

# Management of Creativity and Innovation in the Technology Era

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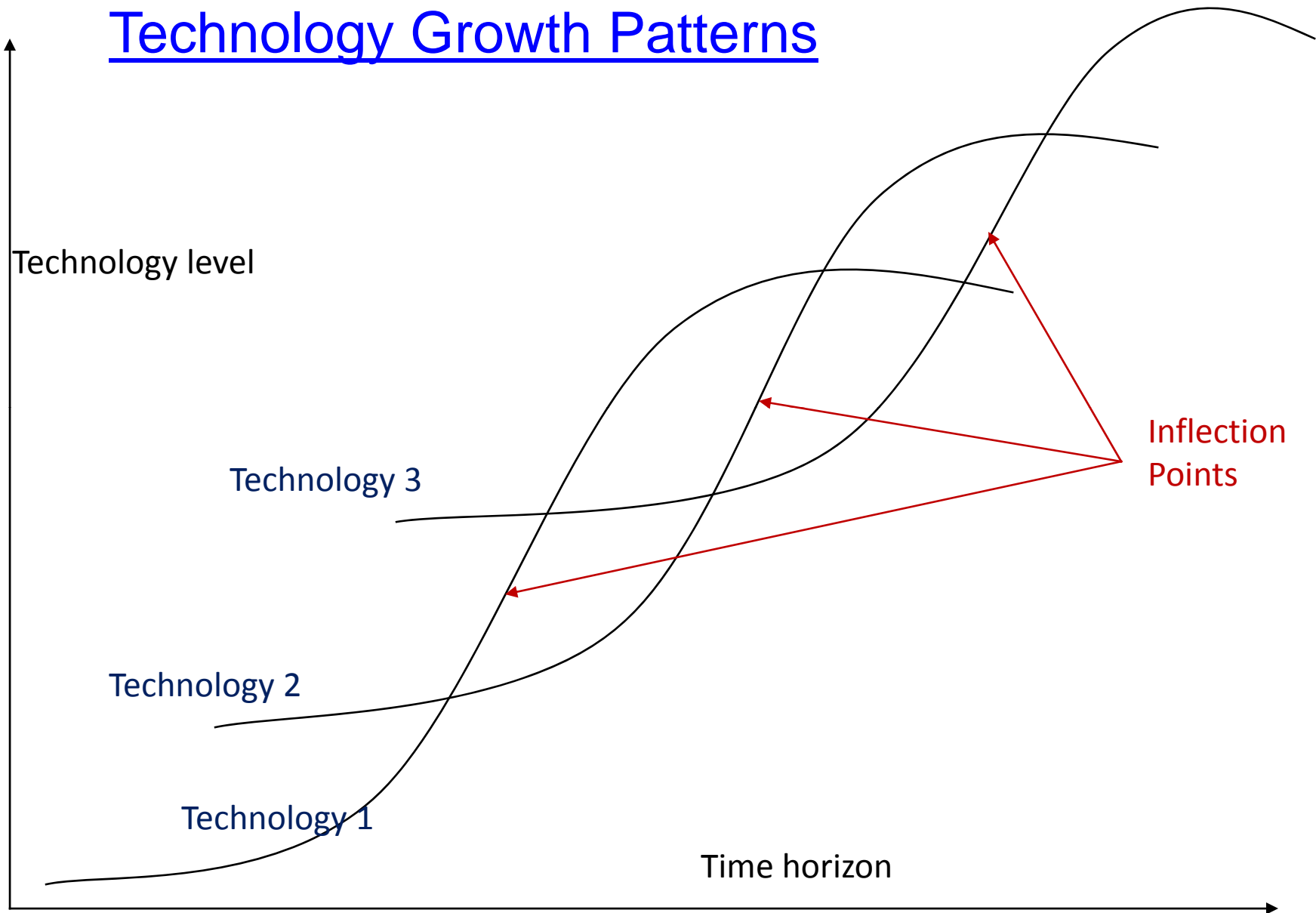
“... The genius of the future lies not in technology alone, but in the ability to manage it.”

