
Supply Chain 2020: When Future Uncertainty is a Certainty

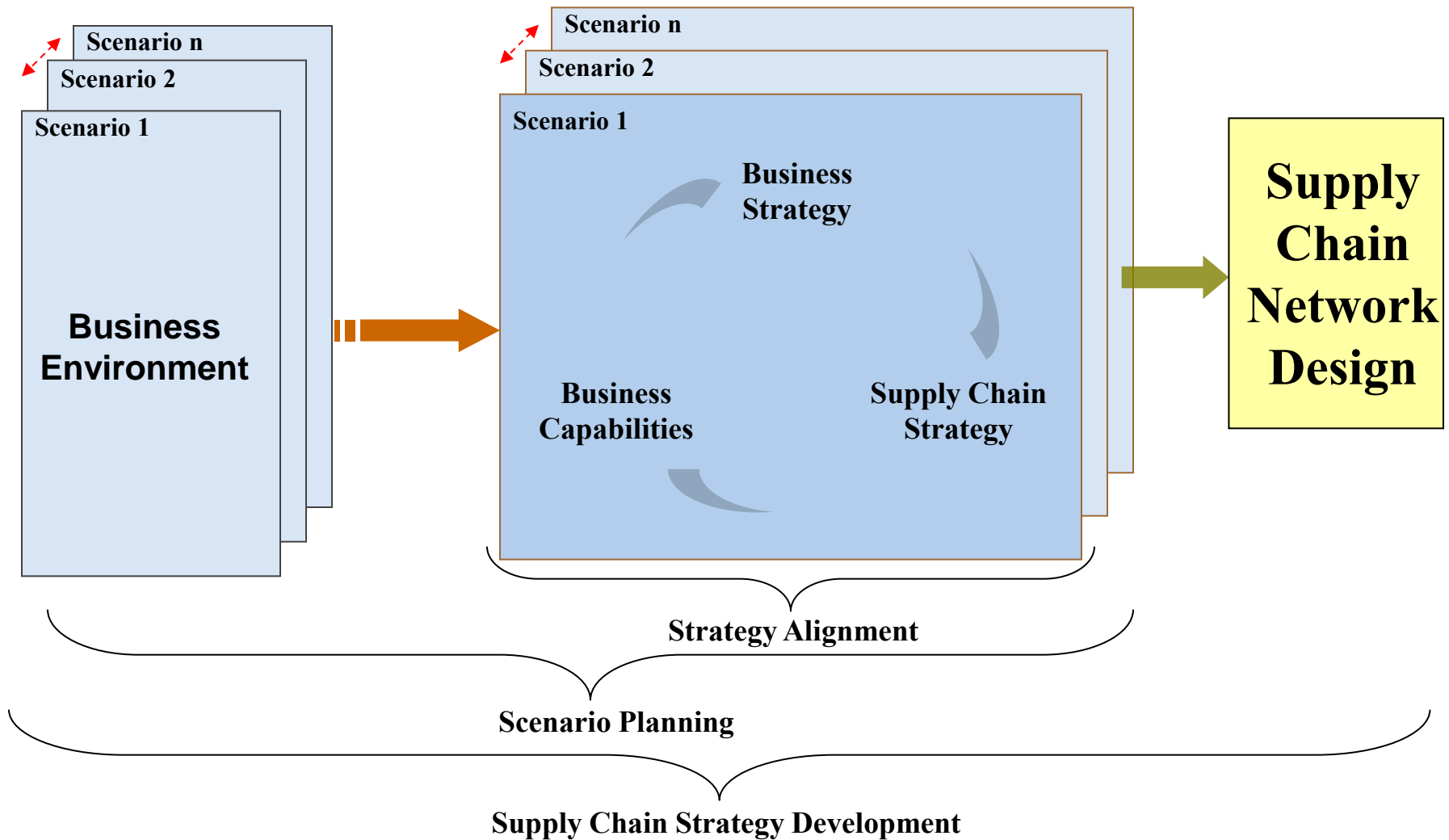
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Agenda

- Scenario Planning Methodology
- Macro Factors
- Scenarios
- Analyzing the Implications of an Uncertain Future

