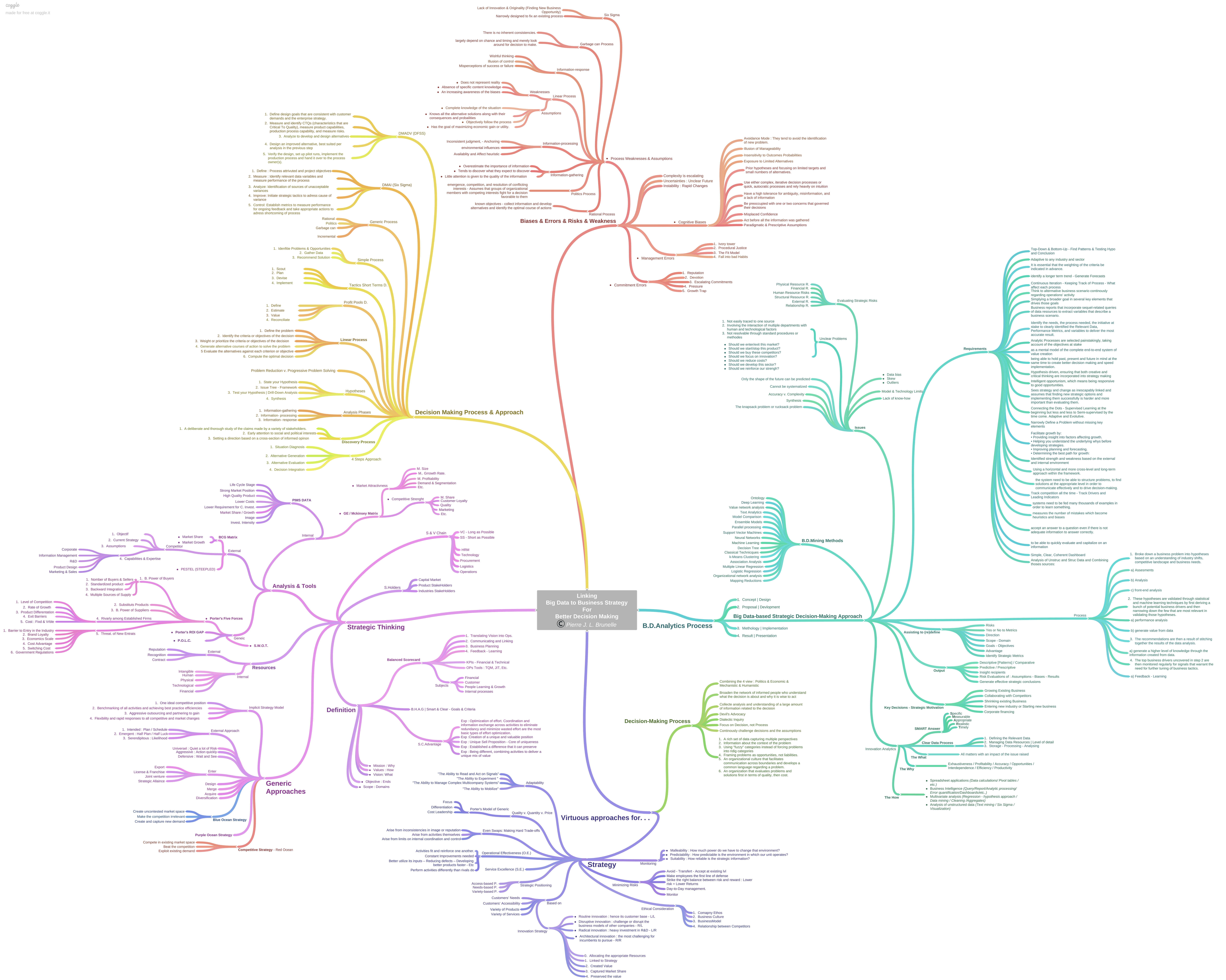
coggle
made for free at coggle.it



Linking
Big Data to Business Strategy
For
Better Decision Making

© *Pierre J. L. Brunelle*

Biases & Errors & Risks & Weakness

- Process Weaknesses & Assumptions
  - Six Sigma
    - Lack of Innovation & Originality (Finding New Business Opportunity)
    - Narrowly designed to fix an existing process
  - Garbage can Process
    - There is no inherent consistencies.
    - largely depend on chance and timing and merely look around for decision to make.
  - Information-response
    - Wishful thinking
    - Illusion of control
    - Misperceptions of success or failure
  - Linear Process
    - Weaknesses
      - Does not represent reality
      - Absence of specific content knowledge
      - An increasing awareness of the biases
    - Assumptions
      - Complete knowledge of the situation
      - Knows all the alternative solutions along with their consequences and probailities
      - Objectively follow the process
      - Has the goal of maximizing economic gain or utility.
  - Information-processing
    - Inconsistent judgment, - Anchoring
    - environmental influences
    - Availablity and Affect heuristic
  - Information-gathering
    - Overestimate the importance of information
    - Tends to discover what they expect to discover
    - Little attention is given to the quality of the information
  - Politics Process
    - emergence, competition, and resolution of conflicting interests - Assumes that groups of organizational members with competing interests fight for a decision favorable to them
  - Rational Process
    - known objectives - collect information and develop alternatives and identify the optimal course of actions
- Complexity is escalating
- Uncertainties : Unclear Future
- Instability : Rapid Changes
- Cognitive Biases
  - Avoidance Mode : They tend to avoid the identification of new problem.
  - Illusion of Manageability
  - Insensitivity to Outcomes Probabilities
  - Exposure to Limited Alternatives
  - Prior hypotheses and focusing on limited targets and small numbers of alternatives.
  - Use either complex, iterative decision processes or quick, autocratic processes and rely heavily on intuition
  - Have a high tolerance for ambiguity, misinformation, and a lack of information
  - Be preoccupied with one or two concerns that governed their decisions
  - Misplaced Confidence
  - Act before all the information was gathered
  - Paradigmatic & Prescriptive Assumptions
