

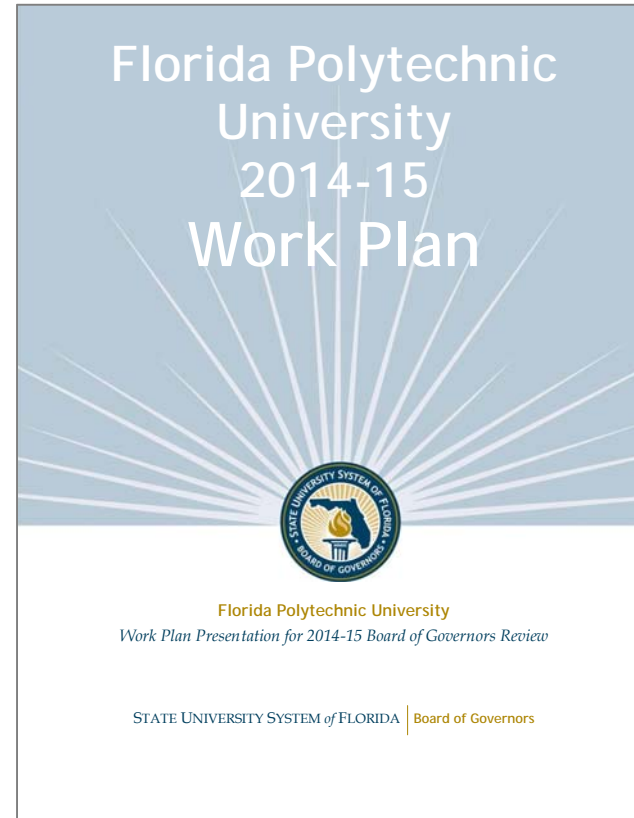
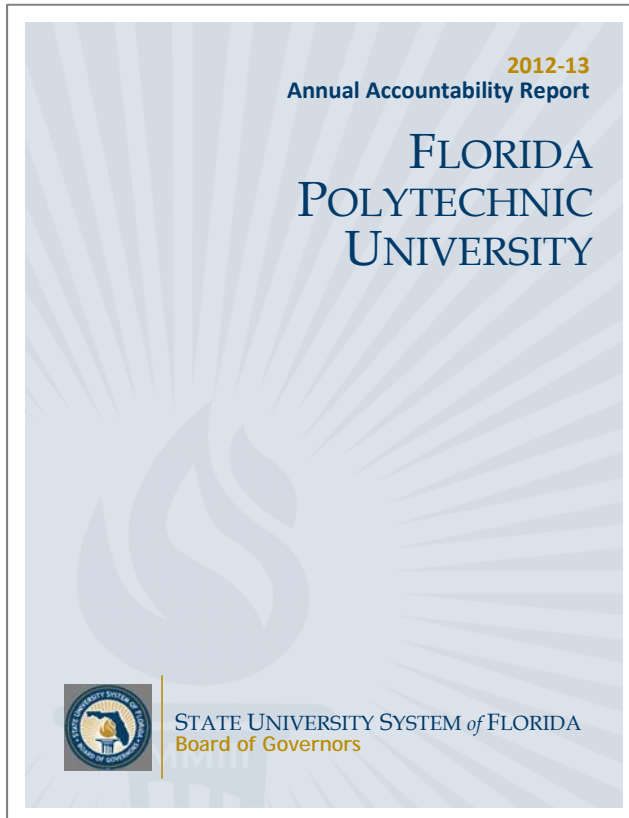
FLORIDA

POLYTECHNIC
UNIVERSITY

Future of STEM Education & Research

Randy K. Avent
19 June 2014

- **STEM education**
 - College of Engineering, College of Innovation & Technology
 - Two Graduate, Six Undergraduate degrees
 - 19 Areas of Concentration
- **Applied research**
 - Florida Industrial & Phosphate Research Institute
 - Nanotechnology & Multifunctional Materials (Planning)
- **Strong industry collaborations**
 - Over 50 industry relationships already established
 - Mix of internships, advisory boards, R&D, and joint teaching
- **Efficient operational structures**
 - Flat organizational structure
 - Advanced IT infrastructure with web-based services



