

**Sistemas de Informação para um mundo
mais HUMANO**

Vamos ampliar nossa visão sobre Sistemas de Informação?

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**Curitiba, PR, Brasil
Maio de 2022**

Por que estamos aqui?



COMISSÃO ESPECIAL DE
SISTEMAS DE INFORMAÇÃO

Expectativa



Apenas 5% das empresas vão reduzir gastos com TI este ano, diz IDC Brasil

Segundo o estudo IDC Predictions Brazil, TIC deverá crescer 8,2% este ano, TI individualmente avançará 10,6%, Telecom 4% e TI Enterprise 8,9%



Por Redação em 9 de fevereiro de 2022 - 7:58 am

Os gastos mundiais com tecnologia da informação (TI) devem chegar a US\$ 4,5 trilhões em 2022.

Para o Gartner, o segmento de serviços de TI deve ter o segundo maior crescimento de gastos em 2022: com aumento de 7,9% em relação a 2021, deve chegar a US\$ 1,3 trilhão. Já os gastos com consultoria de negócios e tecnologia devem aumentar 10% em 2022.

Rank	Company	Market capitalization
1	Apple	\$2.8 trillion
2	Microsoft	\$2.2 trillion
3	Aramco	\$2.0 trillion
4	Alphabet	\$1.8 trillion
5	Amazon	\$1.6 trillion
6	Tesla	\$905.7 billion
7	Berkshire Hathaway	\$700.6 billion
8	Nvidia	\$613.0 billion
9	TSMC	\$600.3 billion
10	Tencent	\$589.8 billion
11	Meta	\$565.4 billion

TECHNOLOGY & BUSINESS

Technology Trend Statistics For Your Business

MOBILE

At least 50% of consumers will use 2 or more devices in their purchase process.



60% of mobile users expect a website to load in less than 3 SECONDS



90% OF MOBILE SEARCHES LEAD TO ACTION, 50% LEAD TO PURCHASE

80% of smartphone users use their device in stores to shop



One half of all local searches are conducted on mobile. People search while on the move.

SOCIAL



100 HOURS OF VIDEO are uploaded to YouTube every minute



2 new users join Facebook

EVERY SECOND



LinkedIn is 277% more effective for lead generation than Facebook & Twitter



85% OF USERS

say social networks help them decide what to buy



93% OF MARKETERS are using social media for business



62% OF PEOPLE ARE MORE LIKELY to engage with brands that integrate social media into their owned Properties

CLOUD



By 2016, worldwide IT cloud spending will approach

£60 BILLION

By 2015, Cloud will generate

14 MILLION JOBS

90% of public sector respondents & 78% of private sector respondents said DATA SECURITY WAS THEIR MAIN WORRY

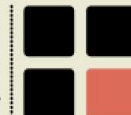
82% OF COMPANIES saved money when they moved to the cloud



APPS



25% OF ENTERPRISES will have an enterprise app store by 2017



1 IN 4 APPS ARE abandoned after the initial use

40% OF MARKETERS ARE PLANNING TO DEVELOP A MOBILE APP IN THE NEXT YEAR

By 2018 more app revenue will come from tablets than smartphones



MOBILE MEDIA CONSUMPTION TIME

82% - within apps
18% - mobile browsers



THERE ARE MORE THAN 1.5 MILLION APPS

AVAILABLE IN THE APPLE APP STORE AND GOOGLE PLAY

BROUGHT TO YOU BY:



PRODUCED BY:



<http://www.slideshare.net/LocalBizness1/slideshare-top-50-mega-trends>

AttwoodDigital.com

Desafios da OECD para a Educação até 2030

Preparar a sociedade para:



DESAFIOS
ainda não conhecidos



TECNOLOGIAS
ainda não inventadas



EMPREGOS
ainda não criados



COMPREENDER
a complexidade e a ambiguidade

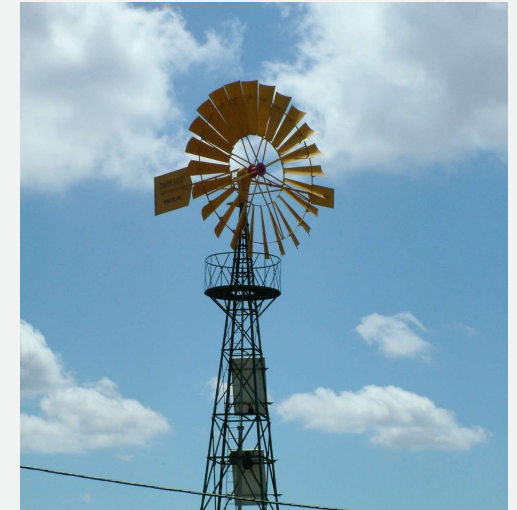
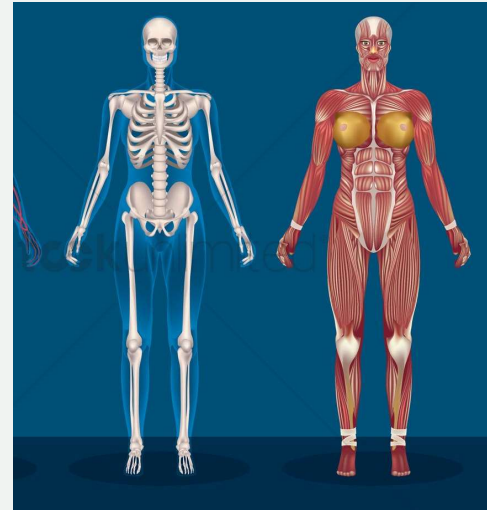


Sistemas de Informação

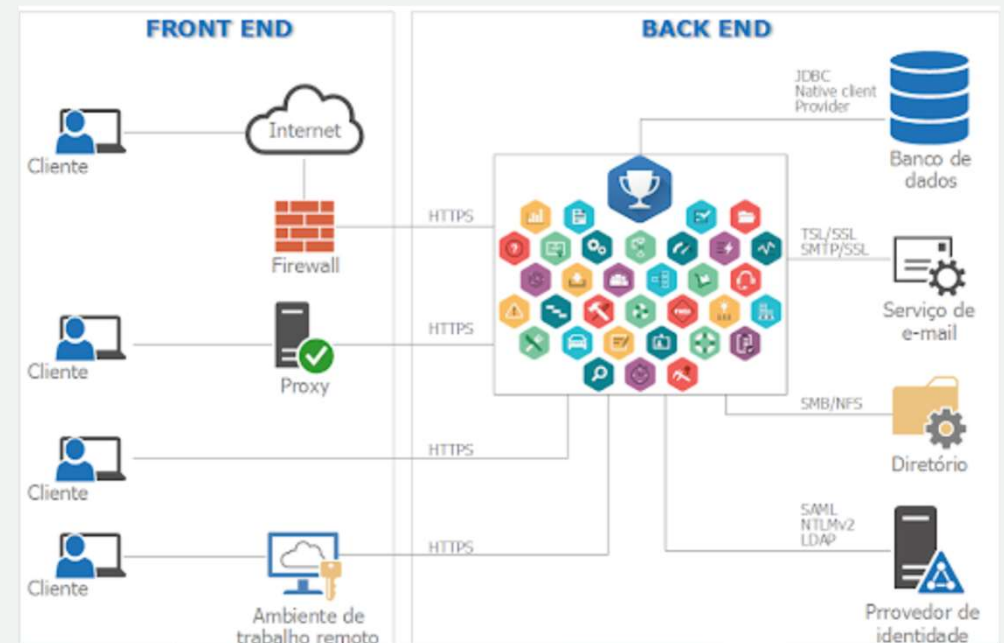
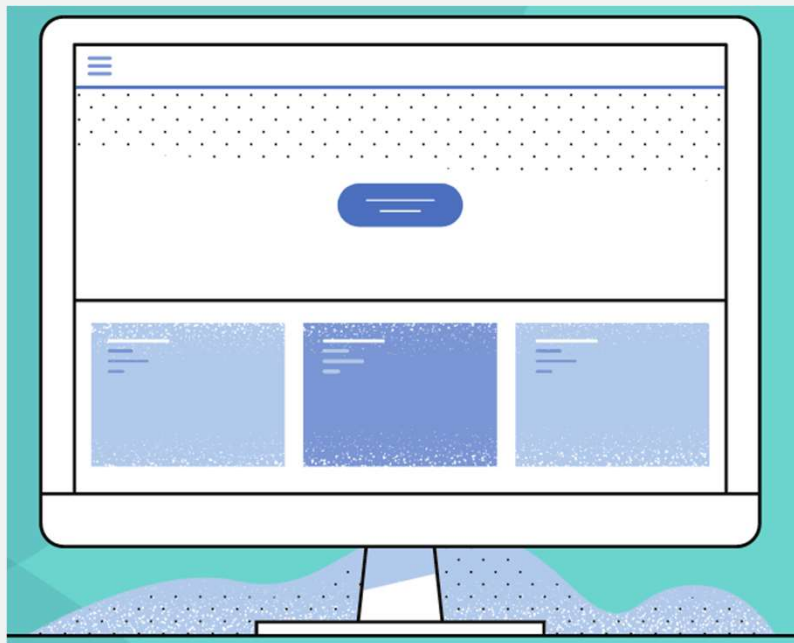
Decifra-me ou te devoro.

Sistema

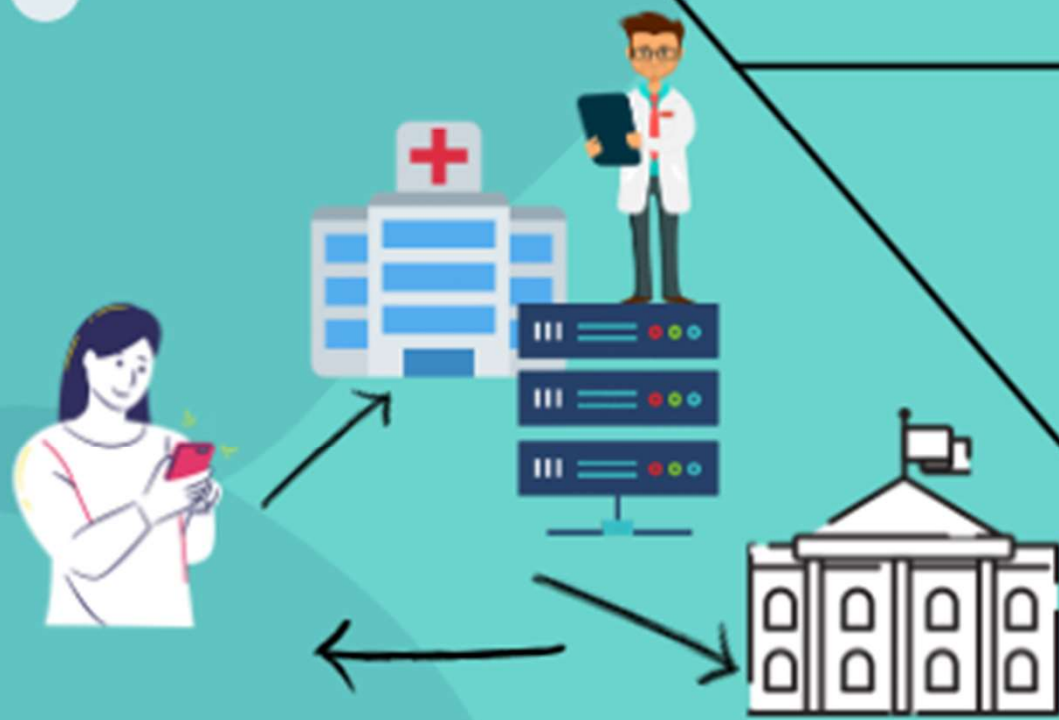
- **Um sistema é :**
 - Um conjunto de elementos**
 - Dinamicamente relacionados**
 - Executando atividades**
 - Para atingir um objetivo**
 - Operando sobre dados / energia / matéria**
 - Para fornecer informação / energia / matéria**
- Teoria Geral de Sistemas**



