User guide
EVO (ver. 2.6)

http://evo.caltech.edu

Content

1. STARTING

1.1 MINIMAL REQUIREMENTS

To run EVO properly, your PC needs to fulfill certain minimum hardware requirements, especially if you intend to send/receive video/audio with good quality and interactivity:

- Intel PC: Pentium 4 1,5 GHz, 512 MB RAM (minimum) or 1Gb RAM (recommended)
- Macintosh with PowerPC processor: 1 GHz, 512 MB RAM (minimum) or 1Gb RAM (recommended)
- Macintosh with Intel processor: 512 MB RAM (minimum) or 1Gb RAM (recommended)

EVO is a Java application, and needs to have the Java virtual machine installed on the PC from which it will be run. Version 1.5 and upward is supported by EVO.

- Go to the Java website at http://java.com
- Click on **Verify installation** to make sure that java is installed or to get the newest version of Java
- If you don't have it or want the newest version (recommended), click on **Download** to get it

1.2 REGISTER TO EVO

Before you can start any EVO meeting session, you have to register to get your login and password.

      a.   From EVO website(http://evo.caltech.edu), select your language on top-right menu.

b. Click on "Register" to become an EVO user.

c. Enter all your details. Click on "SUBMIT".

d. You may upload a picture of yourself after successful registration.

e. **You will receive email to your mailbox shortly after clicking on "**SUBMIT**", with a link to activate your account. If you don't receive the email, check in your spam folder or/and contact the EVO support.**

1.3 LOGIN TO EVO

a. From the EVO site, click on "Start" to launch the **KOALA** application (EVO Client). The **KOALA** client will be automatically downloaded as well as all the necessary components. Please wait, this process can take few minutes. (Note that (1) you must accept digital signature of Koala and (2) the automatic download will occur for any further update of EVO components).

b. A Login window will appear.

c. Enter your login name and password and hit enter or click on "OK".

d. First time users may register by clicking the link "Need to register?" (See. Section 1.2 Register for EVO).

e. If you are already a user and have forgotten your password, click on "Forgot your password?" Enter your registered e-mail address. A new password will be sent to you via e-mail.

1.4 FIRST TIME USER

In EVO, we created the concept of communities which regroup people working in the same project or with the same interest (pretty much like a news group). Every new user belongs automatically by default to the **Universe** community and so is able to enter to ongoing meetings and make booking related to this community. You may change the language in the top-right corner of the Koala window.

1.4.1 Choosing communities

You may not belong to any communities when you first started, so you won't be able to join any of the meetings until you add some into your "My EVO Communities"

    a. If you want to register to more communities, you have to click on button "other EVO communities"; this will open other window for choosing community.

Add community

    b. Select the communities you prefer from the list on the left panel. Click on "+" to expand a list of communities under the community category.
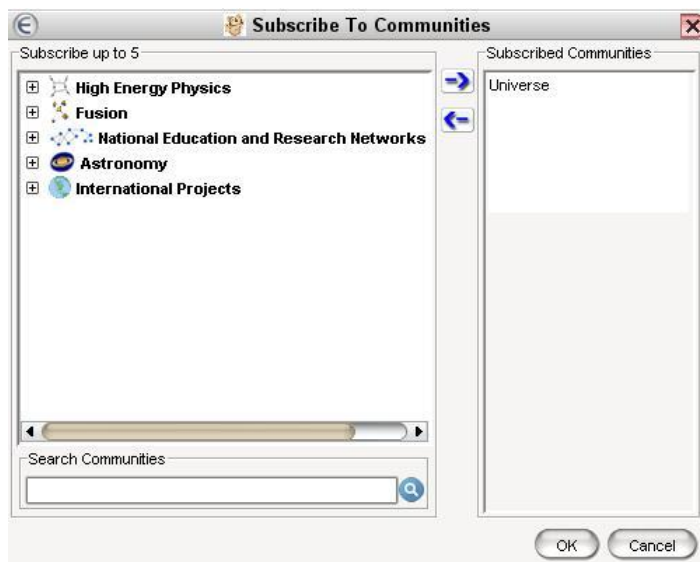
c. Click on the right arrow (or double click) to bring your selection to the "Subscribed Communities" list on the right. Note: You can add maximum 5 communities. Click on "OK" to close the window.

d. The selected communities will appear under your "My EVO Communities" in your EVO environment tree. (You may add or delete communities from your list at any time)

1.4.2 Menu

The menu bar items control system-wide behavior. (**Koala, Call, Bookings, Configuration, Search**. For more details, please see section 3[1])

1.4.3 Language

The 🦅 pull down menu on the top right corner allows selection of a number of different languages for KOALA's graphical user interface.