BELL ATLANTIC

Andy Grove, Intel co-founder and former CEO, says:

*“Only the paranoid survive”*

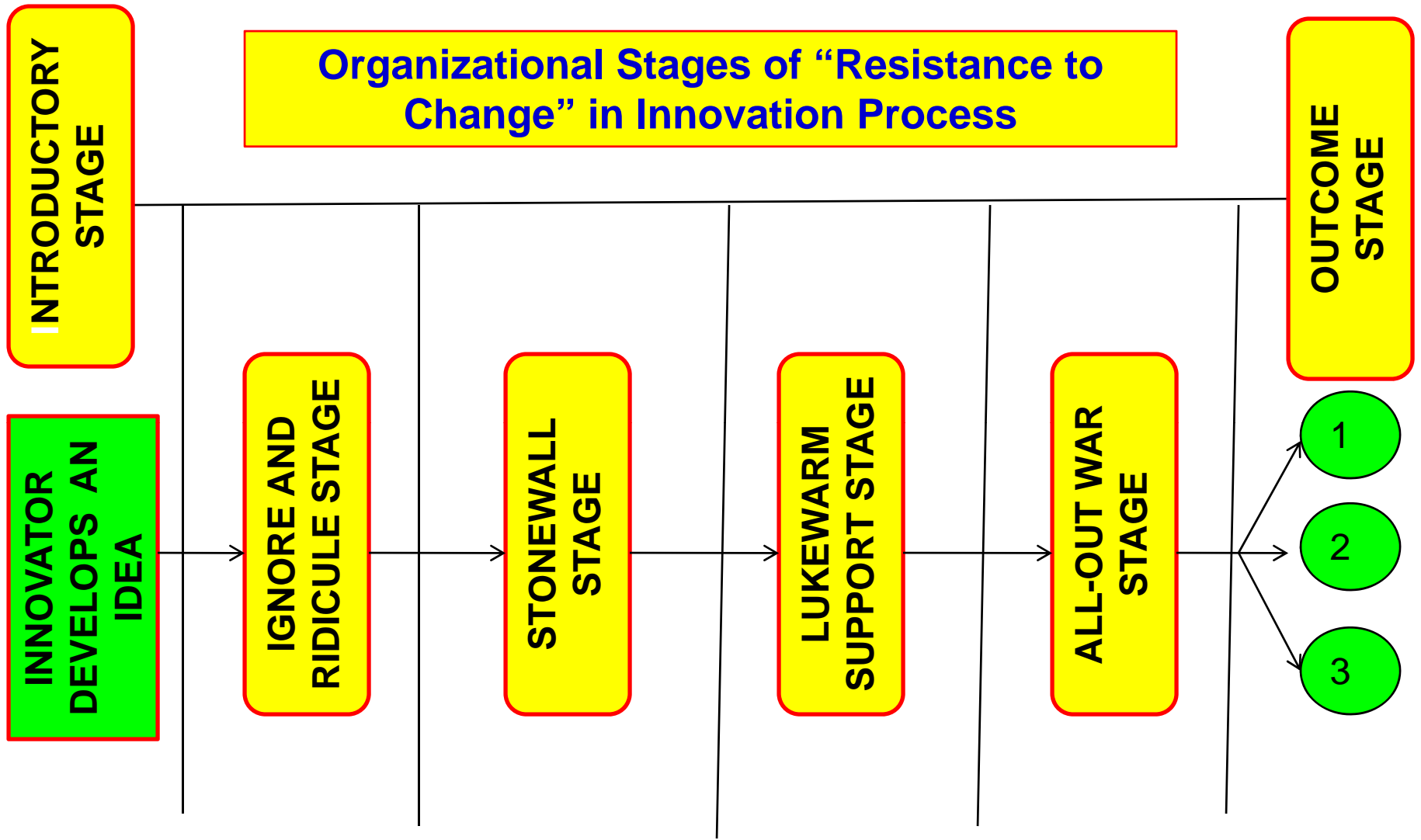