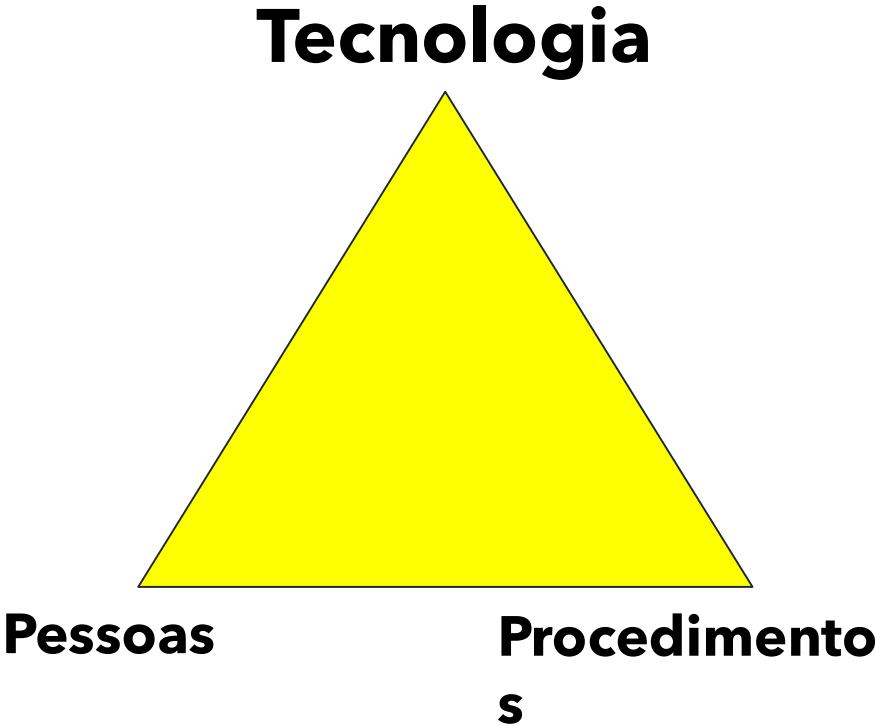
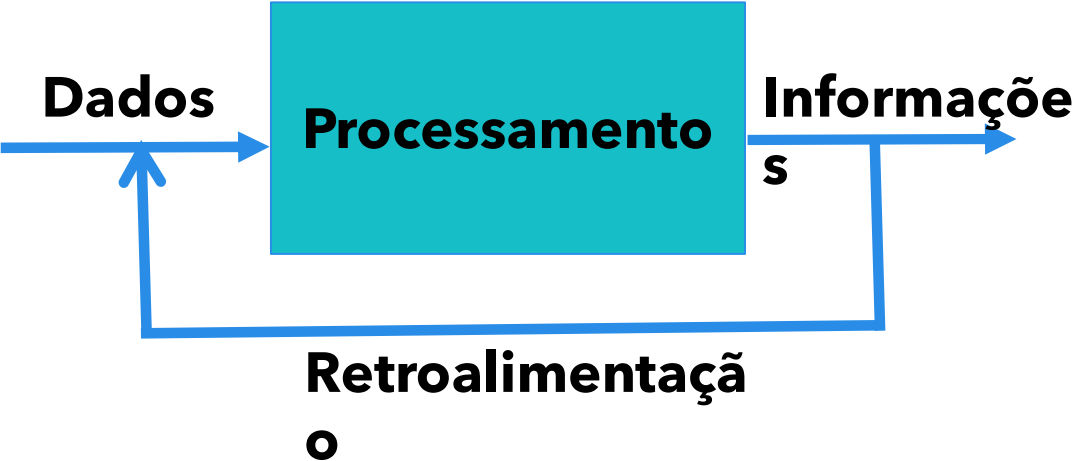
Sistema de Informação Baseado em Software



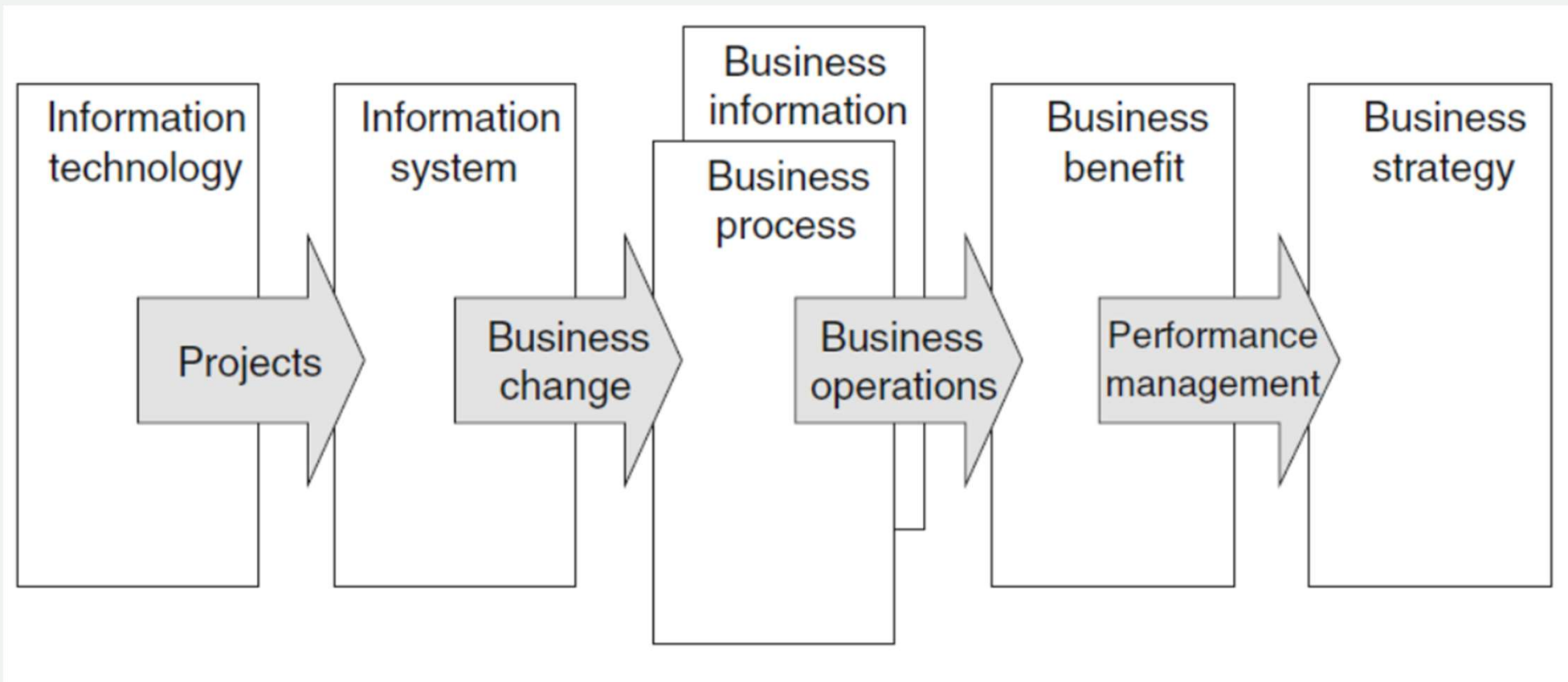
SISTEMAS DE INFORMAÇÃO



E a visão sobre SI

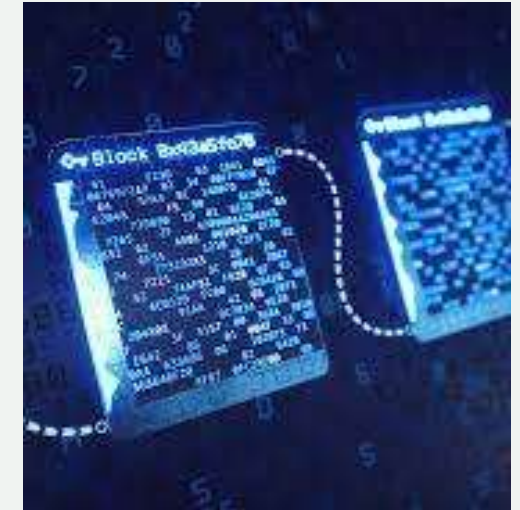
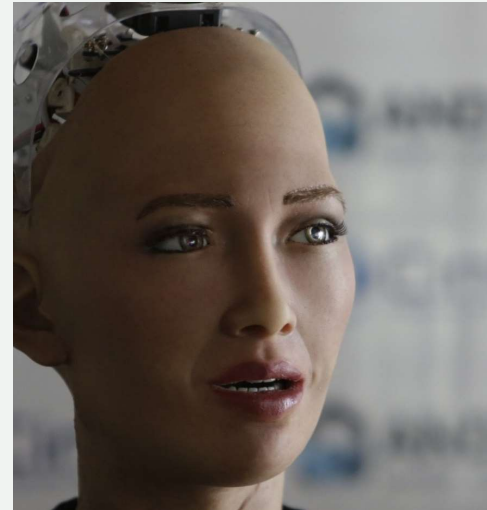


O alinhamento entre TI e negócios...



Dilemas na contemporaneidade

Alguma coisa está muito certa na nossa forma de construir Sistemas de Informação.



