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# **DiWaCS Documentation**

***Release 0.9.2.1***

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DiWaCS is an application developed for DiWa smart space and should be used **only** inside **Diwaamo**. DiWaCS connects to address **239.128.128.1:5555** using **Pragmatic General Multicast (PGM)**. DiWaCS is built on **Python** and **WxPython** is used for UI programming. Currently, only supported platform is **Windows 7**.

**Required python modules for DiWaCS:**

- Configobj <http://www.voidspace.org.uk/python/configobj.html>
- PIL <http://www.pythonware.com/products/pil/>
- Python Pubsub <http://pubsub.sourceforge.net/>
- SQLAlchemy <http://www.sqlalchemy.org/>
- Watchdog <http://packages.python.org/watchdog/>
- WxPython <http://www.wxpython.org>
- ZeroMQ <http://zeromq.org> with openpgm support <http://code.google.com/p/openpgm/>

Contents:



## AUTOMATED CODE DOCUMENTATION

Documentation generated on 2013-05-20 at 11:06.

### 1.1 Add file module

Created on 5.6.2012

@author: neriksso

@requires: ZeroMQ

**synopsis** Used to add a file in the current project.

`add_file.main()`

Main function of the sub program.

Sub program is meant to be bound to windows explorer context menu. Context menu allows the user to quickly add files to project without interacting with DiWaCS directly.

Transmits the `add_file` command to DiWaCS via interprocess socket.

**Parameters** `filepath` (*String*) – Path of the file to be added.

**Returns** windows success code (0 on success).

**Return type** Integer

### 1.2 Send file module

Created on 5.6.2012

@author: neriksso

@requires: ZeroMQ

**synopsis** Used to send a file to another node.

`send_file_to.main()`

Main function of the sub program.

Sub program is meant to be bound to windows explorer context menu. Context menu allows the user to quickly send files without interacting with DiWaCS directly.

Transmits the `send_to` command to DiWaCS via interprocess connection.

**Parameters**

- **node\_id** (*Integer*) – ID of the node to send the file to.
- **filepath** (*String*) – Path of the file to be sent.

**Returns** windows success code (0 on success).

**Return type** Integer

## 1.3 Controller module

Created on 28.5.2012

@author: neriksso

**controller.AddComputerToSession** (*session, name, ip, wos\_id*)  
Adds a computer to a session.

### Parameters

- **session** (*models.Session*) – A current session.
- **name** (*String.*) – A name of the computer.
- **ip** (*Integer.*) – Computers IP address.
- **wos\_id** (*Integer.*) – Wos id of the computer.

**controller.AddEvent** (*session\_id, title, desc*)  
Adds an event to the database.

### Parameters

- **session** (*models.Session*) – The current session.
- **desc** (*String.*) – Description of the event.

**controller.AddFileToProject** (*file, project\_id*)  
Add a file to project. Copies it to the folder and adds a record to database.

### Parameters

- **file** (*String*) – A filepath.
- **project\_id** – Project id from database.

**Returns** New filepath.

**Return type** String

**controller.AddProject** (*data*)  
Adds a project to database and returns a project instance

**Parameters** **data** (*A dictionary*) – Project information

**Return type** an instance of *models.Project*

**controller.ConnectToDatabase** (*expire=False*)  
Connect to the database and return a Session object

**controller.CreateAll** ()  
Create tables to the database

**controller.CreateFileaction** (*path, action, session\_id, project\_id*)  
Logs a file action to the database.

### Parameters



- **path** (*String.*) – Filepath.
- **action** (*Integer.*) – File action id.
- **session\_id** (*Integer.*) – Current session id.
- **project\_id** (*Integer.*) – Project id from database.

`controller.DeleteRecord (Model, idNum)`

Delete a record from database

#### Parameters

- **Model** (`sqlalchemy.ext.declarative.declarative_base().`) – The model for which to delete a record.
- **idNum** (*Integer.*) – Recond id.

`controller.EditProject (idNum, row)`

Update a project info

#### Parameters

- **idNum** (*Integer.*) – Database id number of the project.
- **row** (*A dictionary*) – The new project information.

`controller.EndSession (session_id)`

Ends a session, sets its endtime to database. Ends file scanner.

**Parameters** **session** (`models.Session`) – Current session.

**class** `controller.FILE_ACTION_SCANNER (session_id, project_id, path)`

A scanner thread for monitoring user actions (Open, Close, Create, etc..) during a session. Utilizes Nirsoft's tools [RecentFilesView](#) and [OpenedFilesView](#) .

