

11th Annual

# FUTURE TRENDS CONFERENCE

Plug into the future.  
Anticipate & respond  
to changing consumer  
needs. Outperform  
the competition.

*Visionary Information for Business Now*

## Using Forecasting , Scenario Planning & Game Theory to Create a Better Corporate Future

Rom Gayoso

Intel Corporation

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# Learning Objectives

## Presentation Theme: Dealing with Uncertainty

- The steps to create a scenario, skill sets, and team composition
- How to work with data (collection, sources) and how to put the story together
- Combine scenarios with other Quantitative Methods in order to minimize the impact of uncertainties



# How to capitalize on Future Trends to improve the future?

- Need to understand what the trends are!
- Are they augmenting your bottom line or are they detrimental to your plans?
- Can you see the positive? What do you need to change to allow your organization to benefit?
- Intelligence: which Technology should we pursue in order to have a more competitive offering? How will competitors react?
- How to make a choice in a world of uncertainty?

There are many questions... how can we find answers?



# Looking for answers

- Defining the business & competitive environment
  - ◆ Which consumer Want/Need will be focus?
  - ◆ What the market looks like?
  - ◆ What are the market dynamics?
  - ◆ In which world will our products/services exist?
- Those questions are best answered using an analytical method called Scenario Planning



# Scenario Planning Agenda

- Importance of Scenario Planning
- Principles of Scenario Planning
- Process steps in Scenario planning

# Importance of Scenario Planning for business forecasting and strategy

- Shell\* Oil's success: Shell Oil went from rank #14 to #2 Company in the world because Shell Oil foresaw:
  - ◆ The occurrence of the 1970's Oil Crisis
  - ◆ Rise in crude oil supply in the 1980's (discovery of non-OPEC reserves)

\*\* Other names and brands may be claimed as the property of others



# Scenario Planning Principles

- **Scenarios are complete stories: logical and compelling**
- **Scenario is a tool to inform decision makers and timely influence their decision making**
- **The importance of building scenario is to improve managers' mindsets and environment knowledge**
- **Scenarios must include indicators so that managers can track how the future is evolving**



# Why Scenario Planning?

- There are many reasons why one would engage with this exercise for strategic planning:
  - ◆ Uncertainties in your market
  - ◆ Changing business and competitive environment
  - ◆ Limited budget
- Questions constantly addressed in the above situations are:
  - ◆ What is the best approach to remain competitive?
  - ◆ How to develop the corresponding risk mitigation strategies matching the levels and types of uncertainty?



# "How to"

## The process steps in Scenario Planning



# Scenario Planning Process: Steps



## Team composition

### Team skill set:

- God parent/evangelist
- Veterans
- Marketing
- Technical
- Economist/Econometricians
- Manufacturing
- Social Scientist

## Identify

- Players
- Competitors
- Suppliers
- Customers

### Tools:

- Porters
- SWOT

## Macro data

- Demographic
- Industry specific
- Political developments
- Globalization
- Cultural
- Legal

### Sources:

- BEA
- Census
- Industry Assoc.
- Market Research firms
- D&B
- Edgar
- Trade shows
- Reports
- Conferences

## Crunching

- Logical
- Consistent with business challenges
- Reflect alternative realities
- Must be credible
- Align with Corp. culture or not
- Delivered in consistent phases within the planning cycle (the business processes)
- Must have high level owner/evangelist
- Must have clear audience/ forum

## Winning

- Linking alternative realities to strategy
- Would existing strategy still work in an alternative reality?
- Identify gaps, risks and opportunities
- Develop risk mitigation strategies