Dilemas na contemporaneidade

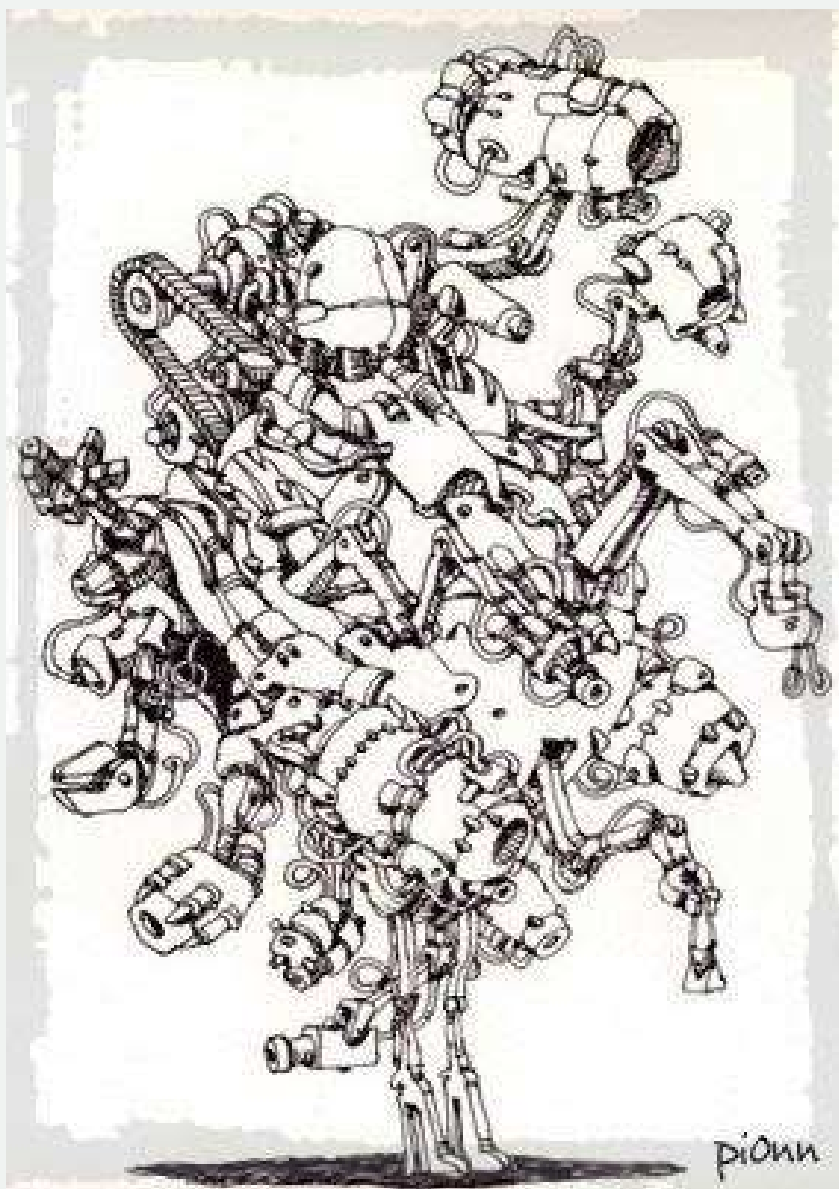
Alguma coisa está muito errada na nossa forma de construir Sistemas de Informação.



Paradoxos da Tecnologia



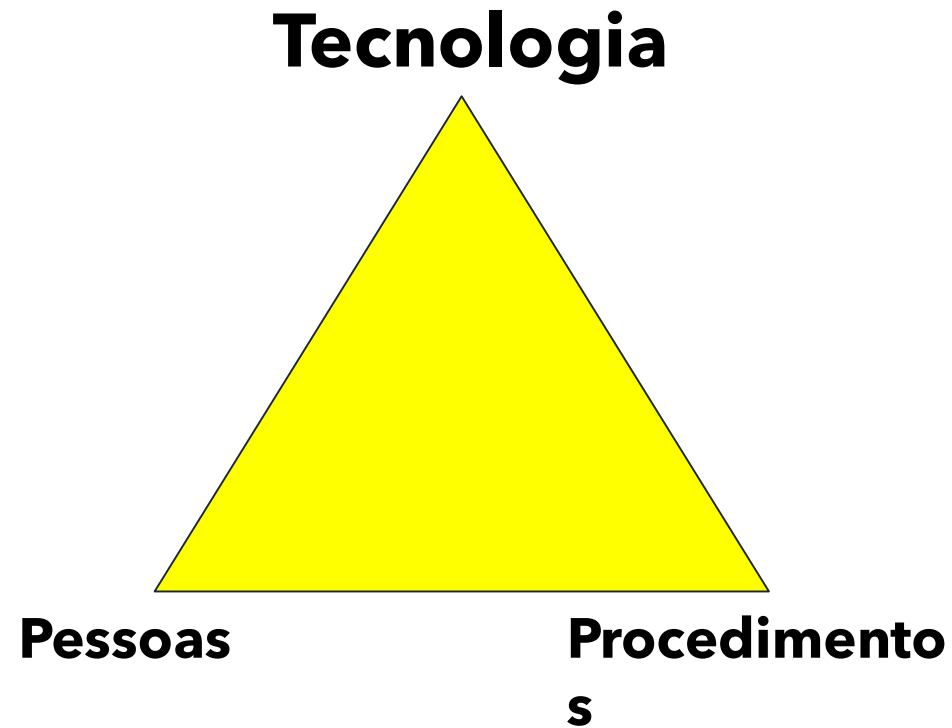
Jarvenpaa e Lang (2005)



Desconstrução

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Entendemos os "pilares" de SI?

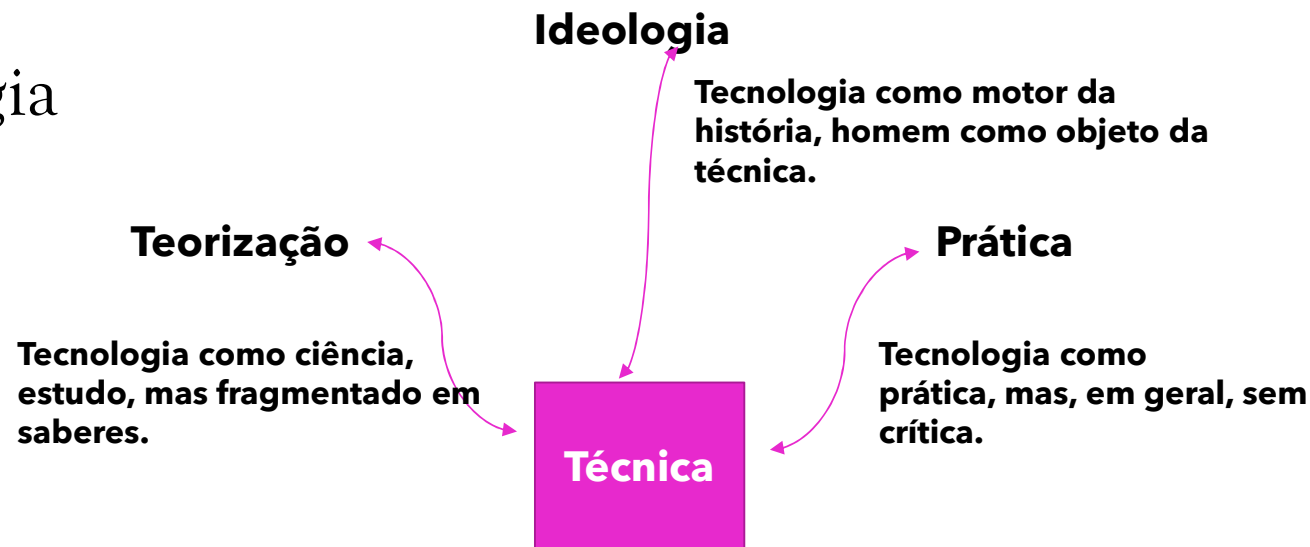


Tecnologia – Significados

- 1. A teoria, a ciência, o estudo, a discussão da técnica (artes, habilidades do fazer, profissões, modos de produzir alguma coisa)**
- 2. A técnica. Sentido mais frequente e popular, quando não se exige precisão maior.**
- 3. Conjunto de todas as técnicas que dispõe uma sociedade em qualquer fase histórica do seu desenvolvimento.**
- 4. A ideologização da técnica.**

Pinto, A. V. O conceito de tecnologia. Vol 1. Contraponto. (2005)

Tecnologia

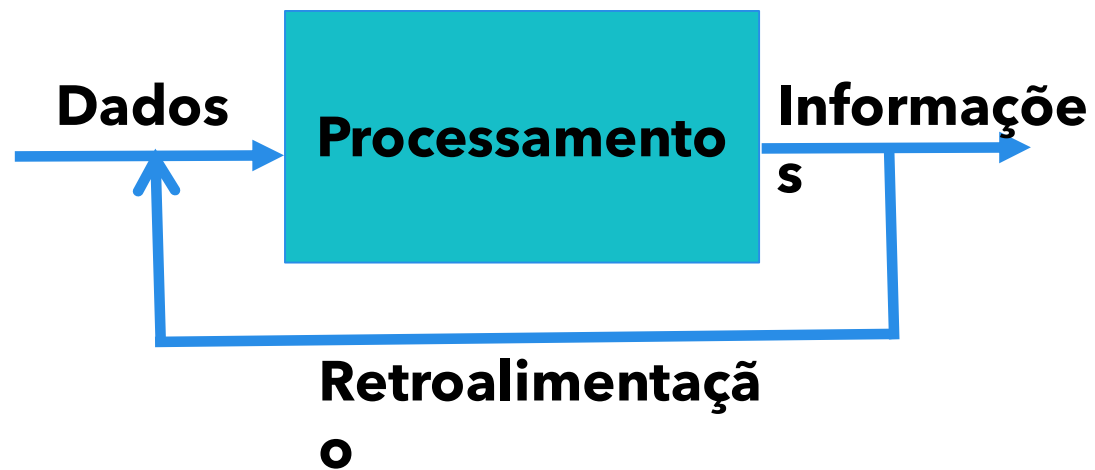


"Comprova a dissociação, ainda reinante entre a teoria e a prática, da qual a grande maioria de teóricos e práticos da tecnologia nem chega a ter consciência. O resultado infeliz da situação cifra-se em vermos a teoria ser feita pelos práticos, não chegando sequer a suspeitar que a estão fazendo e, de outro lado, a prática ser imaginada pelos teóricos, que sobre ela especulam com inteira falta das vivências autênticas dispensáveis à formulação de julgamentos lógicos corretos." (Pinto, A. V.)

A negação da totalidade.

**Pinto, A. V. O conceito de tecnologia. Vol 1
Contraponto. (2005)**

Entendemos a "Tecnologia" de SI?

