

100 Year Starship Study™ Public Symposium

VENUE INFORMATION

Hilton Orlando Convention Center

Address: 6001 Destination Parkway, Orlando, FL 32819 **Phone:** 1-407-313-4300 **Fax:** 1-407-313-4301

Website: http://www1.hilton.com/en_US/hi/hotel/ORLOCHH-Hilton-Orlando-Florida/index.do

TRACK DESCRIPTIONS

Time-Distance Solutions | Track Chair: Dr. Jim Benford

Propulsion, time/space manipulation and/or dilation, near speed of light navigation, faster than light navigation, observations and sensing at near speed of light or faster than light

Habitats and Environmental Science | Track Chair: Dr. Chris McKay

To have gravity or not, space and radiation effects, environmental toxins, energy collection and use, agriculture, self-supporting environments, optimal habitat sizing

Biology and Space Medicine | Track Chair: Dr. Neal Pellis

Physiology in space, psychology in space, human life suspension (e.g., cryogenic), medical facilities and capabilities in space, on-scene (end of journey) spawning from genetic material

Education, Social, Economic and Legal Considerations | Track Chair: Dr. Mae Jemison

Education as a mission, who goes, who stays, to profit or not, economies in space, communications back to earth, political ramifications, round-trip legacy investments and assets left behind

Destinations | Track Chair: Dr. Jill Tarter

Criteria for destination selection, what to take, how many destinations and missions, probes versus journeys of faith

Philosophical and Religious Considerations | Track Chair: Mr. Stewart Brand

Why go to the stars, moral and ethical issues, implications of finding hospitable worlds, implications of finding life elsewhere, implications of being left behind

Communication of the Vision | Track Chair: Dr. Harry Kloor

Storytelling as a means of inspiration, linkage between incentives, payback and investment, use of movies, television and books to popularize long term research, long term journeys

Agenda Updated September 28, 2011

FRIDAY, SEPTEMBER 30, 2011

Registration

9:00 - 12:30

Welcome

12:30 - 12:40

Speaker: Dave Neyland, DARPA Tactical Technology Office, Director

Orange Ballroom D

Welcome

12:40 - 12:50

Speaker: Pete Worden, NASA Ames Research Center, Center Director

Orange Ballroom D

Keynote: Hacking Space Exploration

12:50 - 1:15

Ariel Waldman, Spacehack.org

Orange Ballroom D

Break

1:15 - 1:30

Breakout Sessions

1:30 - 3:10

**Time-Distance Solutions
(Propulsion 1)**

Orange Ballroom G

- 1:30 A Review of Interstellar Starship Designs
R. Obousy, *Icarus Interstellar*
- 2:00 A Review of the Daedalus Main Propulsion System
J. R. French, *Icarus Interstellar*
- 2:20 Fusion Propulsion Comparison
M. Stanic, *Icarus Interstellar*
- 2:40 Nuclear Thermal Propulsion
G. Landis, *NASA Glenn Research Center*

Biology and Space Medicine

Florida Ballroom 6

- 1:30 Track Introduction
N. Pellis, *Universities Space Research Association*
- 1:40 Crowd-Sourced R&D
P. Baum, *European Commission - Joint Research Centre Institute for Prospective Studies*
- 2:10 Biomech. Simulation
B. Gyss, *Biomechsyst*
- 2:40 A Hypothesis on Biological Protection from Space Radiation through the Use of New Therapeutic Gases
M. Schoenfeld, *NASA, Marshall Space Flight Center*

**Time-Distance Solutions
(Starship Technologies 1)**

Florida Ballroom 5

- 1:30 Long Term Computing
A. Tziolas, *Icarus Interstellar*
- 1:50 Ultra-High Specific Impulse Indium FEEP Thruster for Precursor Interstellar Exploration
A. Genovese
- 2:10 Creating Materials for the Starship
D. Weiss, *Eck Industries, Inc.*
- 2:30 A Necessary Condition for Practical Communications at Cosmic Distances
S. Lazareanu
- 2:50 Combined Imaging, Power Generation and Distribution, Propulsion and Communication Subsystems
J. Ritter, *Maui Institute for Astronomy*

