Pragmatic Aspects of Interaction with Flexible e-Government Systems

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Outline

- e-Government
  - Problem and Motivation

- Objectives

- Normative Approach for Tailoring

- Applying to e-Government context

- Discussion

- Conclusions
e-Government

• A distinct research field
  – Information Systems
  – Information Technology research

• Some Aspects
  – Large number of users
  – Diversity of users and needs
  – Influence of Laws and Processes
Problem and Motivation

- Citizens with different abilities, educational levels, physical conditions and preferences
  - Require flexible interfaces and services

- Educational, technological, cultural, social and economical barriers hamper access to technology and interaction possibilities
Objectives

- Construction of flexible and adaptable interfaces
  - More than the choice of style preferences for the information presentation

*Include socio-pragmatic aspects of the interaction*
Objectives

Socio-Pragmatics
Context

Citizens

Understand this Mutual Relationship to adapt the Interface to Citizens and Organizational needs

Organizations
Normative Approach for Tailoring

• Ontology + Norms
  – Affordances
    • Gibson's *Affordances* expanded by Stamper to express invariants of behavior in the social World
  – Norms
    • Describe the relationships between an intentional use of signs and the resulting behavior of responsible agents
    • Describe the beliefs, expectations, commitments, contract, law, culture, as well as business
Normative Approach for Tailoring

- Adjust the interface during runtime according to norms evaluation
- Give to users, domain specialists and public administrators the opportunity to specify and change norms
- Every time that a norm changes, the interface also changes
Basic Architecture

NBIC
Norm Based Interface Configurator

Rules Services
Objects Action Rules

Norms Services
Afforances Norms
Compile

WSDL

ICE
Interface Configuration Environment

ICE Web Service

WSDL

Norms Modelers

Application

Perception

Action

Struts Extension

Facts
Tailoring Extension
xml
jsp
html

xml
jsp
html

AMPI
Extended Architecture

NBIC
Norm Based Interface Configurator

Rules Services
Objects Action Rules

Norms Services
Affordances Norms
Compile

WSDL
WSDL
WSDL
WSDL
WSDL

Translate the norms to inference machine language

Manage norms from actions captured from the interface

Client Application

nbic_client Component

br:nbic_client_wsmanger
br:nbic_client_servlets
Extended Architecture

- Norms can be captured from the system usage and passed to NBIC
- Norms descriptions are not explicitly specified by the users
- The users should be aware that they are changing the system behaviour and are able to predict how it will work
Applying to e-Government Context

Public Organization

Public Administrators  Backoffice Systems

Norms (procedures, laws, rules, ...)

Context Information

Norms (preferences, intentions, etc)

Usage Context Information

Framework

Generates

Citizens
Applying to e-Government Context

- Chosen scenario
  - Brazilian Federal Tax Portal (Receita Federal)

- Complex procedures and norms
- Millions of Access
- Millions of users
  - With different intentions
Website of Receita Federal

O Simples Nacional já está em vigor

Confira no Portal do Simples Nacional - Consulta Optantes, se sua empresa migrou do Simples Federal para o Simples Nacional.

Regularização Fiscal para Império no Simples Nacional

Contribuintes que optaram pelo Simples Nacional deverão regularizar as pendências fiscais até 31 de julho de 2007, às 20h (horário de Brasília). Para mais informações, Clique Aqui.

Novo Instrução Normativa do CNPJ

Programa CNPJ/Cadastro Sincronizado 2.0 - nova versão

Ensino e Distância - DCTF

Clique e aprenda o correto preenchimento da DCTF. É mais simples do que parece.

DIPJ - Declaração de Informações Econômico-fiscais da Pessoa Jurídica

Encerrou-se às 20 horas, horário de Brasília, de 29/6/2007 o prazo de entrega da declaração.

IRPF - Restituição e Extrato Simplificado do Processamento

Atenção: Débito Automático das Quotas do IRPF 2007

Orientações sobre informações bancárias enviadas com dados errados.

