CAP Leadership 2013 - 2014

CAP Chairman:  
Richard Goldberg  
VP Corporate Quality, Cisco

CAP Vice Chairman:  
Mark Ambrose  
San Diego Site Executive, Raytheon
Thank you David Hadacek and Carl Lippke Solar Turbines for ‘Spirit of Solar’ Cruise September 23, 2013
Welcome New CAP Members!

Intuit

Informatica

PlayStation

Integrity Applications Incorporated

Salesforce

Mitek
Welcome Distinguished Students - Team Internship Program

2013 Record Breaking Summer

300 Students | 83 Teams (3 International) | 45 Companies
Problem Statement
Burst pneumatic ducts can cause unacceptable deflections and/or fire seal disengagement leading to catastrophic damage to nacelle components
Nacelle Components
Typical Burst Duct Timeline

Pressure and temperature increases from a burst duct can result in catastrophic failures in the nacelle.
Inner Fixed Structure Deflection

Thrust Reverser Cross Section

Normal condition

Burst Duct

Excessive Deflection
Fire Seal Disengagement

Fire seal disengagement can redirect fan flow into the IFS, causing scooping.
Project Objective

Develop and evaluate improved methods to mitigate the effects of burst duct conditions
Project Overview

**Brainstorming**
- Conduct research & generate concepts
- Sensor → Driver → Mechanism

**Down-Selection**
- Develop criteria matrix
- Evaluate against existing solutions

**Analysis**
- Preliminary analysis for feasibility
# Project Timeline

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Down Selection

Criteria (weight):
- effectiveness (3x)
- acoustics (2x)
- safety (3x)
- maintenance (1x)
- aerodynamics (2x)
- manufacturability (1x)
- operability (2x)
- size (2x)
- development (1x)
- weight (2x)
Analysis

- CATIA
- NASTRAN
- VIPER (Pressure Relief Analysis Program)
- Hand Calculations
Conclusion

• Generated 27 ideas
• Down selected to and developed 3 design candidates
• Filed 2 invention disclosures
Situational Awareness with Cyber-Physical Security
a ViaSat project

Daniel Moeller
Adam Miles
Supervisors:
Brice Dorman

Kalvin Chau
Philip Jia

Alex Amirnovin
Nick Saunders
What is Cyber-Physical Security Integration?

- Leveraging both physical sensor data and cybersecurity technology to form a comprehensive view of the system’s security posture

  Physical security mechanisms (i.e. sensors, video cameras, etc.) intertwined with

  Cyber security measures (i.e. cyber sensors, firewalls, etc.)
Why do we need Cyber-Physical Security Integration?

- Trends in critical infrastructure are moving towards increased connectivity
  - Smart Grid: Remember the San Diego blackout?
- These innovations open new vulnerabilities to cyber attacks
- Physical and cyber security are currently separate
ViaSat Common Cybersecurity Services (CCS)

- Central Security GUI
  - Real-time monitoring
  - Security controls and overrides
- Automated response?
Quality of Trust (QoT)

- Quantifies trustworthiness of peers
- Distributed (peer-to-peer)

- Incorporates physical and cyber events
- Reputation-based decisions
- Enables automated awareness and response
CCS Central Security GUI
Peer-to-Peer QoT

Representing 21 SA's spanning 21 guid nodes as 21 bundles
Cyber Physical Security
Introducing New Dean of the Jacobs School of Engineering

Dean Albert ‘Al’ P. Pisano
Jacobs School of Engineering
Leadership Assimilation Exercise

Core Questions for CAP Executives

• What do CAP members already know about the Dean?

• What do CAP Executives want to know about the Dean?

• What do you need from the Dean to serve as champion for the Jacobs School in your company?

• What does the Dean need to know about CAP, corporate members, and you the CAP Executive?

• What issues do you have that require the attention of the Dean now?
Leadership Assimilation Exercise

Core Questions for Dean Al Pisano

• What do you already know about CAP and our CAP Executives?

• What would you like to know about CAP and CAP partners?

• What are your expectations of CAP partners?

• What significant issues need to be addressed immediately?

• What did you want the job as Dean of the Jacobs School of Engineering?
CAP Business

Anne O’Donnell
Director
Corporate Affiliates Program (CAP)
Master of Advanced Studies - Update

Students enrolled from more than 45 different local companies

FIRST Graduating Classes: June 2013
- Medical Device Engineering: 5 students (multiple provisional patents)
- Wireless Embedded Systems: 16 students

Fall 2013 enrollment Exceeded All goals for registered students
- Architecture-based Enterprise Systems Engineering: 36
- Medical Device Engineering: 19
- Wireless Embedded Systems: 26

New Program: MAS Big Data Science
- Initial proposal submitted: May 2013
- 2nd proposal submittal: October 2013
- Expected launch: Fall 2014
MAS Capstone Presentations and Graduation

• Students enrolled from more than 45 different local companies
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• New Program: MAS Big Data Science
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  – 2nd proposal submittal: October 2013
  – Expected launch: Fall 2014
you're invited

Celebrate the 25th Anniversary of the Computer Science & Engineering Department at UC San Diego

come
experience
cse...

friday
October, 11, 2013
9:30A to 5:00P
UC San Diego Campus
Summer Program for Incoming Students (SPIS)

Mohan Paturi
Professor, Computer Science & Engineering Department
SPIS - Summer Program for Incoming Students

Department of Computer Science and Engineering
Jacobs School of Engineering, UCSD
What motivated SPIS?

