Room API

SAP NetWeaver Product Management

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Content

This document will cover the following topics:

- **Examples of Integration of Collaboration Rooms into SAP Applications**
- **Collaboration Room Infrastructure**
  - **Collaboration Room framework**
  - **Different layers of Collaboration Rooms**
  - **User management**
- **Collaboration Room APIs**
  - **Introduction**
  - **How to use the Collaboration Room API**
    e.g. to create Rooms, delete Rooms, add Room parts

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Examples of Integration into SAP Applications

Collaboration Room Infrastructure

Collaboration Room APIs

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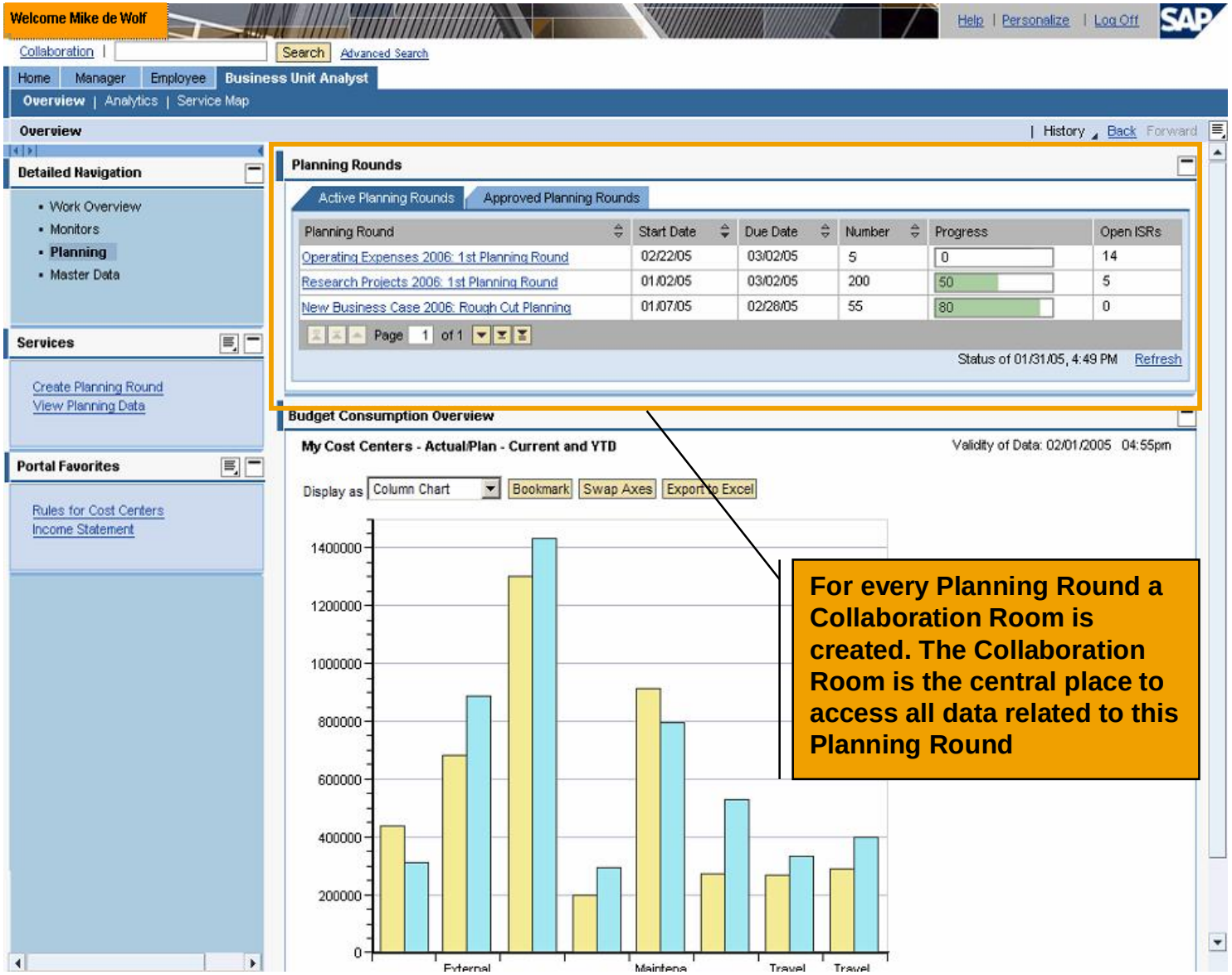
Embedding Collaboration Rooms via Web Services API
(Planning Work Center of Business Unit Analyst in ERP2005)



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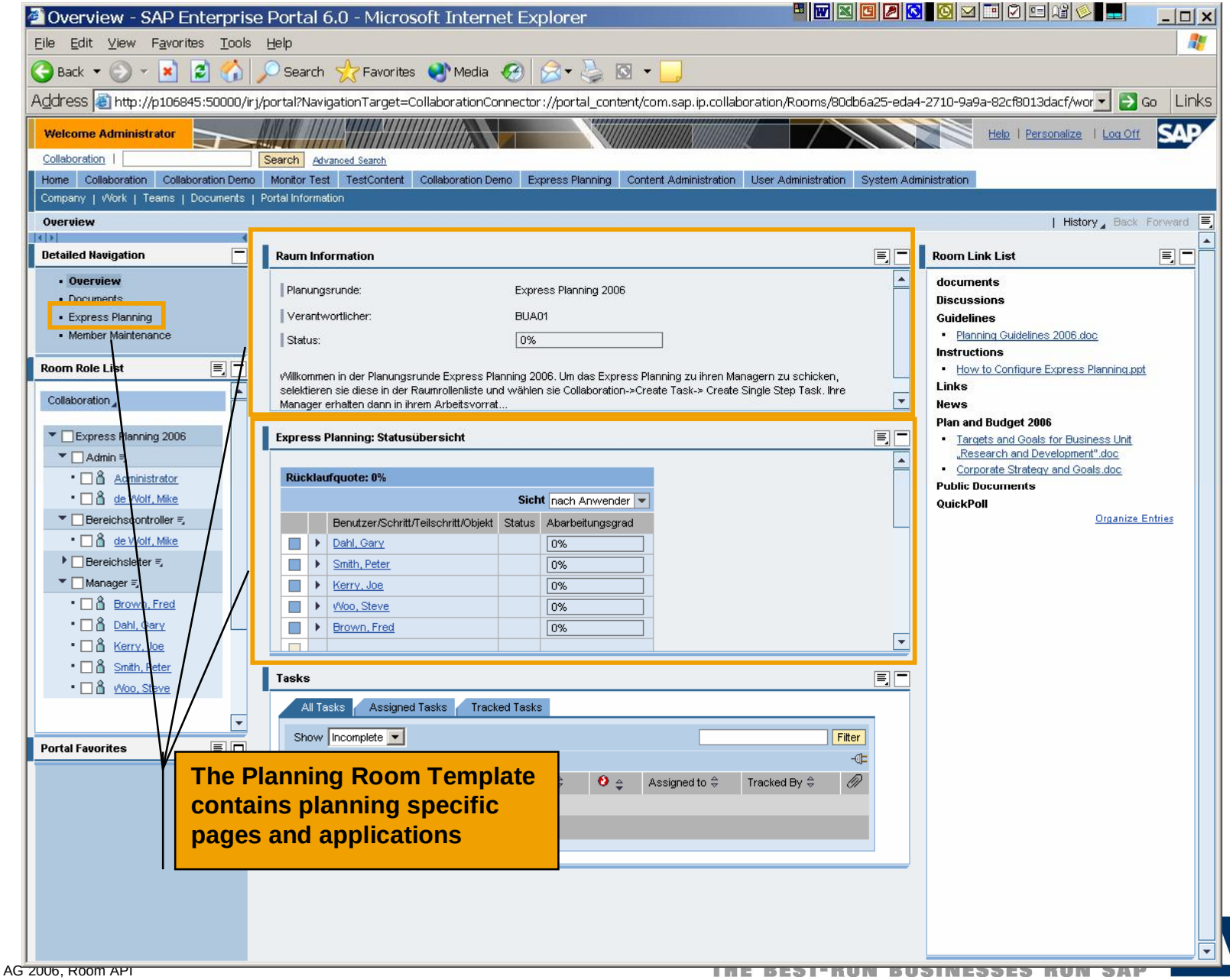
Collaboration Room for Planning: Overview Page



