NEWSLETTER

INCOSE
LOS ANGELES

GOLD CIRCLE AWARD
2002, 2004-10

SILVER CIRCLE AWARD
2003

2008 President's Award for Most Outstanding Chapter

INCOSE
International Council on Systems Engineering

UPCOMING EVENTS

Inside This Edition

The Town Hall Meeting
A Report on the Plans for 2012

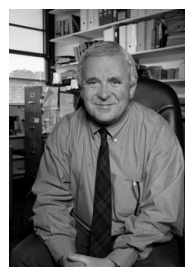*Inputs from Beth O'Donnell, Joshua Sparber, and Alan Kirschbaum*

The Chapter held a town hall meeting on Tuesday, January 10, 2012 at Booz Allen Hamilton's facility near the airport. In addition to the stimulating networking, the Chapter installed officers for the new year, acknowledged the contributions of the volunteers who contributed to the success of the Chapter during 2011, and then had an open forum in which those gathered were able to discuss goals for the upcoming year and how the organization can better serve the systems engineering community.

Susan Ruth of the Aerospace Corporation was the recipient of the **President's Award** in honor of the service she has given the Chapter, including but not limited to producing the Reflector notices and providing wisdom and perspective to the Board of Directors. Susan was selected for this honor because of her continuous contributions and support to INCOSE-LA, for nearly every endeavor and event undertaken by our Chapter. She has been with the Chapter since its beginning.

Susan is a fount of knowledge about the Chapter and its history, and she uses that background and her positive attitude to help guide us for the future. She continues to recruit and inspire others to contribute and to become involved.

Dr. Bohdan Oppenheim, Professor of Systems Engineering at Loyola Marymount University, was given the **Susan C. Ruth Award** for his continued willingness and ability to exercise organizational resources for the benefit of the Los Angeles Chapter. The Susan C. Ruth Award is named for the service Susan provided during the first ten years of the Chapter's existence; service in every way possible while never seeking anything other than the betterment of the Chapter. This award is to honor Chapter volunteers who have given a significant amount of volunteer service to the chapter for at least five years.

Special recognition was given to several people to honor their exceptional service to the Chapter.

Terry Rector, Dr. Azad Madni, Dr. Elliot Axelband, Marilee Wheaton, and Roger Ghanem were recognized for their

February Speaker Meeting

"Model-Based Design, Engineering, and Development:
Advancements mean New Opportunities
for Space Systems Development"
Presenter: Dr. Kirstie Bellman

PARTICULARS

When: Tuesday, February 14, 2012, 5:30 — 7:45 p.m.
Where: Booz Allen Hamilton, LAX Office
Building 5220 — 2nd. Floor, Suite 200
5220 Pacific Concourse Drive
Remote sites will be available at the Control Point Corporation in Santa Barbara, JPL in Pasadena, the Boeing Company in Huntington Beach, and in the Antelope Valley
Cost: Members-*FREE*; Non-members-*$10.00*

Meeting Agenda:

5:30 - 6:20 p.m. Registration, networking, refreshments
6:20 - 6:30 p.m. Welcome and announcements
6:30 - 7:45 p.m. Presentation followed by questions and answers
Refreshments will be provided at the host site. Contact remote site contacts for more information regarding parking, refreshments, and other administrivia at their site locations.

ABSTRACT: Space systems have always been model-based. The difference now is the depth and extent of the modeling and how much models and model analyses have begun to substitute for traditional design and development activities. In this presentation, we consider some advances in model-based design, engineering and development (MBDED) that show great promise for complex space system design, and describe others that could provide even more gains for space systems, from design through operation.

We describe some of the advancements resulting from MBDED and where they are perhaps especially relevant to space systems. This will include:

A. the new scalability of formal methods, including the increasing importance of formal or mathematically-based modeling languages
B. the way these gains promote increasingly tight integration between design and verification, and
C. the semantic integration of models and tool chains.

In this discussion, we will note recent work in some relevant Defense Advanced Research Projects Agency (DARPA), National Science Foundation, and European programs. We will consider additional capabilities that should be emphasized in MBDED to make its impact upon complex space system design even greater. This will include two points: first, the critical need to model the development plans and processes for a complex system, and, second, reflection capabilities to help tie all the diverse resources together into an adaptive framework that can help monitor, manage and report to the system designers its states, its use of resources, and its local context-dependent choices and decisions.

