

# Massaging Organizations: How should Information Systems deal with change?

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# Abstract

Efficacy of information systems is directly related to their power to act as a mirror. Projecting the organization into artificial and abstract systems is a Herculean task in which models have a fundamental role. These mirrors and their supporting technology bring themselves a change in the reality they try to model. In software engineering this kind of phenomena has been named E-type systems. In an E-type environment, our main concern is how to use information technology, in such a way, as to help an organization maintain its social responsibility. Understanding the medium message, in a transparent way, is a major challenge to information systems architects. We will glimpse of a vision where modeling languages have a role in making information open source and understandable to the actors that use them.

# Initial Statements

**First** of all: Use of McLuhan ideas is bounded by what Federman noticed in

“On Reading McLuhan”

<http://www.mcluhan.utoronto.ca/OnReadingMcLuhan.pdf>

"People make a great mistake trying to read me as if I was saying something ... I don't want them to believe me. I just want them to think."

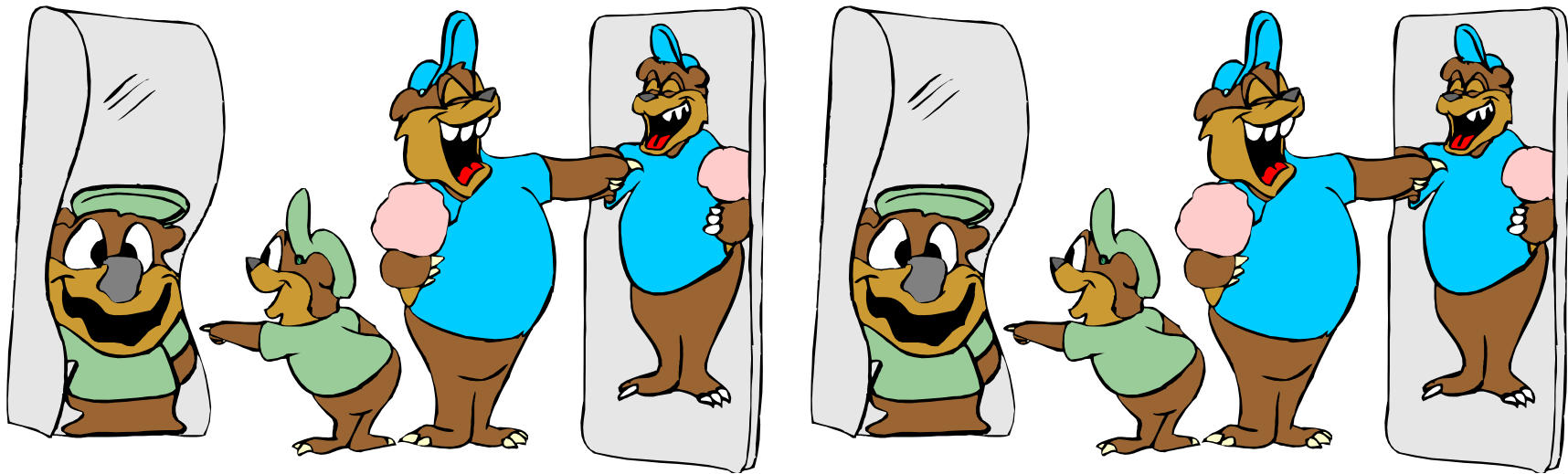
(quoted in Wallace Turner, "Understand McLuhan (sic) by Him," *The New York Times*, November 22, 1966.).

I am not an expert on McLuhan, I have just read some of this thoughts.

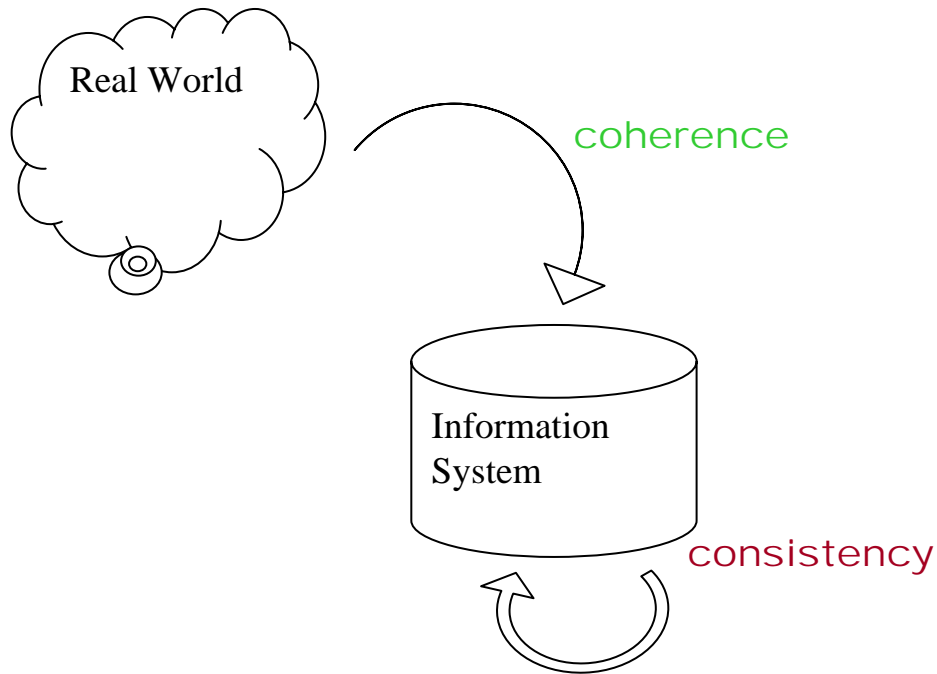
**Second:** The metaphor is a rich one, and the crux is understanding how change is pervasive, it comes either from the medium as well as in the use of the medium.

**Third:** Information systems and media are starting to mingle into a new entity.

# Basic Premise: The Mirror



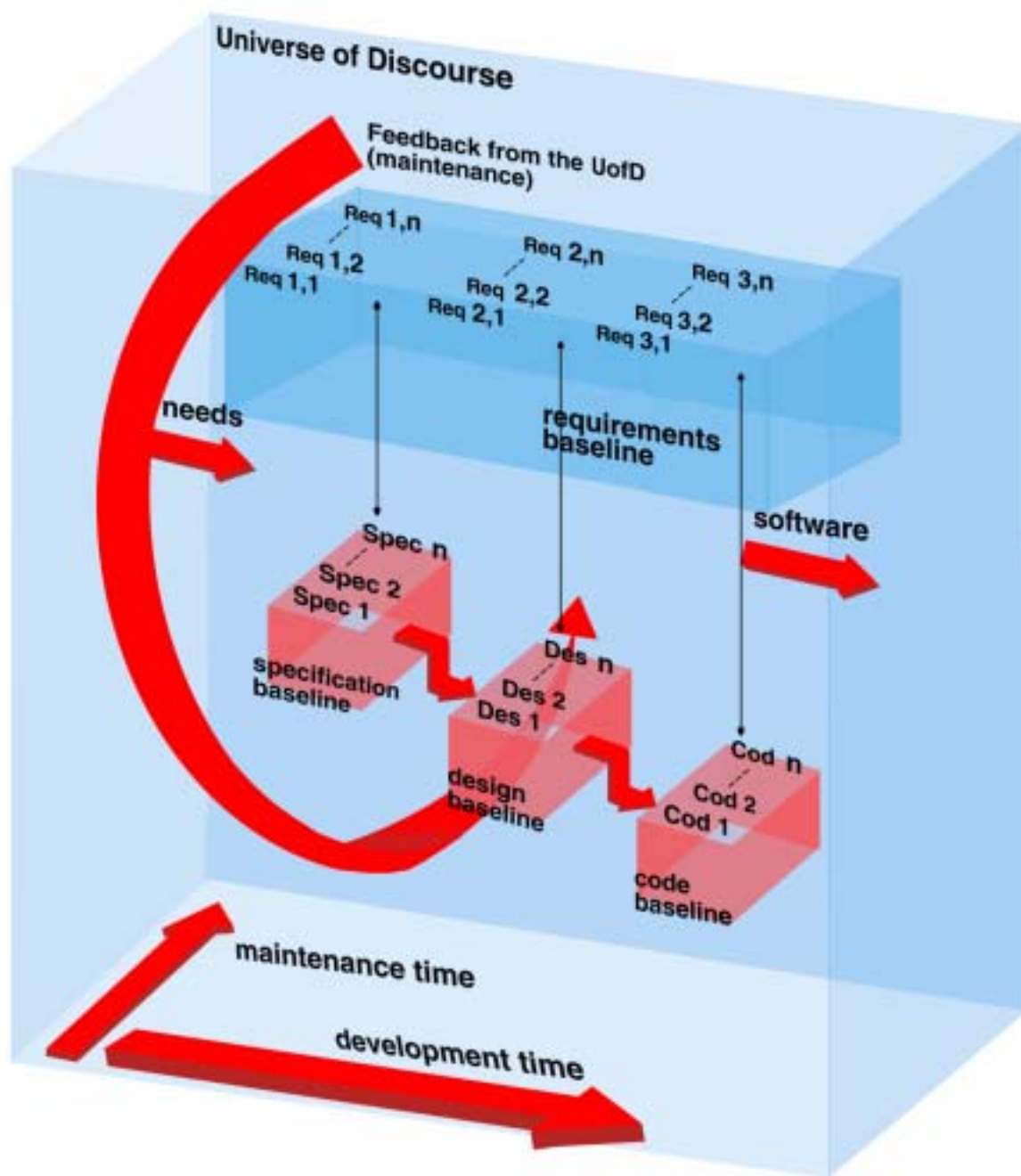
# Basic Premise: The Mirror



Coherence is related to mirror the reality.

Consistency is related to information integrity.