#### Parameters

- **session\_id** (*Integer.*) – Current session id from database.
- **project\_id** (*Integer.*) – Current project id from database.
- **path** (*String.*) – Filepath of project folder.

**run ()**

Starts the thread.

**stop ()**

Stops the thread.

`controller.GetOrCreate (session, model, **kwargs)`

Fetches or creates a instance.

#### Parameters

- **session** (`models.Session`) – a related session
- **model** (`sqlalchemy.ext.declarative.declarative_base().`) – The model of which an instance is wanted

`controller.GetProject (project_id)`

Fetches projects by a company.

**Parameters** **company\_id** (*Integer.*) – A company id from database.

`controller.GetProjectPath (project_id)`

Fetches the project path from database and return it.

**Parameters** `project_id` (*Integer*) – Project id for database.

**Return type** `String`.

`controller.GetProjectsByCompany` (*company\_id*)

Fetches projects by a company.

**Parameters** `company_id` (*Integer*) – A company id from database.

`controller.GetRecentFiles` (*project\_id*)

Fetches files accessed recently in the project sessions from the database.

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#### **Todo**

Add a limit parameter, currently fetches all files.

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#### **Todo**

Duplicate check.

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**Parameters** `project_id` (*Integer*) – The project id

**Return type** a list of files

`controller.GetSessionsByProject` (*project\_id*)

Fetches sessions for a project.

**Parameters** `project_id` (*Integer*) – Project id from database.

`controller.InitSyncProjectDir` (*project\_id*)

Initial sync of project dir and database.

**Parameters** `project_id` (*Integer*) – Project id from database.

`controller.IsProjectFile` (*filename*, *project\_id*)

Checks, if a file belongs to a project. Checks both project folder and database.

#### **Parameters**

- `filename` (*String*) – a filepath.
- `project_id` (*Integer*) – Project id from database.

**Return type** `Boolean`.

`class controller.PROJECT_FILE_EVENT_HANDLER` (*project\_id*)

Handler for FileSystem events on project folder.

**Parameters** `project_id` (*Integer*) – Project id from database.

`on_created` (*event*)

On\_created event handler. Logs to database.

**Parameters** `event` (an instance of `watchdog.events.FileSystemEvent`) – The event.

`on_deleted` (*event*)

On\_deleted event handler. Logs to database.

**Parameters** `event` (an instance of `watchdog.events.FileSystemEvent`) – The event.

`on_modified` (*event*)

On\_modified event handler. Logs to database.

**Parameters** `event` (an instance of `watchdog.events.FileSystemEvent`) – The event.

**class** `controller.SCAN_HANDLER` (*project\_id*)  
Handler for FileSystem events on SCANNING folder.

**Parameters** `project_id` (*Integer*) – Project id from database.

**on\_created** (*event*)  
On\_created event handler. Logs to database.

**Parameters** `event` (an instance of `watchdog.events.FileSystemEvent`) – The event.

**controller.StartNewSession** (*project\_id, session\_id=None, old\_session\_id=None*)  
Creates a session to the database and return a session object.

**Parameters**

- **project\_id** (*Integer*) – Project id from database.
- **session\_id** (*Integer*) – an existing session id from database.
- **old\_session\_id** (*Integer*) – A session id of a session which will be continued.

## 1.4 Models module

Created on 23.5.2012

@author: neriksso

@requires: sqlalchemy

@requires: pywin32

**synopsis** Used to represent the different database structures on DiWa.

**class** `models.Action` (*name*)  
A class representation of a action. A file action uses this to describe the action.

**Field:**

- `id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the action, used as primary key in database table.
- `name` (`sqlalchemy.schema.Column(sqlalchemy.types.String)`) - Name of the action (Max 50 characters).

**Parameters** `name` (*String*) – Name of the action.

**class** `models.Activity` (*project, session=None*)  
A class representation of an activity.

**Fields:**

- `id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of activity, used as primary key in database table.
- `session_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the session activity belongs to.
- `session` (`sqlalchemy.orm.relationship`) - Session relationship.
- `project_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the project activity belongs to.
- `project` (`sqlalchemy.orm.relationship`) - Project relationship.

- `active (sqlalchemy.schema.Column(sqlalchemy.types.Boolean))` - Boolean flag indicating that the project is active.

**Parameters**

- **project** (`models.Project`) – Project activity belongs to.
- **session** (`models.Session`) – Optional session activity belongs to.

**class** `models.Company` (*name*)

A class representation of a company.

**Fields:**

- `id (sqlalchemy.schema.Column(sqlalchemy.types.Integer))` - ID of the company, used as primary key in database table.
- `name (sqlalchemy.schema.Column(sqlalchemy.types.String))` - Name of the company (Max 50 characters).