Introduction: Supply Chain 2020 Methodology



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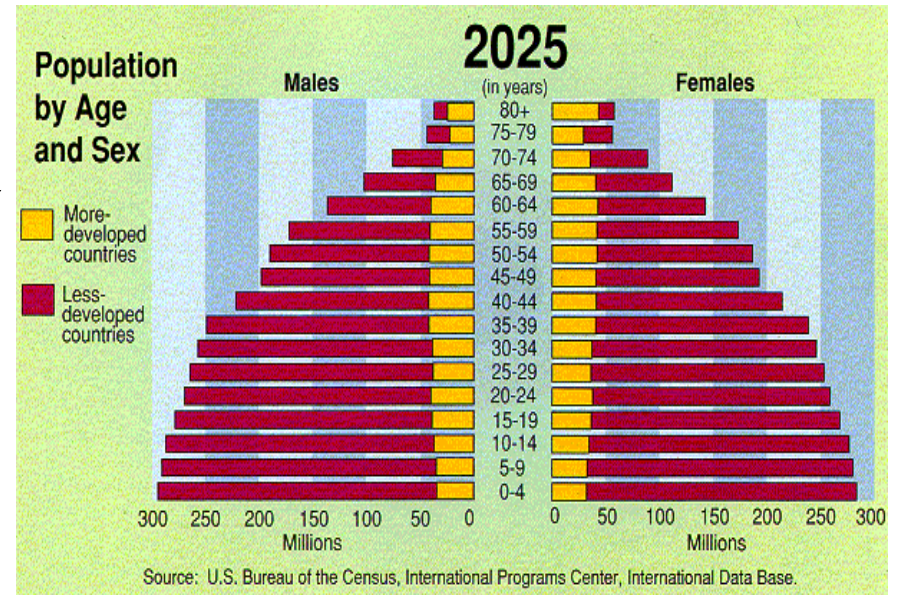
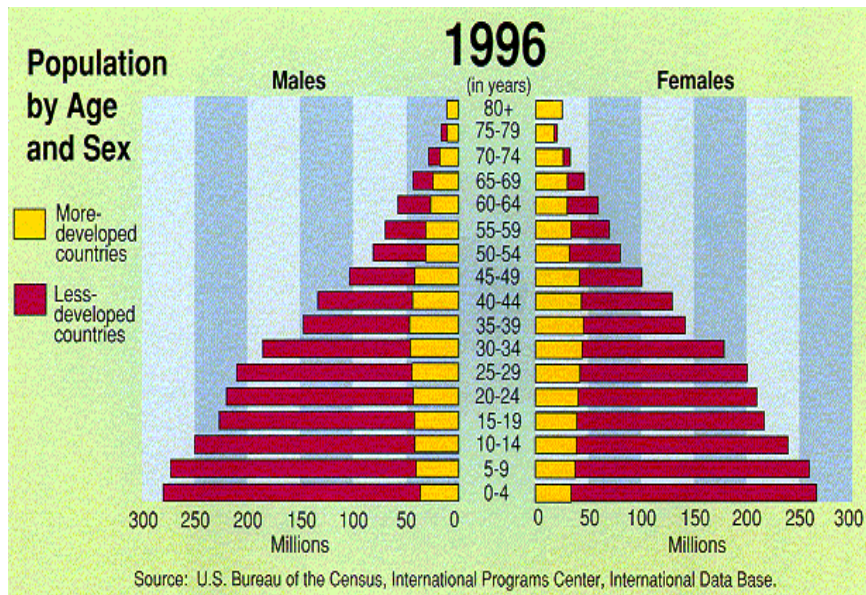
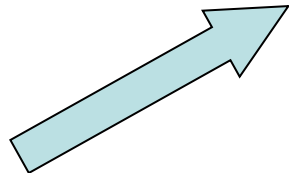
Six Macro Factors That Will Most Reshape 2020

1. Aging of Developed Countries
2. Volatility of oil prices
3. Economic/military power shift towards the East
4. Tightly aligned trading blocs (e.g., 3 or 4)
5. Green Laws, globally
6. Pervasive powerful technologies

Larry Lapide, "When Uncertainty Is a Certain Factor", Manufacturing Executive Leadership Journal, March 2011

Larry Lapide, "When Uncertainty is a Certain Factor" , Supply Chain Management Review, March/April 2014 (reprint from MELJ)