**Education, Social, Economic
and Legal Considerations**

Orange Ballroom F

- 1:30 Track Introduction
M. Jemison, *The Jemison Group, Inc.*
- 1:40 Ethical Economics
J. Blodgett, *Lifeboat Foundation*
- 1:50 Space is Not White
S.H. Riley
- 2:00 PANEL: The Public Good
M. Jemison, *The Jemison Group, Inc.*, Moderator
American Sociopolitical Problems Impacting Starship-Project Realization
D. Cartsonis
International and Interstellar Workings
S. Clouston, *Clouston Energy Research, LLC*
Where's the __?
E. Vinterhav, *SSC*
A 100 Year World View
A. Sinclair, *Leeward Space Foundation*

Communication of the Vision **Florida Ballroom 7**

- 1:30 Science Fiction and the Big Questions
M. O’Keeffe, *Bellarmino University School of Communication*
- 1:50 The Interstellar Vision: Principles and Practice
P. Gilster, *Tau Zero Foundation*
- 2:10 Interstellar Flight, Imagination and Myth Creation as an Effective Means for Enduring Inspiration
G.H. Padowitz
- 2:30 Utilizing Video Games
L. Blaize
- 2:50 Together We Leap
G. Gould, *Starship Collaborations*

Break **3:10 - 3:25**

Breakout Sessions **3:25 - 4:45**

Time-Distance Solutions (Propulsion 1) **Orange Ballroom G**

- 3:25 Nuclear Energy Space Propulsion
T. Kammash, *University of Michigan*
- 4:05 Self Fueling Space Propulsion
T. Kammash, *University of Michigan*
- 4:25 Pulsed Fusion Rocket: An Ultra High ISP Variable Thrust Deep Space Vehicle Powered by Inertial Confinement Fusion
J.R. Orcutt, *University of Illinois - Urbana/Champaign*

Time-Distance Solutions (Starship Technologies 1) **Florida Ballroom 5**

- 3:25 Initial Considerations in Exploring the Interstellar Roadmap
R. Swinney, *Icarus Interstellar*
- 3:45 Enabling the 2nd Generation in Space: Building Blocks for Large Scale Space Endeavours
D. Barnhart, *DARPA*

Biology and Space Medicine **Florida Ballroom 6**

- 3:25 Current and Future Implementations of Biorobotic Interfacing for Interstellar Travel
A. Altomare
- 3:45 Making Aliens
A. Andreadis
- 4:05 Artificial Gravity: Current and Future Concepts
D. Buckland, *Massachusetts Institute of Technology, Harvard Medical School*

Education, Social, Economic and Legal Considerations **Orange Ballroom F**

- 3:25 The 34-Year Starship
J. Nosanov, *NASA Jet Propulsion Laboratory*
- 3:35 A Look Back to Look Forward
J. Baldini, *Baldini Resource Associates*
- 3:45 Technology, Society and Politics in the Next 100-300 Years - Implications for an Interstellar Flight
A.M. Hein, *Icarus Interstellar*

- 3:55 PANEL: Background for 100 Year Starship
M. Jemison, *The Jemison Group, Inc.*, Moderator
A 21st Century Interstellar Starship Study
R. Obousy, *Icarus Interstellar*
Ad Astra Incrementis
M. Millis, *Tau Zero Foundation*
Round Robin Discussion
All Presenters

Communication of the Vision **Florida Ballroom 7**

- 3:25 Comparison of Historic Exploration
W. Rankin, *University of Central Missouri*
- 3:45 Interstellar Colonization and Multi-Generation Spaceships: Getting There is Half the Fun
A. Andrews, *SIGMA*

Demonstrations **Florida Ballroom 5**

- 4:05 VTC School Project Report via Skype
- 4:25 Luna Bots

Break

4:45 - 5:00

Science Fiction Writers' Panel

5:00 - 6:00

Participating Authors:

