
DiWaCS Documentation

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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 2013-06-03 at 16:15.

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 (*filepath, project_id*)
Add a file to project. Copies it to the folder and adds a record to database.

Parameters

- **filepath** (*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.

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

Fetches or creates an 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.GetProjectPassword (project_id)`

Returns the project password.

`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.

Todo

Add a limit parameter, currently fetches all files.

Todo

Duplicate check.

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 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.SaveScreen (win, filepath)`

Saves the background image of the desktop.

Parameters

- **win** (*Integer, Integer*) – The windows version tuple of host computer.
- **filepath** (*String*) – The filepath 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.

Returns The path to the file.

Return type String

1.5 Macro module

macro.py defines a few user input functions.

`macro.Click()`

Send a mouse click: LeftButton down, LeftButton up.

`macro.GetPos()`

Return the current position of the mouse.

Returns The position of the mouse.

Return type POINT

`macro.GetSendkeys(code)`

Returns a character for a key code.

Parameters **code** (*Integer*) – The character code.

`macro.Hold()`

Send a mouse hold: LeftButton down.

`macro.Key(event, kcode)`

Used to send a single virtual keycode to the system.

Parameters

- **event** (*wx.Event*) – Captured key event.
- **kcode** (*Integer*) – Keycode.

`macro.MiddleClick()`

Send a mouse middle click: MiddleButton down, MiddleButton up.

`macro.MiddleHold()`

Send a mouse middle click: MiddleButton down.

`macro.MiddleRelease()`

Send a mouse middle click: MiddleButton up.

`macro.Move(x, y)`

Move the cursor for x amount in horizontal direction and y amount in vertical direction.

Parameters

- **x** (*Integer*) – Amount to move in horizontal direction.

- **y** (*Integer*) – Amount to move in vertical direction.

macro.MoveTo (*x, y*)

Move the mouse cursor to point (*x, y*) on screen.

Parameters

- **x** (*Integer*) – X coordinate of the desired position.
- **y** (*Integer*) – Y coordinate of the desired position.

class macro.POINT

Stores the *x* and *y* components of coordinates.

Attribute x *c_ulong*

Attribute y *c_ulong*

macro.Release ()

Send a mouse release: LeftButton up.

macro.RightClick ()

Send a mouse right click: RightButton down, RightButton up.

macro.RightHold ()

Send a mouse right hold: RightButton down.

macro.RightRelease ()

Send a mouse right release: RightButton up.

macro.SendInput (*intype, data, flags, scan=0, mouse_data=0*)

SendInput sends virtual user input.

Parameters

- **intype** (*String*) – Input type, either ‘m’ for mouse input or ‘k’ for keyboard input.
- **data** (*Integer or (Integer, Integer).*) – Input data, keycode to input or a tuple of (*x, y*) for mouse.
- **flags** (*Integer*) – Input flags, used to separate keyup and keydown events.
- **scan** (*Integer*) – Input scancode. More info in: <http://en.wikipedia.org/wiki/Scancode>
- **mouse_data** (*Integer*) – Represents additional information about mouse events for example wheel amount.

macro.Slide (*x, y*)

Slide the mouse for *x* amount in horizontal direction and *y* amount in vertical direction.

Parameters

- **x** (*Integer*) – The amount to slide in horizontal direction.
- **y** (*Integer*) – The amount to slide in vertical direction.

macro.SlideTo (*x, y, speed=0*)

Slides the mouse to point (*x, y*)

Parameters

- **x** (*Integer*) – The target X coordinate.
- **y** (*Integer*) – The target Y coordinate.
- **speed** (*String*) – The speed of motion ‘slow’ or ‘fast’, default 0.

1.6 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.

1.7 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.

Returns Initializes a message from JSON object.

Return type `swnp.Message`.

static `to_dict` (*msg*)

Return a message in a dict.

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

Returns Dictionary representation of 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.

