

# Realizing The BB Vision An Internationally Recognized 21<sup>st</sup> Land-Grant University

## *Beyond Boundaries*

### A FRAMEWORK FOR THE FUTURE

#### GOALS

The Beyond Boundaries thematic groups were tasked with creating a future vision for Virginia Tech that would prepare the university for two related goals:

Advance as an internationally recognized, global land-grant university

Strategically address the challenges and opportunities presented by the changing landscape of higher education

Thanassis Rikakis,

Executive Vice President and Provost



# National/Global Prominence Through Differentiation

## The Leading Destination For VT-Shaped Knowledge

### **A distinguishing characteristic for Virginia Tech that**

- Builds on the university's strengths and tradition
- Allows the university to tackle the complexity of 21<sup>st</sup> century education, research and engagement in a unique manner
- Facilitates recruitment of talented students and faculty
- Graduates 21<sup>st</sup> century work force; addresses gaps/needs
- Advances the development of partnerships
- Diversifies our financial portfolio
- Promotes communities of learning

# VT-Shaped Individuals



# VT-Shaped Framework

Solid  
Disciplinary  
Preparation .....



# VT-Shaped Framework

Solid  
Disciplinary  
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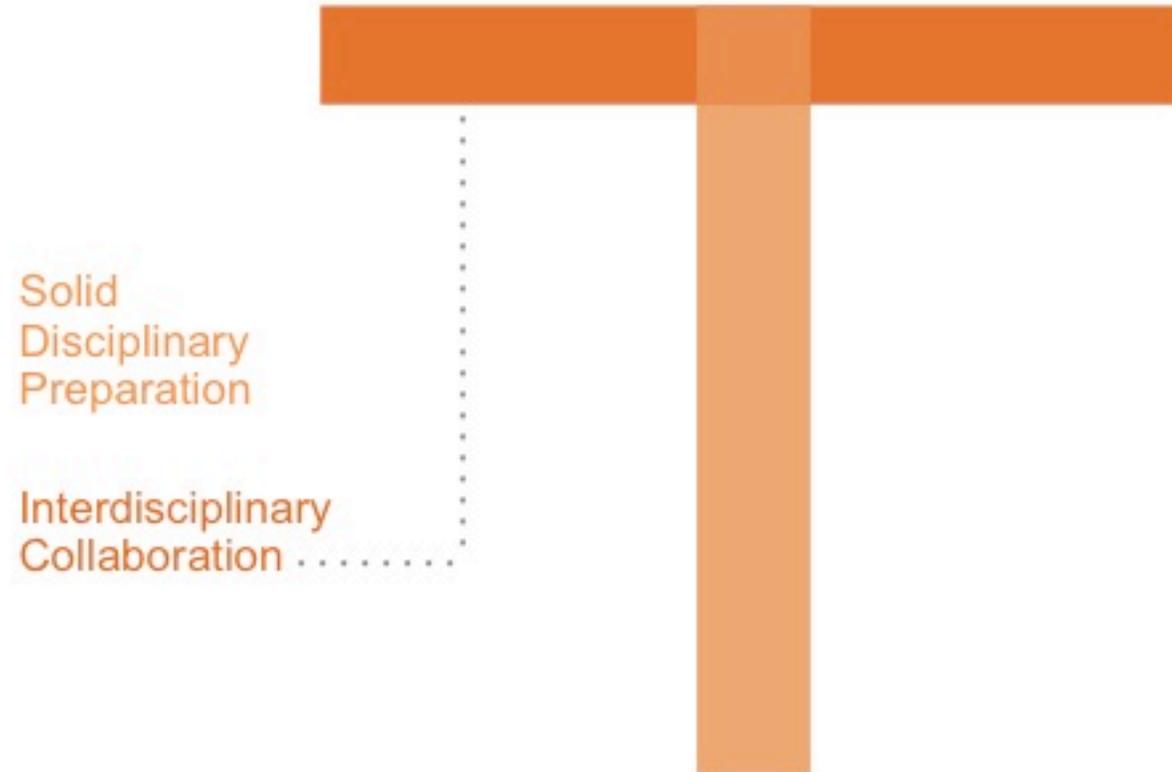
## Colleges:

- Customized benchmarking
  - Global leader in select areas of excellence
  - Regional leader in areas of strength
  - Measured investments in other areas
  - Continuous improvement and innovation
- Significant annual budget increases to colleges (total \$150M by 2022)

