

# Research & Human Resource Needs of Industry

Joe Miller  
Corning Incorporated  
December 3, 2006



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Discovering Beyond Imagination

# Culture and Commitment to Innovation



Glass envelope  
for Thomas  
Edison's light  
bulb



Processes for mass  
producing the  
television bulb



Ceramic substrates for  
automotive catalytic  
converters

1879

1915

1947

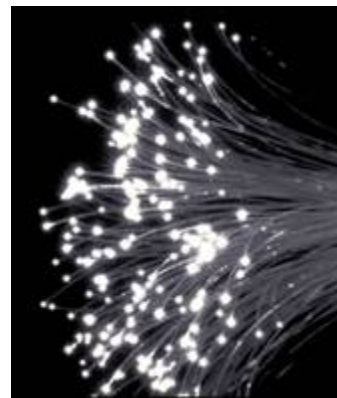
1970

1972

1984

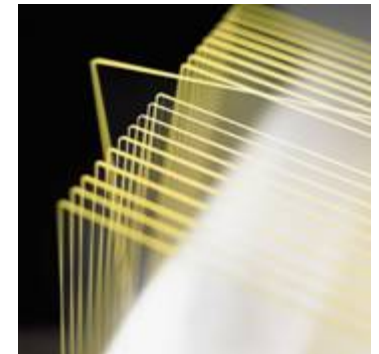


Heat-resistant  
Pyrex<sup>®</sup> glass



First low-loss  
optical fiber

AMLCD glass for  
computers and  
large screen TVs



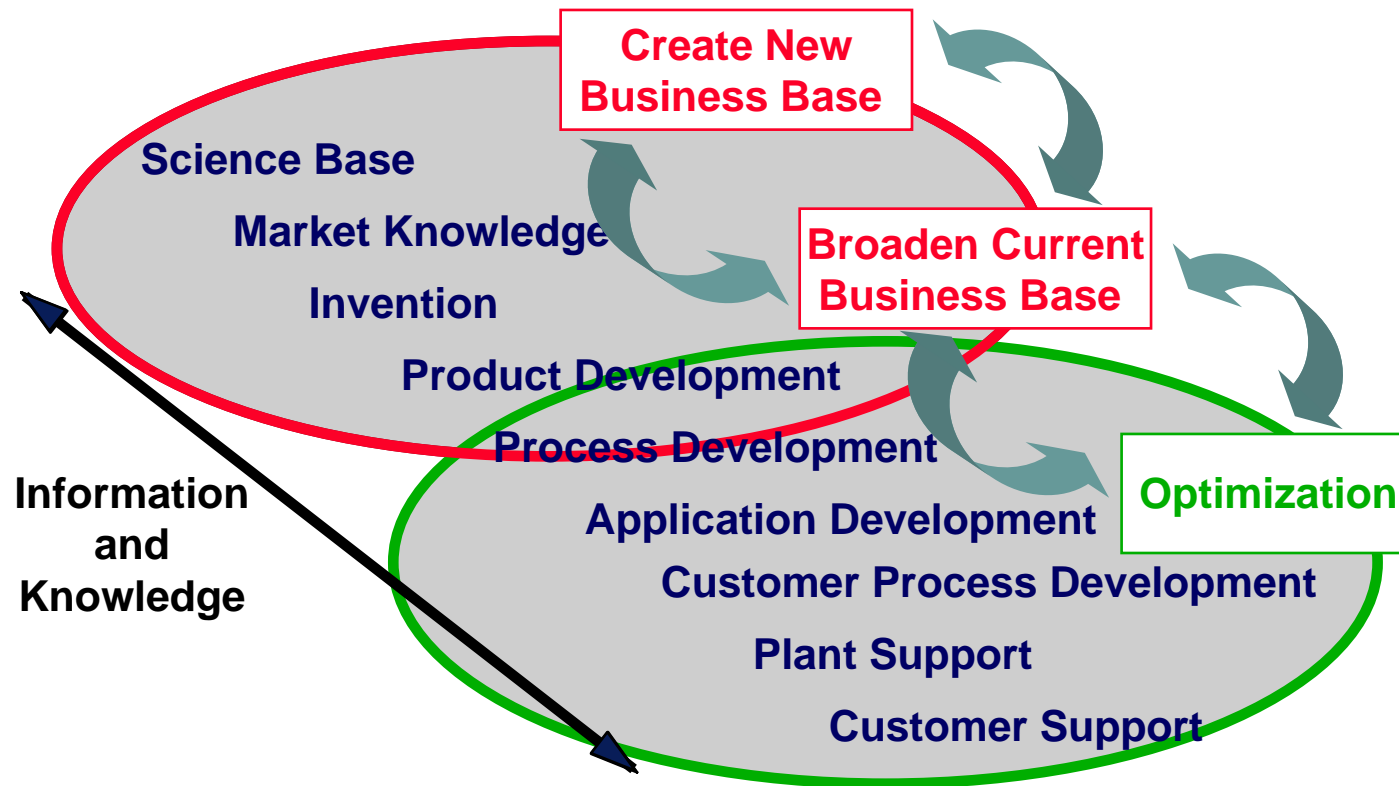
# Industrial Innovation

The Need to Grow through Innovation  
and Create the New ... Drives Our Actions

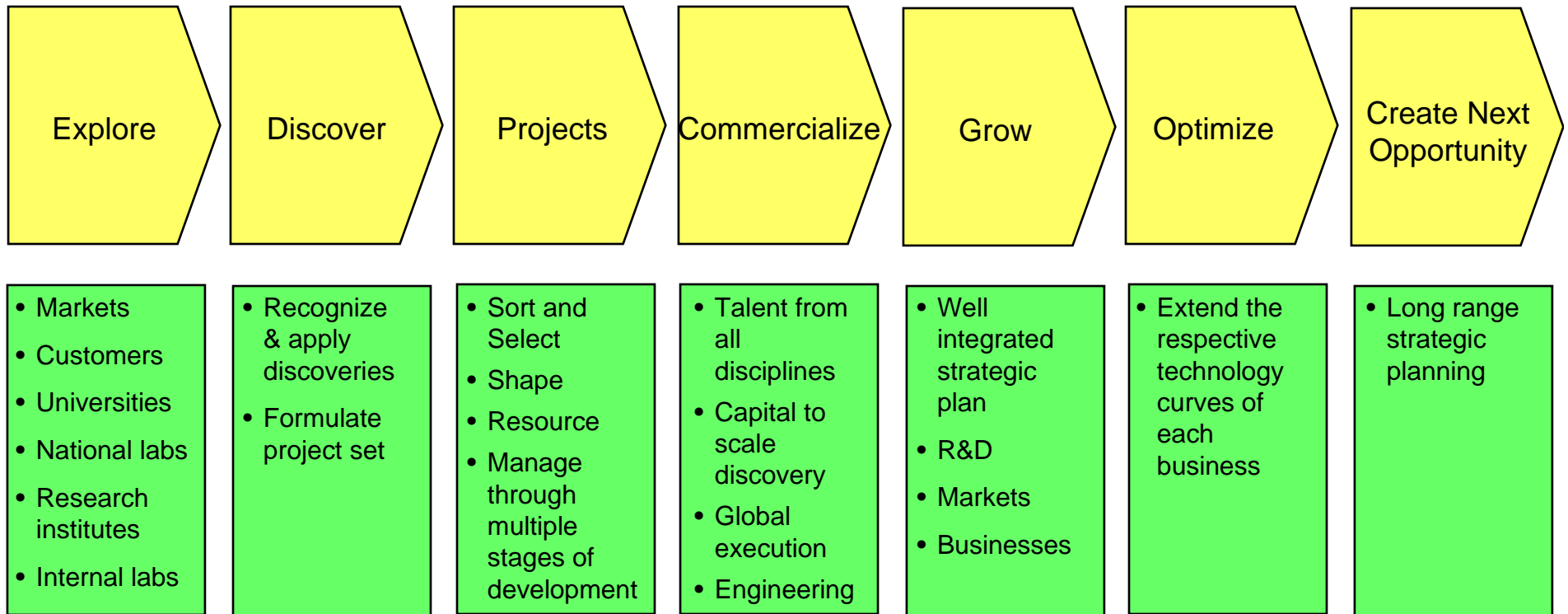


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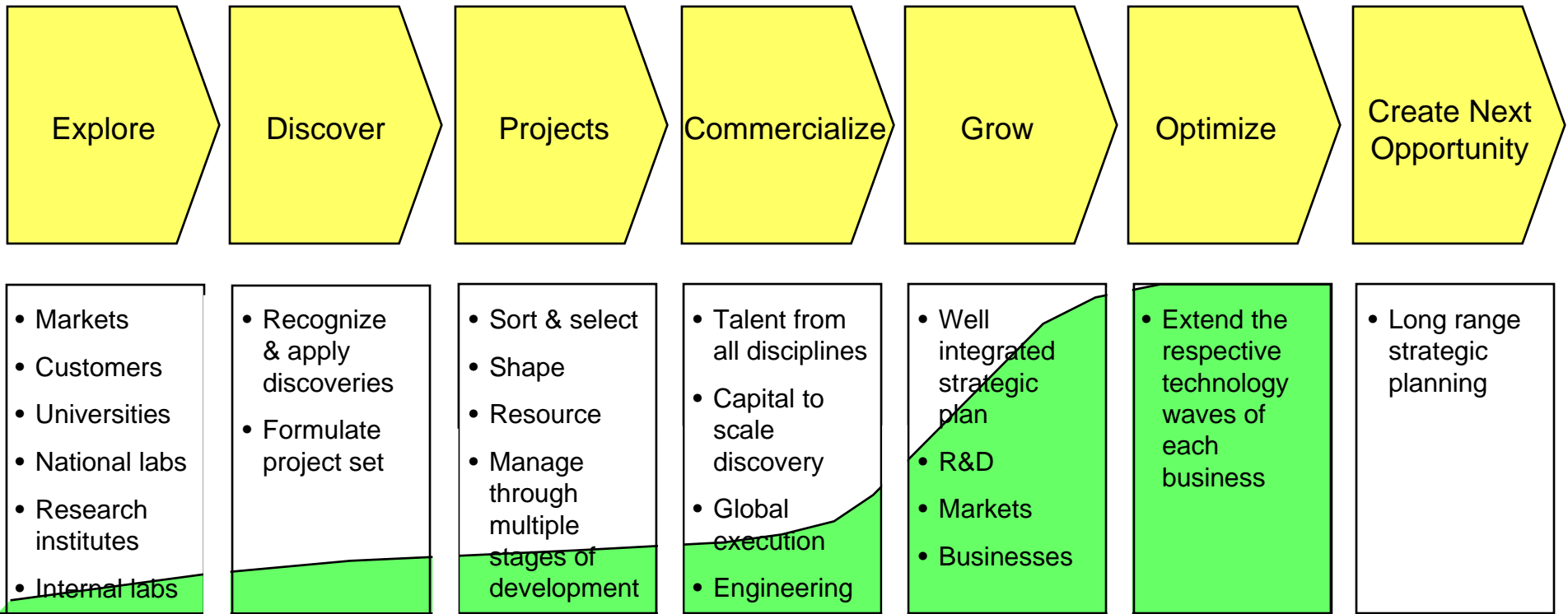
# Innovation Model – Integrating Science and Markets



