



# Technology-based Business Transformation

ESD.57 – Fall 2007

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Society

Business

Technology

# Class Overview

- Technology-based innovation and business survival
- Formulating a market strategy around a new, disruptive, complex technology
- Executing a multi-faceted strategy in the marketplace
- Organizational and cultural Issues
- Class project presentation and discussion

# e-business = Web + IT

## Industrial Strength

Database Transactions  
Scalability Systems Mgmt  
Availability  
Security



IT

Web

## Standards

SET  
TCP/IP HTML SSL  
HTTP Browsers Java  
Web Servers GUIs

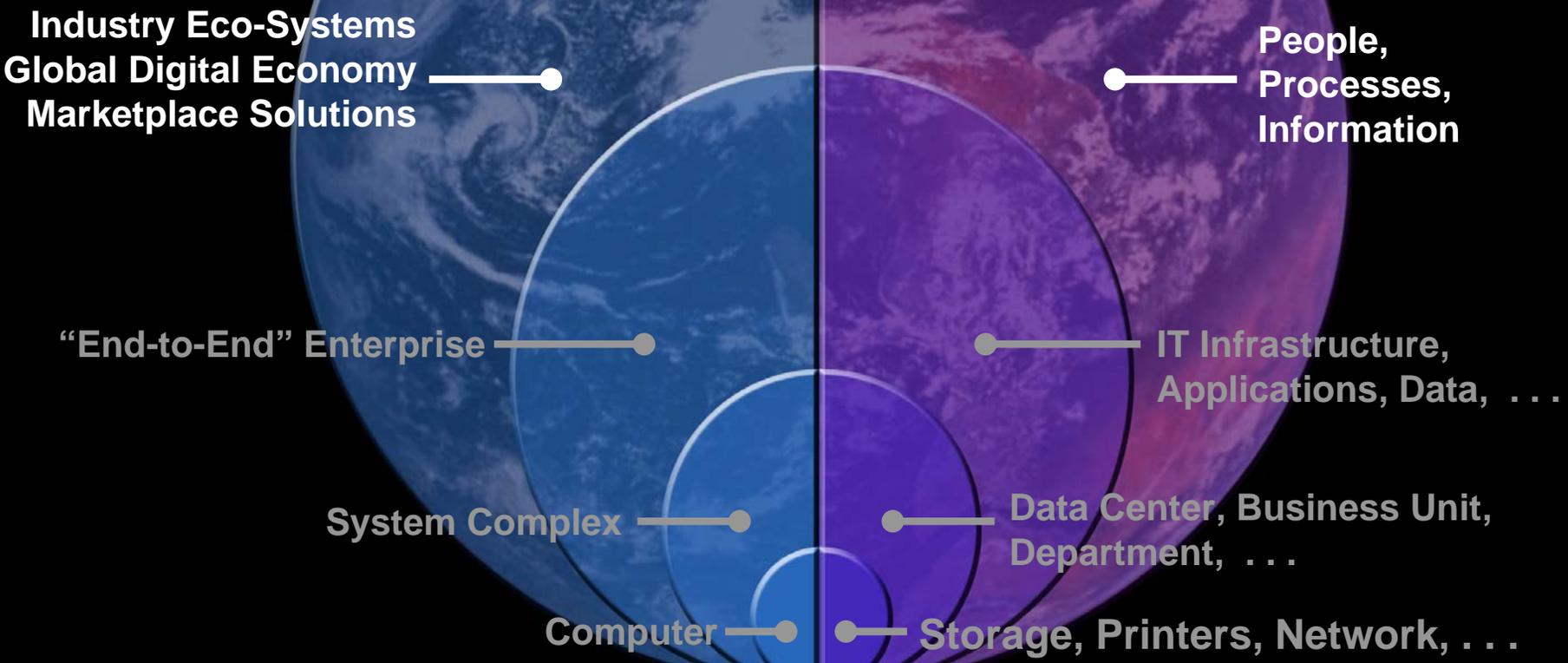
# Executing IBM's Internet strategy in the marketplace