Change is pervasive



# Organization Theory

- Taylor e Fayol.
- Mayo e Follet.
- Weber
- Simon
- Katz and Kahn
- Quality Movement
- Re-engineering

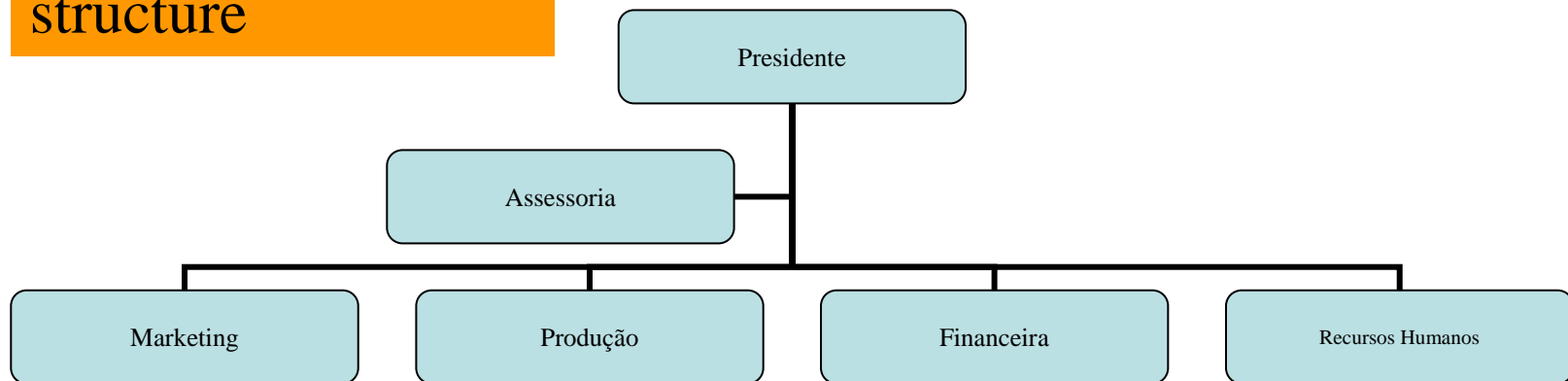


# Morgan Metaphors

- Machines
- Living Organisms
- Brains
- Culture
- Government
- Psychological Prisons
- Flow and Transformation
- Domination Instruments

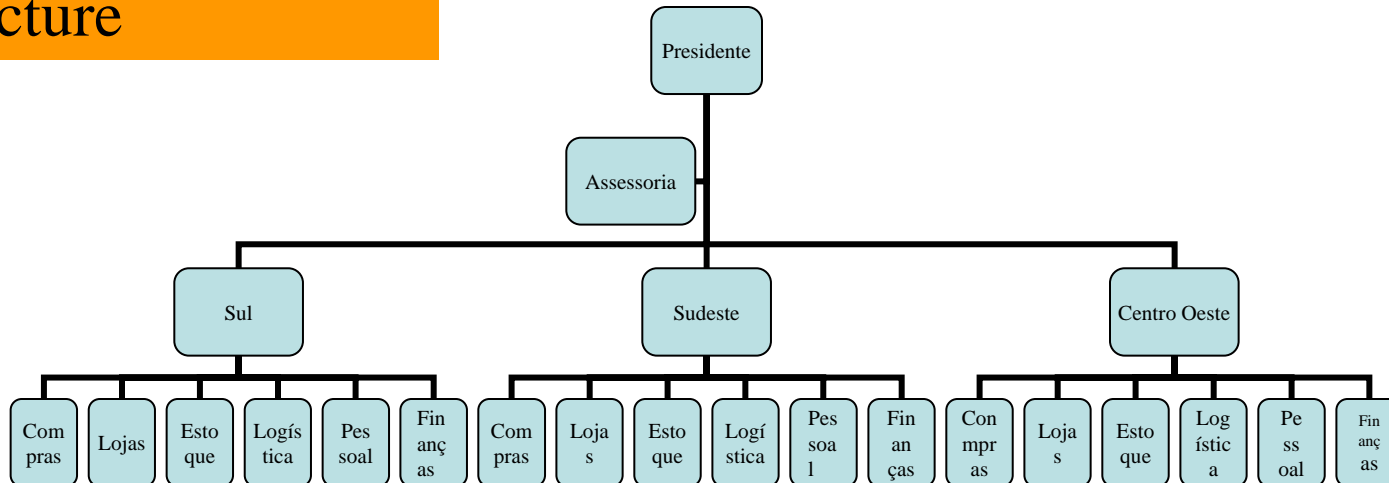
# Organization Change: A structural view

Function oriented structure



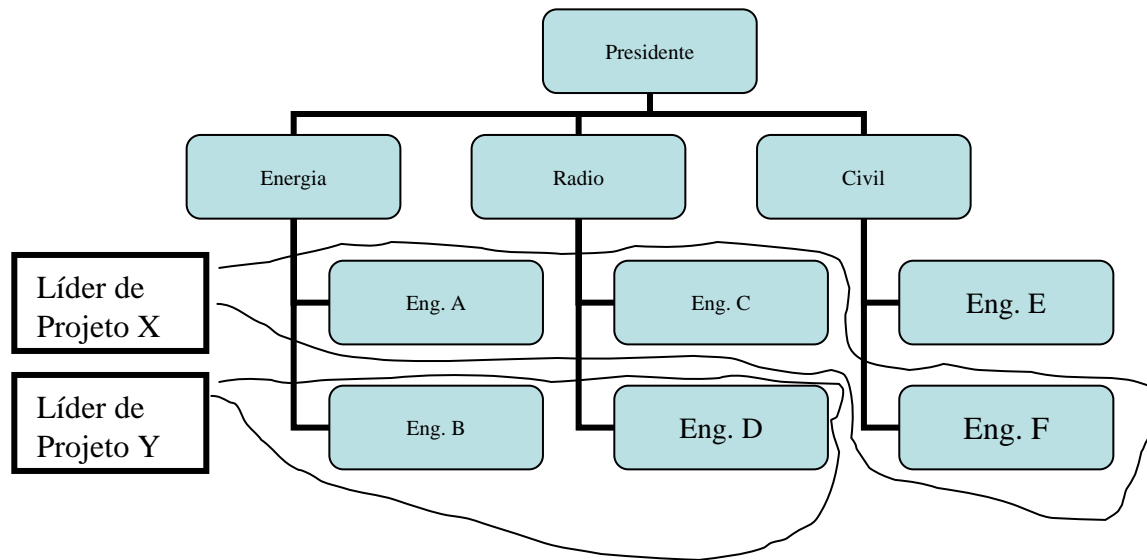
# Organization Change: A structural view

Division oriented structure



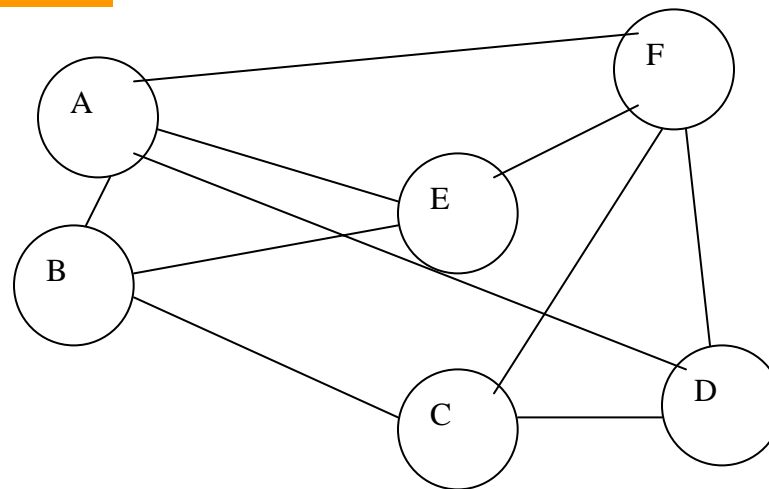
# Organization Change: A structural view

Matrix oriented structure



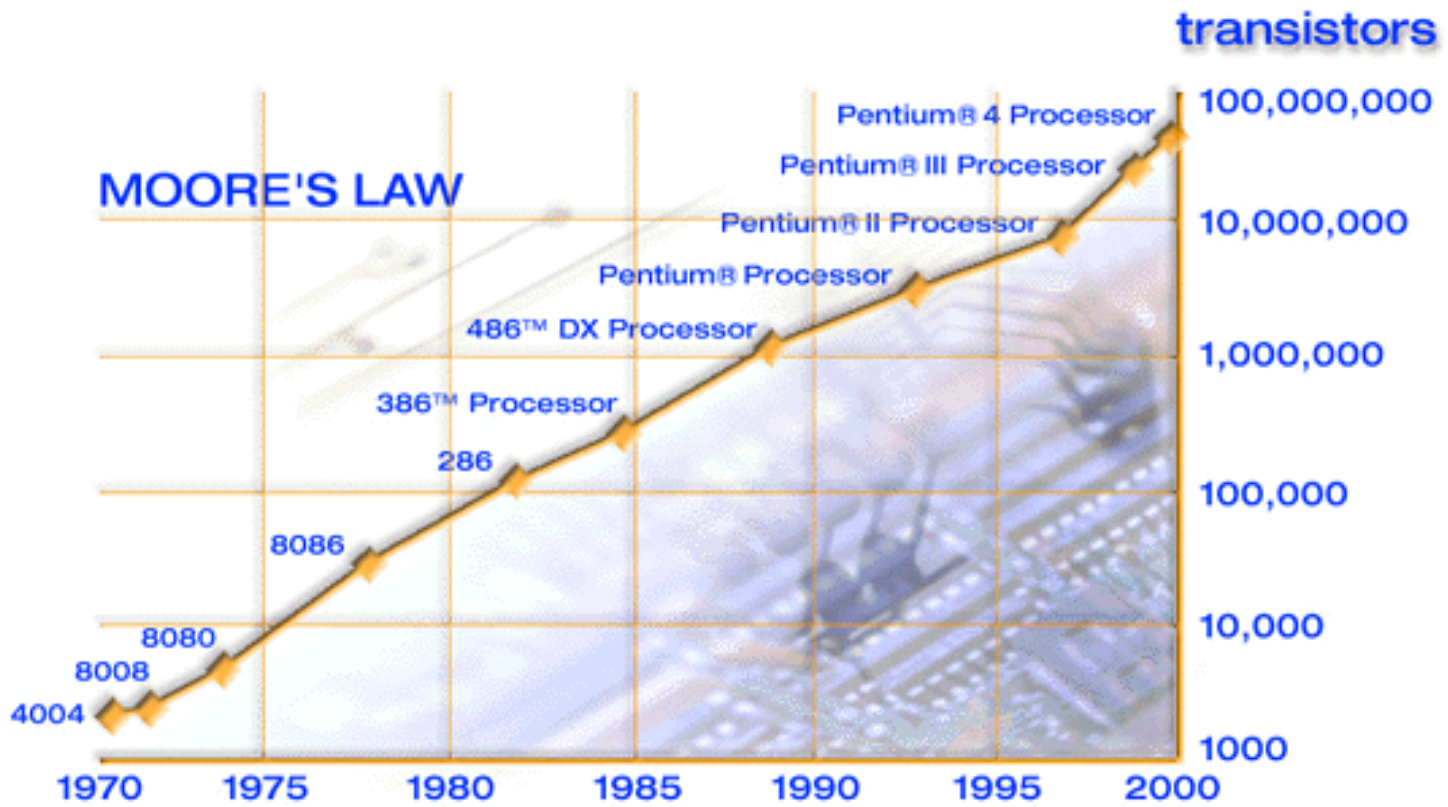
# Organization Change: A structural view

Network oriented structure



# Technology

<http://www.intel.com/research/silicon/pix/mooreslawgraph2.gif>



# Types of Technology (Partial)

Hardware	{ Servers, Parallel Machines, Hubs, Portables, Mobile ...
Software	{ Languages, Middleware, Operating Systems, Protocols, Data Base, CRM, XML, DAML, Visualization, Graphical Interfaces, ...
Management	{ TQC, Re-engineering, CMMI, Workflow, Collaboration, CRM, ...,

