

Design and Implementation of a Process Management System in Plone

Gildardo Bautista Arturo Curiel Monica Leñero
Sergio Rajsbaum

May 28th, 2010

Contents

1 Introduction

- Process Description
- Product Description

2 Implementation and Design

- Main Workflows
- Budget management
- Additional Views

3 Results and Future Work

Contents

1 Introduction

- Process Description
- Product Description

2 Implementation and Design

- Main Workflows
- Budget management
- Additional Views

3 Results and Future Work

The Process

What do we want to do?

Definition

We wanted to develop an automatic channel for researchers and staff to submit travel expense applications inside the Institute of Mathematics. Additionally:

- The system had to share information with the InfoMatem site database.
- The system had to properly organize applications by annual periods and should implement, at least, basic accounting.

The Process

What do we want to do?

Definition

We wanted to develop an automatic channel for researchers and staff to submit travel expense applications inside the Institute of Mathematics. Additionally:

- The system had to share information with the InfoMatem site database.
- The system had to properly organize applications by annual periods and should implement, at least, basic accounting.

The Process

What do we want to do?

Definition

We wanted to develop an automatic channel for researchers and staff to submit travel expense applications inside the Institute of Mathematics. Additionally:

- The system had to share information with the InfoMatem site database.
- The system had to properly organize applications by annual periods and should implement, at least, basic accounting.

The Process

Who?

Who is involved in the process?

- **Researchers and Staff Members** These are members of the Institute who can submit travel expense applications. In the old Infomatem they usually had to download and print a template from the site and fill it by hand.
- **Scholarship Holders** People enrolled on a degree granting program with an advisor from the Institute.

The Process

Who?

Who is involved in the process?

- **Researchers and Staff Members** These are members of the Institute who can submit travel expense applications. In the old Infomatem they usually had to download and print a template from the site and fill it by hand.
- **Scholarship Holders** People enrolled on a degree granting program with an advisor from the Institute.

The Process

Who?

Who is involved in the process?

- **Researchers and Staff Members** These are members of the Institute who can submit travel expense applications. In the old Infomatem they usually had to download and print a template from the site and fill it by hand.
- **Scholarship Holders** People enrolled on a degree granting program with an advisor from the Institute.

The Process

Who?

Who is involved in the process?

- **Special Commission Administrators** They form a commission of the Internal Council in charge of reviewing and approving (or rejecting) travel expense applications.
- **Internal Council Members** These are members of the Internal Council of the Institute. Their duty (in this scope) is to ratify desitions taken by the Special Commission Administrators.

The Process

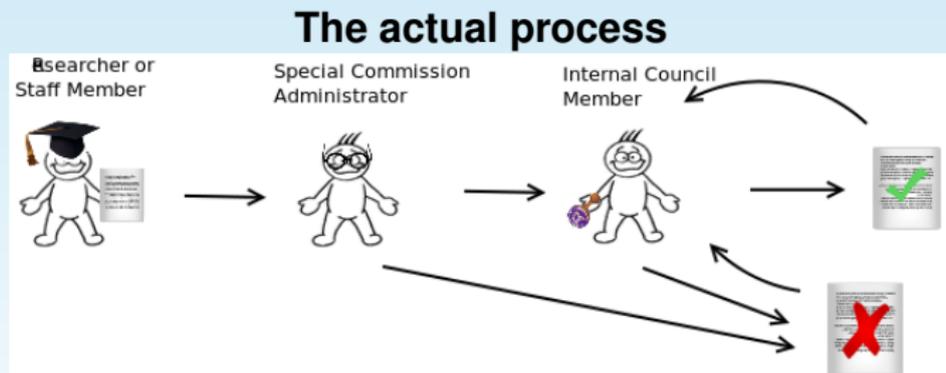
Who?

Who is involved in the process?

- **Special Commission Administrators** They form a commission of the Internal Council in charge of reviewing and approving (or rejecting) travel expense applications.
- **Internal Council Members** These are members of the Internal Council of the Institute. Their duty (in this scope) is to ratify desitions taken by the Special Commission Administrators.

