IEEE

IEEE brain

Building Reliable Advances and BRAIN Innovations in Neurotechnology

2019 NEUROTECH ENTREPRENEURS WORKSHOP

December 13-15, 2019 • Phoenix, Arizona

WORKSHOP PROGRAM

START UP WORKSHOP

IEEE Brain 2019 Neurotech Entrepreneurs Workshop

Friday, December 13, 2019

Welcome Reception	MU 241A | Ventana A	4:30pm - 5:30pm
Welcoming Remarks	MU 241A | Ventana A	5:30pm - 5:45pm

Marco Santello | Director, SBHSE, and Director, NSF IUCRC BRAIN
Doug Weber | Director, Rehab Neural Engineering Labs, Bioengineering, Univ of Pittsburgh
Kyle Squires | Dean and Professor, Ira A. Fulton Schools of Engineering, ASU
Michael T. Lawton | President and CEO, Barrow Neurological Institute

Group Assignments & Challenges Announced	MU 241A | Ventana A	5:45pm - 6:00pm
Elevator Pitch Icebreaker	MU 241A | Ventana A	6:00pm - 7:00pm
Networking Reception	MU 241A | Ventana A	7:00pm - 8:00pm

Saturday, December 14, 2019

Coffee and Pastries	MU 228 | Cochise	8:00am - 8:30am
Commercialization of Academic Technology	MU 228 | Cochise	8:30am - 9:30am

Student Coordinator: Alex Steele
Speakers:
Kyle Siegal- "Intellectual Property: the Currency of Commercialization"
Andrew Cornwell - "Licensing Academic Intellectual Property"
Cristin Welle - "Regulatory Considerations"
Bob Greenberg - "The Alfred Mann Foundation - A Medical Device Translational Engine - Axonics as a Recent Example Spinout"

Break		9:30am - 9:45am
Building Your Business	MU 228 | Cochise	9:45am - 10:45am

Student Coordinator: Dorian Haci
Speakers:
Dan Rizzuto - "Nia Therapeutics: Building an Early-stage Medical Device Business"
Greg Gage - "Backyard Brains: How We Bootstrapped a Low-Fi, High-Tech Neuroscience Company"
Amy Kruse - "Platypus Neuro : Applied Neuroscience and Optimized Human Performance at Scale"
Erika Ross - "Abbott Neuromodulation: The Importance and Practice of Late-stage Innovation"

Break		10:45am - 11:00am
Lessons Learned Entrepreneurship Panel *Student Coordinator:* Nick Hool *Speakers*: Jose Carmena, Ana Maiques, Jamie Tyler, Matt Angle	MU 228 | Cochise	11:00am - 12:00pm
Lunch	MU 228 | Cochise	12:00pm - 1:00pm
Breakout Workshops with Mentors	Various	1:00pm - 4:00pm
Solution and Value Proposition Room: MU 228 | Cochise *Mentors*: Bob Greenberg, Erika Ross		
Stakeholder Analysis – Who does the Problem Affect? Room: MU 228 | Cochise *Mentors*: Matt Angle, Ana Maiques		
Ethical Considerations Room: MU 236 | Mohave *Mentors*: Dan Rizzuto, Jamie Tyler		
Business Model Room: MU 236 | Mohave, MU 206 | Copper *Mentors*: Althea Stillman, James Cavuto		
Pitch Development Room: MU 208 | Chrysocolla, MU | 210 Plata *Mentors*: Greg Gage, Emily Caporello		
Break		4:00pm - 4:30pm
Team Meetings Teams to use same room assignment from last breakout session		4:30pm - 6:00pm
Dinner and Networking Reception	MU 228 | Cochise	6:00pm - 7:30pm

IEEE Brain 2019 Neurotech Entrepreneurs Workshop

Sunday, December 15, 2019

Teams Develop Presentations On Your Own. *Note*: MU not open until 9 am		before 10am
Coffee & Pastries	MU 228 | Cochise	before 10am
Commercialization Pathways and Funding Opportunities	MU 228 | Cochise	10:00am - 11:30am
Student Coordinator: Simone Rodriguez *Speakers (Government)*: Emily Caporello, Jesus Soriano, Eric Van Gieson *Speakers (Angel / VC Funding)*: James Goulka, Althea Stillman		
Lunch	MU 228 | Cochise	11:30am - 12:30pm
Break- Team Preparation	Room TBD	12:30pm - 1:00pm
Teams to use same room assignment from last breakout session on Saturday: MU 206 | Copper, MU 208 | Chrysocolla, MU 210 | Plata, MU 236 | Mohave, MU 228 | Cochise		
Team Presentations	Various	1:00pm - 2:00pm
Closing Remarks	MU 228 | Cochise	2:00pm - 3:00pm

Welcome

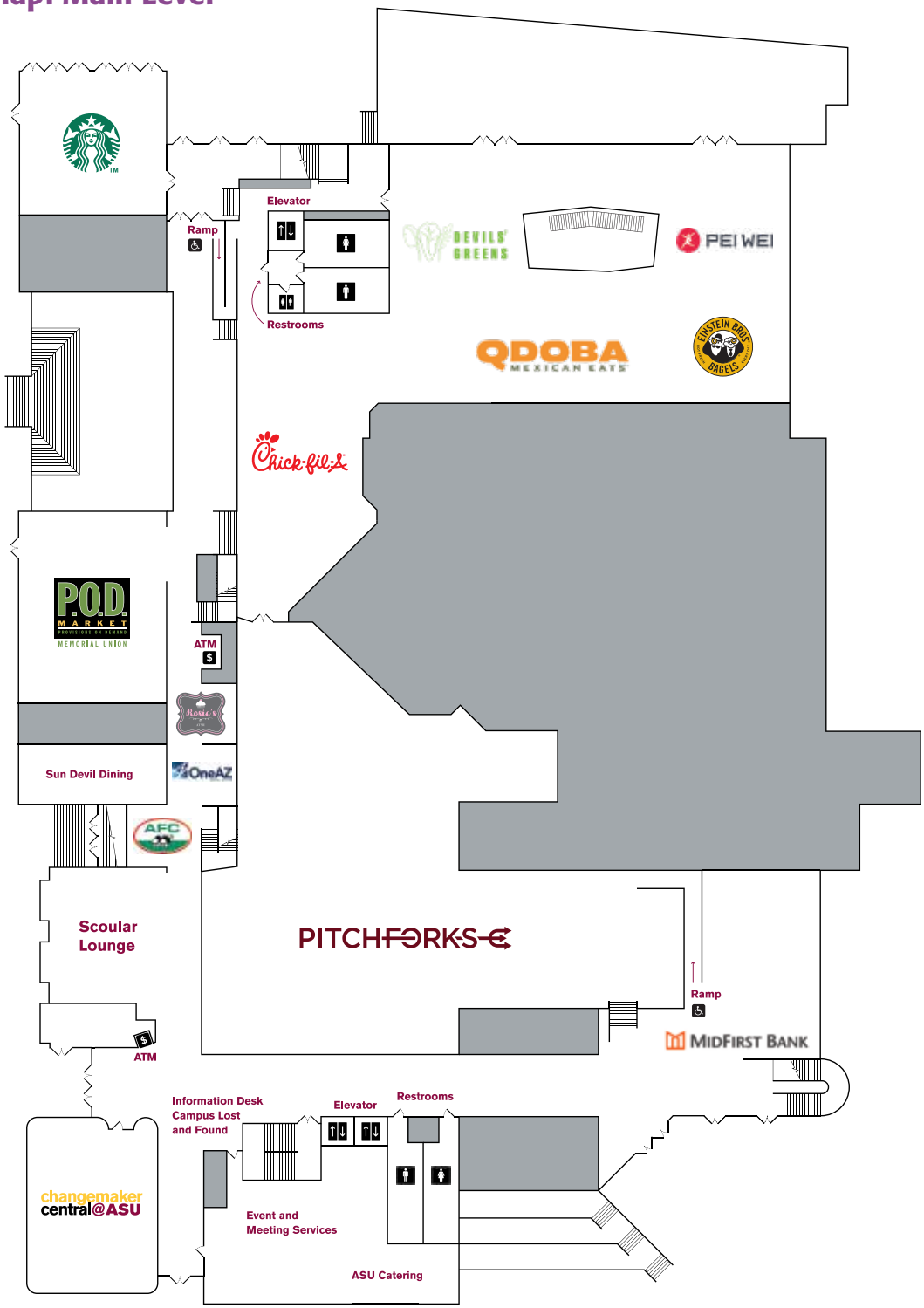
Welcome to the 2019 Neurotech Entrepreneurs Workshop. And congratulations on the accomplishments that led to your being invited to attend.