Systems Engineering for Agility and Affordability
Mini-conference Particulars
Please note flyer to the right on page 3

Cost: The cost for the conference is $60.00 for presenters, students, and senior members of INCOSE, $85.00 for INCOSE members, and $100.00 for non-members. ***Please note: these rates are available only until March 2, 2012.*** After that date the rates increase, so register early. See the website (http://www.incose-la.org/events/conferences/mini-conference-2012.html) for more details and to register.

Amenities: Lunch, coffee, tea, buffet breakfast, and handouts are included.

Keynote speaker: Gwynne Shotwell was appointed President of the Space Exploration Technologies Corporation (known familiarly as SpaceX) in December, 2008. As President, she has focused on the operational activities of SpaceX, including sales, marketing, manufacturing, launch operations, legal, government relations and finance.

Gwynne joined SpaceX in 2002 as Vice President of Business Development to generate and manage SpaceX's customer base and the company's strategic and government relations. Previously, she served for ten years at The Aerospace Corporation and, before that, directed business development at Microcosm, Inc. She began her engineering career at Chrysler Motors. In 2004, she was elected to the California Space Authority Board of Directors. She has served as chairperson of the AIAA Space Systems Technical Committee and as an officer of the AIAA Los Angeles Chapter. Ms. Shotwell graduated with honors from Northwestern University with a Bachelor of Mechanical Engineering degree and a Master of Applied Mathematics degree.

SAVE THE DATE

March Speaker Meeting
Systems Engineering for the Great Iron Horse
When: Tuesday, March 13, 2011, 5:30 p.m. — 7:45 p.m.
More details available in the March edition of the Newsletter, on the INCOSE-LA website, and in a Reflector notice

Networking Event
Discussion on the upcoming conference
When: March 7, 2012
More details available in the March edition of the Newsletter, on the INCOSE-LA website, and in a Reflector notice

Conference on Systems Engineering Research 2012
When: March 19 — 22, 2012
Location: St. Louis, Missouri
Go to http://cser.mst.edu for details

Improving Space Operations Workshop
Hosted by the AIAA
When: April 24 — 25, 2012
More information on page 7

INCOSE LOS ANGELES CHAPTER (INCOSE-LA)
2012 Mini-Conference

Saturday, March 31, 2012
Loyola Marymount University,
Los Angeles California

> Agility is, primarily, a software-centric concept. How can the systems engineering process be best leveraged to facilitate the expectations of agility in the software elements of a system.

> Is systems engineering a cost driver? If so, what can be done to make it affordable?

Systems Engineering for Agility and Affordability

This year's mini-conference will feature a comprehensive discussion of agility and affordability as essential elements of the systems engineering process. The conference will be informative, educational, and interactive, giving those in attendance an opportunity to participate and to better understand these latest issues in the application of the systems engineering process.

Keynote Address:
Gwynne Shotwell, President of the Space Exploration Technologies Corporation, will open the conference. Her keynote address will lay the foundation for the day's discussions.

Presentations:
The technical Program Committee, led by Bruce Riggins of The Boeing Company, has selected a series of presentations that will consider practical approaches to performing systems engineering more efficiently and effectively and which will bring more agility into the systems engineering process in its application to software products. Each presentation will be about twenty minutes long and will be followed by a question-and-answer period to give the people in attendance an opportunity to ask questions.

Lunch:
Lunch is a part of the conference and, as with conferences in the past, will be an opportunity for further discussions and networking.

Panel Discussion:
The conference will conclude with an interactive panel discussion. A panel of renowned systems engineering experts in affordability and agility will discuss the topic at hand. Marilee Wheaton will moderate the panel discussion and will the open up the discussion to questions and inputs from the floor. Marilee Wheaton is the Executive Director of the Aerospace Institute at the Aerospace Corporation. The Aerospace Institute serves as the key learning and knowledge-sharing resource of The Aerospace Corporation

BIOGRAPHY: Dr. Kirstie L. Bellman is a Principal Scientist at the Aerospace Corporation and the head of the Aerospace Integration Sciences Center (AISC), which she founded upon returning to Aerospace after four years at DARPA. AISC's focus is on the development of advanced system and model integration methods, new analytic techniques, and evaluation tools for assessing the impacts of new technologies.