# Step 1 Team composition: Harnessing Human Capital

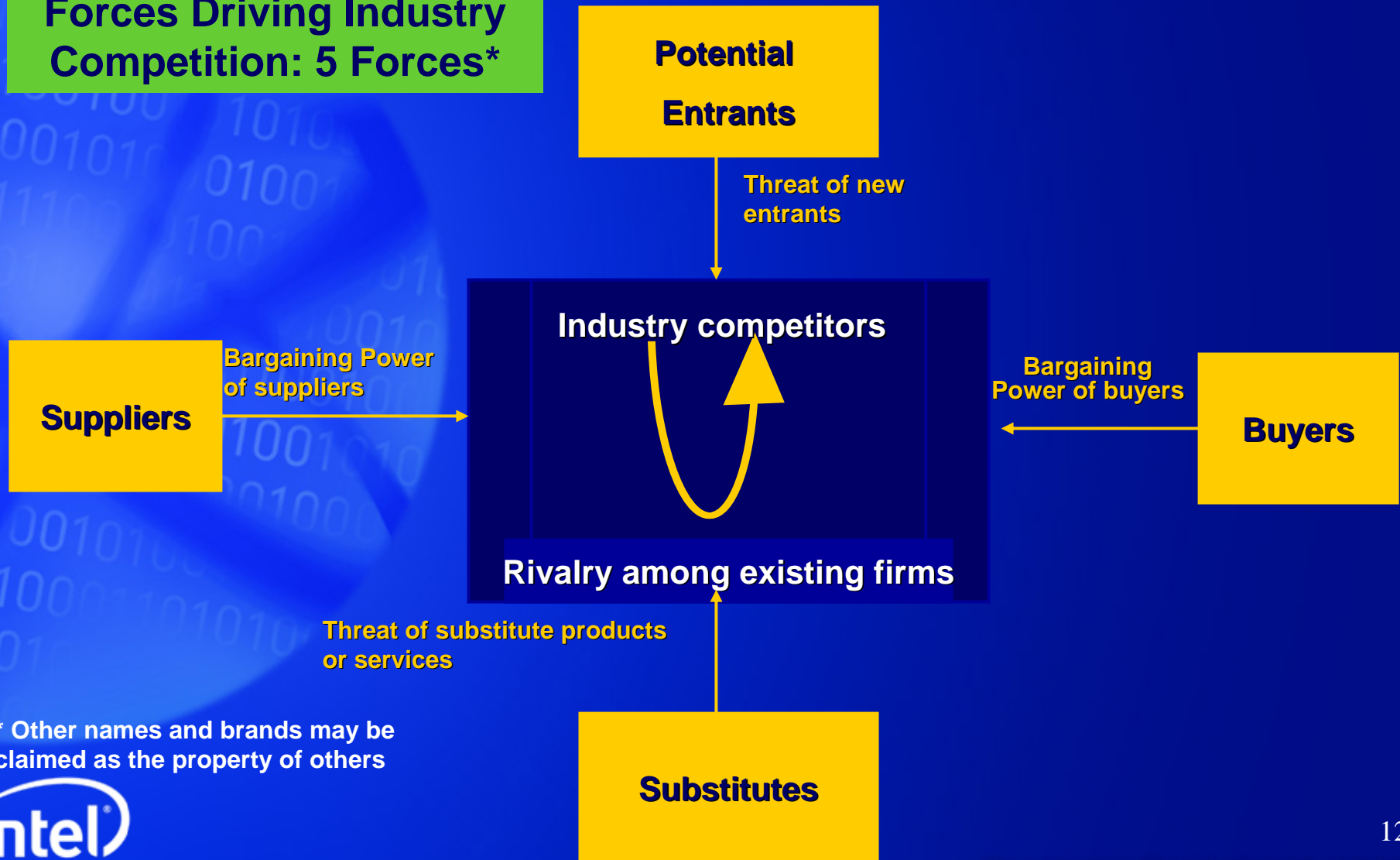
- **Define the stakeholders**
  - Internal vs. External
  - Internal: Planning, Finance, Manufacturing, Sales and Marketing
  - External: Shareholders, representative from the Board of Dir, and lobbyists
- **God parent**
  - Champion: VP, Dir
- **Team composition (based on skills)**
  - Veterans
  - Marketing
  - Finance: Financial Risk
  - Technical
  - Economist/ Econometricians
  - Manufacturing
  - Sales
  - Social Scientist

**Right team composition is critical to the  
success of Scenario Planning**



# Step 2: Collect & Analyze Competitive Data

Forces Driving Industry Competition: 5 Forces\*



\* Other names and brands may be claimed as the property of others



# Crude Oil Industry's Example

- Buyer Power
  - ◆ Gasoline distributors/ coops
- Supplier Power
  - ◆ Oil drilling equipment manufacturer
- Barriers to Entry
  - ◆ High cost of building refineries
- Threat of Substitutes
  - ◆ Bio Diesel and Hydrogen
- Rivalry in the Industry
  - ◆ Competition for natural resources/ exploration rights



# SWOT Analysis

## Strengths

- High market share
- Large R&D budgets
- Quality reputation
- Patents

## Weaknesses

- Large inventories
- Follower's pricing strategies
- Human rights issues
- Fire accidents due to negligence

## Opportunities

- New growth markets
- Less barriers for trade and investment among countries
- Infrastructure developments
- Fewer legal and tax barriers

## Threats

- Low cost producers from emerging growth countries
- Growing Govt. scrutiny
- Loss of experienced executive staff
- Trade union's unrest



# Step 3: Collect Macro Data

- **Economic Trends:** GDP, Inflation, and monetary policies
- **Demographic:** Age composition, mobility, education, income composition, spending preference, family size and other
- **Industry Specific:** Trends in the availability of raw materials and suppliers, mergers and acquisitions, etc
- **Political developments:** Regulations/ deregulations, changes in the governmental structure, Trade agreements, UN's policy, etc
- **Globalization:** Removal of trade barriers, liberal imports and exports, infrastructure development , opening of new markets, office location decisions and other
- **Cultural:** Women's participation in the work force
- **Legal:** Tax structure and transparency in the legal framework