Aliquota Efetiva do IRPF 2007 - Simulador

Simulador para cálculo do imposto de renda mensal e anual.
Website of Receita Federal

- Mix of Information and Services
- They are not Personalized
- Some Classification
- The situations and intentions can be uncountable
- They can be unpredictable
Tailoring the Interface

### CPF - Cadastro Pessoa Física

<table>
<thead>
<tr>
<th>Declarações Da Pessoa Física Access:</th>
<th>PF Isento</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declaração Anual De Isento – DO ÚLTIMO PER</td>
<td>PF Não Isenta Destacar</td>
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<tr>
<td>Declaração Do Imposto De Renda PF – PERÍODO</td>
<td>PF Imposto a Pagar Ocultar</td>
</tr>
<tr>
<td>Declarações IRPF De Anos Anteriores</td>
<td>PJ Simples Exibir</td>
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</table>

#### Aliquota Efetiva Do IRPF

<table>
<thead>
<tr>
<th>Aliquota Efetiva Do IRPF</th>
<th>%</th>
<th>Parcela a declara (R$)</th>
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<tr>
<td>1.313,69</td>
<td></td>
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<tr>
<td>1.313,70</td>
<td>15,0</td>
<td>197,05</td>
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<td>2.622,12</td>
<td>27,0</td>
<td>525,19</td>
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### Programas

<table>
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<tr>
<th>Programas Access:</th>
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<tbody>
<tr>
<td>Situação Fiscal – Orientação Para Consulta</td>
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<tr>
<td>Certidão Negativa De Débitos</td>
</tr>
<tr>
<td>Restituição Do IRPF PERÍODO ANTERIOR – Xº Lote Residual</td>
</tr>
</tbody>
</table>

### Pagamentos

<table>
<thead>
<tr>
<th>Pagamentos Access:</th>
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<tbody>
<tr>
<td>Parcelamento Débitos</td>
</tr>
<tr>
<td>Isenções Especiais – IPI Para Taxistas</td>
</tr>
<tr>
<td>Isenções Especiais – Insenção De IPI/IOF</td>
</tr>
<tr>
<td>Isenções Especiais – De IRPF/ Portadores Doença Grave</td>
</tr>
<tr>
<td>Residente No Brasil Ausente No Exterior</td>
</tr>
</tbody>
</table>
Tailoring the Interface

GERENCIAMENTO ADMINISTRADOR

Novos Links

Cidadão: [Input]

Condição: [Input] e [Input] Novo Condição

Obrigado [Input]

Descrição Link: [Input] Destacado

Nome do Arquivo: [Input]

Confirmar Link

Página Principal
Example of Personalized Interfaces
Examples of Personalized Interfaces

- Visual and structural aspects were maintained
- Citizens with debits
Examples of Personalized Interfaces

- Citizens
- Tax Exemption
Examples of Personalized Interfaces

- Citizens
- Restitution
Discussion

- Some questions to be addressed
  - Analyze *with* the users the benefits for long periods in real situations
  - Provide other changes in the visual and structure of the interface
  - Analyze the communication and synchronization with backoffice systems
  - Deeper investigation of the normative aspects of the personalization in distributed systems
  - How to consider computational aspects such as performance and scalability
Discussion

• The application of the approach in other contexts
  – Some features of the e-Gov context justify the approach

– Examples:
  • More likely: e-Commerce, e-Business, Collaborative systems
  • Probably with adaptations: Administrative systems, email, point-to-point communication, backoffice systems
  • Probably Not (without major changes): Word processors, modeling tools, and Compilers with no collaborative support
Conclusion

• E-Gov systems require flexible and personalized interfaces due to the diversity of users and stakeholders

• Pragmatic-social aspects should be considered

• Use of a normative approach and architecture

• Extension of the architecture and application on e-government context

• Results pointed out the potential of the approach
Next Steps …

• New alternatives to provide the norm specification and modification

• The application in other contexts

• How to define other visual changes (color, format, icons, etc) through norm changes
Thanks