#1 Aging of Developed Countries



Source: Joseph F. Coughlin, PhD, Director, MIT Age Lab

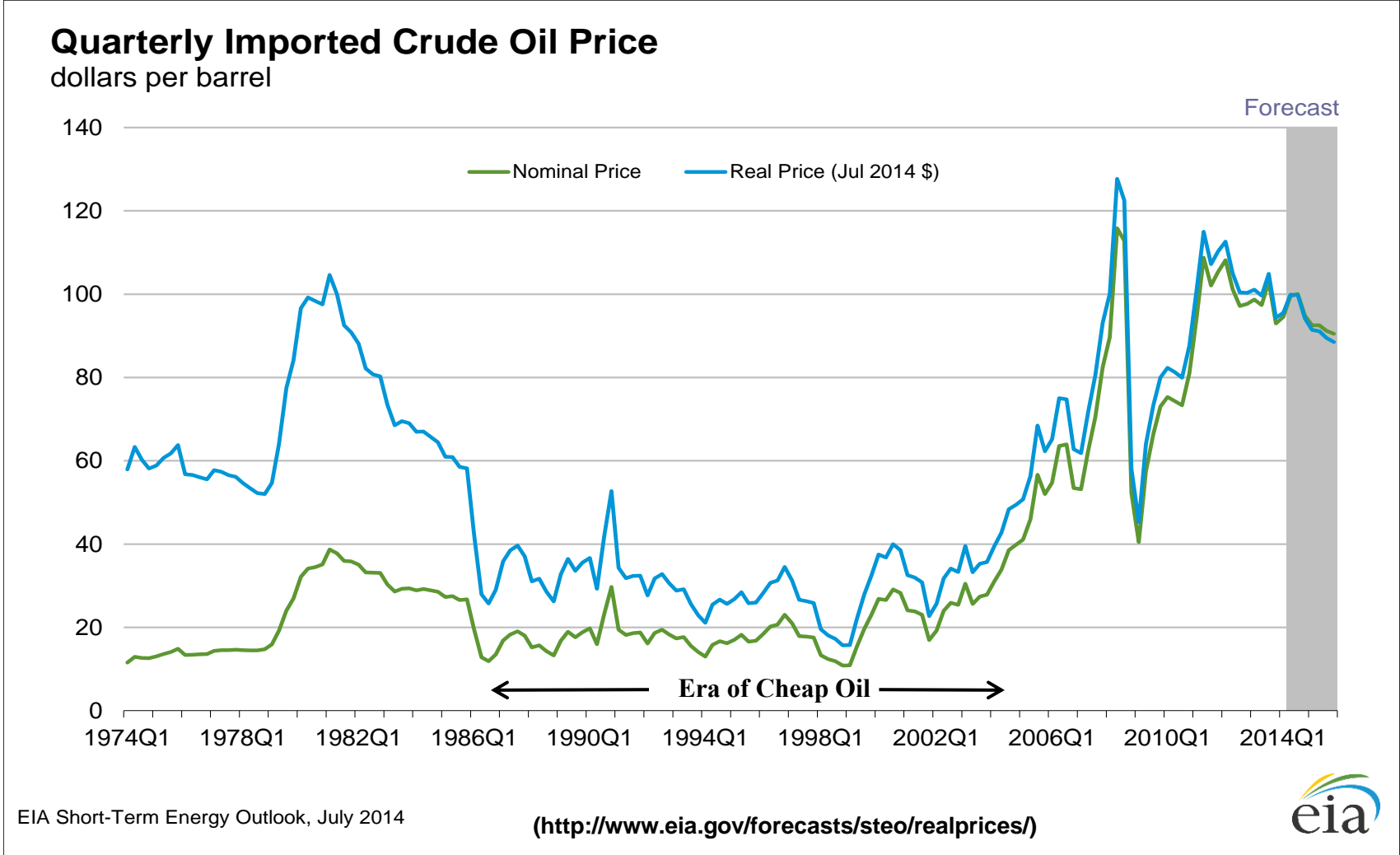
#1 Aging of Developed Countries

1. What is the impact on products & services demanded?
 - a. Personalize products (e.g., physically, hearing, and sight challenged)
 - b. Total solutions of services and products
 - c. Health care hubs, in-home service monitoring of diet & health, and home delivery re-emerging

2. What is the impact on supply chain workers?
 - a. Plant and warehouse blue collar workers (e.g., more automation)
 - Older
 - Language-challenged
 - Mentally & physically handicapped
 - b. Elderly drivers (e.g., dashboard design)
 - c. Elderly, semi-retired white collar knowledge workers

3. What if immigration is opened up? Closed?

#2 Volatility of oil prices: Greater global demand and becoming more expensive to extract (\$200 or more per barrel in 2020?)