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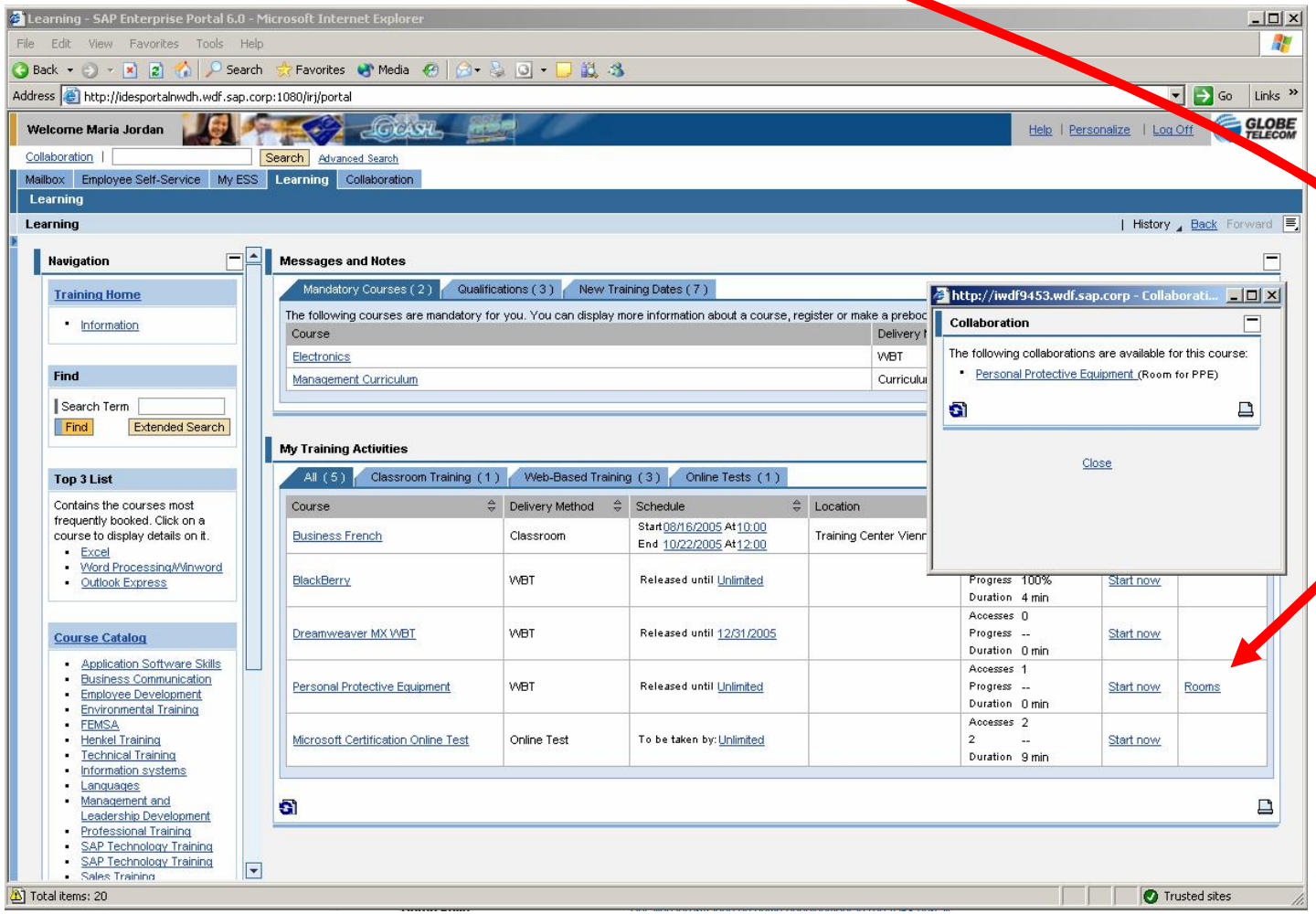
Example:
SAP Learning Solution and Collaboration Rooms

SAP Learning Solution enables you to set up virtual learner communities where students can speedily and efficiently exchange information with each other