While at DARPA, she extended the then new concept of Virtual Worlds to education, business and research environments. With a number of academic partners, she is also developing new mathematical approaches to the analysis of Virtual Worlds containing collaborating humans, artificial agents, and heterogeneous representations, models and processing tools. Lastly she has been working on reflective architectures that use models to manage their own resources and to reason about appropriate behavior. Recently with both national and international partners, she has been applying the above experience and methods to theoretical work and experiments on emotional agents, cyber-medicine applications, bio-computation, and "biologically-inspired" architectures and operating systems.

Upon completion of her term at DARPA as a Program Manager for the Domain-Specific Software Architectures program, Prototech (rapid prototyping technology and formally-based specification languages), projects in the Computer Science Formal Foundations program, and the large Computer-Aided Education and Training Initiative, she received an award from the Office of the Secretary of Defense for excellence in her programs. Recently, she received the 2008 Award in Technology from the Telluride Technology Festival. Other past awardees include Vint Cerf, Murray Gellman, Charles Townes, and Freeman Dyson. She is a fellow of American Association for the Advancement of Science and has published her research in a wide range of topics in Cognitive Science, Neuroscience, and Computer Science.

Dr. Bellman has a Ph.D., earned at the University of California, San Diego, in Neurophysiology and Cognitive Science and has worked at the post-doctorate level on a postdoctoral scholarship and traineeship in neurophysiology at the University of California, Los Angeles.

Besides her active research and management efforts, Dr. Bellman gives many invited talks every year and is a popular lecturer.

R.S.V.P.:

ALL PARTICIPANTS: Please register online at http://www.incose-la.org (this is important so as to help facilitate implementing the meeting). You will be asked to provide your full name, title, company, phone number, and email address. State whether you are a US Citizen, resident alien, or foreign national. Please indicate the site at which you will be attending. Site dependent requirements, including registration dates, are listed below.

Booz Allen Hamilton (the host site): Attendees must R.S.V.P. by Friday, February 10, 2012. Please bring your picture identification (driver's license, passport or green card) to the meeting.

Planned Remote Webcast Sites:

Antelope Valley/Palmdale: Held on the campus of the Antelope Valley College in the "BE" (Business Education) building, room 207. Open to all; no R.S.V.P. deadline. POC: Mike Wallace, phone: 661-540-0290, email: m.wallace@ngc.com.

Huntington Beach: The Boeing Company, 14900 Bolsa Chica Road, Building 17, Conference Room 109. Please register by Friday, February 10, 2012. Open to U.S. citizens and non-resident aliens. *We regret that foreign nationals will not be able to attend at the Boeing Company site.* Visitors will need to bring identification and check in with Security in the lobby of Building 17 **not later than 6:00 p.m.** *Please bring your picture identification (driver's license, passport and/or green card) to the meeting.* POC: Beth O'Donnell, phone: 714-372-2543, email: elizabeth.l.o'donnell@boeing.com. **Refreshments will be provided at this site.**

Goleta: Control Point Corporation, 110 Castilian, Suite 200, Goleta. Please register by Friday, February 10, 2012. POC: Scott Grant, scott.grant@control-pt.com. 805-882-1884, x108 for directions or more information.

Pasadena, JPL – Please register online by Thursday, February 9, 2012. Contact Michela Muñoz Fernández at Michela.Munoz.Fernandez@jpl.nasa.gov for specific location and directions.

The Board of Directors wishes to welcome the following new members in the Los Angeles Chapter of INCOSE:

Note: The information listed below is from the member directory and is based upon your initial membership application. If the information is not correct or complete, then please access the member directory (at www.incose.org) to update your information.

Name	Title	Company
Jim Dimarogonas	Senior Principal Engineer	The MITRE Corporation
Steve Dobbs	Prof Practice Professor	Cal Poly Pomona
James Wang	System Engineer	L3 Communications, Power Paragon
Rama Wusirika	Student	Loyola Marymount University

leadership and work in making the **2011 Conference on Systems Engineering Research** a success. The conference, an international event, was held April 14 – 16, 2011 in Redondo Beach.