# Step 4: Building the Scenario: Packaging

## Qualities of a good Scenario

- Logical
- Consistent with business challenges
- Reflect alternative realities
- Must be credible
- Must have clear and traceable indicators
- Align with Corporate Culture (or not?)
- Delivered in a consistent manner within the planning cycle (the business processes)
- Must have high level owner/ evangelist of the exercise
- Must have clear audience/ forum
- Should have a business plan format



# Step 5: Value Add

- **Linking alternative realities to strategy**
  - Would existing strategy still work in an alternative reality?
- **Identify gaps, risks and opportunities**
  - Who benefits from the gaps?
- **Develop risk mitigation strategies**
  - How to close the gaps?
  - Financial implications
  - Opportunities: Hedging, long term contracts and options



# Scenario Planning Process: Summary



## Team composition

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# Decision Making Under Uncertainty – Special Case

- Business uncertainty is not only confined to uncertainty levels, but also evidenced by competitive reactions
- Business process mimics Physics: to each action there is a reaction
- The different sets of competitive action-reaction strategies are best analyzed using a business tool called Game Theory
- Game Theory is a decision making method used to arrive at ideal strategies whenever conflicting interests are present

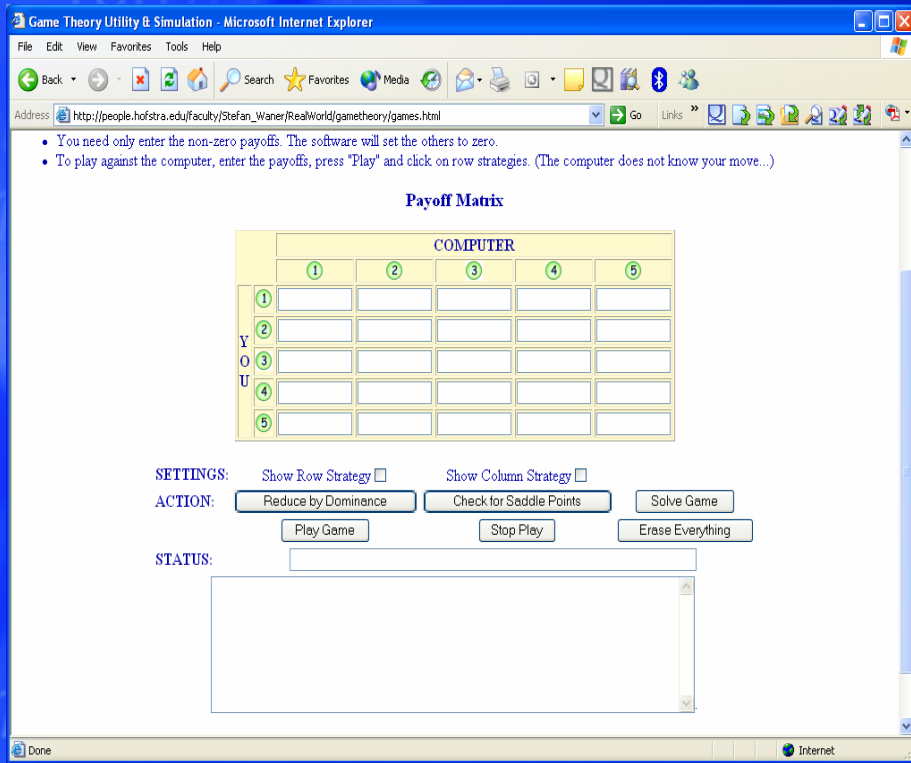


# Concepts

- Play is a match, dispute or conflict of interests over a given resource
- Players are interested parties, any agent with a stake in the outcome of the play
- Players are said to be rational, that is they act in a manner to maximize benefits
- Players expect antagonism and learn to anticipate competitors' moves



# Game Theory Software



- Several vendors have packaged software solutions
- Freeware is an option!
- GameTheory.net\* offers a series of applets for normal and extensive form games, as well as examples for practice

# Games: what to look for?

- Try out several alternatives, choose the one that is robust in face of different alternatives
- Continuously check the intellectual model for different alternatives/strategies
- Perspective: see the game through the eyes of your opponent to avoid self-centered analysis
- Keep in mind other player ALWAYS maximizes its own pay off – never under estimate
- Outcomes: consider the rules and the players can change at a moments notice



# Game Theory Process: Steps



## Stated Objective

- Clear Problem Statement
- Define goals

## Identify

- Players
- Competitors
- Suppliers
- Customers
- Sequence

## Tools:

- Porters
- SWOT

## Mapping

- Players, both actual and potential
- What are all possible actions / moves for each player?
- Measure the benefits of each action in terms of pay off
- Define pay off in clear terms (NPV, MSS)