• How can we **best educate** our students?
• How can we help them realize their **potential**?
Goals of SPIS

1. **Competency**: critical thinking, algorithmic problem solving, and engineering skills, analytical thinking and writing skills.

2. **Inspiration**: passion for CSE, intellectual engagement, societal impact

3. **Personal traits for success**: initiative, perseverance → success

4. **Smooth transition to UCSD**
Courses

• Foundations of Computer Science
• Reading, Writing, and Robots
• Facets of Computer Science and UCSD
• http://cseacademy.eng.ucsd.edu/spis
2013 SPIS

• 30 of the incoming CSE students are invited based on the rank of the high school.
• Team of four faculty and 6 tutors.
• 4-week residential program
SPIS 2013 Results

• SPIS had a transformative effect on a number of students.
• Students are thriving in their Fall classes.
SPIS taught me what it actually means to be a programmer. Now I’m looking forward to starting my college journey this Fall.
Kristophrer Baes

SPIS will be one of the reasons that I am successful at UCSD.
This program has not only taught me the fundamental skills for my classes, it has helped form connections with faculty and students that might not have been made otherwise.
I'm really glad I got to experience the SPIS program because it gave me a head start for intro to programming and making new friends at UCSD.
SPIS has given me a passion to further develop my Computer Science skills during the school year, and has successfully prepared me for the transition into UCSD.
Lucas Phillips

Overall the SPIS program's greatest gifts to me were the resources to learn new programming techniques and also getting to meet my future colleagues and professors ahead of time. Those alone put us above all incoming freshmen students in the field.
Summary

• Tremendous improvement in CSE pipeline at marginally small cost

• An overall excellent program that focuses on individual outcomes will attract talent from all groups including under represented groups.
2014 Plans

• **Scale up** the program to more than 100 students.

• **Promote** UCSD CSE to high school students from under represented groups with SPIS as an added bonus

• **Extend** the features of SPIS to provide an exceptional first-year experience for students.
The von Liebig Entrepreneurism Center
NSF I–Corps Site

Rosibel Ochoa, PhD
Executive Director
gochoa@ucsd.edu

October 3, 2013
Commercialization Pathway

- Research
- Proof of Concept
- Start-Up/License

Graduate level Entrepreneurism Education

Business Mentoring by experienced entrepreneurs

Proof-of-Concept Grants
Entrepreneurism Center Services and Programs

Idea Sourcing & Selection

Catalyze Translation of Research Discoveries

Entrepreneurism Education
von Liebig Center Portfolio

500+ technologies screened, 142 teams supported
$6M in POC grants and mentorship
+1000 students participated in graduate educational programs
41 Startups launched or supported, five licenses.
Netsift sold to CISCO
Ortiva Wireless sold to Allot Communications
Pulsar diagnostics, acquired by Ocusense
UC San Diego Member of the NSF I-Corps Fabric

90 Teams/ 3 year

von LIEBIG
ENTREPRENEURISM CENTER
Integration of von Liebig Center’s Services

**Ideation**
- Entrepreneurism Course (s) & Workshops
- Project Incubation II
  - 30 teams/year
  - $1000-$3000
- Idea validation, customer discovery
- Market research, IP Basics

**Acceleration**
- NSF I-Corps National Team
- 10-15 projects
- $50,000
- Proof of Concept
- $50,000
- NCIIA
- $75,000
- Prototype Development
- Business mentoring

**Launch**
- SBIR
- PI & II
- Angel & Venture Capital
- Corporate Partners
- Incubators: EVONEXUS CONNECT

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**Proof of Concept**
- NSF I-Corps National Team
- Referrals
- 10-15 projects
- $50,000

**Licensing**
- Start-ups

**Entrepreneurism Course (s) & Workshops**
- Founders Institute

**Project Incubation II**
- CORPS
- NSF Innovation Corps

**NCI**
- National Science Foundation

**Ideation**
- Idea validation, customer discovery
- Market research, IP Basics

**Prototype Development**
- Business mentoring
Engagement Opportunities

• Mentorship and network

• Project ideas for I-corps teams

• Team Internships integrating lean startup and customer development methodology
Tour MOXIE Center for Undergraduate Entrepreneurism

lead by

Jay Kunin, Director