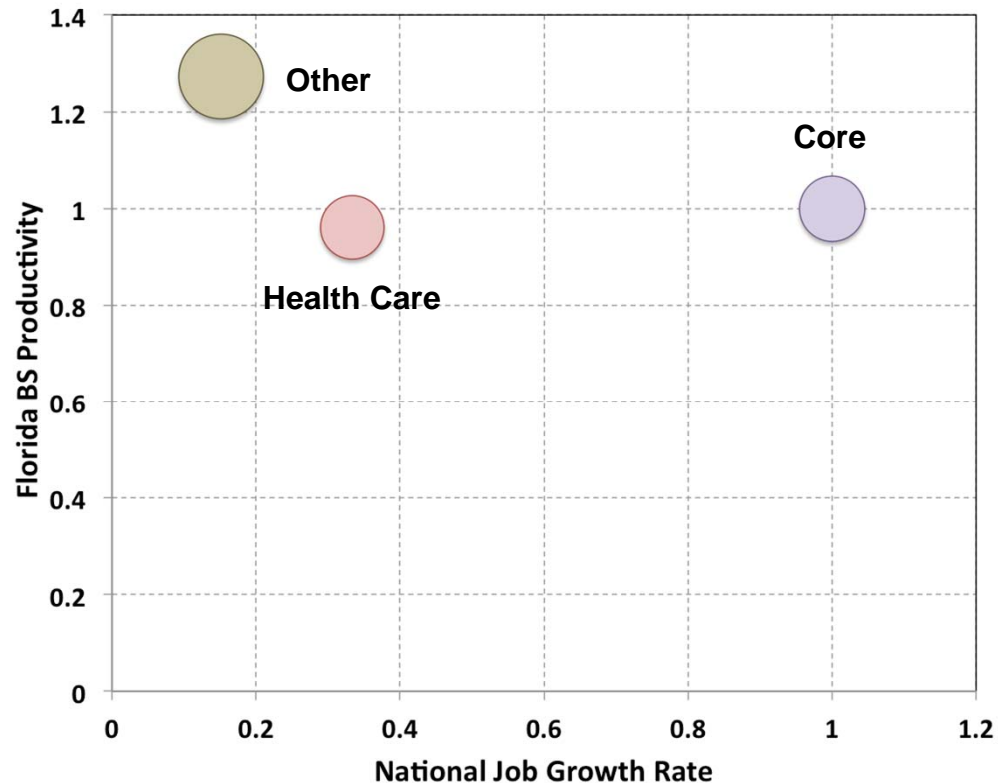
**Strategic Plan, Accountability Report and Work Plan
important ingredients in Florida Polytechnic success**