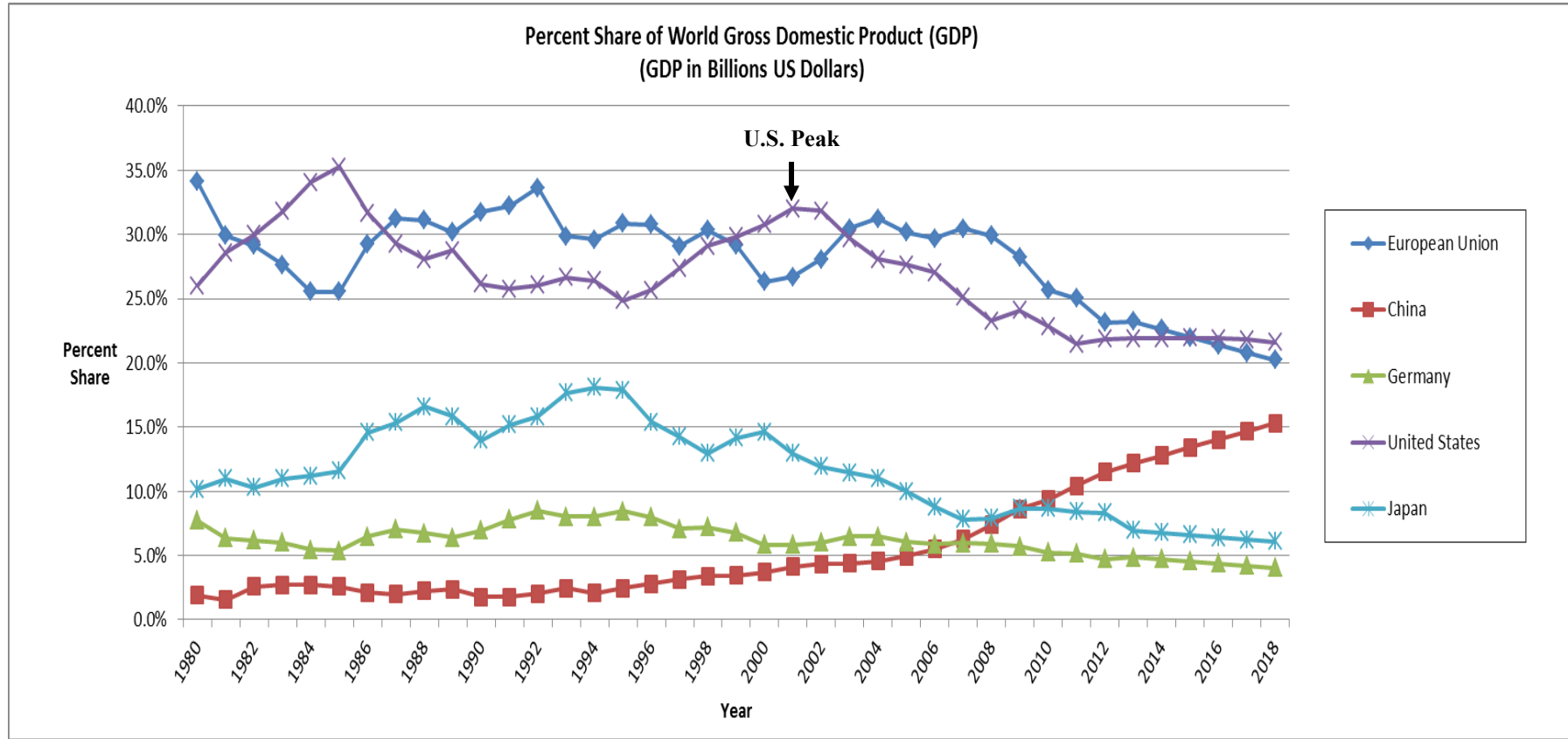


#2 Move from Cost & Inventory-Efficient Supply Chains to Cost & Oil/Energy-Efficient Supply Chains