A special service award was given to **Sandra Chang,** also from the Aerospace Corporation. This special service award is new for our chapter and is intended to recognize individuals or institutions that have made a significant contribution to the Chapter, whether a member or not. Sandra is not a member of the INCOSE-LA Chapter, but she has willingly continued to support the Chapter – based on her connections to our Chapter members from the Aerospace Corporation and her position in their Information Technology organization – by updating the INCOSE-LA email Reflector. According to Susan Ruth, Sandra has been doing this "behind the scenes" for a number of years, and with timeliness and accuracy; which are crucial for us in maintaining effective lines of communication to our members and other interested individuals.

Installation introduction: Professor Madni recognized the outgoing members of the board and officiated at the installation of the new officers. As a preface to the installation, he shared a presentation, "New Era in Systems Engineering." His theme described a future of new missions, new technologies, needs, and opportunities, as well as new opportunities for the Chapter. In particular, he foresaw leadership opportunities to rebalance the Chapter's focus on education, research, and practice by providing educational venues and by adapting the systems engineering process so as to be more meaningful for non-aerospace industries.

Open Forum Discussions: The meeting offered an opportunity for members to provide feedback to Chapter planners; feedback on their needs and proposed programs of potential interest. During this open forum, attendees suggested:

- offering the option to automatically renew membership,
- providing help to members seeking employment in a declining economy with a jobs database and a coaching program,
- tapping the power of the members by fully utilizing a well-maintained volunteer database,
- increasing systems engineering awareness in academic settings by providing speakers bureau presentations, and
- extending the domain coverage of the organization to the healthcare industry.

The audience looked back to the 2011 speakers program and addressed a number of potential topics for 2012 speakers meetings. A consensus emerged that a balance between traditional and emerging domains along with a balance between practice and research would provide relevance. One participant expressed the view that the systems engineering approach, offering methods to control cost and schedule while maintaining value, should be appreciated as a relevant common denominator across disciplines.

Shorter dialogs touched on the topics of improving communication between members and the Chapter, on the sorts of events desired by the members to satisfy systems engineering educational needs, on opportunities for professional development networking, and on increasing the involvement of systems engineering students. Suggestions regarding increasing the involvement of systems engineering students included scheduling a student forum to share the University of Southern California doctoral student research findings, and extending the Chapter's outreach to other area schools including the University of California Irvine, the University of California at Los Angeles, Cal Poly Pomona, California Poly San Luis Obispo, and Loyola Marymount University.

Of special note was the attendance of several member of the budding student division at the University of Southern California: Maryann Hiller, Douglas Orellana, and Yvette Rodriguez.

The assembled discussed building bridges to other professional engineering organizations to grow and foster the profession. One suggestion along these lines emphasized the importance of avoiding systems-engineering-specific jargon in our communications, particularly those communications that go outside the systems engineering community.

President John Silvas wrapped up the discussion by asking for all members to send their additional ideas to him at john.silvas@incose.org and assured the members that their inputs would shape the upcoming Chapter strategic planning session. He concluded by thanking all the participants for their valuable suggestions.

Officers for 2012:

The newly elected officers are John Silvas, (President), Terry Rector, (Vice-president), Alan Kirschbaum, (Secretary), Harvey Soldan, (Treasurer), Dr. Larry Earnest, (Director of Systems Engineering Education), and Michael Maar, (Director of Ways and Means).

Beth O'Donnell will continue to participate on the board in the role of Past President.

The officers who are in the midst of serving two year terms are Paul Cudney, (Director of Membership), Edie Ung, (Director of Communications), and Michael Kim, (Director of Programs).

The Chapter noted credit due to the outgoing board members and to other volunteers, for their contributions to the success of the Chapter. Those acknowledged were Joshua Sparber and Michael Maar, who shared the duties of Chapter Recognition Manager, Susan Ruth for managing and producing the Reflector notices, Mark Gallo, the Website Technical Manager, Stephen Guine, the representative to the San Fernando Engineers' Council, Jose Garcia, Industrial Relations Manager, Nehal Petal, Networking Chair, and Edie Ung, DeAnna Regalbuto, Jorg Largent, and Kathryn Borrund of the Newsletter team.