1.4.4 Connection info

The Connection display on the bottom left corner shows the EVO server (called Panda) to which the Koala client is currently connected.

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[1] If your prefered language is not displayed and would like to provide a translation, please contact the EVO team.

1.4.5   Time zones

The Time Zone on the bottom right corner shows the current time. Clicking on the ⊕ icon will allow you to change the time zone.

2. HOW TO COMMUNICATE WITH EVO SYSTEM

The EVO client interface is provided by the KOALA application, which runs after every login to EVO (see 1.2). The window of this application is divided into three parts A, B, C.
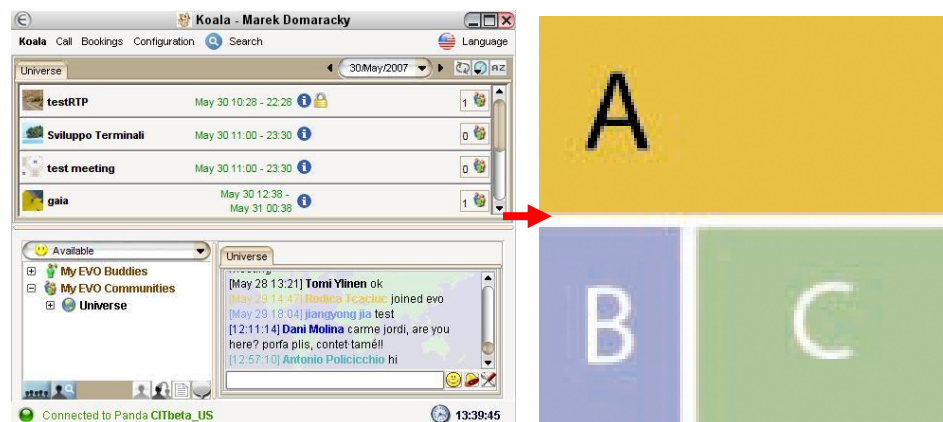
A: The Meeting space:
  a. This is the major stage where most of the activities take place.
  b. Overview of the ongoing meetings taking place in all communities in which you are subscribed.
  c. Once you enter in a meeting, you'll see all the other participants of the current meeting in this area.

B: The Environment of your contacts and communities:
  a. The Environment is a tree view structure that shows information (presence status, idle time...) about other online participants in your communities.

C: The Chat area:
  a. Ongoing group chat support for communities, meetings and also private chat between individuals.

Note that keeping the mouse cursor over an icon button will display a tip in the selected language.

2.1 THE ENVIRONMENT OF YOUR CONTACTS AND COMMUNITIES

In this area, you can get information about other participants. Moving mouse cursor over a participant, gives you more detailed information about him (presence, meeting...).

My EVO Buddies shows your selected Buddies information at all the time.

You may open any of the communities from My EVO Communities to see the current presence information of the participating users.

a. You can set your presence information with preset status (Available, Away, Busy, at Lunch) or Customize a message via the pull down menu on top of the panel.

b. The buttons on the bottom allow you to initiate actions for the "Buddies" or "Community":

1. Other **EVO Community** - Search and subscribe/unsubscribe to communities. For more details please see section 1.3.

2. **Search for Users** – Search and add to "My Buddies" list. For more details see section 3.4.

3. To interact with another user, select his/her icon from the list. You can then use the following functions (from left to right):

   o Add/Delete Buddy to/from list of My EVO Buddies.

   o Invitation to meeting. If you are in the meeting, you will invite him to this meeting; otherwise, you will meet in private meeting, where no one else has access.

   o Send file.

   o Start private chat.

2.2 CHAT

The bottom right panel shows you the ongoing public **CHAT** communication inside the community, meeting or private chat between participants. Each community or meeting has its own chat. Clicking on the tab labeled with community/meeting name, will activate the corresponding chat.