We hope this workshop will inspire, empower, and connect you as aspiring entrepreneurs in neural engineering. The presentations and workshops in the areas of ideation, market analysis, customer and stakeholder analysis, intellectual property, regulatory affairs, reimbursement, valuation, and fundraising are designed to give you the foundation for commercializing your innovations. In the breakout sessions, student teams will be given relevant challenges from the neurotechnology industry, will develop the startup ideas, and will present their solutions to industry leaders. Teams of mentors will assist the students throughout the process.

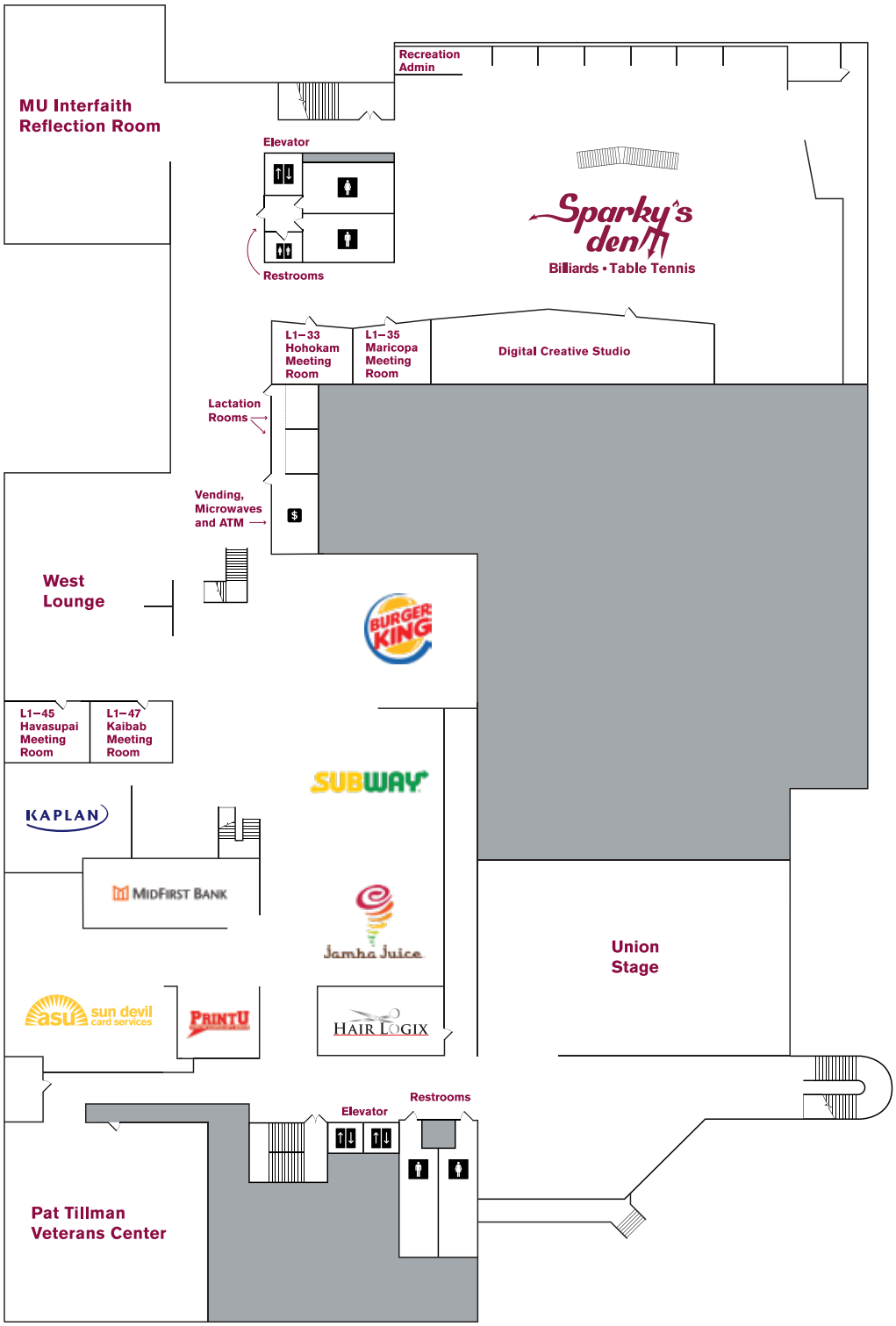
Throughout the event, attendees will enjoy the opportunity to connect with industry and academic leaders as well as other entrepreneurial students in the neurotechnology field.