Warning: Only one instance per computer

Parameters

- **pgm_group** (*Integer*) – The Multicast Group this node wants to be a part of.
- **screens** (*Integer*) – The number of visible screens. Defaults to 0.
- **name** (*String*) – The name of the instance.
- **id** (*Integer*) – ID of the instance.
- **context** (`zmq.Context`) – ZeroMQ context to use.
- **error_handler** (`wos.CONN_ERR_TH`) – Error handler for the init constructor.

StartSubRoutine (*target, routine, name, args*)

A wrapper for starting up subroutine threads.

Parameters

- **target** (`threading.Thread`) – Variable that contains the current thread for routine.
- **routine** – The routine to run.
- **name** (*String*) – Name of the routine.
- **args** (*List*) – Arguments for the routine.

Returns The thread of subroutine.

Return type `threading.Thread`

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_urls, unused_context*)

Subscriber routine for the node ID.

Parameters

- **sub_urls** (*List of Strings*) – Subscribing URLs.
- **context** (`zmq.core.context.Context`) – ZeroMQ context for message sending.

sub_routine_sys (*sub_urls, unused_context*)

Subscriber routine for the node ID.

Parameters

- **sub_urls** (*List of Strings*) – Subscribing URLs.

- **context** (`zmq.core.context.Context`) – ZeroMQ context for message sending.

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.

`swnp.testStorageConnection` ()
Try to access StorageProjects

Returns Does the path exist.

Return type Boolean

1.8 Utils module

Created on 17.5.2013

`utils.CheckProjectPassword` (*project_id*, *password*)
Compares the the provided password with the project password.

`utils.DottedIPToInt` (*dotted_ip*)
Transforms a dotted IP address to Integer.

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

Returns The IP address.

Return type Integer

`utils.GetEncryptedDirName` (*name*, *hashed_password*)
Returns the encrypted name for project directory.

`utils.GetLANMachines` (*lan_ip*)

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

Returns lan machines

Return type string[]

`utils.GetLocalIPAddress` (*target*)
Used to get local Internet Protocol address.

Returns The current IP address.

Return type string

`utils.GetMacForIp` (*ip*)
Returns the mac address for an local IP address.

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

`utils.HashPassword` (*password*)
Hashes the provided password.

`utils.IntToDottedIP` (*intip*)
Transforms an Integer IP address to dotted representation.

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

Returns The IP

Return type string

`utils.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.

`utils.MapNetworkShare (letter, share=None)`

Maps the network share to a letter.

Parameters

- **letter** (*String*.) – The letter for which to map.
- **share** (*String*) – The network share, defaults to None which unmaps the letter.

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. By convention AudioRecorder is usually written in mixedcase although we prefer uppercase for threading types.

Parameters **parent** (`threading.Thread`) – Parent of the thread.

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.BlackOverlay (pos, size, parent)`

Create a frame, size is full display size, `wx.DisplaySize()` gives width, height tuple of display screen.

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 DiWaCS 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

exception *wos*.**CloseError** (**args, **kws*)
Class describing an error while closing application.

class *wos*.**ConnectionErrorDialog** (*parent*)
Create a connection error dialog that informs the user about reconnection attempts made by the software.

class *wos*.**CreateProjectDialog** (*parent*)
A dialog for project creation.

class *wos*.**DeleteProjectDialog** (*parent, title, project_id*)
A dialog for deleting project.

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 (*filename*)
Sends a file link to another node.

HideScreens ()
Hides all screens.

InitScreens ()
Inits 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 (*unused_event*)
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 (*unused_event*)
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 (unused_event)

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.

Parameters *project_id (Integer)* – The project id from database.

SetCurrentSession (session_id)

Set current session.

Parameters *session_id (Integer)* – a session id from database.

SetProjectObserver ()

Observer for filechanges in project directory.

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.

OnKeyboardEvent (*event*)

Called when keyboard events are received.

OnMouseEvent (*event*)

Called when mouse events are received.

`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 (unused_event)
    Closes the dialog without modifications.

    Parameters event (Event) – GUI event.

openConfig (unused_event)
    Opens config file.