**Parameters** **name** (`String`) – The name of the company.

**class** `models.Computer` (*\*\*kwargs*)

A class representation of a computer.

**Fields:**

- `id (sqlalchemy.schema.Column(sqlalchemy.types.Integer))` - ID of computer, used as primary key in database table.
- `name (sqlalchemy.schema.Column(sqlalchemy.types.String))` - Name of the computer.
- `ip (sqlalchemy.schema.Column(sqlalchemy.dialects.mysql.INTEGER))` - Internet Protocol address of the computer (Defined as unsigned).
- `mac (sqlalchemy.schema.Column(sqlalchemy.types.String))` - Media Access Control address of the computer.
- `time (sqlalchemy.schema.Column(sqlalchemy.dialects.mysql.DATETIME))` - Time of the last network activity from the computer.
- `screens (sqlalchemy.schema.Column(sqlalchemy.dialects.mysql.SMALLINT))` - Number of screens on the computer.
- `responsive (sqlalchemy.schema.Column(sqlalchemy.dialects.mysql.TINYINT))` - The responsive value of the computer.
- `user_id (sqlalchemy.schema.Column(sqlalchemy.types.Integer))` - ID of the user currently using the computer.
- `user (sqlalchemy.orm.relationship)` - The current user.
- `wos_id (sqlalchemy.schema.Column(sqlalchemy.types.Integer))` - WOS ID.

**class** `models.Event` (*\*\*kwargs*)

A class representation of Event. A simple note with timestamp during a session.

**Fields:**

- `id (sqlalchemy.schema.Column(sqlalchemy.types.Integer))` - ID of the event, used as primary key in database table.

- `title` (`sqlalchemy.schema.Column(sqlalchemy.types.String)`) - Title of the event (Max 40 characters).
- `desc` (`sqlalchemy.schema.Column(sqlalchemy.types.String)`) - More in-depth description of the event (Max 500 characters).
- `time` (`sqlalchemy.schema.Column(sqlalchemy.dialects.mysql.DATETIME)`) - Time the event took place.
- `session_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the session this event belongs to.
- `session` (`sqlalchemy.orm.relationship`) - Session this event belongs to.

**class** `models.File` (*\*\*kwargs*)  
A class representation of a file.

**Fields:**

- `id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the file, used as primary key in database table.
- `path` (`sqlalchemy.schema.Column(sqlalchemy.types.String)`) - Path of the file on DiWa (max 255 chars).
- `project_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the project this file belongs to.
- `project` (`sqlalchemy.orm.relationship`) - Project this file belongs to.

**class** `models.FileAction` (*file, action, session=None, computer=None, user=None*)  
A class representation of a fileaction.

**Fields:**

- `id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the FileAction, used as primary key in the database table.
- `file_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the file this FileAction affects.
- `file` (`sqlalchemy.orm.relationship`) - The file this FileAction affects.
- `action_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the action affecting the file.
- `action` (`sqlalchemy.orm.relationship`) - Action affecting the file.
- `action_time` (`sqlalchemy.schema.Column(sqlalchemy.dialects.mysql.DATETIME)`) - Time the action took place on.
- `user_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the user performing the action.
- `user` (`sqlalchemy.orm.relationship`) - User performing the action.
- `computer_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the computer user performed the action on.
- `computer` (`sqlalchemy.orm.relationship`) - Computer user performed the action on.
- `session_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the session user performed the action in.
- `session` (`sqlalchemy.orm.relationship`) - Session user performed the action in.

**Parameters**

- **file** (`models.File`) – The file which is subjected to the action.
- **action** (`models.Action`) – The action which is applied to the file.
- **session** (`models.Session`) – The session in which the FileAction took place on.
- **computer** (`models.Computer`) – The computer from which the user performed the action.
- **user** (`models.User`) – The user performing the action.

**class** `models.Project` (*name, company, password*)

A class representation of a project.

**Fields:**

- `id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of project, used as primary key in database table.
- `name` (`sqlalchemy.schema.Column(sqlalchemy.types.String)`) - Name of the project (Max 50 characters).
- `company_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the company that owns the project.
- `company` (`sqlalchemy.orm.relationship`) - The company that owns the project.
- `dir` (`sqlalchemy.schema.Column(sqlalchemy.types.String)`) - Directory path for the project files (Max 255 characters).
- `password` (`sqlalchemy.schema.Column(sqlalchemy.types.String)`) - Password for the project (Max 40 characters).
- `members` (`sqlalchemy.orm.relationship`) - The users that work on the project.

**Parameters**

- **name** (`String`) – Name of the project.
- **company** (`models.Company`) – The owner of the project.