IEEE Brain 2019 Neurotech Entrepreneurs Workshop

MU Building Map: Main Level



MU Building Map: Lower Level



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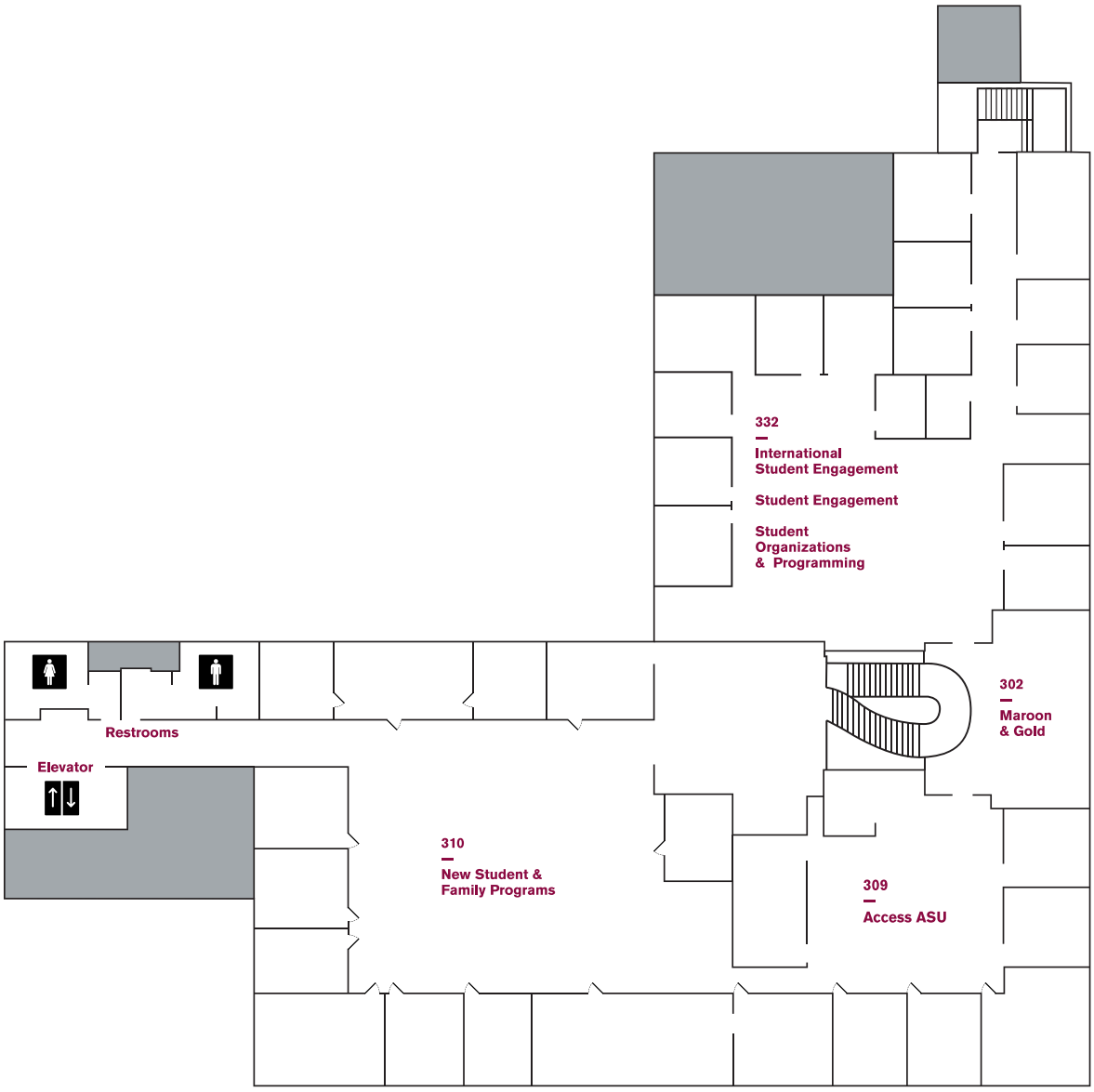
MU Building Map: Second Floor

MU Building Map: Third Floor



IEEE Brain 2019 Neurotech Entrepreneurs Workshop

Speaker Biographies

Indicates: Judge Indicates: Team Mentor

Jimmy Abbas, Ph.D.
School of Biological and Health Systems Engineering | Arizona State University

Jimmy Abbas is Director of the Center for Adaptive Neural Systems and Associate Professor of Biomedical Engineering in the School of Biological and Health Systems Engineering at Arizona State University. His research program develops and applies neural engineering techniques in the area of medical rehabilitation. Current projects include the development and assessment of systems that use electrical stimulation for therapy after spinal cord injury, techniques to improve sensorimotor function in people with Parkinson's Disease, and technology to enhance the utility of prosthetic limbs for amputees.

Matt Angle, Ph.D.
Founder & CEO | Paradromics, Inc.

Matt Angle is the Founder and CEO of Paradromics. His technical background is in neural recording and the design of neural recording systems. He has a PhD from the University of Heidelberg, during which time he worked at the Max Planck Institute for Medical Research. Prior to founding Paradromics in 2015, he was a postdoctoral researcher at Stanford University, in the Department of Materials Science and Engineering. He lives in Austin, TX with his wife and two children.

Emily Caporello, Ph. D.
Scientific Program Manager | National Institute of Neurological Disorders and Stroke

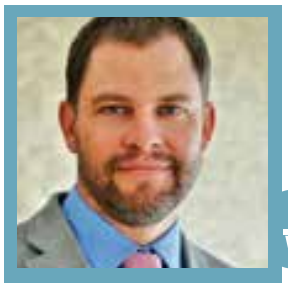
Dr. Caporello oversees a portfolio of small business and BRAIN projects focused on the translation of neurological tools, technologies, and drugs as a Scientific Program Manager at NINDS. Prior to this position, Dr. Caporello co-founded two companies (CleverPet, MindX Corporation) and spent four years as a Science and Engineering Technical Advisor to the Defense Advanced Research Agency (DARPA). Dr. Caporello received her B.S. in Neuroscience from Johns Hopkins University, and her Ph.D. in Neuroscience from the University of California San Diego.

Jose Carmena, Ph.D.
Professor | UC Berkeley

Jose M. Carmena is the Chancellor's Professor of Electrical Engineering and Neuroscience at the University of California-Berkeley, and Founder and co-CEO at iota Biosciences Inc. His research program in neural engineering and systems neuroscience is aimed at building the science and engineering base that will allow the creation of reliable neuroprosthetic systems for the severely disabled. He is co-inventor of "neural dust", an ultrasonic interface for vanishingly small implants in the body, which led to the foundation of iota Biosciences.