## *Key Organizational Factors*

- **Balance between proprietary and open**
  - Did not participate in “browser wars”, looked at browser as “basic dial tone”
  - Embraced open source Apache web server vs “http” internal effort
  - Focused internal efforts on proprietary enterprise quality software: WebSphere built on Apache and other open source components
- **Build in-house vs partnerships and acquisitions**
  - Made a number of key acquisitions to build up software and services business: Lotus, Tivoli, . . .
  - Partnered extensively, including with major competitors: Java with Sun
- **Market offerings – key focus and segments**
  - Focused on key areas where IBM had skills and enterprise had needs: hosting, security, back end integration, web application servers, . . .
  - Organized offerings around Content, Collaboration and Commerce
- **Financial and Market measurements**
  - Tracked directly a number of key, “pure” Internet projects
  - Focused primarily on larger Internet impact on overall revenues, key client engagements, and market impact
  - Reviewed progress closely with CEO and top senior management

# Evolution of Systems

## *Breadth and Scope*



# Evolution of Systems: *Up the Stack*

**Business**



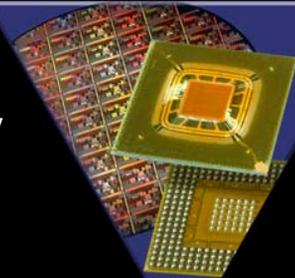
**Applications**



**Products**



**Technology**



# Enlightened Experimentation

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Quote from the book below stating that new technologies make experimentation easier, which is the pathway to innovative new products.

*Enlightened Experimentation:  
The New Imperative for Innovation  
– Stephan Thomke*

# New technologies enabling rapid, collaborative, inexpensive experimentation

- Internet, Web, Web 2.0, Social Networks
- Inexpensive IT systems, open source software
- Sophisticated simulation using powerful supercomputers
- Highly realistic, interactive, visual models
- Vast amounts of information, advanced information analysis

# Enlightened Experimentation

## *Essential Factors*

- Organize for rapid experimentation
  - Revamp entrenched routines, organizational boundaries and incentives
  - Small development teams with key people who can iterate rapidly
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# Democratizing Innovation

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Quote from book below about how both businesses and individuals are increasingly able to innovate for themselves, creating exactly what they need, often building upon innovations developed and shared by others, rather than relying on a manufacturer to deliver an imperfect solution.

*Democratizing Innovation – Eric von Hippel*

# Essential Definition

The “functional” source of innovation depends upon the *functional* relationship between innovator and innovation:

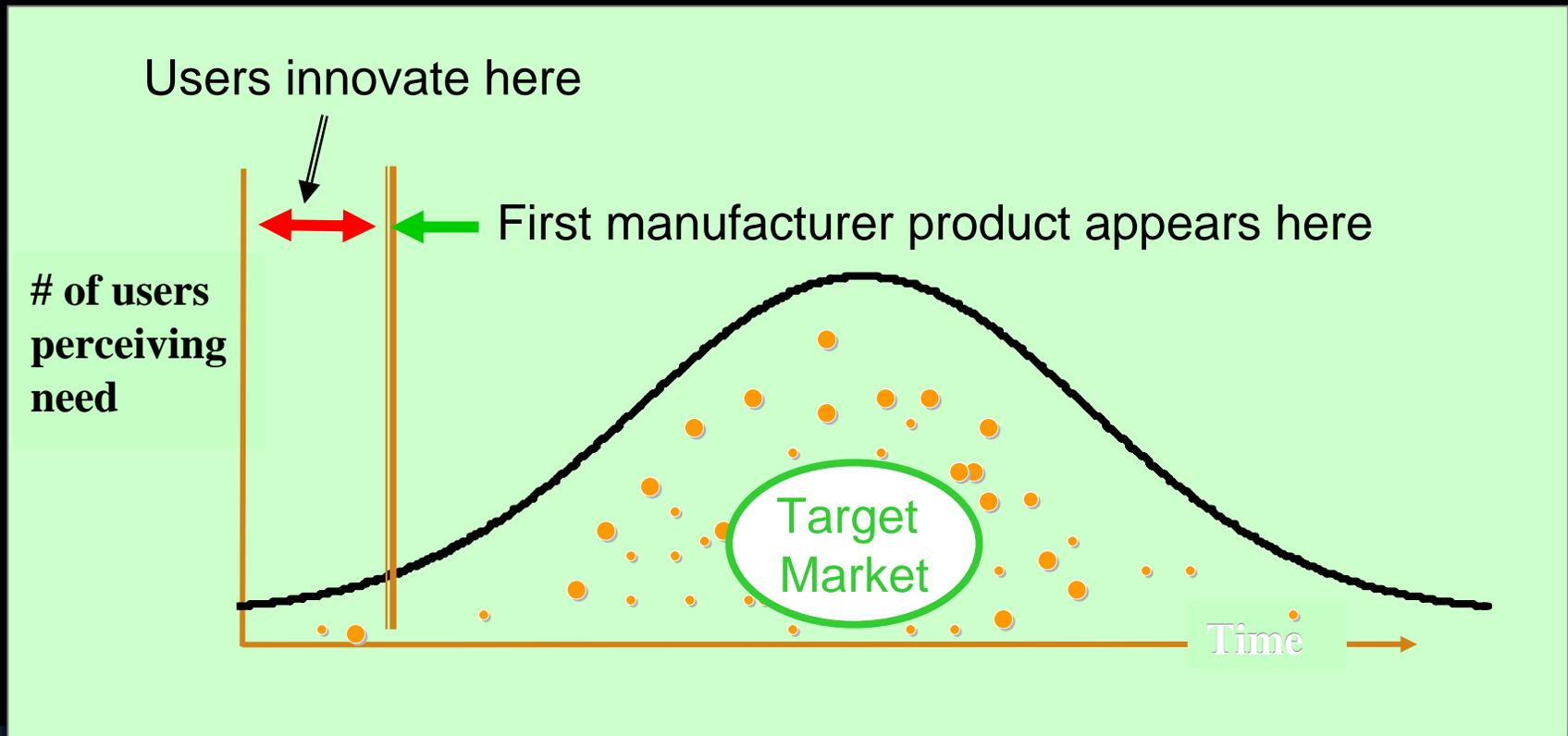
- An innovation is a **USER innovation** when the developer expects to benefit by USING it;
- An innovation is a **MANUFACTURER innovation** when the developer expects to benefit by SELLING it.