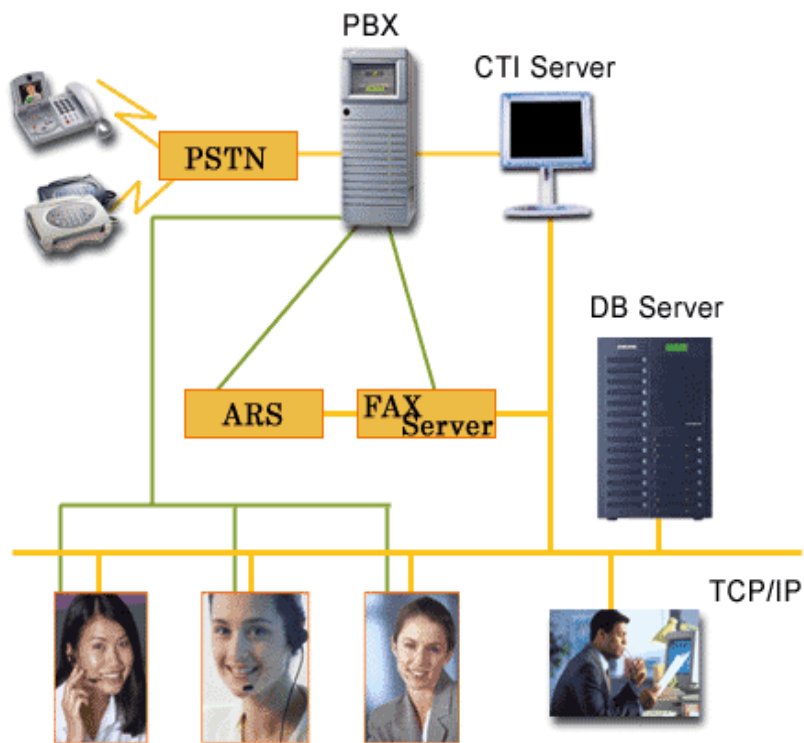
# Technology Players (TI/IS)

- The media (Gartner)
- The major hardware vendors
- The major software vendors
- The accounting companies
- The gurus
- ...



# Technology

## Call Center



# Technology



**CRM**

**Front Office**

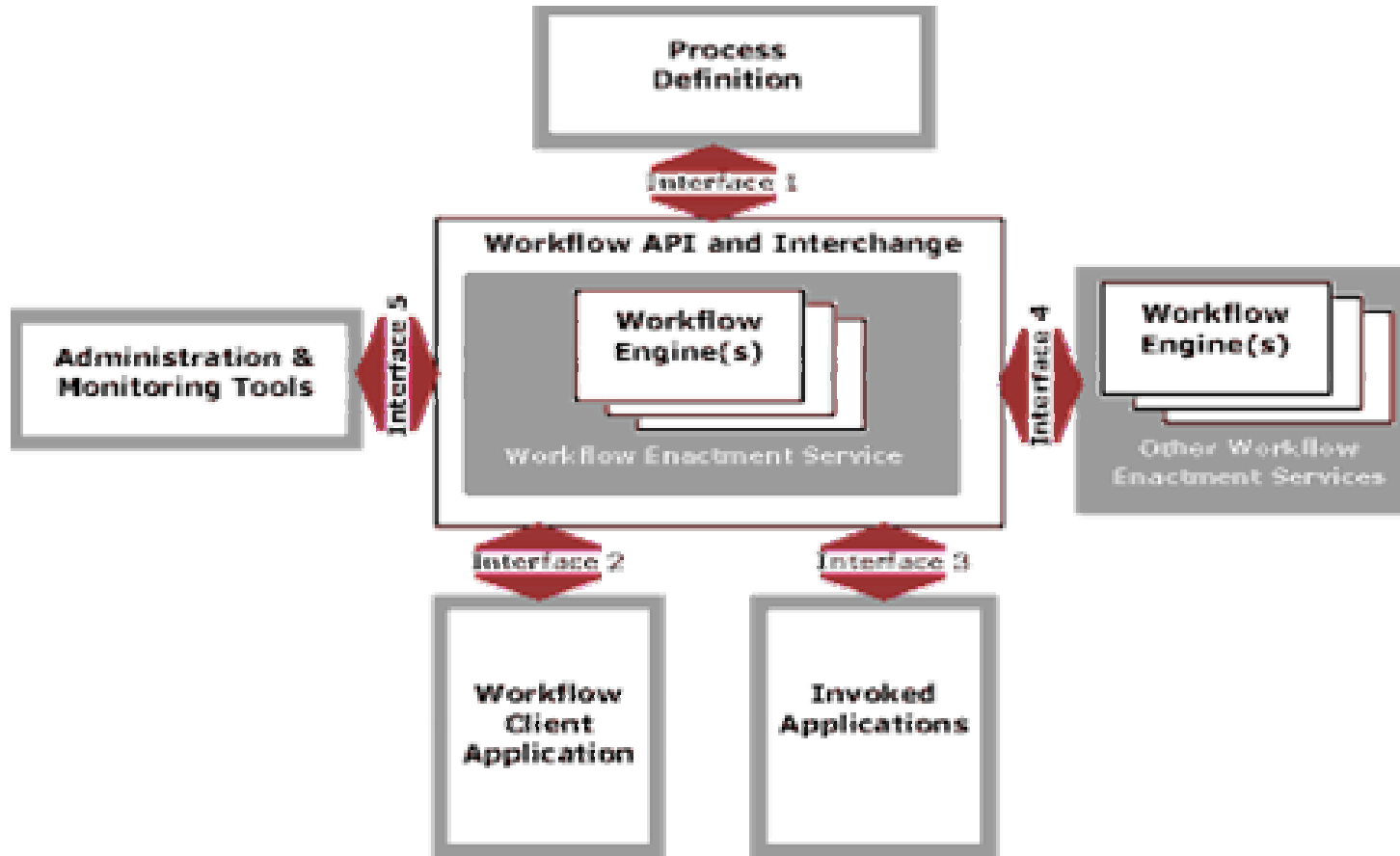


**Back- Office**

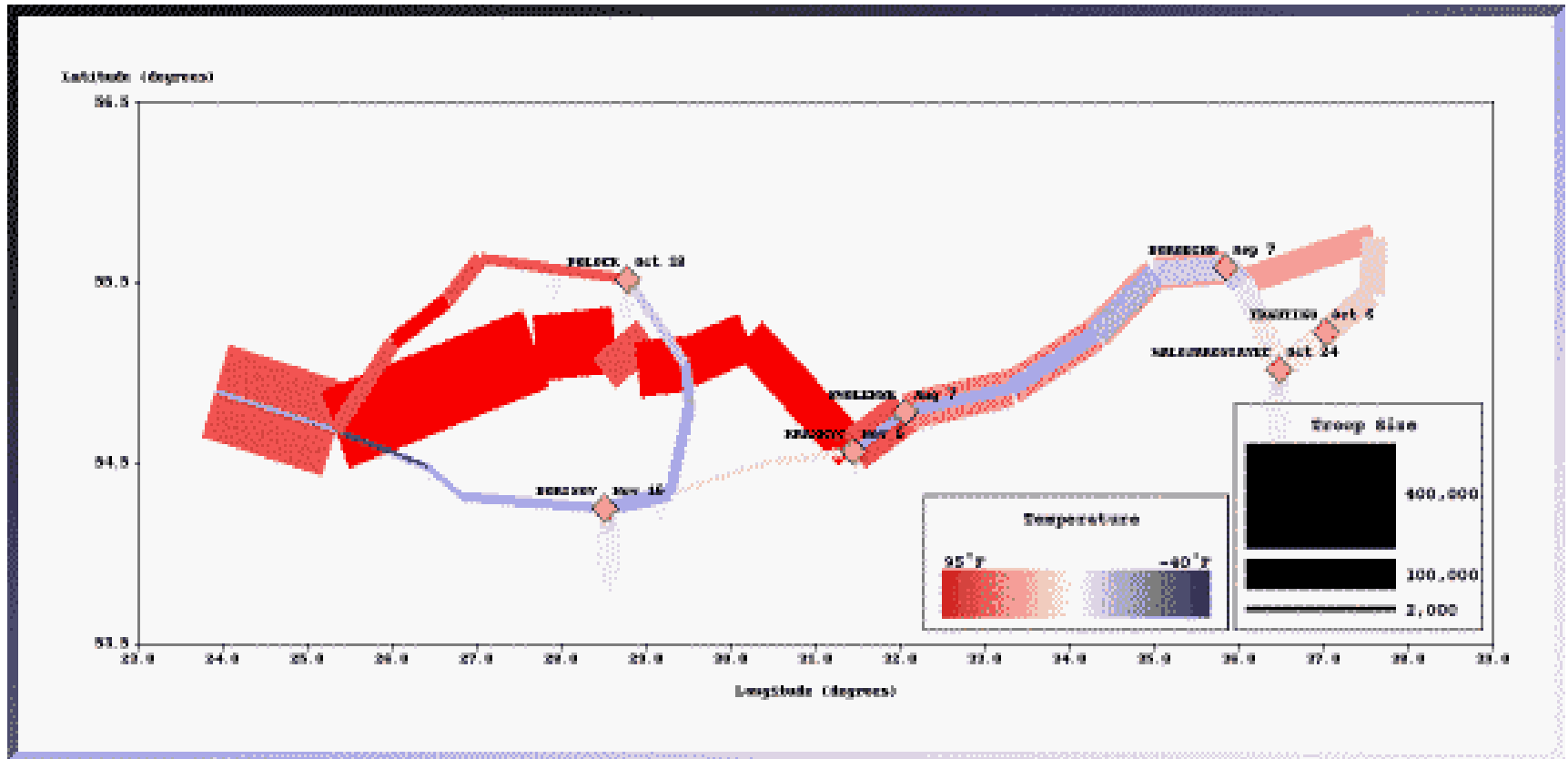
**ERP**

<http://www.wfmc.org/standards/model.htm>

# Technology



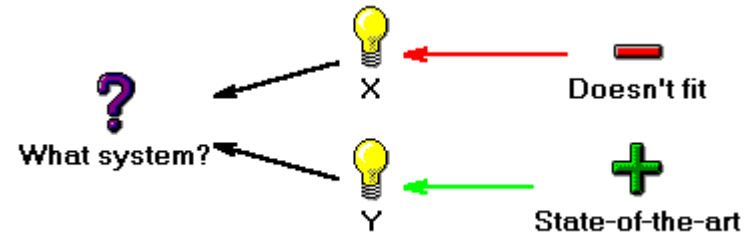
# Technology



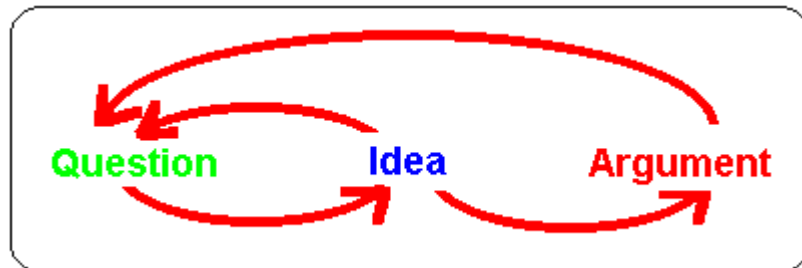
<http://www-2.cs.cmu.edu/Groups/sage/sagewalk2.html>

