

# Innovation and Entrepreneurship

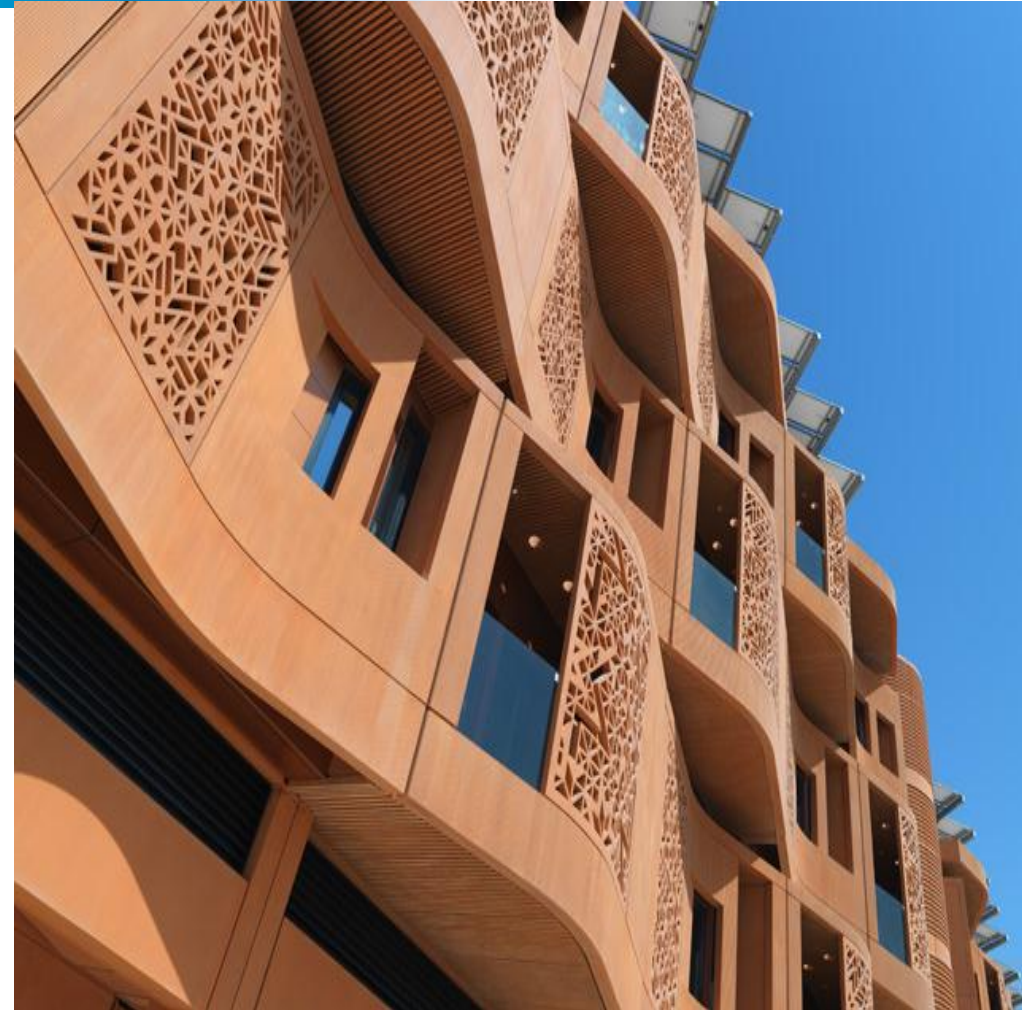
Fred Moavenzadeh  
President  
Masdar Institute of Science and Technology

**Masdar**  
INSTITUTE



# ENTREPRENEURSHIP

Entrepreneurship  
through accumulation  
of wealth or creation  
of wealth



# ACCUMULATION OF WEALTH

- Taking Advantage of Rapid Economic Growth, and/or
- Liberalization and Privatization of Economy
- Normally Economic Growth is not uniformly distributed
- Witness;
  - China, India, Middle East, Russia

