EXO PLATFORM
VERSION 2.0
A complete guide to
eXo platform technology

ADMIN
# Table of Contents

Overview ................................................................................................................................. 3
  Why use this documentation ................................................................................................. 3
  Comments welcome! .............................................................................................................. 3

Administrator Guide Documentation ......................................................................................... 4

1.1 eXo Portal 1.1 Best Features ............................................................................................. 5
  1.1.1 Web Content Accessibility .......................................................................................... 5
  1.1.2 Rules Engine (JSR 94) ............................................................................................. 5
  1.1.3 Enhanced Security ..................................................................................................... 5
  1.1.4 Chart Capabilities ..................................................................................................... 5
  1.1.5 Drag and Drop ......................................................................................................... 5

1.2 Basic definitions .................................................................................................................. 6
  1.2.1 Portal ....................................................................................................................... 6
  1.2.2 Portlet ...................................................................................................................... 8
  1.2.3 Portlet Container ...................................................................................................... 11
  1.2.4 JSR 168 .................................................................................................................. 11

1.3 General Concept .................................................................................................................. 13
  1.3.1 Portal owner and remote user .................................................................................... 13
  1.3.2 Multi Portal Concept ................................................................................................ 13
  1.3.3 eXo platform layout .................................................................................................. 14
  1.3.4 Security Concept ...................................................................................................... 15
  1.3.5 Properties file chain for an easier internationalization management ....................... 17
  1.3.6 Indexing and Search ................................................................................................. 19
    1.3.6.1 Search Forms and Database .............................................................................. 20

2.0 Administrator Environment .................................................................................................. 25

2.1 Manage your organization users ....................................................................................... 25
  2.1.1 Register a new user ................................................................................................. 25
  2.1.2 Manage users, groups, and membership types ....................................................... 26
    2.1.2.1 Users Tab management ...................................................................................... 27
    2.1.2.2 Management Groups Tab .................................................................................. 28
    2.1.2.2 Management Memberships Tab ........................................................................ 34
  2.1.3 Manage user remotely .............................................................................................. 34

2.2 Manage Portal ................................................................................................................... 36
  2.2.1 Register portlet ......................................................................................................... 36
  2.2.2 Internationalization .................................................................................................. 39
  2.2.3 Import/Export .......................................................................................................... 43
  2.2.4 Indexing ................................................................................................................... 45

2.3 Monitoring Portlet .............................................................................................................. 46
  2.3.1 JMX Monitoring ....................................................................................................... 46
    2.3.1.1 Portalmx ............................................................................................................. 47
      2.3.1.1.1 Session Manager .......................................................................................... 48
      2.3.1.1.2 User Activities Log Services ....................................................................... 50
      2.3.1.1.3 Portal Activities Log Services .................................................................... 54
Overview

eXo platform vision of delivering innovative technologies that are designed to work together to enhance information sharing and collaboration by focusing on a reliable and scalable portal platform. We are very excited to introduce a whole new set of products line for our users which deliver more flexibility and extensibility.

In eXo platform version 2.0 we include eXo portal 1.1 and eXo ECM 1.0 which promise a much more ease of use and a powerful collaborative tools to effectively share information. eXo platform product lines provide the groundwork for an effective and efficient workplace. Whether you are an IT administrator or a user looking for a solution sharing, eXo platform gives you a fast and robust way to build and share these information. We have taken portal technology to a new level by providing flexible, cost-effective, and scalable products to help small to large business increase their productivity. eXo platform is available under GPL license and we have a subscription model that support all of our client's questions.

Why use this documentation

This documentation is a useful guide for administrators and content managers who wish to learn more about eXo platform technology in details. It gives an in depth examples and easy explanation of eXo platform technology that not only allows technical but also non-technical people to create and manage very fast and powerful website with just a click of a mouse.

Before going through this documentation make sure that your system has been installed properly otherwise refer to eXo platform installation and configuration guide book for all your installation questions.

Comments welcome!

At eXo platform, we are always delighted to hear from you. We want this documentation to be as much help to you as possible. Please contact us at the following email address for any questions or comments. Support@exoplatform.com
Administrator Guide Documentation

In the admin guide section you will begin the process of starting to work with eXo platform following features:

➢ Managing users and groups
➢ Managing your portal
➢ Monitoring your portlet
➢ Portal customization

Right from the point after eXo portal is installed and running, you will get a quick start to eXo platform administrator environment. You will get to know how to manage users and groups, portal portlets as well as monitoring the activity of your portal.

Furthermore, you will get to learn how to customization and personalization your portal page content. We will show you how to add, edit, or delete your content so that you can take control of your information. Then you will learn how to set your portal environment content according to your creative style with our look and feel section.
1.1 eXo Portal 1.1 Best Features

eXo platform 1.1 can quickly help corporate build connected solutions with an infrastructure that is secure and essential for developing an effective portal. eXo portal 1.1 latest features includes:

➢ Web Content Accessibility
➢ Rules Engine
➢ Enhanced Security
➢ Chart Capabilities
➢ Drag and drop

1.1.1 Web Content Accessibility
Web Content Accessibility (US 508/WCAG 1.0 compliance). Coding with everyone in mind. Web content accessibility lets people with disabilities perceive, understand, navigate, and interact with the web.