Place for typing

a. Enter the text on the bottom field to write chat messages and type on *Return/Enter* key to send it.
b. Select from 😊 **Smiley** the pull down menu to select emoticons.
c. The 🔔 icon shakes the window to call for attention from the other participants.
d. ✂ icon controls settings within the chat panel such as: Beep, text size, etc

2.3 ENTERING A MEETING

As soon as you log in EVO, KOALA will show the list of ongoing meetings in selected community. On the left, you can see name of the meeting and on the right side, you can see the number of participants in the meeting. If you click on letter "i", you will get detail information about meeting. To join a meeting, just click on it. If you want to join a meeting in another community, click firstly on the tab with the community name and then on the meeting.

Sort the meeting by title

Sort the meeting by time

Show all day's meetings

Ongoing meetings

2.3.1 Ongoing meeting

After entering into a meeting, the top part of KOALA will display the **ongoing meeting** window. The Icons with participants will always show up, even if the user is not sending audio/video.

Click with the left mouse button on user's icon.
(for instance to add a Moderator).

a. Clicking with the left mouse button on user's icon will allow you to choose one of the following options (respectively): : start a private chat with selected user, send a file to a user, add him to your buddy list and to make private audio chat inside the meeting:

Your private audio conference will not be heard by other users in the meeting, but at the same time you still have the possibility to hear and see other participants.

b. The user that made reservation for the meeting, will become automatically moderator and has additional options : mute audio/video of selected user, kick a user off the meeting and allow a user to become moderator.

c. Buttons for quick **VIDEO control:** turn on and off transmitting video from your camera and display video from other user's.

d. Buttons for quick **AUDIO control:** turn on and off microphone and speakers. 2 gradient columns are present for audio leveling both of outgoing and incoming audio.

e. **ATTENTION:** buttons for quick control (a. c. and d.) works only for the default videoconference client EVO Tools (ViEVO, JRAT, EVOWB)[2].

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[2] ViEVO is the EVO video tool, JRAT is the EVO audio tool and EVOWB is the whiteboard.

f. **Leave this meeting** will make you leave the meeting and return to the previous view. You'll be able to enter other meetings from there.

2.3.2 Whiteboard

The Whiteboard is an application which allows users in the meeting to share a drawing area. The button for activation is on the bottom panel of the ongoing meeting. The button means that the whiteboard is not started.
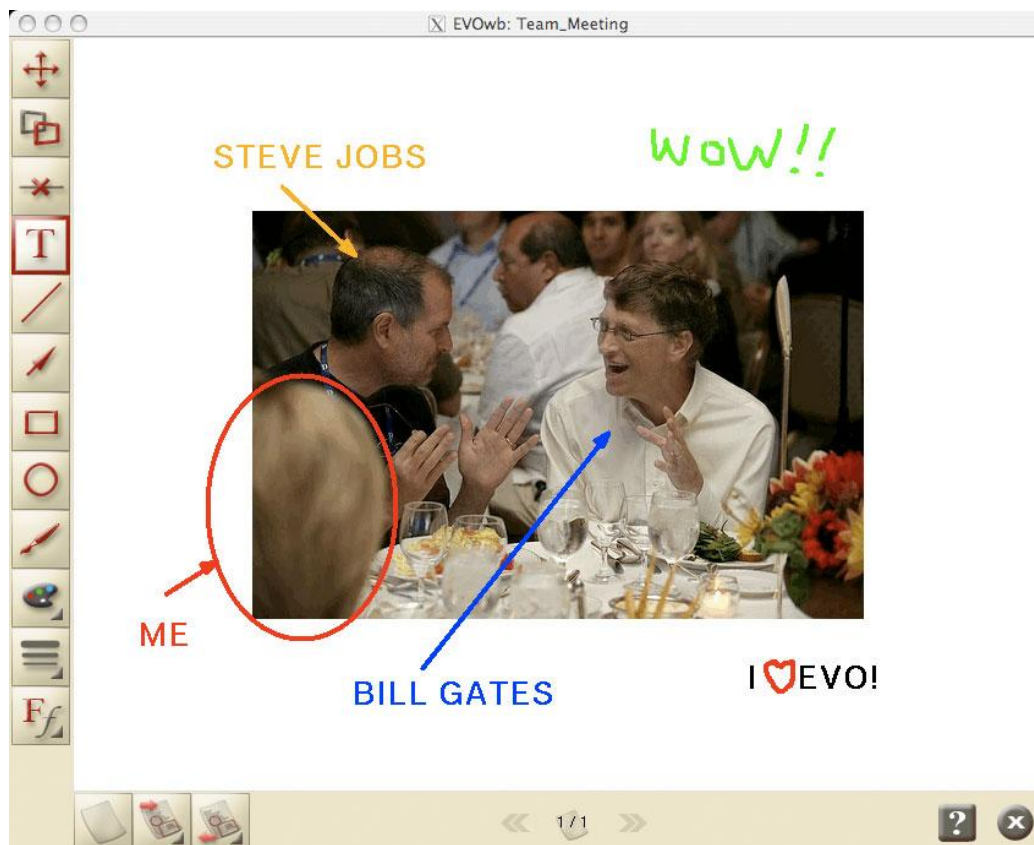
The Whiteboard allows you to draw simple shapes, write text, deleting objects, move objects, insert pictures from your local disk, insert your desktop screenshot and save of pages to your local disk for later usage.