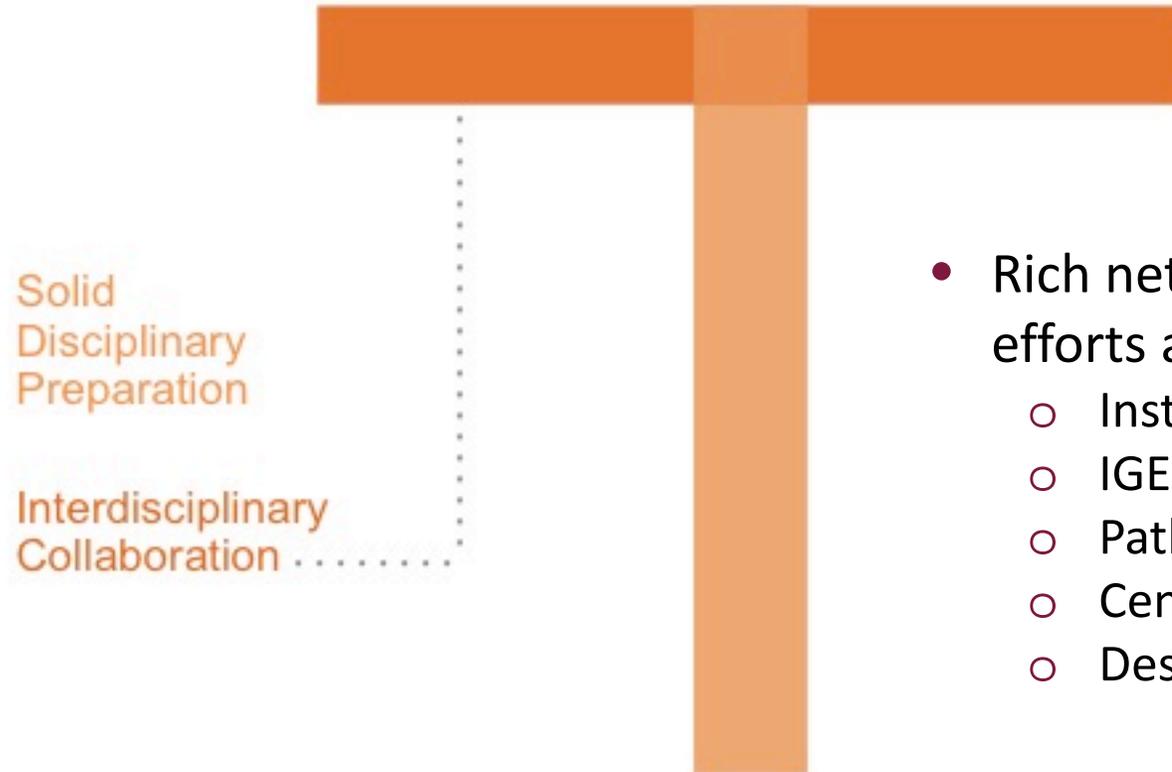
# Partnership for Incentive Based Budget Model

- ~ 50% of weight on education (undergrad and grad)
  - Emphasis on SCH to promote BB teaching
    - Incentives for BB teaching
  - Incentives for BB majors
  - Quantity and quality of teaching
  - Emphasis on student recruiting and student success
- ~ 25% of weight on nationally benchmarked scholarship
- ~ 25% of weight on external income (research and philanthropy) for STEM disciplines
- Significant sponsoring for Architecture, Design, Arts, and Humanities
- Emphasis on diversity of faculty and student cohorts

# VT-Shaped Framework



# VT-Shaped Framework



- Rich network of interdisciplinary efforts at VT
  - Institutes
  - IGEPs
  - Pathways Gen Ed Curriculum
  - Centers
  - Destination Areas

