

# Gestão do Conhecimento e Inteligência Competitiva



UNI7 - Ciência de dados  
Pós-graduação

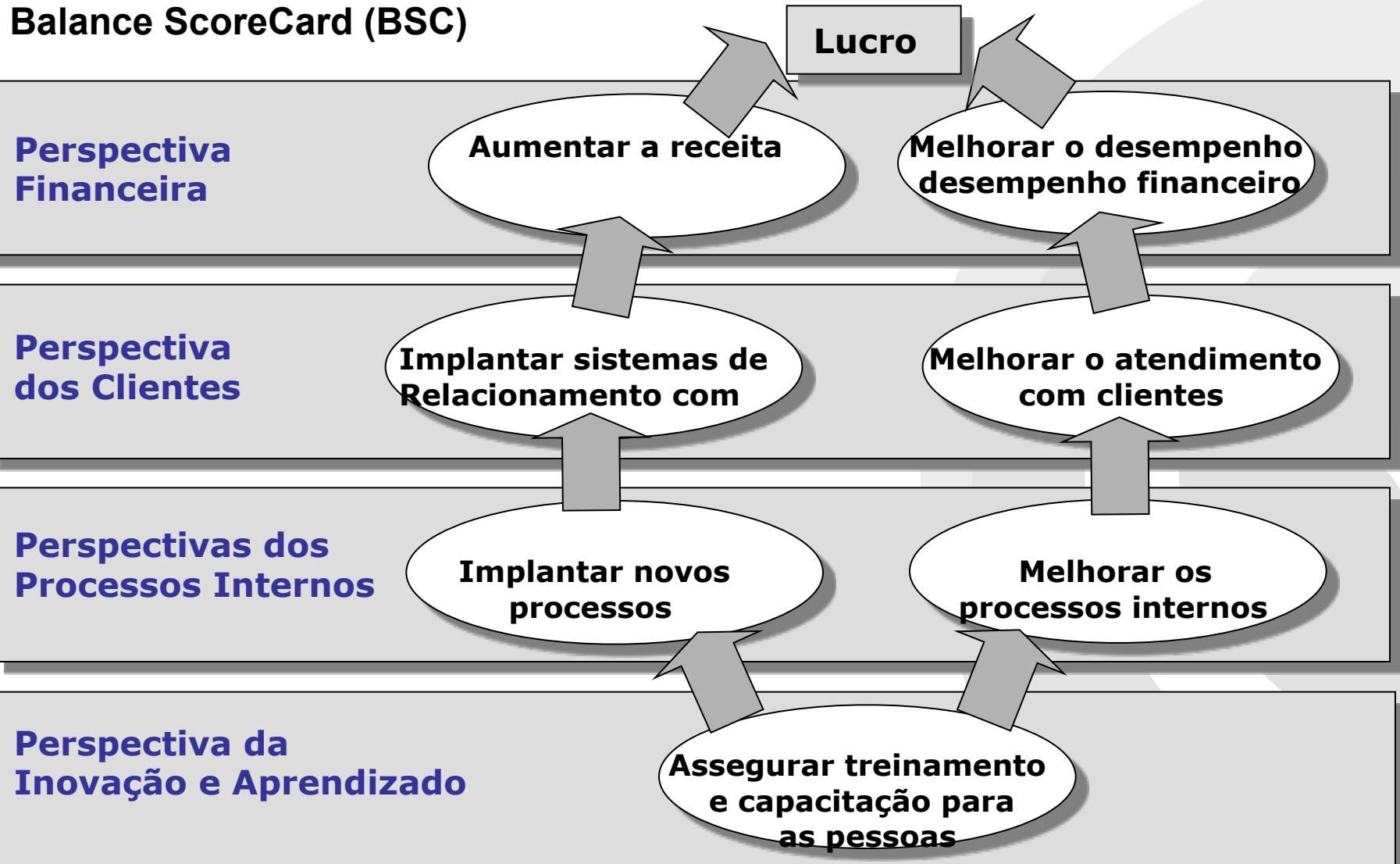
por Renilton Soares de Oliveira  
@renilton, renilton@conjecto.com.br

