



## Center to Stream Healthcare In Place (C2SHIP)

**Location:** Gates Thomas building - Map: <https://mce.caltech.edu/about/location>  
California Institute of Technology  
Department of Mechanical and Civil Engineering  
1200 E. California Boulevard  
MC MC 104-44  
Pasadena, CA 91125-2100

**Date:** December 15-17, 2021

### December 15, 2021 (Social Event – Gathering Dinner)

6:30pm-8:30pm Caltech's Athenaeum

### December 16, 2021 (Day 1)

8:00 am	Participant Registration
8:00 - 8:30 am	Breakfast and Networking Time
<b>8:30 – 8:45 am</b>	<b>Welcome Remarks (David Armstrong &amp; Chiara Daraio)</b>
8:30 - 8:35 am	<b>Harry A. Atwater</b> , Chair, Division of Engineering and Applied Science, Caltech (Host University)
8:35 - 8:40 am	<b>Mark Van Dyke</b> , Associate Dean of Research, Professor, Biomedical Engineering, College of Engineering, Univ. of Arizona (Lead University)
8:40 - 8:45 am	<b>Steve Shapiro</b> , Senior Vice President for health affairs <b>Chip Zukoski</b> , Provost, Vice President for Academic Affairs Research

**Ishwar Puri**, Vice President of Research, University of Southern California (USC)  
8:45 – 8:50 am **Giovanna Guidoboni**, Associate Dean of Research, College of Engineering, University of Missouri (new potential site)

**8:50 – 9:10 Keynote talks: Precision Aging Network**

Carol Barnes, Neuroscientist and Regents' Professor of psychology at the University of Arizona, Fellow of the American Association for the Advancement of Science, foreign member of the Royal Norwegian Society of Sciences and Letters, member of the National Academy of Sciences.

Esther Sternberg, Professor of Medicine & Psychology at the University of Arizona, Director of Research, Andrew Weil Center for Integrative Medicine, Director, Institute on Place, Wellbeing, and Performance, Inaugural Andrew Weil Endowed Chair for Research in Integrative Medicine.

**9:10 - 10:20 am Vision, Capabilities and Value Proposition of the Center (Moderator: Janet Roveda & Bijan Najafi)**

9:10 - 10:10 am Welcoming note from NSF IUCRC Program director, **Behrooz Shirazi**

10:10 -10:15 am Instructions on how to access the feedback system (e.g., AirTable), how to complete the feedback form, and how C2SHIP will use the feedback, **Janet Roveda and Bijan Najafi**

10:15 - 10:20 am BREAK/Center Video (vision, capability and value proposition for the Center and new site)

**Session 1: Technologies to support care in Place (Moderators: Najafi & Skubic)**

**10:20 - 10:35 am Care in Place and VA – by Dr Mark Kunik**

**10:35 - 11:15 pm Pitch Presentations – The use of technology to support care in place**

10:35 - 10:45 P001: Wearable Wireless Eddy Current Sensors for Continuous Skin Edema and Brain Hemorrhagic Stroke Monitoring (Yu-Chong Tai, Caltech)

10:45 - 10:55 P002: Predict acute suicide risk changes from wearable-based metrics, (Michelle Patriquin, Menninger/BCM/VA Houston)

10:55 - 11:05 P003: Exploring environmental, social, behavioral, and health-related characteristics associated with patient trust in providers and willingness to use health services delivered via telehealth and remote patient monitoring (Ritika Chaturvedi, USC)

11:05 - 11:15 P004: Multimodal Sensing Integrated with Mobility Aids for Monitoring Dehydration in Older Adults (Zheng Yan, MU)

11:15 - 11:25 P005: Smart Interfaces for Older Adults and Clinicians to Support Management of Chronic Health Conditions (Blaine Reeder, MU)

11:25- 11:35 General discussion

11:35 – 12:00 am BREAK videos (5 mins Pitch videos)

**12:00 - 1:00 pm LUNCH (Real Fiesta)**

**Session 2: The use of technology support care in place (Moderators: David Armstrong and Janet Roveda)**

**1:00 – 2:00 pm Pitch Presentations – The use of technology to support care in place**

1:00 - 1:10 P006 THERMAP -- Polymer-based temperature mapping devices (Chiara Daraio, Caltech).