## Crunching

- Draw a matrix for simultaneous games
- Draw a Tree diagram for sequential games
- Calculate and load the pay off for each cell
- Ensure pay offs are consistent across cells → all defined in common term (ROI or Share)

## Winning

- Run the analysis
- Are there any dominant strategies?
- Are most likely moves identified?
- Is probable outcome clear?
- Consider all options
- Would existing strategy still work?
- Identify gaps
- Develop risk mitigation strategies

# Summary

- Future Trends need to be put into context, so that we can understand them
- Pursuit of alternative technologies and understanding future markets require decision making under uncertainty
- Two analytical tools aid decision making
  - ◆ Scenario Planning
  - ◆ Game Theory
- Traditional Forecasts & Trend Analysis need to be augmented by Scenario Planning and Game Theory in order to be more effective business tools



# Q&As



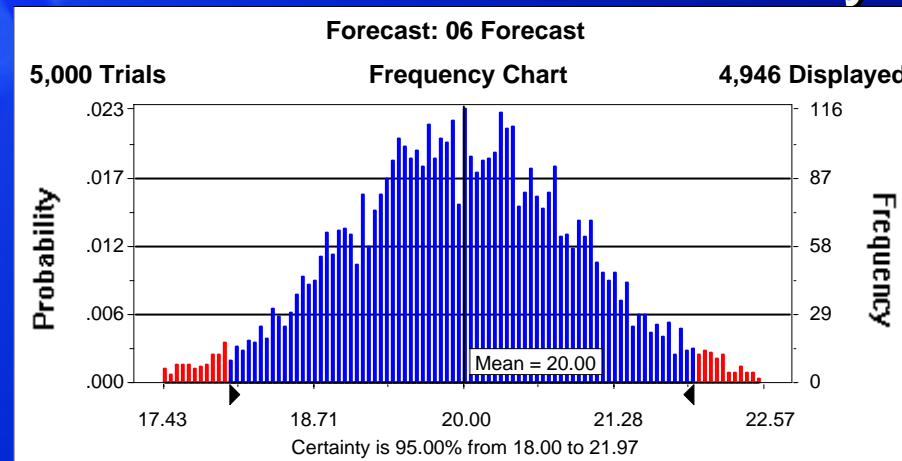
# Example: United Brewers\*

\* Fictional example

- Start with your baseline forecast

Beer Sales	2006	2007	2008	2009	2010
Cans (M)	20	35	37	43	56
Revenue (\$M)	35	61.25	64.75	75.25	98
STD DEV	1	1.3	3.6	4.7	6.8

- Extract Std Dev and feed it into MC Simulator to generate 95% CI → reveals sensitivity



# Example: United Brewers\* (2)

\* Fictional example

- Scenario calls for fall in Disposable Income, resulting in a fall in Beer Consumption

Beer Sales	2006	2007	2008	2009	2010
Baseline For	20	35	37	43	56
Scenario	18	34	36.5	43	56
Gap Units	2	1	0.5	0	0
Gap \$M	3.5	1.75	0.875	0	0

- Identified risk in Units and Dollars
- Next Step: identify risk mitigation strategies to minimize the potential lost Revenue
  - ◆ Cost Cutting
  - ◆ Financial Hedging



# Example: United Brewers\* (3)

\* Fictional example

- An Artificial Neural Network model called for INCREASED Beer Consumption (in bad times people drink more)

Beer Sales	2006	2007	2008	2009	2010
Baseline For	20	35	37	43	56
ANN	20.8	35.7	37.2	43	56
Extra Units	0.8	0.7	0.2	0	0
Extra Rev \$M	1.4	1.2	0.35	0	0

- Identified opportunity in Units and Dollars
- Next Step: identify manufacturing capacity strategies to capture potential increased market share and Revenue
  - ◆ Do we have spare Capacity?
  - ◆ Flex Capacity strategies (Labor, Productivity, etc)



# Example: United Brewers\* (4)

\* Fictional example

- A Board member thought competition might be tempted to start a price war: use a Churn model to estimate marginal propensity to switch

		Competitor "A"	
		Beer Game	Beer Game
United	\$1.75	20,20	18,22
	\$1.70	22, 16	21,21

- Most likely competitors will try to take advantage of the situation and thus lower ASP by 5¢ → Identified gap in Units and Dollars
- Next Step: identify manufacturing capacity strategies to capture potential increased market share and Revenue
  - ◆ Do we have spare Capacity?
  - ◆ Flex Capacity strategies (Labor, Productivity, etc)
  - ◆ Margin analysis: \$700K benefit, but what is our Cost structure?