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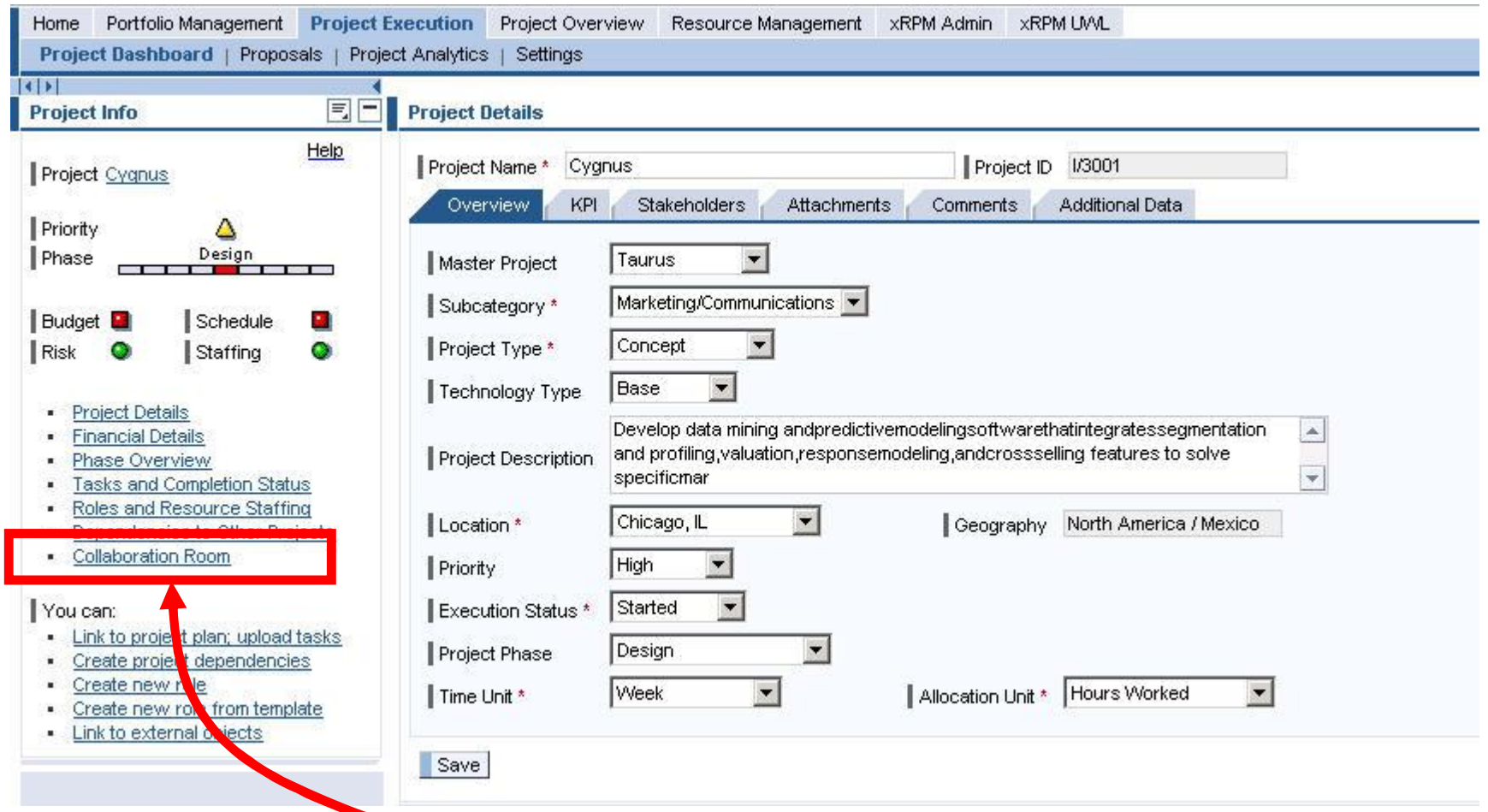
Example (xRPM): Collaboration Rooms Integrated into Project Planning



Once you have found the right project resources with xRPM, invite them into their future virtual working space

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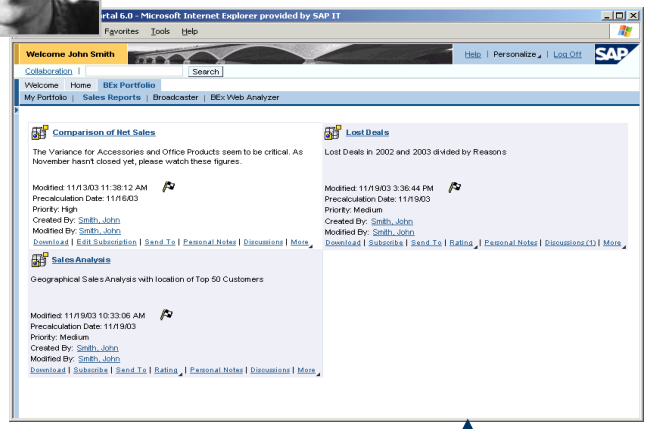
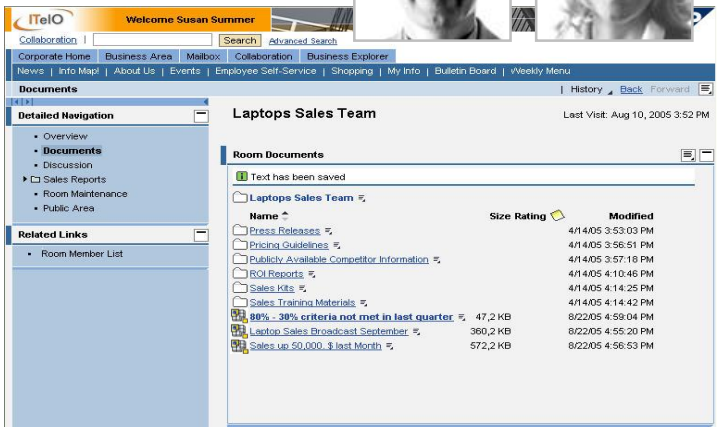
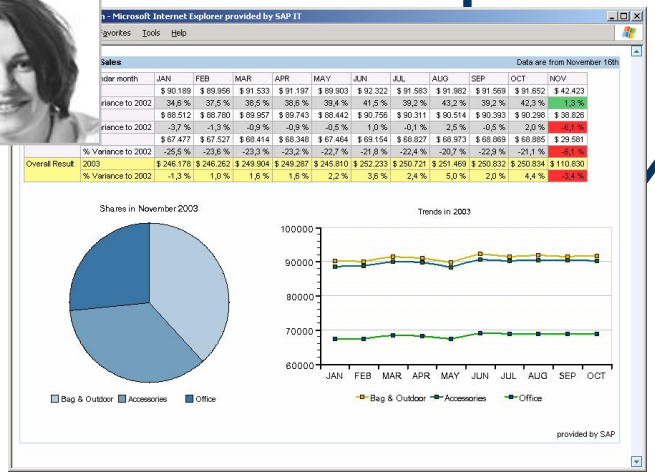
INFORMATION TO ACTION – INFORMATION BROADCASTING

Subscribe
Feedback
Notes
Search
...