# Innovation Process Model



# Innovation Process Model



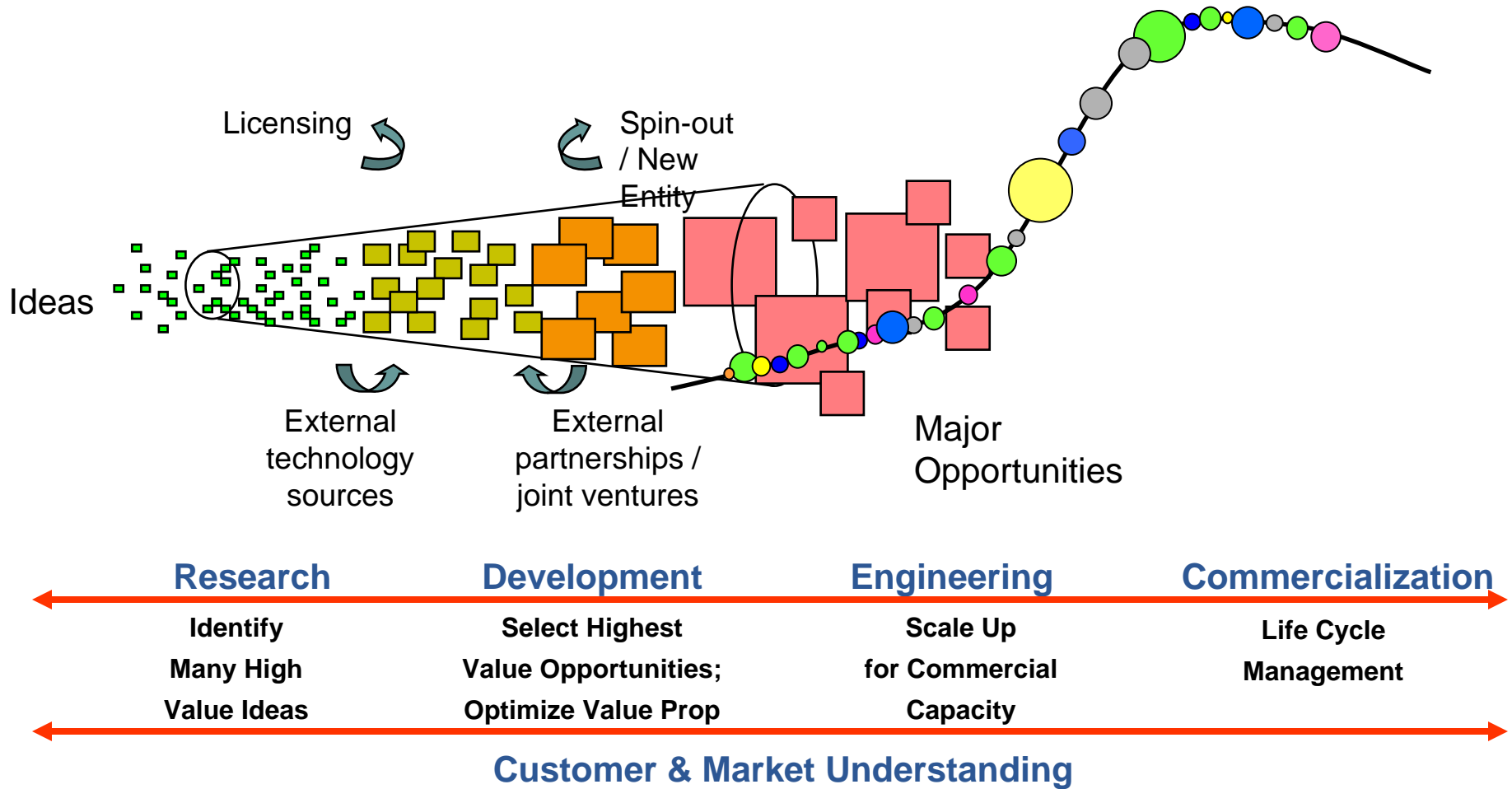
 Investment Curve

# Innovation Process Model

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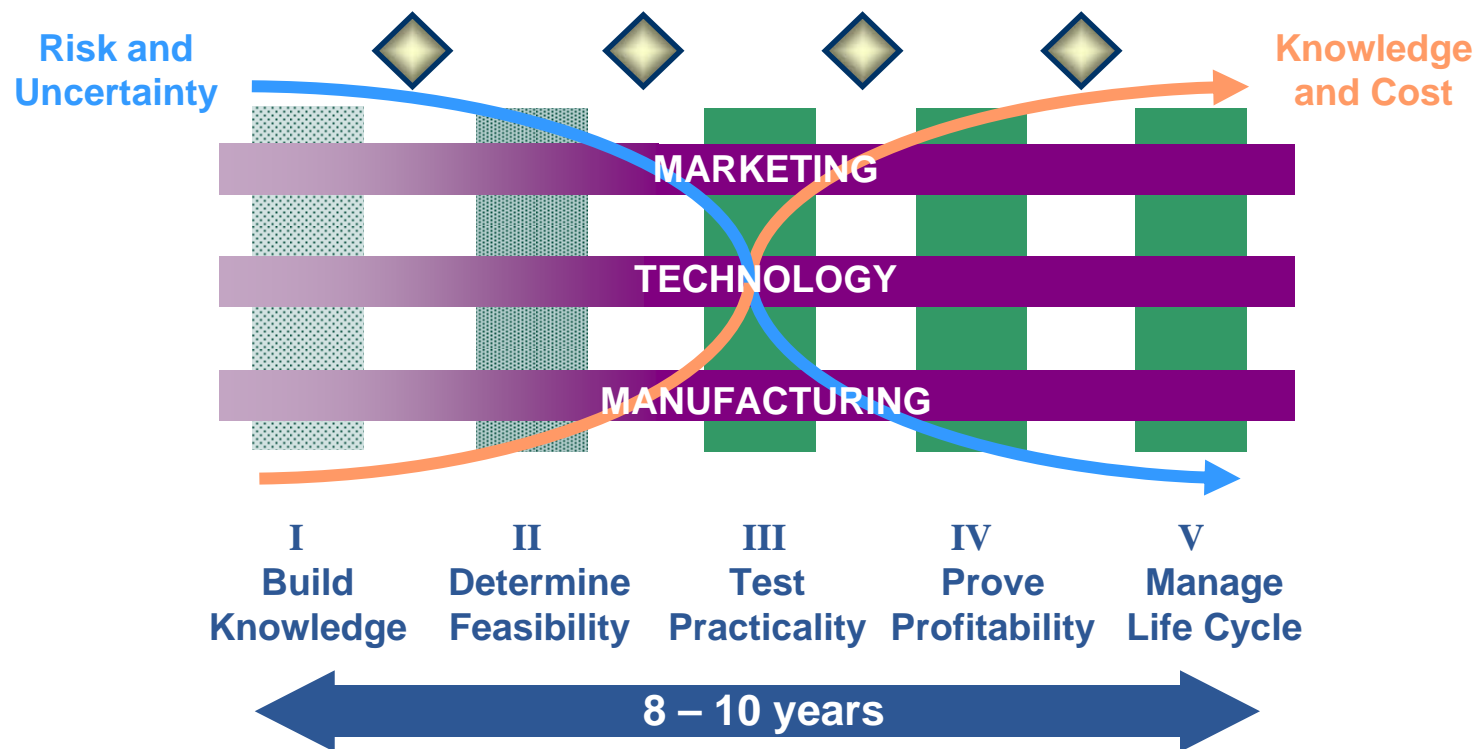
- Defines a pipeline
- Dictates activities and skills
- Requires integration of skills / capabilities to create uniqueness and value