# CREATION OF WEALTH

- Enhancing Current Economic Activities:
  - Increasing Productivity and Efficiency of Current Products and Processes, or
- Introduction of Disruptive Technologies or Processes
- Examples:
  - 19<sup>th</sup> & 20<sup>th</sup> centuries; mechanization technology
  - Late 20<sup>th</sup> century, information sciences and technology
  - 21<sup>st</sup> century knowledge technology

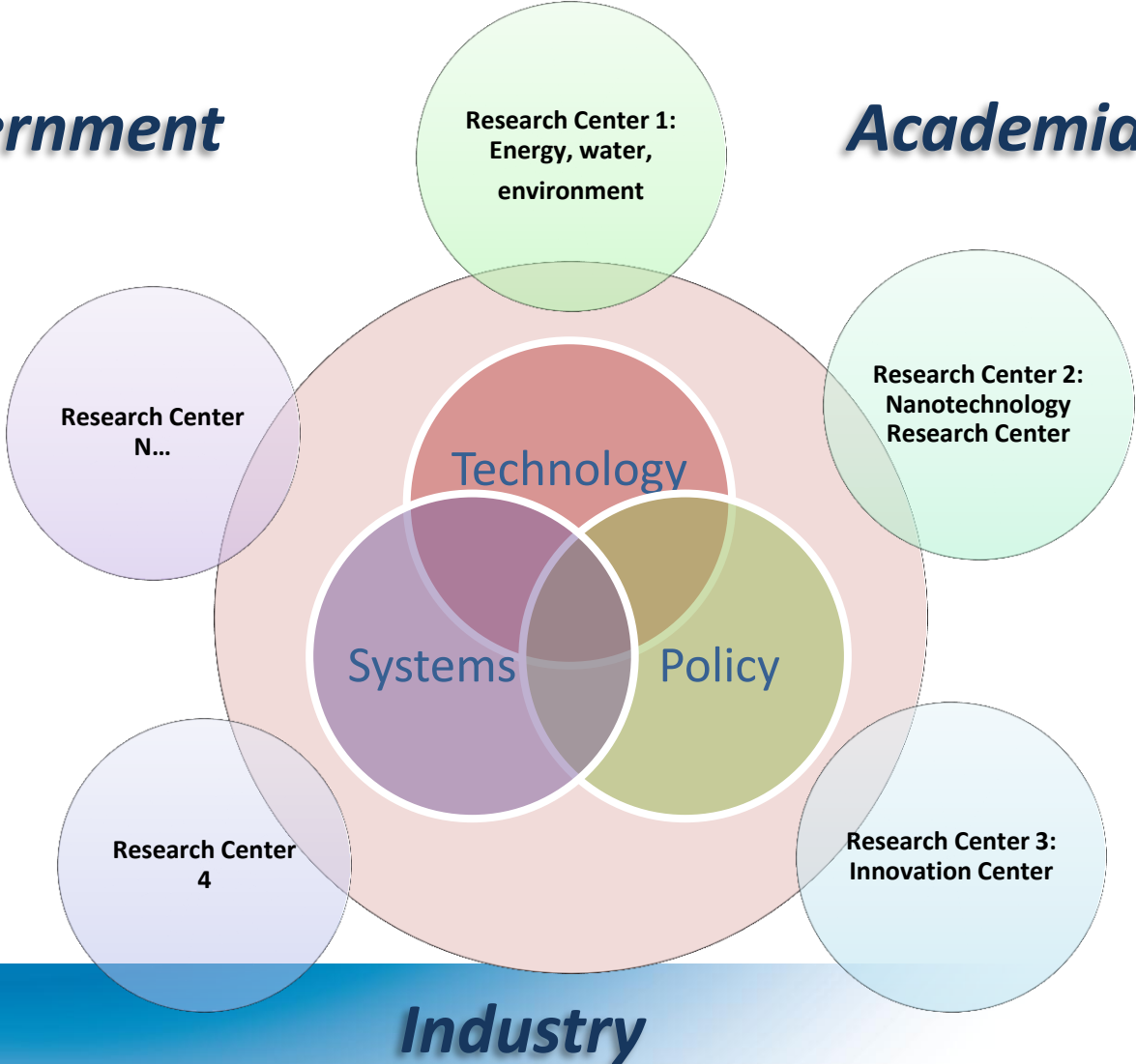
# MASDAR INSTITUTE

- Its Focus is on Development of Disruptive Technologies and Processes with primary focus on Green Technologies and processes
- Its R&D platform consist of three interconnected domains:
  - Technology
  - Systems and
  - Policy