Orange Ballroom D

- Stephen Baxter
- Robert J. Sawyer
- Gregory Benford
- Allen Steele
- Geoffrey A. Landis

Moderator: Gay Haldeman

Meet and Greet

6:00 - 6:30
Lobby Bar

Dinner Break

6:30 - 7:30

Social Event/Film

7:30 - 10:00

SATURDAY, OCTOBER 1, 2011

Plenary: Galactic Exploration and the Long Term Future of Humanity

8:30 - 9:15

Speaker: George Whitesides, *Virgin Galactic President & CEO*

Orange Ballroom D

Break

9:15 - 9:45

Breakout Sessions

9:45 - 11:00

**Time-Distance Solutions
(Propulsion 2)**

Orange Ballroom G

- 9:45 Modular Aneutronic Fusion Engine for an Alpha Centauri Mission
M. Paluszek, S. Hurley, S. Cohen, *Princeton University*
- 10:05 Fission-Fusion Hybrid Fuel for Interstellar Propulsion
R. Freeland, *Icarus Interstellar*
- 10:25 Evolutionary Lightsailing Missions for 100 YSS
L. Friedman, *Planetary Society*, D. Garber, *Millennium Space Systems Inc.*, T. Heinsheimer, *Colbaugh & Heinsheimer Consulting, Inc*

**Time-Distance Solutions
(Exotic Sciences)**

Florida Ballroom 5

- 9:45 Millis, Space Drive Physics, Intro and Next Steps
M. Millis, *Tau Zero Foundation*
- 10:15 Warp Field Mechanics 101
H. White, *NASA Johnson Space Center*

Habitats and Environmental Science

Florida Ballroom 6

- 9:45 ISS Life Support Lessons Learned
M. Roman, *NASA Marshall Space Flight*
- 10:05 Artificial Lighting for Self-Sustaining Long Distance Space Flight
M. Hyvärinen, *Aalto University*
- 10:25 Plasma Shield for an Interstellar Vehicle
G. Landis, *NASA Glenn Research Center*

**Education, Social, Economic
and Legal Considerations**

Orange Ballroom F

- 9:45 The Wait Calculation
A. Kennedy
- 9:55 Interstellar Sweat Equity
D. O'Donnell, *International Space Development Authority Corp.*
- 10:05 PANEL: Organization, Operations and Tech Development En Route 1
M. Jemison, *The Jemison Group, Inc.*, Moderator
Building a Bridge to the Stars
R. Handberg, *University of Central Florida*
The Culturisation of Space as a Cornerstone in the Space/Society Domain
M. Peljhan, *University of California, Santa Barbara*
Icarus Interstellar's New Icarus Institute for Interstellar Sciences
B. Cress, *Icarus Interstellar*
Exploratory Research for an Interstellar Mission - Technology Readiness, Stakeholders and Research Sustainability
A.M. Hein, K. Long, *Icarus Interstellar*

Philosophical and Religious Considerations

Florida Ballroom 7

- 9:45 Track Introduction
S. Brand, *Long Now Foundation*
- 9:55 Long-Term Implications of Interstellar Flight
M.A.G. Michaud, *U.S. Department of State Official (Retired)*
- 10:15 To Humbly Go...Breaking Previous Patterns of Colonization
W.R. Kramer, *Hawaii Research Center for Futures Studies*

Destinations

Florida Ballroom 2

- 9:45 Visiting the Neighbors
J. Tarter, *SETI*
- 10:05 PANEL: Summary of Icarus Project Contributions to the Selection of Destination
J. Tarter, *SETI*, Moderator
 - Navigational and Guidance Requirements of an Interstellar Spacecraft
R. Swinney, *Icarus Interstellar*
 - Target Selection
I. Crawford, *Project Icarus/Birkbeck College London*
 - Scientific Objectives
I. Crawford, *Project Icarus/Birkbeck College London*
 - Exoplanet Studies for Potential Icarus Destination Stars
A. Hale, *Icarus Interstellar*

Break

10:45 - 11:00

Breakout Sessions

11:00 - 11:50

Time-Distance Solutions (Propulsion 2)