# Innovation Pipeline Dynamics



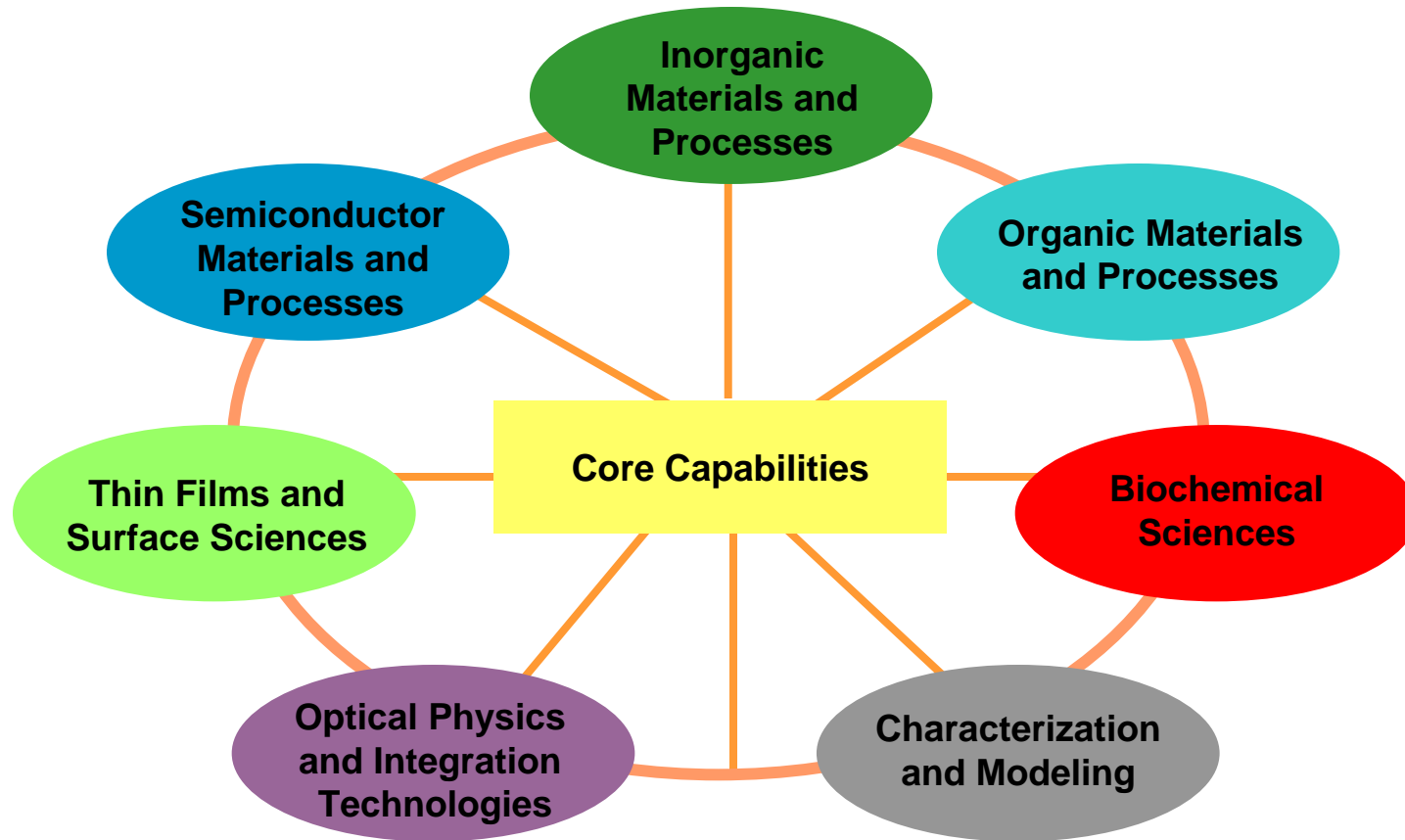


# Innovation Pipeline Dictates Activities

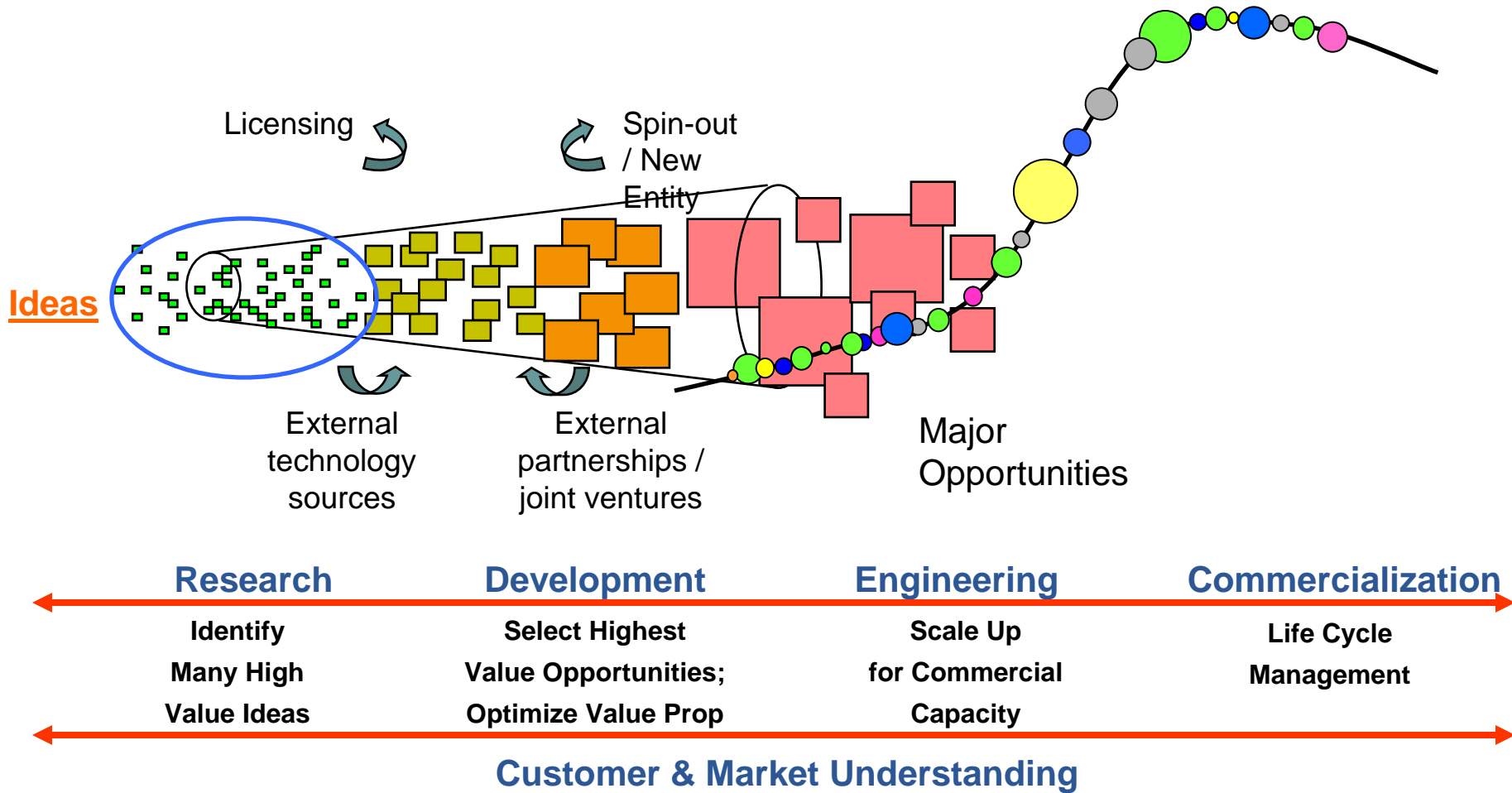