# Technology

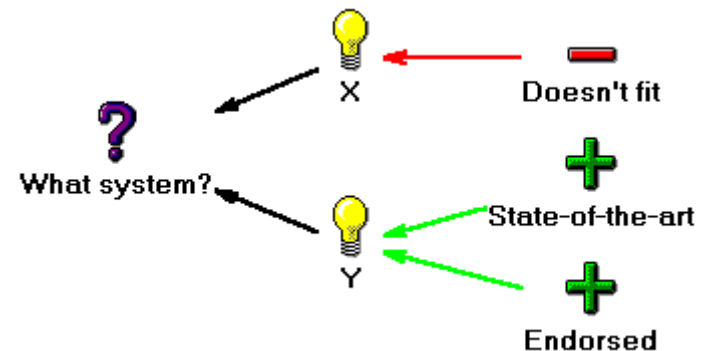
## Issue Based Information Systems



1. Question: "What system should we buy?"
  - 1.1 Idea: "X"
    - 1.1.1 Con (Objects to): Doesn't fit w/ existing tools
  - 1.2 Idea: "Y"
    - 1.2.1 Pro (Supports): State-of-the-art Technology



*The IBIS Model.*

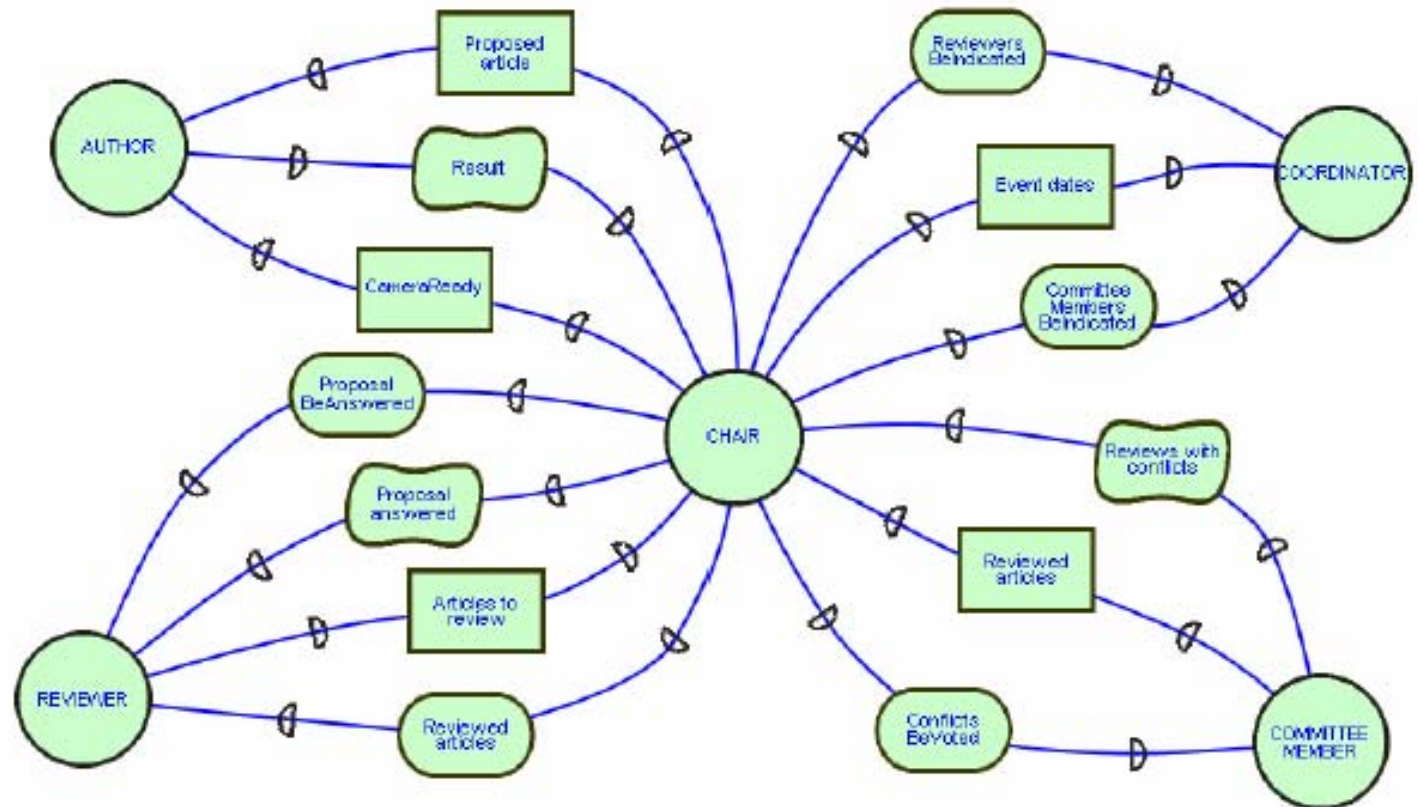


An Argument used to endorse Idea Y

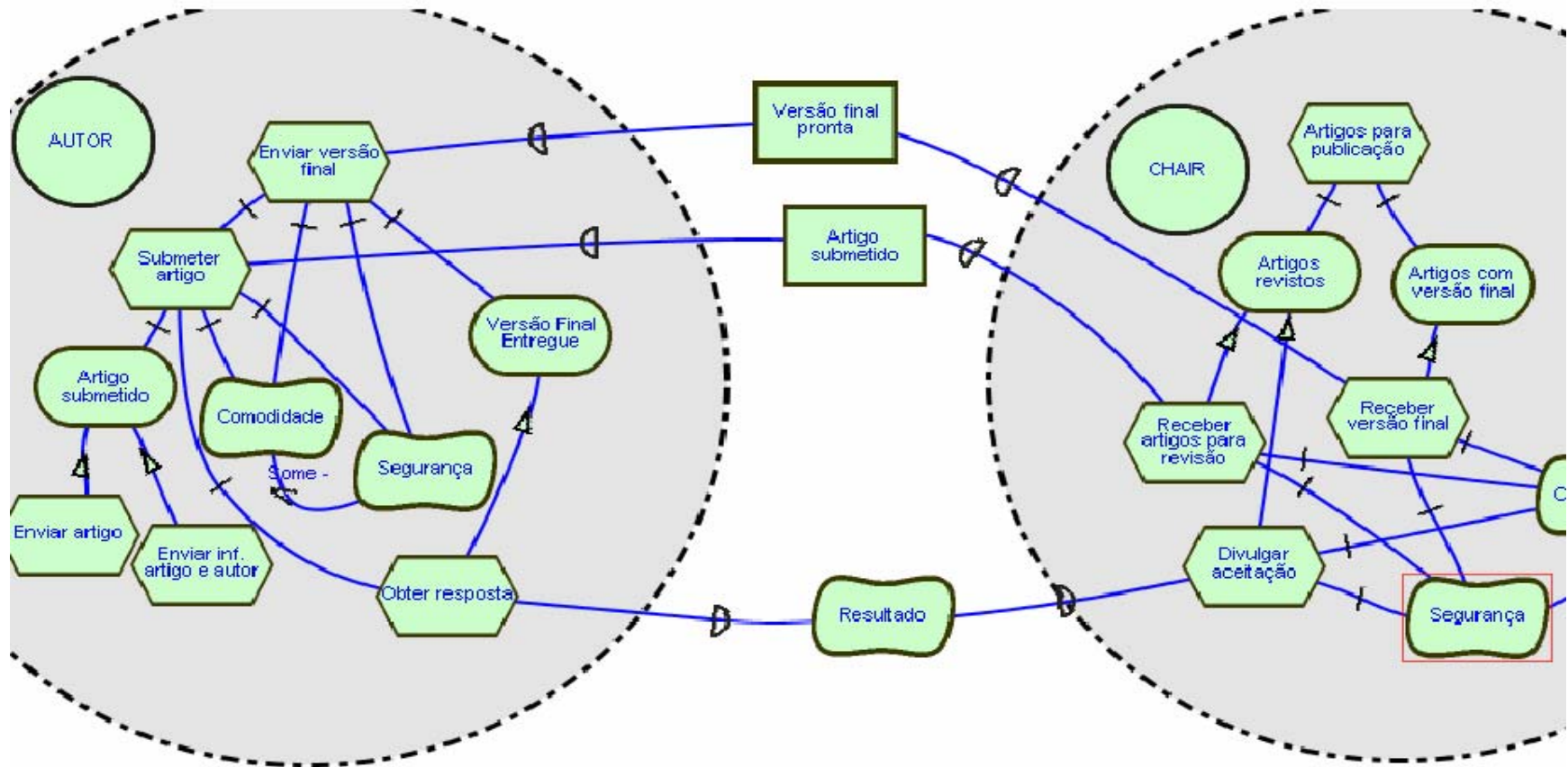
# Technology (Supplier Side)

- Genesys (<http://www.genesys.com/>)
- Microsoft (<http://www.microsoft.com/catalog/>) Vide Business Sofware (Messaging and Collaboration)
- ICQ (<http://web.icq.com/>)
- Eudora (<http://www.eudora.com>)
- IBM (<http://www.lotus.com>)
- SAP (<http://www.sap.com/brazil/solutions/r3/>)
- Datasul (<http://www.datasul.com.br>)
- Microsiga (<http://www.microsiga.com.br>)
- Baan (<http://www.baan.com>)
- IBM ([http://www3.ibm.com/ebusiness/br/erp/erp\\_cycle.shtml](http://www3.ibm.com/ebusiness/br/erp/erp_cycle.shtml))
- W4 (<http://www.w4global.com/indexen.htm>)
- IBM (<http://www-3.ibm.com/software/ts/mqseries/workflow/>)
- IBM Lotus (<http://www.lotus.com>)
- FileNET (<http://www.filenet.com/>)
- Fujitsu (<http://www.i-flow.com/>)

