

# **Technology Transfer and the Commercialization of Emerging Security Software**

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# Innovation Realization Goals

- ✓ Graduate Ph.D.'s in science and engineering who are technically proficient and understand economic and management principles critical to R&D
- ✓ Produce science and engineering thesis research of scientific merit and market relevance
- ✓ Train management graduate students in R&D project management



# Traditional Study Cycle

## Engineering / Science



## Management



# Education Realization Lab

Engineering / Science



Workshops  
&  
Internships

Integrated Team Research:  
Engineering / Science  
Economics  
Management Science

Market Awareness

Intellectual Property  
Startups  
Licensed Technology

Lab Experience



Management

*Technical Transfer Initiative*

Krannert  
Graduate School  
of Management



# Traditional Research

## TRADITIONAL RESEARCH

✓ Hypothesis formation

✓ Proof of concept

✓ Prototype

## SCIENCE ISSUES

✓ Scientific merit; technical feasibility

✓ Testing and validation

✓ Refinement and scale-up



# Innovation Realization Lab

## INTEGRATED RESEARCH

- ✓ Hypothesis formation  
Market forecast
- ✓ Proof of concept  
Competitive analysis
- ✓ Prototype  
Commercialization  
strategy

## SCIENCE/BUSINESS ISSUES

- ✓ Scientific merit; technical feasibility  
Economic and social impact
- ✓ Testing and validation  
Risk, product and platform  
definition  
Patent or copyright  
Business creation or license  
Venture capital
- ✓ Refinement and scale-up  
Full market analysis (e.g. pricing,  
cost)

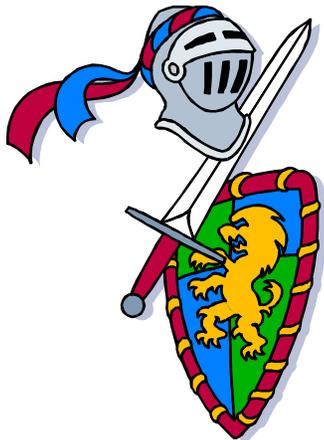


# **R** **enefits**

- ✓ Ph.D.s and MBAs with experience & skills to create economic value from technology
- ✓ Thesis research of scientific merit & market relevance
- ✓ Recruit and graduate the best & enable them to start companies
- ✓ Potential for high tech start-ups



# Market $\approx$ battlefield



- ✓ Characteristics:
  - ✓ Imperfect information
  - ✓ Chaotic
  - ✓ Fluid
- ✓ Leads us to ask:
  - ✓ What portion of the Battlefield can you securely hold?
  - ✓ Where is the balance between knowing and acting?



# The Significant Marketing Questions

- ① What is the Product?
- ② How will the product be used, i.e. for what applications?
- ③ Why will the product be used, in terms of features, functions, and benefits?
- ④ Who will buy the product?
- ⑤ Where will the product be sold and through what distribution channels?
- ⑥ When will orders be received and filled , i.e. how long will that process take?