The Process

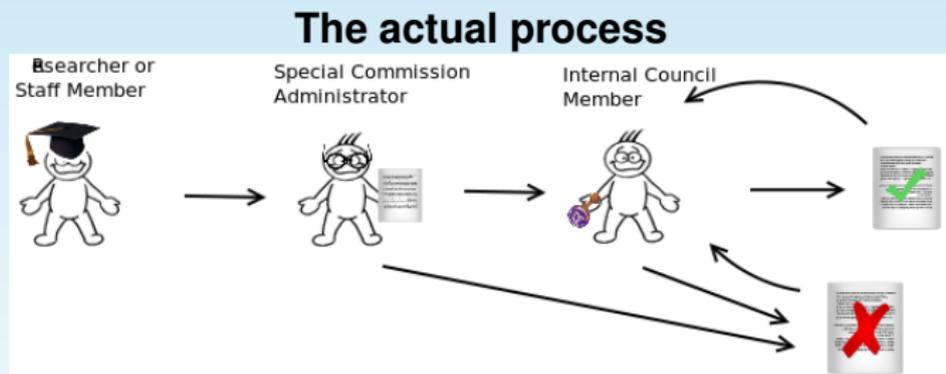
The workflow



- 1 A researcher or staff member creates a new application.

The Process

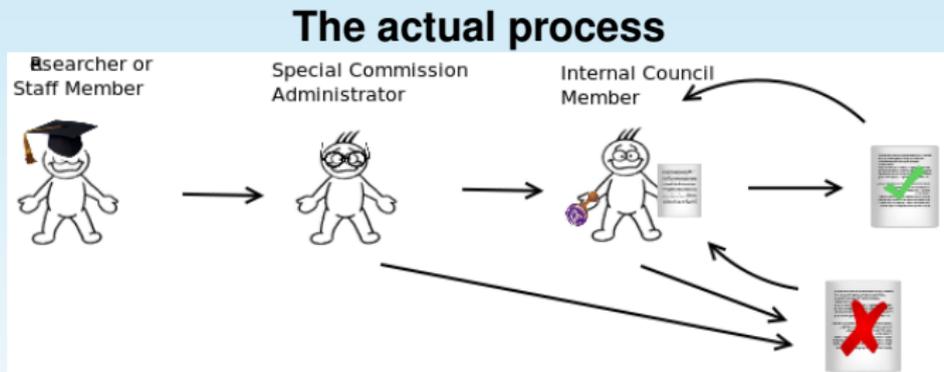
The workflow



- 2 The application is eventually sent and reviewed by a Special Commission Administrator, who decides whether it should be approved (in which case he lets it reach the council) or rejected.

The Process

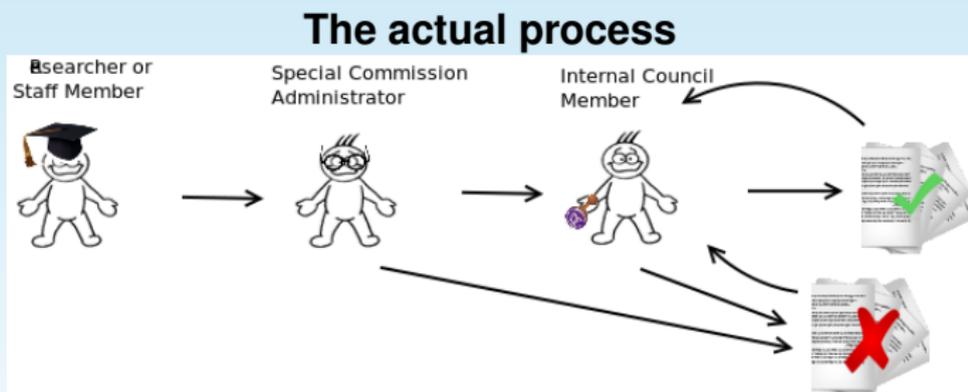
The workflow



- 3 If approved, the Council (in their weekly session) ratifies the former decision or rejects the application for any reason.

The Process

The workflow



- 4 In either case, the applications become public (to researchers) and remain in the database for further reference.

Contents

1 Introduction

- Process Description
- **Product Description**

2 Implementation and Design

- Main Workflows
- Budget management
- Additional Views

3 Results and Future Work

The Product

Description

*Solicitud*es (Applications) is a Process Management System distributed as a Plone product. It was designed to model the process of creation, review and approval of travel expense applications for researchers, scholarship holders and staff members in the Institute of Mathematics in UNAM.