Oil/Energy Costs Impact Supply Chains in 4 Major Cost Areas:

1. Freight costs (e.g., slow down supply chains; think slow-steaming)
 - Inventory versus freight tradeoffs; e.g., Just-In-Time(JIT) programs
 - Labor versus freight tradeoffs (e.g., offshore manufacturing)
 - Barge versus Rail versus Truck shipping
 - Ocean vs. Air shipping (e.g., offshore sourcing)
 - FOB pricing and on-line free delivery services
2. Material costs (i.e., oil-based materials back to glass, paper, and metal)
3. Production operating costs
4. Packaging costs (e.g., paper versus plastics)

#3 Economic/military power shift towards the East



Source of Data: International Monetary Fund (IMF) website -- <http://www.imf.org/external/index.htm> (April 2014)

1. U.S. and European Union's share of worldwide GDP is generally declining
 - U.S. recent peak in 2001 at 32.3% of GDP share, then declined, and forecasted flat in short-term
 - China surpassed Germany in 2007 to be #3
 - China surpassed passed Japan in 2010 to be #2

#3 Economic/military power shift towards the East (Cont'd)

2. Many of the 'largest' companies now outside EU and U.S.
3. Rise of middle class in Eastern countries creates consuming nations (Will U.S. and E.U. be able to compete there?)
4. Future global competition for scarce materials and business opportunities (China ties to Australia, Africa, and Middle East)
5. China and India producing more engineers and college-educated students: So will major innovation move there too?
6. China's unknown future (the wild card)

“This is not a book about the decline of America but rather about the rise of everyone else”: Fareed Zakaria, The Post-American World, Norton

#4 Tightly aligned trading blocs (e.g., 3 or 4) rather than “The World is Flat” (Author: Tom Friedman)

1. Powerful trading blocks centered around, for example, Europe, US, Japan/Asia, and China
2. Largely intra-trading among blocs (e.g., will Food, Clothing, and Shelter goods supply chains flow North-to-South with little East-to-West flow?)
3. Heavy trade barriers into and out of the blocks

#5 Green Laws, Globally

1. Energy-efficient transportation operations

An EPA report (April 2009) reported that the Transportation sector is the second major source of greenhouse emissions (after Electricity Generation).

2. Reverse logistics

3. Green product design

4. Supply network compliance

#6 Pervasive Powerful Technologies

1. “The World is Flat”:

- Distributed virtual workers and organization
 - Proliferation of virtual communities like Second Life?
 - One Worldwide Internet or fragmented by country politics (e.g., Germany, China, and Arab world creating their own)?
- Seamless worldwide trading partner collaboration via Internet and wireless communication, and among social-network based ‘collaborative’ communities like Facebook and LinkedIn