# Modeling Technology



# Modeling Technology





# Modeling Technology

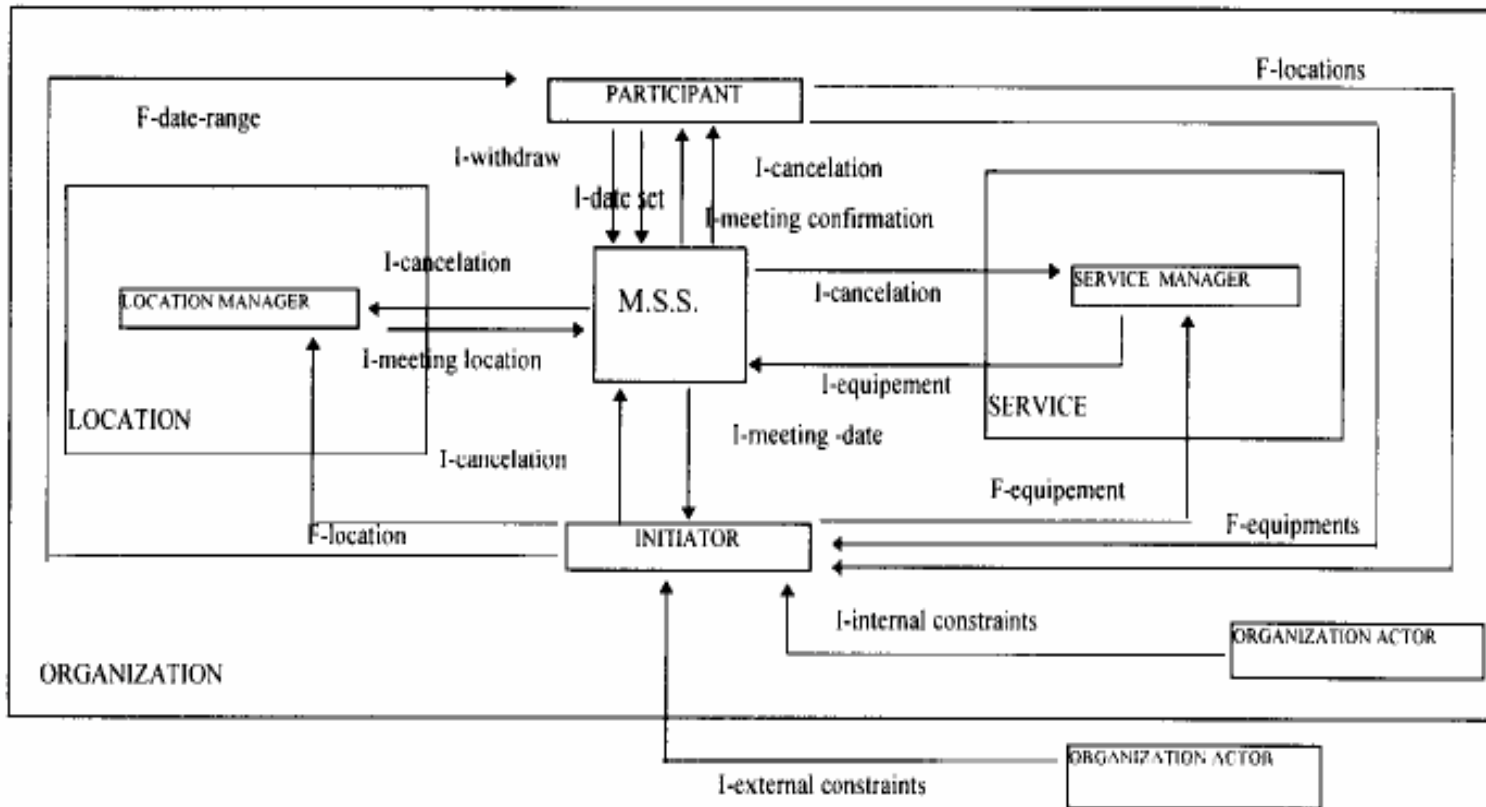
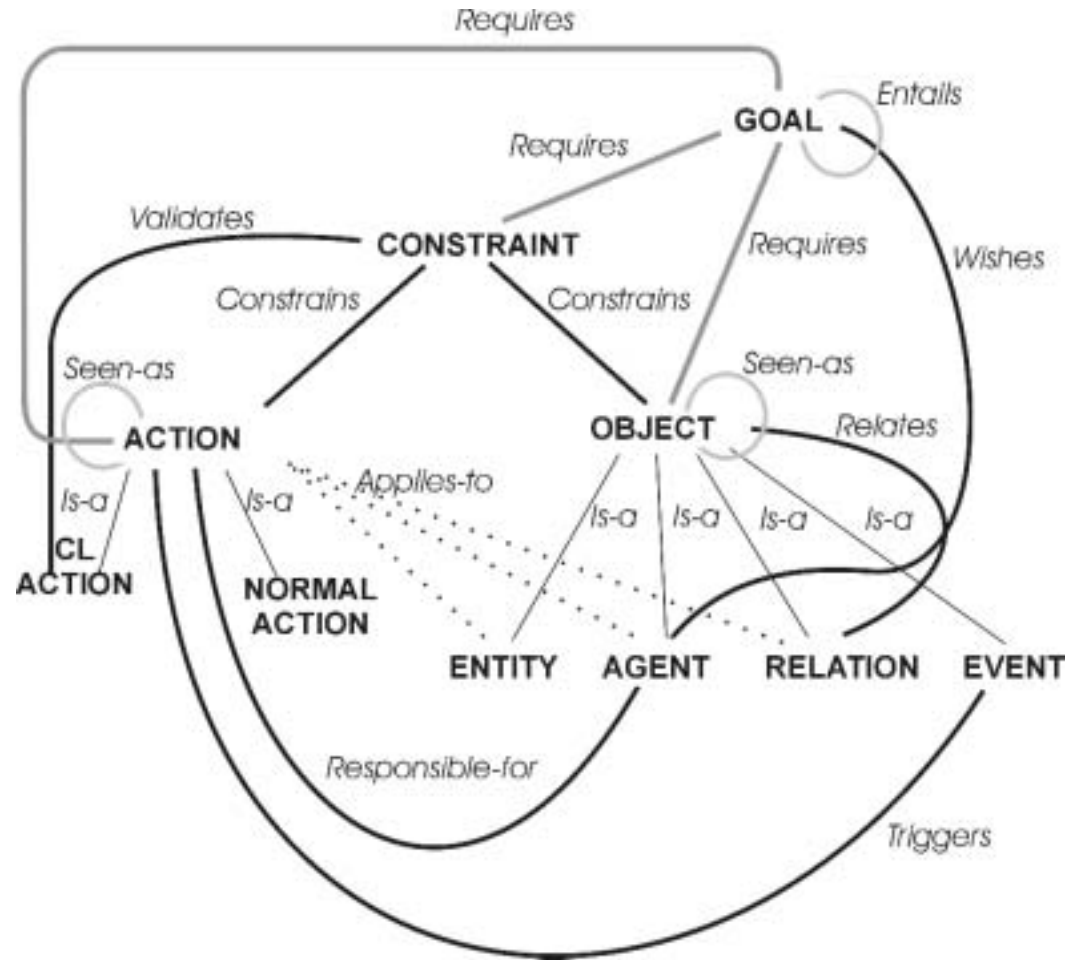


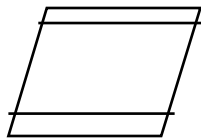
Figure 2: Level Diagram

# Modeling Technology

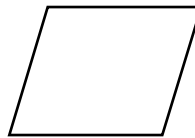


# Modeling Technology

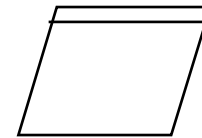
## ISAC (activity graphs elements)



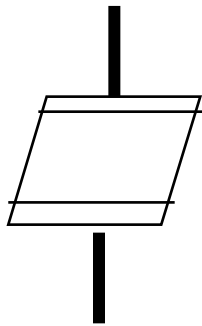
Conjunto de pessoas  
ou materiais



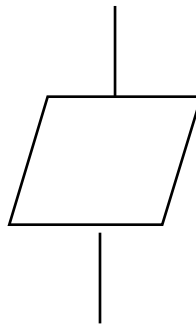
Conjunto de mensagens



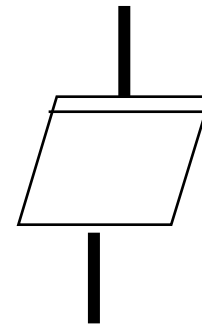
Conjunto de pessoas/  
materiais e mensagens



Fluxo de  
pessoas/material



Fluxo de mensagens



Fluxo de pessoas/  
materiais e mensagens

●  
Atividade: pessoas e  
outros recursos tomam  
parte na atividade.

