CS EXPANSION OVERVIEW

MAJOR GOALS

✔ Increase undergraduate enrollments by 27% to 1009 (1351 currently)
✔ Increase graduate enrollments by 27% to 311 (321 currently)
• Hire faculty and staff to support growth in students
• Grow in stature by enhancing research in Cyber Sustainability
• Create a new Data Science degree program
✔ Expediting a Professional MS in Cybersecurity
Initial Proposal developed in 2012
## UNDERGRADUATE ENROLLMENTS

### CS EXPANSION

Initial Proposal developed in 2012

<table>
<thead>
<tr>
<th></th>
<th>11-12</th>
<th>12-13</th>
<th>13-14</th>
<th>14-15</th>
<th>15-16</th>
<th>16-17</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proposed</strong></td>
<td>682</td>
<td>682</td>
<td>787</td>
<td>879</td>
<td>973</td>
<td>1009</td>
</tr>
<tr>
<td><strong>Actual</strong></td>
<td>682</td>
<td>831</td>
<td>905</td>
<td>982</td>
<td>1351</td>
<td></td>
</tr>
<tr>
<td><strong>%</strong></td>
<td>22%</td>
<td>15%</td>
<td>12%</td>
<td>39%</td>
<td></td>
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</tbody>
</table>
UNDERGRADUATE POPULATION
AS OF MARCH 2016

- 450 Indiana Residents (33.3%)
- 491 Out of State (36.3%)
- 410 International students (30.3%)

- 160 Female (11.8%)
- 48 Under Represented Minorities (3.6%)
Degrees Awarded

- PhD
- MS
- BS

# Degrees Awarded

<table>
<thead>
<tr>
<th></th>
<th>09-10</th>
<th>10-11</th>
<th>11-12</th>
<th>12-13</th>
<th>13-14</th>
<th>14-15</th>
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</thead>
<tbody>
<tr>
<td><strong>PhD</strong></td>
<td>23</td>
<td>16</td>
<td>11</td>
<td>25</td>
<td>16</td>
<td>31</td>
</tr>
<tr>
<td><strong>MS</strong></td>
<td>29</td>
<td>51</td>
<td>44</td>
<td>45</td>
<td>38</td>
<td>32</td>
</tr>
<tr>
<td><strong>BS</strong></td>
<td>71</td>
<td>92</td>
<td>92</td>
<td>120</td>
<td>151</td>
<td>144</td>
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</table>
BS GRADUATE PLACEMENT
SELF REPORTED DATA FOR 130 OUT OF 144 2014-15 GRADUATES

- Employed: 78%
- Still Looking: 17%
- Graduate School: 5%
- Other Plans: 0%

- Northeast: 40%
- Southeast: 15%
- Midwest: 37%
- West: 1%
- Foreign: 1%

PURDUE UNIVERSITY
### CPP Members Hire Our BS Grads

**Self Reported Data for 130 out of 144 2014-15 Graduates**

<table>
<thead>
<tr>
<th>Region</th>
<th>High</th>
<th>Low</th>
<th>Median</th>
<th>Average</th>
<th>Bonus</th>
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</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>$115,000</td>
<td>$70,000</td>
<td>$80,000</td>
<td>$86,250</td>
<td>$3,000 - $5,000</td>
</tr>
<tr>
<td>Southeast</td>
<td>$69,500</td>
<td>$53,500</td>
<td>$61,400</td>
<td>$61,728</td>
<td>$3,000 - $5,000</td>
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<tr>
<td>Midwest</td>
<td>$101,000</td>
<td>$40,000</td>
<td>$65,000</td>
<td>$69,891</td>
<td>$2,500 - $15,000</td>
</tr>
<tr>
<td>West</td>
<td>$130,000</td>
<td>$68,000</td>
<td>$100,000</td>
<td>$98,609</td>
<td>$15,000 - $50,000</td>
</tr>
</tbody>
</table>

CPP Members hired 40% of all employed BS students.
GROWING DEMAND FOR CS

EXPONENTIAL INCREASE

<table>
<thead>
<tr>
<th>Year</th>
<th>Applications</th>
<th>Admitted</th>
<th>Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2008</td>
<td>500</td>
<td>300</td>
<td>100</td>
</tr>
<tr>
<td>Fall 2009</td>
<td>550</td>
<td>350</td>
<td>150</td>
</tr>
<tr>
<td>Fall 2010</td>
<td>600</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td>Fall 2011</td>
<td>650</td>
<td>450</td>
<td>250</td>
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<td>Fall 2012</td>
<td>700</td>
<td>500</td>
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<tr>
<td>Fall 2013</td>
<td>750</td>
<td>550</td>
<td>350</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>800</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>850</td>
<td>650</td>
<td>450</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>900</td>
<td>700</td>
<td>500</td>
</tr>
</tbody>
</table>
# GROWING DEMAND FOR CS