# MASDAR INSTITUTE INTELLECTUAL UNDERPINNING

**Government**

**Academia**



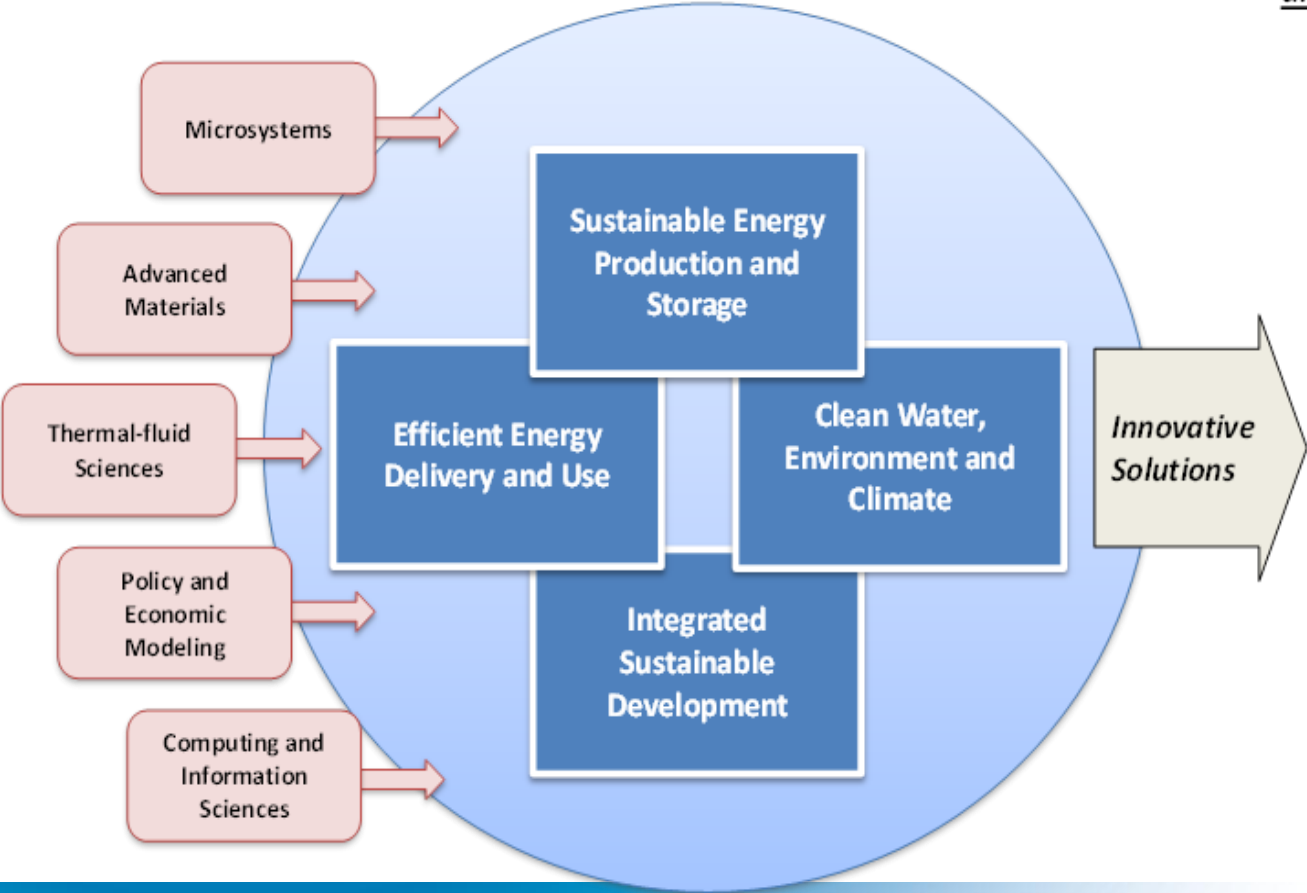


# Alignment Of Analytical And Experimental Capabilities With Application-oriented Research And