Custom Data Types

We needed to create these custom data types:

- License Application.- The standard type of application, used for every travel.
- Scholarship Holder Application.- An application for Scholarship Holders. Same as the License Application, except it has additional fields for the latter users (i.e. advisor name, which degree they are pursuing, etc).
- Visitor Application.- For external visitors. Researchers use this application when they require monetary support for visitors attending to some event at the Institue. If approved, the money used is discounted from the annual budget assigned to the researcher who submits the application.

We used archetypes to define these content types

Custom Data Types

We needed to create these custom data types:

- License Application.- The standard type of application, used for every travel.
- Scholarship Holder Application.- An application for Scholarship Holders. Same as the License Application, except it has additional fields for the latter users (i.e. advisor name, which degree they are pursuing, etc).
- Visitor Application.- For external visitors. Researchers use this application when they require monetary support for visitors attending to some event at the Institute. If approved, the money used is discounted from the annual budget assigned to the researcher who submits the application.

We used archetypes to define these content types

Custom Data Types

We needed to create these custom data types:

- License Application.- The standard type of application, used for every travel.
- Scholarship Holder Application.- An application for Scholarship Holders. Same as the License Application, except it has additional fields for the latter users (i.e. advisor name, which degree they are pursuing, etc).
- Visitor Application.- For external visitors. Researchers use this application when they require monetary support for visitors attending to some event at the Institute. If approved, the money used is discounted from the annual budget assigned to the researcher who submits the application.

We used archetypes to define these content types

Custom Data Types

We needed to create these custom data types:

- License Application.- The standard type of application, used for every travel.
- Scholarship Holder Application.- An application for Scholarship Holders. Same as the License Application, except it has additional fields for the latter users (i.e. advisor name, which degree they are pursuing, etc).
- Visitor Application.- For external visitors. Researchers use this application when they require monetary support for visitors attending to some event at the Institute. If approved, the money used is discounted from the annual budget assigned to the researcher who submits the application.

We used archetypes to define these content types

Custom Data Types

We needed to create these custom data types:

- License Application.- The standard type of application, used for every travel.
- Scholarship Holder Application.- An application for Scholarship Holders. Same as the License Application, except it has additional fields for the latter users (i.e. advisor name, which degree they are pursuing, etc).
- Visitor Application.- For external visitors. Researchers use this application when they require monetary support for visitors attending to some event at the Institute. If approved, the money used is discounted from the annual budget assigned to the researcher who submits the application.

We used archetypes to define these content types

Example of an Application

Datos del Solicitante			
Nombre		Investigador1 Apellido1	
Presupuesto:	Asignado	1200.0	
	Disponible	-1196.0	
Datos del Destino			
País		Andorra	
Ciudad		Ciudad	
Institución		Institucion	
Fecha de inicio	2010/02/09	Fecha de término	2010/02/04
Datos Adicionales			
Objetivo de la visita		Objetivo	
Áreas de investigación		03-xx Mathematical logic and foundations	
Título del trabajo a presentar			
Archivos adjuntos		archivo	
Comentarios adicionales			
Pasaje	No	Tipo de pasaje	
Viáticos	No	Inscripción	No
Cantidades			
Concepto	Cantidad Solicitada	Cantidad Recomendada por Comision Especial	Cantidad Autorizada por el Consejo Interno
Cantidad para pasajes	0.0	1899.0	1000.0
Cantidad para viáticos	0.0	0.0	0.0
Cantidad para inscripción	0.0	0.0	0.0
Total	0.0	1899.0	1000.0

Custom Roles

System users

Custom roles:

Researcher

- Create License and Visitor Applications.

Custom Roles

System users

Custom roles:

Scholarship Holder

- Create Scholarship Holder Applications.

Custom Roles

System users

Custom roles:

Special Commission Administrator

- Review Applications.
- Modify restricted fields for Special Commission.

Custom Roles

System users

Custom roles:

Special Commission Head

- Review Applications.
- Modify restricted fields for Special Commission.
- Change object state.

Custom Roles

System users

Custom roles:

Internal Council Member

- Review Applications.
- Modify restricted fields for Internal Council.

Custom Roles

System users

Custom roles:

Internal Council Member Head

- Review Applications.
- Modify restricted fields for Internal Council.
- Change object state.