Broadcast into KM
(ad-hoc, scheduled, event-driven)



Broadcast into KM
Folders within
Collaboration Rooms

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Examples of Integration into SAP Applications

Collaboration Room Infrastructure

Collaboration Room APIs

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Collaboration Room Infrastructure

- **Collaboration Room Framework combines the functional capabilities of**
  - **Portal and**
  - **Knowledge Management**
- **Collaboration Room API**
  - **Provides abstraction**
  - **Offers scenario-oriented access to room functionality**

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Collaboration Room Infrastructure

Three main parts of SAP NW Portal and KM framework are used to store rooms and room-related information

- **Portal Content Directory (PCD)**
  - **Used to store the portal-related parts of existing room instances such as worksets, pages, and iViews.**
  - **Also used as a store for the room templates that make the room creation process much easier for end users.**
- **User Management**
  - **Used to store user-to-room and user-to-room role assignments.**
- **Repository Framework (RF)**
  - **Used to create a semantic object for each room.**
  - **These room objects hold all room information that is not stored in one of the other two layers.**
  - **This includes the name and description of the room, and other basic information.**

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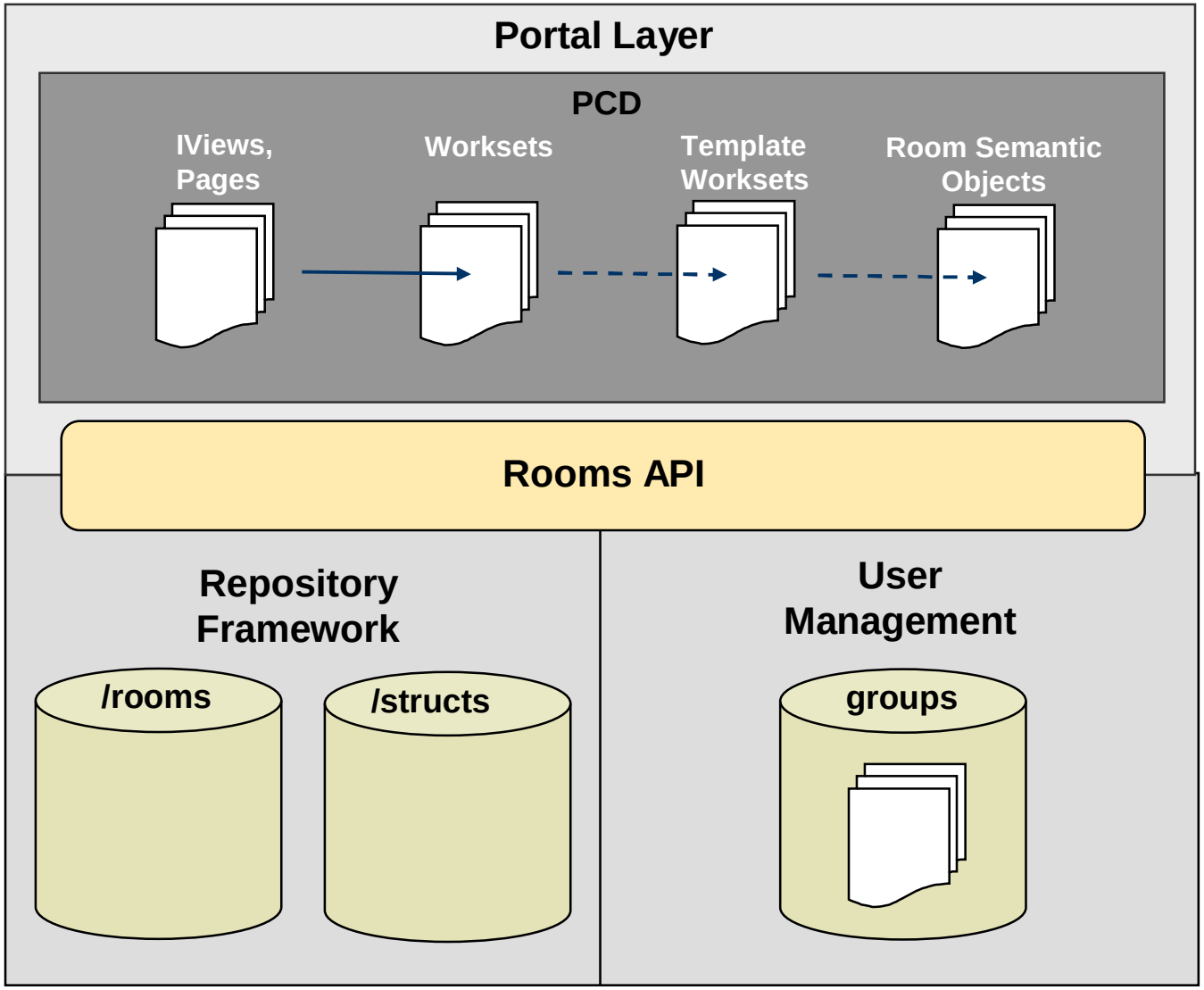
Architecture Overview: Portal/RF/UM



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Collaboration Room Infrastructure – PCD Objects

Location

- portal_content/com.sap.ip.collaboration/worksets
  - Worksets which are used when creating a Collaboration Room Template
- portal_content/com.sap.ip.collaboration/TemplateWorksets
  - Worksets of Collaboration Room Templates
- portal_content/com.sap.ip.collaboration/room_part_worksets
  - Worksets which are used when creating a Collaboration Room Part Template
- portal_content/com.sap.ip.collaboration/RoomPartTemplateWorksets
  - Worksets of Collaboration Room Part Templates
- portal_content/com.sap.ip.collaboration/rooms
  - pcd objects of instantiated collaboration rooms (not visible)

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Collaboration Room Infrastructure – PCD Objects

Permissions

Configuration permissions guide

- **https://www.sdn.sap.com/irj/sdn/howtoguides ➔ SAP NetWeaver 7.0 -> User Productivity -> Running an Enterprise Portal -> How to Configure Initial Permissions for Initial Content in SAP NetWeaver.**

8. Set permissions to Collaboration content.

This section is only relevant if you installed Collaboration in your portal.

Set the permissions as follows:

- Folder: `/Portal Content/Content Provided by SAP/Collaboration`
  - Role: **Super Admin** [Owner/EU-on]
  - Role: **Content Admin** [Full Control/EU-on]
  - Role: **System Admin** [Read-Write/EU-on]
  - Group: **Everyone** [None/EU-on]

If you have integrated Collaboration Rooms into your portal, do the following as well:

- Folder: `/Portal Content/com.sap.ip.collaboration`
  - Group: **Everyone** group [None/EU-on]

  Note:
  - The `Rooms` sub-folder should inherit this permission also. This permission setting is necessary for users to be able to navigate within Collaboration-based rooms and view their content at runtime.
  - If the rooms are available to authenticated portal users only, you can instead add the **Authenticated Users** group with *EU-on* permission.
- Folder: `/Portal Content/Content Provided by SAP/Admin Content/Collaboration_Administrators`
  - Role: **Super Admin** [Owner/EU-on]
  - Role: **Content Admin** [None/EU-on]

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Collaboration Room Infrastructure – RF

Repositories

- /rooms
  - Storage of Collaboration Rooms with properties like description, roles, etc.
- /room_structures
  - Storage of structures of the room e.g. which folders belong to a room.
- /room_extensions
  - Standard repository which is used when creating storages for rooms.
- /room_stores
  - Former store concept storage. Should not be used anymore.