Orange Ballroom G

- 11:10 Light Sailing to the Stars
G.L. Matloff, *New York City College of Technology*
- 11:30 Recent Developments in Interstellar Beam-Driven Sails
J. Benford, *Icarus Interstellar*

Time-Distance Solutions (Exotic Sciences)

Florida Ballroom 5

- 11:00 Faster-Than-Light Space Warps, Status and Next Steps
E. W. Davis, *Institute for Advanced Studies at Austin & Tau Zero Foundation*
- 11:20 The Role of the Quantum Vacuum in Space Travel
G.J. Maclay, *Quantum Fields, LLC and Tau Zero Foundation*

Habitats and Environmental Science

Florida Ballroom 6

- 11:00 Heat Recyclers
D. Sheehan, *University of California, San Diego*
- 11:20 Macrolife Afterword
G. Zebrowski

Education, Social, Economic and Legal Considerations

Orange Ballroom F

- 11:00 PANEL: Organization, Operations and Tech Development En Route 2
M. Jemison, *The Jemison Group, Inc.*, Moderator
Publicly Open Virtualized Gaming Environment for Simulation of All Aspects Related to 100 Year Starship Study
V. Astakhov, T. Astakhova, *University of California, San Diego*

Nature's Way of Making Audacious Space Projects Viable

P. Metzger, *NASA Kennedy Space Center*

Using the 100-Year Starship Study to Foster Near-Term Revolutionary Technologies

R. Terrile, *Jet Propulsion Lab/California Tech*

Software Resilience in the 100 Year Starship

D. A. Dulo, *US Naval Postgraduate School*

Intersection of Advanced Space Science, Entrepreneurship and Education

T. Zurbuchen, *Space Science and Aerospace Engineering, University of Michigan*

Philosophical and Religious Considerations

Florida Ballroom 7

- 11:00 Spirit and Exploration
K. Nebergall, *Day Five, LLC*
- 11:20 The Longest Journey
A. Sinclair, *Leeward Space Foundation*

Destinations

Florida Ballroom 2

- 11:00 Small Body Exploration Technologies as Precursors for Interstellar Robotics
R. Noble, *SLAC National Accelerator Laboratory, Stanford University*
- 11:20 Colonization of Mars via Initial One-Way Mission
D. Schulze-Makuch, *WSU*

Lunch

11:50 - 12:50

Breakout Sessions

12:50 - 2:30

**Time-Distance Solutions
(Propulsion 2)**

Orange Ballroom G

- 12:50 A Sustainable Developmental Pathway of Photon Propulsion Towards Interstellar Flight
Y.K. Bae, *Y.K. Bae Corp.*
- 1:10 Mass Beam Propulsion, an Overview
G.D. Nordley
- 1:30 PANEL DEBATE: What's the Best Way Forward for Starship Propulsion?
Benford (*Moderator*), Kammash, Obousy, Friedman, Borowski, Miley
- 2:10 Mission Architectures for Achieving 0.1-0.2c Velocities
R. Adams, *NASA, Marshall Space Flight Center*

**Time-Distance Solutions
(Exotic Sciences)**

Florida Ballroom 5

- 12:50 Quantised Inertia and FTL
M. McCulloch, *University of Plymouth, UK*
- 1:10 The Starship Challenge
O. Christea, *BITNETT CCSS, Romania*
- 1:30 Cockpit Considerations for Inertial Affect and FTL Propulsion
M.G. Millis, *Tau Zero Foundation*
- 1:50 Low Power Warp Drive
J. Sarfatti, *ISEP*

Habitats and Environmental Science

Florida Ballroom 6

- 12:50 Terraforming Planets, Geoengineering Earth
J.R. Fleming, *Colby College*
- 1:10 Algae 360 Microfarms
M. Edwards, *Arizona State University*
- 1:30 Org. of Long-term Interstellar Distributed Digital Preservation Networks
M. Halbert, *MetaArchive Coop. and University of North Texas*