The Overall Research Mission

Core Analytical and Experimental Capabilities

Application-Oriented Research Domains

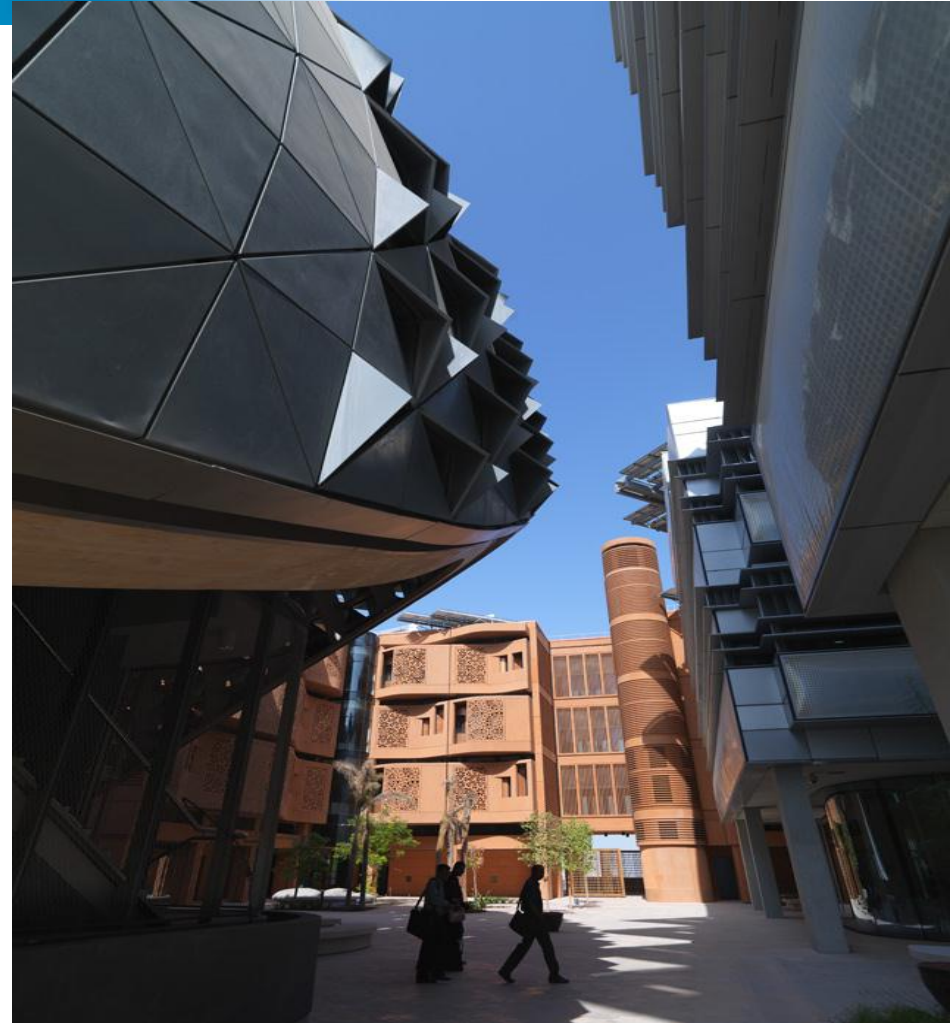
Key Challenges in Advanced Energy and Sustainability



