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."
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
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, ..., 

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

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

Based on the book *Sistemas de Informação de Leite*, J.C.S.P. e Leal Ferreira, S.M.B.
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

http://www.touchstone.com/tr/wp/IBIS.html

An Argument used to endorse Idea Y
Technology (Supplier Side)

- Genesys (http://www.genesys.com/)
- Microsoft (http://www.microsoft.com/catalog/) Vide Business Software (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)
- Microssiga (http://www.microsiga.com.br)
- Baan (http://www.baan.com)
- 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.

Based on the book *Sistemas de Informação* by J.C.S.P. e Leal Ferreira, S.M.B.
Modeling Technology

Fig. 8 Basic Framework of Strategic Corporate Memory
Modeling Technology

Figure 1 – Scenario Representation proposed by Leite [4]
Modeling Technology

<table>
<thead>
<tr>
<th>Title:</th>
<th>Build a group of adherents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal:</td>
<td>Build a new group of adherents for a saving plan.</td>
</tr>
<tr>
<td>Context:</td>
<td></td>
</tr>
<tr>
<td>Geographical Location:</td>
<td>Administration society headquarters.</td>
</tr>
<tr>
<td>Temporal Location:</td>
<td>Every second monday.</td>
</tr>
<tr>
<td>Precondition:</td>
<td>There are as many accepted solicitors as required to build a group.</td>
</tr>
<tr>
<td>Resources:</td>
<td>application form, Constraint: it must be numbered, formal notification form.</td>
</tr>
<tr>
<td>Actors:</td>
<td>administration society, accepted solicitor.</td>
</tr>
<tr>
<td>Episodes:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The administration society chooses among all accepted solicitors those who will integrate the new group.</td>
</tr>
<tr>
<td></td>
<td>The administration society generates a list of members of the new group of adherents including personnel data and number assigned to each application form.</td>
</tr>
<tr>
<td></td>
<td>The administration society records the new group of adherents to participate in the next adjudication act.</td>
</tr>
<tr>
<td></td>
<td>The administration society sends a formal notification of acceptance to every accepted solicitor included in the new group.</td>
</tr>
<tr>
<td>Exceptions:</td>
<td>---</td>
</tr>
</tbody>
</table>
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

Fig. 2. An example of an LEL symbol.
Modeling Technology

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 (Leavit)
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)
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

Needs: Level 1
Requirements: Level 2
Specs: Level 3
Product: Level 4
Basic Information Requirements

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

Baseado no livro *Sistemas de Informação* de Leite, J.C.S.P. e Leal Ferreira, S.M.B.
Transparency
Usability (Feedback)
WERpapers
(http://wer.inf.puc-rio.br/WERpapers/)
C&L

Scenario / Code

Title: Accessing the system
Goal: It permits that the user access the CeL, the user takes the password.
Context: slies.inf.puc-rio.br/cel/eclipse is accessed in page or wrong password - $wrong=true.
Actors: user, login.php.
Episodes:
Episode 1: login.php starts session for user.
Episode 2: login.php starts variables and it includes resources - bd_inc, ...
Episode 3: login.php connects the SGBD with bd_connect defined in bd.
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 8: login.php shows option of REMEMBER PASSWORD - forgotPassword.php.

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

/*Título: 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 */
/*Recurso: login, senha, bd.inc, httprequest.inc, $wrong, $url,

/*Episódio 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;
    $aa = $valor;
}

reset ($_POST);
while (list ($chave, $valor) = each ($_POST)) {
    $a = $chave;
    $aa = $valor;
}
/*Episódio 3: Conectar o SGBD*/
$r = bd_connect() or die("Erro ao conectar ao SGBD");

/*Episódio 9: Se o formulário tiver sido submetido então verificar se o login e senha estão corretos.*/
if ($_POST['submit'] == 'Entrar') {
    $q = "SELECT id_usuario FROM usuario WHERE login='$_POST[login]' AND senha='$_POST[senha]';
    $qrr = mysql_query($q) or die("Erro ao executar a query");

    /*Episódio 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&amp;url=externo.php');
        </script>
    } else {
        $row = mysql_fetch_row($qrr);
        $_SESSION['id_usuario_corrente'] = $row[0];
        session_register("id_usuario_corrente");
    }
    ?>
    <script language="javascript1.3">
        opener.document.location.replace('externo.php');
    </script>
}
Scenario / Code

Title:             Register new user
Goal:             The system enters information on a new user in the database
Context:          Registration of a new user
                  Parameters: user name, email, password
Actions:          new user
                  post new user
                  connect
                  $sql = "INSERT INTO users (username, email, password) VALUES ($username, $email, $password)");
Resources:        database connection
                  SQL query
                  user validation

Episodes:
Episode 1:        Initialize session.
                  $session_start();
Episode 2:        Include file that defines system functions.
                  include("functions_generic.php");
Episode 3:        Log user into the database with bd_node defined in bd.inc.
                  $login = $bd_node->login($username, $password);
Episode 17:       IF $login THEN user session user name comes from remote ACCESS SYSTEM or login.php (user name)
                  IF ($login == "true")
                  $sql = "SELECT * FROM users WHERE username = $username"; 
                  $user = $db->query($sql);
Episode 18:       Load index.php and direct ADD PROJECT scenario:
                  script="register.html"; 
                  open($script); 
                  script="register.php"; 
                  add_attribute("script=register.php","dependency="); 
                  add_attribute("onclick=");