# Destination Areas Enrich Our Interdisciplinary Network

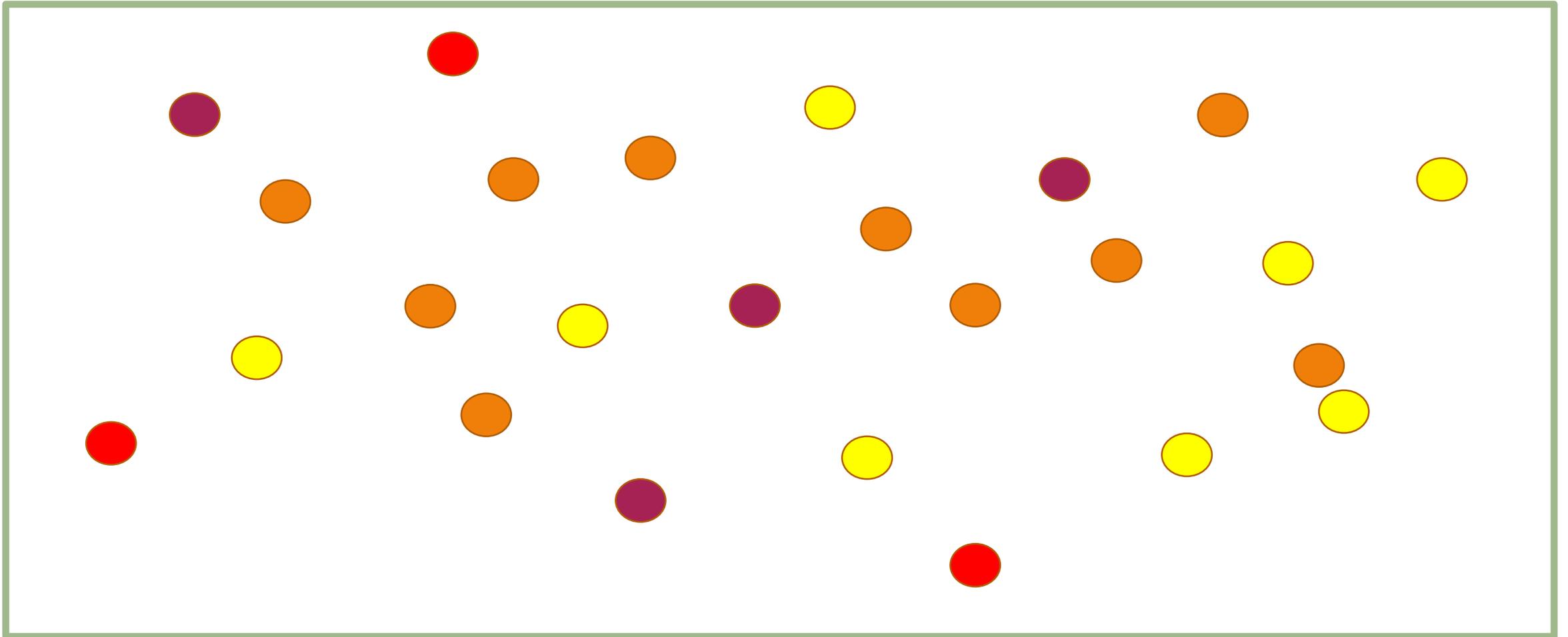
- Transdisciplinary and multi-function
  - Focus on the problem; 360° solutions; spanning research, education and engagement
- Opportunity for collaborations and outcomes of large-scale and scope
  - Student impact
  - Faculty connectivity
  - External support and buy-in
  - Societal impact
- Leading universities are developing cross-university transdisciplinary signature initiatives around current complex problems