# Gestão do Conhecimento & Inteligência Competitiva



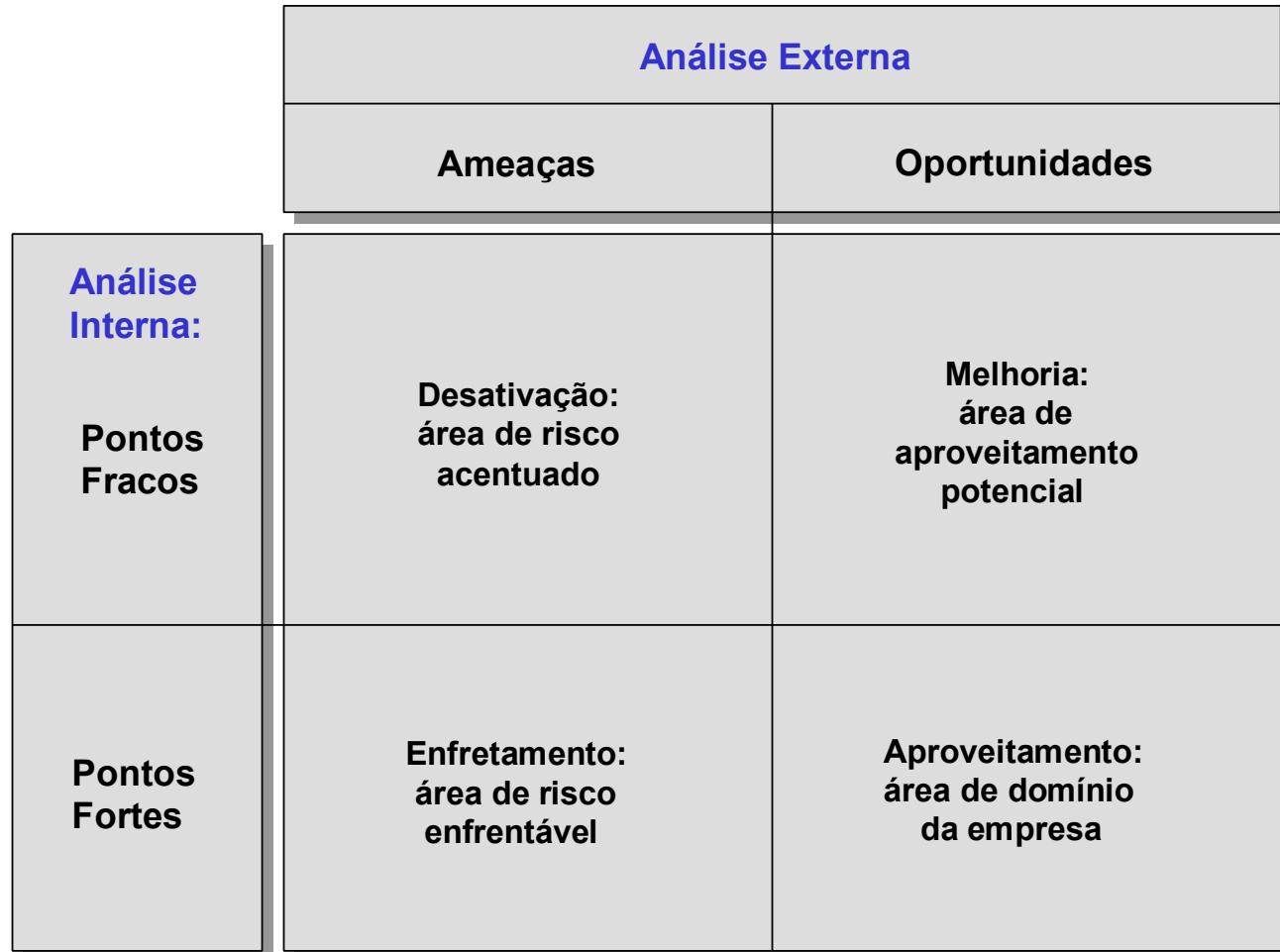
# Inteligência Organizacional

## Balance ScoreCard (BSC)



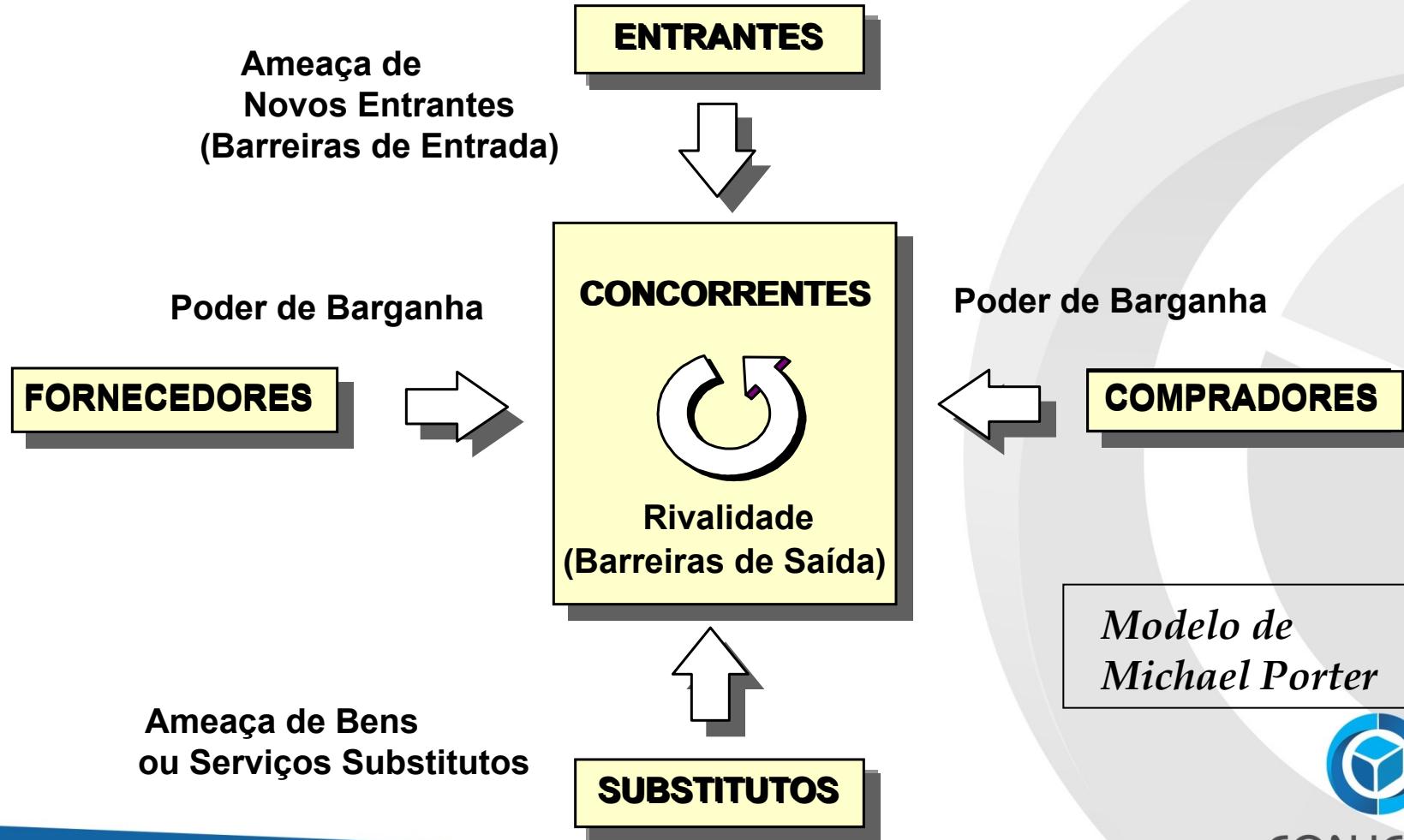
# Inteligência Organizacional

## Análise da Matriz SWOT



# Inteligência Competitiva

## Modelo das 5 Forças Competitivas de PORTER

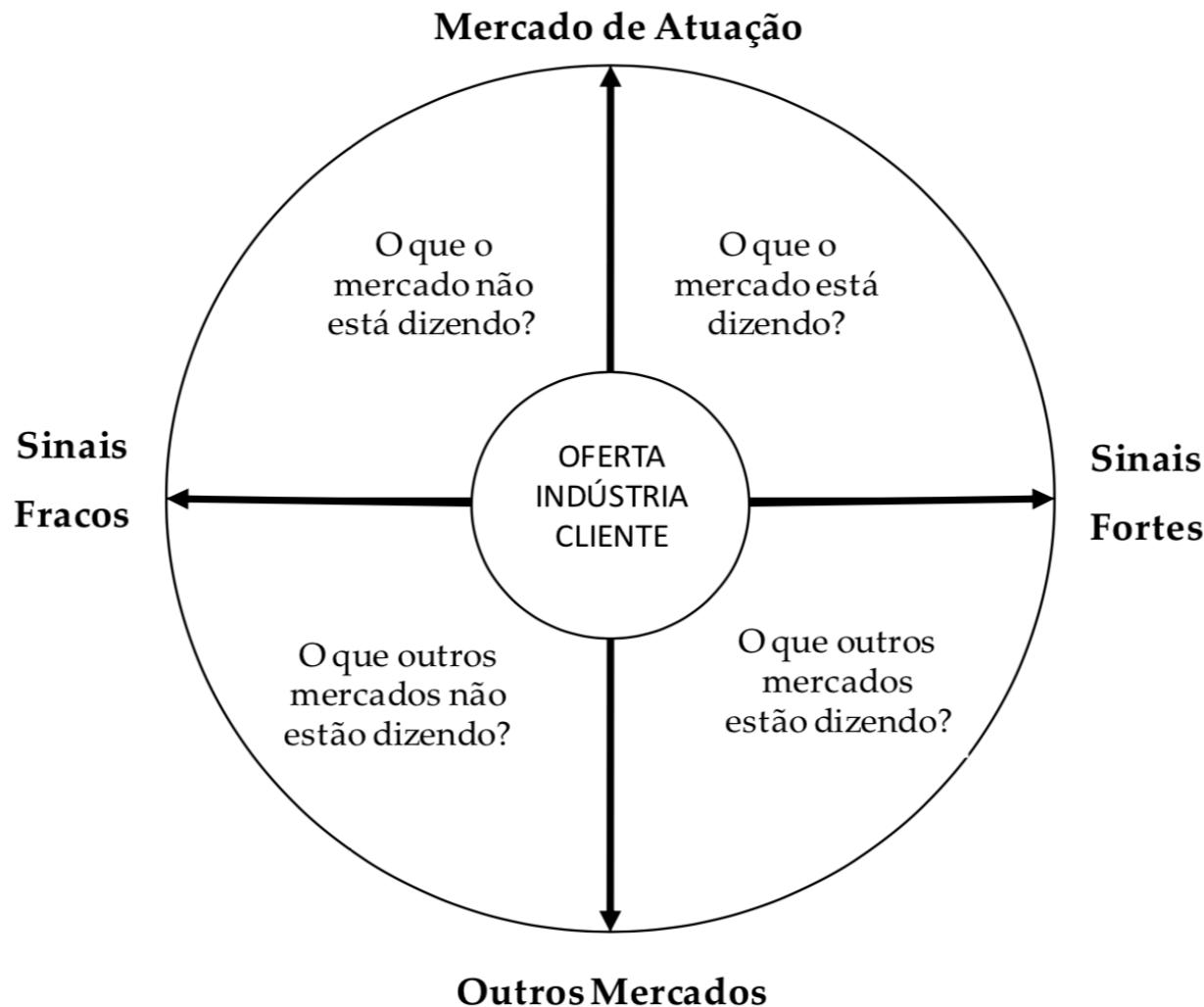


*Modelo de Michael Porter*



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# Radar dos Momentos-Zero Pulsantes



# Matriz de Interpretação dos Sinais

## Os Dois Tipos de Erro na Interpretação dos Sinais

	Real	
Real	Erro de Subestimação	Acerto por Consideração
Falso	Acerto por Desconsideração	Erro de Superestimação
	Não Considera o Sinal	Considera o Sinal
Avaliação da Empresa		

# KM & BI

## Tacit knowledge and BI

When Karl-Erik Sveiby (1997) created the first framework defining intellectual capital, he defined three elements:

1. employee competence (the capabilities of people in an organization – its human capital);
2. internal structure (structured or organizational capital, including patents, documented processes, computer-based data, and the vision, strategy, and policies created by leadership); and
3. external structure (customer or relationship capital – the value of a firm's relationships with the people with whom it does business).

