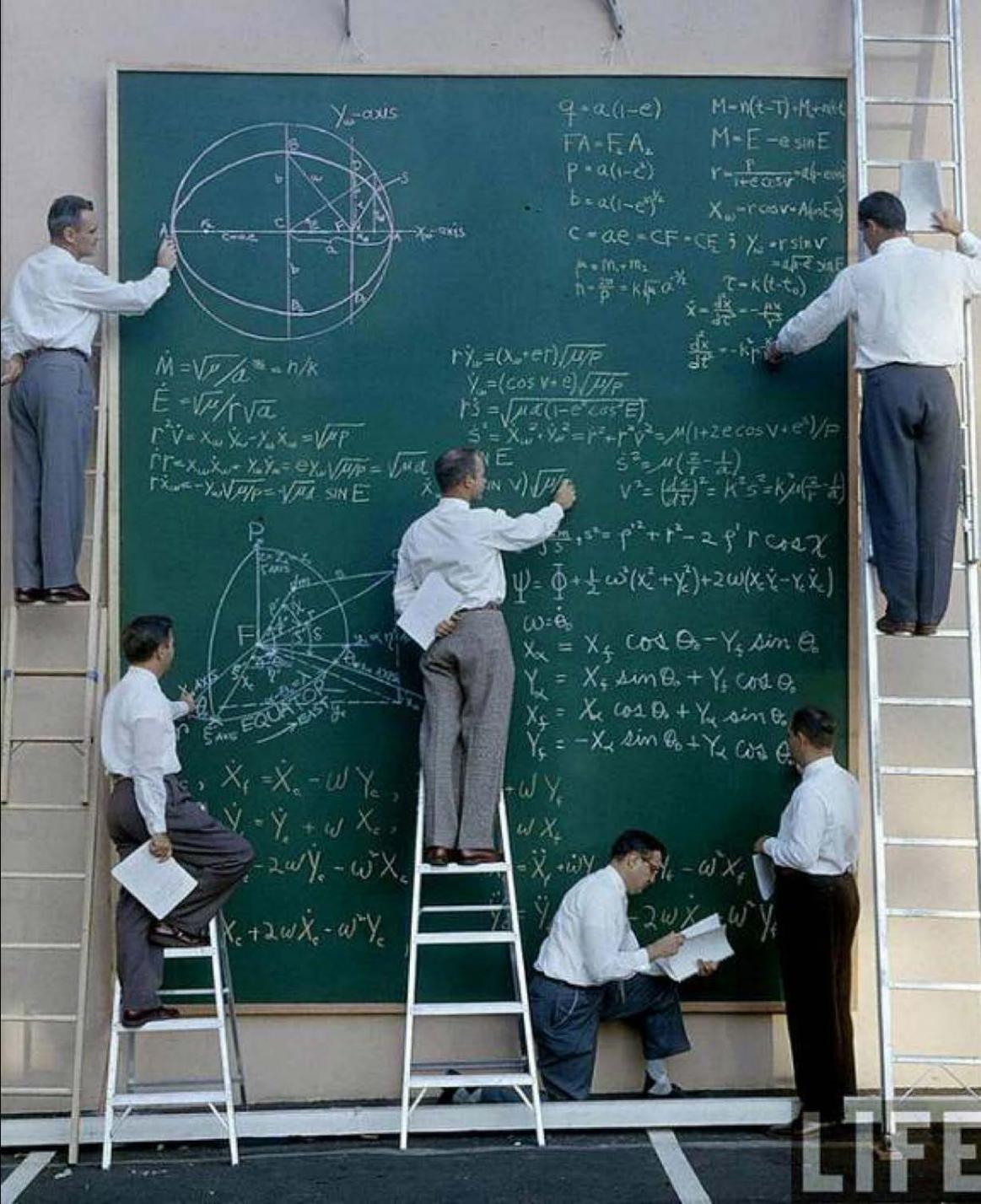


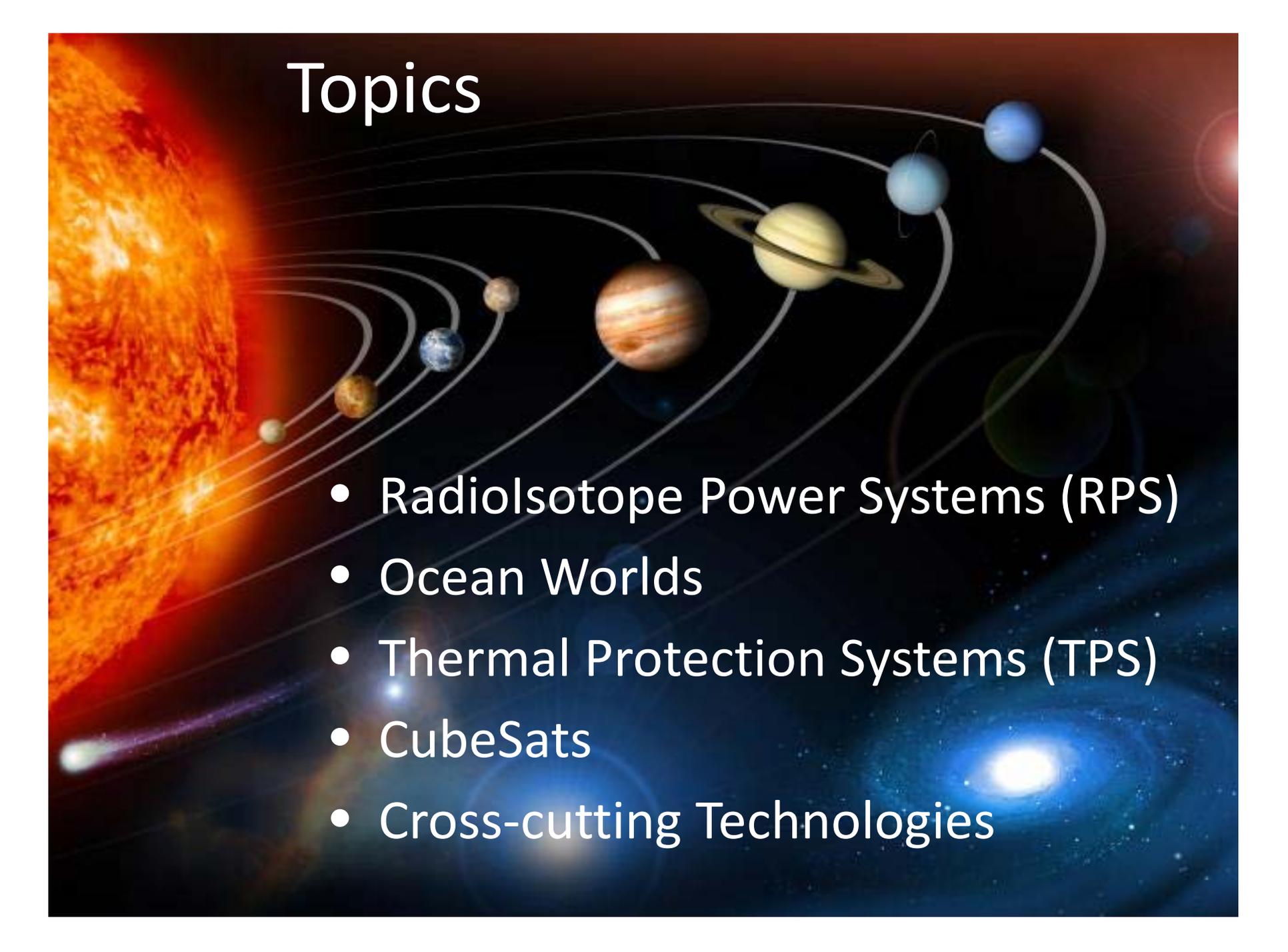
OPAG Technology Posters

Pat Beauchamp
February 1, 2016

NASA before Computers or
Powerpoint....



Topics



- Radiolotope Power Systems (RPS)
- Ocean Worlds
- Thermal Protection Systems (TPS)
- CubeSats
- Cross-cutting Technologies

RPS Technologies



- **The Multi-Mission Radioisotope Thermoelectric Generator for Science Exploration** - David Woerner
- **An Update on the enhanced MMRTG for Exploration of the Outer Planets-** David Woerner, Nick Keyawa
- **A Next Generation GPHS-RTG for Space Science Missions: the Segmented Modular Radioisotope Thermoelectric Generator (SMRTG)** - Jean-Pierre Fleurial, Samad Firdosy and Dave Woerner
- **Two Deep Space Mission Concepts Using Small RPS –** Young Lee and Brian Bairstow

Ocean Worlds



- **Titan Submarine** - R.D. Lorenz, S. Oleson, G. Landis, P. Schmitz, M. Paul, J. Walsh, J.W. Hartwig, A. Colozza
- **Intelligent Landing System for Safe and Precision Landing on Uncharted Ocean Worlds** - Andrew Johnson, Anup Katake, Miguel San Martin
- **Robotic Surface and Subsurface Exploration of Ocean Worlds** - Hari Nayar, Brian Wilcox
- **Low-Power, Low-Temperature Electronics for the Europa Lander** - Gary Bolotin PI, Yutao He, Doug Sheldon, Don Hunter
- **Low Temperature Power Sources for Outer Planets Exploration** - Ratnakumar Bugga, John-Paul Jones, Simon Jones, Charlie Krause, Barry Nakazono, Raymond A. Ontiveros, Jasmina Pasalic, Marshall C. Smart, Thomas I. Valdez, William C. West, Larry D. Whitcanack and Erik J. Brandon
- **Two-Stage Penetrator System for Icy Moon Landers** - R. M. Winglee, T. Robinson, M. Danner, C. Herrera, B. Petrich and C. Truitt
- **Low-Frequency Radio Sounding to Probe Brittle-Lid Temperatures on Europa and Enceladus** - Dale P. Winebrenner, David Stillman and Joseph A. MacGregor