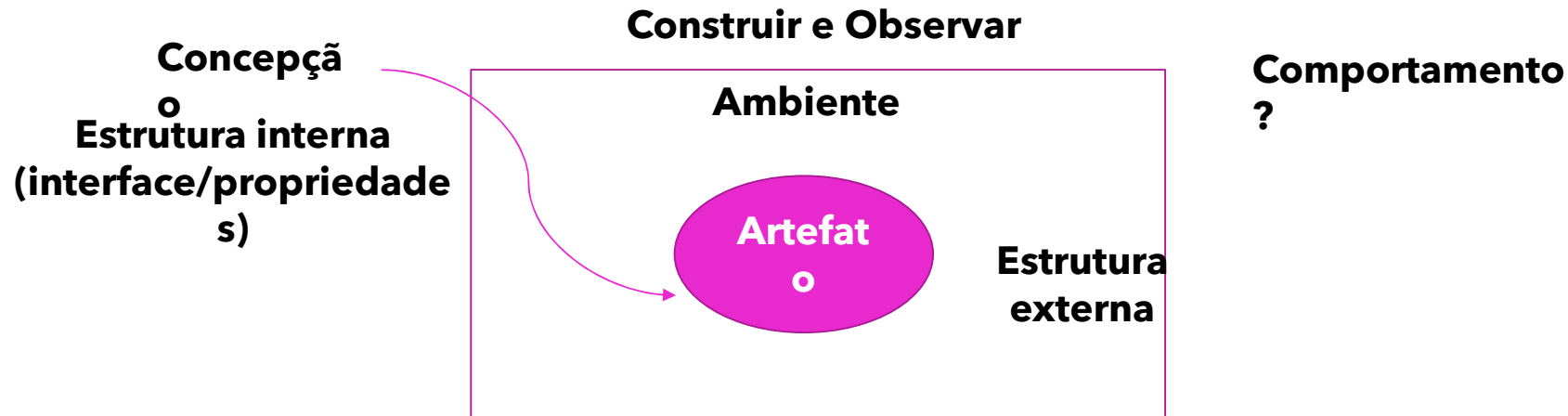


Herbert A. Simon
Les sciences
de l'artificiel



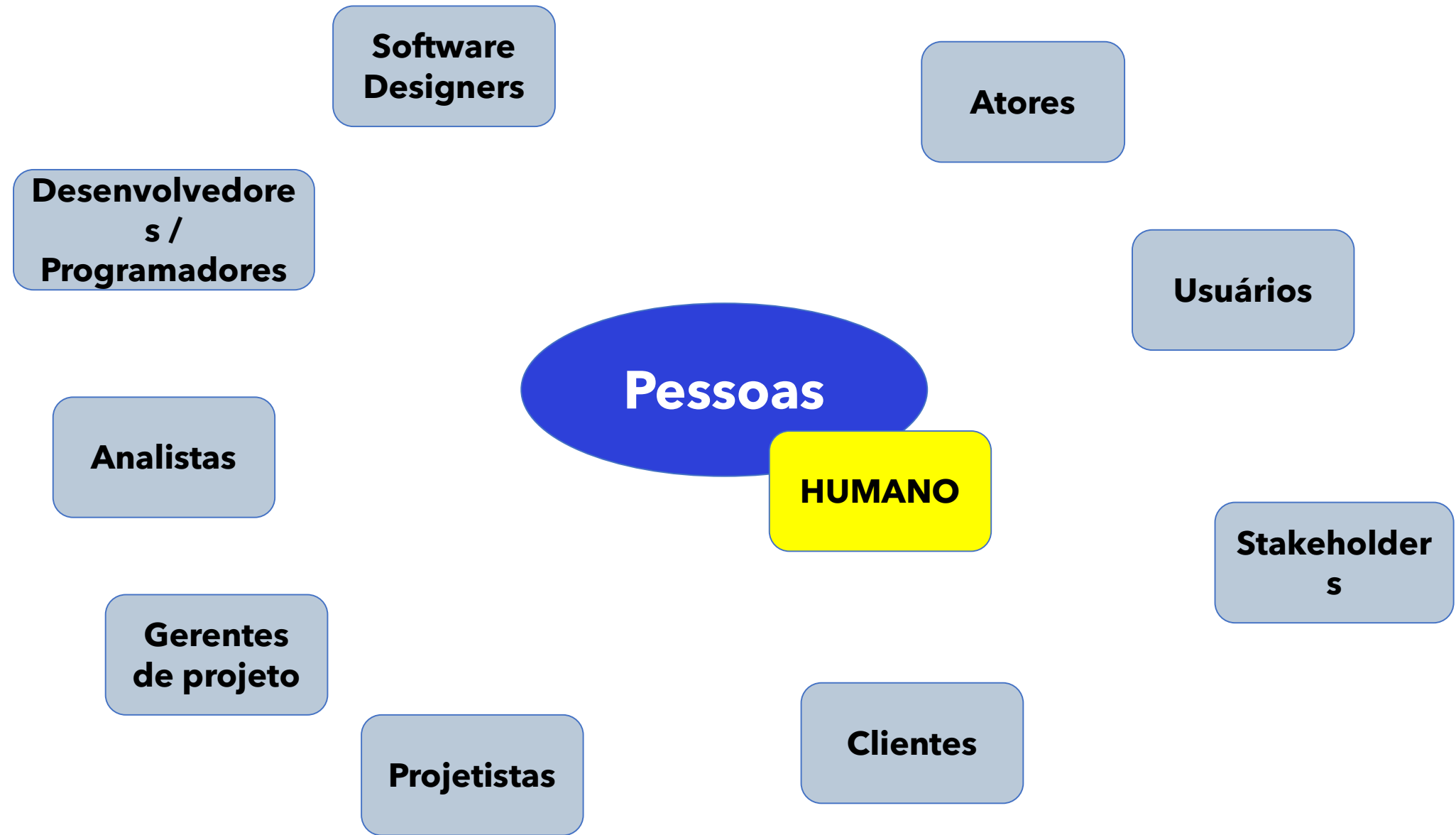
bloessais

- **Abstração**
- **Adaptação**
- **Solução ótima x solução satisfatória**
- **Teoria matemática x teoria empírica**
- **Existe o artificial se tudo o que é criado pelo homem usa matéria da natureza ou imita seu funcionamento?**
- **O "artificial" são construções culturais, sociais e humanas**



"O que precisamos estudar além dessas ciências fronteiriças: aquelas que a interface entre os meios e o ambiente da tarefa? ... O domínio de estudo dos que trabalham no artificial é a análise dos mecanismos pelos quais se realizam a adaptação dos meios aos ambientes. No centro da análise, encontramos justamente o processo da concepção propriamente dita..." (Simon)

"Dissemos que o verdadeiro sujeito de estudo da humanidade é o próprio o homem. Eu reivindico aqui que os seres humanos - pelo menos em seus componentes intelectuais - podem ser considerados como relativamente simples, e que, essencialmente, a complexidade de seu comportamento resulta de seu ambiente, de sua busca por boas concepções. Se eu convenci você, nós podemos concluir que, em larga parte, o verdadeiro estudo da humanidade é a ciência da concepção, considerada não somente como a parte profissional do ensino das técnicas mas, sobretudo, como um testemunho essencial da cultura do "homem honesto"." (Simon)



Software Designers

Atores

Desenvolvedores / Programadores

Usuários

Pessoas

Analistas

HUMANO

Stakeholders

Gerentes de projeto

Clientes

Projetistas

Como a gente parte para a construção de um sistema computacional

- ⑩ **Abstração de contextos**
- ⑩ **Abstração de atores**
- ⑩ **Abstração de conceitos**
- ⑩ **Abstração de funções**
- ⑩ **Abstração de informações**
- ⑩ **Abstração de arquiteturas**
- ⑩ **Abstração de processos**
- ⑩ **...**



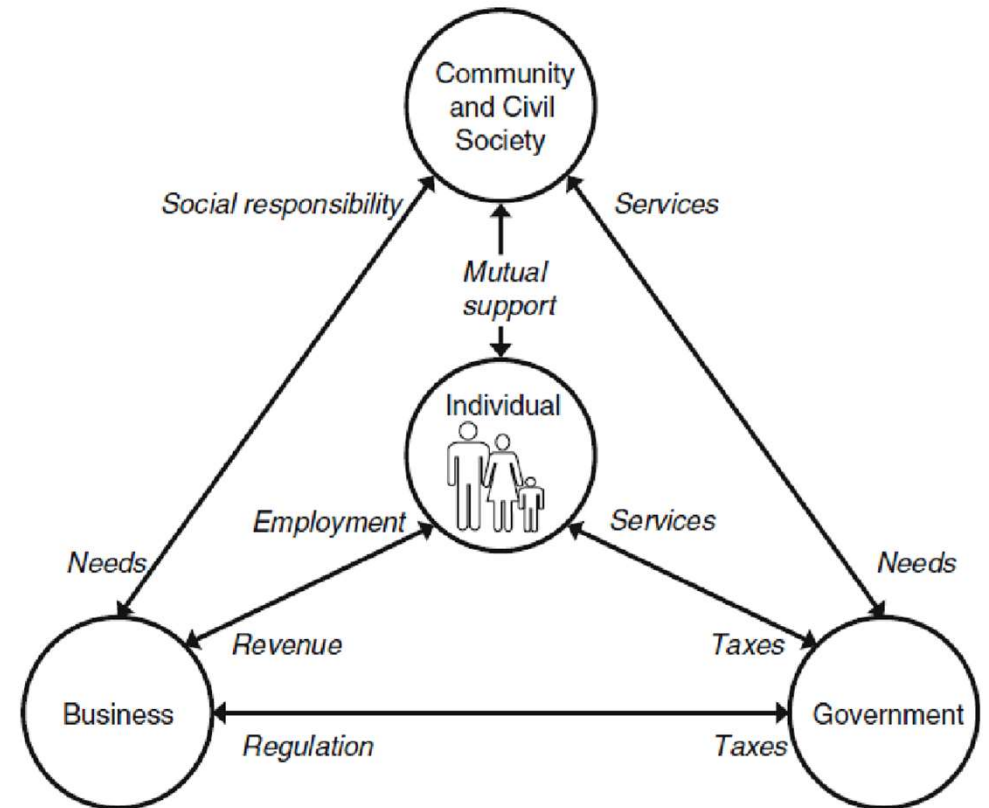
Visão reducionista
Controle da produção e da
qualidade
Especialização de atividades

O que teríamos que olhar

10 A complexidade está:

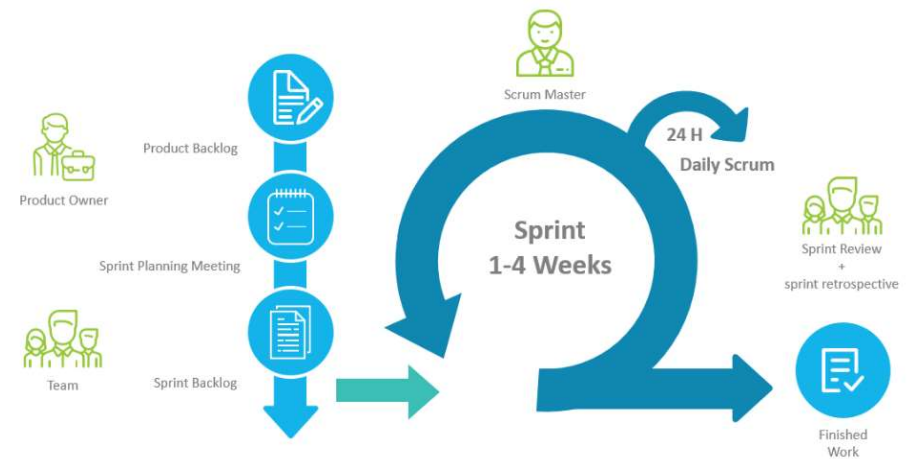
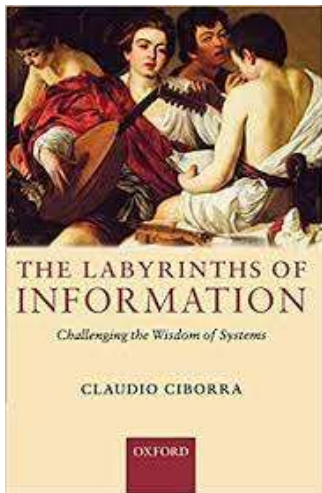
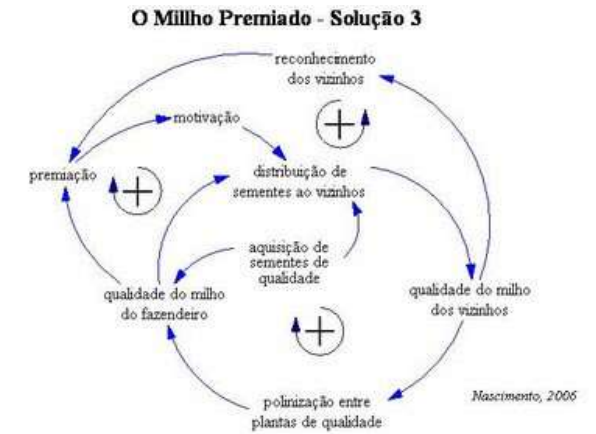
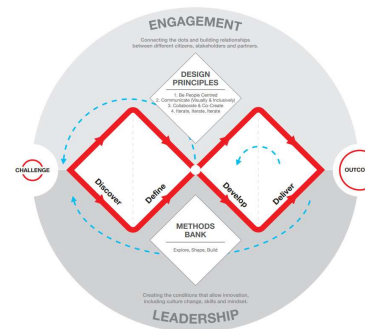
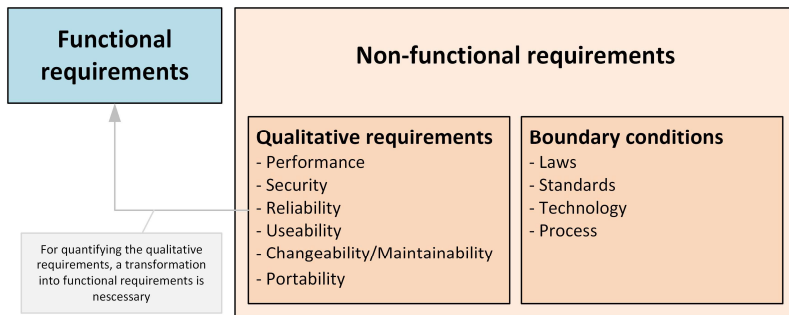
- 10 nas tecnologias e processos
- 10 nas organizações
- 10 na sociedade
- 10 no conhecimento (multidisciplinaridade)
- 10 na psique humana (!)