- Management Errors
  1. Ivory tower
  2. Procedural Justice
  3. The Fit Model
  4. Fall into bad Habits
- Commitment Errors
  1. Reputation
  2. Devotion
  3. Escalating Commitments
  4. Pressure
  5. Growth Trap

Decision Making Process & Approach

- DMADV (DFSS)
  1. Define design goals that are consistent with customer demands and the enterprise strategy.
  2. Measure and identify CTQs (characteristics that are Critical To Quality), measure product capabilities, production process capability, and measure risks.
  3. Analyze to develop and design alternatives
  4. Design an improved alternative, best suited per analysis in the previous step
  5. Verify the design, set up pilot runs, implement the production process and hand it over to the process owner(s).
- DMAI (Six Sigma)
  1. Define : Process attrivuted and project objectives
  2. Measure : Identify relevant data variables and measure performance of the process
  3. Analyze: Identification of sources of unacceptable variances
  4. Improve: Initiate strategic tactics to adress cause of variance
  5. Control: Establish metrics to measure performance for ongoing feedback and take appropriate actions to adress shortcoming of process
- Generic Process
  - Rational
  - Politics
  - Garbage can
  - Incremental
- Simple Process
  1. Idenfitie Problems & Opportunities
  2. Gather Data
  3. Recommend Solution
- Tactics Short Terms D.
  1. Scout
  2. Plan
  3. Devise
  4. Implement
- Profit Pools D.
  1. Define
  2. Estimate
  3. Value
  4. Reconciliate
- **Linear Process**
  1. Define the problem
  2. Identify the criteria or objectives of the decision
  3. Weight or prioritize the criteria or objectives of the decision
  4. Generate alternative courses of action to solve the problem
  5 Evaluate the alternatives against each criterion or objective
  6. Compute the optimal decision
- Problem Reduction v. Progressive Problem Solving
- Hypotheses
  1. State your Hypothesis
  2. Issue Tree - Framework
  3. Test your Hypothesis | Drill-Down Analysis
  4. Synthesis
- Analysis Phases
  1. Information-gathering
  2. Information- processing
  3. Information- response
- **Discovery Process**
  1. A deliberate and thorough study of the claims made by a variety of stakeholders.
  2. Early attention to social and political interests
  3. Setting a direction based on a cross-section of informed opinon
- 4 Steps Approach
  1. Situation Diagnosis
  2. Alternative Generation
  3. Alternative Evaluation
  4. Decision Integration