  - Focused on each university's distinguishing strengths

# Destination Areas Enrich Our Interdisciplinary Network

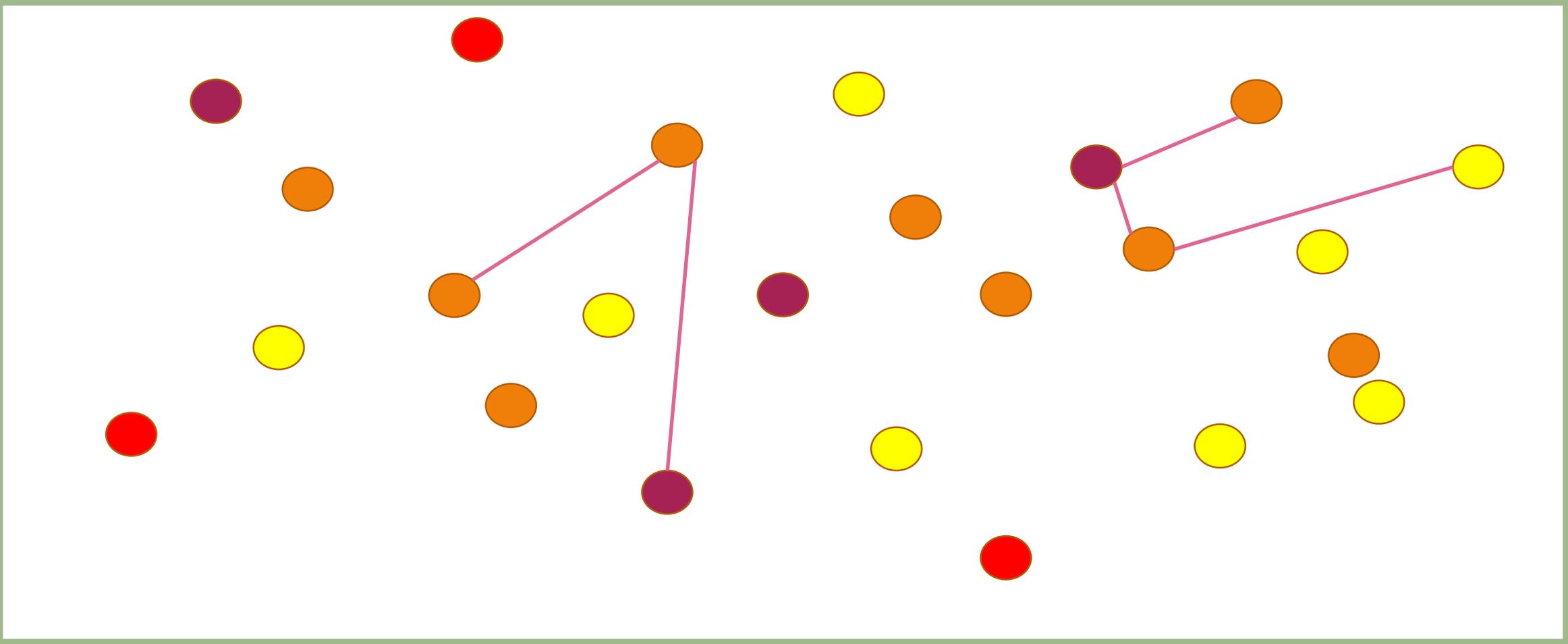
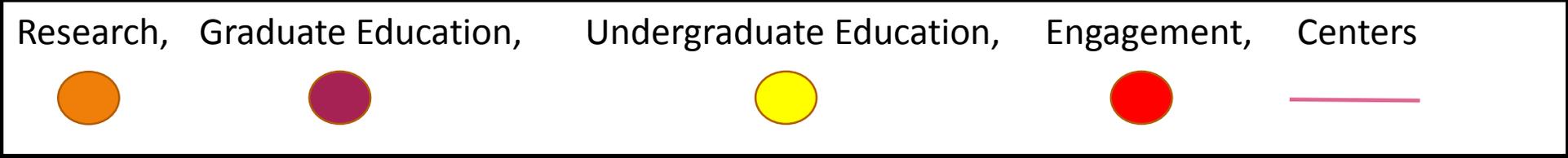
- Three layer network
  - Disciplinary distinction (network nodes)
  - Interdisciplinary distinction
    - Focused interdisciplinary connectivity (centers, institutes, IGEPs, pathways, etc.)
  - Cross cutting approaches to wicked problems (Destination Areas)