# Modeling Technology

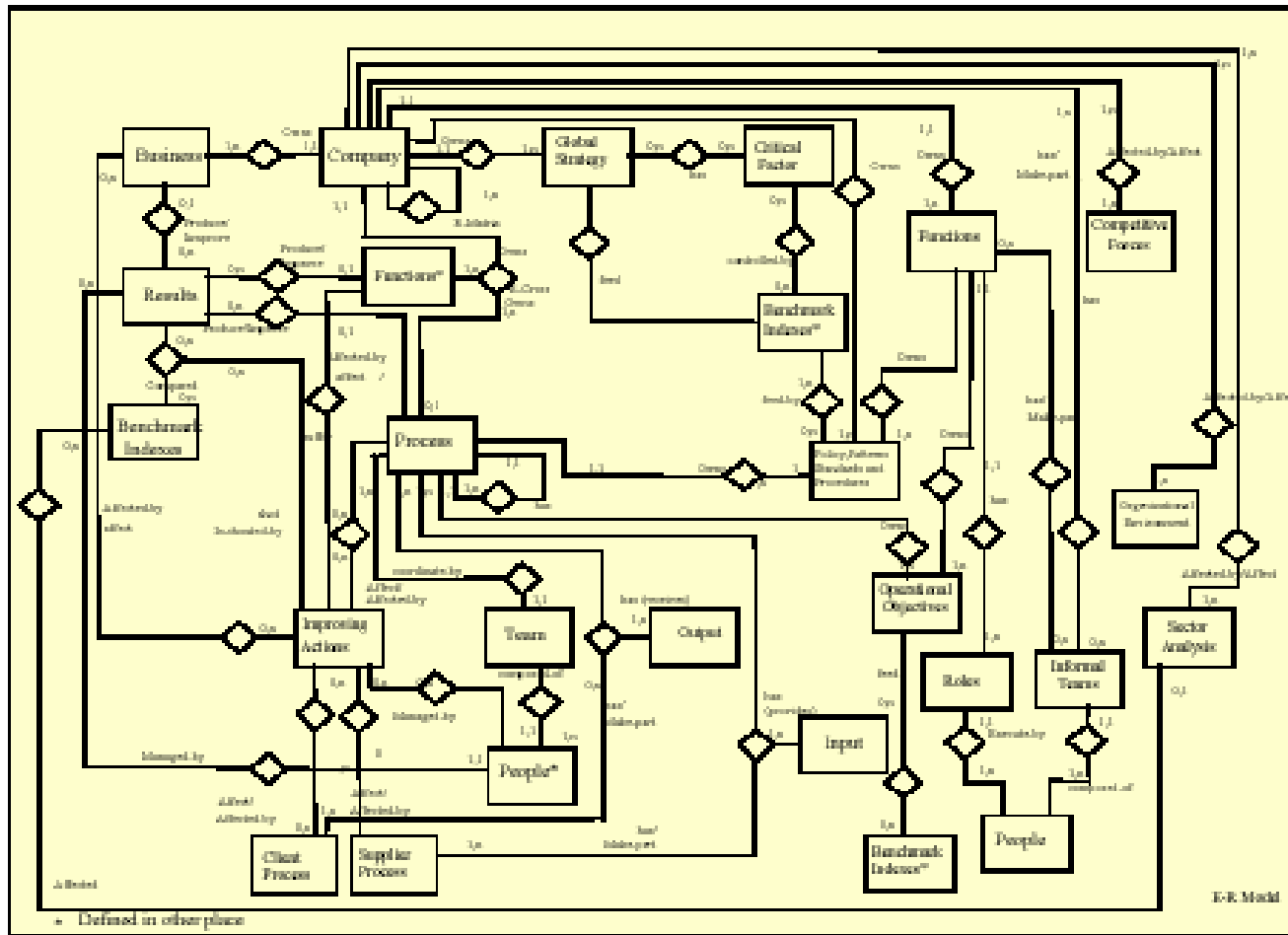


Fig.8 Basic Framework of Strategic Corporate Memory

# Modeling Technology

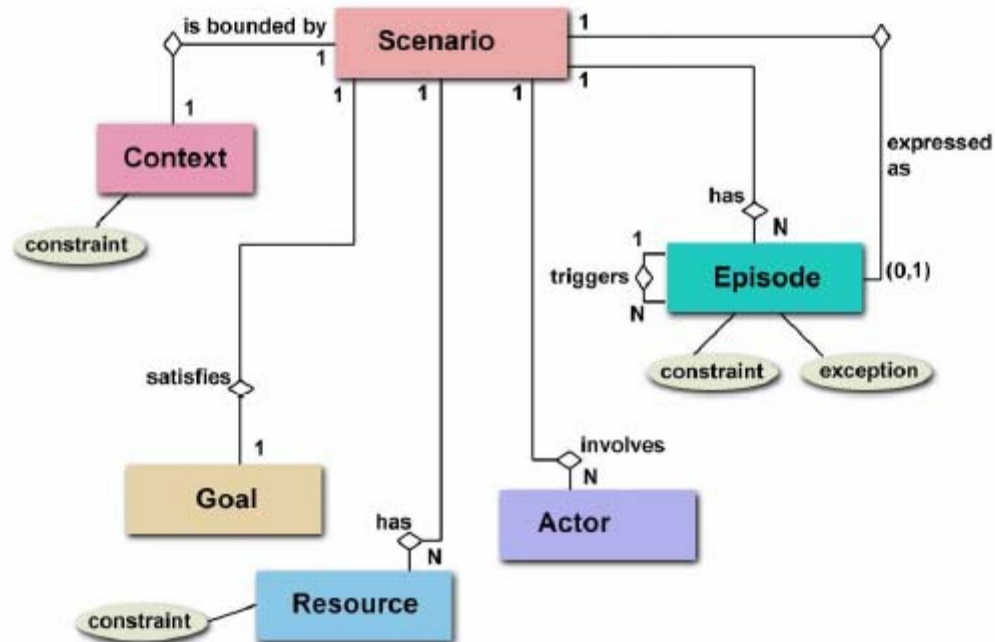


Figure 1 – Scenario Representation proposed by Leite [4]

# Modeling Technology

**Title:** Build a group of adherents

**Goal:** Build a new group of adherents for a saving plan.

**Context:**

**Geographical Location:** Administration society headquarters.

**Temporal Location:** Every second monday.

**Precondition:** There are as many accepted solicitors as required to build a group.

**Resources:** application form, **Constraint:** it must be numbered.  
formal notification form.

**Actors:** administration society, accepted solicitor.

**Episodes:**

The administration society chooses among all accepted solicitors those who will integrate the new group.

The administration society generates a list of members of the new group of adherents including personnel data and number assigned to each application form.

The administration society records the new group of adherents to participate in the next adjudication act.

The administration society sends a formal notification of acceptance to every accepted solicitor included in the new group.

**Exceptions:** ---

# Modeling Technology

## Member of group

### Notion:

- he or she is an accepted solicitor belonging to a group.

### Behavioral Response:

- he or she can make a bidding.
- he or she participates in a drawing lots if the installments were paid in term.
- he or she may abandon the saving plan.
- he or she may cancel the debt.
- he or she may pay installments before due date.
- he or she pays installments in authorized banks.
- he or she gets the chosen vehicle once all the installments were paid.

# Modeling Technology

## **Requester**

### **Notion:**

- person who invites attendees to a meeting.
- may be a participant.

### **Behavioral Response:**

- defines the objective of the meeting, the subjects to be discussed, the attendees, the material to exhibit and the material to distribute.
- records the objective and the attendees in the agenda.
- performs the scheduling of meetings.
- organizes the meeting.
- records the substitute in the agenda.
- decides the cancellation of the meeting.
- decides changes in the meeting requirements.
- decides the moving of date.

Fig. 2. An example of an LEL symbol.



# Modeling Technology

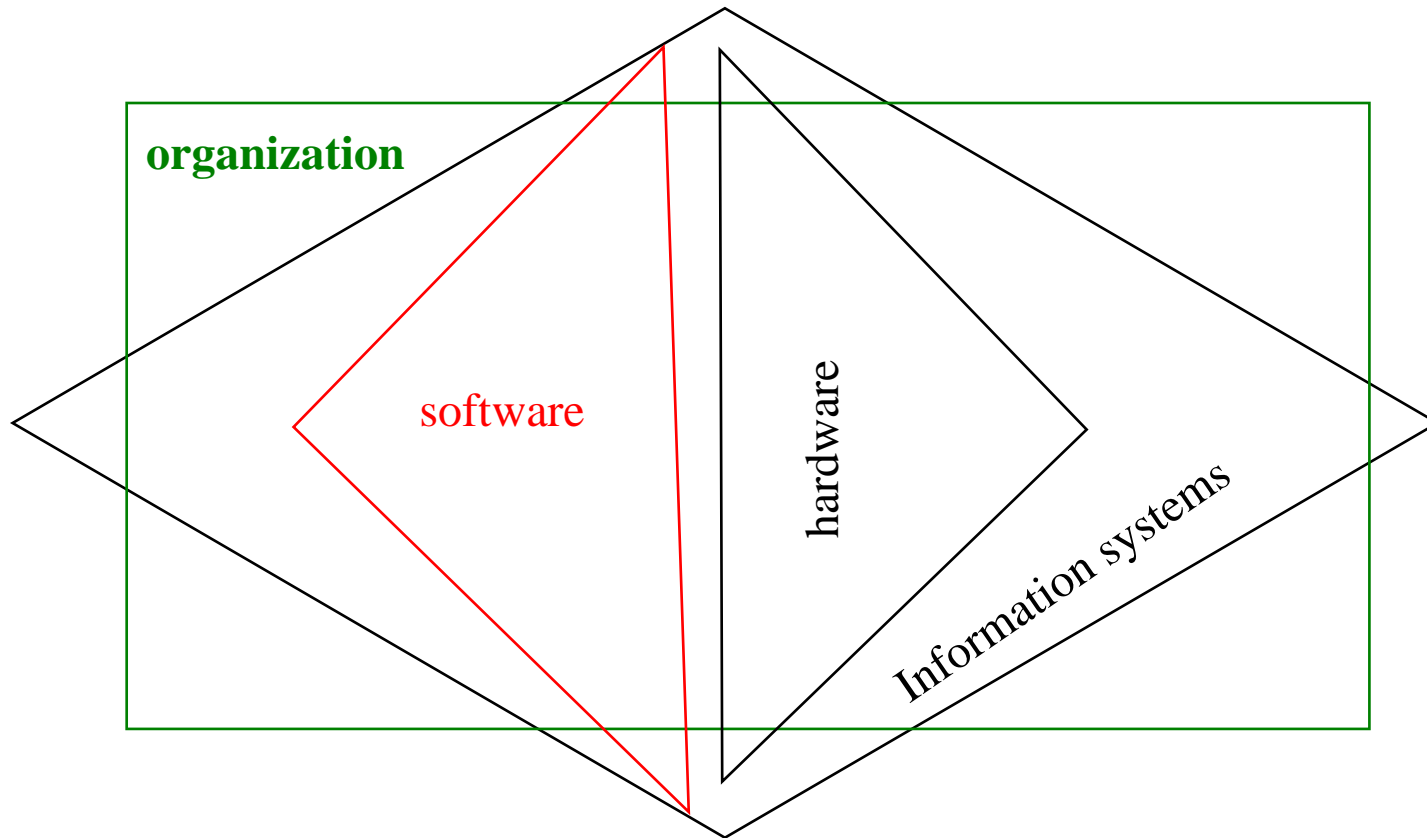
**TITLE:** Organize the Meeting  
**GOAL:** Assure an efficient development of the meeting.  
**CONTEXT:** The meeting has been previously scheduled.  
**RESOURCES:** equipment, physical space.  
**ACTORS:** requester, secretary.

**EPISODES:**  
The requester instructs the secretary about the meeting call.  
CALL TO THE MEETING.  
# NOTIFY ASSISTANCE.  
NOTIFY ABSENCE.  
[ ASK FOR EQUIPMENT. ]  
IF the convoking date was made with anticipation THEN REMIND THE MEETING.  
[ The secretary assures that the equipment is available for the meeting date. ]  
The secretary assures that the physical space is available for the meeting date. #

**EXCEPTIONS:**  
The requester or main attendees can not attend the meeting. ( CANCEL THE MEETING )  
The meeting date must be changed. ( MOVE THE MEETING DATE )  
The need of a meeting requirements change arises. ( CHANGE THE MEETING REQUIREMENTS )

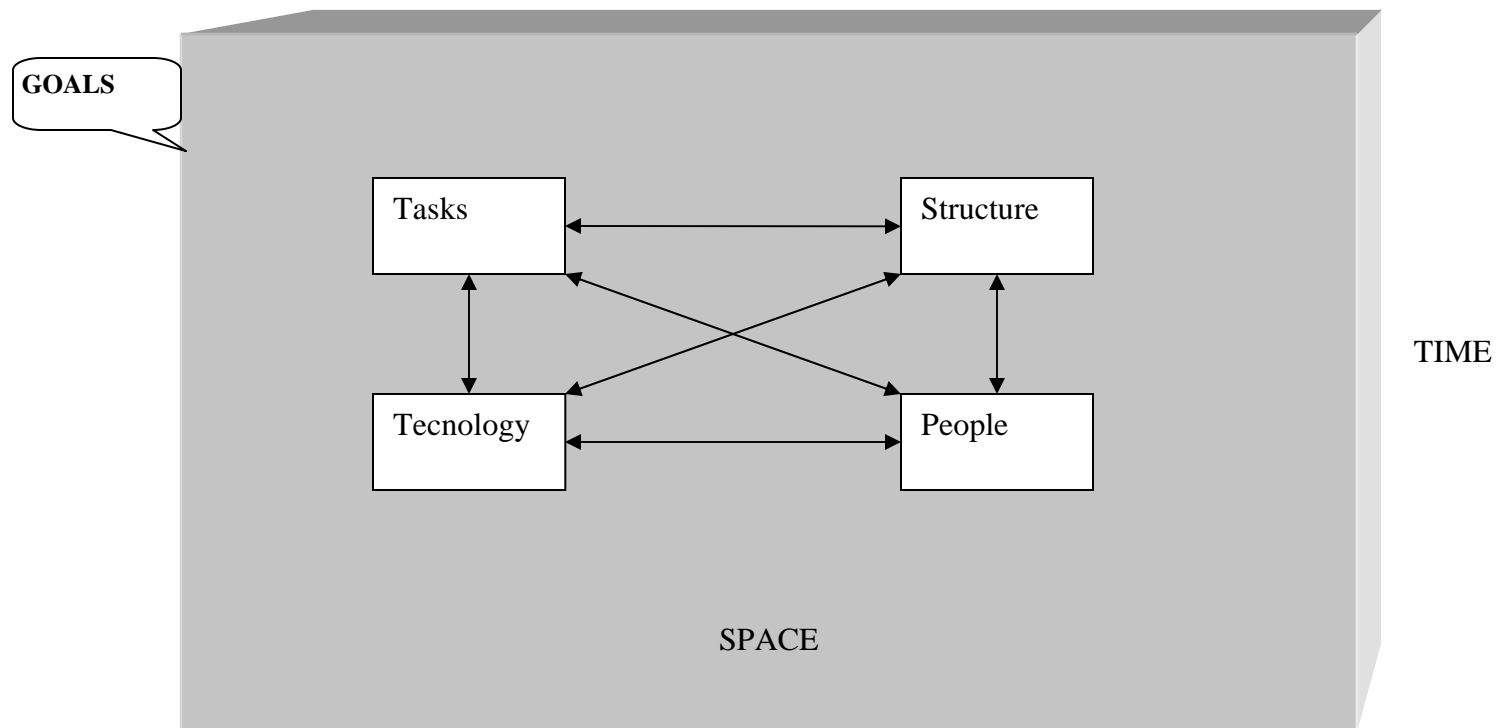
Fig. 6. An example of a scenario.