# And Drives Integration of Skills and Capabilities to Create Uniqueness and Value

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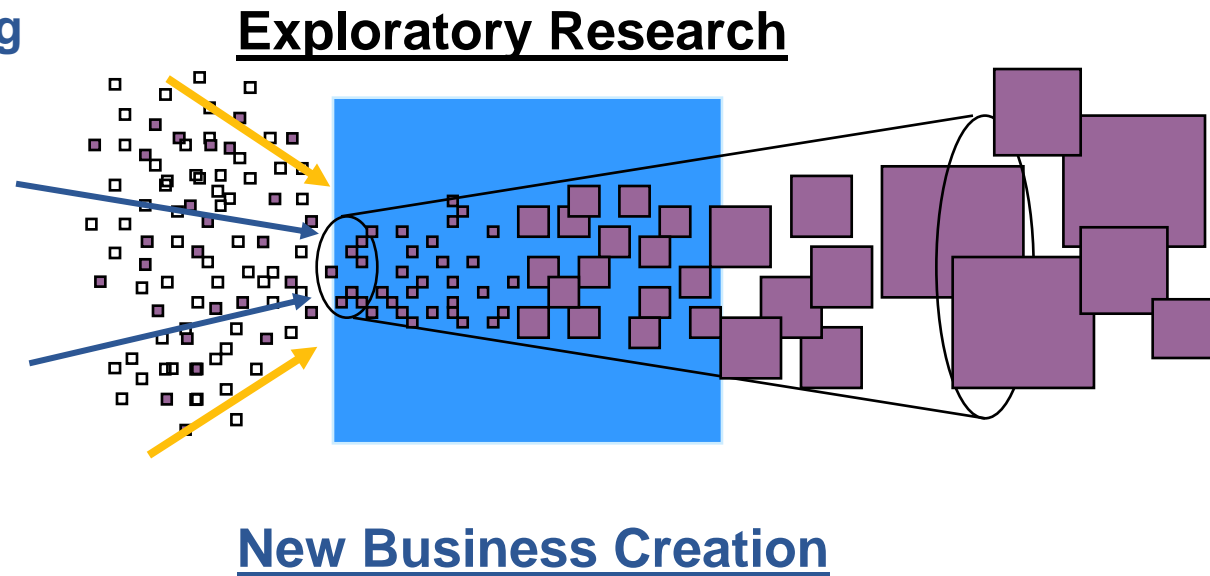