# Destination Areas Enrich Our Interdisciplinary Network

Research, Graduate Education, Undergraduate Education, Engagement

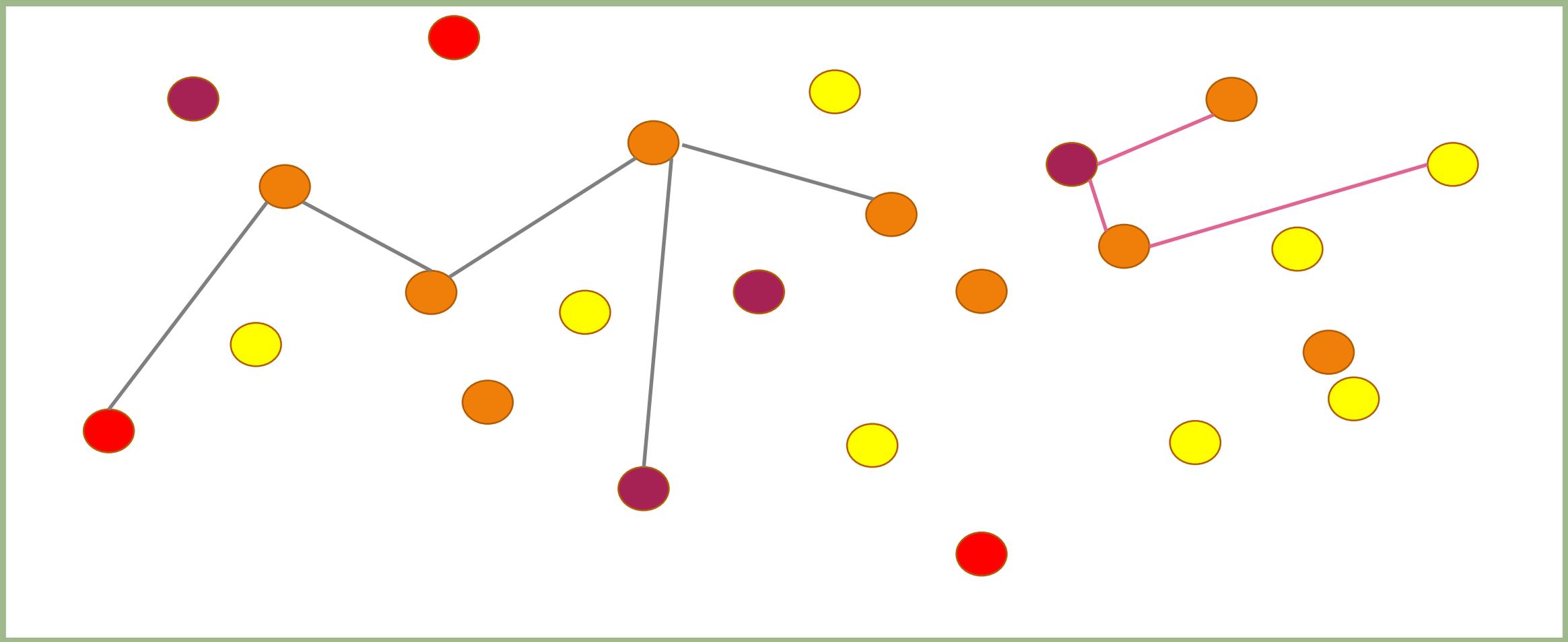


# Destination Areas Enrich Our Interdisciplinary Network



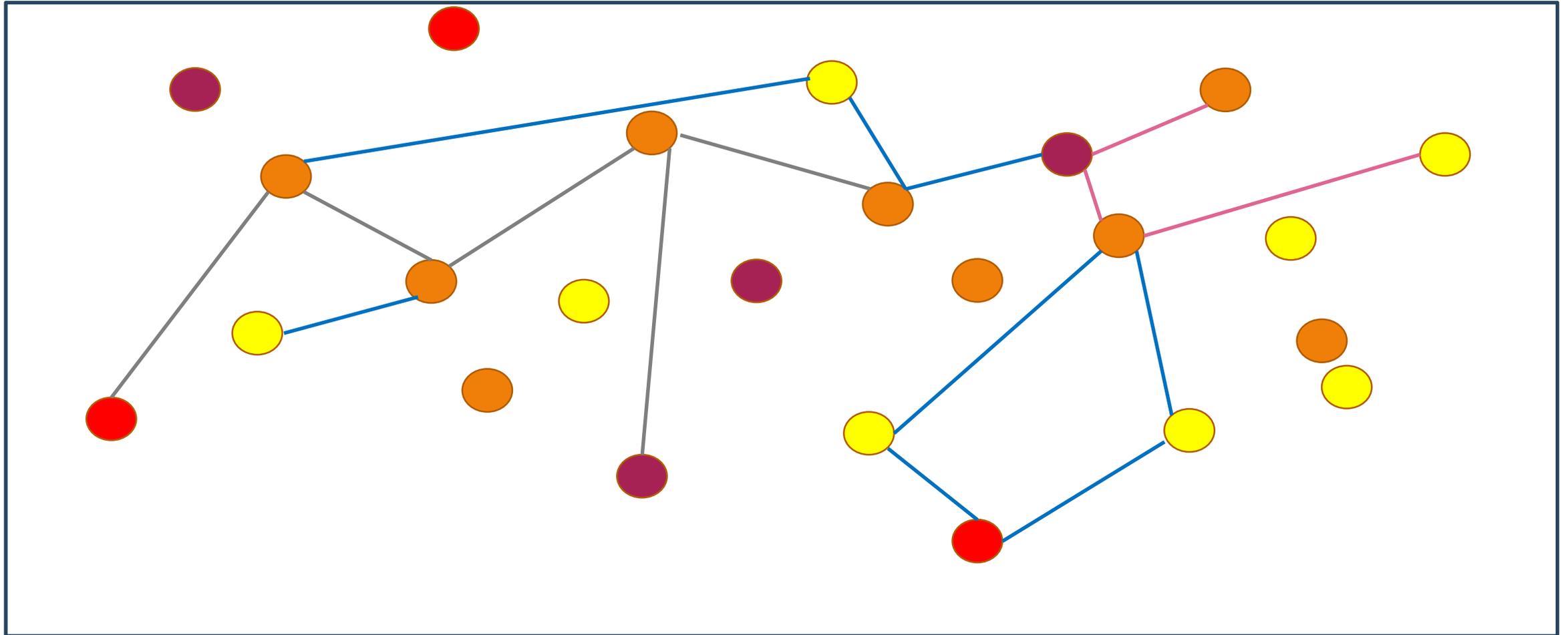
# Destination Areas Enrich Our Interdisciplinary Network

Research,	Graduate Education,	Undergraduate Education,	Engagement,	Centers,	Institutes
					



# Destination Areas Enrich Our Interdisciplinary Network

Research, Graduate Education, Undergraduate Education, Engagement, Centers, Institutes, DAs/SGAs



# Destination Areas Enrich Our Interdisciplinary Network

## Our strategy

1. Explore synergies among strengths of colleges and institutes (completed June 2016)
2. Convene faculty design teams to propose transformational vision and explore participation interest (currently happening)
3. Validate with external audiences (starting by October 2016)
4. Build faculty clusters around areas of greatest synergy and potential for attracting talent globally (starting October 2016 – ongoing)
5. Develop Management Structures; ensure inclusive representation in faculty design teams, executive committee, stakeholders committee (starting October 2016 – ongoing)
6. Develop signature cross-cutting research, education, and experiential learning around promising destination area faculty clusters (starting fall 2016; will take time to mature; schedule to be driven by the faculty/colleges participating)