# The Context



Baseado no livro *Sistemas de Informação* de Leite, J.C.S.P. e Leal Ferreira, S.M.B.

# Organization Subsystems (Leavitt)



Baseado no livro *Sistemas de Informação*, Leite, J.C.S.P. e Leal Ferreira, S.M.B.

# Our Taxonomy

- Transaction Systems
- Decision Support Systems
- Reference Systems

# New World

- **C2G – *Consumer to Government***
- **B2G - *Business to Government***
- **C2C–*Consumer to Consumer***
- **B2B - *Business to Business***

# New Vision (Gathering Data)

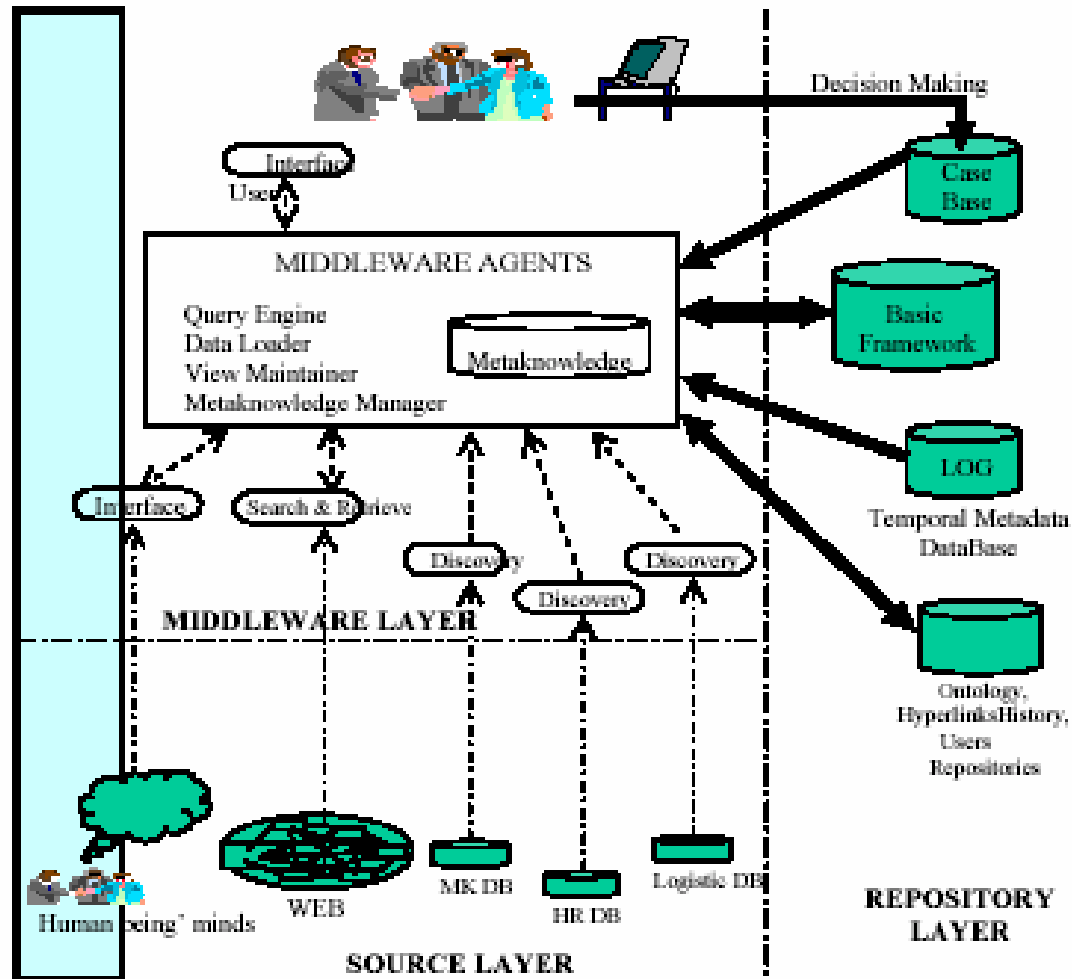


Fig. 10 Strategic Corporate Memory Layer Architecture

# Old Concerns Amplified

- **Privacy** (<http://theprivacyplace.org/>)
- **Habeas Data**  
(<http://dataprotection.blogspot.com/>)
- **Security** (<http://www.setco.org/>)
- **Employment**
- **Health**
- **Control (1984)**

# Possibilities

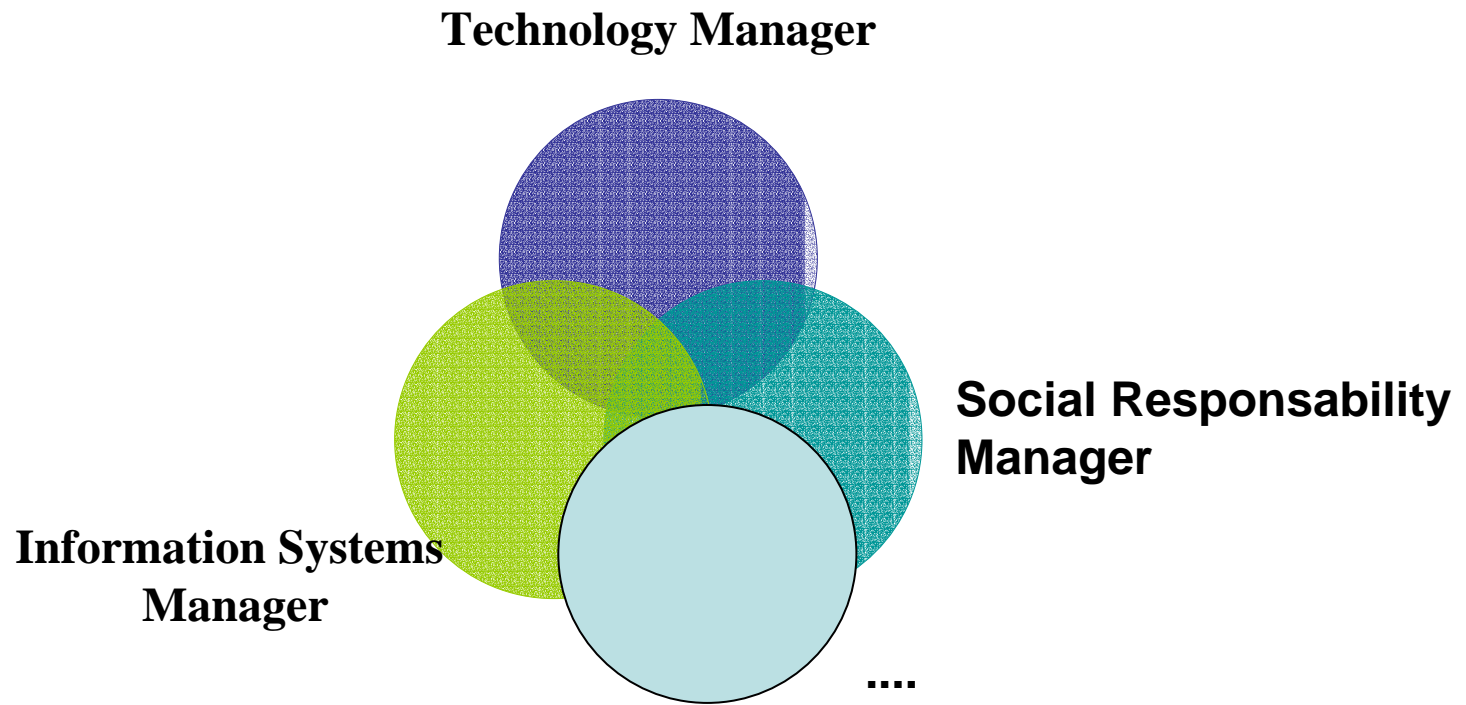
- **Increase Information Systems Democracy**
- **Change Information Systems Practices**
- **Committees**
- **Ombudsman**  
(<http://www.ombud.gov.bc.ca/>)
- **Open Source**
- **Open Knowledge (<http://www.pkp.ubc.ca/>)**



# Manager of Technology

- Training
- Buying Policies
- Support
- Standards
- Cost Policies
- Security, Privacy, ...
- Openness for Discussion
- Secrecy
- External Dependency