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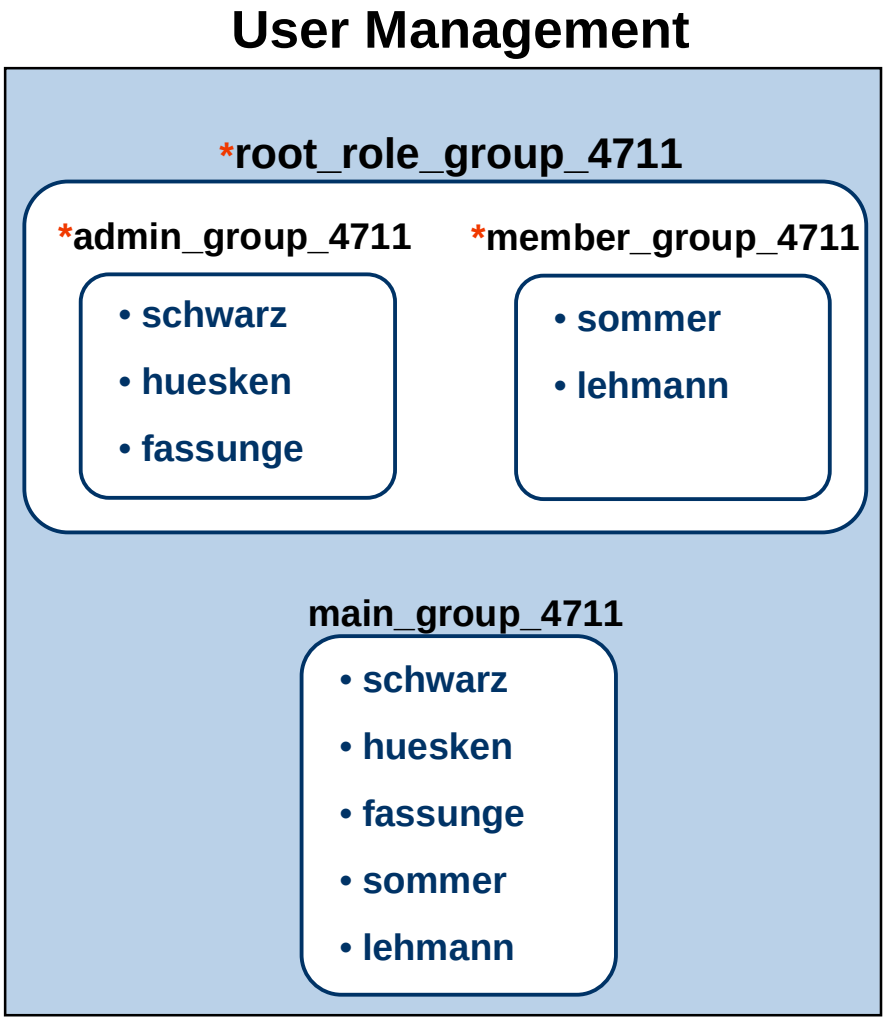
Collaboration Room Infrastructure – UME

Example Room 4711

RoomRole	User
owner	schwarz
admin	huesken
admin	fassunge
member	sommer
member	lehmann

* hidden group

(not visible in normal portal navigation)



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Collaboration Room Infrastructure – Config Framework

Configuration Framework stores information about templates, categories, extensions, etc.

- **System Administration**
  - **➔ System Configuration**
    - **➔Knowledge Management**
      - **➔ Collaboration**

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Collaboration Room Infrastructure – Room creation

What happens when a Collaboration Room is being created? – Steps performed by the Collaboration Room framework:

1. **Application calls**
   - **The Rooms API method createRoom() and**
   - **Passes all relevant data for the new room as a parameter**
2. **The Collaboration Room backend calls the User Management API to**
   - **Create a user group containing all users of the new room**
   - **Create a user group for each room role containing the users assigned to the role in question**
   - **Create a so called root role group - a virtual role group which contains all other role groups as children**

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Collaboration Room Infrastructure

3. **Repository Framework API is called to**
   - Create a new folder resource in a special repository that represents the room itself
   - Set the name, description, and so on of the room as properties of the new room resource
   - Create a link from the room resource to the room *Structure* folder
   - Set ACL permissions for the room resource
4. **The Portal Connector API is called to**
   - Copy the template workset (including pages and iViews) into a special PCD folder
   - Map all room parameters (including the hidden parameters such as room ID and so on) to the iView parameters according to the mapping rules defined in the template
5. **Groupware API is called to**
   - Send invitation e-mails to all users of the new room
6. **Status Engine API is called to**
   - Create a status event for the room creation
7. **At each extension point during the room creation process**
   - Extension framework calls the extensions defined in the template to enable the connection to backend systems and to add additional functionality to the new room

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Examples of Integration into SAP Applications

Collaboration Room Infrastructure

Collaboration Room APIs

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Overview - Features of the Rooms API

Actions

- Create new rooms
- Check for existence of rooms
- Retrieve existing rooms by ID
- Retrieve rooms for a given user
- Retrieve rooms with a given privacy
- Retrieve most/least visited rooms
- Create or delete typed relations between rooms
- Search for typed relations between rooms
- Delete rooms

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Overview - Features of the Rooms API

Room-Instance-Based Information Functionality

- Room name
- Room description
- Creation date of the room
- Version of the room object
- Date of the last modification of the room
- Date when the room was last entered by a given user
- Date when the room was last entered by any user
- Internal/external room access URL
- Unique ID of the room
- Internal/external room parameters
- Room categories
- Template name
- Template description

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Overview - Features of the Rooms API

Room-Instance-Based Information Functionality (cont.)

- Room privacy
- Lock state
- Hidden state
- Room owner
- Room users
- Room roles
- Initial room role
- Admin room role
- Members of a given room role
- Room roles of a given user
- Check whether a user is room member
- Check whether a room has public content
- Usage information for the room
- Room events
- Room parts
- Position of room parts in the *Detailed Navigation* iView

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Overview - Features of the Rooms API

Modifications of a Room instance

- Room name can be changed
- Room description can be changed
- Room owner can be changed
- Room privacy type can be changed
- Room categories can be changed
- Room parameters can be changed
- Application properties can be set at the room instance
- Hide/unhide room
- Lock/unlock room
- Invite new members to a room
- Remove users from a room

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Overview - Features of the Rooms API

Modifications of a Room instance (cont)

- Change a user's roles in a room
- Add a user to a room role
- Remove a user from room roles
- Register/deregister a user in a community
- Add/remove room parts
- Change the order of room parts in the *Detailed Navigation* iView

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Rooms API Structure - Rooms API

Description

- Entry point for other applications to access the functionality provided by the Collaboration Room framework.

Accessibility

- as a KM service and
- as a portal service in the portal environment.
- It does not work on an instance level, but on a factory level that provides access to specific room instances.

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Prerequisites – Compile Time

- **NW Developer Studio - Include the following jar file in your project**
  - ***coll.shared.roomobject_api.jar***
- **Located under in a NetWeaver Portal**
  - ***...\WEB-INF\portal\portalapps\com.sap.netweaver.coll.shared\lib***
- **Example in a NW Development Studio**
  - ***Project ->Properties ->Java Build Path ->Libraries***

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Prerequisites – Runtime

- **Add a reference in the portalapp.xml**

... <application-config>

... <property name="ServicesReference„

value="...,com.sap.netweaver.coll.shared,..."/>

... </application-config> ...