2.3.3 Record and Playback functions

Recording

EVO has built-in functions for recording meetings or playing back previously recorded ones. You can click on the record button ⬜ on the top of Koala interface and a new window with Record/Playback control and settings will appear.

a. First, enter the name of the file. By default Koala will write all files to "EVO Recorded Streams" directory, but you can change it by clicking on 📁 button.

b. You may start recording by clicking on the record button ⬤. A flashing red indicator appears in this button to remind you that meeting is being recorded.

c. You may insert some marks by clicking on the mark button 🕐. Inserting marks into your recording will allow you to get faster access to important parts of the recording during the playback.

d. You have also the possibility to pause or stop the recording. Note that when you hit the stop button, you need to enter a new filename, which is not the case when you hit the pause button.

e. You can choose in real time which type of media you want for your recording/playback. Click on "Medias" tab in the main EVO Record/Playback window and check/uncheck the media type.

Playback

a. You can play back recorded meetings by clicking on "Player" tab in Recording/Playback window.

Type of playback

Jump to previous mark

timeline

Pause   Stop   Play

Open file

Jump to next mark
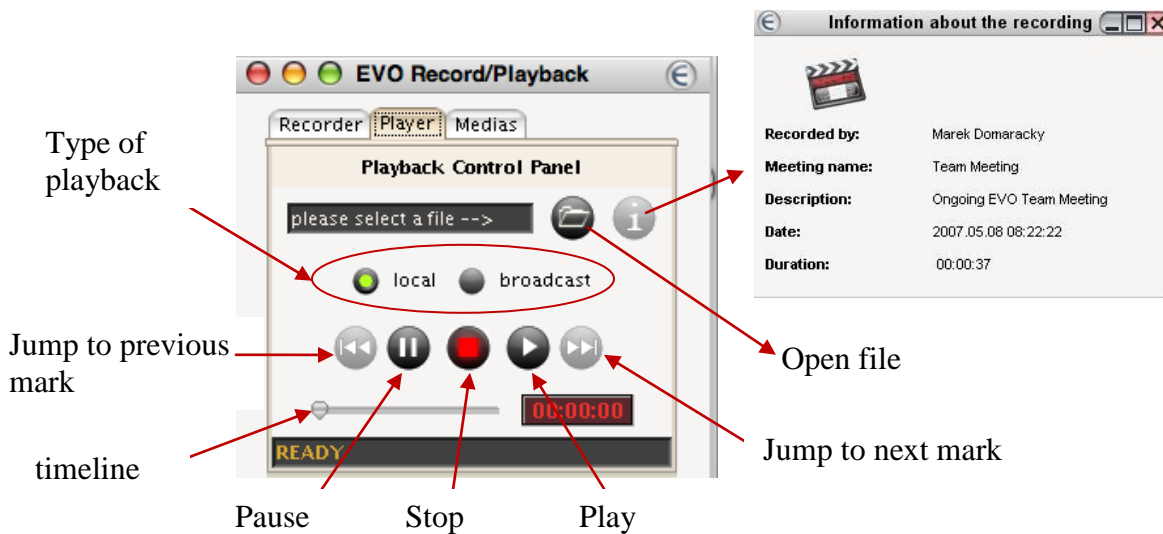
b. Firstly select which file you want to playback. You can select only files with .evo extension. Choose the file and click on "Open".

c. In the main window, you can select local playback or you can broadcast the recorded meeting to other users inside a meeting.

Note: You should not broadcast a recorded sample clip into the same ongoing session that has been recorded. If you do so, then you may experiment some weird video and audio effect.

2.3.4 Audio/Video (AV) Controls

The controls for Video/Audio are found in **AV Controls tab**.