**Education, Social, Economic
and Legal Considerations**

Orange Ballroom F

- 12:50 Structuring the 100-Year Starship Program for Success
J. Kallimani, *RAND Corporation*
- 1:00 A Century and Beyond
N. Kutac, *Endurance Project*
- 1:10 Strategic Roadmap for the Development of an Interstellar Space Program
M. Gifra, *Homo Spaciens Initiative*

- 1:20 PANEL: Structuring the 100 Year Starship
M. Jemison, *The Jemison Group, Inc.*, Moderator

Strategy to Stars
L. Joe

Starflight Academy - Education in Interstellar Engineering
A. Tziolas, *Icarus Interstellar*

Non-traditional Approaches to the Organization of Long-Term Technical Programs
D.R. Glover

Governance and Shared Capitalism Models that Support Long-Term Innovation
J. Blasi, *Rutgers University, School of Management and Labor Relations*

Models for Space Profit in the Long-Term
C. Alberts

**Philosophical and Religious
Considerations**

Florida Ballroom 7

- 12:50 Did Jesus Die for Klingons Too?
C. Weidemann, *Ruhr-University Bochum, Germany*
- 1:10 A Religious Vision for Interstellar Travel?
M. Waltemathe, *Ruhr-University Bochum, Germany*
- 1:30 Sacred Space: A Beginning Framework for the Off-Planet Church
T.K. Hoffmann
- 1:50 Religion in SETI
R. Pay, *SETI-SETR.org*

Destinations

Florida Ballroom 2

- 12:50 Hostile Journey and Destination - Yes. But Weapons?
J. Tarter, *SETI*
- 1:00 Targets in the Search for Habitable Worlds: What's Out There?
M. Turnbull, *Global Science Institute*
- 1:20 Ultimate Destination
D. Silin, *Royal Astronomical Society of Canada*
- 1:40 Sun Focus Comes First, Interstellar Comes Second
C. Maccone, *International Academy of Astronautics and Tau Zero Foundation*
- 2:00 Extrasolar Planets
J. Coughlin, *New Mexico State University*

Break

2:30 - 2:45

Breakout Sessions

2:45 - 4:25

**Time-Distance Solutions
(Propulsion 2)**

Orange Ballroom G

- 2:45 Finding Our Way
M. Arman
- 3:05 Pulsar Navigation and Maser Navigation in 100 Year Starship
D. Jiang, *YunNan Astronomical Observatory*
- 3:25 Lightsail Dust Damage
J. Early
- 3:45 How an Embryo Space Colonization (ESC) Mission Solves the Time-Distance Problem
A. Crowl, J. Hunt, *Icarus Interstellar*
- 4:05 Machine Learning and the Starship - A Match Made in Heaven
P. Galea, *Icarus Interstellar*

**Time-Distance Solutions
(Exotic Sciences)**

Florida Ballroom 5

- 2:45 Does General Relativity Permit Superluminal Travel?
K. Olum, *Tufts Institute of Cosmology*
- 3:05 PANEL DEBATE: Can Exotic Science Lead to Starship Propulsion?
Cramer (*Moderator*), Millis, White, Davis, Nordley, Olum

Habitats and Environmental Science

Florida Ballroom 6

- 2:45 Systems Engineering Overview
L. Lemke, *NASA Ames Research Center*
- 3:05 Starship Repairs
K.M. Berry, *Legendary Projects*
- 3:25 Non-Gaussian Radiation Shielding
B.T. Solomon, *iSETI, LLC*
- 3:45 Wrap Up Panel
C. McKay, *Moderator*

**Education, Social, Economic
and Legal Considerations**

Orange Ballroom F

- 2:45 To Profit or Not
G. Putnam
- 2:55 Wealth Preservation
R. Frieser
- 3:05 The Financing of Interstellar Missions
S. Reynoso, *Space Economics Institute (in formation)*