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Rooms API Structure - Rooms API

Example with a KM Service

```
import com.sap.ip.collaboration.room.api.IRooms;
import com.sapportals.wcm.service.ServiceFactory;
IRooms roomsAPI =
(IRooms) ServiceFactory .getInstance().getService(IRooms.KM_SERVICE_ID);
```

Example with a Portal Service

```
import com.sap.ip.collaboration.room.api.IRooms;
import com.sapportals.portal.prt.runtime.PortalRuntime;
IRooms roomsAPI =
(IRooms) PortalRuntime .getRuntimeResources() .getService(IRooms.PORTAL_SERVICE_ID);
```

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Rooms API Structure - RoomObject API

Description

- **Provides access to the functionality of a specific room instance.**
- **E.g. invite new users to a room.**

Example

```
//Get the Rooms 6.0 API
Portal Service IRooms roomsAPI =
(IRooms) PortalRuntime.getRuntimeResources().getService(IRooms.PORTAL_SERVICE_ID);

//Get a Room
IRoom room = roomsAPI.getRoom("4711");

//throws RoomInstantiationException
```

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Rooms API Structure - RoomInfo API

Description

- Implemented by the RoomInfo object.
- Handles parts of the instance data of a RoomObject.
- Similar to a partial snapshot of a related RoomObject and can be used to create new rooms.
- RoomInfo API provides
  - mandatory field validation.
  - consistency checks for the contained data.
- RoomInfo object is also passed to room extensions to provide them with information about the room.

RoomInfo objects do not contain

- Portal-related information (worksets, pages, and so on).
- Room content (documents, business objects, and so on).

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Rooms API Structure – RoomUsers API

Description

- Provides access to the user-related functionality of a room instance
  - E.g. changing the user-role assignments.
- Implemented by a RoomUsers object
  - Contains the user-role assignments for a specific room.

Reasons why the user-related functionality has been separated from the RoomObject API

- Keep rarely used methods together, but separated from the RoomObject API methods.
- Changes to the RoomUsers object do not affect the corresponding room immediately.

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Rooms API Structure – RoomUsers API

RoomUsers API is coupled with

- **Status Engine**
  - **All changes to the user-role assignments are tracked by the Status Engine.**
- **The e-mail messaging features of the Collaboration framework.**
  - **For example, when a new user is assigned to a room, an invitation e-mail is sent to the user.**

Room Users and Extension engine

- **An instance of the RoomUsers interface is also passed to room extensions at certain extension points to provide a set of affected user-role assignments to the extension (for example, added room users or removed room users).**

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Rooms API Structure - RoomUsers API

Example

```
public void changeUserRoles() throws RoomInstantiationException, UMException
{
  //Get the Rooms 6.0 API Portal Service
  IRooms roomsAPI = (IRooms)
  PortalRuntime.getRuntimeResources().getService(IRooms.PORTAL_SERVICE_ID);

  //Get a Room
  IRoom room = roomsAPI.getRoom("4711");

  //Get the initial role of the room
  IRoomRole newRole = TemplateDataFactory.
                createRoomRole(room.getInitialRoleName());
```


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Example (cont.)

```
//Get the Room Users
IRoomUsers roomUsers = room.getRoomUsers();
IUser newUser = UMFactory.getUserFactory().getUserByLogonID("MyName");
roomUsers.addUserRole(newUser.getUniqueID(), newRole);
String[] userIds = roomUsers.getAllUsers();

//iterate over all room users
for(int i=0; i<userIds.length; i++)
{
  IRoomRole[] userRoles = roomUsers.getUserRoles(userIds[i]);
  //... do something with the user's roles
}

//Apply all changes to the Room and send no notification emails
room.setRoomUsers(roomUsers, false);
```

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Rooms API Structure – Room Relations API

Description

- Implemented by the room relation manager
- Can be obtained from the Rooms API
- Provides methods for creating or deleting relations between rooms
- Each relation has a specific relation type and relates a source room with a target room

Provides methods for searching existing relations by

- Source room
- Source room and relation type
- Target room
- Target room and relation type

Remark

- No semantic connection (e.g. no role inheritance, content sharing)
- Only a link between two rooms that makes navigation between the two rooms easier

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Rooms API Structure - Rooms Relations API

Example

```
import java.util.List;
import com.sap.ip.collaboration.room.api.IRooms;
import com.sap.ip.collaboration.room.api.relman.IRelationManager;
import com.sapportals.portal.prt.runtime.PortalRuntime;
import com.sapportals.wcm.repository.ResourceException;

public void relateRooms() throws ResourceException
{
   String sourceRoomId = "4711";
   String targetRoomId = "4712";

   //Get the Rooms 6.0 API
   Portal Service IRooms roomsAPI = (IRooms)
      PortalRuntime.getRuntimeResources().getService(IRooms.PORTAL_SERVICE_ID);
```

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Example (cont)

```
  //Get the RelationManager
  IRelationManager relMan = roomsAPI.getRelationManager();

  //Retrieve a list of possible relation types
  List types = relMan.getAllAssociationIds();

  //Relate two rooms with the first available relation type
  relMan.relateRoom(sourceRoomId, targetRoomId, (String) types.get(0));

  //Search for target rooms of room "4711"
  List targetRooms =
     relMan.getRelatedRoomsFromRoom(sourceRoomId, (String) types.get(0));

  String roomId = (String) targetRooms.get(0); //roomId should be "4712" now

  //Delete relation
  relMan.unrelateRoom(sourceRoomId, targetRoomId, (String) types.get(0));
}
```

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Rooms API Structure – Room Status Event API

Description

- Provides access to the room-related status events that are automatically logged during system operation

The following functionality is provided

- Retrieval of status events related to a certain room
- Retrieval of room usage data

Status events

- Can be retrieved using the RoomObject API or
- Can be retrieved using the Rooms API (specified by its ID)
- Possibility to filter events by
  - time stamp,
  - status action (defined in RoomStatusAction), and
  - user who caused the events.