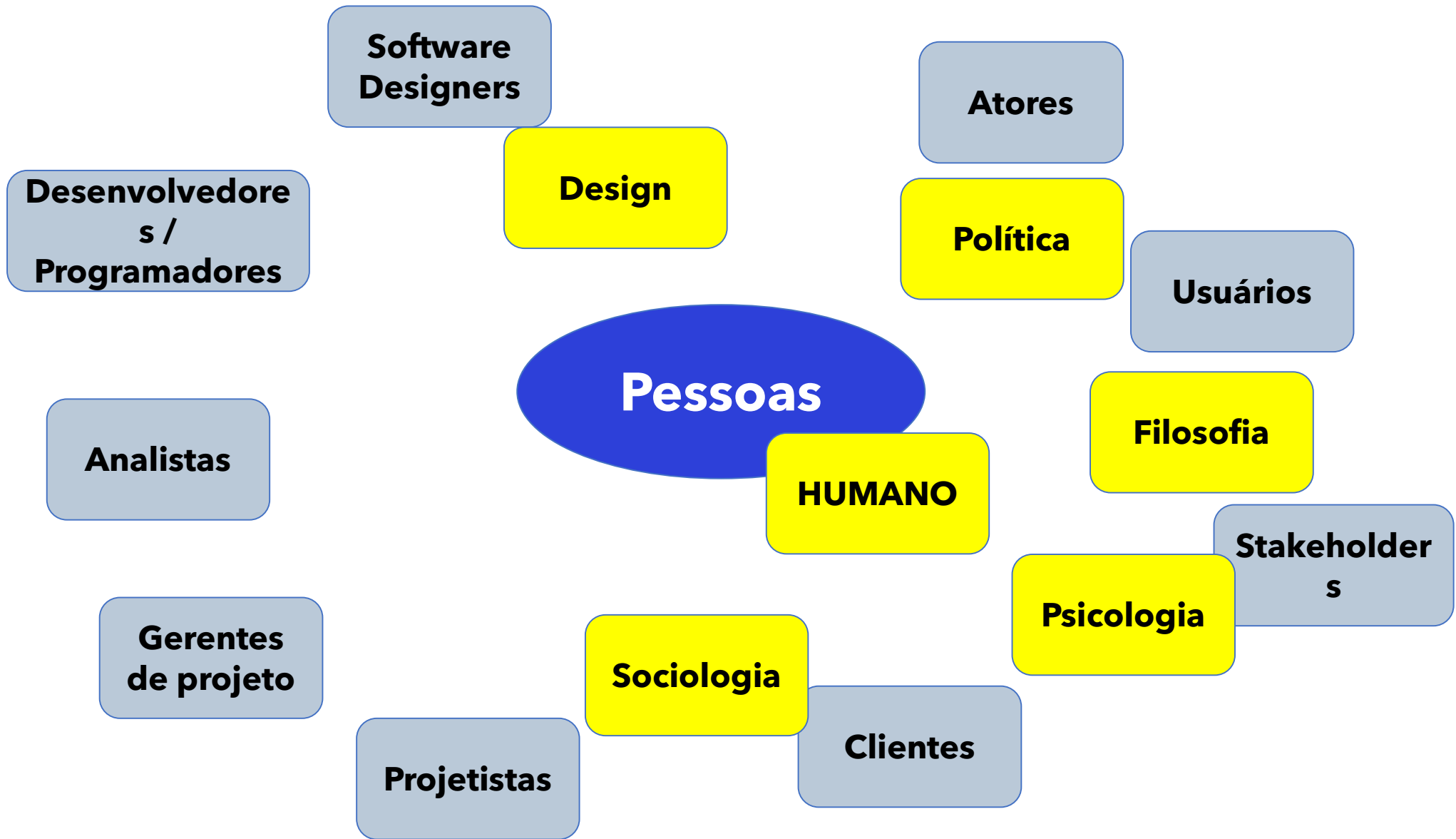
Pensamento Sistêmico
Complexidade



Conforme os sistemas de informação assumem papéis cada vez mais fundamentais na vida em sociedade, na governança pública e na transformação dos negócios, torna-se cada vez mais evidente a necessidade de praticarmos o estudo de sistemas de informação sob uma nova (ou seria velha?) perspectiva. Passamos muito tempo fazendo o movimento de abstrair, reduzir, controlar e objetivar, para construir sistemas. Parece que agora é hora nos movermos ao contrário: ampliar, subjetivar, refletir e observar, para projetar soluções de impacto no mundo em que vivemos. *(Araujo e Siqueira, 2022).*

O que já vimos para auxiliar neste processo







"Não há linhas retas ou cantos afiados na natureza."
(Gaudi)

Nossa necessidade de ordem é uma defesa à nossa incapacidade de lidar com o caos ou de perceber a ordem que há nele. Um instinto egóico de controle.

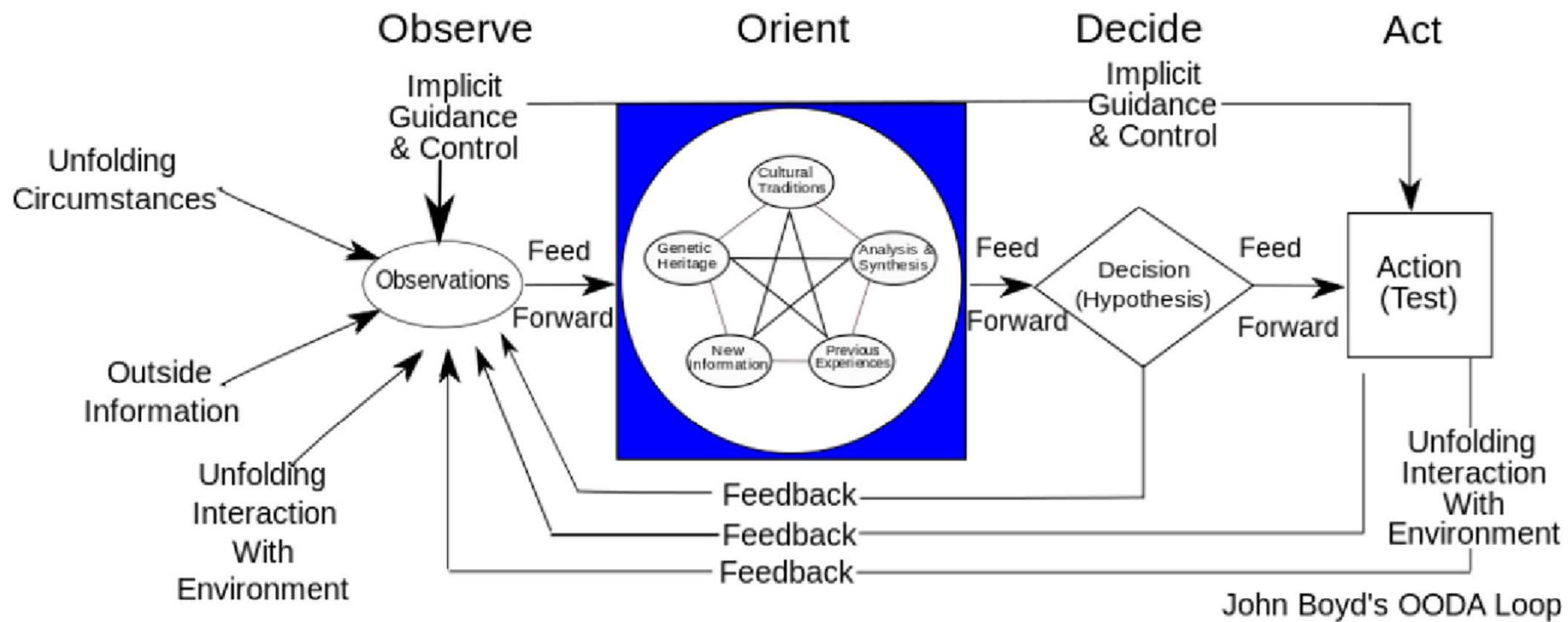
**Não é um problema
essencialmente técnico**

**mas de Sistemas de Informação
para um mundo mais humano**



Bibliografia

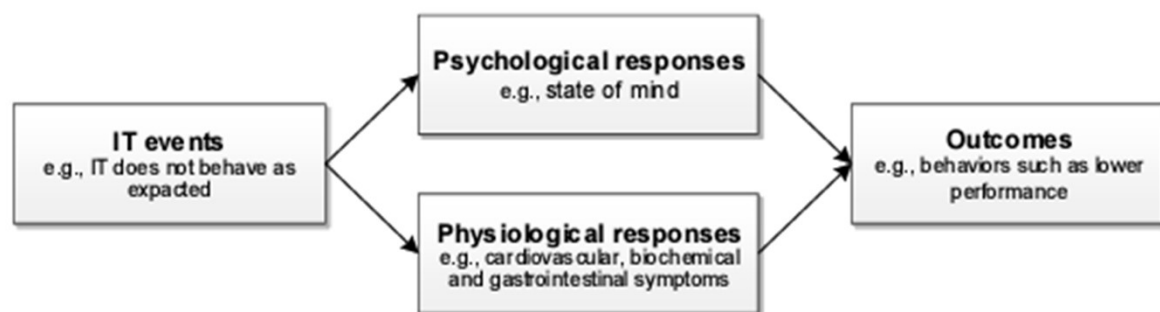
- **Fornazin, M. (notas de aula de Fundamentos de SI, UFF)**
- **Antonio Vieira Pinto. O Conceito de Tecnologia, Vol. I. Ed. Contraponto (2005)**
- **Simon, Herbert A., Les sciences de l'artificiel. Folio Essais. (1996)**



Stimulus

Response

Outcome





São esses instrumentos?
Como vamos encarar/construir
esse conhecimento?