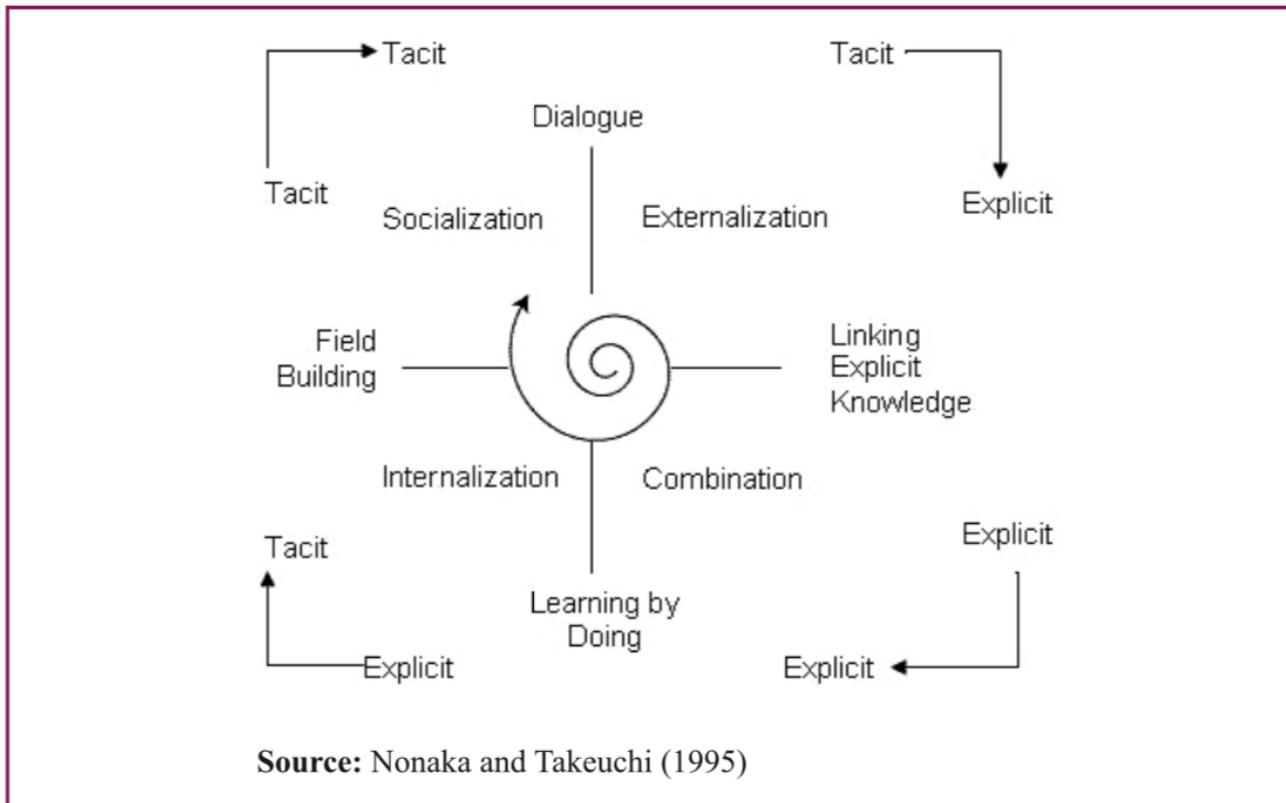
It is clear that BI can help firms analyze transactions within each element, but it only partially explains its relationship to KM. To really understand and learn from a firm's value network, one must also examine tacit behaviors, that is, the nature of behavioral exchanges occurring and the content of information and its value relative to firm performance. Here the role and contribution of BI becomes constrained.



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# KM & BI

**Figure 1** Framework for a learning organization



# KM & BI

Socialization is the process of sharing with others the experiences, technical skills, mental models, and other forms of tacit knowledge. For example, apprentices learn a craft not through language, but by working with their masters; i.e. observing, imitating and practicing under the master's tutelage. On-the-job-training (OJT) provides this mode of sharing tacit knowledge in the business world. OJT is complemented with explicit film clips of the expert performing the task, virtual reality representations, and kinematic analysis (from the field of robotics).



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# KM & BI

Articulation is the process of converting tacit knowledge to explicit knowledge. In the decision-making process, articulation may include, but is not limited to, one or more of the following:

- specifying the purpose of the decision, e.g. to understand how the number and locations of warehouses influence supply costs in a new marketing area;
- articulating parameters, objective functions, relationships, etc., in a BI mathematical model (i.e. building a model);
- articulating “what-if” model cases that reflect existing and potential decision-making situations; and
- evaluating the decision alternatives, given the uncertainty in the decision-making environment.

In other situations (e.g. those requiring the analysis of complicated physical movements), articulation may take the form of kinematic analysis; i.e. attaching sensors to various key appendages and then digitizing and recording the movements of interest. Articulation may also include knowledge extraction in expert systems, determination of causal maps, brainstorming, etc.