1.1.2 Rules Engine (JSR 94)
Rules Engine (JSR 94). Business rule technology provides a solution to manage dynamic business logic. JSR 94 provides a vendor-neutral interface to access rule engines.

1.1.3 Enhanced Security
eXo portal introduces different security layers to ensure that information are being presented to the right user based on their role and profile.

1.1.4 Chart Capabilities
eXo portal 1.1 can display statistic result in chart which allows better interpretation of portal monitoring capabilities.

1.1.5 Drag and Drop
eXo allows for the repositioning of portlets with a new drag-and-drop feature. A user can click on the title bar of a portlet to drag-and-drop it into a new position dynamically.
1.2 Basic definitions

In this section, we discuss the basic definitions surrounding portal technologies such as portal life cycle, portlet, and JSR 168. eXo platform continuously bases its technologies from the latest industry standard and Java specification.

1.2.1 Portal

Companies are often faced with issues of integrating with legacy systems. Portal are the next-generation technologies that provide site users with a single point of access to multiple types of information and application regardless of where the information resides. A complete portal solution should give user every convenient they need to get their tasks done efficiently and effectively. eXo portal 1.1 is pleased to be one of the best Open Source companies to help businesses become truly responsive with a flexible framework that integrate the best of the breed solution. By continuously improving portal ease of use, eXo platform helps company enhance productivity and efficiency thus helping company increase revenue.

A portal in general term is a website that provides end users with a single point of access to the company information system and resources. For example, a corporate portal acts as a starting point for employees to access corporate information and applications.

In technical term, a portal web application processes the client request, retrieves the portlets on the user's current page, and then calls the portlet container to retrieve each portlet's content. A portal can have one or many portlets, and each portlet holds content that can be from any systems or resources. Below depicts eXo portal request life cycle. Note that eXo portal does not use the entire JSF life cycle therefore some phases are not shown in the diagram.
An overview of the eXo portal life cycle architecture begins with the portal initialization to the request processing phases. Let's see these steps in more details.

**Portal Initialization**

When the web server is started or the eXo web archive (WAR) is deployed a PortalContextListener will catch the start event and run the checking code for the default users and groups.

**Portlet Initialization**

When the webserver is started it will look up for the portlet container service and register the application with a portlet container.

**Request Processing**

After the server is started and that all the initialization has been done the request must go through the portal and be treated by the filter.
Filter Phase

When a request is sent to the portal it will be handle by a filter. The filter will determine if the request url has the path /portal/faces/public and the private url has the path portal/faces/private. The filter will then check the owner context and it may reload the user context and store it into the session if the portal context is different from the current user context.

Reconstitute JSF tree phase

The reconstitute JSF tree phase will check for a tree id in the session and will reconstrcut the component tree if the two trees are not the same. eXo JSF tree is constructed based on the owner-config.xml, owner-navigation.xml, and owner-pages.xml files.

JSF decode phase

In this phase, the JSF implementation will iterate over the components in the component tree and calls each components decode() method.

JSF Render phase

The render phase create the html page starting with the portlet container that returned an OutputObject. Then the portal renders the portlet header and body using the content returned by the portlets containers in the OutputObject.

In summary, the characteristics of a portal are:

- Content aggregation from different sources
- Host presentation layer of information systems
- Sophisticated personalization features to provide customized content to users

1.2.2 Portlet

Think of portlet as the building blocks of your portal and these building blocks are applications that contain user's content. These portlet applications are visible in your portal as a single small block and portal pages can have either one or many of these blocks as shown in figure 1 below.
An easy way to understand portlets is to visualize it as the content inside a single small window and not the window itself. Each portlet can be managed and displayed independently from each other but it must be hosted by the portal portlet container. Portlet container manages portlet life cycle which make portlet a server side application. The life cycle starts with the initialization of a portlet into service then comes the handle request which is a process of request and response. However, it is not possible to execute directly portlet functionality via http because all functionalities are managed by the portlet container. At the end of the portlet cycle, portlet is destroyed by a portlet container putting it out of service.

**Portlet API Extensions**

eXo platform support and implement the following portlet specification for its portlets technology:

- Caching
- Portlet filter
- Portlet Inter-Communication
- Pooling

**Caching**
Each eXo portlet is designed so that its content can be accessed in a per user map to reduce portal page creation time. The implementation of this feature uses Aspect Oriented programming and AspectJ language.

**Portlet filter**

Portlet filter implement portlet filter config and portlet filter chain as shown in the figure 2 below. The filter chain is created from the list of filters defined in the portlet.xml file.

![Portlet Filter Diagram](image)

**Figure 2 eXo platform portlet filter diagram**

**Portlet Inter-Communication**

This feature lets a portlet sends an event to another one or broadcast the event within the scope of the portlet application.

**Pooling**

When you have a large number of portlets within a page and many concurrent requests, the number of objects to instantiate can be very important. To avoid these problems we use pooled objects.

**Support a shared session**
When a request is dispatched to another web or portlet application context the session of the first context is propagated to the context where the request is dispatched to. You may configure the use of share session in the portlet-container.xml file.