- Clean Affordable Energy
- Equitable Access to Water
- Robust, Healthy Environment
- Sustainable Economic Development

# MASDAR INSTITUTE

- Disruptive Technologies and/or Processes rely heavily on Innovation and Innovators
- It requires spirit of risk taking
- It is stimulated by the potential pay off

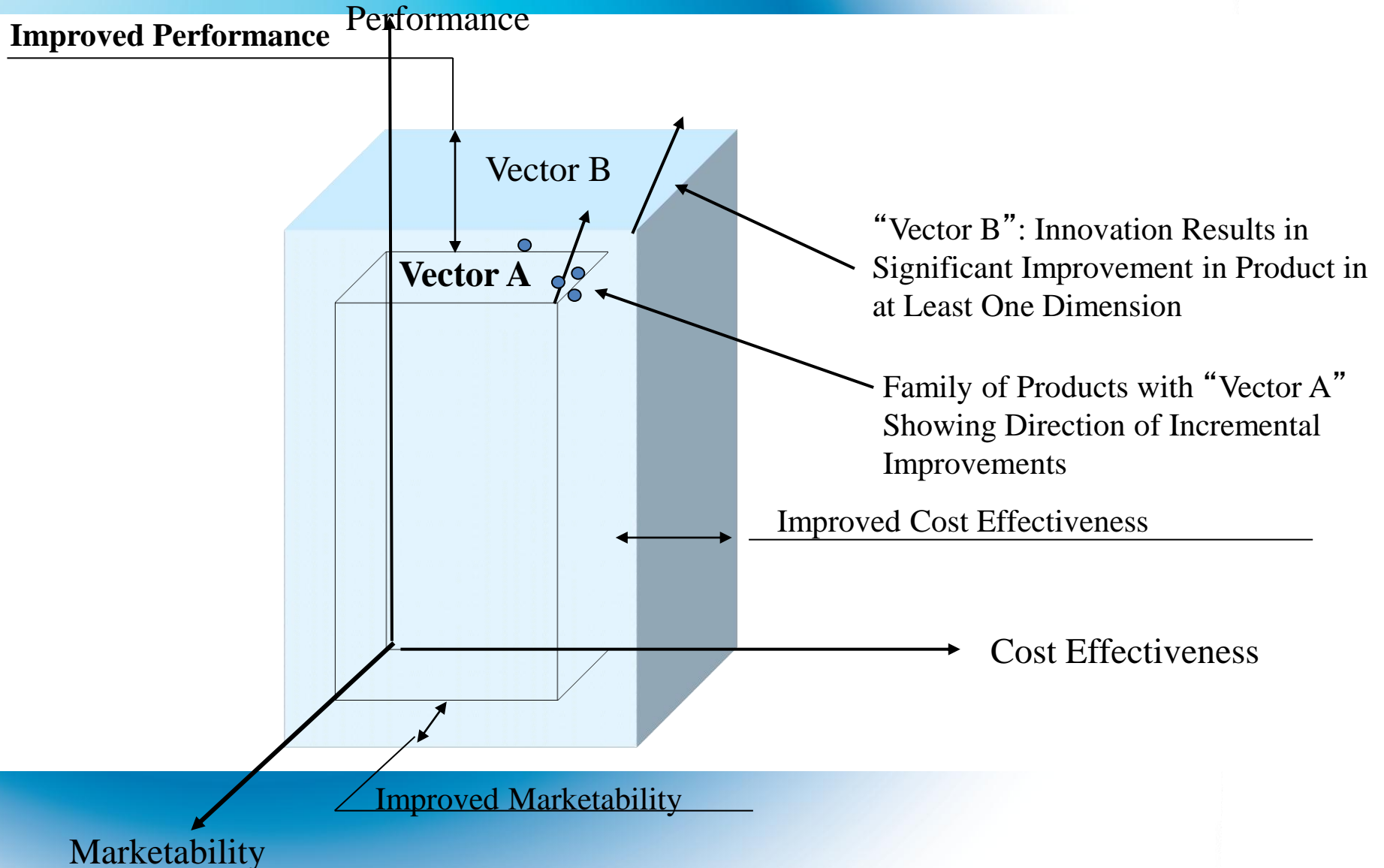




# PROCESS OF INNOVATION

- Process of Innovation is Risky and Uncertain
- Would not be Undertaken if Entrepreneurs Were Rational
- It Requires Technical Finesse and Market Savvy
- Thus Heavy Mortality Rate for Innovating and Non-Innovating Firms