James Cavuoto
Editor and Publisher | Neurotech Reports

James Cavuoto is editor and publisher of Neurotech Business Report and the founder of Neurotech Reports. He is the lead author of "The Market for Neurotechnology," and "The Market for Bioelectronic Medicine," two market research reports published by Neurotech Reports. He holds a degree in biomedical engineering from Case Western Reserve University, where he studied under pioneers in the field of functional electrical stimulation. He has authored a chapter in the textbook Neuromodulation (Elsevier, 2009), as well as articles in Neuromodulation, Journal of Neural Engineering, Medical Device Daily, IEEE Spectrum, MX magazine, and the International Journal of Medical Marketing. He is coauthor, with Jennifer French, of Bionic Pioneers: Brave Neurotech Users Blaze the Trail to New Therapies (Neurotech Press, 2014).



Andrew Cornwell, Ph.D.
Associate Director | Case Coulter TranslationalResearch Partnership

Dr. Andrew Cornwell is the Associate Director of the Case-Coulter Translational Research Partnership (CCTRP) in the Department of Biomedical Engineering at Case Western Reserve University. In this role, he works directly with the Program's awardees to ensure the projects are moving efficiently toward patient care, and also interacts on the Program's behalf with strategic partners in industry, finance, and management. His expertise is in creating lasting relationships between inventors and industry, applying a diverse technical background to translate medtech ideas to clinical practice. Andrew is experienced with software, real-time systems, biomechanics, modeling and simulation, neural interfaces, implantable devices, control systems, and complex biomedical signal analysis, plus document controls, regulatory submissions, clinical trial design, project management, project leadership, and intellectual property development.

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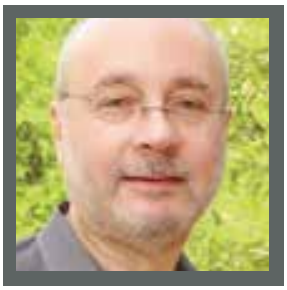
Greg Gage, Ph.D.
CEO and Co-founder | Backyard Brains

Greg Gage is the co-founder and CEO of Backyard Brains, an SBIR-funded organization that develops open-source tools that allow amateurs and students to participate in neural discovery. Greg is an NIH-award winning neuroscientist with 9 popular TED Talks and dozens of peer-reviewed publications. Greg is a Senior Fellow at TED and the recipient of the White House Champion of Change from Barack Obama award for his commitment to citizen science.

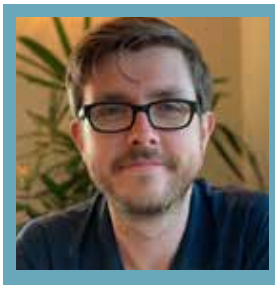


James Goulka
Chairman & Managing Director | Arizona Tech Investors Board Member | Angel Capital Association

James Goulka is the Chairman and Managing Director of Arizona Tech Investors, a group of over 90 men and women who invest their own funds in early stage technology companies in the Southwest. ATI has invested in 70 companies, directly and through three funds. He previously served as CEO of 3 software companies as well as the National Technology Transfer Center, which commercialized the technologies originated in all 10 NASA laboratories and parts of the Department of Defense. He holds both an MBA and a BA from Yale.

Robert J. Greenberg, M.D., Ph.D.
Alfred Mann Foundation

Co-founder and former CEO and Chairman of the Board of Second Sight Medical Products, Inc. (NASDAQ: EYES) in Los Angeles, California. Dr. Greenberg is a leader in the field of neural prosthetics – having developed and brought to market the world's most advanced implantable neural stimulator, the Argus II visual prostheses, to treat retinitis pigmentosa, a form of blindness. Dr. Greenberg was also a medical reviewer at the FDA's Office of Device Evaluation. Dr. Greenberg is the recipient of numerous honors and awards, has over 260 issued US patents and over 100 international patents, and has published over 60 articles. He received MD and PhD degrees from The Johns Hopkins School of Medicine in Baltimore, Maryland. Dr. Greenberg joined AMF in 2004 as Chairman of the Board of Directors.



Andrew Klein
Vice President of Sales and Support | Plexon Inc

Andrew Klein is Vice President of Sales and Support at Plexon Inc. He obtained his BSc in Neuroscience from Bowling Green State University in 2005, and following spent time as a research associate at the University of Michigan before accepting a position at Plexon in 2008. He has over fifteen years' experience with in vivo electrophysiology data acquisition and animal behavior analysis. Today, he spends a significant amount of time traveling throughout North and South America, Europe, and Asia supporting users of Plexon electrophysiology acquisition systems.

Amy A. Kruse, Ph.D.
Chief Scientific Officer | Platypus Institute

Dr. Amy Kruse is the Chief Scientific Officer of the Platypus Institute, an applied neuroscience research organization that translates cutting-edge neuroscience discoveries into practical tools and programs that enhance the human experience. Dr. Kruse's primary focus at the Platypus Institute is a project entitled "Human 2.0" – a multi-faceted initiative that helps selected individuals and teams leverage neurotechnology to generate meaningful competitive advantages. Previously, Dr. Kruse was VP and CTO of Cubic Global Defense, where she oversaw the company's research and development (R&D) programs, as well as a government civilian Program Manager at the Defense Advanced Research Projects Agency (DARPA), where she created and oversaw the Agency's first performance-oriented neuroscience program. Dr. Kruse is a member of several defense panels and advisory boards for organizations including DARPA, the National Academies and the Defense Science Board.

Ana Maiques
CEO | Neuroelectrics

Ana Maiques is the CEO of Neuroelectrics, a company aiming to change the way we interact with the brain, developing innovative technologies to monitor and stimulate the brain to help many patients in need. The company is now engaged in an FDA trial at Boston Children Hospital to show efficacy on refractory epilepsy patients, aiming to show seizure reduction using non invasive stim. The company is also working heavily on neurodegenerative diseases such as cognitive decline and AD. She was nominated by IESE as one of the most influential entrepreneurs under 40 in Spain (2010) and received the EU Prize for Women Innovators from the European Commission EC in 2014 and one of the Most Inspiring Fifty Women in Europe. Neuroelectrics received the Best Start-up in Health 2015 bye Wired UK magazine.

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Dan Rizzuto, Ph.D.
CEO | Nia Therapeutics, Inc.

Dan Rizzuto, PhD, is CEO at Nia Therapeutics, where he is developing deep brain stimulation therapies for patients with memory disorders. Dan developed Nia's core technology at the University of Pennsylvania as part of the DARPA Restoring Active Memory (RAM) project. He completed his doctorate in systems neuroscience and human memory at Brandeis University, his postdoctoral training in brain-machine interfaces at Caltech, and was the recipient of the 2015 Neurotechnology Researcher of the Year award from Neurotech Reports.