**class** `models.Session` (*project*)

A class representation of a session.

**Fields:**

- `id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of session, used as primary key in database table.
- `name` (`sqlalchemy.schema.Column(sqlalchemy.types.String)`) - Name of session (Max 50 characters).
- `project_id` (`sqlalchemy.schema.Column(sqlalchemy.types.Integer)`) - ID of the project the session belongs to.
- `project` (`sqlalchemy.orm.relationship`) - The project the session belongs to.
- `starttime` (`sqlalchemy.schema.Column(sqlalchemy.dialects.mysql.DATETIME)`) - Time the session began, defaults to *now()*.
- `endtime` (`sqlalchemy.schema.Column(sqlalchemy.dialects.mysql.DATETIME)`) - The time session ended.

- `previous_session_id(sqlalchemy.schema.Column(sqlalchemy.types.Integer))` - ID of the previous session.
- `previous_session(sqlalchemy.orm.relationship)` - The previous session.
- `participants(sqlalchemy.orm.relationship)` - Users that belong to this session.
- `computers(sqlalchemy.orm.relationship)` - Computers that belong to this session.

**Parameters** `project` (`models.Project`) – The project for the session.

**addUser** (`user`)

Add users to a session.

**Parameters** `user` (`models.User`) – User to be added into the session.

**fileRoutine** ()

File checking routine for logging.

**Throws IOError** When log.txt is not available for write access.

**get\_last\_checked** ()

Fetch last\_checked field.

**Returns** last\_checked field (None before `models.Session.start()` is called).

**Return type** `datetime.datetime` or None

**start** ()

Start a session. Set the last\_checked field to current DateTime.

**class** `models.User` (`name`, `company`)

A class representation of a user.

**Fields:**

- `id(sqlalchemy.schema.Column(sqlalchemy.types.Integer))` - ID of the user, used as primary key in database table.
- `name(sqlalchemy.schema.Column(sqlalchemy.types.String))` - Name of the user (Max 50 characters).
- `email(sqlalchemy.schema.Column(sqlalchemy.types.String))` - Email address of the user (Max 100 characters).
- `title(sqlalchemy.schema.Column(sqlalchemy.types.String))` - Title of the user in the company (Max 50 characters).
- `department(sqlalchemy.schema.Column(sqlalchemy.types.String))` - Department of the user in the company (Max 100 characters).
- `company_id(sqlalchemy.schema.Column(sqlalchemy.types.Integer))` - Company id of the employing company.
- `company(sqlalchemy.orm.relationship)` - Company relationship.

**Parameters**

- **name** (`String`) – Name of the user.
- **company** (`models.Company`) – The employer.

## 1.5 SWNP module

Created on 30.4.2012

@author: neriksso

**class** `swnp.Message` (*TAG, PREFIX, PAYLOAD*)

A class representation of a Message.

Messages are divided into three parts: TAG, PREFIX, PAYLOAD. Messages are encoded to json for transmission.

### Parameters

- **TAG** (*String.*) – TAG of the message.
- **PREFIX** (*String.*) – PREFIX of the message.
- **PAYLOAD** (*String.*) – PAYLOAD of the message.

**static** `from_json` (*json\_dict*)

Return a message from json.

**Parameters** `json_dict` (*json.*) – The json.

**Return type** `swnp.Message`.

**static** `to_dict` (*msg*)

Return a message in a dict.

**Parameters** `msg` (`swnp.Message`) – The message.

**Return type** Dict.

**class** `swnp.Node` (*id, screens, name=None, data=None*)

A class representation of a node in the network.

### Parameters

- **id** (*Integer.*) – Node id
- **screens** (*Integer.*) – Amount of visible screens.
- **name** (*String.*) – The name of the node.

**refresh** ()

Updates the timestamp.

**class** `swnp.SWNP` (*pgm\_group, screens=0, name=None, id=None, context=None, error\_handler=None*)

The main class of swnp.

This class has the required ZeroMQ bindings and is responsible for communicating with other instances.

<b>Warning:</b> Only one instance per computer
--

### Parameters

- **screens** (*Integer.*) – The number of visible screens. Defaults to 0.
- **name** (*String.*) – The name of the instance. Optional.

**close** ()

Closes all connections and exits.

**do\_ping** ()

Send a PING message to the network.



**find\_node** (*node\_id*)

Search the node list for a specific node.

**Parameters** **node\_id** (*Integer*) – The id of the searched node.

**Return type** `swnp.Node`

**get\_buffer** ()

Gets the buffered messages and returns them

**Return type** `json`.

**get\_list** ()

Returns a list of all nodes

**Return type** `list`.

**get\_screen\_list** ()

Returns a list of screens nodes.