**Portlet lazy loading**

Optimizing memory resources we have decided to instantiate and init portlets only when they are called for the first time.

**1.2.3 Portlet Container**

A portal can contain one or many portlets, and it is responsible for aggregating the content produced by these portlets. However, a portal does not provide a runtime environment to manage portlets life cycles; that job belongs to the portlet container which allows portlets to be instantiated, used and finally destroyed.

In simple term, portlet must sit inside a portlet container to receive request from the portal in order to execute its action because portlet container roles is to provides portlet with the required runtime environment. But the portal is responsible to provide Input and Output objects to the portlet container.

eXo portlet container service is a facade to the portlet API and the facade combined with the IoC (Inversion of Control) mechanism makes it simple for portal vendors to integrate eXo portlet container.

**1.2.4 JSR 168**

JSR 168 is first and foremost an industry standard developed by the software community. It stands for Java Specification Request 168 which enables interoperability among portlets and portals. Before JSR 168 standard, applications can't be delivered through any portal immediately because developers and portal vendors use different portlet API. This created an unfavorable condition for corporate who wants the flexibility to use portlet application from different vendors.

By using the JSR 168 industry standard API for creating portlets, eXo platform portal 1.1 adhere to a standard that allows the integration component between application as shown in figure 2 below.
The foundation architecture in eXo platform is java which lets you support technologies such as services container inversion of control (IoC), portlet container JSR 168, portal, JCR-JSR 170, and portlets.
1.3 General Concept

Learning more about portal concepts can help user better understand eXo portal technology. In this section, we will discuss the following concepts:

- Portal owner and remote user
- Multi portal and concept
- eXo platform layout
- Security concept
- The properties file chain for an easier internationalization management
- Indexing and search

1.3.1 Portal owner and remote user

The eXo portal defines two types of users for a session:

- The **user context** is the portal owner who defines the page configuration and owns the user profile associated with the viewed portal.
- The **remote user** is the user who visits the portal.

When a user logs in whether they are a remote or a context user the portal environment will be the same. The different is the context user will use the private link portal/faces/private whereas the remote user will use a public link portal/faces/public. In this case, the remote user can only view the public pages of that user context.

Note that with the eXo portal, you can turn any user context into the default home page by setting some pages of that user as public with an URL.

Finally note that the eXo platform admin can load any portal of any user context in its admin user context. Therefore, the admin can modify any user portal layout or look and feel without the need to enter the user name and password of that user.

1.3.2 Multi Portal Concept

The multi-portal concept has been introduced to allow the deployment of several company or organization portals within the same application server.

One important constraint in such a model is that each portal should be able to share some portlets and some non secured resources with other portals but still being able to own their own critical resources such as dedicated data sources to reach a remote database.

Each portal or portlet is in fact a Web Archive (WAR) that can be deployed in the same application server. When a user request a page from one portal this portal will returned an aggregated content that may contain some markup generated by a
shared portlet. One obvious advantage of such a model is its use in a hosting environment.

As you can see from the picture above, the remote user in portal B can access its portlets and can share the portlets from another portal A.

1.3.3 eXo platform layout

Most portals are actually based on static template mechanisms, and only allow 2 or 3 columns of portlets. Thanks to our use of the Java Server Faces framework it allows the creation of any layout that HTML code may provide. Thereby it is possible to create nested rows and columns as well as tabbed components.

A portal page is composed of two parts:

- The portal template is a set of rows and columns that is viewable on all the pages. We call this a template portal page, which can be modified by using the 'Edit Portal Mode' link while logged in. Basically, it contains the banner and footer portlets, as well as the navigation portlets. You may also add any portlet you would like to see on all pages, such as a portlet containing ads or weather information.
- The page content is also a set of nested rows and columns. It is binded to one or several nodes of the navigation tree. Hence, the portlets located in that page layout content change each time the user clicks on another node of the navigation tree. The user may edit the content of the current page by using the 'Edit Page Mode' link.
The main configuration "secret" is in the block and floating idea. Basically you have two types of blocks: one is a portlet that cannot have the children block and the container that can have the portlet and containers as children. A page is a special container with some additional information tag. For the container you have renderers that control the floating of its children, one is Horizontal renderer, one is vertical renderer, and one is a tab renderer. Consider the pictures below to see how portlets are layout with a container according to the renderer setting.

1.3.4 Security Concept

There are many security features in eXo platform but we will discuss in this section the security concept of membership type which bind membership users and groups together.

Definition

User: A user can be an entity or an application program that can be authenticated with a unique identity.
**Group:** A group is a collection of users that share common attributes such as employees working in the same accounting department under senior manager group.

**Membership type:** Membership type defines the relationship for which a user belongs to a group. A user can be in one or many groups but to know which group a user belongs in, eXo platform requires that a user have a membership type.

Security identity in eXo platform is handled through the permission notion. A permission is a privilege that authorized a subject to perform a specific task on a particular resource.