Erika Ross, Ph.D.
Director, Applied Research | Abbott Neuromodulation

Erika is the Director of Applied Research at Abbott Neuromodulation, leading applied research strategy, external partnerships, portfolio, and execution. Applied research includes computational modeling, pre-clinical, feasibility, and clinical safety trials that feed new products and indications.Prior to her role at Abbott, Erika was the Neuroscience Director at Cala Health, a Stanford Biodesign incubated start-up that has been developing a non-invasive, digitally enabled neuromodulation solution for Essential Tremor patients. She has held roles of increasing leadership at Cala Health as the company completed development and prepared for commercialization. Prior to Cala Health, Erika held the roles of Assistant Professor of Neurologic Surgery and Deputy Director of the Surgical Device Innovation Accelerator at the Mayo Clinic in Rochester, Minn.

Kyle Siegal, M.S., J.D.
Chief Patent Counsel | Skysong Innovations

Kyle serves as Chief Patent Counsel and Senior VP of Life Sciences at Skysong Innovations, the exclusive technology transfer and intellectual property management company for Arizona State University (ASU). In those capacities, Kyle leads a multi-disciplinary team in executing patenting and licensing strategies to translate ASU technologies from the lab to the market for the public good. Prior to joining Skysong Innovations, Kyle was an attorney in private practice where he helped clients identify, secure, and enforce all types of intellectual property rights. Before practicing law, Kyle served as a regulatory affairs specialist for a global medical device company.

Jesus Soriano, Ph.D.
Program Director | NSF Partnerships for Innovation

Jesus Soriano is a Program Director in the NSF Partnerships for Innovation program. Previously, Jesus served as SBIR/STTR Program Director for Biomedical and Smart Health Technologies since 2012, when he joined NSF after 20 years of leadership experience across industry, non-profit and academic sectors. Prior to NSF, he was the Senior Advisor to the Puerto Rico Trust for Science, Technology and Research. Jesus began his career as a family doctor in Spain; then worked at the University of Geneva Medical School as a Research Scientist and Assistant Professor. He came to the US as a visiting scientist to the National Cancer Institute (NIH). He holds a MBA from the Johns Hopkins Carey Business School; a Ph.D. in Medical Sciences from the University of Geneva; and a M.D. from the University of Alicante, Spain.

Althea Stillman, Ph.D.
Associate Director, Life Sciences | IP Group Inc.

Althea is Associate Director for Life Sciences at IP Group, an intellectual property commercialization company. She is part of the team that drives the company's efforts to identify and develop early-stage technologies in the life sciences stemming from premier research institutions in North America. Currently, Althea is the investment lead and Board Director for several start-ups across IP Group's research partner network. Althea has experience in technologies ranging across the healthcare and biotech sectors, as well as an extensive research background in neuroscience, genetics and molecular biology. Prior to joining IP Group in 2016, Althea worked for the Penn Center for Innovation, at the University of Pennsylvania. She holds a Ph.D. in Genetics from Yale University and a B.A. in Molecular Cell Biology from the University of California, Berkeley

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William (Jamie) Tyler, Ph.D.
Associate Professor School of Biological and Health Systems Engineering | Arizona State University

William (Jamie) Tyler is an associate professor in the School of Biological and Health Systems Engineering at Arizona State University and co-founder of several companies including IST - a neurotech company. His groups' primary research and development interests focus on developing and applying noninvasive neuromodulation methods and devices intended to optimize human performance and brain health. His teams are particularly interested in developing electrical, ultrasonic, and alternative technologies or interfaces that are capable of precisely regulating the human autonomic nervous system, as well as deep-brain circuits to regulate arousal, attention, learning, and sleep/wake cycles. In addition to developing methods and tools for enhancing human performance, his academic and corporate teams have developed various technologies being investigated for the clinical treatment of some neurological diseases and neuropsychiatric disorders.

Cristin Welle, Ph.D.
Departments of Neurosurgery and Physiology & Biophysics | University of Colorado

Dr. Cristin Welle is an Associate Professor in University of Colorado Departments of Neurosurgery and Physiology & Biophysics faculty, where she investigates circuit-level structure and function in the context of translational neurotechnology. Before moving to the University of Colorado, Dr. Welle led a research group at the Center for Devices and Radiological Health, Food and Drug Administration, with a focus on safety and performance of novel Brain Computer Interface technology. While at the FDA, Dr. Welle also led public workshops to engage the scientific and regulatory neural interface communities, and participated in regulatory reviews of over 100 neurological submissions.

Eric Van Gieson, Ph.D.
Biological Technologies Office | DARPA

Dr. Eric Van Gieson joined DARPA as a Program Manager in August 2017 with the goal of using host-based methods to mitigate the impacts of emerging disease threats. He intends to explore epigenetic and real-time monitoring approaches that can dynamically guide healthcare decisions and therapy, and new methods of increasing patient survival in austere environments using intelligent systems partnered with local care providers. Throughout his career, Dr. Van Gieson has worked with private and interagency government partners to build diagnostic and healthcare solutions.

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Participating Students and Teams

Team 1

- ☐ **Emanuele Formento** | Ecole Polytechnique Fédérale de Lausanne (EPFL)
- ☐ **Zhonghua Aileen Ouyang** | University of Michigan Ann Arbor
- ☐ **David Eguren** | University of Houston

Team 2

- ☐ **Mehran Talebinejad** | University of Ottawa
- ☐ **Kassondra Hickey** | Arizona State University
- ☐ **Pablo Tostado Marcos** | University of San Diego / Imperial College London

Team 3

- ☐ **Taegyo Kim** | Drexel University
- ☐ **Katarzyna Szostak** | Imperial College London
- ☐ **Abbas Furniturewalla** | University of Florida

Team 4

- ☐ **Gavin Philips** | University of Florida
- ☐ **Adriana Pliego** | Meritorious Autonomous University of Puebla/Benemérita Universidad Autónoma de Puebla
- ☐ **Paul Botros** | UC Berkeley

Team 5

- ☐ **Enzo Mastinu**| Universita' degli Studi di Cagliari, Italy
- ☐ **Sarah Soaf** | Arizona State University
- ☐ **Shawn Joshi** | Drexel University

Team 6

- [ ] **Kai Yu** | University of Minnesota
- [ ] **Noelle Jacobsen** | University of Florida
- [ ] **Kramay Patel** | University of Toronto

Team 7

- [ ] **Justin Tanner** | Arizona State University
- [ ] **Florencia Garro** | National University of Córdoba
- [ ] **Siddharth Nair** | Indian Institute of Science, Bangalore

Team 8

- [ ] **Jesus Cruz-Garza** | University of Houston
- [ ] **Sharena Rice** | University of Michigan
- [ ] **Yannick Roy** | Université de Montréal

Team 9

- [ ] **Daril Brown II** | UC San Diego
- [ ] **Zeinab Mohammadi** | University of Colorado
- [ ] **Elissa Welle** | University of Michigan Ann Arbor