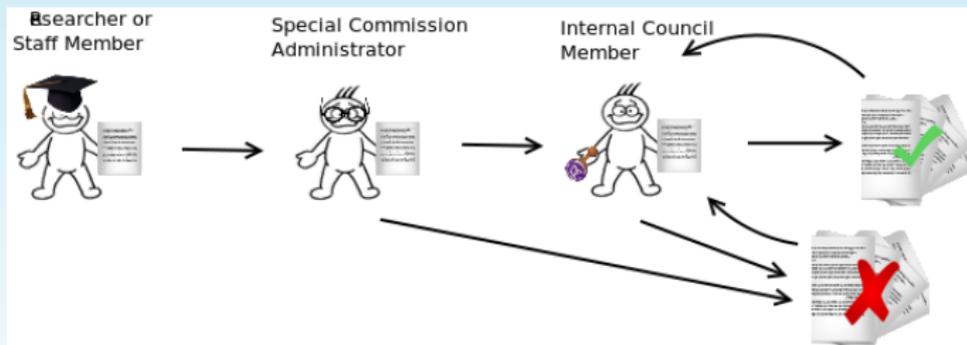
Special Remarks

- Every component and view is registered via Generic Setup and ZCML configuration files.
- We used Archetypes to develop custom content types.

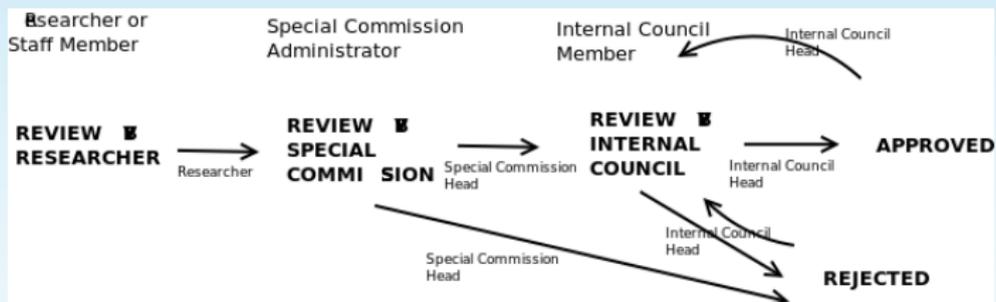
Contents

- 1 Introduction
 - Process Description
 - Product Description
- 2 Implementation and Design
 - **Main Workflows**
 - Budget management
 - Additional Views
- 3 Results and Future Work

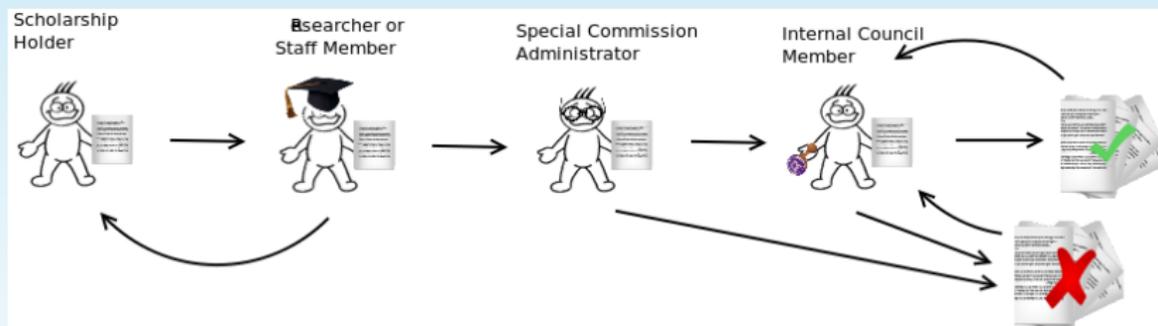
Main Workflows



Main Workflows



Main Workflows



Main Workflows



Contents

- 1 Introduction
 - Process Description
 - Product Description
- 2 Implementation and Design
 - Main Workflows
 - **Budget management**
 - Additional Views
- 3 Results and Future Work