# Technology Growth Patterns

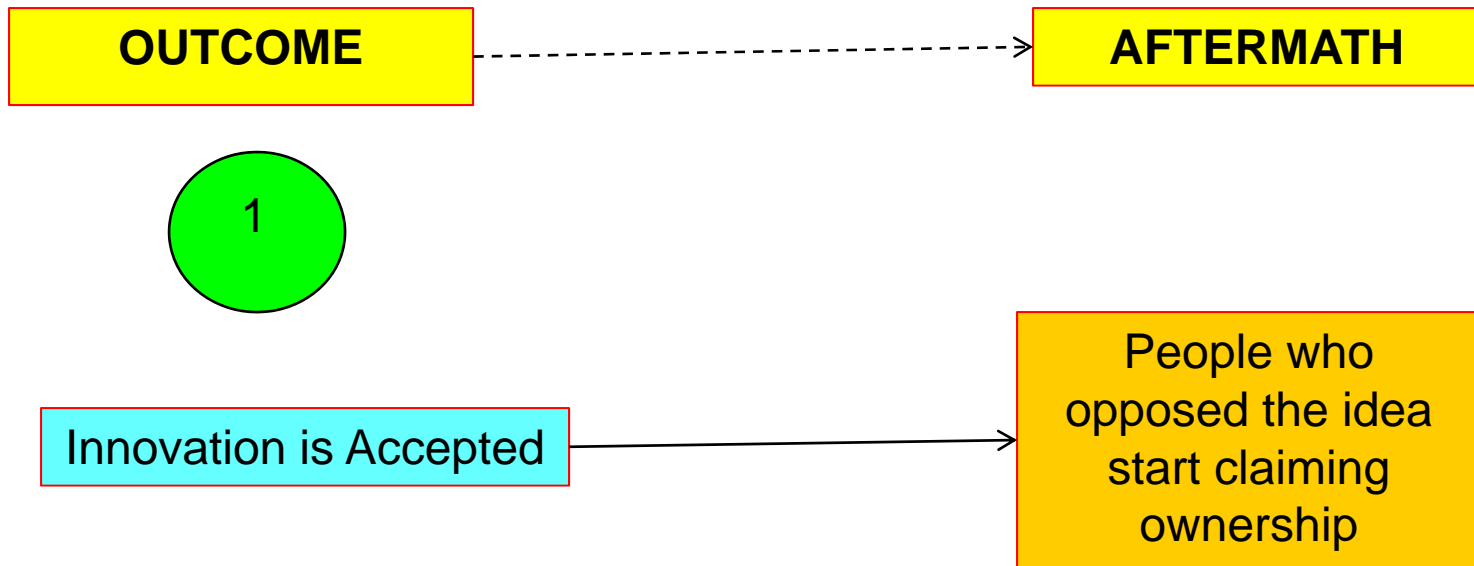


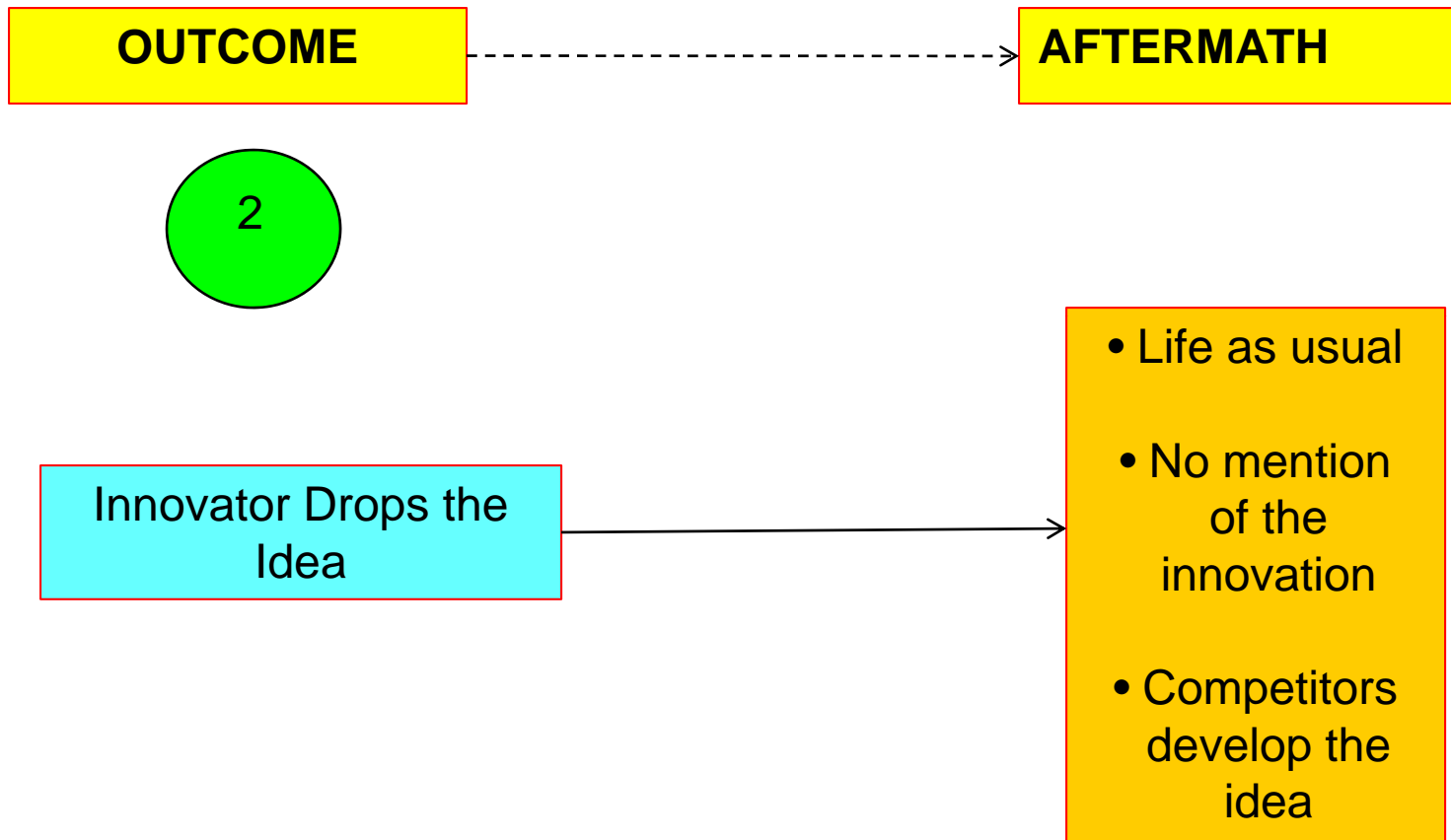
# Machiavelli on Innovators

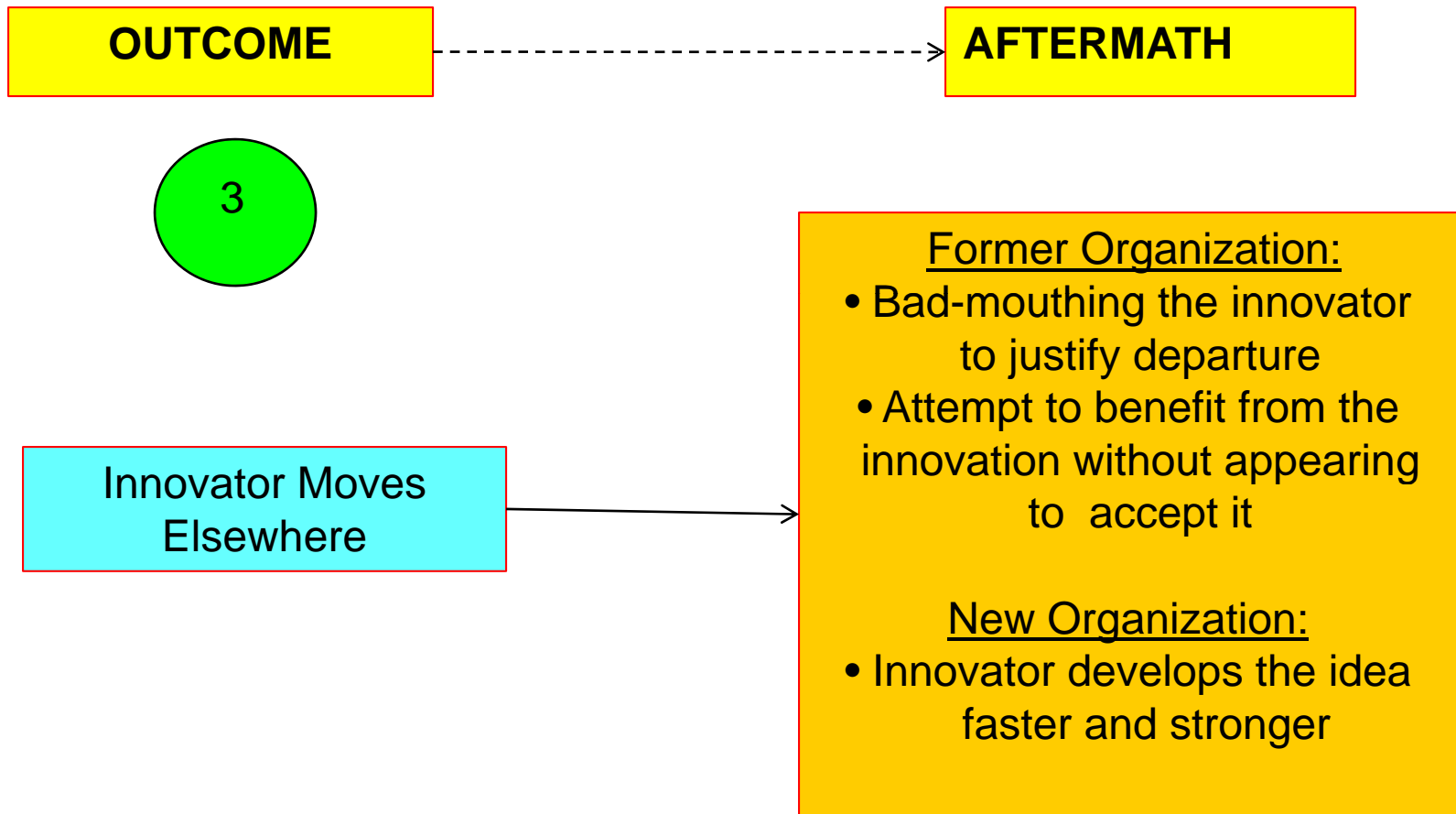
“It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institutions and merely lukewarm defenders in those who should gain by the new ones.”

