WPI’s RESEARCH ENTERPRISE IN THE STRATEGIC PLAN

Faculty Meeting
December 18, 2015
STRATEGIC PLANNING

Retreats, listening sessions, faculty lunches, pillar topics announced
June-November 2014
STRATEGIC PLANNING
IGNITE TEAM #3

Strengthen Research & Ph.D. Programs

February 26, 2015

B. Vernescu & J. Yagoobi
Research Activity and Awards

# Proposals

<table>
<thead>
<tr>
<th>Year</th>
<th># Proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>288</td>
</tr>
<tr>
<td>2012</td>
<td>340</td>
</tr>
<tr>
<td>2013</td>
<td>345</td>
</tr>
<tr>
<td>2014</td>
<td>376</td>
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<tr>
<td>2015</td>
<td>349</td>
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Award Increments

<table>
<thead>
<tr>
<th>Year</th>
<th>Millions</th>
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<tbody>
<tr>
<td>2011</td>
<td>18</td>
</tr>
<tr>
<td>2012</td>
<td>18</td>
</tr>
<tr>
<td>2013</td>
<td>25</td>
</tr>
<tr>
<td>2014</td>
<td>33</td>
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<tr>
<td>2015</td>
<td>34</td>
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89% increase

Recovered F&A

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<tr>
<th>Year</th>
<th>Millions</th>
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<tr>
<td>2011</td>
<td>4.4</td>
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<tr>
<td>2012</td>
<td>3.9</td>
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<tr>
<td>2013</td>
<td>4.3</td>
</tr>
<tr>
<td>2014</td>
<td>5.3</td>
</tr>
<tr>
<td>2015</td>
<td>5.3</td>
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18% increase

Expenditures

<table>
<thead>
<tr>
<th>Year</th>
<th>Millions</th>
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</thead>
<tbody>
<tr>
<td>2011</td>
<td>18</td>
</tr>
<tr>
<td>2012</td>
<td>15</td>
</tr>
<tr>
<td>2013</td>
<td>18</td>
</tr>
<tr>
<td>2014</td>
<td>22</td>
</tr>
<tr>
<td>2015</td>
<td>29</td>
</tr>
</tbody>
</table>

63% increase
IMAGINE A WORLD

• HEALTHY
• SAFE & SECURE
• RESILIENT
• VIBRANT
IMAGINE A WORLD

• ADVANCED MATERIALS, MANUFACTURING, MOBILITY
• HEALTH AND BIOTECHNOLOGY
• CYBER, DATA AND SECURITY ENGINEERING
• ROBOTICS AND CYBERPHYSICAL SYSTEMS
• LEARNING SCIENCES AND TECHNOLOGY
Research Themes

Health and Biotechnology

Robotics and Cyberphysical Systems

Advanced Materials, Manufacturing and Mobility

Cyber, Data and Security Science and Engineering

Learning Sciences and Technology

Research Themes Build Upon Strength & Opportunity
Research Themes’ Funding
FY’11-FY’15
DEVELOPING RESEARCH THEMES
SUMMER 2015

The Research Enterprise
November 5, 2015
K. Oates and B. Vernescu

Learning Sciences and Technology
Neil Heffernan (CS)
Ivon Arroyo (SSPS)
Joseph Beck (CS)
Erin Ottmar (SSPS)

Advanced Materials, Manufacturing & Mobility
Jamal Yagooby (ME & P3)
Diran Apelian (ME)
Michael Timko (CHE)
Diana Lados (ME)

Robotics and Cyberphysical Systems
Taskin Padir (ECE & P3)
Jim Duckworth (ECE)
Ximing Huang (ECE)
Sonia Cernova (CS)
Dmitri Berenson (CS)

Cyber, Data and Security Engineering
Elke Rundensteiner (CS & P3)
Kathi Fisler (CS)
Berk Sunar (ECE)
Craig Shue (CS & P3)
Thomas Eisenbarth (ECE)
Randy Paffenroth (MA)

Health and Biotechnology
Glenn Gaudette (BME)
Greg Fischer (ME)
Arne Gericke (CH & P3)
Diane Strong (BUS & P3)
Luis Vidali (BBT)

K. Oates and B. Vernescu
WPI’s Research Enterprise

**Aspirational Goal:** WPI is nationally recognized as a research university, with areas of global excellence, by pursuing scientific and technological advances across disciplines, with societal and industrial impact.
Data driven strategy