Video
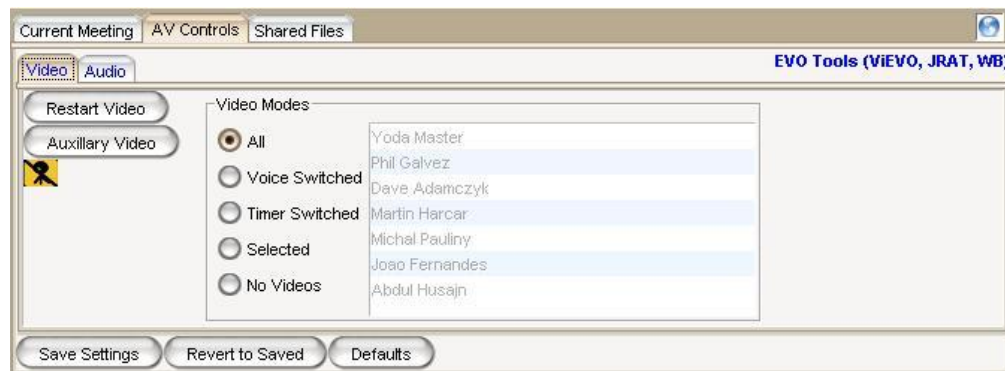
a. Click on "Restart Video" to resume ViEVO video application if there is a problem or if you have previously shut it down.

b. "Auxiliary Video" will start up a second instance of ViEVO. You can set it to a second source other than the camera that is pointing at you (e.g. you can share your desktop).

c. You can start/stop transmission using the Camera icon.

d. Video Modes: here you can choose which video streams you receive from network. If your location has a low bandwidth, you can reduce the incoming network traffic by decreasing the number of received video streams. You can choose "All", to receive all video streams, video only from Speaker or choose from list of participants (with CTRL + mouse).

Audio
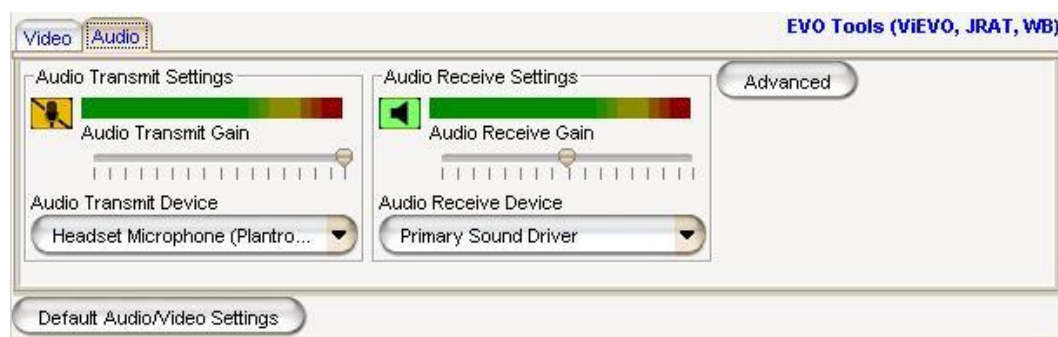
a. Click on the icon to set the audio function On/ Off.

b. Control the volume with the Playback/Record Gain sliding bar.

c. You can select a different audio device to transmit or receive from the 2 pull down menus. You may want to do this if you don't hear the remote participants or if you don't see any activity in the view meter when you are talking.

d. You may monitor the volume on the meters: your volume should be within the green zone for a correct audio quality.

e. You can select the "Advanced" button to set some additional settings.

- If your network connection has a low bandwidth, you can change the "Audio Transmit Quality" to reduce bandwidth used by your audio
- Disabling "Transmit Silence Suppression" will send audio at all the time even if you are not speaking. If enabled, one can change the threshold under which one will not send audio
- "Transmit Auto Gain Control (AGC)" will automatically adjust your Transmit volume.
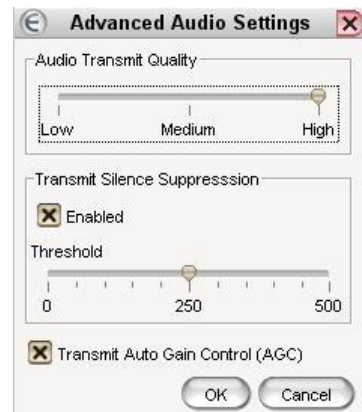
f. "Default Audio/Video Settings": It will switch back to the default system setting. Note that every setting changes are saved when you leave the meeting. When you launch Koala next time or join a new meeting, your saved settings will be set automatically.