Team 10

- [ ] **Ameya Nanivadekar** | University of Pittsburgh
- [ ] **José Morales** | Imperial College London/University of Chicago
- [ ] **Elizabeth Bottorff** | University of Michigan

IEEE Brain 2019 Neurotech Entrepreneurs Workshop

Judging Panels

Judging Panel A:
Cristin Welle
Andrew Klein
Jose Carmena

Judging Panel B:
Eric Van Gieson
Andrew Cornwell
Stephanie Thacker

Judging Panel C:
Marco Santello
Jim Abbas
Amy Kruse

Judging Panel D:
Jo Jo Platt
Kyle Siegal
TBD

Mentors

Solution and Value Proposition
Bob Greenberg
Erika Ross

Stakeholder Analysis – Who does the Problem Affect?
Matt Angle
Ana Maiques

Ethical Considerations
Dan Rizzuto
Jamie Tyler

Business Model
Althea Stillman
James Cavuto

Pitch Development
Greg Gage
Emily Caporello

Overview of the Neurotech Challenge

You are the founding team of a startup company that has developed a state-of-the-art product. How do you commercialize it?

Product 1: A robotic exoskeleton device to help patients walk
Product 2: A brain-computer interface for upper-limb amputees to control a bionic arm
Product 3: A new type of orthotic to help with foot drop in the neuro compromised population
Product 4: An upper body adaptive resistance trainer for rehabilitation
Product 5: A gaming system that utilizes eye tracking computational models for rehabilitation
Product 6: An artificial skin with a mobile app that monitors physiological measurements
Product 7: A robotic surgical device to assist physicians with brachial plexus surgery
Product 8: Brain-computer interface to help amputees overcome phantom pain
Product 9: Intracranial implants to relieve epilepsy patients of episodes
Product 10: Neurostimulation technology for those with mental illness

Your goal is to implement the tools you've learned in this workshop to build a go-to-market strategy and business plan. The technical details of the solution (or product) are not important. Focus on building a story around why your company should receive investment to bring your product to market. Your pitch will be limited to 10 minutes with 5 minutes for Q&A (15 minutes total) and will be judged on the following criteria on a scale of 1-5:

- **Product and Value Proposition** - Compelling argument that describes the solution and how it solves a problem
- **Stakeholder Analysis** - Clear understanding of the end users, customers and other stakeholders
- **Market Opportunity** - Clear market need and a plan to take advantage of that need
- **Competitive Analysis Advantage** - Illustration of the competitive landscape and the product's competitive advantage in the proposed market
- **Ethical Considerations** - The team thoughtfully considered ethical issues
- **Go-to-Market Strategy** - Team's plan to commercialize and monetize the product
- **Presentation** - The pitch presented the company in a clear, compelling manner, and answered questions well

Please include your team number in your presentation. Company/team name is up to you and your co-founders! All team members must participate.

Please email final presentations to **grace.rigdon@ieee.org** by 12:30pm on Sunday December 15th. Please include your team number in the email subject headline.

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IEEE Brain 2019 Neurotech Entrepreneurs Workshop

Breakout Sessions Schedule: Saturday December 14th

	Solution and Value Proposition		Stakeholder, Competition and Market Analysis	
Room	MU 228 | Cochise	MU 228 | Cochise	MU 228 | Cochise	MU 228 | Cochise
Mentor	Bob Greenberg	Erika Ross	Matt Angle	Ana Maiques
1:00pm - 1:35pm	Team 1	Team 2	Team 3	Team 4
1:35pm - 2:10pm	Team 3	Team 4	Team 5	Team 6
2:10pm - 2:45pm	Team 5	Team 6	Team 7	Team 8
2:45pm - 3:20pm	Team 7	Team 8	Team 9	Team 10
3:20pm - 3:55pm	Team 9	Team 10	Team 1	Team 2

	Ethical Considerations		Business Model and Go-To-Market Strategy	
Room	MU 236 | Mohave	MU 236 | Mohave	MU 236 | Mohave	MU 206 | Copper
Mentor	Dan Rizzuto	Jamie Tyler	Althea Stillman	James Cavuto
1:00pm - 1:35pm	Team 5	Team 6	Team 7	Team 8
1:35pm - 2:10pm	Team 7	Team 8	Team 9	Team 10
2:10pm - 2:45pm	Team 9	Team 10	Team 1	Team 2
2:45pm - 3:20pm	Team 1	Team 2	Team 3	Team 4
3:20pm - 3:55pm	Team 3	Team 4	Team 5	Team 6

	Pitch Development	
Room	MU 208 | Chrysocolla	MU 210 | Plata
Mentor	Greg Gage	Emily Caporello
1:00pm - 1:35pm	Team 9	Team 10
1:35pm - 2:10pm	Team 1	Team 2
2:10pm - 2:45pm	Team 3	Team 4
2:45pm - 3:20pm	Team 5	Team 6
3:20pm - 3:55pm	Team 7	Team 8

Presentation Schedule: Sunday December 15th

Time	MU 236 Mohave Judging Panel A	MU 206 Copper Judging Panel B	MU 208 Chrysocolla Judging Panel C	MU 210 Plata Judging Panel D
1:00pm – 1:20pm	Team 1	Team 2	Team 3	Team 4
1:20pm – 1:40pm	Team 5	Team 6	Team 7	Team 8
1:40pm – 2:00pm	Team 9	Team 10		

Breakout Description
Solution and Value Proposition

Your solution should fill a gap in the customer's needs. It is essential to understand how your solution will be used, how your customers will benefit from it and how meaningful those benefits are to each stakeholder group. A value proposition is a compelling statement that clearly describes what your solution is and how it solves the problem. The value proposition should be quantifiable to a specific customer, meaning that you should understand the costs to the customer of not having the benefits your solution provides.

For this workshop, use the *Strategyzer Value Proposition Canvas* to determine a detailed description of your value propositions for a target customer segment.

