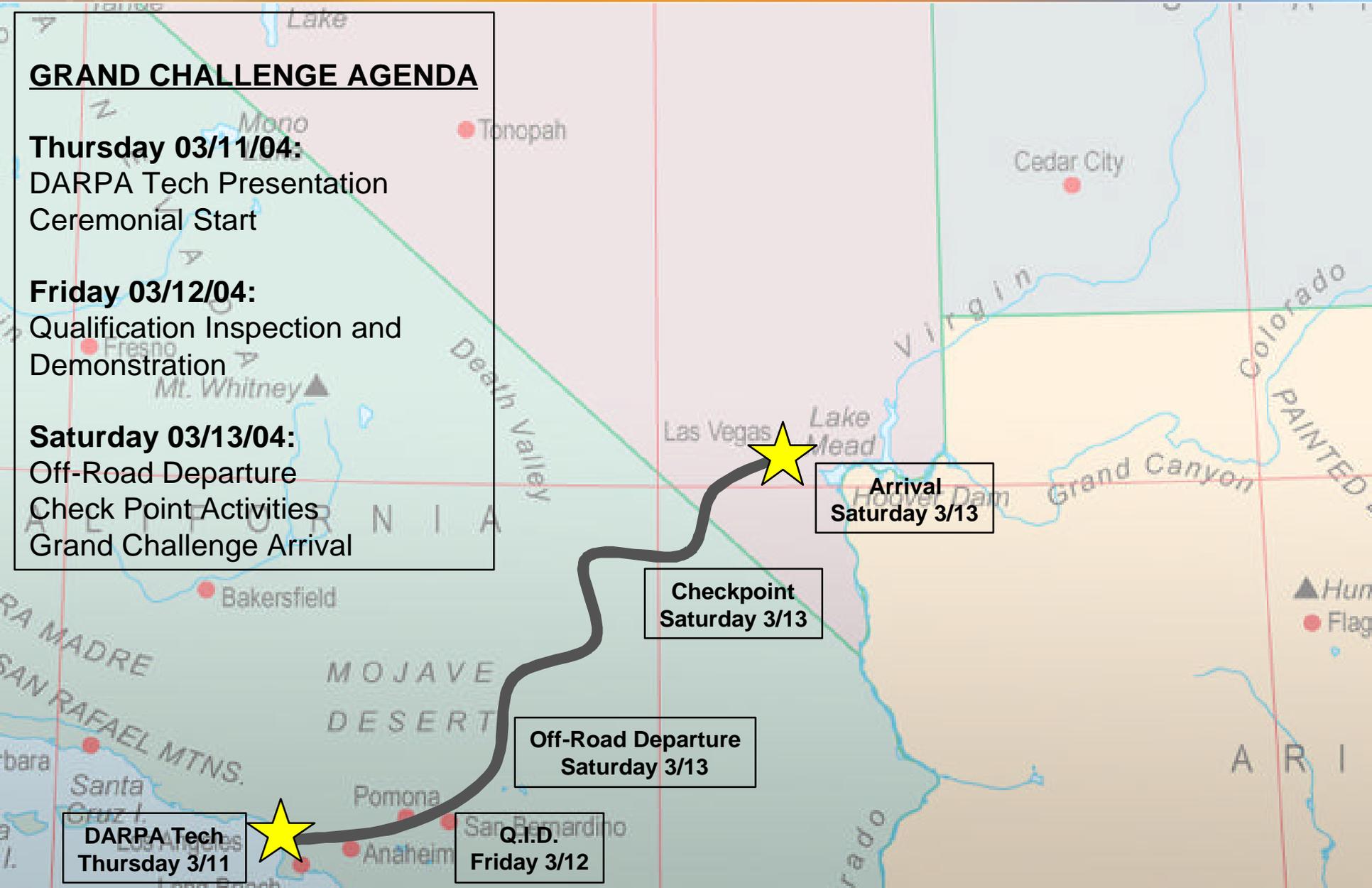
DARPA Tech Presentation
Ceremonial Start

Friday 03/12/04:

Qualification Inspection and
Demonstration

Saturday 03/13/04:

Off-Road Departure
Check Point Activities
Grand Challenge Arrival



**DARPA Tech
Thursday 3/11**

**Q.I.D.
Friday 3/12**

**Off-Road Departure
Saturday 3/13**

**Checkpoint
Saturday 3/13**

**Arrival
Saturday 3/13**

Grand Challenge Team



Dr Tony Tether

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Program Manager

Mr. Art Bruckheim

Gov Liaison

Mr. John Jennings

Congressional Liaison

Ms. Jan Walker

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Mr. Dominic Clark

Public Relations

Mr. Sal Fish

Route Development

Ms. Dianne Sidebottom

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Dr. Mike Mulqueen

Technical Requirements

Dr. Tom Strat

Technical Requirements

Dr. Eric Krotkov

Technical Requirements

Mr. Mike Fagan

Rules and FAQ

Mr. Rob McHenry

Logistics

Mr. Michal Simek

Registration

Ms. Heather Campbell

Registration

Ms. Shaun Kim

Registration

Mr. Darin Smith

Security

Mr. Bob Grant

Security

Ms. Algeria Tate

Contracting

Ms. Sobia Fayyaz

Web Development

Ms. Shannon Ribel

Web Development

DARPA

Grand Challenge

CASH PRIZE!



*Autonomous Ground Vehicle Race
from Los Angeles to Las Vegas*