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# KM & BI

Integration is the process of combining several types of explicit knowledge into new patterns and new relations. The *Gestalt* theory of learning literature (e.g. Perkins, 1986) states that all problems with which we may be confronted, and also the solutions of such problems, are matters of relations; not only does our understanding of the problem demand our awareness of certain relations, but also we cannot solve the problem without discovering certain new relations. One potentially productive integration of explicit knowledge is the analysis of multiple, related “what-if” cases of a mathematical model to find new relationships, or metamodels, that determine the key factors of the model and show how these key factors interact to influence the decision.

Understanding is the process of testing and validating the new relationships in the proper context, thereby converting them into new tacit knowledge. Perkins's theory of understanding, from the theory of learning literature, suggests that understanding involves the knowledge of three things:

1. the purpose of the analysis (i.e. what the decision maker wants to understand);
2. a set of relations or models of the process/system to be understood; and
3. arguments about why the relations/models serve the purpose.



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# KM & BI

Internalization is the process of using the new patterns and relations, together with the arguments of why they fit the purpose, to update and/or extend the decision maker's own tacit knowledge base, thus creating a spiral of learning and knowledge that begins and ends with the individual.



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# KM & BI

The KM literature and practices have not been restricted to issues of explicit knowledge. Hasanali (2004), for example, identified five primary categories of critical success for KM, all of which suggest the importance tacit knowledge as well:

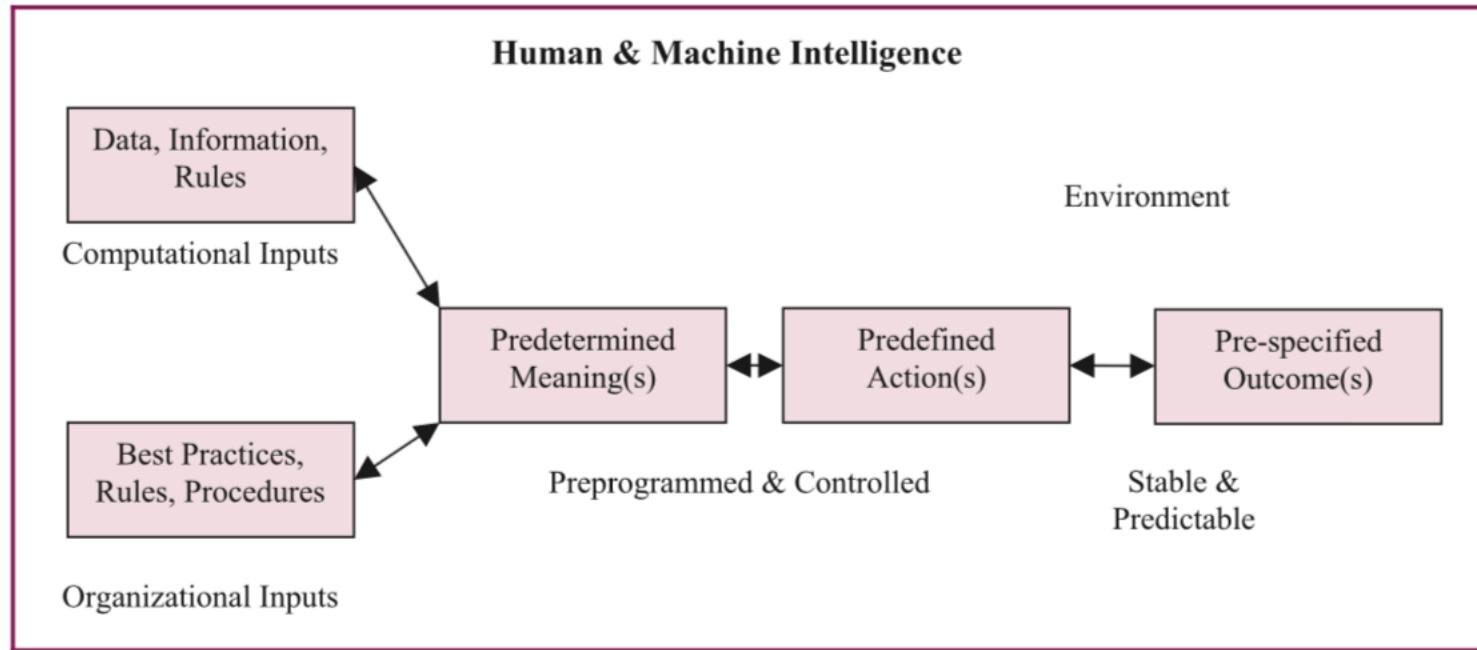
1. leadership;
2. culture;
3. structure, roles, and responsibilities;
4. IT infrastructure; and
5. measurement.