Budget management

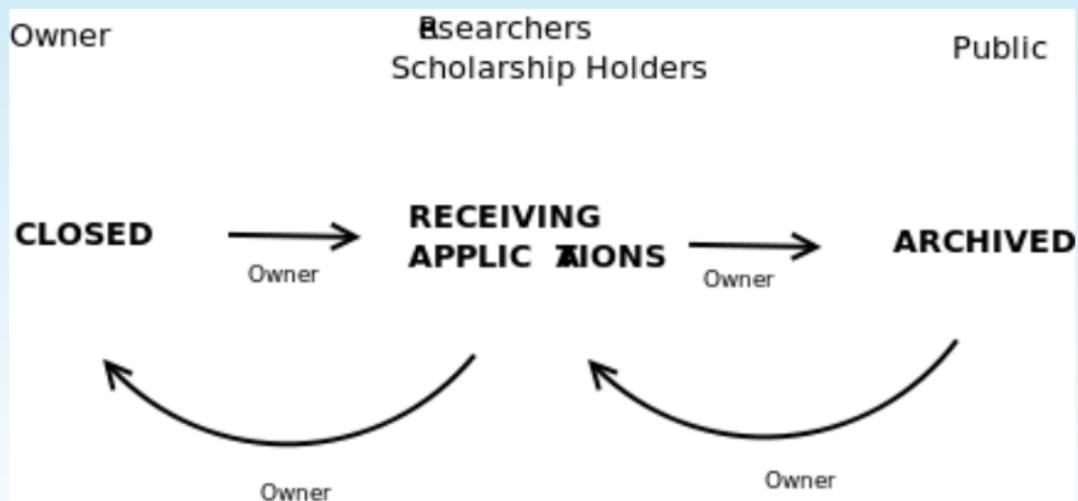
To achieve budget management we needed to create this custom data type:

- **Application Folder.**- An extension of a normal folder. It has two associated dates, a beginning date and an ending date. These dates form an interval used to differentiate between time periods. Every folder contains applications from a single period. These folders have a numeric field which denotes the associated budget for that period.

We used archetypes to define these content types

Budget management

Application Folder Workflow



Budget Display

Servicios Internos

Solicitudes

2010

Solicitud (Becario) de Nombre de Becario por 56999.0 (Una ciudad, Una institucion, 2010/02/09)

Solicitud (Licencia) de Investigador Nombre por 56999.0 (Guanajuato, Una Institucion, 2010/02/09)

Solicitudes Aprobadas (100as) Solicitudes Rechazadas (100as)

Busqueda Presupuesto Total Local

Presupuesto Total Local

Presupuesto máximo por investigador:

	Quantity
Investigadores	\$ 20000.0
Becarios	\$ 5000.0

Maximo Presupuesto para este Periodo: 2010/01/01 hasta 2010/12/31

100000.0 Poner nuevo presupuesto

Cantidades Aprobadas (Totales)

Tipo	Solicitante	Cantidad aprobada para este periodo	Cantidad restante para este investigador
Becario	Tlacaeelel Curiel	0.0	5000.0
Investigador	Investigador Nombre	0.0	15668.0
Becario	Nombre de Becario	56999.0	-227472.0
Tecnico Academico	Jose Gonzalez Inv2	0.0	9348.0
Becario	Arturo Curiel	0.0	5000.0

Presupuesto para este periodo	100000.0
Presupuesto asignado localmente	247456.0
Cantidad restante para este periodo	-147456.0

Poner nuevo presupuesto

Volver a calcular cantidades

Folder de Solicitudes

Del 2010/01/01 hasta 2010/12/31.



Tiene solicitudes pendientes!
Reviselas usando el cuadro ubicado a la derecha de su pantalla y que lleva por título 'A examinar' (dando clic sobre los recuadros) o navegando a 'Mis solicitudes pendientes'.

Tienes los roles de:

Consejero Comisionado Programador de Presupuesto

A examinar

Solicitud (Licencia) de Investigador Nombre por 56999.0 (Guanajuato, Una Institucion, 2010/02/09)

investigador — 06/04/2010

Lista de revision completa...