- 3:15 PANEL: Financing the 100 Year Starship
M. Jemison, *The Jemison Group, Inc.*, Moderator
Investment Financing of Voyages of Discovery and Settlement - Historical Examples and Building Foundations for Future Starships
E. Lark
Starship Affordability
F. Eilingsfeld, *PRICE Systems LLC*
Organizing and Financing Interstellar Space Projects - A Bottom-up Approach
F.S. Ceyssens
Financing Alternatives for Sustainable Public/Private Interests
J. Sibilja, *Meadowbrook Lane Capital, CSRwire.com*
Future ET Banking and Finance
D. Plisek

- 4:05 Creating Long Term Income Streams for the 100 Year Starship Study Initiative
A. Sylvester

**Philosophical and Religious
Considerations**

Florida Ballroom 7

- 2:45 Inertia of Past Futures
K. Denning, *York University, Canada*
- 3:05 Out of the Cradle: Anthropological Background and Process
V. Fert, *GMAP*
- 3:25 Cosmocultural Evolution: A Cosmic Imperative for Interstellar Travel?
Mark Lupisella, *NASA Goddard Space Flight Center*
- 3:45 A Moral Imperative
J.N. Nielsen

Destinations

Florida Ballroom 2

- 2:45 The Artificial Planet
D. Glover
- 3:05 Colony Destination
C.L. Frame, *General Space Company*
- 3:25 Star Probes and ET Intelligence
S. Baxter
- 3:45 Windup: What Does the Cost/Trade Study Look Like at This Point?
J. Tarter, *SETI*
- 4:05 Question and Answer Period

Break

4:25 - 5:00

Science Fiction Writers' Panel**5:00 - 6:00****Participating Authors:****Orange Ballroom D**

- Elizabeth Bear
- Joe Haldeman
- G. David Nordley
- Charles Stross
- Vernor Vinge

Moderator: Gay Haldeman**Dinner Break****6:00 - 8:00****Special Event and Spider Robinson's "Callahan's Crosstime Saloon"****8:00 - 10:00****The Bistro**

The 100 YSS Symposium attendees who are registered guests at the Hilton will have an opportunity to sign up for an entertaining evening of multidimensional story-telling and merriment in the spirit of Spider Robinson's "Callahan's Crosstime Saloon." Regale your peers with your best tall-tale yarns - with a special prize for the peer-voted best stories of the night. Read Spider's book and come prepared! This is an exclusive, limited attendance event.

SUNDAY, OCTOBER 2, 2011**Track Chair Panel****8:00 - 9:00****Orange Ballroom D**

- Dr. Jim Benford, Microwave Sciences
- Dr. Jill Tarter, SETI
- Dr. Chris McKay, NASA Ames Research Center
- Stewart Brand, The Long Now Foundation
- Dr. Neal Pellis, Universities Space Research Association
- Dr. Harry Kloor, Jupiter 9 Productions
- Dr. Mae Jemison, The Jemison Group, Inc.

Moderator: David Neyland, *DARPA Tactical Technology Office***Organizations Panel****9:00 - 10:30****Orange Ballroom D**

- James Schalkwyk, *University of Cape Town*
- Robin Schoemaker, *The Netherlands Organization for Applied Scientific Research TNO*
- Alexander Wong, *Yoyodyne General Systems*
- Tan Huei Ming, *National University of Singapore*
- Mary Ann Beyster, *Foundation for Enterprise Development*
- Bruce Kogut, *Columbia University*
- Ricky Ng-Adam, *Xin Che Jian Hackerspace*
- Matt Bille, *Booz Allen Hamilton*
- Jason Batt, *Capital Christian Center*

Moderator: Paul Eremenko, *DARPA***Communicating the Vision Panel****10:30 - 12:00****Orange Ballroom D**

- Anousheh Ansari, *founder Prodea Systems* – First female private space explorer and first space ambassador.
- Jeff Silver, *producer Biscayne Pictures* – Producer of more than 30 feature films including "Tron: Legacy," "Terminator: Salvation," and "300."
- Dr. June Scobee Rodgers, *founder Challenger Center for Space Science Education* – Founder and educator with innumerable awards and honors.
- Douglas Trumbull, *film director, special effects supervisor, and inventor* – Director of the movies "Silent Running" and "Brainstorm."
- Chris Butler, *CEO and executive producer of Super!Alright! Inc.* – Executive producer of a new media-focused production company.