A user may self registered or be registered by the portal administrator. Once registered the user is given a unique identity and limited privileges. To manage a large number of users permission setting you can put all these users into a group. Set this group with a certain permission to portal resources and users in this group will share the same security privilege. In many instances, a user can belong in one or many groups and as a result it will be hard to track which user belongs to which groups. Bridging this gap requires a concept of membership type to define the relationship between a user and a group as shown in figure 1 below.

![Figure 1 Mapping membership type to groups and users](image)

When you are asked to set permission for your portal pages you are required to select a membership type for you group.

### 1.3.5 Properties file chain for an easier internationalization management

**Concept**

eXo platform introduces the concept of the properties files chain. The idea is
simple and based on the fact that in an entire portal many labels even images are reused in several portlets. eXo platform wanted to be able to define some shared properties keys and values in one file and reference them in each portlet application properties files.

The algorithm is based on the convention that any property wrapped in the syntax \#{key} keys should be resolved. The following picture summarize those explanations. The process starts with portlet properties files grouped together into a shared property file during runtime. A user portal loads a portlet. The portlet uses a key whose value references a shared key located in the shared portal properties file. During runtime, this user would actually access the shared property file that contains a reference to the specific portlet property for which the user wants to load.

**Practice**

Define a shared properties file named locale.portal.portal that contains some of the following keys:
First, you can see that the \{global.icon.location\} is referenced in the same file. That is the first useful enhancement of eXo platform.

Then, in another property file, referenced this time in any portlet.xml using the bundle tag, you can referenced any of those shared keys.

Let's take the example of the UserResource.properties file located in the user portlet application WAR. It contains that text part:

```
... 
<context-param>
    <param-name>locale.portal.portal</param-name>
    <param-value>en</param-value>
</context-param>
```

The keys referenced in that properties file are located in the shared property filelocale.portal.portal

**Implementation note**

We use the resource service to manage the resolution of the referenced keys. Each time a portlet bundle is required then the service will append the chained properties files and will do the resolution and then cache the file so that at each other call the resolution will not occur.

**1.3.6 Indexing and Search**

The ability to find relevant documents based on a set of keywords is a
lifeline for an information portal. eXo platform portal is proud to use Lucene, an open source search engine, that is a high-performance full featured text search engine library and is suitable for nearly any application that requires full-text search. Lucene is capable to be an integral part of eXo web portal by providing accurate text search result and indexing.

Lucene has a comprehensive indexer algorithms and may be updated based on popular searches. The indexer goes through a website and its different links. The search portlet then goes through the index and return the result from the search criteria. For example, eXo portal has many documents in different formats stored in different locations. Whether these documents are in a pdf format or texts in a forum it must be converted into text before loading to Lucene. The Lucene engine applies its own indexing algorithms and place each text words into an indexing library in its own database as shown in the figure below.

Lucene Search Engine

Lucene technologies offer powerful features through simple API and it provides the following major search algorithms:

- Ranked searching – best results returned first
- Many powerful query types: phrase queries, wildcards queries, proximity, queries, range queries and more.
- Fielded searching (e.g title, author, contents)
Date-range searching
Sorting by any fields
Multiple-index searching with merged results
Allows simultaneous update and searching

1.3.6.1 Search Forms and Database

There are several search forms within the portal environment. Each search form is linked to a database and return query results. We will discuss briefly about database and how search form is linked to them. eXo platform portal support connection to various database such as:

- HSQL
- MySQL
- PostgreSQL
- MS SQL 2000
- DB2
- Oracle
- Open LDAP
- Active Directory LDAP

You can choose one of these relational databases to store your portal information. You can also combine relational database with LDAP database to store your organization information. Using LDAP is an efficient way to structure your organization information because retrieving data can be done more quicker and it allows better implementation of single sign on (SSO). Below is a diagram that shows LDAP with a relational database.
Applying database and LDAP server

It is important to know that LDAP is a lightweight database and therefore it's not sufficient to stand alone it must be combined with a relational database. Having said that, a relational database of your choice is sufficient to store all your portal data and figure 1 below is an example of a search form that uses a relational database to retrieve user information.
Searching for documents and texts in eXo portal is done through the Lucene search index engine. The search form as shown in figure 2 below utilize Lucene indexing engine and return all the links to the documents location.
Figure 2 Search form using Lucene
This chapter introduces eXo platform administrator environment. eXo portal 1.1 can quickly help corporate build connected solutions with an infrastructure that is secure and essential for developing an effective and efficient portal. By improving the portal ease of use eXo helps improve productivity while delivering immediate return on your investment.
2.0 Administrator Environment

Administering of a portal can be done through coding, but eXo platform creates an easy to use portal administration interface that allows administrator to quickly access any administration portlets which simplifies the administering task. The portal administration interface lets you:

- Manage your organization users
- Manage portal
- Perform portal analysis

To gain admin privileges you must login as **exoadmin** and enter password as **exo**. The admin environment has three important modules: organization, portal, and monitoring. The organization section lets you manage your users and groups, the portal section lets you manage portlets and the portal environment, and the monitoring section give you an overview analysis of your portal.

2.1 Manage your organization users

Managing your organization starts with managing registered user in your database. There are several ways for a user to register; a user can self registered or you as an administrator can register user in the register portlet. Once users are registered they can be bundle into groups and bind to a membership type. With admin privilege you can remotely access any users context within your own portal to efficiently manage your users portal environment.