Table 1. Overview of the results within the research stream of IT adoption and usage (based on Weinert 2018)


IT event	Appraisal		Coping Strategy	Outcome (variables are highlighted)	Reappraisal	Reference
	1.	2.				
RESEARCH STRAND FOCUSING ON IT EVENTS DUE TO IT USE (MOSTLY TECHNOSTRESS)						
IT-related issues	X	X	Social support (EFC)	Social support is related with high <i>anxiety</i> , high <i>stress</i> , and high <i>depression</i> .	X	(Love et al. 2004)
	X	X	Active coping (PFC)	Active coping has no significant relationship with <i>anxiety</i> , <i>stress</i> , and <i>depression</i> .	X	
	X	X	Cognitive avoidance coping (EFC)	Cognitive avoidance coping is related to high <i>anxiety</i> , high <i>stress</i> , and high <i>depression</i> .	X	
	X	X	Self-controlling coping (EFC)	Self-controlling coping is related with high <i>anxiety</i> , high <i>stress</i> , and high <i>depression</i> .	X	
	X	X	Accepting responsibility coping (EFC)	Self-controlling coping is related with high <i>anxiety</i> , high <i>stress</i> , and high <i>depression</i> .	X	
Security-related stress (overload, complexity, uncertainty)	X	X	Moral disengagement (EFC)	Moral disengagement increases the <i>information security policy violation intention</i> , and it mediates the relationship between security-related stress and <i>information security policy violation intention</i> .	X	(D'Arcy et al. 2014b)
Overload	X	X	Method control (PFC)	Method control increases the relationship between overload and <i>physiological strain responses (alpha-amylase)</i> .	X	(Galluch et al. 2015)
	X	X	Resource control (PFC)	Resource control decreases the relationship between overload and <i>physiological strain responses (alpha-amylase)</i> .	X	
Conflict	X	X	Method control (PFC)	Method control decreases the relationship between conflict and <i>physiological strain responses (alpha-amylase)</i> .	X	(Galluch et al. 2015)
	X	X	Resource control (PFC)	Resource control increases the relationship between conflict and <i>physiological strain responses (alpha-amylase)</i> .	X	
Technostress creators (overload, invasion, complexity, insecurity, uncertainty)	X	X	Conscientiousness (EFC)	Conscientiousness has no effect on <i>job burnout</i> or on <i>job engagement</i> .	X	(Srivastava et al. 2015)
	X	X	Extraversion (EFC)	Extraversion reduces the effect of technostress creators on <i>job burnout</i> .	X	
	X	X	Openness (EFC)	Openness increases the effect of technostress creators on <i>job engagement</i> .	X	
	X	X	Neuroticism (EFC)	Neuroticism increases <i>job burnout</i> and decreases <i>job engagement</i> as well as reduces the effect of technostress creators on <i>job engagement</i> .	X	
	X	X	Agreeableness (EFC)	Agreeableness increases <i>job engagement</i> and the relationship between technostress creators and <i>job burnout</i> .	X	
Technostress creators (overload, invasion, complexity, insecurity, uncertainty)	X	X	Distress venting (EFC)	Distress venting reduces the relation between technostress creators and strain (emotional exhaustion) and increases strain (emotional exhaustion) directly.	X	(Pirkkalainen et al. 2017)
	X	X	Distancing from IT (EFC)	Distancing from IT has no significant effect.	X	




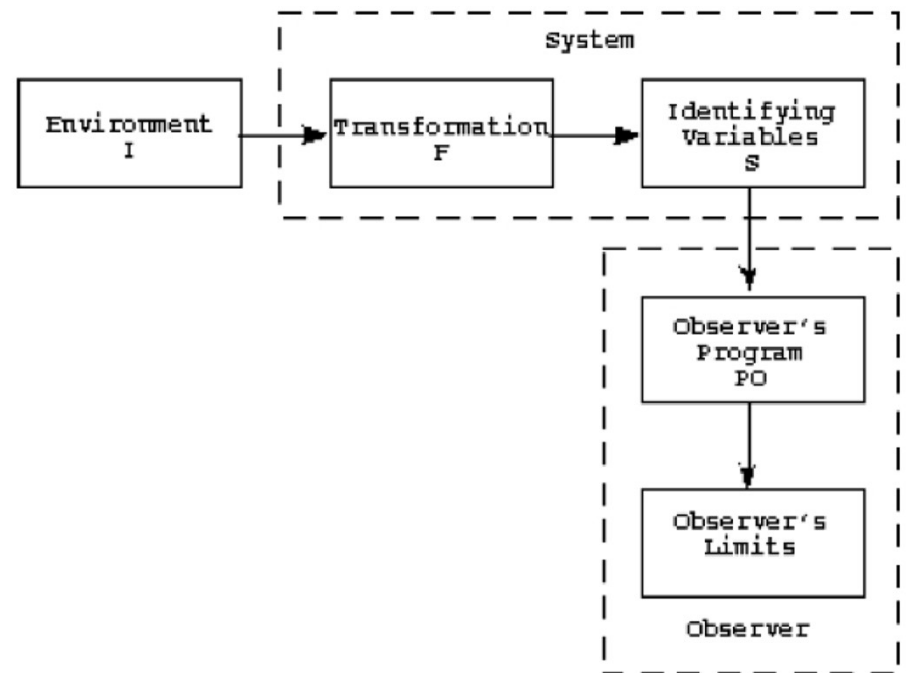
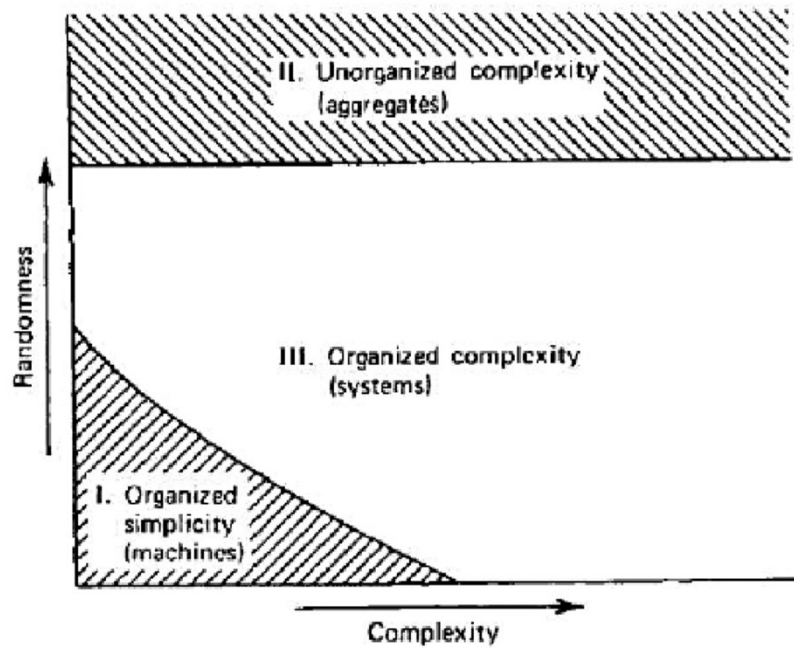
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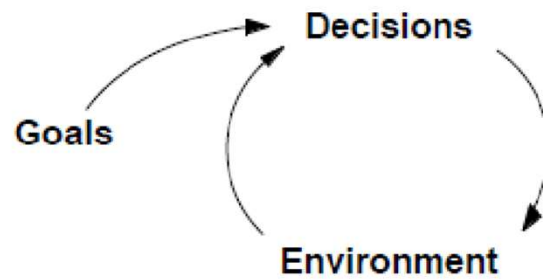