# THREE DIMENSIONS OF PRODUCT AND PROCESS INNOVATION



# INNOVATION

## Market Pull:

- e.g., Energy Efficient Products

## Technology Push:

- e.g., Information Technology; Satellite Communication; Laser Surgery



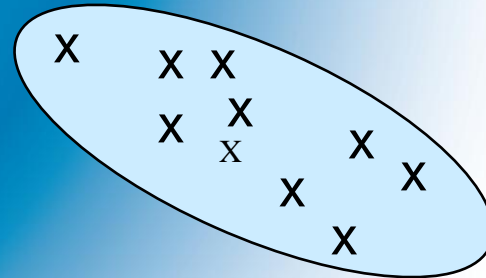
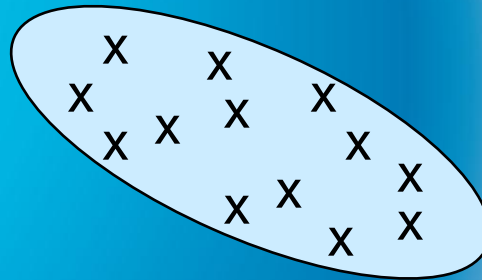
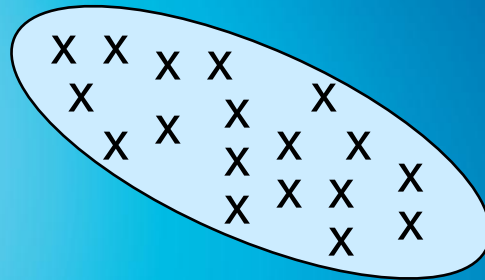
# TECHNOLOGY PUSH

Needs Technology Family Understanding in Terms of:

- Technology
  - Performance
  - Cost Effectiveness
- Engineering Effectiveness
- 
- ```
graph LR; A[Technology] --> D[Engineering Effectiveness]; B[Performance] --> D; C[Cost Effectiveness];
```
- The diagram illustrates the relationship between technology, performance, and cost effectiveness in the context of engineering effectiveness. It features a list of three items on the left: 'Technology', 'Performance', and 'Cost Effectiveness'. Two blue arrows with red outlines point from 'Technology' and 'Performance' towards the text 'Engineering Effectiveness' on the right. 'Cost Effectiveness' is listed below but has no arrow pointing to it.

# FAMILY OF INNOVATIONS

P  
E  
R  
F  
O  
R  
M  
A  
N  
C  
E



COST



# Innovation

```
graph TD; Innovation --> Development[Development of New Technology]; Innovation --> Assessment[Technology Assessment];
```

## Development of New Technology

- Basic Sciences
- Manufacturing Technology:
  - Automation & Robotics
  - Advanced Materials
  - Computers & Information Technology

## Technology Assessment

- Risk Assessment
- Innovation/Diffusion
- Productivity
- Competitiveness
- Cost

# ECONOMICS OF INNOVATION

## Basic Motivations

- Higher profit margins and higher rates of return through premium products
- Larger slices of the pie through adding value in earlier stages of value chain
- Early entry and thus controlling the technological direction
- Increased Marketability (Trade Names, Etc.)

# MASDAR INSTITUTE

MI is six years old and in many respects is similar to SK Tech.