Instructions for the canvas are as follows:

1. Customer Jobs: What jobs or activities is your customer trying to accomplish?

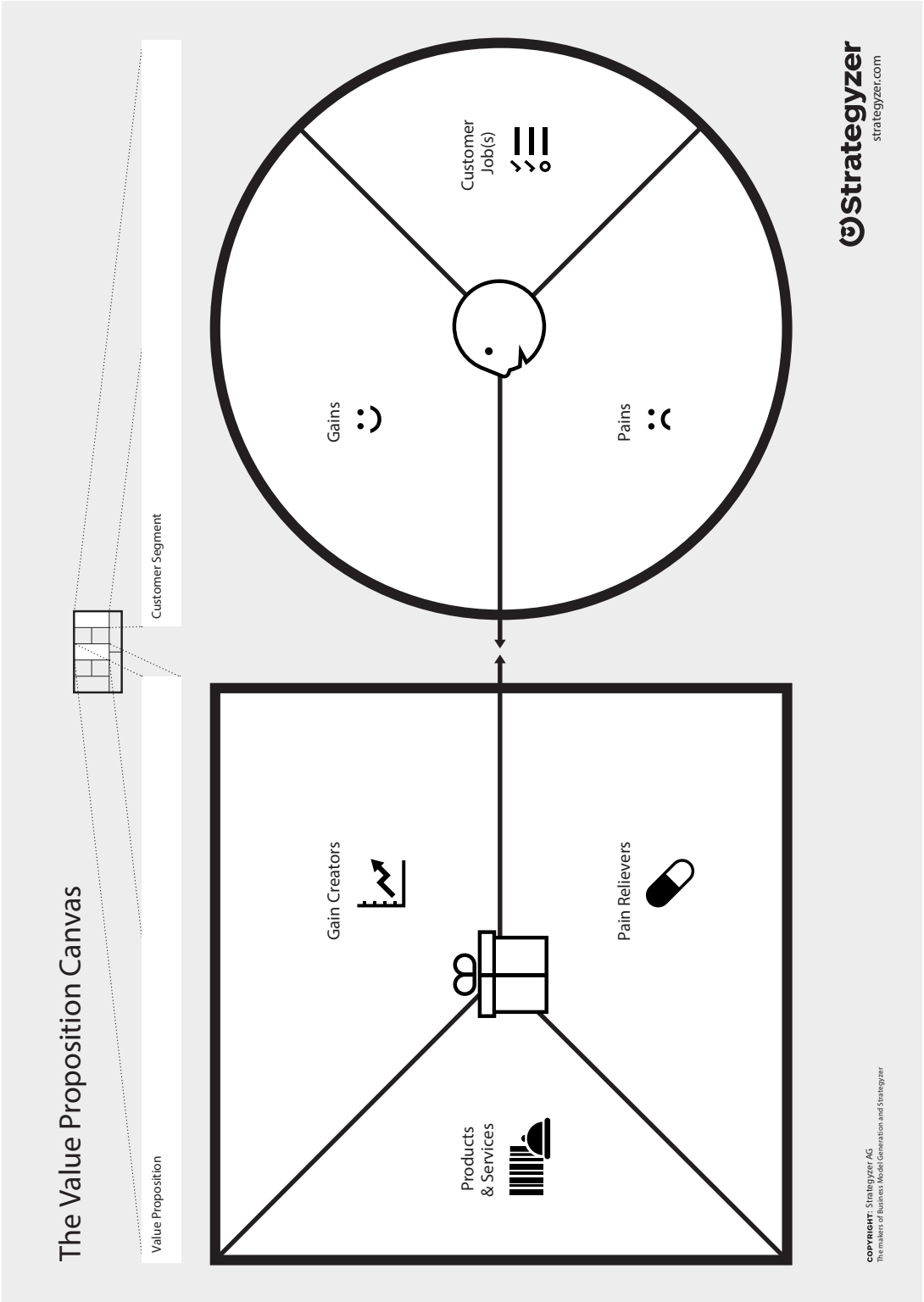
2. Pains and Gains: What "pains" could your customer experience before, during, or after completing the job? What "gains" or benefits does your customer expect or desire?

3. Products and Services: What products and services is your value proposition built around?

4. Value Creation: How do your products and services create value by either killing customer pains or creating customer gains?

**The Value Proposition Canvas and Instruction Manual can be found on the Strategyzer website (Strategyzer.com)*

Worksheet - Solution and Value Proposition



Breakout Description
Stakeholders, Market Analysis and Competition

Before you start, identify the problem you are trying to solve. It is essential to understand why the problem is significant and who it affects. Stakeholder analysis is an important process of identifying all the people affected by the problem and assessing their needs. There are four categories of stakeholders:

1. End User: Users are the stakeholder group who uses your product and are the beneficiaries of your services. **Do not confuse end users with customers. Your end user may not be who is buying your product.**

2. Decision Maker/Governance: This stakeholder group has an interest in how the project is managed and determines whether to buy your product, and for how much. An example of this type of stakeholder is a program manager who decides to buy a software package for its employees to use.

3. Influencer: Influencers have the power to influence decisions to purchase the product or service.

4. Saboteur: This group of stakeholders can negatively impact your promotion and sales.

Typically, a thorough customer discovery process includes interviewing potential stakeholders and customers to ensure your company's value propositions align with their needs.

For this workshop, use the stakeholder worksheet to determine who your stakeholders and what their needs are.

Complementary to customer discovery, market analysis gives you insight into your potential market and select the best customer segment. These customers are accessible, receptive to your value proposition and able to afford your solution. Additionally, market analysis should help you determine the total available market, serviceable available market and your target market.

1. Total Available Market (TAM) is the global revenue opportunity available. *How many people would want this product?*

2. Serviceable Available Market (SAM) is the percentage of the total available market that your company can serve. *How many people need this product?*

3. Target market is the group of customers you will market your product to. *Who am I selling this product to in years 1, 2 and 3?*

Finally, competition is always there. Stakeholders are currently addressing the problem you are solving with your product in some way. Competitors can be separated into direct and indirect. Direct competitors solve the customers' needs the same way you do or sell the same product.

Indirect competitors are solving the same problem, but through a different service or product. Competitive analysis gives you an understanding of your direct and indirect competitors and their defining characteristics.

Once you've identified your competitive landscape, it is important to understand and articulate why your competitors' solutions are inadequate and how your product has a competitive advantage. *What are the unique benefits your product or solution provides?*

Examples of how to differentiate your product: enhanced customer experience, lower cost to the customer, special product features, branding, intellectual property, etc.

Worksheet - Stakeholder Analysis

	Who are they?	What is the value proposition to them?	What do assumptions do you want to test with them?	How might you reach them?
End Users: Those who will use the product.				
Decision Makers: Those who have the authority and budget to buy the product.				
Influencers: Those who can influence indirectly the decision maker to buy the product.				
Saboteurs: Those who are lurking in the background that can influence the decision maker to not buy the product.				

Breakout Description
Ethical Considerations

There are many areas of discussion concerning ethical considerations, such as the following:

1. Product Performance: Consistency with product promises, reliability, safety and quality

2. Technology: Data acquisition and storage, privacy, etc.

3. Regulatory compliance

4. Marketing: Deceptive marketing, selective advertising, etc.

5. Product placement and pricing

6. Company culture

In this session, brainstorm potential ethical issues that may arise in your company. Prioritize and perform a deeper analysis of these ethical issues and how you would like to mitigate these risks.