## Traditional, Manufacturer-Centered Innovation Paradigm

Manufacturers identify user needs, develop products at private expense, And profit by protecting and selling what they have developed.

## User-Centered (Democratized) Innovation Paradigm

Lead Users innovate to solve their own needs at private expense - and then freely reveal their innovations

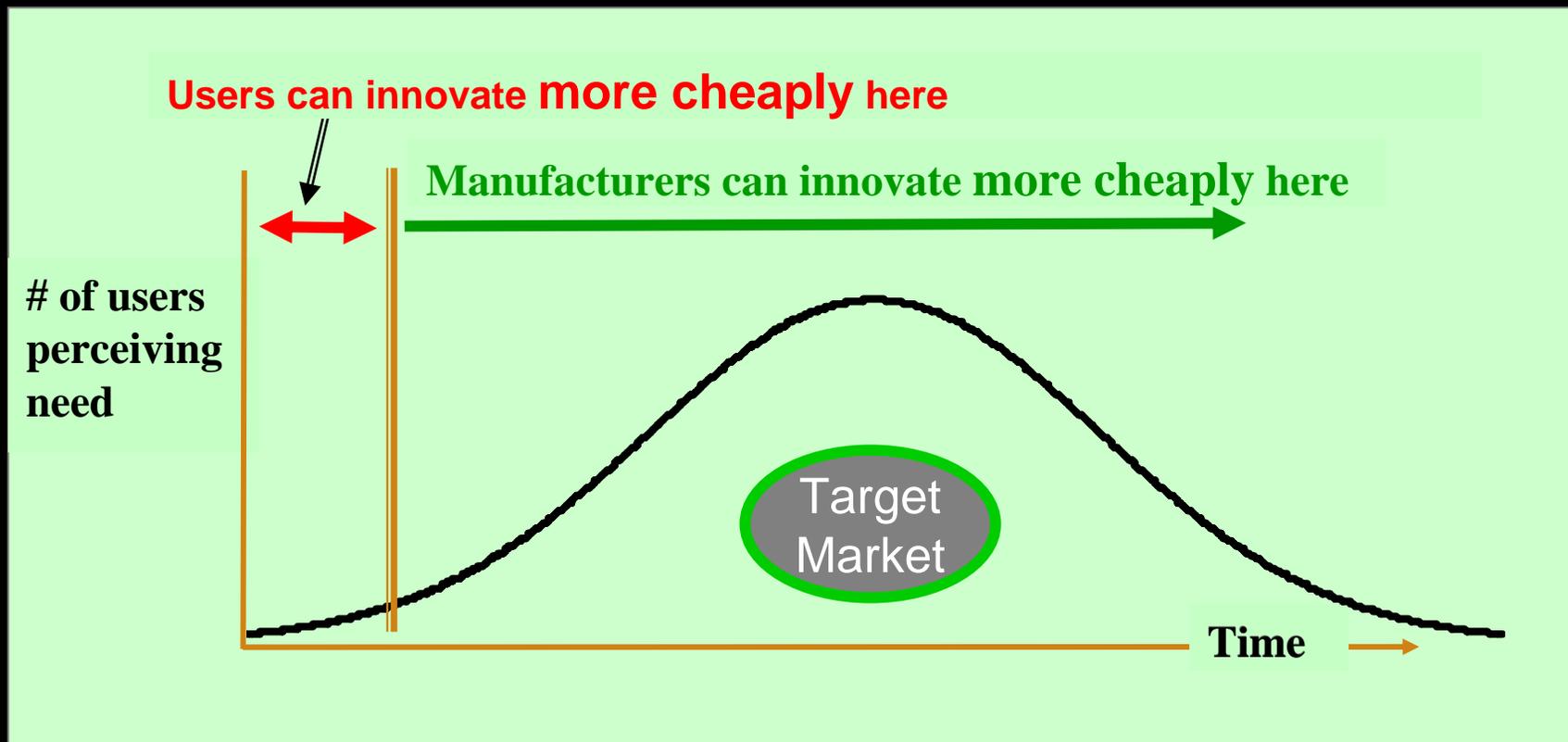


## Innovating users tend to be “Lead Users”

### “Lead Users”:

1. Have needs that *foreshadow general demand* in the marketplace;
2. Expect to *obtain high benefit* from a solution to their needs. (Such users are more likely to innovate – “Necessity is the mother of invention!”)