2.1.1 Register a new user

There are advantages and disadvantages of letting user to self registered. The advantage is that the process of self registering is quicker but the disadvantages is that anyone can registered. Letting an administrator take control of the registration process will eliminate unwanted users and make certain that user profile is not fictional. We will show you how you can register a new user with the registered portlet.

1. Click on user registration in the organization menu bar.
2. For our example, enter all key fields as shown in table 1 below. Registering a new user require all fields to be entered.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Name</td>
<td>john</td>
</tr>
<tr>
<td>Password 1x</td>
<td>*******</td>
</tr>
<tr>
<td>Password 2x</td>
<td>*******</td>
</tr>
<tr>
<td>First Name</td>
<td>John</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Last Name</td>
<td>Smith</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:johnsmith@exoplatform.com">johnsmith@exoplatform.com</a></td>
</tr>
</tbody>
</table>

Table 1 Register form

3. Click save. John is now registered as shown in the users list in figure 1 below.

![User list](image)

*Figure 1 User list*

Note: There are several things to note when a user is registered to your portal database:

- Username must be unique.
- eXo platform group all registered users to the `/portal/share` group. It also mapped this group to inherit the portal community and navigation config of the portal template.

### 2.1.2 Manage users, groups, and membership types

Setting user into groups and bind them together with memberships type allow better permission management. Each user in a group has a certain permission to view or edit a page content. For example, an employee in human resource department can be in the human resource group and because this employee is a team leader he/she can be in another group called departmental team leader group. All employee in the human resource group can view a shared portal but only employees who are in the
human resource team leader group are allowed to edit page content that is relevant to this group.

Grouping users into categorized groups is a good and easy way to control the access of a large number of users. Beside security issue, users of the same group tend to share the same portal configuration. This is an efficient way to define the layout for all users by grouping them in the same group.

The organization management portlets has three tabs that let you administer your portals users.

- Users tab lets you edit user's information
- Groups tab lets you create, browse and configure groups
- Memberships tab lets you define your membership type

2.1.2.1 Users Tab management

You can view, edit, and delete user information in the users tab. The view icon will let you view in details users information and the edit icon lets you modified users account and membership information as shown in figure 1 below.

![Figure 1 Edit users account](image-url)
2.1.2.2 Management Groups Tab

On the left hand side of the group tab you have an explorer which you can browse nested group like a directory. There are two tabs for you to configure your user into group and group into community as shown in figure 1 below.

![Groups tab main page](image)

*Figure 1 Groups tab main page*

Before we explain to you the concept of user in group and how to map group to community we will show you how a create a new group.

**Create a new group**

1. Click on the add group icon to create a new group name.
2. In our example, we enter the group name as ProjectLeader and the label name as Leader.
2. Click on the save icon to see the new group appear in the explorer group tree as shown in figure 2 below.
**Add user to a group**

Adding user into categorized groups is a good and easy way to control the access of a large number of users. For example, you have ten users who is authorized to view certain pages. You can either set permission for all these users one at a time which is time consuming or you add these users in a group then set the permission for this group. We will show you how to add a user in our newly created group called ProjectLeader.

1. In the ProjectLeader group select the User in Group tab.
2. Add user “demo” in the user name and click save as shown in figure 2.

![Figure 2 User in Group. User demo is add to ProjectLeader group.](image)

**Add a group to a community**

The concept of adding a group to a community is that it configures the group to inherit the portal and navigation properties from the portal in which it is mapped to. For example, we want users in a badminton group to have sporting event pages so we would need to map this group to a sport event community. By mapping to the sporting event community portal and navigation config, users in the badminton group will inherit event pages and navigation link in their portal. Before we show you how you can map a group to a community, we will explain why demo is grouped in the portal/share group and mapped to the portal template as shown in
All users in eXo portal is build to have the most basic portal template with only home as page content and navigation link. But eXo portal configured so that all users are grouped together in portal/share group and mapped this group portal and navigation config to portal template. By doing this, all registered users will inherit portal template -- Search Site, and Site Map. Therefore, when you log into demo you will see – Home, Search Site, and Site Map. But when you delete demo out of portal/share group demo user will have only --Home as its navigation and portal page.

Note: Predefined portal template such as portal, exo, community, exo-test, admin, template, and company xml files can be found in \portal\WEB-INF\conf\users location.

We will show you how you can add your group to your choice of community portal and navigation config. It is important to remember that you only need to map your group to a community when you want users in that group to inherit a certain portal and navigation config. In our example we have created “ProjectName” portal page and navigation link for a user name “john”. John is the owner of the “ProjectName” page that contains a list of available project. We want users in our ProjectLeader group to obtain the ProjectName page and navigation links so we
must configure the community config. Let's see how it is done.

**Note:** To do this example, create a user name john and customize its portal to have the ProjectName page and navigation.

1. Locate the demo user from user in group tab belonging to the ProjectLeader group which you have created in the previous example. Click on community config tab.