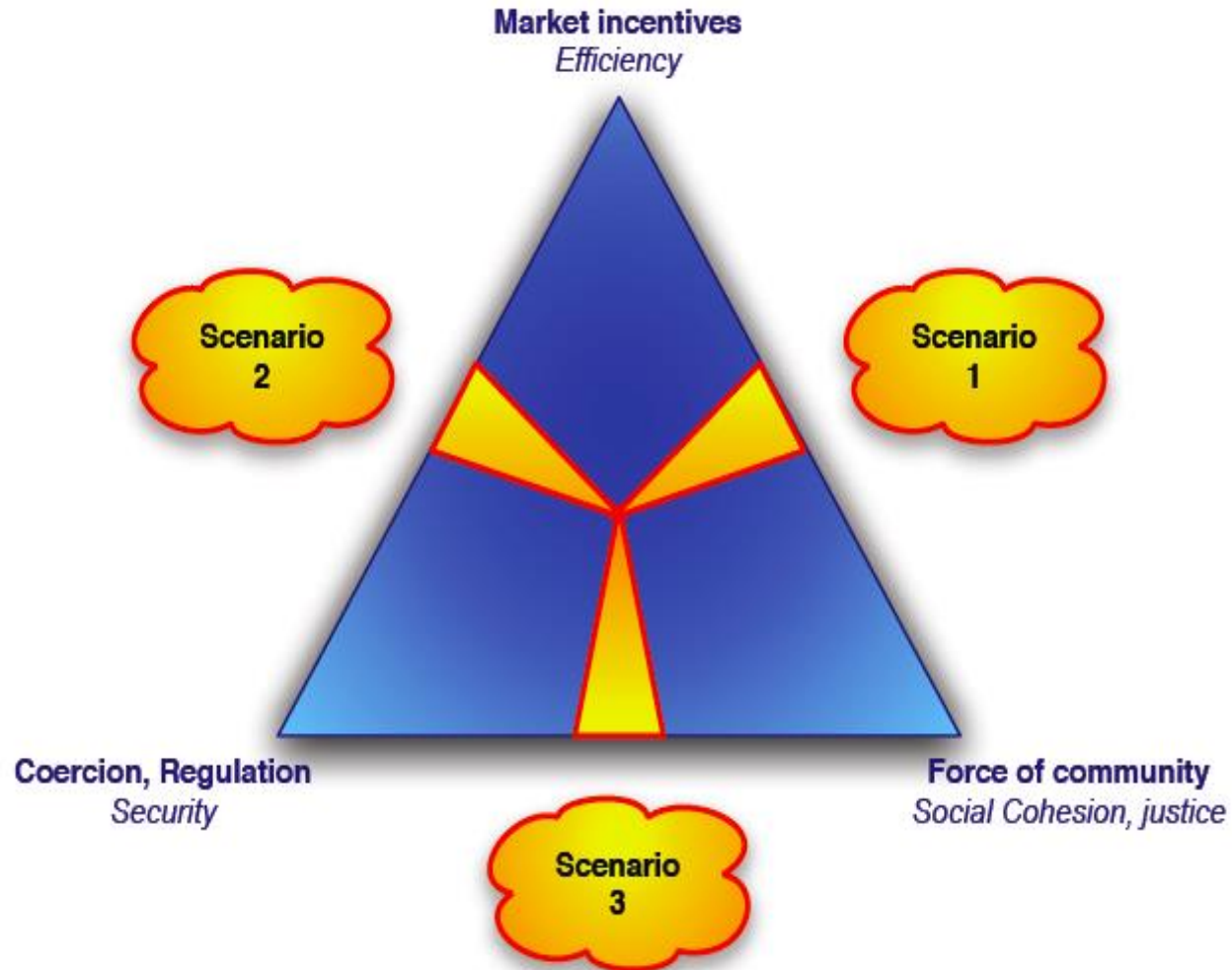
2. Full end-to-end supply chain visibility of worldwide goods, information, and (e.g., the Internet of things and financials, as well as of information)

3. Virtual reality allows full view and virtual management of total supply chains (i.e., melding of the artificial and physical worlds through supply chain modeling, simulation ‘games’, and optimization)

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SC2020 Scenarios Based on Shell Scenarios*



*Source: Shell Global Scenarios to 2025, p12

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Scenario Snapshots of the World in 2020

Scenario 1

Synchronicity

- Globalization and democratization
- Trustworthiness and integrity are crucial values in business
- Constantly shifting market demands and technological breakthroughs
- Frenetic pace of innovation and customization
- Critical role of knowledge workers

Scenario 2

Spin City

- Interventionist policies of governments
- Complex web of conflicting regulations
- No international consensus
- Globalization remains strong but highly regulated
- Trustworthiness is a competitive advantage to compete globally

Scenario 3

Alien Nation

- People think and act locally
- Mistrust and security are highly sensitive issues
- Globalization restrained by nationalistic policies
- Trade barriers and national champions
- Secured energy resources
- Limited migration flows