Strategic Thinking

- Analysis & Tools
  - Internal
    - **PIMS DATA**
      - Life Cycle Stage
      - Strong Market Position
      - High Quality Product
      - Lower Costs
      - Lower Requirement for C. Invest.
      - Market Share / Growth
      - Image
      - Invest. Intensity
    - **GE / Mckinsey Matrix**
      - Market Attractivness
        - M. Size
        - M.. Grrowth Rate.
        - M. Profitability
        - Demand & Segmentation
        - Etc.
      - Competitive Strenght
        - M. Share
        - Customer Loyalty
        - Quality
        - Marketing
        - Etc.
  - External
    - **BCG Matrix**
      - Market Share
      - Market Growth
    - Competitor
      1. Objectif
      2. Current Strategy
      3. Assumptions
      4. Capabilities & Expertise
         - Corporate
         - Information Management
         - R&D
         - Product Design
         - Marketing & Sales
    - PESTEL (STEEPLED)
  - Geneic
    - **Porter's Five Forces**
      1. B. Power of Buyers
         1. Nomber of Buyers & Sellers
         2. Standardized product
         3. Backward Integration
         4. Multiple Sources of Supply
      2. Substituts Products
      3. B. Power of Suppliers
      4. Rivalry among Established Firms
         1. Level of Competition
         2. Rate of Growth
         3. Product Differentation
         4. Exit Barriers
         5. Cost : Fixd & Vrble
      5. Threat. of New Entrats
         1. Barrier to Entry in the Industry
         2. Brand Loyalty
         3. Economics Scale
         4. Cost Advantage
         5. Switching Cost
         6. Government Regulations
    - **Porter's ROI GAP**
    - **P.O.L.C.**
    - **S.W.O.T.**
- Resources
  - External
    - Reputation
    - Recognition
    - Contract
  - Internal
    - Intangible
    - Human
    - Physical
    - Technological
    - Financial
- S & V Chain
  - VC - Long as Possible
  - SS - Short as Possible
  - HRM
  - Technology
  - Procurement
  - Logistics
  - Operations
- S.Holders
  - Capital Market
  - Product StakeHolders
  - Industries StakeHolders
- Definition
  - **Balanced Scorecard**
    1. Translating Vision into Ops.
    2. Communicating and Linking
    3. Business Planning
    4. Feedback - Learning
    - KPIs - Financial & Technical
    - OPs Tools : TQM, JIT, Etc.
    - Subjects
      - Financial
      - Customer
      - People Learning & Growth
      - Internal processes
  - B.H.A.G | Smart & Clear - Goals & Criteria
  - S.C.Advantage
    - Exp : Optimization of effort. Coordination and information exchange across activities to eliminate redundancy and minimize wasted effort are the most basic types of effort optimization.
    - Exp :Creation of a unique and valuable position
    - Exp : Unique Sell Proposition - Core of uniqueness
    - Exp : Established a difference that it can preserve
    - Exp : Being different, combining activities to deliver a unique mix of value
  - Mission : Why
  - Values : How
  - Vision: What
  - Objective : Ends
  - Scope : Domains
- Generic Approaches
  - Implicit Strategy Model
    1. One ideal competitive position
    2. Benchmarking of all activities and achieving best practice efficiencies
    3. Aggressive outsourcing and partnering to gain
    4. Flexibility and rapid responses to all competitive and market changes
  - External Approach
    1. Intended : Plan / Schedule
    2. Emergent : Half Plan / Half Luck
    3. Serendipitous : Likelihood
  - Universel : Quiet a lot of Risk
  - Aggressive : Action quickly
  - Defensive : Wait and See
  - Enter
    - Export
    - License & Franchise
    - Joint venture
    - Strategic Allaince
  - Design
  - Merge
  - Acquire
  - Diversification
  - **Blue Ocean Strategy**
    - Create uncontested market space
    - Make the competition irrelevant
    - Create and capture new demand
  - **Purple Ocean Strategy**
  - **Competitive Strategy** - Red Ocean
    - Compete in existing market space
    - Beat the competition
    - Exploit existing demand