1:10 - 1:20 P007 Dynamical Interaction Analysis of Motor and Neural Network Function for Early stage Alzheimer's Disease Detection: Clinical Application of Functional Near-infrared Spectroscopy (fNIRS) (Nima Toosizadeh, UA)

1:20 – 1:30 P008: Transcutaneous Electrical Nerve Stimulation For Lower Extremity In Patients With Post Acute Covid-19 Syndrome: PACS (Rasha Bara, BCM/Baylor St Luke's Medical Center)

1:30 – 1:40 P009 Expansion of Use of a Simple, Home System for Early Detection and Monitoring of Diabetic Foot Ulcers: The Foot Selfie (Mark Swerdlow, USC)

1:40 – 1:50 P010: Soft, wireless, battery-free sensors and stimulators for discovery,diagnostics and therapeutics (Philipp Gutruf, UA)

1:50- 2:00 General discussion

**Session 3: Understand and Coordinate Healthcare system interfaces (Marge Skubic & Chiara Dario)**

**2:00 - 2:10 C2SHIP Innovation Studio (Shayan Mashatian, Silverberry)**

**2:10 – 3:10 pm The Pitch Presentation – The use of technology support care in place**

2:10 - 2:20 P011. A Tele-Foot Exercise program with wearable sensors to prevent lower extremities muscle atrophy in patients with lower extremities edema (Ram Mishra, BCM/Baylor St Luke's Medical Center)

- 2:20 - 2:30 P012. Exploring the heterogeneous, dynamic, and multilevel relationships between individual-level social determinants, physical activity, sleep health, cognitive function, and ADRD risk (R. Chaturvedi, USC)
- 2:30 - 2:40 P013. Discerning False Alarms Through Seamless Visualization (Santiago Lombeyda, George Djorgovski, Caltech, Shu-Fen Wung UA)
- 2:40 - 2:50 P014. Wearable Biosensor for Non-Invasive COPD Monitoring, by Prof. Wei Gao (Caltech).
- 2:50- 3:00 General discussion
- 3:00 - 3:30 pm BREAK (5 mins Pitch videos)

#### **Session 4: Industry introduction (Moderators: Bent Von Eitzen and Shayan Mashatian)**

##### **3:30 - 4:30 pm : Partnership between industry and academia**

NeuroMetrix (Shai Gozani) , Medline, (Margaret Halstead) , BestBuy (Joseph Gwin) Smartek 21 (Martyn Molnar), SMWmed (Bo Pi, Yue Wang), Sivacor Medical Inc.(Daniel Rachlin), Heritage (Jeffrey Karish), Masimo, ICO System (Tong Kim), Vadum (Nikhil Kriplani), Rockley (Greg Finn), Shanda (David Tu), Flinn Foundation (Mary O'Reilly) , Valsem Industries (Jean-François Daviet), Viable Insights (Deven Wisner), Wound Exam (Kouhyar Tavakolian)

3:50 - 4:00 Q&A, General Discussions about the potential challenges, markets, and future directions

4:00 - 4:30 pm Break (5 min Pitch Videos)

#### **Session 5: Discussion (Moderators:Najafi and Roveda)**

**4:30 – 5:00 pm IAB organizational meeting and formative discussion, Bylaws** (with Behrooz Shirazi and Drew Rivers, all directors), with the goals of gauging IAB reaction to Day 1 activities, talking through project voting, feedback to PIs, inputs, refinement.

5:30 - 5:40 pm Review of evening and Day 2 activities, Dr. Janet Roveda

5:45 pm Technical Forum and Social (5mins Pitch videos)

**6:00 pm Dinner**

**December 17, 2021 (Day 2):**

- 7:30 - 8:00 am                      Arrival and Breakfast
- 8:00 - 9:30 am                      Airtable form review and discussion - Janet Roveda and Bijan Najafi (All participants)
- 9:30 - 10:30am                      IAB closed door session (project voting and recommendation);  
**(Moderators: Shai Gozani and Margaret Halstead)**
- 10:30 - 10:40                      IAB Report out
- 1) Potential funding projects (comments and suggested changes)
  - 2) Bylaw inputs and suggestions
- 10:40 - 11:00 am                      Next Steps, Action Items & Closing Remarks (All participants)
- 11:00 - 11:30                      Lab Tour (<http://www.daraio.caltech.edu/>)
- 11:30 am                              ADJOURN (Box lunches)
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