Help Wanted!
Employment Opportunities and Where to Find Them
By Jorg Largent

One of the unheralded benefits of membership in INCOSE is the on-line listing of opportunities for systems engineers. The path to the listing is through the INCOSE website and clicking on the "Job Bank" quick link on the lower left side of the page (http://jobsconnection.incose.org/home/index.cfm?site_id=582). The Systems Engineering Jobs Bank page offers the job seeker five self-explanatory options to facilitate learning about opportunities.

A recent spot check of the "view jobs" tab showed that there are 390 jobs listed. Search options include keyword, location, and job type. Sixteen job types were listed. Locations are listed by state (26), Canadian province (2), and "other / non-US." California leads the location list with eighteen jobs, Michigan is second with sixteen (many with Chrysler), and then Massachusetts is next with thirteen. The opportunities are in a variety of fields including academia, medicine, aerospace, and transportation. The skills required and the experience required both cover a wide spectrum. So too the job descriptions cover a broad spectrum – broader than the common textbook definition of systems engineering, as is often the case.

The website is also a service for employers seeking potential employees, and has a set of tools to help them communicate their needs to the community of systems engineering professionals.

The Los Angeles Chapter supplements the INCOSE website-based service. All of the events sponsored by the Chapter provide face-to-face opportunities for networking by job seekers and employee seekers as well. In addition, the Chapter sponsors networking events without a structured agenda. These networking events are held throughout the year in a variety of venues in the Los Angeles area. These popular events are an opportunity to meet with other systems engineers and to learn about opportunities and about individuals who might be available to meet a need for a system engineer. As these events are scheduled, the Chapter will announce the details in the *Newsletter* and in e-mailed "Reflector" notices.

From a mathematical perspective, you can approach data from two general directions. One approach is inductive (drawing a generalization from the data); the other approach is deductive (explaining data from a generalization).

"Beginning Math Concepts for Game Developers," John P. Flynt, Ph.D.

Stay Connected
Get the latest on INCOSE-LA happenings in the Reflector e-mails
If you wish to be placed on our e-mail distribution, contact Susan Ruth
susan.c.ruth@aero.org

The Ground Systems Architecture Workshop Presentation on
"Profligate Systems Engineering"

Where: Sheraton Gateway Hotel, 6101 West Century Boulevard, Los Angeles

When: February 29, 2012, 5:30 p.m. to 8:30 p.m.

Speaker: Dawn C. Meyerriecks, Associate Director of National Intelligence for Acquisition, Technology, and Facilities, Office of the Director of National Intelligence.

Enticement: The complexity of current and future engineering endeavors continues to increase non-linearly as the demand for more integration of devices and an increased inter-relationship between devices and data. Because no one individual or small team can track, let alone manage, all their dependencies, we tend to build more and more "slop capacity" into each level of the stack. But then budgets go south, resulting in a need to recover efficiencies without sacrificing effectiveness, begging the question: "now what?"

Cost: Attending Ms. Meyerriecks' presentation is free for members of INCOSE-LA, however there is a charge for parking.

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pro·fli·gate *adj* 1: completely given up to dissipation and licentiousness 2: wildly extravagant

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Some Background: Ms. Meyerriecks will be speaking on the evening of February 29. Her presentation will be one of several given in parallel that evening.

The Ground System Architectures Workshop, now in its sixteenth year, provides a forum for the world's spacecraft ground system experts to collaborate with other ground system users, developers, and researchers through tutorials, presentations, working groups, and panel discussions on issues and solutions. This year the program committee is looking for presentations covering all aspects of spacecraft ground systems, with a special focus on the challenges and opportunities of expanding access to information by a wide range of stakeholders.

The Ground Systems Architecture Workshop is sponsored by The Aerospace Corporation in cooperation with: the Air Force Space Command, the Air Force Space and Missile Systems Center, the National Reconnaissance Office, the National Aeronautics and Space Administration (Goddard Space Flight Center), the Jet Propulsion Laboratory, the University of Southern California Center for Systems and Software Engineering, the Software Engineering Institute, and the Institute for Software Research at the University of California, Irvine. For more information on Ms. Meyerriecks' presentation and on the entire four day event, go to http://csse.usc.edu/gsaw/gsaw2012/agenda12.html.

The presentation on profligate systems engineering is co-sponsored by INCOSE-LA and Southern California SPIN (Software Process Improvement Network).