B.D.Analytics Process

1. Concept | Design
2. Proposal | Devlopment
- **Big Data-based Strategic Decision-Making Approach**
  - Issues
    - Evaluating Strategic Risks
      - Physical Resource R.
      - Financial R.
      - Human Resource Risks
      - Structural Resource R.
      - External R.
      - Relationship R.
    - Unclear Problems
      1. Not easily traced to one source
      2. Involving the interaction of multiple departments with human and technological factors
      3. Not resolvable through standard procedures or methodes
      - Should we enter/exit this market?
      - Should we start/stop this product?
      - Should we buy these competitors?
      - Should we focus on innovation?
      - Should we reduce costs?
      - Should we develop this sector?
      - Should we reinforce our strengh?
    - Only the shape of the future can be predicted
    - Cannot be systematized
    - Accuracy v. Complexity
    - Synthesis
    - The knapsack problem or rucksack problem
    - Data bias
    - Skew
    - Outliers
    - Model & Technology Limits
    - Lack of know-how
  - **B.D.Mining Methods**
    - Ontology
    - Deep Learning
    - Value network analysis
    - Text Analytics
    - Model Comparison
    - Ensemble Models
    - Parallel processing
    - Support Vector Machines
    - Neural Networks
    - Machine Learning
    - Decision Tree
    - Classical Technicques
    - k-Means Clustering
    - Association Analysis
    - Multiple Linear Regression
    - Logistic Regression
    - Organizational network analysis
    - Mapping Reductions
  - **Requirements**
    - Top-Down & Bottom-Up - Find Patterns & Testing Hypo and Conclusion
    - Adaptive to any industry and sector
    - It is essential that the weighting of the criteria be indicated in advance.
    - identify a longer term trend - Generate Forecasts
    - Continuous Iteration - Keeping Track of Process - What affect each process
    - Think to altermative business scenario continously regarding operations' activity
    - Simplying a broader goal in several key elements that drives those goals
    - Business reports that incorporate sequel-related queries of data resources to extract variables that describe a business scenario.
    - Identify the needs, the process needed, the initiative at stake to clearly identified the Relevant Data, Performance Metrics, and variables to deliver the most accurate result.
    - Analytic Processes are selected painstakingly, taking account of the objectives at stake
    - as a mental model of the complete end-to-end system of value creation
    - being able to hold past, present and future in mind at the same time to create better decision making and speed implementation.
    - Hypothesis driven, ensuring that both creative and critical thinking are incorporated into strategy making
    - Intelligent opportunism, which means being responsive to good opportunities.
    - Sees strategy and change as inescapably linked and assumes that finding new strategic options and implementing them successfully is harder and more important than evaluating them.
    - Connecting the Dots - Supervised Learning at the beginning but less and less to Semi-supervised by the time come. Adaptive and Evolutive.
    - Narrowly Define a Problem without missing key elements
    - Facilitate growth by:
      • Providing insight into factors affecting growth.
      • Helping you understand the underlying whys before developing strategies.
      • Improving planning and forecasting.
      • Determining the best path for growth:
    - Identified strength and weakness based on the external and internal environment
    - Using a horizontal and more cross-level and long-term approach within the framework.
    - the system need to be able to structure problems, to find solutions at the appropriate level in order to communicate effectively and to drive decision-making.
    - Track competition all the time - Track Drivers and Leading Indicators
    - systems need to be fed many thousands of examples in order to learn something.
    - measures the number of mistakes which become heuristics and biases
    - accept an answer to a question even if there is not adequate information to answer correctly.
    - to be able to quickly evaluate and capitalize on an information
    - Simple, Clear, Coherent Dashboard
    - Analysis of Unstruc and Struc Data and Combining thoses sources:
  - Process
    1. Broke down a business problem into hypotheses based on an understanding of industry shifts, competitive landscape and business needs.
       - a) Assesments
       - b) Analysis
       - c) front-end analysis
    2. These hypotheses are validated through statistical and machine learning techniques by first deriving a bunch of potential business drivers and then narrowing down the few that are most relevant in validating those hypotheses.
       - a) performance analysis
       - b) generate value from data
    3. The recommendations are then a result of stitching together the results of the data analysis.
       - a) generate a higher level of knowledge through the information created from data.
    4. The top business drivers uncovered in step 2 are then monitored regularly for signals that warrant the need for further tuning of business tactics.
       - a) Feedback - Learning
  - **Assisting to (re)define**
    - Risks
    - Yes or No to Metrics
    - Direction
    - Scope - Domain
    - Goals - Objectives
    - Advantage
    - Identify Strategic Metrics
  - **Output**
    - Descriptive [Patterns] / Comparative
    - Predictive / Prescriptive
    - Insight recipients
    - Risk Evaluations of : Assumptions - Biases - Results
    - Generate effective strategic conclusions
  - **Key Decisions - Strategic Motivation**
    - Growing Existing Business
    - Collaborating with Competitors
    - Shrinking existing Business
    - Entering new industry or Starting new business
    - Corporate financing
  - Innovation Analytics
    - **SMART Answer**
      - **S**pecific
      - **M**easurable
      - **A**ppropriate
      - **R**ealistic
      - **T**imely
    - **Clear Data Process**
      1. Defining the Relevant Data
      2. Managing Data Resources | Level of detail
      3. Storage - Processing - Analysing
    - **The What**
      - All matters with an impact of the issue raised
    - **The Why**
      - Exhaustiveness / Profitability / Accuracy / Opportunities / Interdependence / Efficiency / Productivity
    - **The How**
      - Spreadsheet applications *(Data calculations/ Pivot tables / etc.)*
      - Business Intelligence *(Query/Report/Analytic processing/ Error quantification/Dashboards/etc..)*
      - Multivariate analysis *(Regression - hypothesis approach / Data mining / Cleaning /Aggregates)*
      - Analysis of unstructured data *(Text mining / Six Sigma / Visualization)*
3. Methology | Implementation
4. Result | Presentation