MI is:

- Only graduate education offering MSc, and PhD, focused on science & engineering
- Private, not for profit, independent, governed by a board of trustees
- Research driven with focus on contract research and
- Has been established in cooperation with MIT

# MASDAR INSTITUTE

continued

- MI is established to support the UAE Government's Economic Diversification Plan toward Knowledge Based Economy
- To achieve this diversification they recognized and put in place-six years ago-a semi autonomous government entity called Masdar Initiative to develop the whole value chain required for this transformation

# MASDAR INITIATIVE

- Formed by Abu Dhabi Government to develop a holistic approach necessary for the transformation of the economy
- Put in the complete value chain necessary for a robust innovation to market creation
- To create a demonstration city



# MASDAR VALUE CHAIN

This include development and/or establishment of:

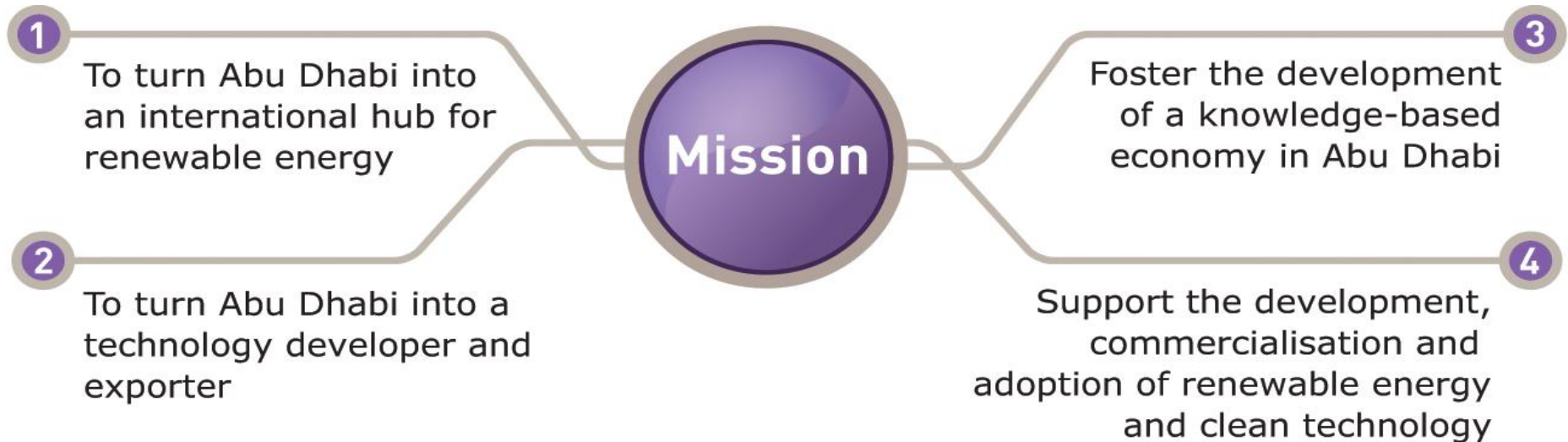
- Human Capital
- R&D Infrastructure conducive to innovation
- Centers or Clusters for “proof of concept”
- Incubation Environment
- Promotion of Regulatory Framework necessary to its mission