# Destination Areas Enrich Our Interdisciplinary Network

## Our strategy

- Develop common facilities for DA faculty clusters (fall 2016-2022):
  1. Intelligent infrastructure corridor in BB (and NCR),
  2. Global Business and Analytics Complex in BB (and NCR)
    - Data Analytics and Decision Sciences (and Policy)
  3. Creativity and Innovation District
  4. Health Sciences and Technology Campus
    - Connections to Adaptive Brain, GSS/Infectious Disease and 3 more areas
  5. Feasibility study for Global Systems Science Building (208 and 229)
  6. Feasibility study for integrated security home facilities
  7. Development of Arlington Building into 360° showcase for
    - Integrated Security
    - Data and Decision Sciences (and policy)
    - Intelligent Infrastructure

# Destination Areas and Themes

## continuously evolving

### Data Analytics and Decision Sciences

- general methodology
- health analytics
- financial resilience analytics
- infrastructure analytics
- security analytics
- social analytics

### Integrated Security

- interface between cyber-physical and human agents
- security governance policy and practices
- national security and preparedness

### Global Systems Science

- a systems level approach to 9 interconnected problems



### Intelligent Infrastructure for Human-Centered Communities

- autonomous vehicle systems
- smart design and construction
- Smart energy,
- intelligent/ubiquitous mobility

### Adaptive Brain and Behavior

- molecular
- individual
- social

# Strategic Growth Areas and Themes

continuously evolving

## **Innovation and Entrepreneurship**

- Curriculum available to 10% of our students
- Develop cross-university scholarship in the area

## **Creative Technologies and Experiences**

- Curriculum available to 10% of our students
- Develop cross-university scholarship in the area