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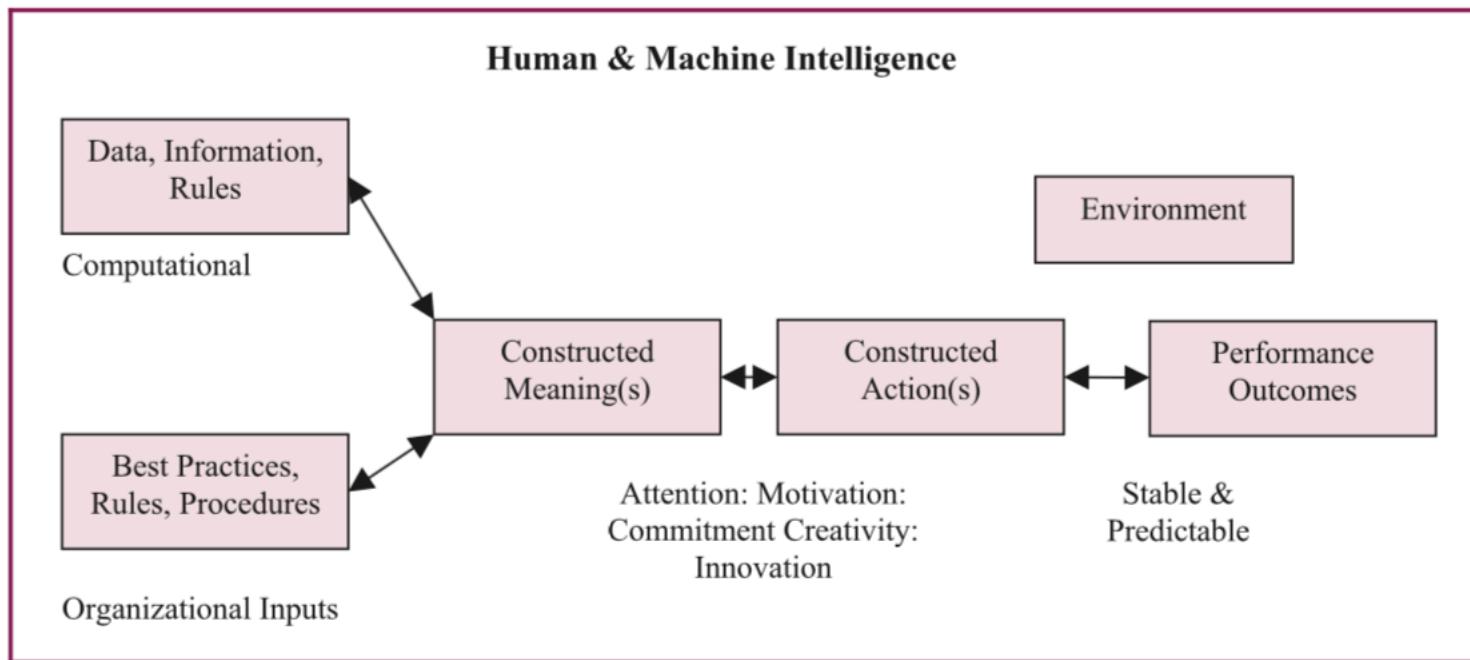
# KM & BI (Construção do conhecimento)