2. You will see that there are two community config: portal and navigation community. You can choose to map your group to both community config, or just one community config depending on how you want your group to be configured. For our example, we will show you how you can add your group to both portal and navigation community.

3. Click on the portal community add/edit icon. There are three important fields in the portal community form that we will describe to you in tab 1: membership, portal, and priority.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membership</td>
<td>Users in group must have the same membership type as the portal community to gain inheritance.</td>
<td>member</td>
</tr>
<tr>
<td>Portal</td>
<td>Refer to the portal template group configuration</td>
<td>john</td>
</tr>
<tr>
<td>Priority</td>
<td>The priority is used in case a user is in several groups. Priority value from 1 to 10 where 1 is the highest.</td>
<td>5</td>
</tr>
</tbody>
</table>

*Table 1 Field description*

3. Enter the value in table 1 to your portal community form and click save. One thing to consider is that when you add a user into your group with a membership type that is different from the membership type you set in the portal community form, these users will not inherit the portal template due to the membership restriction.

4. Navigation community form also has three important field as shown in table 2 below.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>

### Table 2 Navigation community field description

<table>
<thead>
<tr>
<th>Membership</th>
<th>Users in group must have the same membership type as the portal community to gain inheritance.</th>
<th>member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portal</td>
<td>Refer to the portal template group configuration</td>
<td>john</td>
</tr>
<tr>
<td>Priority</td>
<td>The priority is used in case a user is in several groups. Priority value from 1 to 10 where 1 is the highest.</td>
<td>2</td>
</tr>
</tbody>
</table>

5. Enter values in table 2 to the navigation community form and click save as shown in the figure 2 below.

![Figure 2 Community config](image)

As we have explained earlier, eXo portal configured so that demo has -- Home, My Portal, Search, and Site navigation. After you have mapped your ProjectLeader group to the community config, log in demo and you will see that demo will have an extra navigation which its inherit from the user john through the community config as shown in figure 3 below.
Figure 3 Demo portal has inherit ProjectName navigation and page from John through community config.

2.1.2.2 Management Memberships Tab

Membership defines the relationship between a user and a group for linking and permission setting purposes. A user can be in one or many groups but to know which group a user belongs in, eXo platform requires that a user have a membership type. eXo platform default membership types are: member, owner and validator. In our example we will create a new membership type call local.

Create a new membership type

1. In the membership tab, click on add icon.
2. Enter “local” in membership name field. Click save. You will see local as shown in figure 1 below.
2.1.3 Manage user remotely

Manage user remotely allows you to access user portal context workspace with admin privilege to edit. It allows you to load any user portal workspace in your admin portal without logging into that user account. Let's go through an example together.

1. Select portal admin from the organization menu bar as shown in figure 1.

*Figure 1 Portal Admin*
2. The portal admin displays a list of owners and clicking on the edit icon allows you to access the context of that user. For our example, we will click on exo owner edit icon which will bring you to exo workspace as shown in figure 2 below.
3. As you can see, the login status bar shows “Welcome: exo” without you ever logging into that user account. With an admin privilege you can add, edit, and delete everything in the exo user context workspace. You can for example change a page rendering from default to ContainerColumnRenderer.

4. Next to the login status bar is a back icon which lets you go back to your admin context.

**Note:** When you access exo context remotely your URL looks like this

```
/portal/faces/admin/exo?admin:returnAction=admin
```

### 2.2 Manage Portal

#### 2.2.1 Register portlet

When users manage their content they would want to add or edit information that relates to them. However, depending on their permission level they may not be able to add or edit those information. Portlet registry lets you define which portlets you want to expose to users. In the portlet registry, you can create a category folder where you can import a group of portlets in that folder. Then you can expose this folder to users with your permission setting and only users with the right permission will see these portlets. We will show you how you can create a folder category, import portlets and set permission for it.

1. Click on Porlet registry in the portal menu bar.

2. Click on add category icon and enter “ExampleCategory” in the portlet category name field. Click save and you will see that the newly created folder is in the portlet registry page as shown in figure 1 below.

*Figure 1 Portlet Registry*
3. We will show you how you can import portlets. In the main portlet registry you can add portlets or edit and delete category. Click on add portlets icon to view a list of available portlets as shown in figure 2 below.
4. Select the first four portlets and click save. You will see that the four selected portlets appeared under the folder ExampleCategory as shown in figure 3 below.

![Figure 3 Portlets in ExampleCategory](image)

**Permission Setting**

When portlets are added in portlet category folders they are ready to be viewed and selected by users. To install security for each of these portlets you must set the permission in the permission page. Choose a portlet and click on the edit role icon to bring you to the permission setting page. In the permission setting page click on add permission icon and select a group id. It's important to remember that only users that have the required permission can view these portlets.

### 2.2.2 Internationalization

Internationalization section lets you manage your portal resource properties. The idea is that many texts are being reused in portlets and for that reason it is more efficient to put these texts in one central location. Portlets can reference these texts in the resource properties files by accessing the predefined keys and values syntax like this #{key}. When developing a portlet application developers can define keys and values of the portlet in the portlet property file. When portlets are uploaded onto the server for the first time these portlets properties files are group together under a single shared properties file to the database. When users access
their portal, portlets in that portal will reference the shared property file with key and this file will match it with a value from a portlet properties files as in figure 1 below.