## **Materials**

- Focus on additive manufacturing

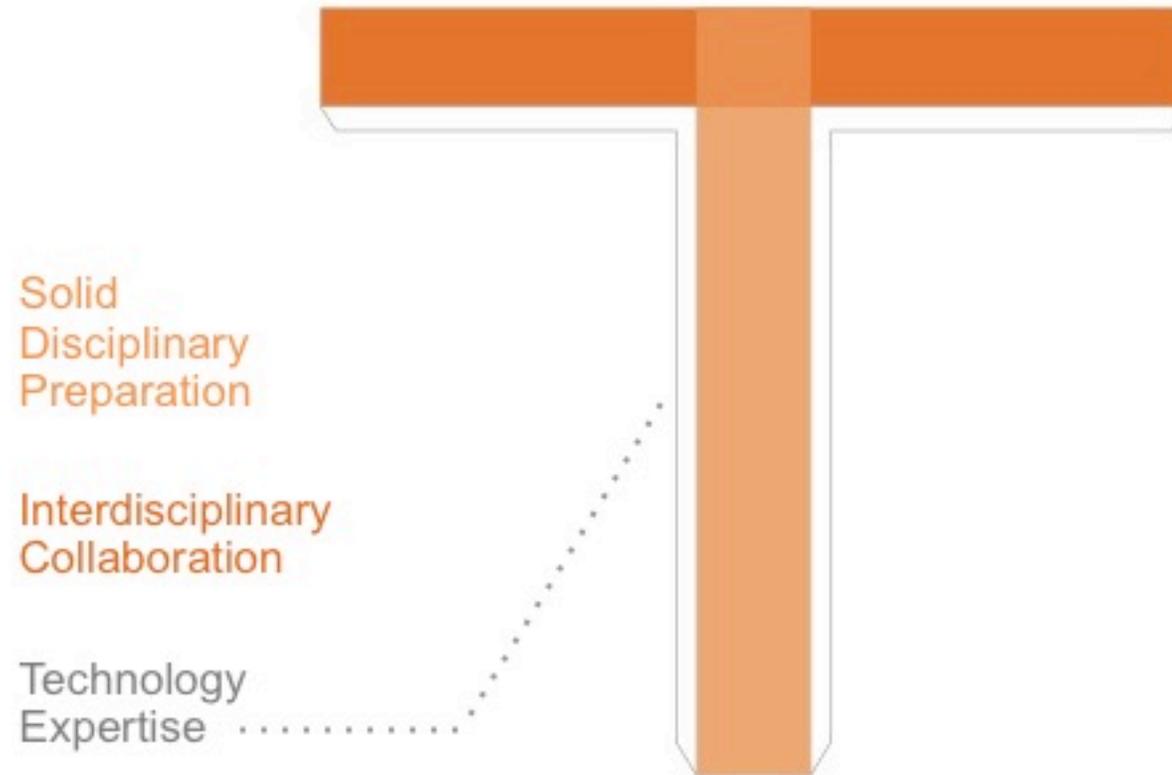
## **Policy**

- Cross-disciplinary knowledge for meaningful public policy

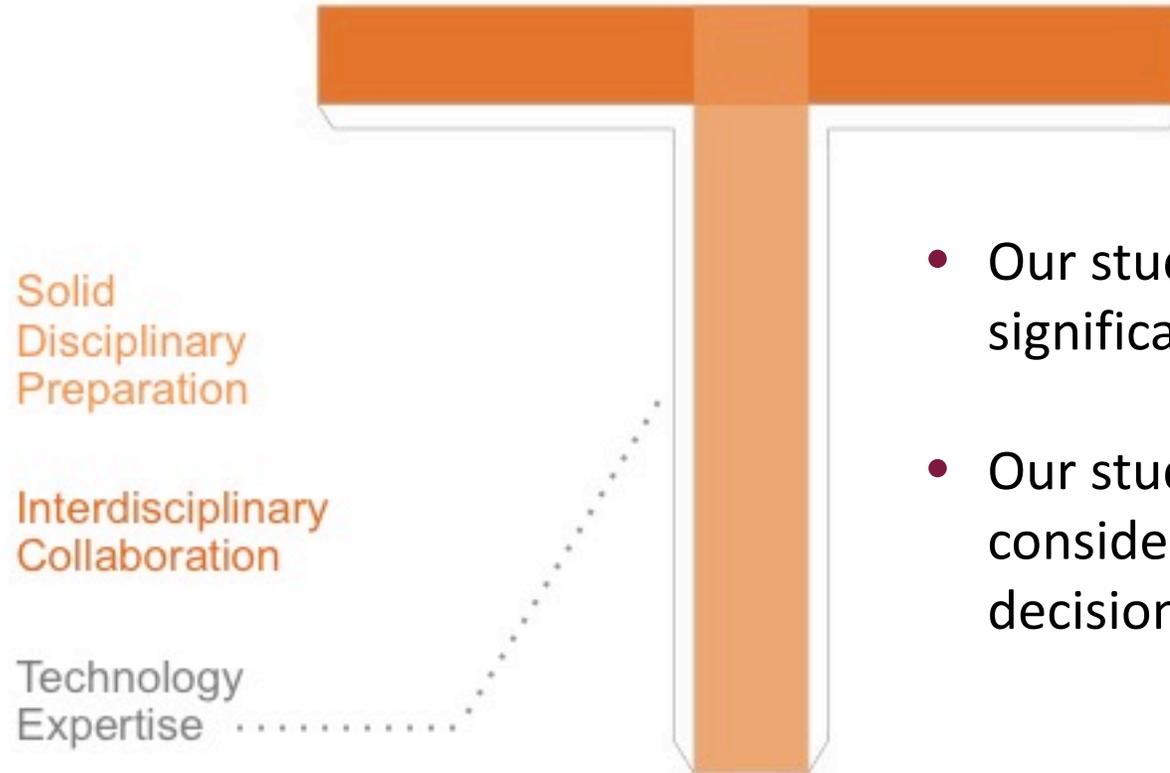
## **Equity and Social Disparity in the Human Condition**