**Return type** `list`.

**ping\_handler** (*payload*)

A handler for PING messages. Sends update\_screens, if necessary.

**Parameters** **payload** (*String*.) – The payload of a PING message.

**ping\_routine** (*error\_handler*)

A routine for sending PING messages at regular intervals.

**send** (*tag, prefix, message*)

Send a message to the network.

**Parameters**

- **tag** (*String*.) – The tag of the message; recipient.
- **prefix** (*String*.) – The prefix of the message.
- **message** (*String*.) – The payload of the message.

**set\_screens** (*screens*)

Sets the number of screens for the instance.

**Parameters** **screens** (*Integer*.) – New number of screens.

**shutdown** ()

shuts down all connections, no exit.

**sub\_routine** (*sub\_url, context*)

Subscriber routine for the node ID.

**Parameters**

- **sub\_url** (*String*) – Subscribing URL.
- **context** (`zmq.core.context.Context`) – ZeroMQ context for message sending

**sub\_routine\_sys** (*sub\_url, context*)

Subscriber routine for the node ID.

**Parameters**

- **sub\_url** (*String*) – Subscribing URL.
- **context** (`zmq.core.context.Context`) – ZeroMQ context for message sending

**sync\_handler** (*msg*)

Handler for sync messages.

Deprecated since version 0.2.

**Parameters** *msg* (*swnp.Message*) – The message.

**sys\_handler** (*msg*)

Handler for “SYS” messages.

**Parameters** *msg* (*swnp.Message*) – The received message.

**timeout\_routine** ()

Routine for checking node list and removing nodes with timeout.

## 1.6 Commons module

Created on 17.5.2013

`commons.IterIsLast` (*iterable*) → generates (item, islast) pairs

Generates pairs where the first element is an item from the iterable source and the second element is a boolean flag indicating if it is the last item in the sequence.

**Parameters** *iterable* (*iterable*) – The iterable element.

## 1.7 Filesystem module

Created on 17.5.2013

`filesystem.CopyFileToProject` (*filepath*, *project\_id*)

Copy file to project dir and return new filepath in project dir.

**Parameters**

- **filepath** (*String.*) – The file path.
- **project\_id** (*Integer.*) – Project id from database.

`filesystem.CopyToTemp` (*filepath*)

Copy a file to temporary folder.

**Parameters** *filepath* (*String.*) – The file path.

`filesystem.CreateProjectDir` (*dir\_name*)

Creates a project directory, if one does not exist in the file system

**Parameters** *dir\_name* (*String.*) – Name of the directory

`filesystem.FileToBase64` (*filepath*)

Transform a file to a binary object.

**Parameters** *filepath* (*String.*) – The file path.

`filesystem.GetFileExtension` (*path*)

Returns the file extension of a file

**Parameters** *path* (*String*) – The file path.

**Return type** *String*.

`filesystem.GetNodeImg (node)`

Searches for a node's image in STORAGE.

**Parameters** `node` (*Integer*.) – The node id.

`filesystem.IsSubtree (filename, parent)`

Determines, if filename is inside the parent folder.

**Parameters**

- **filename** (*String*.) – The file path.
- **parent** (*String*.) – The parent file path.

`filesystem.OpenFile (filepath)`

Opens a file path.

**Parameters** `filepath` (*String*.) – The file path.

`filesystem.OpenedFilesQuery ()`

Calls the openedfilesview.

`filesystem.RecentFilesQuery ()`

Calls the recentfilesview.

`filesystem.SaveScreen (win, filepath)`

Saves the background image of the desktop.

**Parameters** `filename` (*String*.) – The filename for the saved image.

`filesystem.SearchFile (filename, search_path)`

Search file in a given path.

**Parameters**

- **filename** (*String*.) – The file name.
- **search\_path** (*String*.) – The search path.

## 1.8 Networking module

Created on 17.5.2013

`networking.DottedIPToInt (dotted_ip)`

Transforms a dotted IP address to Integer.

**Parameters** `dotted_ip` (*String*) – The IP address.

**Returns** The IP address.

**Return type** Integer

`networking.GetLANMachines (lan_ip)`

**Parameters** `lan_ip` (*string*) – Local Area Network IP.

**Returns** lan machines

**Return type** string[]

`networking.GetLocalIPAddress (target)`

Used to get local Internet Protocol address.

**Returns** The current IP address.

**Return type** string

`networking.GetMacForIp(ip)`

Returns the mac address for an local IP address.