## EXPONENTIAL GROWTH

<table>
<thead>
<tr>
<th>Fall</th>
<th>Applications</th>
<th>Admitted</th>
<th>Admit %</th>
<th>Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2008</td>
<td>518</td>
<td>392</td>
<td>75.7%</td>
<td>136</td>
</tr>
<tr>
<td>Fall 2009</td>
<td>658</td>
<td>474</td>
<td>72.0%</td>
<td>140</td>
</tr>
<tr>
<td>Fall 2010</td>
<td>550</td>
<td>433</td>
<td>78.7%</td>
<td>160</td>
</tr>
<tr>
<td>Fall 2011</td>
<td>693</td>
<td>542</td>
<td>78.2%</td>
<td>196</td>
</tr>
<tr>
<td>Fall 2012</td>
<td>858</td>
<td>614</td>
<td>71.6%</td>
<td>245</td>
</tr>
<tr>
<td>Fall 2013</td>
<td>1001</td>
<td>689</td>
<td>68.8%</td>
<td>258</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>1512</td>
<td>1046</td>
<td>69.2%</td>
<td>312</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>2397</td>
<td>1542</td>
<td>64.3%</td>
<td>445</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>2949</td>
<td>1393</td>
<td>47.2%</td>
<td>?</td>
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</table>
### High Profile Admits

Admitted student profiles are improving

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAT M</td>
<td>719</td>
<td>722</td>
<td>729</td>
</tr>
<tr>
<td>SATV</td>
<td>637</td>
<td>635</td>
<td>661</td>
</tr>
<tr>
<td>ACT</td>
<td>30.3</td>
<td>30.7</td>
<td>31.3</td>
</tr>
<tr>
<td>GPA</td>
<td>3.77</td>
<td>3.78</td>
<td>3.86</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>CS Range</th>
<th>First Year Engg. Range</th>
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</thead>
<tbody>
<tr>
<td>SATM</td>
<td>490 - 800</td>
<td>470-800</td>
<td></td>
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<tr>
<td>SATV</td>
<td>410 - 800</td>
<td>380 - 800</td>
<td></td>
</tr>
<tr>
<td>ACT Comp</td>
<td>21 - 36</td>
<td>21 - 36</td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td>2.63 - 4.00</td>
<td>2.84 - 4.00</td>
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</tbody>
</table>
2016 FRESHMEN TARGET

TARGET ADMISSIONS

• 2015 enrollment (1351 undergraduates) is already far above planned expansion goal (1009).
• Faculty hiring is picking up but lags significantly
• However, the demand for CS is very strong
• Suggested target for admissions was set at 400

• Very likely, total 2016 enrollment is going to be very high (possibly 1500!)
NEW PROFESSIONAL MASTER’S DEGREE
SCHEDULED FOR SUMMER 2016

• Concentration in Information Security
• Program just approved last month
  • First cohort to start in June
  • Currently, all courses on campus
  • Program can be completed in one year
• New courses in Data Security, and Security Analytics will be distinctive to Purdue
• Target student: software developer or cyber security professional with programming background
CENTER FOR SCIENCE OF INFORMATION

• First NSF-Sponsored Science and Technology Center centered in Indiana
• $25 million over five years (2010-2015)
• Advancing the foundations of Information Theory
• Renewed for another five years, $25 million
• Director: Prof. Wojtek Szpankowski
Differential Fee

Raising the Bar

• Critical support for managing the growth and enhancing quality

• Directly impact student experience:
  • Improved student/faculty ratios (3 tenure-track + 3 Prof. of Practice)
  • Retention and recruitment of high-caliber faculty through competitive remuneration
  • Student success initiatives
  • Increased teaching assistant support
1. **Student experience**
   Managing large enrollments

2. **Student success**
   Retention and diversity

3. **Space**
   Renovating and optimizing
## FRESHMAN COURSE ENROLLMENTS

### CS18000

<table>
<thead>
<tr>
<th>Year</th>
<th>Admitted</th>
<th>Accepted</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>968</td>
<td>313</td>
</tr>
<tr>
<td>2015</td>
<td>1544</td>
<td>445</td>
</tr>
<tr>
<td>2016</td>
<td>1372</td>
<td>?</td>
</tr>
</tbody>
</table>