# Ideas, Ideas, Ideas – The Front End Differentiates

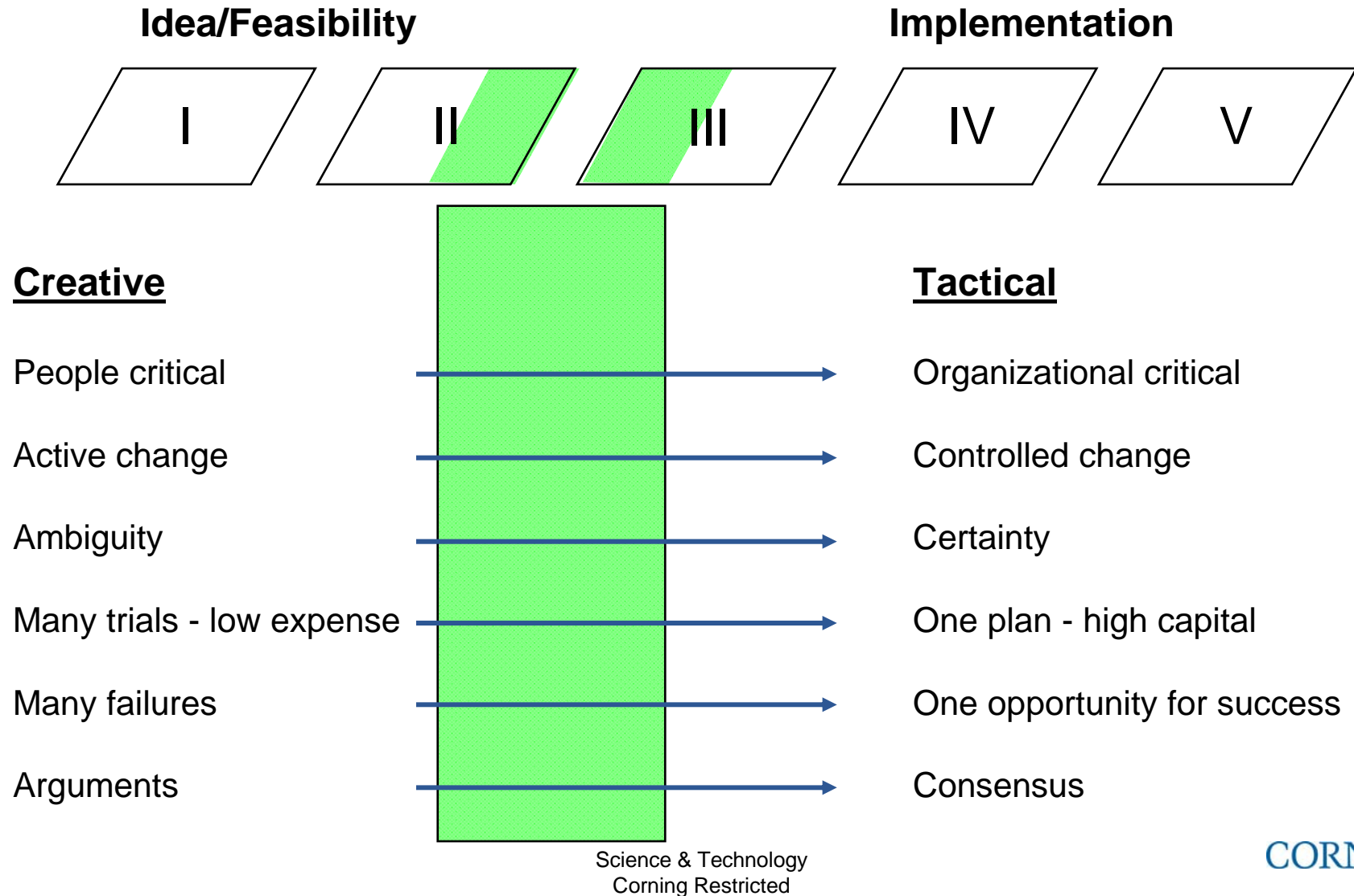


# Ideas Come From Many Sources

- Early Stage Marketing
- Internal Labs
- Research Institutes
- Universities
- Government
- Customers
- Global



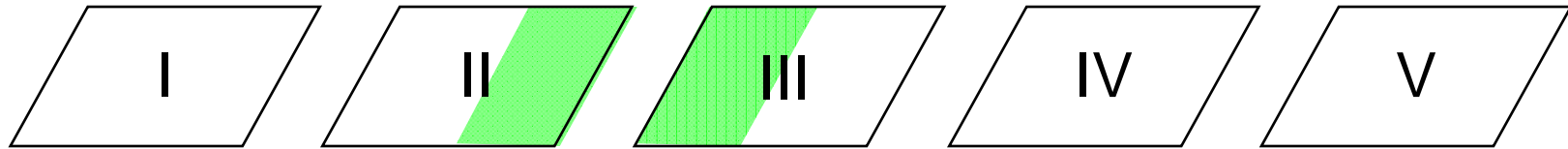
# Different Skills Needed At Different Innovation Stages



# Many Compete with Superior Execution Skills

## Idea/Feasibility

## Implementation



### Creative

People critical

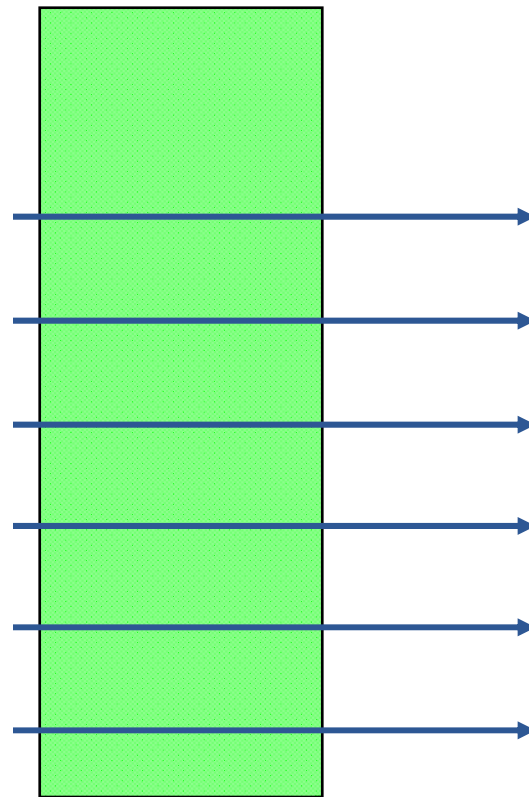
Active change

Ambiguity

Many trials - low expense

Many failures

Arguments



### Tactical

Organizational critical

Controlled change

Certainty

One plan - high capital

One opportunity for success

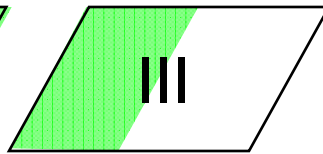
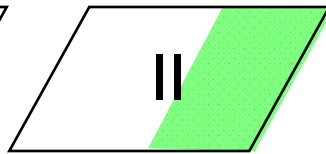
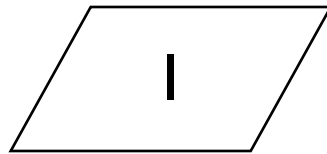
Consensus

Science & Technology  
Corning Restricted

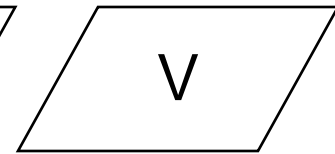
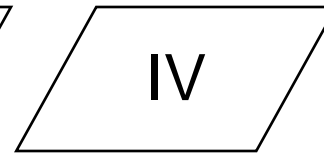
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# Creative Skills Define the Quality of Innovation