**Parameters** `ip` (*String.*) – IP address

`networking.IntToDottedIP(intip)`

Transforms an Integer IP address to dotted representation.

**Parameters** `intip` (*Integer*) – The IP

**Returns** The IP

**Return type** string

`networking.MapNetworkShare(letter, share)`

Maps the network share to a letter.

**Parameters**

- **letter** (*String.*) – The letter for which to map.
- **share** (*String.*) – The network share.

## 1.9 Wos module

Created on 8.5.2012

@author: neriksso

**class** `wos.AddProjectDialog` (*parent, title, project\_id=None*)

A dialog for adding a new project

**Parameters**

- **parent** (`wx.Frame`) – Parent frame.
- **title** (*String.*) – A title for the dialog.

**OnAdd** (*e*)

Handles the addition of a project to database, when “Add” button is pressed.

**Parameters** `e` (*Event.*) – GUI Event.

**OnClose** (*e*)

Handles “Close” button presses

**Parameters** `e` (*Event.*) – GUI Event.

**class** `wos.AudioRecorder` (*parent*)

A thread for capturing audio continuously. It keeps a buffer that can be saved to a file.

**run** ()

Continuously record from the microphone to the buffer. If the buffer is full, the first frame will be removed and the new block appended.

**save** (*ide, path*)

Save the buffer to a file.

**class** `wos.CHECK_UPDATE`

Thread for checking version updates.

**class** `wos.CONN_ERR_TH` (*parent*)

Thread for checking connection errors.

**Parameters** `parent` (*wx.Frame.*) – Parent object.

**run** ()

Starts the thread.

**class** `wos.CURRENT_PROJECT` (*project\_id, swnp*)

Thread for transmitting current project selection. When user selects a project, an instance is started. When a new selection is made, by any Chimaira instance, the old instance is terminated.

**Parameters**

- **project\_id** (*Integer.*) – Project id from the database.
- **swnp** (*swnp.SWNP*) – SWNP instance for sending data to the network.

**run** ()

Starts the thread.

**stop** ()

Stops the thread.

**class** `wos.CURRENT_SESSION` (*parent, swnp*)

Thread for transmitting current session id, when one is started by the user. When the session is ended, by any Chimaira instance, the instance is terminated.

**Parameters**

- **session\_id** (*Integer.*) – Session id from the database.
- **swnp** (*swnp.SWNP*) – SWNP instance for sending data to the network.

**run** ()

Starts the thread.

**stop** ()

Stops the thread

**class** `wos.DropTarget` (*window, parent, i*)

Implements drop target functionality to receive files, bitmaps and text

**OnData** (*x, y, d*)

Handles drag/dropping files/text or a bitmap

**class** `wos.EventList` (*parent, \*args, \*\*kwargs*)

A Frame which displays the possible event titles and handles the event creation.

**GetIcon** (*icon*)

Fetches gui icons.

**Parameters** `icon` (*String.*) – The icon file name.

**Return type** `wx.Image`

**class** `wos.GUI` (*parent, title*)

WOS Application Frame

**Parameters**

- **parent** (*wx.Frame*) – Parent frame.
- **title** (*String.*) – Title for the frame

**AlignCenterTop ()**

Aligns frame to Horizontal center and vertical top

**CreateConfig ()**

Creates a config file

**GetIcon (icon)**

Fetches gui icons.

**Parameters** **icon** (*String.*) – The icon file name.

**Return type** `wx.Image`

**HandleFileSend (file)**

Sends a file link to another node

**HideScreens ()**

Hides all screens

**InitScreens ()**

Init's Screens

**InitUI ()**

UI initing

**LoadConfig ()**

Loads a config file or creates one

**MessageHandler (message)**

Message handler for received messages

**Parameters** **message** (an instance of `swnp.Message`) – Received message.

**OnAboutBox (e)**

About dialog

**Parameters** **e** (*Event.*) – GUI Event.

**OnCreateTables (evt)**

Create necessary db tables

**Parameters** **evt** (*Event*) – GUI event.

**OnEvtBtn (evt)**

Event Button handler

**Parameters** **evt** (*Event.*) – GUI Event.

**OnExit (event)**

Exits program

**Parameters** **event** (*Event.*) – GUI Event

**OnIconify (evt)**

Window minimize event handler

**Parameters** **evt** (*Event.*) – GUI Event.

**OnProjectSelected ()**

Project selected event handler

**OnSession (evt)**

Session button pressed

**Parameters** **evt** (*Event*) – GUI Event.

**OnTaskBarActivate** (*evt*)

Taskbar activate event handler

**Parameters** *evt* (*Event.*) – GUI Event.**OnTaskBarClose** (*evt*)

Taskbar close event handler

**Parameters** *evt* (*Event.*) – GUI Event.**OpenProjectDir** (*evt*)

Opens project directory in windows explorer

**Parameters** *evt* (*event.*) – The GUI event.**PaintSelect** (*evt*)

Paints the selection of a node.