# MASDAR VALUE CHAIN

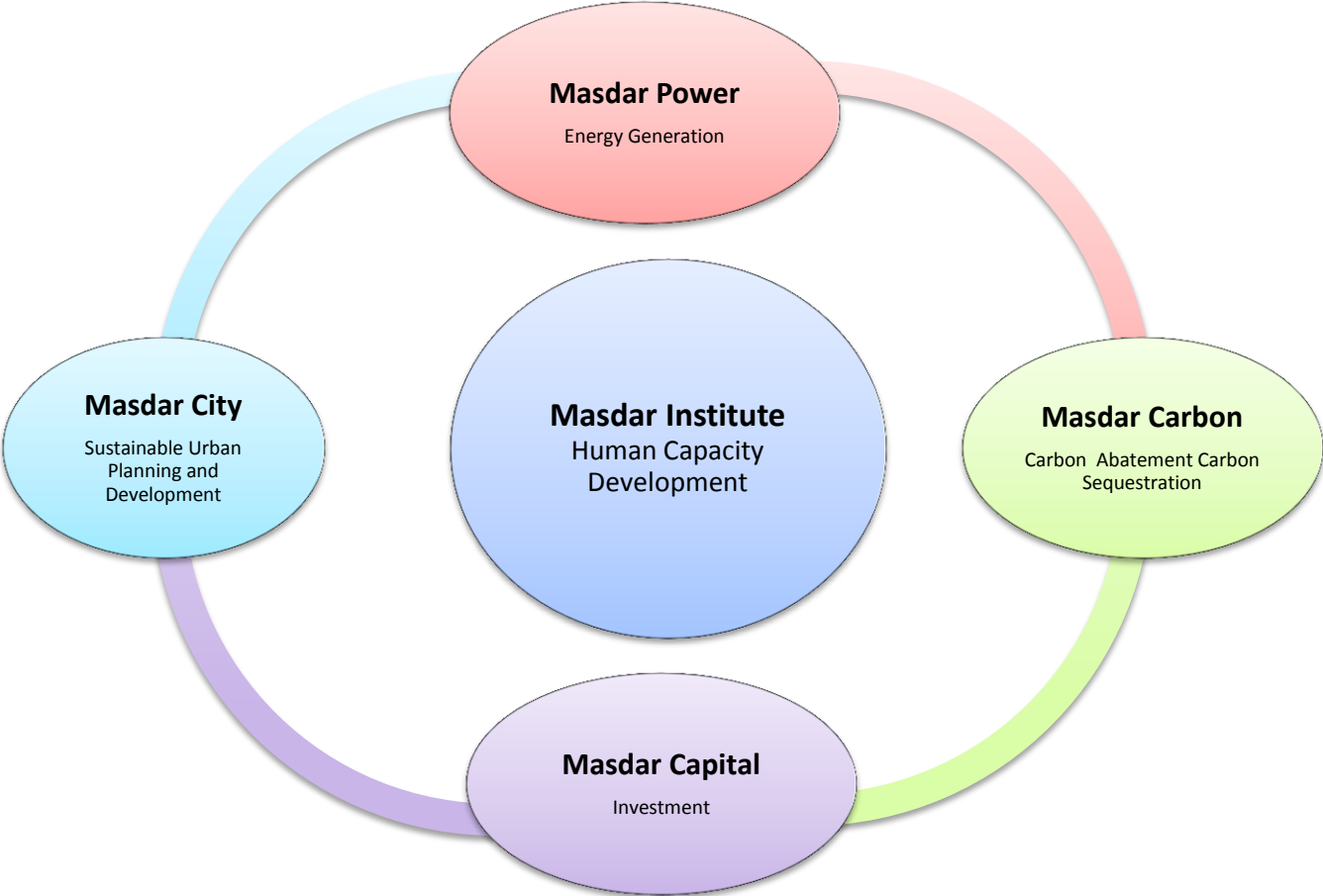
continued

- Buy in's from government, industry, and academia
- Venture Capital
- Incentive for promotion of Entrepreneurship and Start-ups
- Creation of Joint Ventures with Multinationals to promote R&D, creation of intellectual properties and,
- Development of “Masdar City” as an Innovation Hub

# MASDAR'S MISSION



# MASDAR GROUP



# ROLE OF MASDAR INSTITUTE

- Primarily to participate in the development of the Human and the Intellectual capital necessary for the Knowledge Economy
- To play a major Role in the establishment and the promotion of a Robust R&D Infrastructure
- To establish and participate in the development of “Centers for the Proof of Concept”
- To participate in the development of an “Entrepreneurship Culture”



# TASKS

- Capital Formation
  - Human
  - Intellectual
  - Financial
- Market Creation
  - Entrepreneurship
  - Start-ups
  - Joint Ventures



**“Unobtanium** is a material that weighs nothing, is enormously strong, withstands high temperatures, lasts forever, is easy to make, and costs almost nothing.”

THANK YOU