Figure 1 Referencing resource properties files with shared #{key} and value

Accessing shared properties file can be done through code but eXo platform provides an interface that makes it easy for admin to modify any portlets keys and values. The internationalization section is where you can access individual portlet by accessing the database which contains the shared properties file. The internationalization interface provides an efficient environment for you to create a multi language portal. All you need is to change the text in the language you want from the internationalization portlet. We will show you an example on how you can easily create a multi language portal.

1. Click on the internationalization section under the portal menu bar.
2. We want to create a new language for our portal. To do this click on the New Resource icon.
3. For our example, enter “locale.users.community” for the name text field. You must use “locale.users” naming convention plus your user name to specify the user's portal you want to add. Select “fr” from the language drop down list and click on the save icon as shown in figure 2 below.

Figure 2 Internationalization section

4. Click on the view icon next to your newly created language and set the following key value. The key is “home” and the value is “acceuille” (acceuille is a French word for home). The other keys values are shown in the table 1 below.
Table 1 Keys and values

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>home</td>
<td>Acceuille</td>
</tr>
<tr>
<td>my-portal</td>
<td>Mon Portail</td>
</tr>
<tr>
<td>sitemap</td>
<td>Site Map</td>
</tr>
<tr>
<td>search</td>
<td>Recherche</td>
</tr>
</tbody>
</table>

Enter the key and value in `locale.users.community` as shown in figure 3 below.

*Figure 3 Internationalization key value*
5. Click save and log out of the admin workspace. Login as **community** and password as **exo** to access this user workspace. Upon login in you will notice that the default language is English. Click on the “fr” in the language choice portlet to convert your portal into French. All the value we set in the internationalization section appears in the menu bar as shown in figure 4.

---

*Figure 4 Menu bar is in French*
**Note:** It's important to make sure that the key is written exactly the way it is configured in the resource properties files. You can find these files in the directories `\portal\webapp\WEB-INF\classes\locale\portal\uicomponent`, services, resources, and expression. You can also access these files in the internationalization environment and modifying them does not require you to reset your web server. They are called: `locale.portal.uicomponent`, `locale.portal.services`, `locale.portal.resources`, and `locale.portal.expression`. Modifying files in the internationalization interface does not require you to reset your web server. Below in figure 5, you will see a sample of the portal properties files keys and values.

```plaintext
UIPortalForm.header.edit-portal-config=#{global.word.edit}

UIPortalForm.link.save=#{global.html.button.save}
UIPortalForm.link.cancel=#{global.html.button.cancel}

UIPortalForm.label.default-locale=#{global.expression.default-locale}
UIPortalForm.label.view-permission=#{global.expression.view-permission-group}
UIPortalForm.label.edit-permission=#{global.expression.edit-permission-group}
UIPortalForm.label.renderer=#{global.word.renderer}
```

*Figure 5 Portal user interface properties*
2.2.3 Import/Export

Configuration file is written in xml and can be imported and exported to the database. This section lets administrator performs back up and data recovery. Important data such as users account info, portal customization configuration, and organization information are packaged into a zip file format. This zip file has a metadata.xml which contain the description of the zip file as shown in figure 1 below for the user community.

<table>
<thead>
<tr>
<th>Name</th>
<th>community.zip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creation Date</td>
<td>Fri Dec 30 10:09:28 ICT 2006</td>
</tr>
<tr>
<td>Modification Date</td>
<td>Fri Dec 30 10:00:20 ICT 2006</td>
</tr>
</tbody>
</table>

Figure 1 Community users zip file

**Data back up**

Back up essential data is very important for restoring key data when there is a system failure, a lost of data, or a version upgrade. We will show you how you can back up user's data in the following example.

1. Click on Import/Export under the portal menu bar and click on the user data tab. This tab lets you import and download user's information. Import will save files to the database whereas download will let you save to your local directory. Below in figure 2 displays all the users in your portal.

Figure 2 Users Data
Tips: Refresh will display for you the latest files from your database. If nothing happens, go to export data tab and click on export all icon then click on refresh again.

Data recovery

When you back up your data you can back up either to the database or save it in your directories. Therefore, recovering data can be done the same way either from the database or from the directories. We will show you how you can recover your saved data in the import/export section.

1. Click on Import/Export from your portal menu bar. To recover your information from the database click on the export data tab as shown in figure 3 below.

Figure 3 Export data

2. Click on export all icon and then go to the user data tab and click on the refresh icon. The export all and refresh icon will tell the database to export all configuration from the database to the portal.
3. Recovering from your directories is done as follows. Go to the upload data tab. Click on the browse button and locate in the zip file you want to upload from your directories. Once you load your zip file go to the user tab and click refresh. This action will display your newly loaded file. **Note:** Not all the zip file in your directories can be uploaded. Only files that have metadata.xml with information about your users or your portal services are able to be uploaded.