Thermal Protection Systems



- **Conformal TPS – Progress and Potential for New Frontier Missions** - Robin Beck, Ethiraj Venkatapathy, Grant Palmer, Gary Allen and Mairead Stacgpoole.
- **ADEPT - Mechanically Deployable Entry System - FY'15 ground test accomplishments and plans for future flight testing** - Alan Casselle, Brandon Smith, Bryan Yount, Paul Wercinski and Ethiraj Venkatapathy
- **HEEET Development and Maturation Status for NF Missions** - E. Venkatapathy, D. Ellerby, and P. Gage

CubeSats



- **SmallSat Exploration of the Outer Planets** - Laura Jones
- **CubeSat with Nanostructured Sensing Instrumentation for Planetary Exploration** - Joseph Wang, Swomitra Mohanty
- **Mini-MAGGIE: CubeSat MAGnetism and Gravity Investigation at Europa** - B. Burgett, J. Long, P. Whaley, A. Raz, R R. Herrick, D, Thorsen, P. Delamere
- **ERDOS: Europa Radiation and Dust Observation Satellite** - Ashish Goel and Sigrid Close.
- **EPEC: The Europa Plume and Exosphere CubeSat** - B.E. Schmidt, G. Lightsey, M. M. Meister, T. Hyde, J. Wray, D. Spencer, J. J. Buffo, K. J. DeBruin, A. Nelessen, P. Valdez, M. Wilhelm, H. T. Chilton, J. Hale, H. Ali, J. Walker, N. Partansky, N. Prasadh, J. Mendez, J. Gulli, A. Sessa, D. Spencer, J. Carmona-Reyes, C. Paty, J. Dufek, S. Simon.

CubeSats (continued)



- **The DARCSIDE Concept Study for a CubeSat at Europa** – N. J. Chanover, S. J. Stochaj, J. R. Murphy, A. Thelen and K. Rankin
- **Atmosphere and Plume Explorer Mission (APEX)** - Chris Lorenz, Alexander Case, Jeffrey Pekosh, Alexander Ghosh, Victoria Coverstone.
- **Enhanced electromagnetic sounding of Europa's ocean using CubeSats** - Frank Crary, Justin Holmes, David Malaspina, James Mason, Drake Ranquist, Quintin Schiller, Andrew Sturner, and Rick Kohnert.
- **Europa CubeSat for High-Resolution 3D Ice Fracture Mapping and Landing Site Reconnaissance** - Jekan Thangavelautham, Alyssa Rhoden, Jim Bell, Paul Scowen, Mark Robinson, Brett Streetman, Pierre Mioto, James Kaufman, Richard Welle, Hugh Barnaby, Alessandra Babuscia, Kurt Hohman, Lawrence Clark.
- **The Jovian Particles and Fields (JPF) Survey CubeSat Mission** – Dave Spencer and Carol Paty

Cross-cutting Technologies



- **Novel solid-state devices as timing detectors under an extreme radiation environment** - K. Ogasawara, F. Allegrini, T. W. Broiles, M. A. Dayeh, M. I. Desai, R. W. Ebert, S. A. Livi, D. J. McComas, SWRI
- **Compact Dual Ion Composition Experiment (CoDICE) – A novel plasma and energetic particle sensor for outer planet magnetospheres** - K. Ogasawara, M. I. Desai, R. W. Ebert, D. J. McComas, F. Allegrini, S. E. Weidner, N. Alexander, and S. A. Livi
- **Plasma Instrumentation** – Phil Valek
- **From Science Operations to Data Archival** - Sandee Jeffers, Prachet Mokashi, and Joey Mukherjee.
- **Technology advancements in compact far ultraviolet spectrographs** – Michael Davis

Cross Cutting technologies



- **Suprathermal Ion Sensors** - F. Allegrini, M. I. Desai, R. W. Ebert, G. C. Ho, K. Ogasawara
- **Aerocapture Technologies for Outer Solar System Exploration** – Tom Spilker, Chet Borden, Mark Adler, Michele Munk and the A-team study team
- **MAss Spectrometer for Planetary EXploration (MASPEX)** - J.H. Waite, Jr., T. Brockwell, G.P. Miller, K.S. Pickens, P. Wilson, J. Roberts, R.C. Blase, W. McKinnon, E. Shock, M. Zolotov, M. McGrath, D. Wyrick, B. Teolis, M. Sephton, O. Mousis, J. Lunine, S. Bolton
- **Science Instrument Electronics for Extreme Environments** – Robert Frampton, Leora Peltz, Bill Bartholet and A. J. Kleinosowski