Realidade

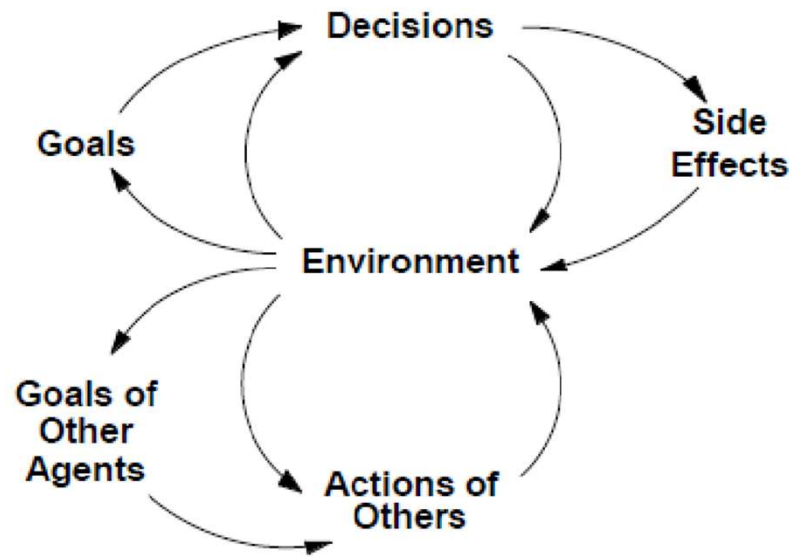
 = Analytical treatment

 = Statistical treatment

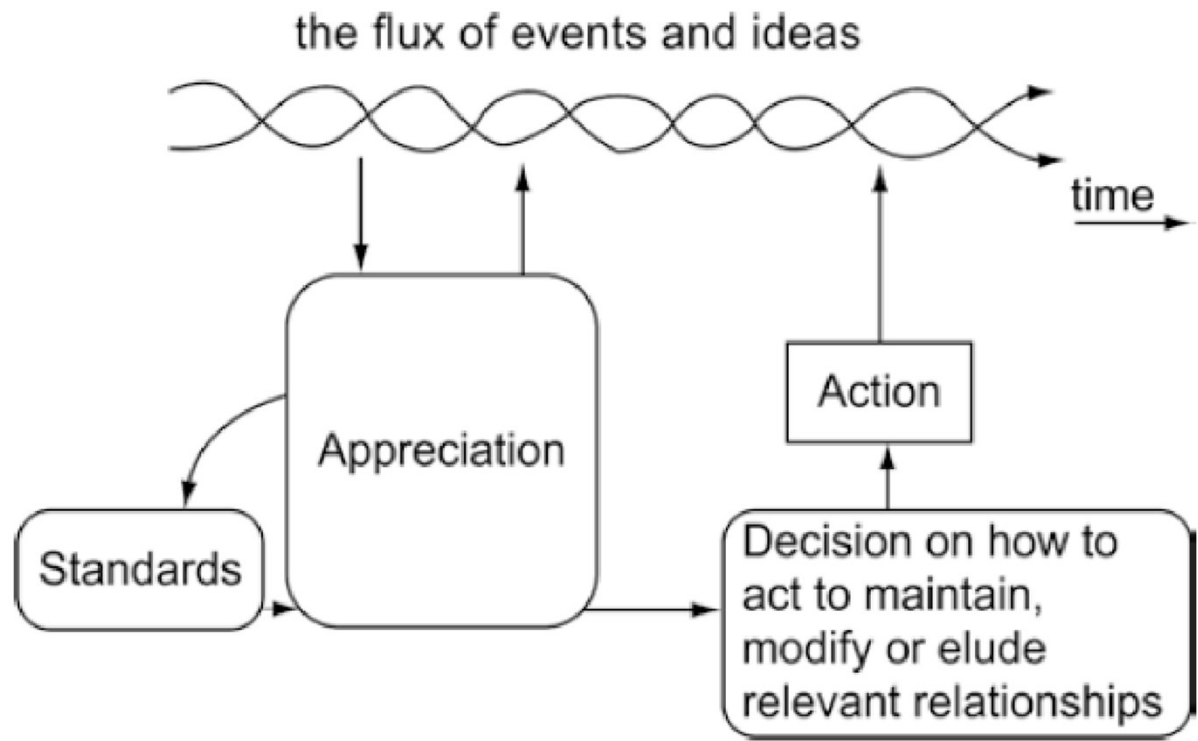


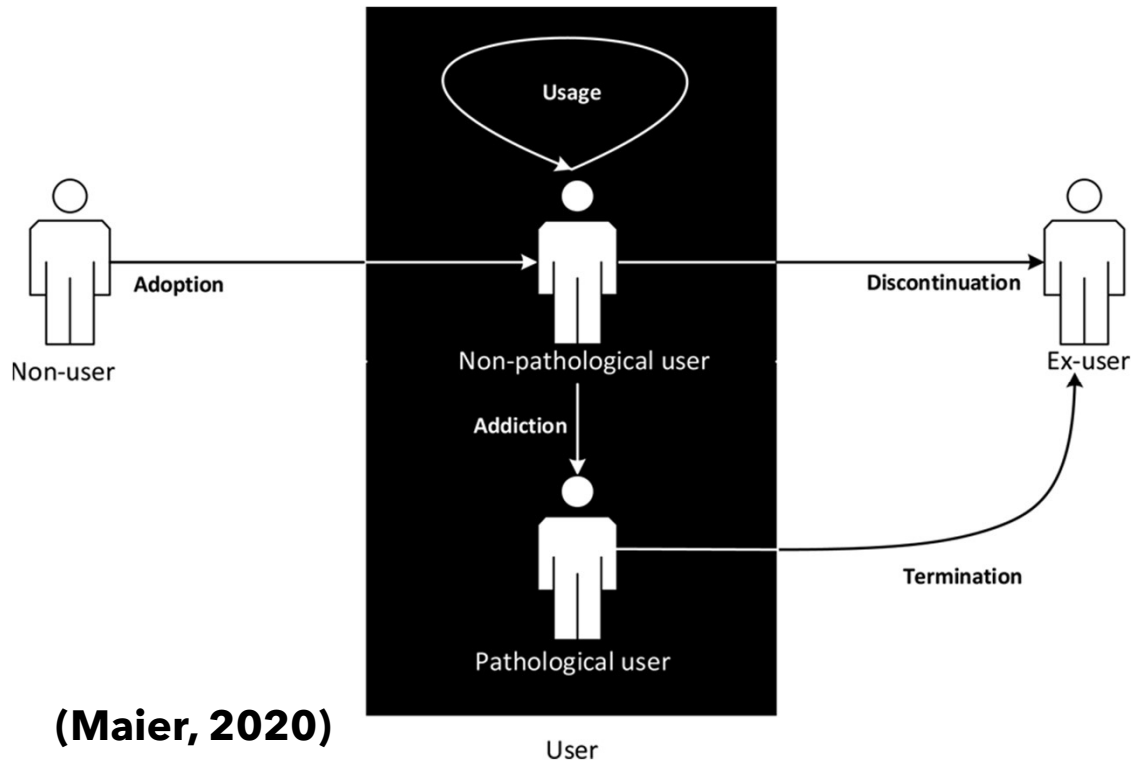


Our decisions alter our environment, leading to new decisions,



but also triggering side effects, delayed reactions, changes in goals and interventions by others. These feedbacks may lead to unanticipated results and ineffective policies.

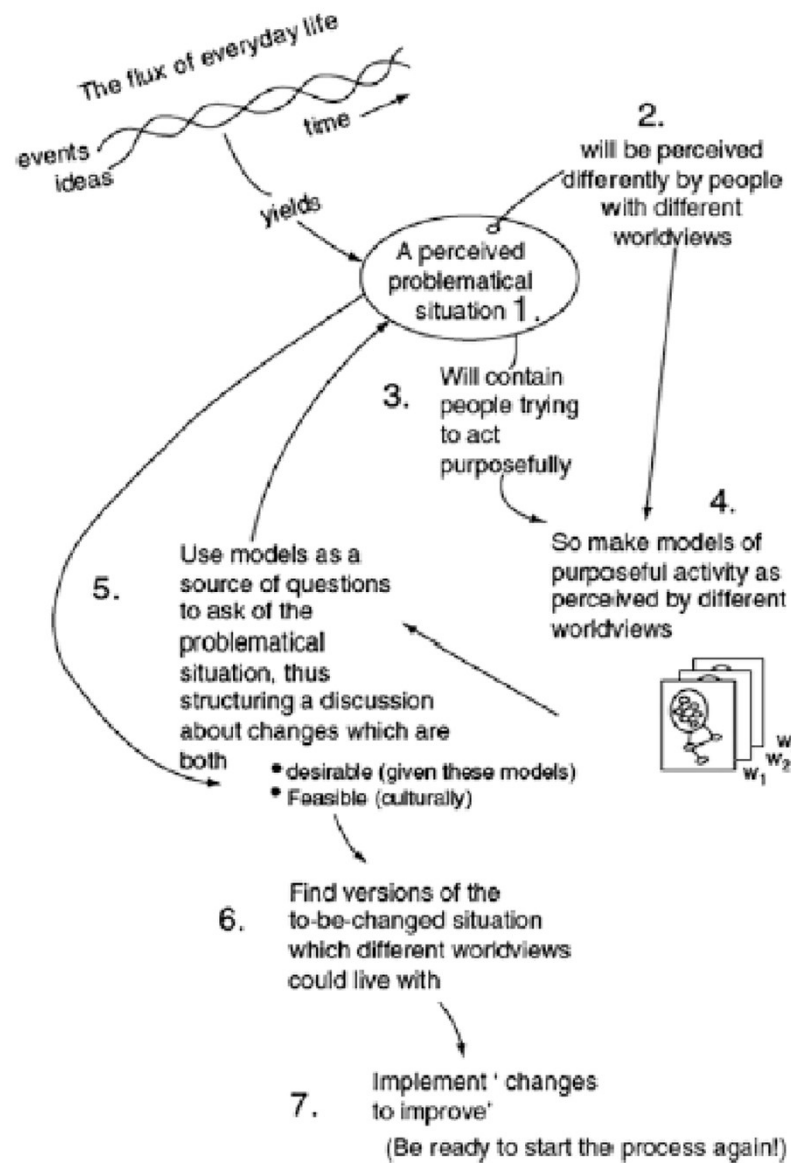


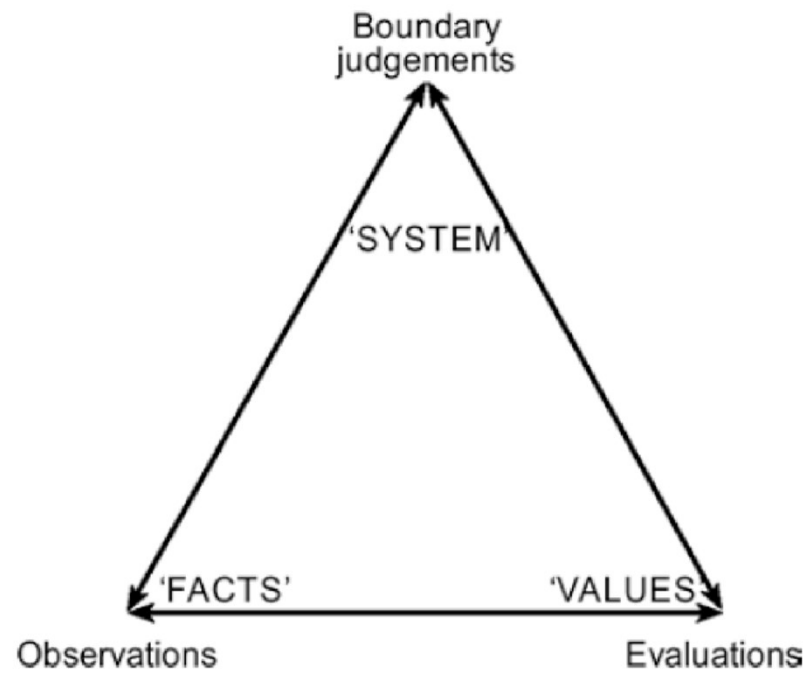


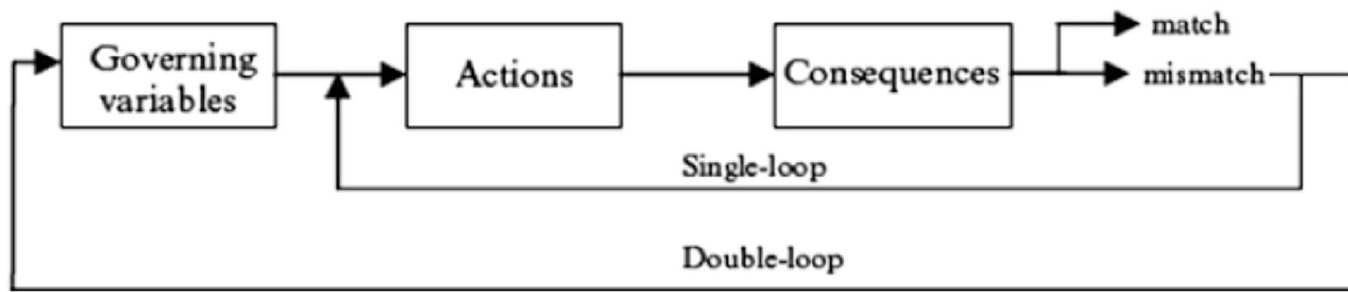
Maier, C. (2020). Overcoming pathological IT use: How and why IT addicts terminate their use of games and social media. *International Journal of Information Management*, 51, 102053.