Outline

- Introduction
- **Tripartite Mission**
- **Accountability**
- **Summary**

STEM Education in Florida

- **STEM Categories**

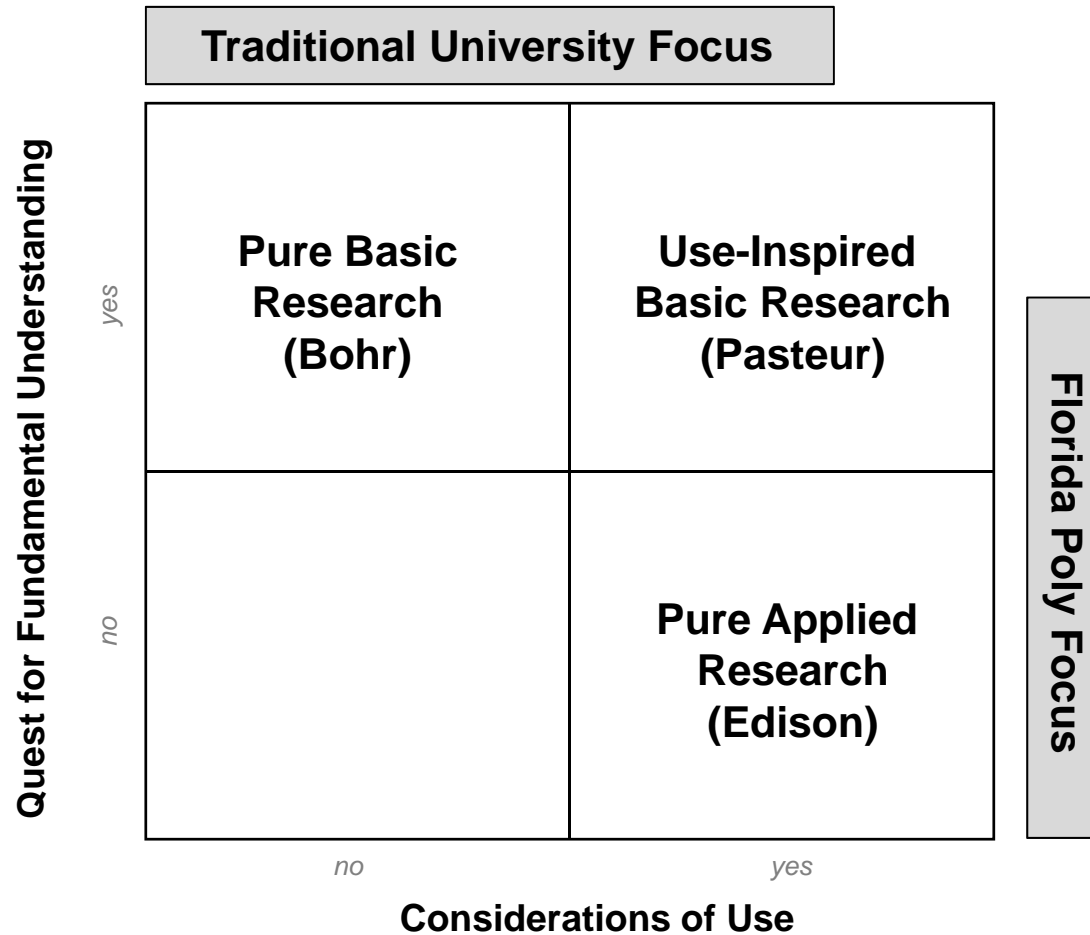


- **Numerous reports highlight importance of STEM**
 - Growing need for STEM undergraduates estimated over a million
 - Significant economic impact
- **Florida Polytechnic will focus on select core STEM disciplines**
 - Engineering
 - Analytics & Informatics
 - Computer Science

Florida Polytechnic increases graduates in important core STEM areas to stimulate economic development

- **Retention rates in STEM significantly lower than other fields**
 - Innovative teaching methods
 - Active learning, flipped classrooms, ...
 - Hybrid and on-line programs, supplemented with MOOCs
 - Immersion in field, capstone course focus on innovation
 - Discovery-based research courses
 - Real-world, industry-driven problems
 - Team-based approaches with integrated teaching
 - Student Support
 - Academic Success Center
 - Living-Learning Communities
 - Bridge programs for mathematics
- **Workforce Preparation**
 - Internships & Coops
 - Responsive programs
 - Holistic education with leadership, communications, finance
 - Interdisciplinary learning environments

Pasteur's Quadrant

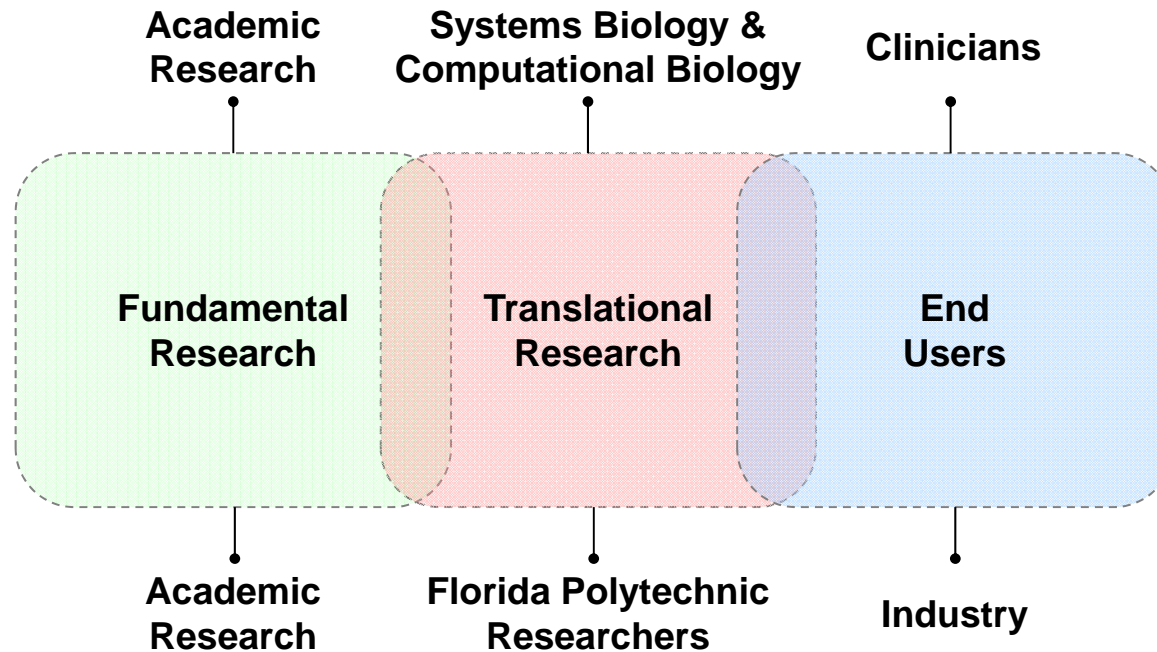


Florida Polytechnic Research will be problem-driven

- **Focus on hiring scholar-practitioners with industry or national laboratory experience**
- **Reward faculty engagement with industry**
 - Build MIT culture of tech transfer, firm creation and regional development
 - Mine practical and commercial results for industrial returns
- **Commercialization and entrepreneurship**
 - “Impact over Income” approach
 - Use NERFs, royalty holidays and other mechanisms to attract industry
- **Grow research infrastructure through FIPR and strategic hires**