---

**Note:** For future use.

---

**Parameters** *evt* (*Event.*) – GUI Event**SelectNode** (*evt*)

Handles the selection of a node, start remote control.

---

**Note:** For future use.

---

**Parameters** *evt* (*Event.*) – GUI Event**SelectProjectDialog** (*evt*)

Select project event handler

**Parameters** *evt* (*Event.*) – GUI Event.**SetCurrentProject** (*project\_id*)

Start current project loop :param project\_id: The project id from database. :type project\_id: Integer.

**SetCurrentSession** (*session\_id*)

Set current session

**Parameters** *session\_id* (*Integer.*) – a session id from database.**SetProjectObserver** ()

Observer for filechanges in project dir

**SetScanObserver** ()

Observer for created files in scanned or taken with camera

**Shift** (*evt*)

Caroussel Shift function

**Parameters** *evt* (*Event.*) – GUI Event.**ShowPreferences** (*evt*)

Preferences dialog event handler

**Parameters** *evt* (*Event.*) – GUI Event.**StartCurrentProject** ()

Start current project loop

**StartCurrentSession** ()

Start current project loop

**SwnpSend** (*node, message*)

Sends a message to the node.

**Parameters**

- **node** (*String.*) – The node for which to send a message.
- **message** (*String.*) – The message.

**UpdateScreens** (*update*)

Called when screens need to be updated and redrawn

**Parameters** **update** (*Boolean.*) – Pubsub needs one param, therefore it is called update.

**class** `wos.INPUT_CAPTURE` (*parent, swnp*)

Thread for capturing input from mouse/keyboard.

**Parameters**

- **parent** (*GUI.*) – Parent instance.
- **swnp** (*swnp.SWNP*) – SWNP instance for sending data to the network.

**OnMouseEvent** (*event*)

WM\_MOUSEFIRST = 0x200

WM\_MOUSEMOVE = 0x200

WM\_LBUTTONDOWN = 0x201

WM\_LBUTTONUP = 0x202

WM\_LBUTTONDBLCLK = 0x203

WM\_RBUTTONDOWN = 0x204

WM\_RBUTTONUP = 0x205

WM\_RBUTTONDBLCLK = 0x206

WM\_MBUTTONDOWN = 0x207

WM\_MBUTTONUP = 0x208

WM\_MBUTTONDBLCLK = 0x209

WM\_MOUSEWHEEL = 0x20A

WM\_MOUSEHWHEEL = 0x20E

**run** ()

Starts the thread.

**stop** ()

Stops the thread.

**class** `wos.MySplashScreen` (*parent=None*)

Create a splash screen widget.

**class** `wos.PreferencesDialog` (*config, evtlist*)

Creates and displays a preferences dialog that allows the user to change some settings.

**Parameters** **config** – a Config object



**loadPreferences** ()  
Load the current preferences and fills the text controls

**onCancel** (*event*)  
Closes the dialog without modifications.  
**Parameters** *event* (*Event.*) – GUI event.

**openConfig** (*event*)  
Closes the dialog without modifications.  
**Parameters** *event* (*Event.*) – GUI event.

**savePreferences** (*event*)  
Save the preferences.  
**Parameters** *event* (*Event.*) – GUI Event.

**class** `wos.ProjectSelectDialog` (*parent*)  
A dialog for selecting a project.  
**Parameters** *parent* (`wx.Frame`) – Parent frame

**AddEvent** (*event*)  
Shows a modal dialog for adding a new project.  
**Parameters** *event* (*Event.*) – GUI Event.

**DelEvent** (*evt*)  
Handles the selection of a project. Starts a `wos.CURRENT_PROJECT`, if necessary. Shows a dialog of the selected project.  
**Parameters** *evt* (*Event.*) – GUI Event.

**EditEvent** (*event*)  
Shows a modal dialog for adding a new project.  
**Parameters** *event* (*Event.*) – GUI Event.

**GetProjects** (*company\_id=1*)  
Fetches all projects from the database, based on the company.  
**Parameters** *company\_id* (*Integer.*) – A company id, the owner of the projects. Defaults to 1.

**SelEvent** (*evt*)  
Handles the selection of a project. Starts a `wos.CURRENT_PROJECT`, if necessary. Shows a dialog of the selected project.  
**Parameters** *evt* (*Event.*) – GUI Event.

