

Eric D. Ward

SYSTEM ARCHITECT · SPACECRAFT ENGINEER

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“The future cannot be predicted, but futures can be invented.”

Abilities and Expertise

SYSTEM ARCHITECTING

- Led the development of a trade-space study to concurrently architect a campaign to establish a permanent, sustainable human presence on Mars in the 2040's.
- Investigated the JPL design process as a system through a multi-layer analysis of the design and engineering change records in order to identify systematic trends to be avoided or augmented for future projects.
- Orchestrated the development of the next-generation design of a consumer machine and insured the product system met all requirements and objectives.

PROJECT MANAGEMENT

- Led two separate clubs, and coordinated with outside universities, to launch the first private space industry conference at MIT.
- Developed and managed a project timeline for design and validation of non-sterile bio-screw delivery system, which enabled simultaneous sterile and non-sterile product launches and increased revenue.
- Gathered user requirements, and translated them into design specifications which enabled machine design with minimal necessary changes after the design phase.
- Created risk-based verification and validation plan which allowed product to pass regulatory requirements three days before cut-off.

ANALYSIS AND TESTING

- Calculated strength and optimized structural rigidity of automation machines using computational finite element analysis.
- Performed thermodynamic finite element analysis of payload components for STS-116 emergency atmospheric re-entry as a prerequisite for launch.
- Performed multidimensional statistical tolerance analysis of bio-sensor insertion assembly using real-world data to expose holistic design and manufacturing strengths and weaknesses.
- Coordinated supply chain during qualification of new tooling including writing the Design of Experiment tests which determined the most robust production parameters.

MECHANICAL SYSTEMS DESIGN

- Designed and fabricated fully automated, thermal/vacuum chamber compatible testing platforms for satellite flight hardware.
- Designed compact structures for automation leading to increased reliability and throughput without necessitating changes to constrained environmental boxes.
- Designed multistage dip coating machine for bio-sensor production applying closed-loop control of electric and pneumatic actuation which increased reliability and consistency and sped throughput by a factor of 3.
- Developed a mechanism for painless bio-sensor implantation with reliability across disposable and re-usable components that lead to an 'Outstanding Achievements in Science and Technology' award from Bayer Healthcare.

Experience

Aten Engineering	Co-Founder and CEO
Odyne Space	Co-Founder and CEO
SawStop	System Architect
NASA JPL	Graduate Student Intern
Phelion	Founder, Product and Process Design Engineer
Acumed	Product Engineer
Bayer Healthcare	Product and Process Design Engineer

Education

Massachusetts Institute of Technology

S.M. IN ENGINEERING AND MANAGEMENT

- President, Students for the Exploration and Development of Space
- Mechanical Engineering R.A, MIT Kavli Institute of Astrophysics

Cambridge, MA

June 2016

Oregon State University

B.S. IN MECHANICAL ENGINEERING

Corvallis, OR

June 2007

Honors & Awards

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| 2014 | Best Performance , Systems Design and Management Design Competition | MIT |
| 2013 | R&D Collaboration Award , Annual Design Competition | Acumed |
| 2009 | Outstanding Achievement , Science and Technology | Bayer Diabetes |

Technical Publications

Framework for Valuation of Asteroid Mining Options, Incorporating Strategic Knowledge Gaps, Market Demand and Temporal Dependencies of In Space Resource Availability

ERIC D. WARD, JASON ASPIOTIS, J.L. GALACHE, JEFFERY B. GREENBLATT

Space Resources Roundtable

Jun. 2018

A Method to Evaluate Architectural Comparisons for a Campaign to Explore the Surface of Mars

ERIC D. WARD, RYAN L. WEBB

Acta Astronautica

Jul. 2016

A Socio-Technical Systems Analysis of Change Processes in the Design of Flagship Interplanetary Missions

ERIC D. WARD

SDM Thesis, MIT

Jun. 2016

Engineering Change Activity Analysis of Space Mission Projects

ERIC D. WARD, DIEGO MUNDO, MARGARET A. FRERKING, OLIVIER L. DE WECK

IEEE AeroSpace Conference

Mar. 2016