IEEE Brain 2019 Neurotech Entrepreneurs Workshop

IEEE Neuroethics Framework

Addressing the Ethical, Legal and Social Implications of Neurotechnology

TECHNOLOGIES / METHODS

	Recording/ Sensing Technologies to capture information about or from the nervous system	Stimulating/ Actuating Technologies to stimulate or modulate the nervous system	Controlling Technologies that combine recording / sensing with stimulation / actuation to control the nervous system	Direct Physical and Biological Modification Technologies to physically alter the nervous system by modifying physiology, and/or specific systems or sub-systems	Augmentation and Facilitation Technologies to support or expand the existing function of the nervous system
Medical Technologies for diagnostics or treatment of infirmity and disease, including direct-to-consumer	TBD	TBD	TBD	TBD	TBD
Wellness Tools for active pursuit of a healthy and fulfilling life; improving physical, mental, and social well-being	TBD	TBD	TBD	TBD	TBD
Education Technologies to improve and/or facilitate learning; assist in remedial learning strategies; cognitive enhancement	TBD	TBD	TBD	TBD	TBD
Workplace Technologies to monitor or modify brain in the workplace; efficiency improvements, evaluation and monitoring	TBD	TBD	TBD	TBD	TBD
Military/National Security Technologies to augment or improve the ability to fight or defend through soldier enhancement, intelligence, and/or debilitate the enemy	TBD	TBD	TBD	TBD	TBD
Sports and Competitions Technologies impacting success in sports or competition, including before, during or after competition	TBD	TBD	TBD	TBD	TBD
Entertainment Entertainment technologies, including virtual/augmented reality and brain-controlled video games	TBD	TBD	TBD	TBD	TBD
Analytics, Marketing, & Advertising Technologies used to inform decision making, including data used to profile and influence consumers	TBD	TBD	TBD	TBD	TBD
Justice System Technologies for use in civil and criminal adjudication, as well as in the correctional context, including to detect, modify and/or surveil brain states	TBD	TBD	TBD	TBD	TBD

APPLICATIONS / PURPOSE

IMPLICATIONS FOR

Education | **Stimulating/ Actuating**

Neuroscience and technology are being considered and used to optimize learning, memory, and performance of certain cognitive and behavioral tasks. This has led to ethical, legal and social concerns about how and when neuro-engineering should be used in educational settings.

Issues to consider include:

- Unknowns stemming from use of frontier science and technology
- Long-term effects of use in children/adolescents
- Trade-offs of cognitive "gains" vs "losses"
- Viability, validity and value of "informed" consent
- Implicit or explicit coercion
- Development of "super-scholars" and its limitations, vulnerabilities and liabilities
- Establishment of a "new normal" of optimized cognitive performance
- Issues/concerns surrounding "fairness"
- Stigma/bias (for and/or against those receiving interventions)
- Implications of "mind control"
- Escalation and brinksmanship

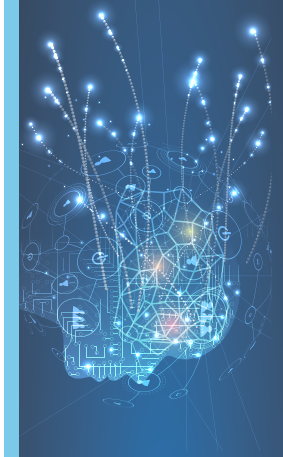
Get Engaged » Help create the guidelines in your area of expertise

Complete online form to participate: tiny.cc/engageIEEEneuroethics

neuroethics@ieee.org

Worksheet - Ethical Considerations

	Stakeholder group affected	What is the obligation to the stakeholder?	Potential Actions	Positive Consequences	Negative Consequences
Ethical Issue 1:					
Ethical Issue 2:					
Ethical Issue 3:					



Breakout Description
Business Model Development

The purpose of a business model is to describe how you create, deliver and capture value. The business model canvas is a visual tool that describes the company's or product's value proposition, customers, revenue models, go-to-market strategy and finances.

There are three common ways to sell your product:

1. Business to Consumer (B2C): sell your product directly to consumers
2. Business to Business (B2B): sell your product to businesses
3. Business to Business to Consumer (B2B2C): sell your product to a business who then sells to consumers

Additionally, there are many ways to generate revenue, such as licensing, subscription, and more. Designing a revenue model that generates recurring revenue provides a reliable revenue stream. It can also encourage services, such as customer service, to maintain customer relationships to **acquire, keep and grow** your customer base.

For this workshop, use the *Strategyzer Business Model Canvas* to determine your company's business model.

Questions to consider are:

1. What is the value of your solution to your customers?
2. Who are you selling to?
3. How are your customers paying you?
4. How much are your customers paying you?
5. How can you retain customers while growing your overall customer base?
6. Who are your key suppliers and partners? What is your dependency on key players in your value chain?
7. How will your market your product or service?

The Business Model Canvas

Designed for:	Designed by:	Date:	Version:

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		**Channels**	

Cost Structure	Revenue Streams

DESIGNED BY: Strategyzer AG
The makers of Business Model Generation and Strategyzer

Strategyzer
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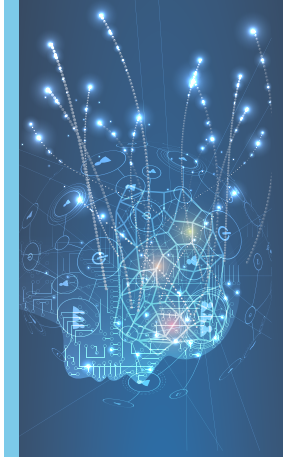

Breakout Description
Pitch Development

A pitch presents a business idea. Your pitch should tell a story and persuade your audience to help you be successful, whether that be through investment or another form of support. As an entrepreneur, you will deliver three main types of pitches:

1. *An Elevator Pitch* is very short, typically less than 2 minutes, overview of your business or product. Mostly used in a face-to-face networking scenario, elevator pitches are meant to grab the interest of your audience by giving a flavor of what your company is doing. This pitch should cover who you are, what your product is, your competitive advantage, who your target customer is, and the ask.

2. *A Product Pitch* is typically directed to a customer to sell your product. This pitch will focus on the product's benefits and competitive advantage. Finally, this pitch should end with an ask or an offer to make the deal.

3. *An Investor Pitch* gives information about your product and your business. It should introduce the team, the problem, market growth and opportunity, product description and differentiation, value propositions and customers, barriers to entry, competitive analysis, business plan, go-to-market strategy, financial forecasts, an exit strategy and your investment ask.

Make your pitch passionate, tell a story and always make the ask. Authors of *The Power of Moments*, Dan and Chip Heath, found that "after a presentation, 63% of attendees remember stories. Only 5% remember statistics."

In this session, you will develop an investor pitch template. Refer to the challenge description for guidelines.

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