« Abril 2010 »

Lu	Ma	Mi	Ju	Vi	Sá	Do

Budget Display

Presupuesto máximo por investigador:

	Quantity
Investigadores	\$ 20000.0
Becarios	\$ 5000.0

Poner nuevo presupuesto

Investigador Nombre por 56999.0 (Guanajuato, Una Institucion, 2010/02/09)
investigador — 06/04/2010

[Lista de revisión completa...](#)

Cantidades aprobadas por periodo

Título	Periodo	Presupuesto para este periodo	Presupuesto asignado localmente	Cantidad restante para este periodo
2010	Del 2010/01/01 al 2010/12/31	100000.0	247456.0	-147456.0
Presupuesto maximo total (todos los periodos)		100000.0		
Presupuesto asignado en todos los periodos		247456.0		
Presupuesto restante		-147456.0		

« Abril 2010 »

Lu	Ma	Mi	Ju	Vi	Sá	Do
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Cantidades Aprobadas (Totales)

Tipo	Solicitante	Suma de cantidades aprobadas (pesos)	Cantidad restante para este investigador
Becario	Arturo Curiel	0.0	5000.0
Becario	Nombre de Becario	232472.0	-227472.0
Investigador	Investigador Nombre	4332.0	15668.0
Tecnico Academico	Jose Gonzalez Inv2	10652.0	9348.0
Becario	Tlacaalel Curiel	0.0	5000.0
		1	
Presupuesto maximo total (todos los periodos)		100000.0	
Presupuesto asignado en todos los periodos		247456.0	
Presupuesto restante		-147456.0	

Volver a calcular cantidades

Contents

1 Introduction

- Process Description
- Product Description

2 Implementation and Design

- Main Workflows
- Budget management
- **Additional Views**

3 Results and Future Work

Additional Views

Ease of navigation was achieved by:

- Implementing custom views.
- Using external *scripts* to add functionality.
- *Portlet* design.

Additional Views

Menus

Contenidos | Navegacion | Búsqueda

Agregar elemento ▼ | Estado: Aceptando Solicitudes

Menu, folder 2012



Mis solicitudes aprobadas
Aqui puede ver sus solicitudes que ya han sido aprobadas:



Mis solicitudes rechazadas
Aqui puede ver sus solicitudes que fueron rechazadas:



Mis solicitudes en proceso
Aqui puede ver todas las solicitudes que ha enviado:



Solicitudes pendientes de revision
Contiene todas las solicitudes que necesitan ser revisadas por usted:



Solicitudes publicas aprobadas
Aqui puede ver todas las solicitudes publicas aprobadas en el periodo (aun si no son de usted):



Solicitudes publicas rechazadas
Aqui puede ver todas las solicitudes publicas rechazadas en el periodo (aun si no son de usted):

Folder de Solicitudes

Del 2010/04/09 hasta 2010/04/09.



Tiene solicitudes enviadas. Puede revisarlas navegando a 'Mis solicitudes en proceso'.

Acceso rapido:
Ir a 'Mis solicitudes en proceso'

Regresar al menu

 Tu tienes los roles de:
Investigador

« Abril 2010 »

Lu	Ma	Mi	Ju	Vi	Sa	Do
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Additional Views

List Views

Solicitudes publicas aprobadas

Aquí puede ver todas las solicitudes publicas aprobadas en el periodo (aun si no son de usted)
Folder 2010

Cantidades Aprobadas (por Solicitud)

Tipo	Solicitante	Motivo	Lugar	Fecha desde	Fecha hasta	Cantidad aprobada (pesos)	Liga
Solicitud de Licencia	Gerardo Accosta	Visita a Mississippi State University	Starkville, Mississippi, United States	2010/03/17	2010/03/21	7000.0	ver
Solicitud de Licencia	Micho Durdjevich	Visita a Universidad Autónoma de Nayarit	Nayarit, Mexico	2010/01/09	2010/01/17	0.0	ver
Solicitud de Licencia	E. Javier Elzondo	Visita a Universidad de Barcelona	Barcelona, Spain	2010/02/12	2010/02/20	0.0	ver
Solicitud de Licencia	Sergio Macías	Visita a Universidad de Patras, en Nafpaktos, Grecia	Nafpaktos, Greece	2010/06/26	2010/06/30	19993.62	ver
Solicitud de Licencia	Sergio Macías	Visita a Universidad de Birmingham	Birmingham, United Kingdom	2010/07/01	2010/07/24	0.0	ver
Solicitud de Licencia	Octavio Mendoza	Visita a Centro de Matemática de la Facultad de Ciencias, Universidad de la República, en Uruguay, Universidad Nacional de	Buenos Aires, Argentina	2010/03/03	2010/03/19	14000.0	ver

Del 2010/01/01 hasta 2010/12/31.

No hay solicitudes pendientes. Puede revisar sus solicitudes aprobadas y rechazadas navegando a 'Mis solicitudes aprobadas' y 'Mis solicitudes rechazadas', respectivamente.