Eighteenth Annual
Improving Space Operations Workshop
April 24-25, 2012

The Space Operations and Support Technical Committee of the American Institute of Aeronautics and Astronautics (AIAA) is sponsoring a workshop on improving space operations. The workshop is being hosted by Jet Propulsion Labs and SpaceOps. This year's workshop will be held April 24 and 25, 2012 at the Jet Propulsion Laboratory in Pasadena, California.

The Space Operations and Support Technical Committee is concerned with all aspects of civil, military, and commercial space operations and support, including direct and supporting operations, the systems and software affecting operations, and space operations and operational risk management. The SOSTC addresses all types of space operations. It is involved with all phases of mission operations, including pre-launch and launch activities, early mission commissioning activities, on-orbit activities, cruise and encounter activities, post-landing activities, and end-of-life operations. The SOSTC likewise addresses space related operational support activities, including training, servicing, mission planning, flight dynamics, telemetry transmission, command and control, and data handling, processing, analysis, and storage.

The workshop is a primary means by which the SOSTC achieves its objectives:

1. Investigate the development, implementation, and operation of systems that support space related activities.
2. Focus on operations technologies associated with space operations infrastructure, including the Internet and other commercial technologies.
3. Develop positions on operational issues needing AIAA input from a cross section of member expertise.
4. Identify approaches and standards for making operations more affordable, more flexible, more productive, and safer.

As in past years, the emphasis will be on small groups working to advance the level of understanding in several technical areas relevant to space operations.

This year's tracks include:

Commercial Space
End-of-Mission Disposal Requirements and Activities
Mission Operations Assurance Track

Additional information can be found at the workshop website: https://info.aiaa.org/tac/SMG/SOSTC/Workshop Documents/2012/ SOSTC 2012 workshop flyer - Final.pdf

Past-president Beth O'Donnell capturing Chapter President John Silvas in action at the January 28 strategic planning meeting (above).
Past-president Beth O'Donnell and President John Silvas discussed how best to lead the Chapter over lunch at the International Work Shop in Jacksonville (below).
One highlight of the International Workshop was the networking event hosted by the Los Angeles Chapter. These events have become popular at workshops and symposia (bottom).
The photo to the lower left, courtesy Eric Belle, is of the Main Street bridge over the St. John's River in Jacksonville.

Return Address:

PO Box 10969
Westminster, CA   92685-0969

INCOSE-LA CHAPTER MINI-CONFERENCE COMING SOON: MARCH 31, 2012

See page 3 for details. Question? Address them to 2012MC@incose-la.org

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Forwarding Address Requested

The International Council on Systems Engineering (INCOSE) is a not-for profit membership organization founded to develop and disseminate the interdisciplinary principles and practices that enable the realization of successful systems. INCOSE's mission is to share, promote, and advance the best of systems engineering from across the globe for the benefit of humanity and the planet. The Los Angeles Chapter meets several times per year for speaker meetings, and, in addition, sponsors tutorials, mini-conferences and other activities of interest to those in the systems engineering field or related fields.

2011 Board of Directors

Elected Officers			Elected At-large Directors		
President	John Silvas	silvas_john@bah.com	Membership	Paul Cudney	paul.cudney@incose.org
Vice-President	Terry Rector	terry.rector@incose.org	Programs	Michael Kim	michael.kim@jhuapl.edu
Past President	Beth O'Donnell	elizabeth.odonnell@incose.org	Systems Engineering Education	Larry Earnest	Larry.earnest@incose.org
Secretary	Alan Kirschbaum	alan.kirschbaum@incose.org	Ways and Means	Michael Maar	michael.maar@incose.org
Treasurer	Harvey Soldan	harvey.soldan@jpl.nasa.gov	Communications	Edie Ung	edie1121@mac.com
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Chapter Recognition Manager	Joshua Sparber	Joshua.sparber@dcma.com	Industrial Relations Manager	Jose Garcia Jr.	jose.s.garcia-jr@boeing.com
Professional Networking Chair	Nehal Patel	Patel_nahal@bah.com	Website Technical Manager	Mark Gallo	mark.gallo@incose.org
2012 Mini-Conference Chair	Michael Wallace	m.wallace@ngc.com	Lead Site Coordinator	OPEN	
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