Research Information Management System

Identify Funding Opp
Manage Post-Award Funds
Monitor Success Rates
Aggregate & Benchmark Res. Output
Facilitate Collaborations
Showcase Successes
Support Translational Activities
Data Based Decision Making
Assess & Track Performance
Develop Adjust Strategy
Build Expertise
Attract Funding

Assess & Track Performance
Develop Adjust Strategy
Build Expertise
Attract Funding
<table>
<thead>
<tr>
<th>Size</th>
<th># Proposals</th>
<th>Value (Millions)</th>
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<tr>
<td>&lt;$100K</td>
<td>311</td>
<td></td>
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<tr>
<td>$100K-250K</td>
<td>84</td>
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<tr>
<td>$250K-500K</td>
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<td>28</td>
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<tr>
<td>$1M-3M</td>
<td>16</td>
<td></td>
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<tr>
<td>$3M-5M</td>
<td>4</td>
<td></td>
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<tr>
<td>&gt;$5M</td>
<td>1</td>
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58% proposals 7% of award $  

4% proposals 46% of award $
## WPI CENTERS’ EXPENDITURES FY15

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Expenditure</th>
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<tbody>
<tr>
<td>Apelian</td>
<td>MPI - All MPI Centers</td>
<td>6,654,500.32</td>
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<tr>
<td>Yagoobi</td>
<td>Center for Advanced Research in Drying (CARD)</td>
<td>23,001.50</td>
</tr>
<tr>
<td>Ma</td>
<td>Center for Inorganic Membrane Studies</td>
<td>1,281,304.30</td>
</tr>
<tr>
<td>McNeill</td>
<td>New England Center for Analog &amp; Mixed Signal IC Design</td>
<td>116,597.50</td>
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<tr>
<td>Gaudette</td>
<td>Regenerative Biosciences</td>
<td>410,420.02</td>
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<tr>
<td>Cyganski/Duckworth</td>
<td>Center for First Responder Technology</td>
<td>330,955.68</td>
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<tr>
<td>Datta</td>
<td>Fuel Cell Center</td>
<td>19,742.29</td>
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<tr>
<td>Ludwig</td>
<td>Center for Imaging and Sensing</td>
<td>113,076.97</td>
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<tr>
<td>Lados</td>
<td>Integrative Materials Design Center</td>
<td>327,532.71</td>
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<tr>
<td>Lambert</td>
<td>Center for Neuroprosthetics and BioMems</td>
<td>74,216.39</td>
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<tr>
<td>Tilley</td>
<td>Center for Industrial Mathematics &amp; Statistics (CIMS)</td>
<td>198,864.27</td>
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<tr>
<td>Easson</td>
<td>Center for Bioprocessing &amp; Tissue Engineering</td>
<td>50,381.63</td>
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<tr>
<td>Rice</td>
<td>Center for Entrepreneurship &amp; Innovation</td>
<td>192,501.56</td>
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<tr>
<td>Vera Tice</td>
<td>Healthcare Delivery Institute, HDI</td>
<td>1,750,542.09</td>
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<tr>
<td><strong>TOTAL WPI CENTERS</strong></td>
<td></td>
<td><strong>11,528,839.71</strong></td>
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WPI RESEARCH INFRASTRUCTURE

OSD & SPA

HPC, INSTR. CLUSTERS

RESEARCH CENTERS

COMPLIANCE

IPI & TAN

Health and Biotechnology

Robotics and Cyberphysical Systems

Advanced Materials, Manufacturing and Mobility

Cyber, Data and Security Science and Engineering

Learning Sciences and Technology

Research Themes Build Upon Strength & Opportunity
WPI research infrastructure

Faculty Pool

Research Need/Opportunity

Research Cluster

Establishment of a Center
Enhance WPI’s Research Infrastructure

WPI Research Solutions Institute

- Faculty Pool
- Research Need/Opportunity
- Research Cluster
- Development of a Research Initiative
- Develop research & funding ideas
- WPI Research Solutions Institute

- Help identify
- Help form
- Support & refinement
- Help develop
- Not funded (3 years)?
- Funding threshold
- Establish a Center
WPI’s Research Enterprise

Three Year Goals:

- Establish faculty cluster hiring
- Strengthen the research infrastructure
- Launch the WPI Research Solutions Institute
- Submit significant research center (STC, ERC,...) proposals (two per year)
- Increase corporate, foundation and government funding by 50%
- Increase graduate research fellowships by 50%