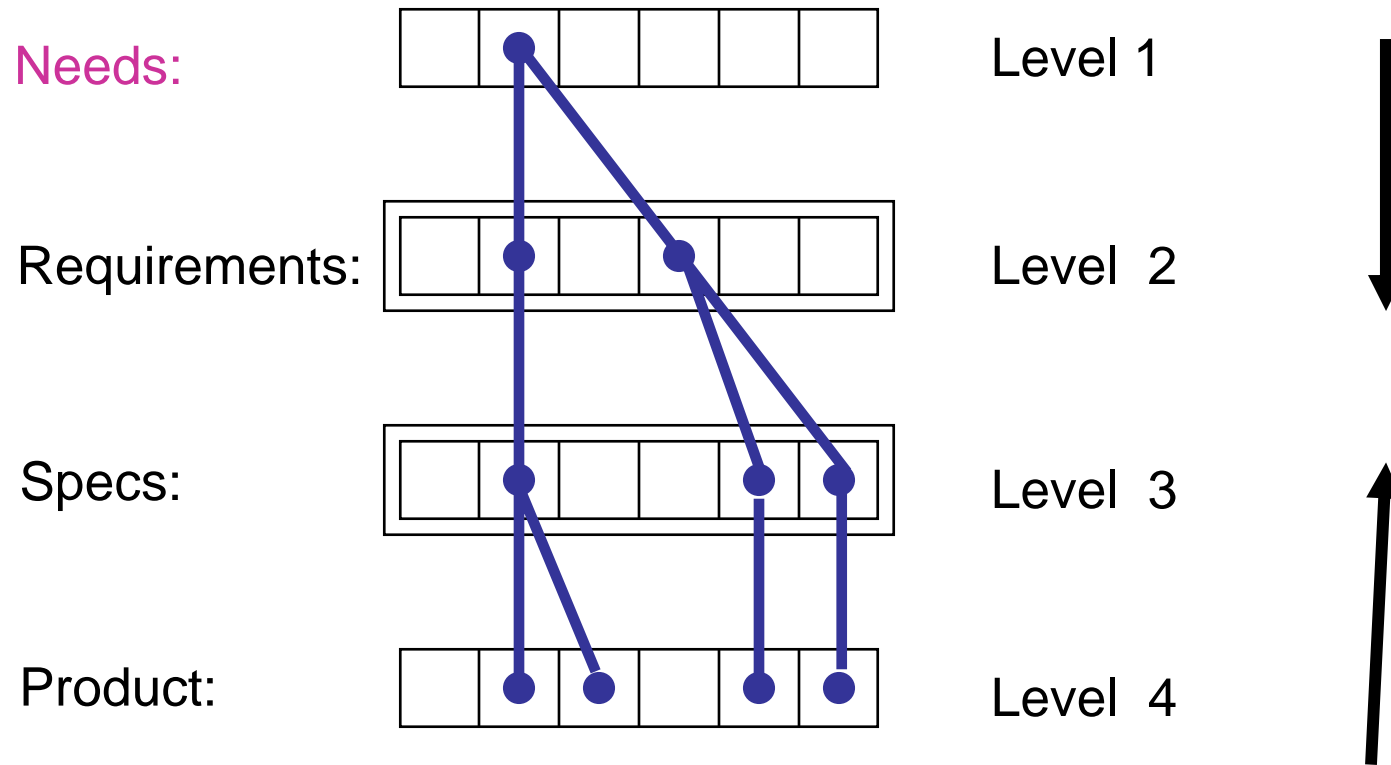
# Lord of the Rings



# Auditing

- Traces
- Redundancy
- Standards

# Auditing

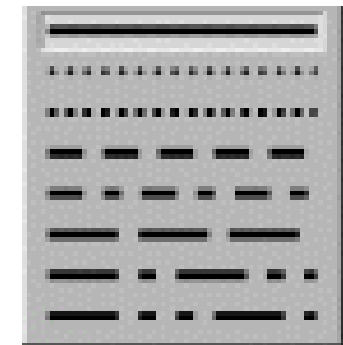
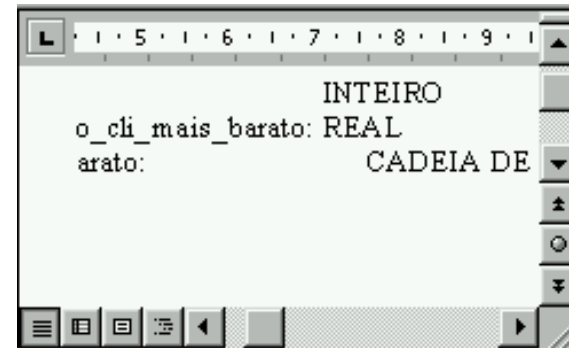
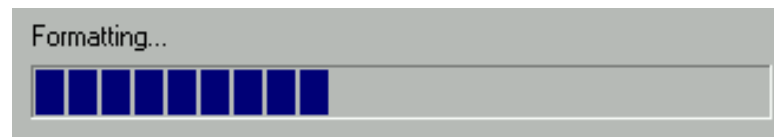
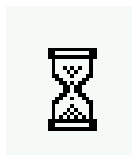
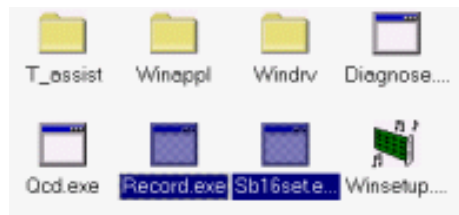
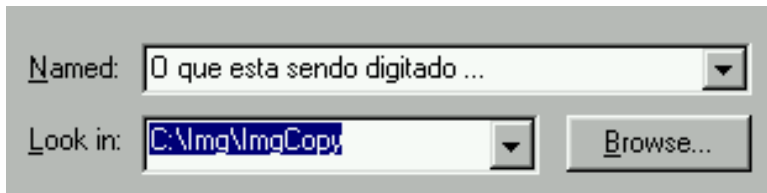


# Basic Information Requirements

- Value
- Frequency
- Volume
- Comparison
- Safe
- Law Compliancy
- Level of Detail
- Exception
- Trustworthy
- ...

Transparency

# Usability (Feedback)



WERpapers

(<http://wer.inf.puc-rio.br/WERpapers/>)



# C&L

**login\_CELdoc - Microsoft Internet Explorer**

Arquivo Editar Exibir Favoritos Ferramentas Ajuda

Voltar Avançar Parar Atualizar Página inicial

Endereço <http://sl.les.inf.puc-rio.br/cel/doc>

**Scenario / Code**

**Title:** Accessing the system  
**Goal:** It permits that the user access the CeL, the user takes the password.  
**Context:** sl.les.inf.puc-rio.br/cel/aplicacao is accessed. In page or wrong password - \$wrong=true.  
**Actors:** user, login.php.  
**Resources:** \$login, \$password, bd.inc, bd\_connect(), httprequest, forgotPassword.php, add\_user.php?new=true.  
**Episodes:**  
Episode 1: login.php starts session for user.  
Episode 2: login.php starts variables and it includes resources - bd.inc, f...  
Episode 3: login.php connects the SGBD with bd\_connect defined in bd.i...  
Episode 10: If user submitted the form then login.php verifies if login and

```
if( $submit == 'Entrar' ) {  
  
    $q = "SELECT id_usuario FROM usuario WHERE login='$login' AND senha='$senha'  
    $qrr = mysql_query($q) or die("Erro ao executar a query");
```

Episode 11: If login or password are wrong then reload login.php with wrong=true in URL.  
Episode 12: If login and password are true then login.php register session for user, close login.php and open CeL.  
Episode 4: login.php show form of login for user.  
Episode 5: If wrong = true then login.php shows the message Wrong login or wrong password.  
Episode 6: If wrong != true then login.php shows the message Write login and password.  
Episode 7: login.php shows option of [ADD USER](#) - add\_user.php?new=true.  
Episode 8: login.php shows option of [REMEMBER PASSWORD](#) - forgotPassword.php.  
Episode 9: login.php shows option of [SHOW SOURCE](#) - showSource.php?file=login.php.  
?>

<i><a href="showSource.php?file=login.php">Veja o código fonte</a></i>

**Entre com seu Login e Senha - Microsoft Internet Expl...**

**léxico & cenários**

**Entre com seu Login e Senha:**

Login:

Senha:

[Cadastrar-se](#) [Esqueci senha](#)

[Veja o código fonte!](#)

Meu computador

Iniciar | Endymion... | Exploran... | login\_CE... | http://13... | Entre c... | imagem - ... | 08:58

```
<?php
```

```
/*Titulo: Acessar o sistema */  
/*Objetivo: Permitir que o usuário acesse a Aplicação de Edição de LAL e  
Cenários, acesse a funcionalidade de cadastrar-se no sistema ou acesse a funcionalidade de  
requisitar sua senha no caso de tê-la esquecido. */  
/*Contexto: A página 139.82.24.189/cel/aplicacao é acessada.  
Na página 139.82.24.189/cel/aplicacao/login.php o usuário  
insere login ou senha incorretos - $wrong=true*/  
/*Atores: usuário */  
/*Recursos: login, senha, bd.inc, httprequest.inc, $wrong, $url,  
showSource.php?file=login.php, esqueciSenha.php, add_usuario.php?novo=true*/
```

```
/*Episodio 1: Iniciar sessão */
```

```
session_start();
```

```
include("bd.inc");
```

```
$url = "";  
$submit = "";  
$login = "";  
$senha = "";  
$wrong = "false";
```

```
include("httprequest.inc");
```

```
/*reset ($_GET);  
while (list ($chave, $valor) = each ($_GET)) {  
    $a = $chave;  
    $$a = $valor;  
}
```

```
reset ($_POST);  
while (list ($chave, $valor) = each ($_POST)) {  
    $a = $chave;  
    $$a = $valor;
```

http://sl.les.inf.puc-rio.br/cel/aplicacao/showSource.php?file-login.php - Microsoft Internet Explorer

```
/*Episodio 2: Conectar o SGBD */
$r = bd_connect() or die("Erro ao conectar ao SGBD");

/*Episodio 9: Se o formulário tiver sido submetido então verificar se o login e senha estão
corretos. */
if ( $submit == 'Entrar' ) {

    $q = "SELECT id_usuario FROM usuario WHERE login='$login' AND senha='$senha'";
    $qrr = mysql_query($q) or die("Erro ao executar a query");

    /*Episodio 10: Se o login e/ou senha estiverem incorretos então retornar a página de login com
wrong=true na URL. */
    if ( !mysql_num_rows($qrr) )
    {

?>
        <script language="javascript1.3">
            document.location.replace('login.php?wrong=true&url=<?=$url?>');
        </script>

<?php
        $wrong = $_get["wrong"];
    }

    /*Episodio 11: Se o login e senha estiverem corretos então registrar sessão para o usuário,
fechar login.php e abrir aplicação . */
    else {
        $row = mysql_fetch_row($qrr);
        $id_usuario_corrente = $row[0];

        session_register("id_usuario_corrente");

?>

        <script language="javascript1.3">
            opener.document.location.replace('<?=$url?>');
            self.close();
        </script>
    }
}
```

login\_C11.doc - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address: http://el.lis.uf-pa-rs.br/ceaf/educacao/doc/new\_user.htm

### Scenario / Code

**Title:** Register new user

**Goal:** The system enters information on a new user in the database

**Context:** login.php, add\_usuario.php using novotru  
add\_usuario.php executes recursos() using parameters p\_style, p\_text, nome, email, login,  
senha, senha\_conf, fnovo, loadstradit, miss, che, ocorred, add\_usuario.php

**Actors:** user,

**Resources:** bd.inc, lutfceisset.inc, funcoes\_genericas.php, showSource.php?file=add\_usuario.php,  
url, p\_style, p\_text, nome, email, login, senha, senha\_conf, fnovo, loadstradit

**Episodes:**

Episode 1: Initiate session.  
`session_start();`

Episode 2: Include file that defines system functions.  
`include("funcoes_genericas.php");`

Episode 3: login.php connects the SQLBD with bd\_connect defined in bd.inc

Episode 17: IF fnovo="true" THEN initiate user session, user came from scenario ACCESS SYSTEM so login.php fnovo="true".

```
if( $fnovo == "true" ) {
    $id_usuario_corrente = simple_query("id_usuario", "usuario", "login = '$login'");
    session_register("id_usuario_corrente");
}
```

Episode 18: Load index.php and direct to ADD PROJECT scenario

```
<script language="javascript">
    opener.location.replace("index.php");
    open("add_projeto.php", "_dependent,height=300,width=550,resizable,scrollbars,titlebar");
    self.close();
</script>
```

Done

Start | Inbox - Outlook Express | Jeeb 5 - Microsoft Word | login\_C11.doc - Micro... | 17:19