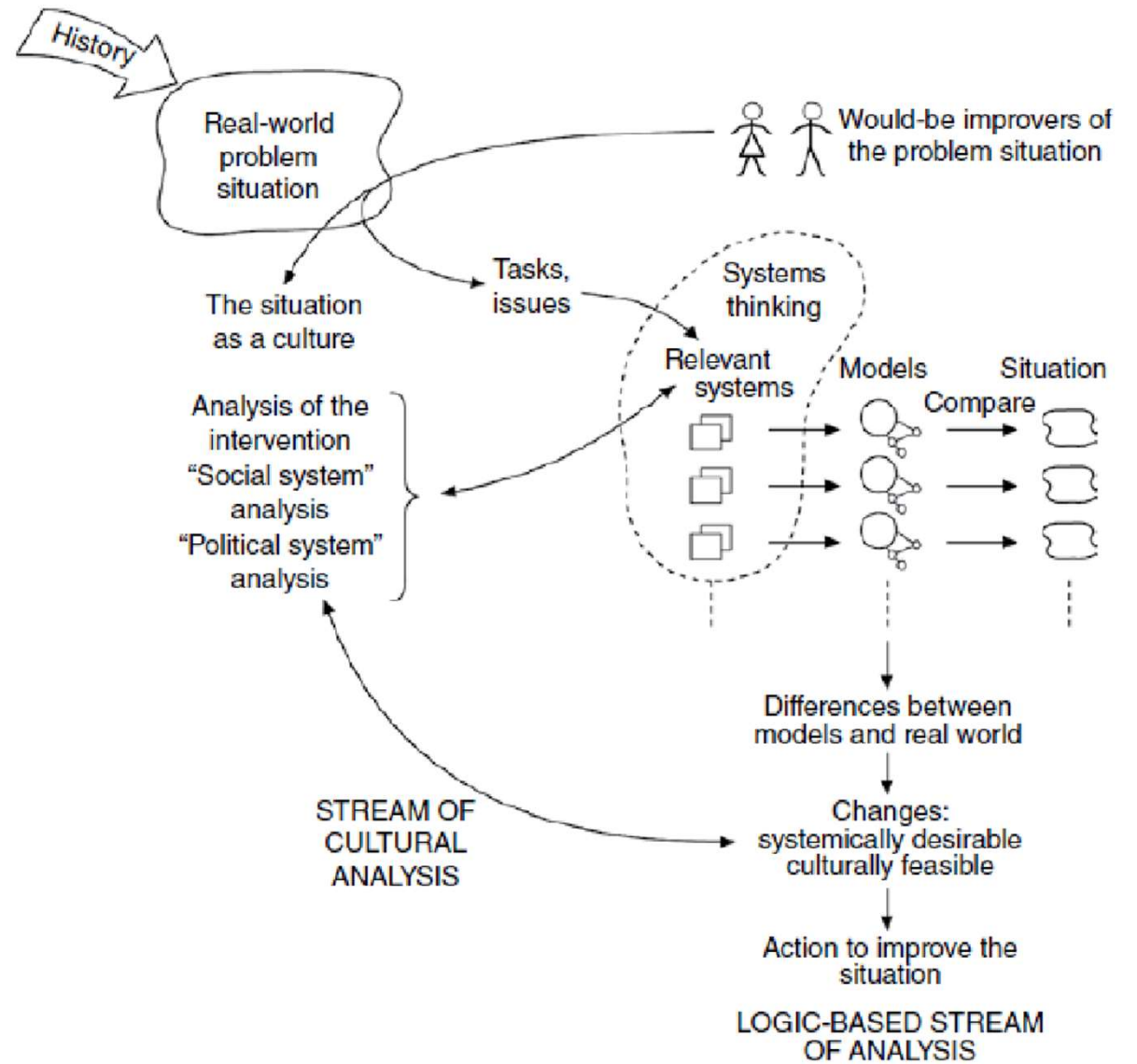
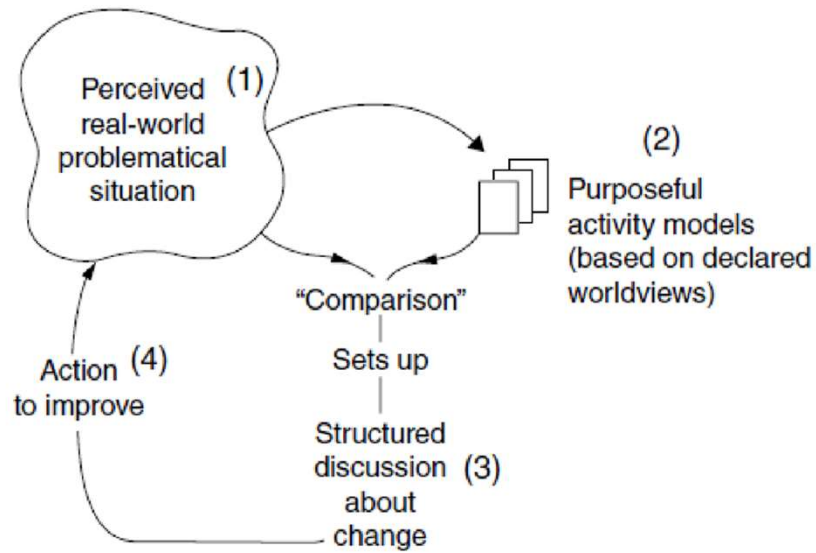
Table 4. Taxonomy of OSN users' negative experiences and themes of the dark side of using OSNs

Open/Descriptive and Structural Coding	Pattern Coding	Axial Coding	Selective Coding			
Feeling panic	Intrinsic cost/Cognitive cost (Tong et al., 2007; Yan et al., 2016)	Cost of social exchange (Tong et al., 2007; Yan et al., 2016)	Dark side of using OSNs			
Irritation						
Feeling stress						
Feeling depression						
Feeling guilt						
Feeling jealousy						
Feeling of loneliness						
Flaming behaviors						
Anxiety						
Self-dissatisfaction						
Distraction addiction						
Deterioration of mood						
Reduced self-esteem/confidence						
Addiction to the use of OSNs						
Information overload	Opportunity cost/Executorial cost (Tong et al., 2007; Yan et al., 2016)					
Wasting time						
Wasting energy						
Wasting money						
Work overload						
Increase user's appetite to take too much financial risk						
Inappropriate posts				Inappropriate content (Fox & Moreland, 2015; Han & Myers, 2018; Preece, 2004)	Annoying content (Preece, 2004)	
Poor content in terms of writing						
Dumb jokes						
Being exposed to sexual images or messages						
Offensive content	Obscene content (Preece, 2004)					
Lack of privacy						
Privacy violation						
Lack of online safety						
Unsolicited communications						
Publicizing private information						
Misrepresentation						
Deception				Privacy concerns (D'Arcy et al., 2014; Fox & Moreland, 2015; Jiang et al., 2013; Osatuyi, 2015; Rawassizadeh, 2012)	Privacy concerns (D'Arcy et al., 2014; Fox & Moreland, 2015; Jiang et al., 2013; Osatuyi, 2015; Rawassizadeh, 2012)	
Misuse of information						
Impersonation						
Stealing personal data						
Cyberstalking behavior						
Malicious software						
Social engineering						
Phishing risks						
Feeling of being abused	Security threats (D'Arcy et al., 2014; Chaudhary et al., 2016; Z. Liu et al., 2016; Zhang & Gupta, 2018)	Security threats (D'Arcy et al., 2014; Z. Liu et al., 2016; Zhang & Gupta, 2018)				
	Cyberbullying (Preece et al., 2014; Trossen et al., 2018; Yan et al., 2016)	Cyberbullying (Preece et al., 2014; Trossen et al., 2018; Yan et al., 2016)				









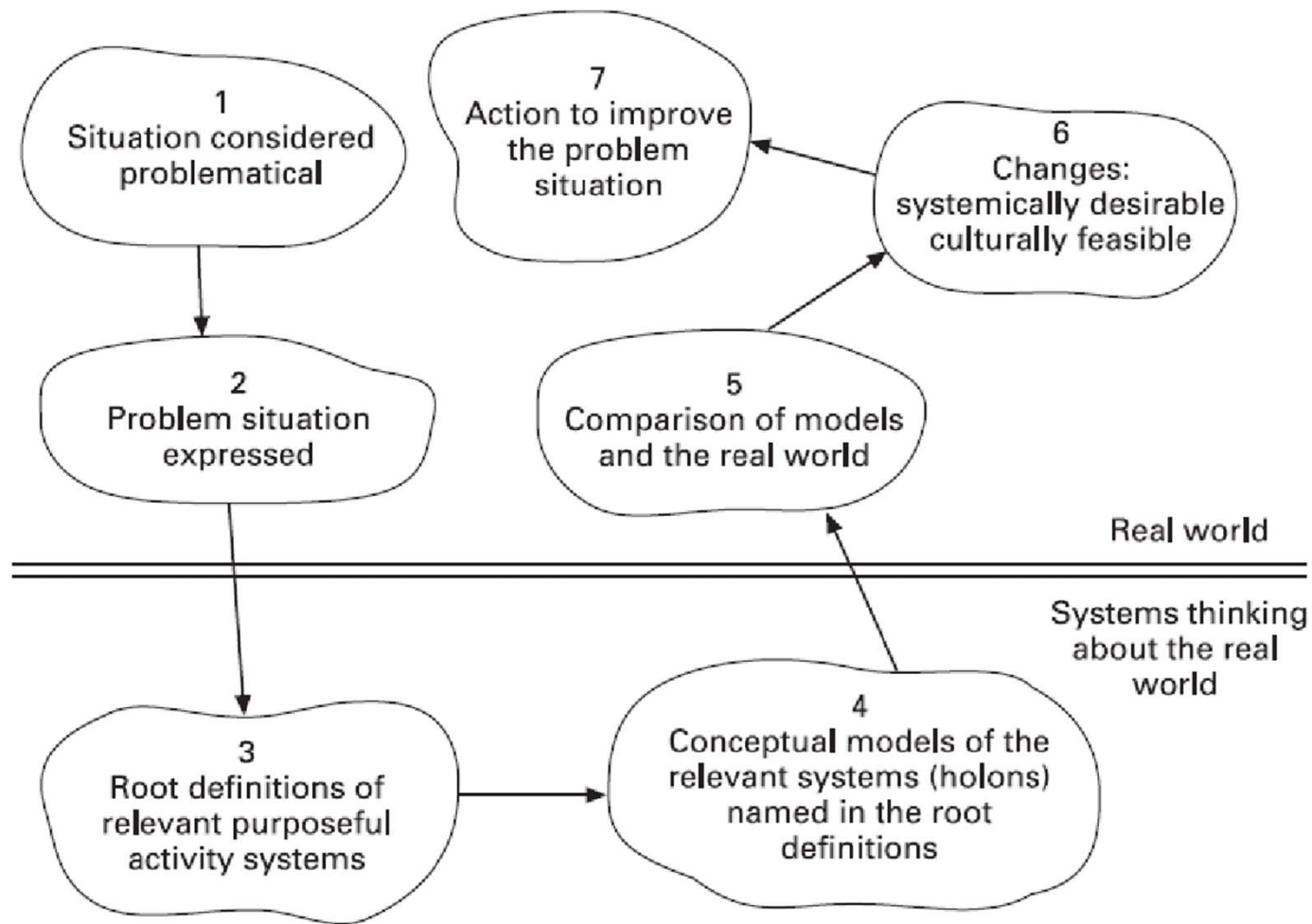


Table 6.1 The boundary categories and questions of CSH (Adapted from Ulrich 1996, p. 44)

Sources of influence	Boundary judgements informing a system of interest (S)			
	<i>Social roles (Stakeholders)</i>	<i>Specific concerns (Stakes)</i>	<i>Key problems (Stakeholding issues)</i>	
Sources of motivation	1. <i>Beneficiary</i> Who ought to be/ is the intended beneficiary of the system (S)?	2. <i>Purpose</i> What ought to be/is the purpose of S?	3. <i>Measure of improvement</i> What ought to be/is S's measure of success	The involved
Sources of control	4. <i>Decision maker</i> Who ought to be/is in control of the conditions of success of S?	5. <i>Resources</i> What conditions of success ought to be/are under the control of S?	6. <i>Decision environment</i> What conditions of success ought to be/are outside the control of the decision maker?	
Sources of knowledge	7. <i>Expert</i> Who ought to be/is providing relevant knowledge and skills for S?	8. <i>Expertise</i> What ought to be/are relevant new knowledge and skills for S?	9. <i>Guarantor</i> What ought to be/are regarded as assurances of successful implementation?	
Sources of legitimacy	10. <i>Witness</i> Who ought to be/ is representing the interests of those negatively affected by but not involved with S?	11. <i>Emancipation</i> What ought to be/are the opportunities for the interests of those negatively affected to have expression and freedom from the worldview of S?	12. <i>Worldview</i> What space ought to be/ is available for reconciling differing worldviews regarding S among those involved and affected?	The affected