## Idea/Feasibility

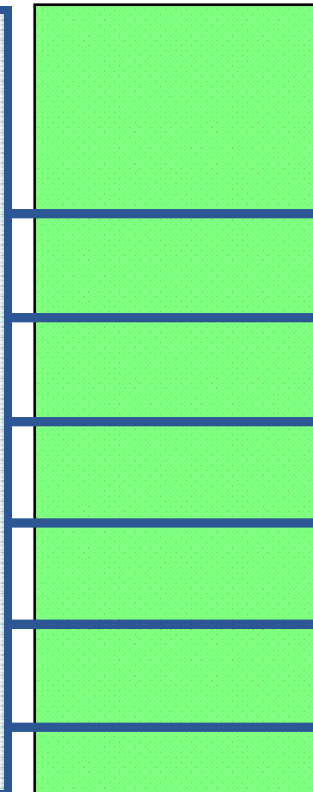


## Implementation



**Creative**

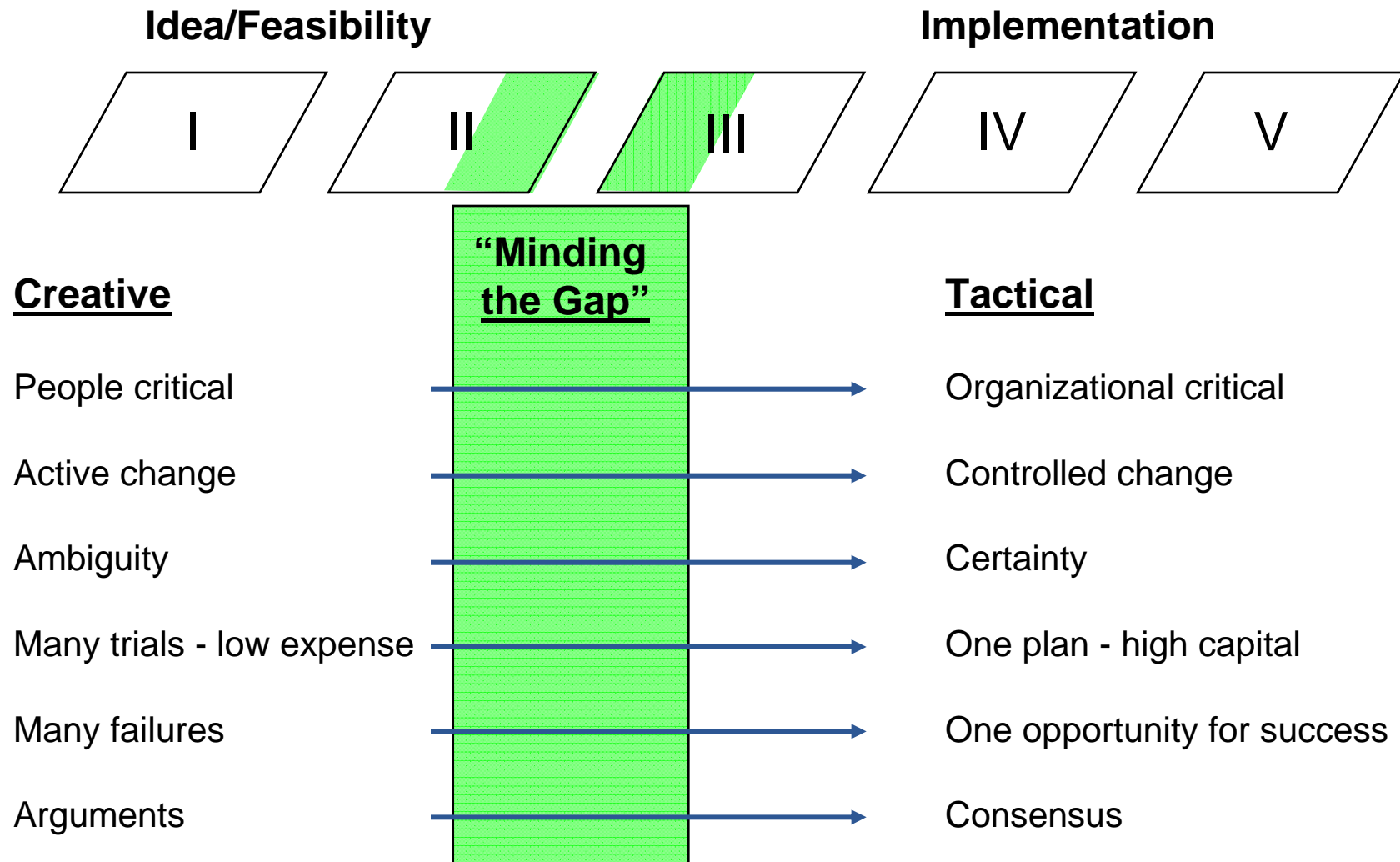
- People critical
- Active change
- Ambiguity
- Many trials - low expense
- Many failures
- Arguments



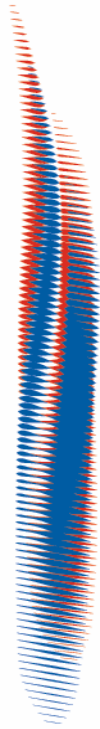
## **Tactical**

- Organizational critical
- Controlled change
- Certainty
- One plan - high capital
- One opportunity for success
- Consensus

# Skills to Mine the Gap are the Most Challenging







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