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Rooms API Structure – Room Status Event API

Room usage data

- **Room specific usage data can be accessed using the RoomObject API and the Rooms API.**
- **Non room specific usage data regarding the most visited or least visited rooms is accessible using the Rooms API only.**

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Rooms API Structure - Room Status Event API

Example

```
//imports for Collaboration Rooms
import com.sap.ip.collaboration.room.api.IRoom;
import com.sap.ip.collaboration.room.api.IRooms;
import com.sap.ip.collaboration.room.api.IRoomStatusEvent;
import com.sap.ip.collaboration.room.api.RoomStatusAction;

//imports for Portal
import com.sapportals.portal.prt.runtime.PortalRuntime;

public void retrieveUserChangeEvents() throws RoomInstantiationException
{

  //Get the Rooms API
  Service IRooms roomsAPI = (IRooms) PortalRuntime
     .getRuntimeResources().getService(IRooms.PORTAL_SERVICE_ID);

  //Get a room
  IRoom room = roomsAPI.getRoom("4711");
```


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Example (cont)

```
        // get all user related status events for the room
        IRoomStatusEvent[] roomEvents = room.getRoomEvents(
                0, // no time restriction = since room creation
                new RoomStatusAction[] {
                        RoomStatusAction.ROOM_ADD_USER,
                        RoomStatusAction.ROOM_REMOVE_USER,
                        RoomStatusAction.ROOM_CHANGE_USER_ROLE
                },
                null, // all users 50 // at most 50 events
        );

        for ( int i = 0; i < roomEvents.length; i++ )
        {
                // process events
                // ...
                // for instance: print message
                System.out.println( roomEvents[i].getMessage() );
        }
}
```

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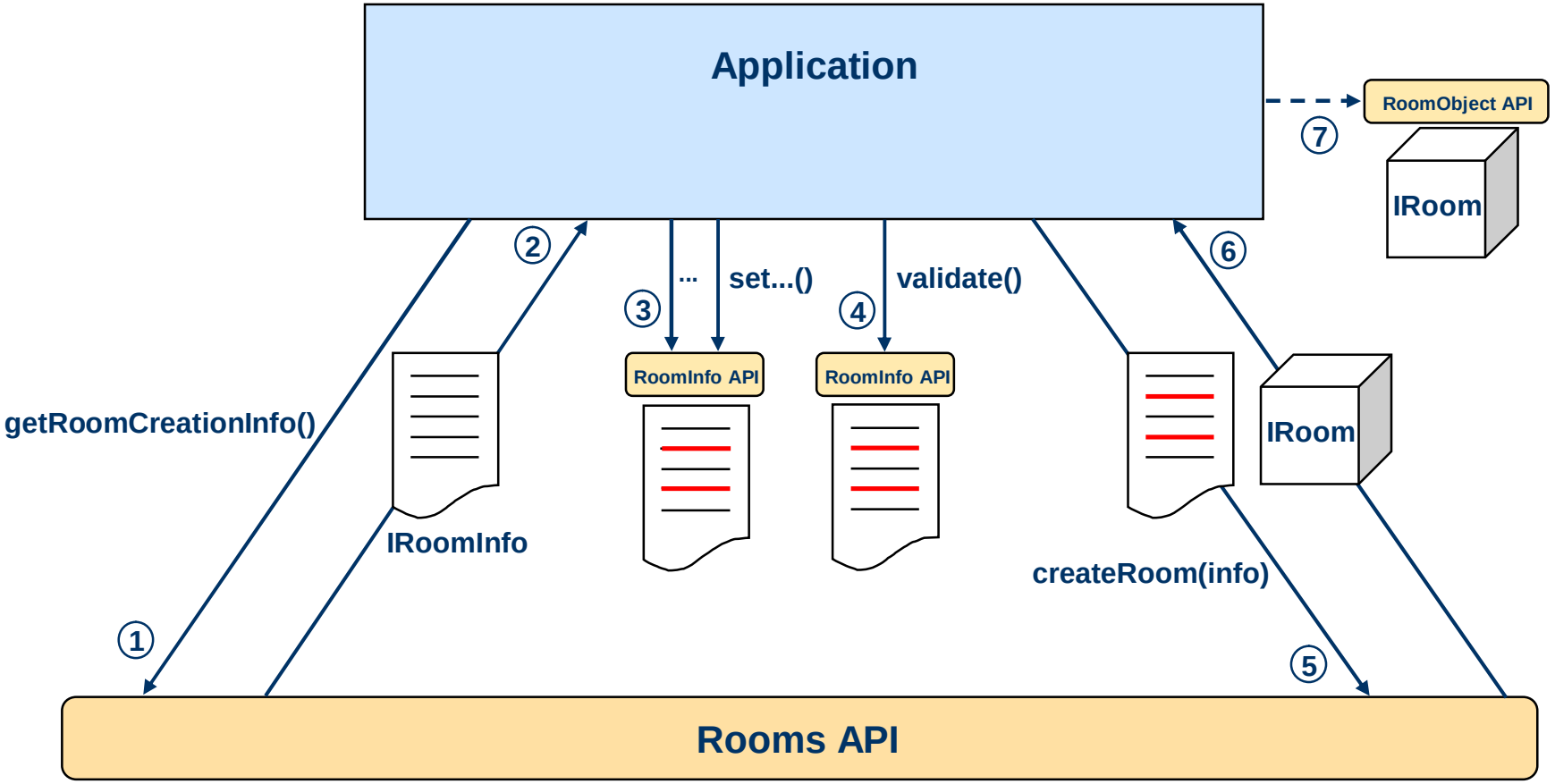
Rooms API Structure – Room Creation



Collaboration Rooms

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Rooms API Structure – Room Creation

1. **Get RoomInfo Object**
   - Needed to create a new room
   - Call Rooms API method getRoomCreationInfo()
2. **Rooms API returns an empty RoomInfo object**
   - Contains no data
3. **Application calls at this RoomInfo object instance methods like**
   - setName(), setDescription() and other set...() to set the required data
   - Otherwise default value are taken from the room template (called by setTemplateName())
4. **RoomInfo method validate()**
   - Check for missing or inconsistent data in the RoomInfo object
   - Returns true, if everything is ok
   - If it returns false, a further call to getValidationErrors() provides more information about the error

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Rooms API Structure – Room Creation

5. **Rooms API method createRoom()**
   - **RoomInfo object is passed as a parameter**
6. **The IRoom Object is created and a reference is passed back to the application**
7. **Room creation process**
   - **If creation in the rooms backend was successful, an instance of IRoom is returned**
   - **If there were any errors during the room creation process, a RoomCreationException is thrown. The exception contains more information about the error itself, or the causing exception as a nested exception.**
8. **The application uses the returned instance of IRoom for further tasks (RoomObject API).**

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Rooms API Structure – Room Creation Example

```
public void createRoom() throws        TemplateNotFoundException,
                                       NoSuchRoleException,
                                       UMException,
                                       RoomCreationException

{
        String templateName = "Template1";

        String roleName = "Role1";

        //Get the Rooms 6.0 API Portal Service
        IRooms roomsAPI = (IRooms)
        PortalRuntime.getRuntimeResources().getService(IRooms.PORTAL_SERVICE_ID);

        //Get Template Related Infos
        ITemplate template = roomsAPI.getRoomTemplate(templateName);

        IRoomRole role1 = template.getRoomRole(roleName);

        //Get an empty RoomInfo object
        IRoomInfo roomInfo = roomsAPI.getRoomCreationInfo();
```