    Parameters event (Event) – GUI event.

savePreferences (event)
    Save the preferences.

    Parameters event (Event) – GUI Event.

class wos.ProjectAuthenticationDialog (parent, title, project_id)
    A dialog for project authentication.

class wos.ProjectSelectDialog (parent)
    A dialog for selecting a project.

    Parameters parent (wx.Frame) – Parent frame.

AddEvent (unused_event)
    Shows a modal dialog for adding a new project.

    Parameters event (Event) – GUI Event.

DelEvent (unused_event)
    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 (unused_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.

SelEvent (unused_event)
    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 (*unused_event*)

Handles “Cancel” button presses.

Parameters *event (Event)* – GUI Event.

class `wos.ProjectSelectedDialog` (*parent, title, project_id*)

A dialog for project selection confirmation.

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** (`zmq.Context`) – ZeroMQ Context for creating sockets.
- **send_file** (*Function*) – Sends files.
- **handle_file** (*Function*) – Handles files.

run ()

Starts the thread

stop ()

Stops the thread

`wos.SetLoggerLevel` (*level*)

Used to set `wos_logger` level.

Parameters *level (Integer)* – The level desired.

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. Contains the URL which the user can click on.

Parameters

- **title** (*String*) – Title of the dialog.
- **url** (*String*) – URL of the update.

class `wos.WORKER_THREAD` (*parent*)

Worker thread for non-UI jobs.

Parameters

- **context** (`zmq.Context`) – ZeroMQ Context for creating sockets.
- **send_file** (*Function*) – Sends files.
- **handle_file** (*Function*) – Handles files

AddProjectReg (*reg_type*)

Adds “Add to project” context menu item to registry. The item will be added to Software-Classes<reg_type>, where <reg_type> can be e.g. ‘*’ for all files or ‘Folder’ for folders.

Parameters **reg_type** (*String*) – Registry type.

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.

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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USER INTERFACE

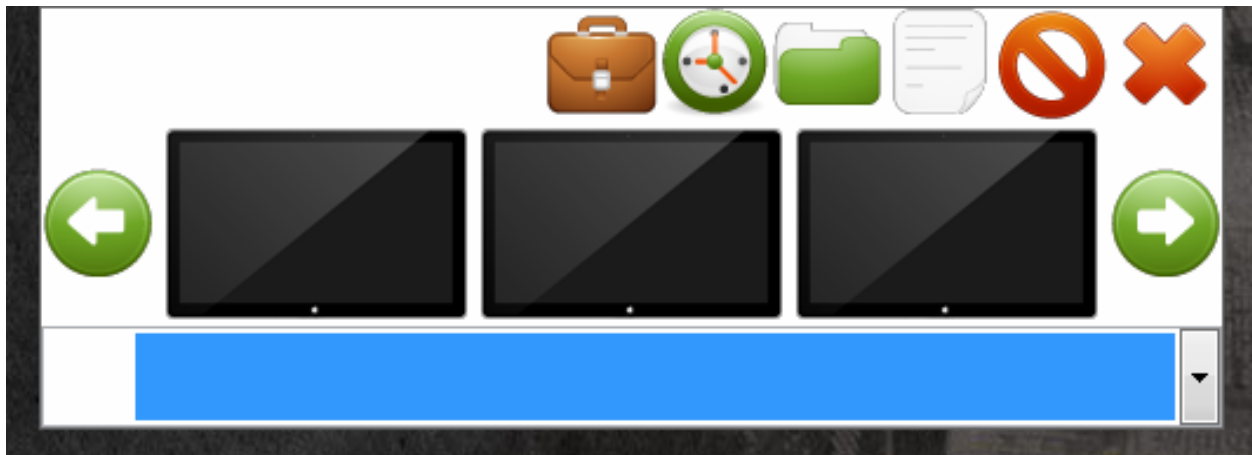


Figure 5.1: The UI of DiWaCS; Several icons for different functions.

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

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- *modindex*
- *search*

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