



TODAY'S WORK. TOMORROW'S WORLD.

JUSTSAP Conference Lunar R&D Park – Plenary Session

Nov 15, 2010

Making Progress Possible

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Introduction

Eric Reiners

- Mgr Automation Systems Development in Applied Research
- 23yrs with Caterpillar - machine design, analysis, test and new product introduction, product quality & reliability, development of collaborative government research.
- Certified 6 Sigma Black Belt
- Bachelor of Science in Engineering from the University of Illinois – Urbana/Champaign

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Agenda

- Caterpillar, NASA, and Automation – Brief History
- Vision – Today's Topic

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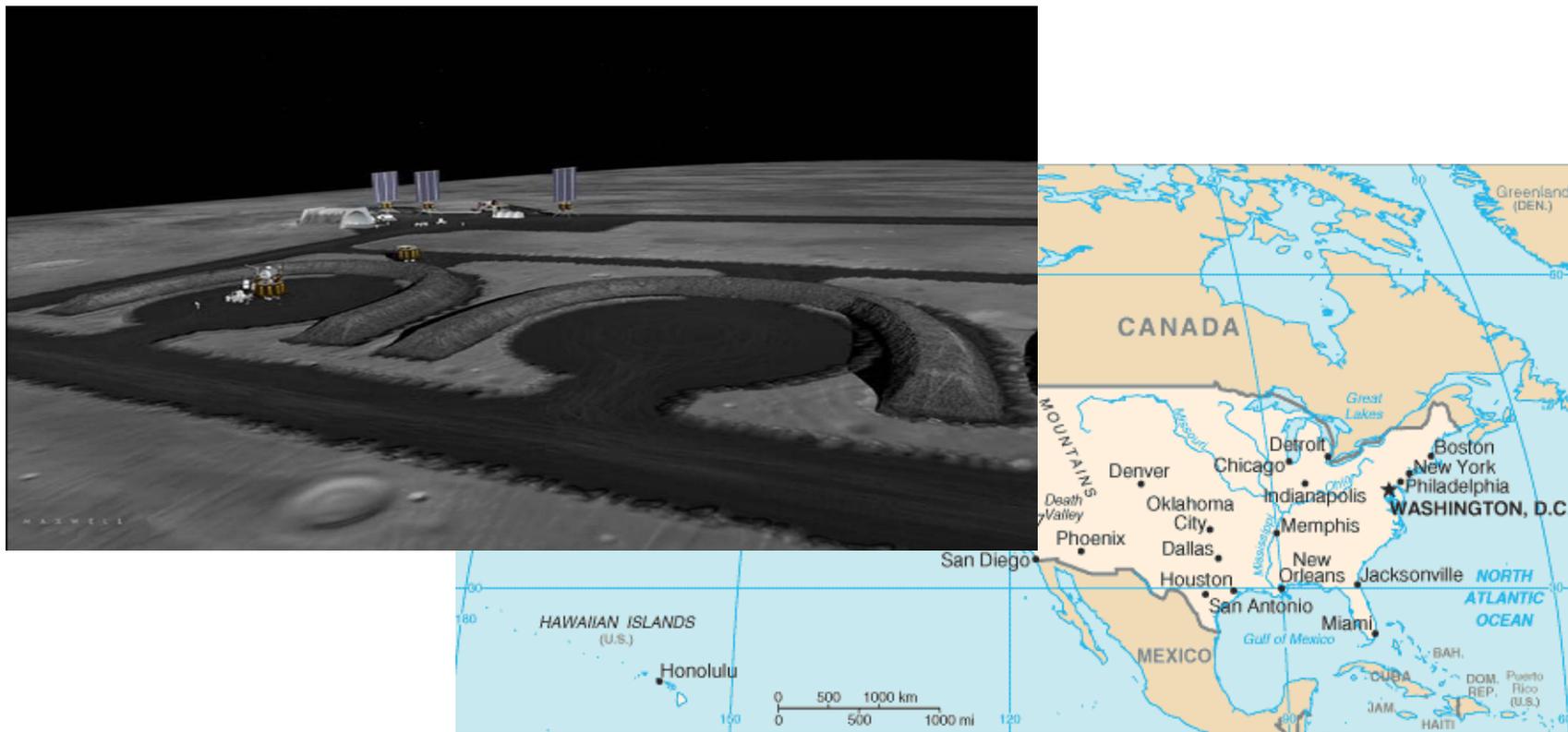
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Vision – Signature Demonstration

Construction of an analog planetary base (Lunar or Mars) and excavation of material for ISRU production.



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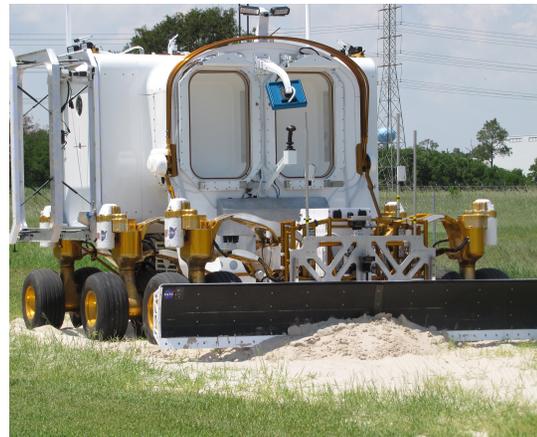
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Vision – Signature Demonstration

Construction of an analog planetary base (Lunar or Mars) and excavation of material for ISRU production.

- Use (2) MTL's as low cost, terrestrial development platforms and migrate the technology to space vehicles (Space Exploration Vehicle – SEV, SCARAB)



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Vision – Signature Demonstration

Construction of an analog planetary base (Lunar or Mars) and excavation of material for ISRU production.

- Autonomous operation with remote control oversight from any/all of the following: Peoria, Il ; Houston, TX ; International Space Station



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Needed Technology



- Remote control w/ time delay
- Autonomous Machine & Work Tool Controls
- Perception and Site Awareness (Vision/Imaging, Obstacle detection, Hazard Tracking)
- Machine/Tool Positioning – Non GPS
- Automated Cycle planning controls
- Site Planning & Scheduling

Images Courtesy of NASA

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CATERPILLAR, NASA, AND AUTOMATION

Back ups

Images Courtesy of NASA

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CATERPILLAR and Astrobotic Technology

Caterpillar is a sponsor of Astrobotic Technology and will leverage their lessons learned.



- Carnegie Mellon Univ Spinoff
- Focus - Acquire and license data, deliver payloads, and perform robotic services on the Moon
- First Mission – Google Lunar X Prize



“First private robot on the Moon”

- Successfully land
- Traverse 500m
- Send back Hi-Def Video

\$30M in Prize money.

Currently 22 active teams.

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CATERPILLAR, NASA, AND AUTOMATION



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