**onCancel** (*event*)  
Handles “Cancel” button presses.  
**Parameters** *event* (*Event.*) – GUI Event.

**class** `wos.SEND_FILE_CONTEX_MENU_HANDLER` (*parent, context, send\_file, handle\_file*)  
Thread for OS contex menu actions like file sending to other node.  
**Parameters**

- **context** (*ZeroMQ context.*) – Context for creating sockets.
- **send\_file** (*Function.*) – Sends files.
- **handle\_file** (*Function.*) – Handles files

**run ()**  
Starts the thread

**stop ()**  
Stops the thread

**class** `wos.SysTray` (*parent*)  
Taskbar Icon class

**Parameters** *parent* (`wx.Frame`) – Parent frame

**CreateMenu ()**  
Create systray menu

**ShowMenu (event)**  
Show popup menu

**Parameters** *event* (*Event.*) – GUI event.

**class** `wos.UpdateDialog` (*title, url, \*args, \*\*kwargs*)  
A Dialog which notifies about a software update

**class** `wos.WORKER_THREAD` (*parent*)  
Worker thread for non-UI jobs.

**Parameters**

- **context** (*ZeroMQ context.*) – Context for creating sockets.
- **send\_file** (*Function.*) – Sends files.
- **handle\_file** (*Function.*) – Handles files

**AddProjectReg ()**  
Adds project folder to registry

**AddRegEntry (name, id)**  
Adds a node to registry

**Parameters**

- **name** (*String*) – Node name.
- **id** (*Integer.*) – Node id.

**RemoveAllRegEntries ()**  
Removes all related registry entries

**parseConfig (config)**  
Handles config file settings

---

CHAPTER  
TWO

---

BUGS

Bug	Description	Status
Sample bug	Description for sample	Open / Closed / Will not be fixed



## FEATURES

Feature	Description
Project	User can add, edit and select a project
Session	User can start, end and continue sessions
Event	User can tag an interesting event during a session
File Monitoring	Users' file actions are monitored during a session. It includes opening files.



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22. 1.1

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## USER INTERFACE

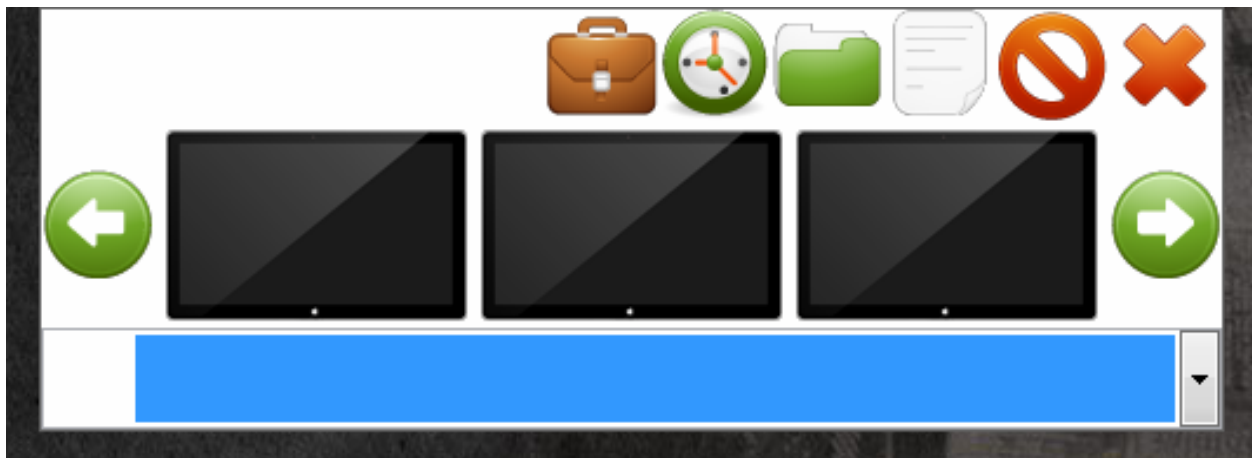


Figure 5.1: The UI of Chimaira; Several icons for different functions.

The screen icons identify different screens nodes. The user can drop files on to these icons, causing the dropped files to be opened in the specific node. The arrows control the carousel of nodes, and are visible only if more than three nodes are connected. The drop-down list in holds recently viewed files in the selected project.

Table 5.1: Icons explained

Icon	Description
Briefcase	Select a project
Clock	Start / End a session
Folder	Open project directory
Note	Create an Event note
Circle	Hide the application
Cross	Exit the application



## INDICES AND TABLES

- *genindex*
- *modindex*
- *search*





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