---

### Enrollment Numbers

| Semester | f09 | s10 | f10 | s11 | f11 | s12 | f12 | s13 | f13 | s14 | f14 | s15 | f15 |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2009     | 180 | 82  | 145 | 233 | 129 | 263 | 155 | 346 | 141 | 347 | 185 | 415 | 247 | 558 |
MANAGING THE GROWTH IN STUDENTS

ONGOING PROGRAMS FROM 2014-15

• Better support for students
  • More teaching assistants, supplemental instruction, student led help desk
• Increased summer course offerings
• New UG program manager, ombudsperson
• Laptop-based exams to curb dishonesty
• Multiple sections of freshman, sophomore courses
• New retention and recruitment programs
  • Bridge program, NCWIT, Free online course over summer for admitted freshmen
MANAGING THE GROWTH IN STUDENTS

NEW IN 2015-16

• Peer mentoring program
  • Launched in fall 2015
  • Help students feel they belong
  • Share solutions, identify issues
• Evening mentoring sessions
• Professors of practice
• Student success coordinator
  • Recommended by Corporate Partners, NCWIT
  • Focus on at-risk students
  • Special focus on diversity
MANAGING THE GROWTH IN STUDENTS

TEACHING ASSISTANTS

- Teaching Assistant Support
  - Central to CS education — individual attention is key
  - New TA training course this fall
  - Improved monitoring
  - Increased level of TA support

<table>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GTAs</td>
<td>46</td>
<td>44</td>
<td>49</td>
<td>56</td>
<td>66</td>
<td>75</td>
<td>96</td>
</tr>
<tr>
<td>UGrad</td>
<td>472</td>
<td>551</td>
<td>682</td>
<td>831</td>
<td>905</td>
<td>1,014</td>
<td>1,350</td>
</tr>
</tbody>
</table>
CS BRIDGE PROGRAM

LEVELING THE PLAYING FIELD

- Continues to be a strong program
- 2015
  - Sponsored by Harris Corporation
  - 63 students
    - Bridge learning community

- Continuing with Online CS180 for High Schools
  - Expanding to Florida high schools
  - Exploring AP approval and offering high school credit
    - 233 students
    - 14 Indiana teachers
    - 86 homeschooled students
A mentor program for first-year CS students

• Bi-weekly check-ins with mentees
• Academic support and tips for success
• BGR-style groups (1 mentor for 3-5 mentees)
• Monthly activities

Our goal is to provide peer support for at-risk and/or underrepresented students who may otherwise leave the major in the first year.
PEER-2-PEER MENTOR PROGRAM

RETENTION

Pilot Program (Fall 2015)
• 16 committed Sophomore and Junior mentors
• 4-5 mentees for each mentor (76 total mentees in first year)
• Training began in mid-September
• Provide funding for mentors to do social activities with their mentees

Fall 2016 (anticipated)
• 64 Sophomore, Junior, and Senior mentors
• 3-4 mentees per mentor (invitations to mentees will be sent in Summer 2016)
• Mentor Training to occur in April 2016
• Mentees will be assigned to a mentor prior to beginning of Fall 2016 semester
Free online CS 180 for all Indiana high school students
  • Same material as CS AP course
  • 334 students over two years

Moving ahead
  • Scaling to national scale
  • Partnering with edX to create a MOOC
  • Goal is to provide access to a high quality AP course for all students in the US
  • Predicted audience for 2016-17: 2000 students
FY 16 HIRING STATUS

SUPPORTING THE GROWTH IN ENROLLMENTS

- 7 new faculty hired in 2014-15
  - 2 deferred start date to Fall 2016
  - 3 from Purdue Moves funding
- Added another undergraduate advisor
- Hired departmental secretary
- Hired new student success coordinator
- 2015-16 faculty search underway
  - 2 hired, 5 more positions to fill
  - Professor of practice search has started
With continued faculty hiring and more anticipated growth in grad student enrollment, current renovations are focused on office and research space

- Faculty offices in Lawson maxed out
- Renovated 11 offices in Haas
- May need to reassign staff to open more offices for faculty
- Fully successful hiring season will bump three staff members from offices
- Swelling undergrad enrollment has led to more TAs and the need for more more TA offices and meeting spaces
LAB RENOVATIONS

ENHANCING THE EDUCATIONAL EXPERIENCE

Virtual Reality
• CS 252 Systems Programming
• High-tech goggles to create interactive environment

Devices Lab:
• Upgraded our facilities with state-of-art labs and high-tech resources
• More collaborative, group project oriented
• Used for teaching and student club activities
Engaged the Cyber Center to help establish connections among researchers
Discovery Park has been instrumental
  - Strategic Doing workshops (past and planned)