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Rooms API Structure – Room Creation Example

```
//Fill RoomInfo object with values
roomInfo.setName("New Room Name");

roomInfo.setDescription("New Room Description");

roomInfo.setTemplateName(templateName);

roomInfo.addRoomParameter("ParamName", "ParamDesc", "ParamValue", false);

//Set User Role Assignments
IUser owner = UMFactory.getUserFactory().getUserByLogonID("SmithJ");

roomInfo.setOwnerId(owner.getUniqueID());

roomInfo.addUserToRole(owner.getUniqueID(), role1);

//Finally Create the Room
if(roomInfo.validate())

    roomsAPI.createRoom(roomInfo, true);

}
```

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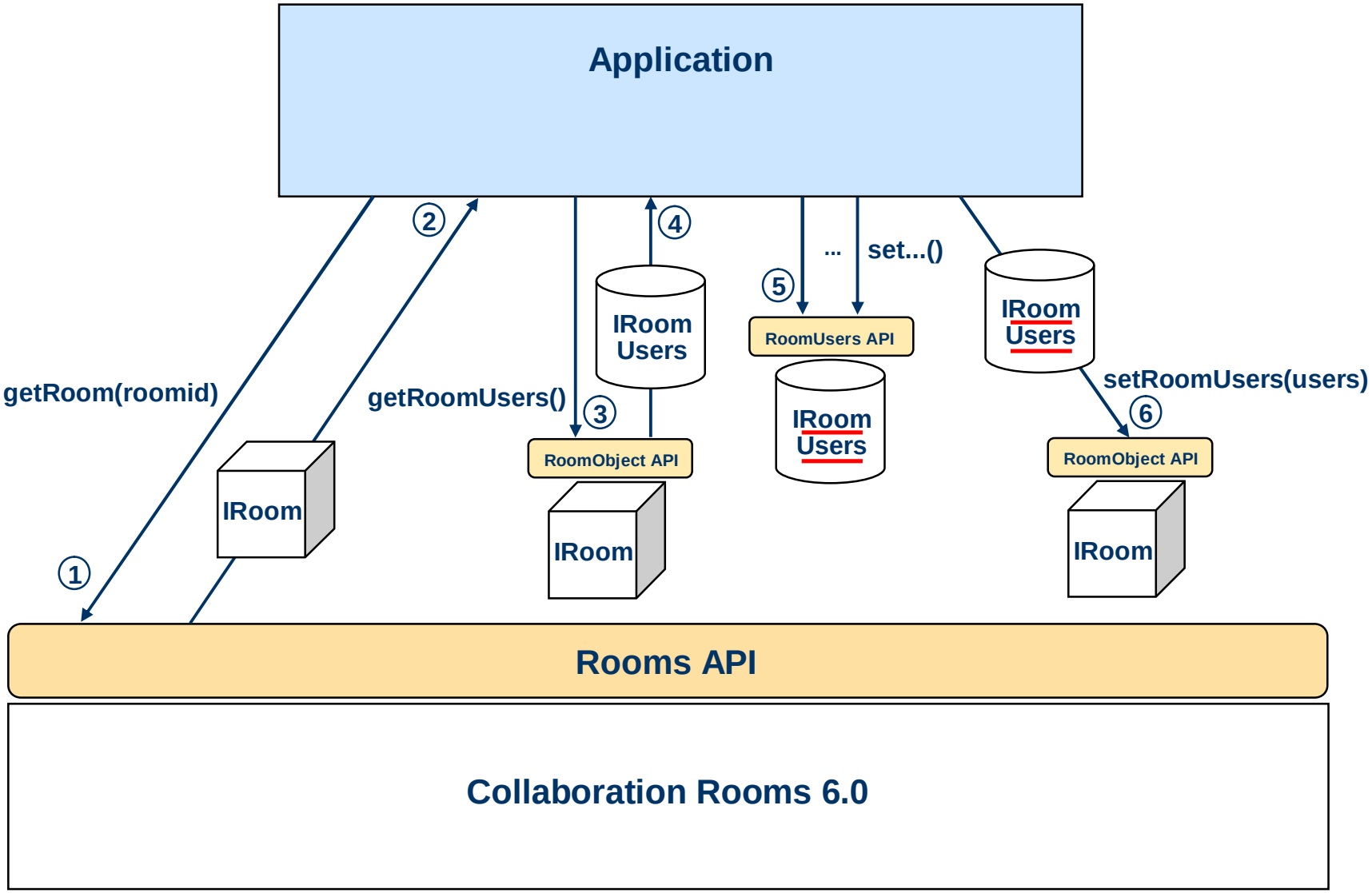
Rooms API Structure – Change a Room



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Rooms API Structure – Change a Room

1. **Call to the Rooms API method getRoom()**
   - **Passing the room ID of the room as a parameter**
2. **Rooms API returns an instance**
   - **If a room with the given ID exists**
3. **Room instance method getRoomUsers()**
4. **An instance of IRoomUsers is returned**
   - **Holds the current user-room role assignments**
5. **RoomUsers API**
   - **To modify user-room role assignments**
   - **E.g. addUserRole() to invite a new user to the room**
6. **Room instance method setRoomUsers()**
   - **Passes RoomUsers object as a parameter**
   - **Applies all changes to the room**

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Rooms API Structure – Change a Room

```
public void changeUserRoles() throws RoomInstantiationException, UMException
{
    //Get the Rooms 6.0 API Portal Service
    IRooms roomsAPI = (IRooms)
    PortalRuntime.getRuntimeResources().getService(IRooms.PORTAL_SERVICE_ID);

    //Get a Room
    IRoom room = roomsAPI.getRoom("4711");

    //Get the initial role of the room
    IRoomRole newRole = room.getInitialRoomRole();

    //Get the Room Users
    IRoomUsers roomUsers = room.getRoomUsers();

    IUser newUser = UMFactory.getUserFactory().getUserByLogonID("SmithJ");

    roomUsers.addUserRole(newUser.getUniqueID(), newRole);

    String[] userIds = roomUsers.getAllUsers();
```


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Rooms API Structure – Change a Room

```
//iterate over all room users
for(int i=0; i<userIds.length; i++)
        {
                IRoomRole[] userRoles = roomUsers.getUserRoles(userIds[i]);
                //... do something with the user's roles
        }
//Apply all changes to the Room and send no notification emails
 room.setRoomUsers(roomUsers, false);
}
```


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Further Information

Public Web

- **NetWeaver Developer‘s Guide:**
  http://www.sdn.sap.com/irj/sdn/devguide2004s ➔Enabling User Collaboration

- **Commented Coding Samples:**
  http://help.sap.com/saphelp_nw04s/helpdata/en/7d/c69c42d706c66ae10000000a155106/frameset.htm

SAP Service Marketplace

- **Role-specific Learning Maps (available for purchase):**
  http://service.sap.com/rkt-netweaver ➔Available OKPs for SAP NetWeaver

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