Lead Users innovate at the leading edge of markets – where demand is small and uncertain. SO - lead user innovations offer a product **feedstock** for manufacturers



# Information on needs and solutions is often “sticky” – so users and manufacturers tend to draw on **different** local information when they innovate

- **Richest Need** information is usually found at user sites.
- **Richest Solution** information is often found at manufacturer sites.



# User and manufacturer innovations tend to *differ*

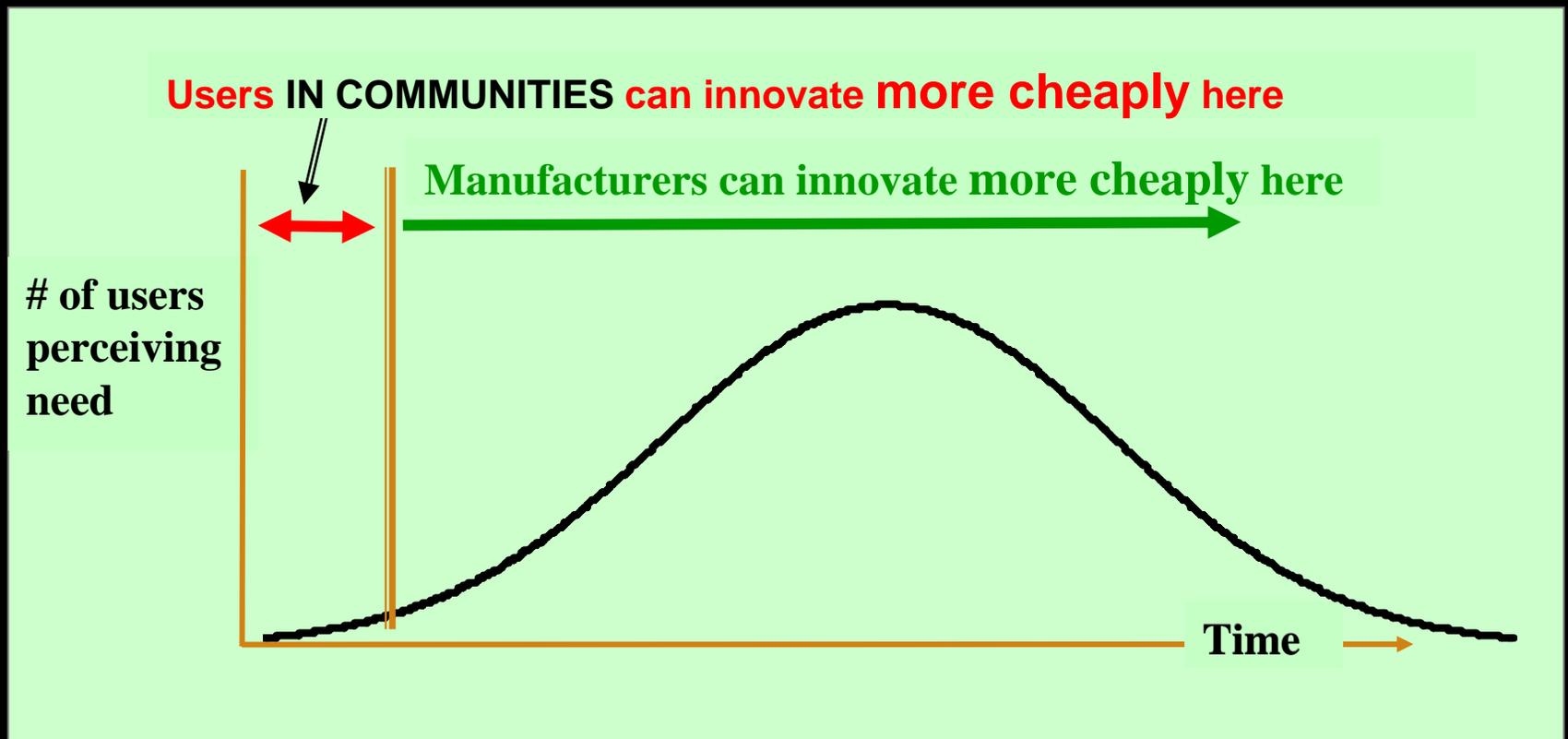
Users tend to develop **Functionally Novel** innovations:

- The first sports-nutrition bar
- The first scientific instrument of a new type

Manufacturers tend to develop **Dimension of Merit Improvements**:

- A better-tasting sports-nutrition bar
- Improvements to an existing type of scientific instrument

# Free revealing is essential to make user-centered innovation an economically-efficient solution



## Free revealing often makes economic sense for user-innovators

It is typically **not practical** for user innovators to protect their innovations as intellectual property and license them. (But some may turn into manufacturers and benefit that way).

So the real choice facing user-innovators is typically to freely reveal on purpose – or to reveal grudgingly.

- Generally they reveal gladly because the alternative of free revealing offers private benefits:
  - Enhanced reputation
  - Your innovation is improved by others (for free)
  - Network effect benefits...

Free revealing generally makes economic sense for collaborating user-innovators

Innovating users generally reveal gladly because of the economic benefits they obtain:

- User firms still profit from their own use of their own innovation and:
  - Their innovation is improved by others (for free)
  - Enhanced reputation
  - Network effect benefits...

# What are the implications of user-centered innovation for firms?

- For firms, a shift from manufacturer-centered to user-centered innovation requires new innovation processes and new business models
- Sharing innovation with users can be efficiency-enhancing for manufacturers:
  - Let users pioneer at the leading edge
  - Manufacturers then follow – and will be more likely to succeed (75% of new products introduced currently fail)

# Research possibilities - huge

## The present innovation paradigm is badly broken

- 75% of new products fail in the marketplace;
- new methods needed

## In a world of user-centered innovation:

- What should innovation strategy look like?
  - If a firm outsources innovation to users and manufacturing to low-cost countries, what is left?
  - What are the possible profitable business models?
- What should innovation processes look like?

# Executing IBM's e-business strategy in the marketplace

## *Key Market Factors*

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- Time to market is critical – pick segments where “good enough” products and services are adequate
  - Web-IT integration; Customer self-service; Simple e-commerce

# Executing IBM's e-business strategy in the marketplace

## *Key Market Factors*

- Time to Market – Early “Killer Apps”
  - Web-IT integration; Customer self-service; Simple e-commerce
- Establish early market presence with major events and customer prototypes

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  - 1996 Olympics web site; Grammys;
  - Many customer prototypes; focus on customer references

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  - Key message: leverage Internet for business value
  - Major e-business marketing campaign

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# Executing IBM's e-business strategy in the marketplace

## *Key Lessons Learned*

- Focus, Focus, Focus, . . . .
- Extensive market prototyping and experimentation, including client projects
- Don't try to do it all by yourself; partner extensively
- Critical importance of highly disciplined marketing and communications



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