**Figure 2** Model 1: knowledge management for routine structured information processing



# KM & BI (Construção do conhecimento)

**Figure 3** Model 2: knowledge management for non-routine and unstructured sense making

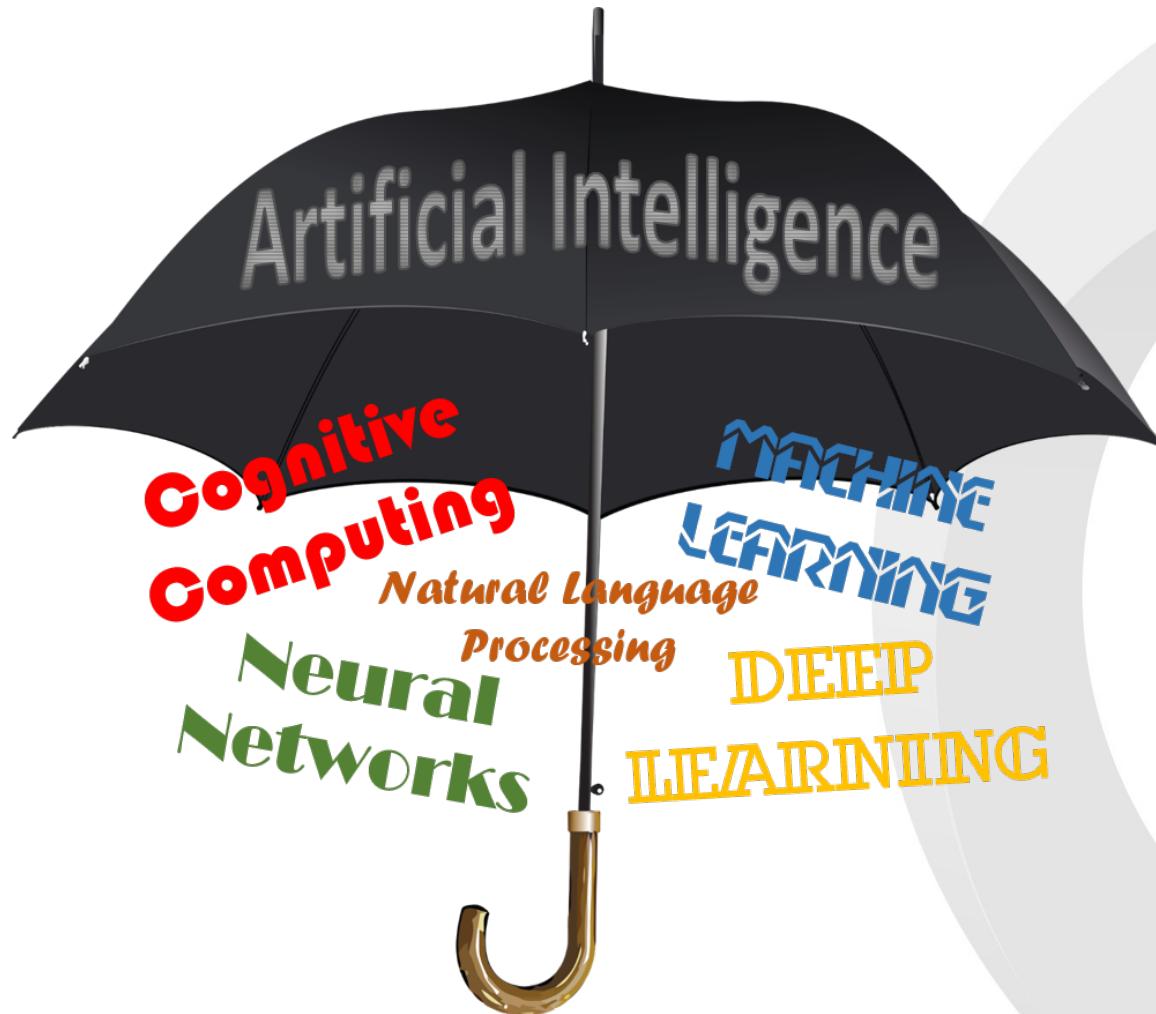


# Inteligência?



Neil deGrasse Tyson (Astrofísico) @TC15, Las Vegas, Out/2015

# Dados + Algoritmos



# Dados + Algoritmos

MIT SLOAN MANAGEMENT REVIEW

FRONTIERS

## Using Artificial Intelligence to Set Information Free

REID HOFFMAN

We are on the cusp of a major breakthrough in how organizations collect, analyze, and act on knowledge.



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# Big Data - Conceito

- Big data é informação **útil** e **relevante** para a tomada de decisão, que...
- ...envolve a habilidade de extrair **significado** de dados em grande **volume**, proveniente de fontes heterogêneas (**variedade**), produzidos em alta **velocidade**, e...
- ...requer formas **inovadoras** e **eficazes** de processamento e análise de dados.



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# Mercado de trabalho (big data)



# Mercado de trabalho (big data)



# Mercado de trabalho (market research)



# Mercado de trabalho (market research, analytics)



# Cientista de dados (1)

- O profissional mais cobiçado do século 21, segundo Thomas Davenport
- Maior disponibilidade de dados implica melhor qualidade e assertividade para análises e inferências
- Consequentemente maior o potencial retorno para o resultado dessas análises
- Perfil: estatística, algoritmos, negócios, visualização, comunicação, tecnologia (dados)



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# Cientista de Dados (2)



Nate Silver, <http://fivethirtyeight.com/>



# Big Data for ALL

Simon Rogers



José Roberto de Toledo



Hans Rosling



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# Big Data - Gov, Biz, Viz



Dhanurjay "DJ" Patil, US Gov



Hillary Mason, Fast Forward Labs, Bitly



Jer Thorp, NY Times, The Office for Creative Research

# US Gov - From Patil's Presentation

**This is the most data driven President we've ever had:**

- Created the first set of dashboards at the Federal level to monitor progress on major IT technology investments.
- Established data.gov which hosts over 135,000 data sets (and growing) from the U.S. Government.
- Executive order to ensure that open and machine-readable data is the new default for the government.
- Investing in research and data science to revolutionize how we improve health and treat disease
- Driving privacy for the consumer and ensuring competitiveness through the Big Data report.
- Establishing data driven culture through out the government with key data personnel at agencies like NIH, Dept of Energy, Commerce, Treasury, Dept. of Transportation, ...