Acceso rápido:
 Ir a 'Mis solicitudes aprobadas'
 Ir a 'Mis solicitudes rechazadas'

[Regresar al menú](#)

Tu tienes los roles de:
Comisionado Investigador
Importador de Solicitudes

Additional Views

■ Import View

The screenshot displays the 'Import' view in a Plone web application. The top navigation bar includes tabs for 'Acerca de', 'Directorio', 'Investigación', 'Enseñanza', 'Servicios', 'Actividades', and 'Búsquedas'. The current page path is 'Usted está aquí: Inicio → Servicios → Servicios Internos → Solicitudes → 2010'. The main content area is titled '2010 Importar' and contains the following elements:

- Importar Solicitudes:** A section where users can import requests into the system.
- Tipo a importar:** A section with the instruction 'Seleccione el tipo de solicitud a importar.' and four radio button options:
 - Solicitud de Licencia
 - Solicitud de Visitante
 - Solicitud de Becario
 - Varios tipos simultaneamente
- Archivo Fuente:** A section with the instruction 'Seleccione el archivo a importar dando clic en el botón'. It features a text input field, a 'Browse...' button, and an 'Importar' button.

The right sidebar, titled 'Folder de Solicitudes', shows the date range 'Del 2010/01/01 hasta 2010/12/31.' and a folder icon. It contains the following text:

- No hay solicitudes pendientes. Puede revisar sus solicitudes aprobadas y rechazadas navegando a 'Mis solicitudes aprobadas' y 'Mis solicitudes rechazadas', respectivamente.
- Acceso rapido:**
 - Ir a 'Mis solicitudes aprobadas'
 - Ir a 'Mis solicitudes rechazadas'
- Regresar al menu
- Tu tienes los roles de:
 - Comisionado
 - Investigador
 - Importador de Solicitudes

At the bottom of the page, there are standard navigation icons for back, forward, and search.

Additional Views

Searches

Búsqueda avanzada por contenido

Este formulario de búsqueda le permitirá encontrar contenido en el site especificando uno o más términos de búsqueda.

Recuerde que puede usar la búsqueda rápida en cualquier momento, la cual es normalmente suficiente. Este formulario de búsqueda es sólo por si desea ser más específico.

Términos a Buscar

Autor

Devuelve los elementos creados por un usuario.

Solicitudes enviadas por...

País

País especificado en la solicitud.

Elija un país...

Ciudad

Ciudad especificada en la solicitud.

Institución

Institución especificada en la solicitud.

Fecha de inicio

Fecha de inicio especificada en la solicitud.

-- / -- / -- : -- : --

Fecha de término

Fecha de finalización especificada en la solicitud.

-- / -- / -- : -- : --

Áreas de Investigación

Solicitudes del Área...

Nombre del becario

Seleccione un becario (si aplica)...

Asesor

Seleccione un asesor (si aplica)...

Objetivo de la visita

Título del trabajo a presentar

Cantidad total

Cantidad total aprobada o requerida en pesos (MDD) según sea el caso.

0.0

Mayores que cantidad

Si la cantidad es mayor a cero, regresará las solicitudes que requieren (o donen aprobada) una cantidad mayor a la especificada.

0.0

Some issues

- Users love to have a lot of options but feel better with few displayed at the same time.
- We can't rely on user's good memory. The user has to be reminded always of what he/she is seeing.
- Workflow design can't always be completely automatic.
- External scripts should be avoided. . . but they are not.

Results

- Automatic display of budget information, time saviour.
- Easy migration between different instances of Plone.
- User experience was boosted by the use of a lot of visual aides, including portlets.
- Workflow design is the crucial part of the process.
- A 'visible' switch is needed for every part of the standard view.

Results

- Automatic display of budget information, time saviour.
- Easy migration between different instances of Plone.
- User experience was boosted by the use of a lot of visual aides, including portlets.
- Workflow design is the crucial part of the process.
- A 'visible' switch is needed for every part of the standard view.

Future Work

- Towards a generic process modelling product.
- Easy access for non-developers: browser level creation.
 - 1 Custom type definition.
 - 2 Custom workflow definitons.
 - 3 Automatic view creation on portlet.
- Support for more import/export formats.
- Complete migration to Zope 3 views.

Thanks

- Thanks for your attention.