- Pathways Curriculum
- Develop cross-university scholarship in the area

# VT-Shaped Framework

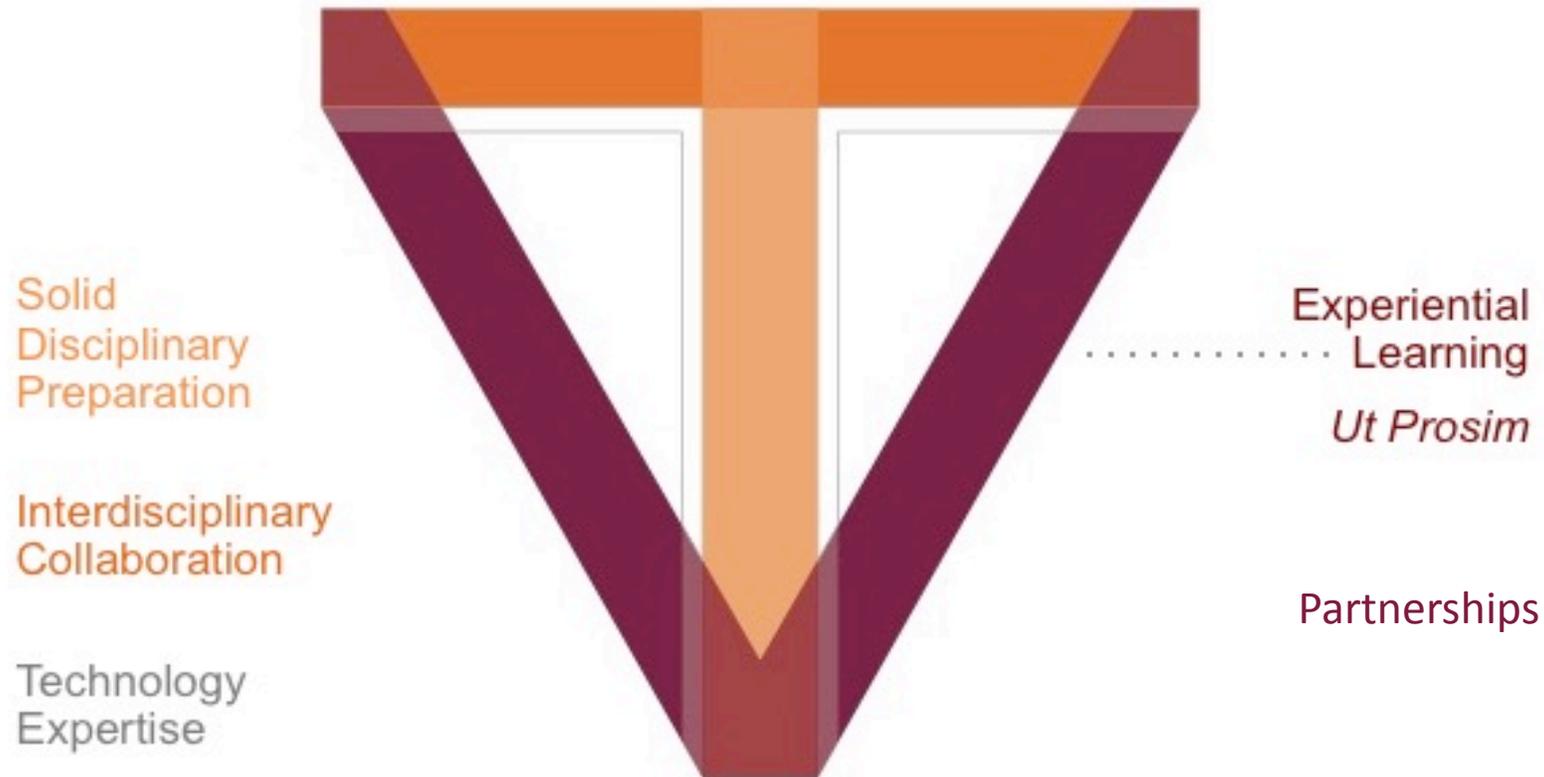


# VT-Shaped Framework



- Our students will graduate with significant technology expertise
- Our students will recognize and consider the human context in decision and action

# VT-Shaped Framework



- VT-shaped programs achieved by combining different faculty profiles
- Not every faculty to be VT-shaped
- Everyone should be aware of all dimensions and participate in the model in some customized form and help students achieve VT-shaped experience

# VT-Shaped Knowledge Generation Requires Diverse Communities of Learning



- Being where the knowledge and experiences are:
  - Blacksburg
  - Roanoke
  - National Capital Region
  - Extension/Experiment Stations
  - Joint labs with industry
  - Global and regional gateways
- Diversity and inclusion as a key to excellence in 21<sup>st</sup> century complexity
- Adaptive pedagogy and curriculum

# VT-Shaped Framework Requires Participatory Management and Iterative Design

- Effective leadership in this complex framework requires collective cognition, group genius, and continuous adaptation and improvement
- Moving leadership from collegial to collaborative
  - Being aware of your organization and of the relevant broader context
  - Developing collective cognition through collective leadership practices
  - Iterative design and innovation

# Iterative, Participatory Design Activity I - A VT-Shaped Framework Budget Model

- Development and implementation of new budget model (PIBB)
  - Outcome-based (with national benchmarks)
  - Data supported and transparent
  - Adaptive
  - Supports VT-shaped research, education and engagement
  - Promotes quality and rewards impact (of all kinds)

# Iterative, Participatory Design Activity II - Continuous Collaborative Strategic Visioning

- Development of department and college strategic visioning plans
- Exploration of synergies between college, institute, and destination areas faculty cluster plans and iterative improvement of plans
- Exploration of synergies between VT-integrated plans and external partners (industry, government, community, students, alumni) and iterative improvement of plans
- What does success look like – second stage of BB and new scorecard – and iterative improvement of plans

# Change Management and Communication

- The Beyond Boundaries evolution of the university requires coordinated progress of all key structures to avoid conflicting messages
- Acknowledge rate and scope of change and related challenges (and ask for patience and support)
- Acknowledge that this will take time
- Communicate, communicate, communicate
- Consistency in message and materials (and related actions)
- Improve information flow (and related actions)
- Enhance contact points