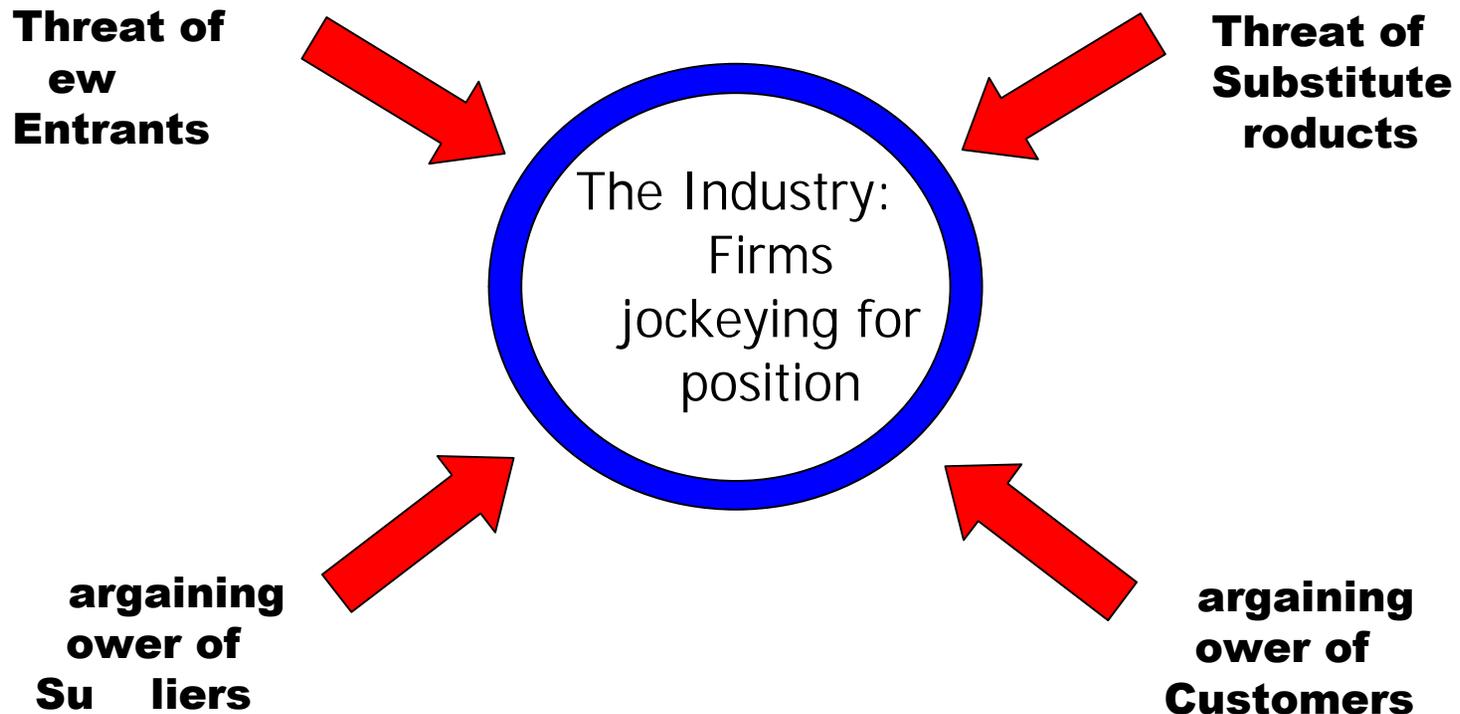
# Strategic Management

- ✓ Know the Customer
- ✓ SWOT Analysis  
(Strengths, Weaknesses, Opportunities, Threats)
- ✓ Gap Analysis  
Where are we? Where do we want to go? How do we get there?
- ✓ Action plan



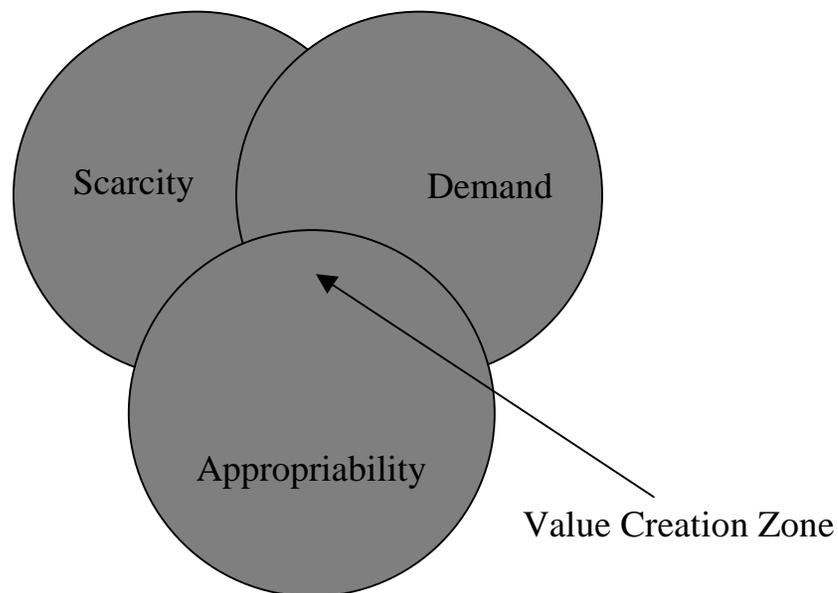
# Strategic Management

Porter's Five Forces



# Strategic Management

## Resource based Strategy



*Can a resource be the strategic basis for the firm?*

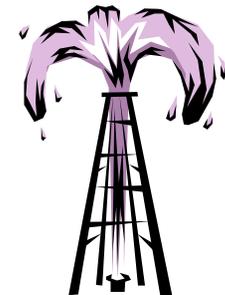
*Inimitability*

*Durability*

*Appropriability*

*Substitutability*

*Competitive Superiority*



# Software Tam er roofing

## ✓ Software Publishers Market

- ✓ Prevents unauthorized change to software
- ✓ Allows the resilient watermarking of software
- ✓ Prevents reverse engineering of the software
- ✓ Prevents the extraction of any module from a software product
- ✓ Protects limited versions of a software product from modification

## Information Providers Market

- ✓ Bind the data to the program that mediates access to it