Translational Research Model

- **Medical Domain**



- **High-Tech Industry**




Florida Polytechnic will collaborate with other Florida universities to help “Bridge the Valley of Death”

Community and Business Engagement

- **Build strong industry relationships with students**
 - Undergraduate and graduate employment opportunities
 - Internships and Coops
 - Senior design projects
 - Undergraduate research experiences
- **Build strong industry relationships with faculty**
 - Formal and informal consulting
 - Testing services
 - Curriculum development
 - Center and Institute memberships
 - Sponsored research
- **Innovative concepts for future discussions**
 - Industry “IPAs”
 - Four-day work weeks

Florida Poly Contributions to SUS Goals

	Excellence	Productivity	Strategic Priorities
Teaching & Learning			
Scholarship, Research & Innovation			
Community & Business Engagement			

Near-term  Mid-term  Long-term 

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Organization Efficiency

- **Maintain a flat organizational structure with minimal administrative personnel**
- **Build modern and advanced IT infrastructure to support university missions and administrative functions**
- **Procure integrated enterprise services for automation, softcopy and reporting**
- **Instrument everything and build accountability dashboards with metric performances**

Performance Funding Model

Board of Governors
Performance Funding Model Overview – May, 2014

The Performance Funding Model includes 10 metrics that evaluate the institutions on a range of issues. Two of the 10 metrics are Choice metrics; one picked by the Board and one by the university boards of trustees. These metrics were chosen after reviewing over 40 metrics identified in the University Work Plans.

The model has four guiding principles: 1) use metrics that align with SUS Strategic Plan goals, 2) reward Excellence or Improvement, 3) have a few clear, simple metrics, and 4) acknowledge the unique mission of the different institutions.

Key components of the model:

- Institutions will be evaluated on either Excellence or Improvement for each metric.
- Data is based on one-year data.
- The benchmarks for Excellence were based on the Board of Governors 2025 System Strategic Plan goals and analysis of relevant data trends, whereas the benchmarks for Improvement were determined after reviewing data trends for each metric.
- The Florida Legislature has approved \$100 million in new funding for performance funding and a proportional amount to total \$65 million would come from each university's recurring state base appropriation and another \$35 million from other system initiatives.

Metrics Common to all Institutions:
Seven metrics apply to all eleven institutions. The eighth metric, graduate degrees awarded in areas of strategic emphasis (8a), applies to all institutions except New College. The alternative metric for New College (8b) is "freshman in the top 10% of graduating high school class."

Metrics Common to all Institutions	
1. Percent of Bachelor's Graduates Employed and/or Continuing their Education Further	6. Bachelor's Degrees Awarded in Areas of Strategic Emphasis (includes STEM)
2. Average Wages of Employed Baccalaureate Graduates	7. University Access Rate (Percent of Undergraduates with a Pell-grant)
3. Cost per Undergraduate Degree	8a. Graduate Degrees Awarded in Areas of Strategic Emphasis (includes STEM) (NCF Excluded) 8b. Freshman in Top 10% of Graduating High School Class (NCF Alternative Metric)
4. Six Year Graduation Rate (Full-time and Part-time FTIC)	9. Board of Governors Choice
5. Academic Progress Rate (2nd Year Retention with GPA Above 2.0)	10. Board of Trustees Choice

Board Choice Metric - The Board has approved metrics that focuses on areas of improvement and the distinct missions of each university. UF and FSU have a metric measuring faculty awards to represent the research focus of these institutions. New College has "national ranking for institutional and program achievement." The remaining eight institutions all have the "percentage of students graduating without excess hours".

Board of Trustees Choice Metric - Each Board of Trustees has chosen a metric from the remaining metrics in the University Work Plans that are applicable to the mission of that university and have not been previously chosen for the model.

May 1, 2014 Page 1

- Important to create ROI framework that holds universities accountable for performance and cost control
- Recognize that “top-down” metric-driven approaches often have unintended consequences
- Important to continually evaluate and adopt new approaches

Summary

- **Become regionally and nationally recognized for STEM education**
- **Achieve projected student enrollment by developing responsive programs and services**
- **Build infrastructure that inspires technology-rich environments for innovation**
- **Create campus environment that nurtures collaborative research, learning and economic outreach**
- **Establish sound financial growth, stability and administrative practices**