2.2.4 Indexing

Indexing portlet provides an environment for you to activate Lucene index engine. By clicking the index icon and by providing the directory for which you want to index, what you are doing is you activate Lucene engine to index documents and texts in that directory. You have the choice to set the file extension either as .html, .txt, .xml, or .java and Lucene will index only those files extension as shown in figure 1 below.

*Figure 1 Indexing*

You normally perform index or re-index when you want to improve your search result. However, activating Lucene library indexing is not without a cost for your server performance since it will take time for the indexing engine to index large directory. Therefore you must decide when you should call indexing to optimize your server performance.
2.3 Monitoring Portlet

eXo platform portal 1.1 provides a JMX monitoring portlet for you to manage information about your portal. It assists you with gathering all required information for your monitoring purposes such as who uses your portal, what do they look at and how long they spend on each of your portal pages.

2.3.1 JMX Monitoring

JMX monitoring is a portlet that lets you see the global view of your portal activities so that you can make informed decision and apply the appropriate tuning for your portal performance. For example, JMX monitoring portlet display all users who access your portal and their most frequent accessed page. Analyzing these information help you enhance your portal users experience by improving pages that either are slow or have many errors.

The JMX monitoring portlet defines objects that are registered in a MBean (Manage Bean) server and every eXo platform services that are loaded in the service containers are wrapped in a MBean object. This allows better remote management tool and lets you oversee all the states of any deployable object. It gives you an idea of how long it takes for a page to load and render itself and knowing this would help you better manage your portal.

The JMX portlet is built like a file explorer where you have on the left hand side folders of all your MBean servers such as exomx, portalmx, and catalina (tomcat). For monitoring purposes the folder portalmx is what you should look at because
it manages your portal session activities.

2.3.1.1 Portalmx

There are many sub folders in the portalmx server folder, but for monitoring your portal and session activities you should access the monitor folder following files as shown in figure 1 below:

- Session Manager
- UserActivitieslogService
- PortalActivitieslogService

![Figure 1 Monitoring Portlet](image)

2.3.1.1.1 Session Manager

Session Manager has two view modes which you can see who access your portal. The standard view tab displays your session bean code you can execute it whereas the advance view tab already executed the session bean code and displayed information result in meaningful table.

Standard View

Standard view in session manager deploys “ExoContainerMBean” bean and it
exposes four methods: removeSessionContainer, getLiveSessions, getSessionContainer, and addSessionContainer as shown in figure 2 below.

![Figure 2 Session Manager standard view](image)

The standard view allows three methods to be executed and its return type is either void, list, or a session container. We are more interested in executing the getLiveSessions method because it returns the information we need as shown in figure 3 below.

![Figure 3 getLiveSessions result](image)

In the getLiveSessions result you can see information such as browser name, ipaddress and remote user.
Advance View

The advance view executes the ExoContainerMBean methods and displays in a table for easy understanding as shown in figure 4 below.

*Figure 4 Session manager advance tab*

As you can see from the table in figure 4, it is much easier to interpret data since it is organized into meaningful column such as the name of the user who access your portal, what browser they use, and their IP address.
2.3.1.1.2 User Activities Log Services

User activities log services have two view tabs: standard and advance. We are more interested in the advance view tab because data result is displayed in a meaningful table for easier interpretation of data. In the advance view tab you can choose to see data result in table and chart form.

User Activities Table

The user activities table displays information such as the start time, user name, portal owner, duration, counter, and IP address as shown in 5 below.

Figure 5 User Activities Table
You can know exactly the activities of your users by looking at when they access your portal and the duration of their stay. Searching for archived activities can be done through the user activities search form where you can enter the date range and other values.

**User Activities Chart**

User activities chart lets you view data visually. It provides two types of charts: user access duration and user hits counter chart. These charts display for remote user and portal owner as shown in figure 6-9 below.

*Figure 6 User Access Duration Chart for Remote User*
Figure 7 User Hits Counter Chart for Remote User

Figure 8 User Access Duration Chart for Portal Owner
2.3.1.1.3 Portal Activities Log Services

Portal activities log services let you view the average execution time and the access counter for every users who log into your portal. Portal activities log services have two tabs: standard and advance. The standard tab displays the portal activities MBean object and its methods. The advance tab executes the portal activities MBean object and display the result in a table and chart form. We are more interested in the advance tab because data is presented in a meaningful format.

Advance tab displays portal activities log services in two tabs: portal activities table and portal activities chart.

**Portal Activities Table**

Portal activities table displays portal owner, time slot, avg execution time, counter, and error counter as shown in figure 10 below.

*Figure 10 Portal activities table*
Every time slot is associated with a portal owner and the average execution time. The average execution time is the time it takes from the point a portal object is called to the time it finished its execution. For example, the counter logs the portal owner activities and calculate the average time it takes for a portlet pages to render itself. Any errors occur during the portal activities will be logged under the error counter column. To display archived activities you can search using the search form querying by date, type, render counter or query term.

**Portal Activities Chart**

Portal activities chart shows two line chart: activities access chart and average time access chart as shown in figure 11-12 below.
Figure 11 Portal activities access chart
Figure 12 Portal activities average time access chart

The portal activities access chart shows the total counter value for each users who access the portal and the average access chart shows the average time in mini seconds for each access counter value.