*Source: “From The Prince” by Niccolo Machiavelli, translated and edited by Thomas G. Bergen; (copyright 1947), Crofts Classics, p.15*









# Innovation Process

- Developing a creative idea
- Testing the idea to form a concept
- Converting the concept to design
- Converting the design to prototype
- Commercializing the technology

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# CREATIVITY

“A new creative idea is like a baby. You can not just bring it into the world and expect it to grow up and be a success. It needs a mother (enthusiasm) to love it and keep it going when things are tough.

It needs a pediatrician (expert information and technical skills) to solve the problems the mother can not cope with alone. And it needs a father (authority with resources) to feed it and house it. Without any of these, the baby may still turn out all right, but its chances of survival are a lot lower.”

J. B. Quinn

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# Testing the Innovative Ideas for Emerging Technologies

- Are there any known uses for this technology?
- What might this technology do that other technologies can not do?
- Can we make it? Do we want to produce it? If we can not make it, can we source it?
- Where is the path of this technology likely to lead?

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## Testing the Innovative Concepts for Emerging Technologies

- Are there any *direct* competitors for this technology? What and who are the likely *indirect* competitors?
- Who else might be working on this technology? What do we know about their development objectives?
- What factors might limit the use/application of this technology?

## Testing the Innovative Concepts for Emerging Technologies (con'd)

- What might limit the life of this technology?
- Does this technology fit the company's strategies?
- What core competencies appear to be needed to make this technology successful?

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## Testing the Innovative Emerging Technology at the Prototyping Stage

- What insight can be gained from citation analysis about applications of similar technologies?
- What information can be obtained from competitive analysis about others working on this technology?
- How can simulation help to consider and evaluate various product options?

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# Testing the Commercialization of Innovative Emerging Technologies

- What forces in the market appear to make this technology attractive and unattractive from a commercialization viewpoint?
- What pertinent information can be obtained from the customer by utilizing focus groups?
- What information can be obtained on current market applications through patent searches to protect the organization's intellectual property?

## Testing the Commercialization of Innovative Emerging Technologies

- How can potential customer feedback about a specific product help to gauge viability in the market?
- Does this seem to be the right time to commercialize this technology?

# Key Characteristics of Successful Innovations

- Creative People
- Management Support
- Idea Champions
- Organizational culture conducive to innovations

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# Creative People

- Discover, hire and recognize creative people who are able to cope with ambiguity and uncertainty
- Teach people to use their creative potential on a reliable basis
- Ensure that the teams have decision making power
- Improve communication between *research* and *development* to support internal technology transfer

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# Management Support

- Link business strategy, product strategy and product-specific decisions
- Repeatedly explain to top management and remind the unique needs of the technical/creative groups
- Produce technical breakthroughs that utilize the results of creativity for the benefit of the parent organization to assure continuous support

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# Idea Champions for Technological Innovations

- ◆ Typically from the technical side (rather than business development)
- ◆ Respected in the company
- ◆ “Out-of-the-box” thinkers
- ◆ Have understanding of the way the company works
- ◆ Able to get things done

# Idea Champions for Technological Innovations

- ◆ Have strong informal authority
- ◆ Understand how organization works
- ◆ Willing to put their careers on the line
- ◆ Have strong emotional ties to the innovative project
- ◆ Have loyalty of people working in the project

# Key Characteristics of Successful Innovations

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- Idea Champions
- **Organizational culture conducive to innovations**

# Organizational Culture Conducive to Successful Innovations

A culture that

- encourages communicating, sharing and retaining innovative ideas
- rewards the “inquire, learn, create” model, rather than the “read, memorize, repeat” model

# Organizational Culture Conducive to Successful Innovations

A culture that

- allows and encourages risk taking behavior
- accepts and learns from mistakes rather than a being slave to them
- revolves around leaders rather than bosses

## BOSS OR LEADER?

The boss drives employees;  
The leader coaches them.

The boss depends on authority;  
The leader on good will.

The boss inspires fear;  
The leader inspires enthusiasm.

The boss says "I";

The leader says "we".

The boss fixes the blame for the  
breakdown;

The leader fixes the-breakdown.

The boss knows how it is done;  
The leader shows how.

The boss says, "go";

The leader says, "let's go"

# Questions?