Virtuous approaches for. . .

- Decision-Making Process
  - Combining the 4 view : Politics & Economic & Mechanistic & Humanistic
  - Broaden the network of informed people who understand what the decision is about and why it is wise to act
  - Collecte analysis and understanding of a large amount of information related to the decision
  - Devil's Advocacy
  - Dialectic Inquiry
  - Focus on Decision, not Process
  - Continously challenge decisions and the assumptions
  1. A rich set of data capturing multiple perspectives
  2. Information about the context of the problem
  3. Using "fuzzy" categories instead of forcing problems into ridig categories
  4. Framing problems as opportunities, not liabilities.
  5. An organizational culture that facilitates communication across boundaries and develops a common language regarding a problem.
  6. An organization that evaluates problems and solutions first in terms of quality, then cost.
- Strategy
  - Adaptability
    - "The Ability to Read and Act on Signals"
    - "The Ability to Experiment "
    - "The Ability to Manage Complex Multicompany Systems"
    - "The Ability to Mobilize"
  - Quality v. Quantity v. Price
    - Porter's Model of Generic
      - Focus
      - Differentiation
      - Cost Leadership
  - Even Swaps: Making Hard Trade-offs
    - Arise from inconsistencies in image or reputation
    - Arise from activities themselves
    - Arise from limits on internal coordination and control
  - Operational Effectiveness (O.E.)
    - Activities fit and reinforce one another.
    - Constant Improvements needed
    - Better utilize its inputs – Reducing defects – Developing better products faster - Etc
    - Perform activities differently than rivals do
  - Service Excellence (S.E.)
  - Strategic Positioning
    - Access-based P.
    - Needs-based P.
    - Variety-based P.
  - Based on
    - Customers' Needs
    - Customers' Accessibility
    - Variety of Products
    - Variety of Services
  - Innovation Strategy
    - Routine innovation : hence its customer base - L/L
    - Disruptive innovation : challenge or disrupt the business models of other companies - R/L
    - Radical innovation : heavy investment in R&D - L/R
    - Architectural innovation : the most challenging for incumbents to pursue - R/R
    0. Allocating the appropriate Resources
    1. Linked to Strategy
    2. Created Value
    3. Captured Market Share
    4. Preserved the value
  - Monitoring
    - Malleability : How much power do we have to change that environment?
    - Predictability : How predictable is the environment in which our unit operates?
    - Suitability : How reliable is the strategic information?
  - Minimizing Risks
    - Avoid - Transfert - Accept at existing lvl
    - Make employees the first line of defense
    - Strike the right balance between risk and reward : Lower risk = Lower Returns
    - Day-to-Day management.
    - Monitor
  - Ethical Consideration
    1. Comapny Ethos
    2. Business Culture
    3. BusinessModel
    4. Relationship between Competitors