Moderator: Dr. Harry Kloor, *Jupiter 9 Productions*

FRIDAY, SEPTEMBER 30, 2011

9:00-12:30	Registration					
12:30-12:40	Welcome: Dave Neyland, DARPA Tactical Technology Office, Director					
12:40-12:50	Welcome: Pete Worden, NASA Ames Research Center, Center Director					
12:50-1:15	Keynote: Hacking Space Exploration, Ariel Waldman, Spacehack.org					
1:15-1:30	Break					
1:30-3:10	Time-Distance Solutions (Propulsion 1)	Time-Distance Solutions (Starship Technologies 1)	Biology and Space Medicine	Education, Social, Economic and Legal Considerations	Communication of the Vision	
3:10-3:25	Break					
3:25-4:45	Time-Distance Solutions (Propulsion 1)	Time-Distance Solutions (Starship Technologies 1)	Biology and Space Medicine	Education, Social, Economic and Legal Considerations	Communication of the Vision	
4:45-5:00	Break					
5:00-6:00	Science Fiction Writers' Panel: Stephen Baxter, Gregory Benford, Geoffrey A. Landis, Robert J. Sawyer, Allen Steele and Moderator: Gay Haldeman					
6:00-6:30	Meet and Greet					
6:30-7:30	Dinner Break					
7:30-10:00	Social Event					

SATURDAY, OCTOBER 1, 2011

7:30-8:30	Registration					
8:30-9:15	Plenary Speaker: Plenary: Galactic Exploration and the Long Term Future of Humanity by George Whitesides, Virgin Galactic President & CEO					
9:15-9:45	Break					
9:45-11:00	Time-Distance Solutions (Propulsion 2)	Time-Distance Solutions (Exotic Sciences)	Habitats and Environmental Science	Education, Social, Economic and Legal Considerations	Philosophical and Religious Considerations	Destinations
10:45-11:00	Lunch Break					
11:00-11:50	Time-Distance Solutions (Propulsion 2)	Time-Distance Solutions (Exotic Sciences)	Habitats and Environmental Science	Education, Social, Economic and Legal Considerations	Philosophical and Religious Considerations	Destinations
11:50-12:50	Break					
12:50-12:30	Time-Distance Solutions (Propulsion 2)	Time-Distance Solutions (Exotic Sciences)	Habitats and Environmental Science	Education, Social, Economic and Legal Considerations	Philosophical and Religious Considerations	Destinations
2:30-2:45	Break					
2:45-4:25	Time-Distance Solutions (Propulsion 2)	Time-Distance Solutions (Exotic Sciences)	Habitats and Environmental Science	Education, Social, Economic and Legal Considerations	Philosophical and Religious Considerations	Destinations
4:25-5:00	Break					
5:00-6:00	Science Fiction Writers' Panel: Elizabeth Bear, Joe Haldeman, G. David Nordley, Charles Stross, Vernor Vinge and Moderator: Gay Haldeman					
6:00-8:00	Dinner Break					
8:00-10:00	Callahan's Crosstime Saloon					

SUNDAY, OCTOBER 2, 2011

8:00-9:00	Track Chair Panel: Dr. Jim Benford, Dr. Chris McKay, Dr. Neal Pellis, Dr. Mae Jemison, Dr. Jill Tarter, Stewart Brand, Dr. Harry Kloor and Moderator: David Neyland					
9:00-10:30	Organization Panel: James Schalkwyk, Alexander Wong, Mary Ann Beyster, Ricky Ng-Adam, Jason Batt, Robin Schoemaker, Tan Huei Ming, Bruce Kogut, Matt Bille and Moderator Paul Eremenko, DARPA					
10:30-12:00	Communicating the Vision Panel: Anousheh Ansari, Jeff Silver, Dr. June Scobee Rodgers, Douglas Trumbull, Chris Butler and Moderator: Dr. Harry Kloor					