# Big Data - Novo paradigma

Applications-centered today



Business analytics-centered tomorrow

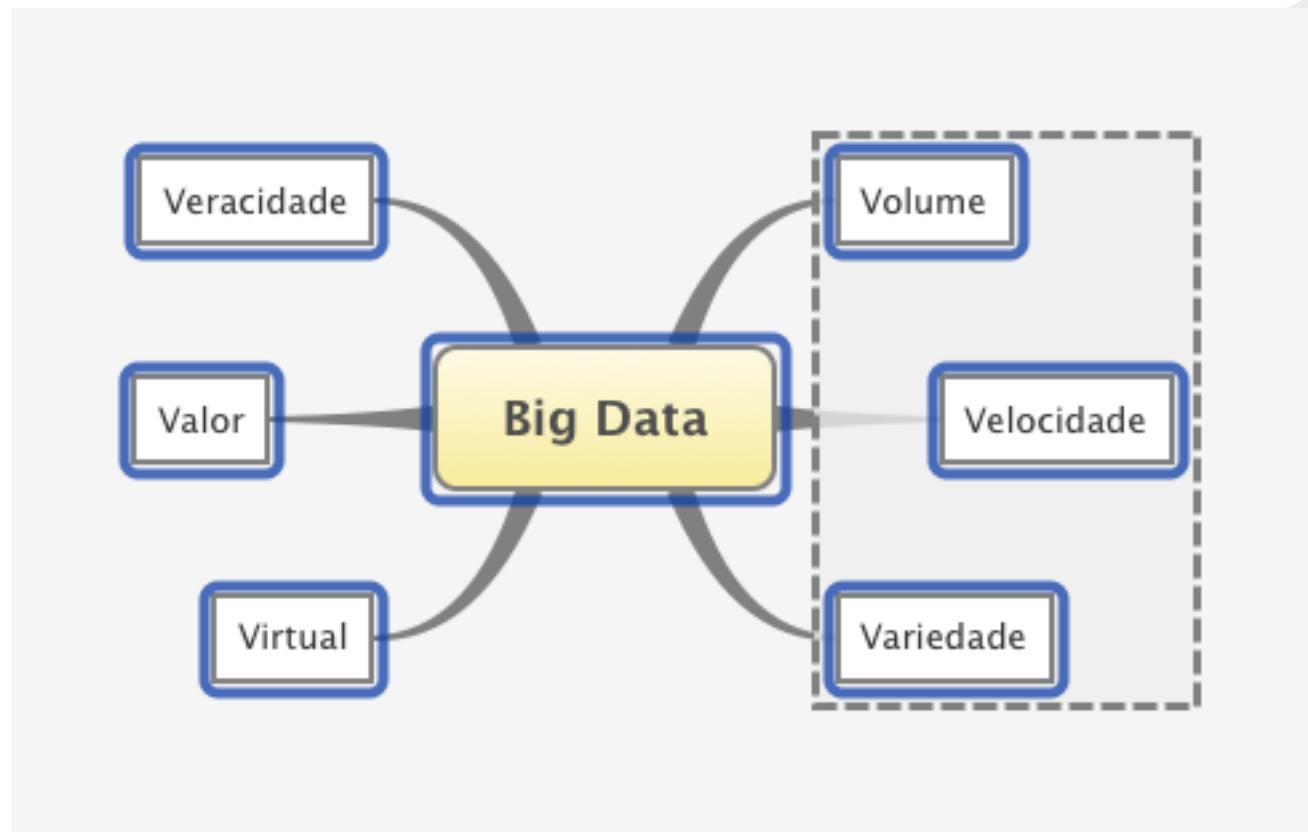


Gartner Group, Julho/2013

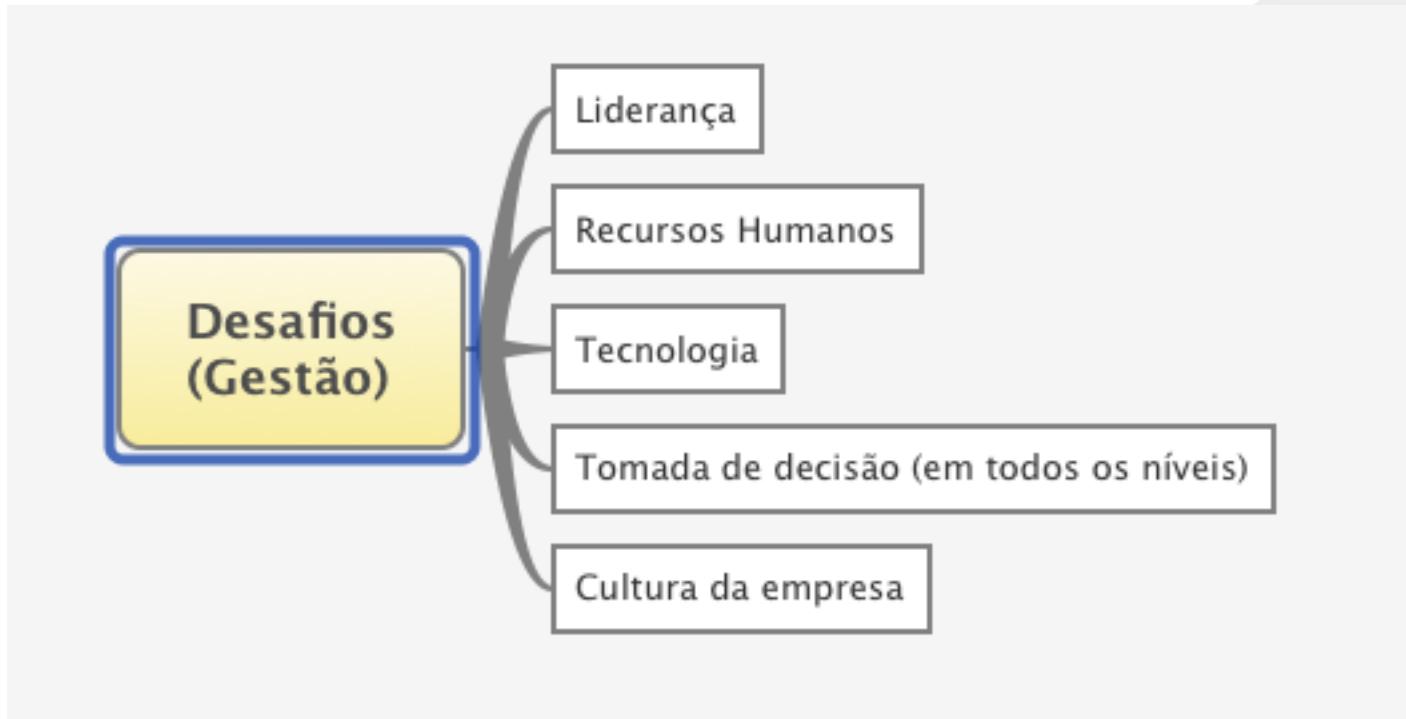


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# Big Data - Características



# Big Data (Desafios)



# Big Data - Tendências

- Proliferação de fontes de dados heterogêneas
- Ferramentas de *data discovery* ao alcance de todos
- Inteligência em todos os níveis das organizações
- Aumento das aplicações de análise visual e preditiva, e inteligência artificial
- *Chief Data Officer (CDO)* e *Chief Analytics Officer (CAO)* cada vez mais presentes nas organizações
- Uso de novas plataformas para tratar dados estruturados e não estruturados (e.g., Spark, Hadoop)
- Maior facilidade para identificar correlações com base em toda a população (N = ALL)



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# Inteligência Artificial



# Correlação vs. Causalidade



# Big Data - Visões Diferentes

The End of Theory: The Data Deluge Makes the Scientific Method Obsolete  
by Chris Anderson, Wired Magazine, 2008

VS.

Big data: are we making a big mistake?  
by Tom Harford, 2014



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# Obrigado!!!



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