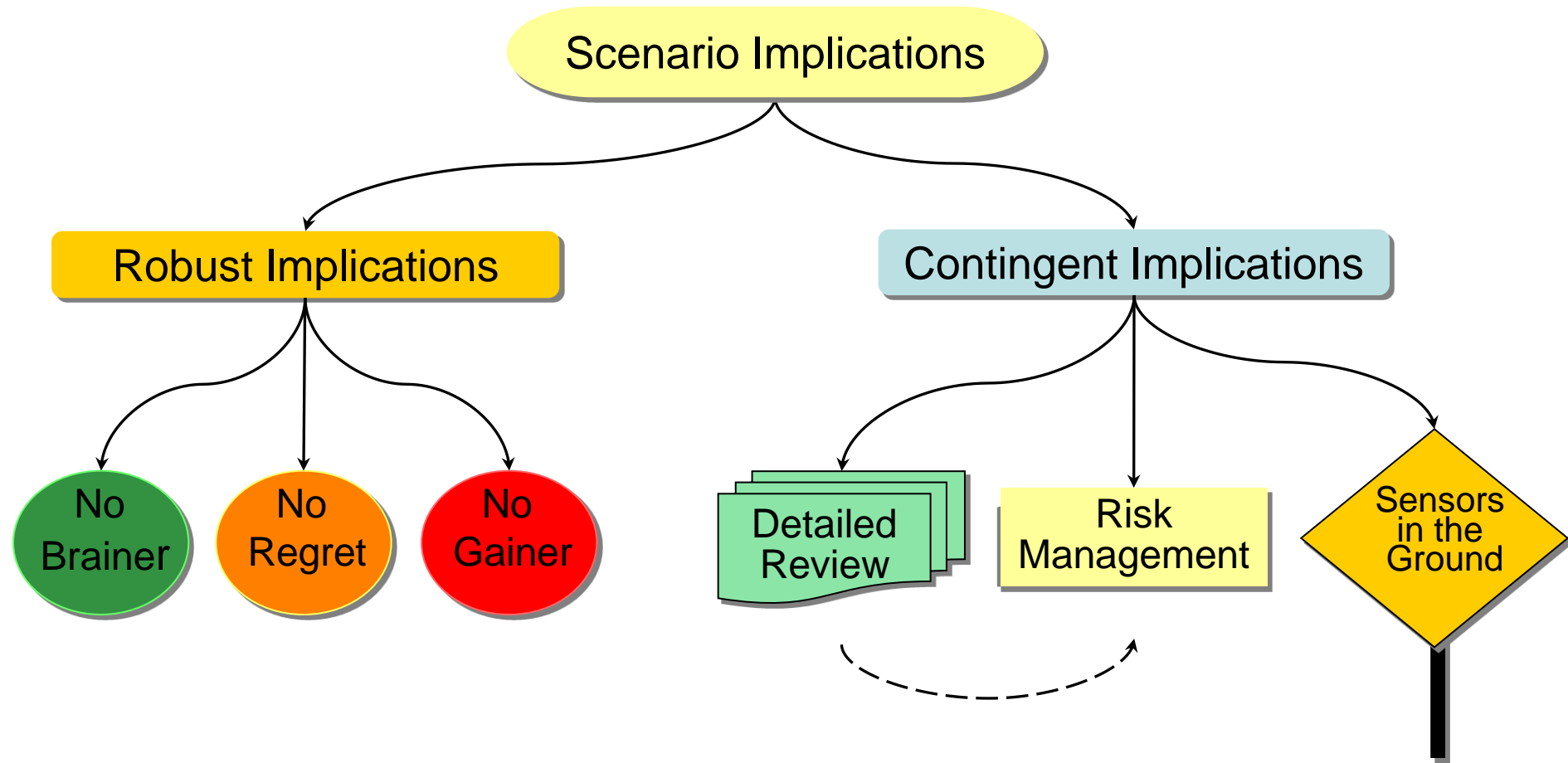
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Scenario Implications for Winning Supply Chain Strategies

1. Implications for Products and Services
2. Implications for Global Supply Networks
3. Investment in capabilities
4. Organization and Culture

Analyzing Scenario Implications



Strategy Key Takeaways

“The future ain’t what it used to be”

Yogi Berra, The Yogi Book, Workman Publishing, New York, 1998

- Revisit your latent assumptions about the future
- Develop strategies for excellence under each possible future using Strategic Alignment
- Use Scenario Planning and Risk management to prepare your supply chain for the future

For further information regarding the Supply Chain 2020 Project:

- Website <http://ctl.mit.edu/research/sc2020>
- Contact the Project Director, Dr. Roberto Perez-Franc (roberto@mit.edu)

Questions?

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