2.3.5 Shared files

a. To upload a file: Click "⬆ Upload a file" button and select the file to send from the file browser.

b. To download a file: Select the desired file from this space and click "⬇Download the file". The file will be downloaded to the default destination folder labeled "DownloadedByEVO" or alternatively the one that previously set via "Preferences".

c. To delete a file, select it and click "✖ Delete the file" button.

d. " Preferences".

- Click "downloaded files" to open up the folder where you can find the downloaded files.
- Click "Set the destination folder" to change the destination where you would like to have you downloaded files stored.
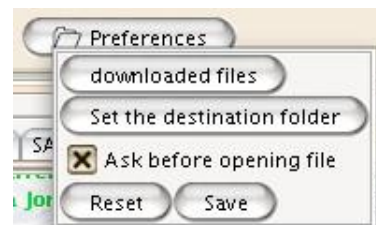
- Uncheck "Ask before opening file" if you prefer to have any download file to be opened automatically after downloading.

3. EVO System functions

3.1 KOALA MENU

3.1.1 About Koala
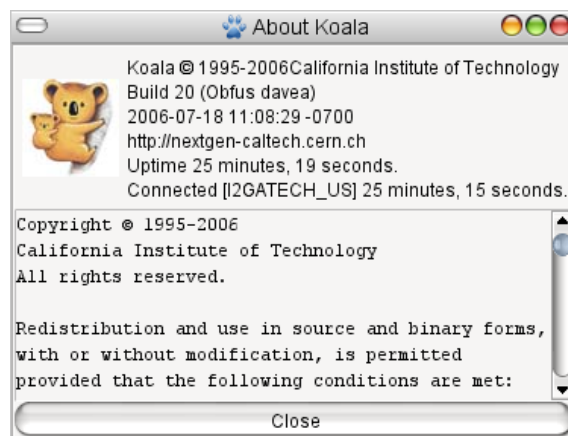
3.1.2 ⬤ Koala Monitoring
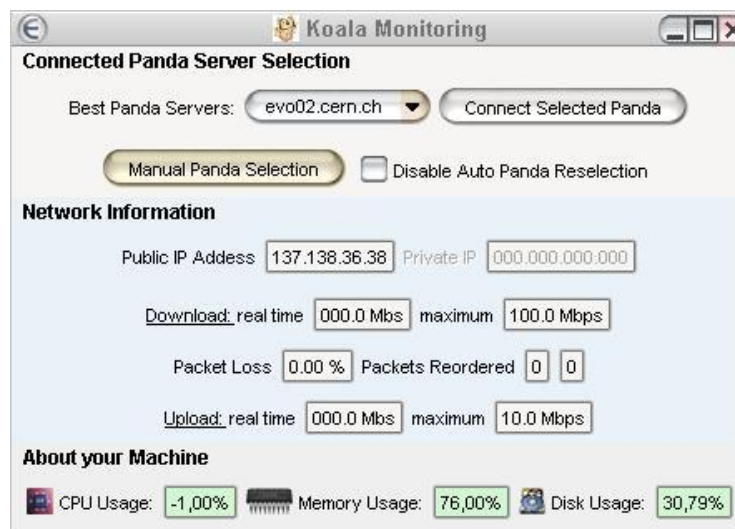
a. Select from the pull down menu one of the three "Best Panda Servers" and click "Connect Selected Panda". This allows for the manual overriding of the PANDA server selection from the previous selected one.

    b. If you want to connect to the different panda, then "Best Panda Servers", you may click on "Manual Panda Selection" and choose one from the list, as depicted below.

    c. "Disable Auto Panda Reselection" will not allow Koala to connect to another Panda with a better connectivity.

| Region	Country	City	Panda
Europe	United Kingdom	Manchester	UKERNA1_UK
Europe	United Kingdom	Manchester	UKERNA_UK
Middle East	Saudi Arabia	Riyadh	ISU02_SA
Middle East	Saudi Arabia	Riyadh	ISU01_SA
North America	USA	Chicago	ChicagoSL_US
North America	USA	Pasadena	EVO2_US
North America	USA	Pasadena	CITbeta_US
Oceania	New Zealand	Auckland	Auckland_NZ
Oceania	New Zealand	Auckland	BeSTGRID_NZ

Red Panda name indicates restricted (inside firewall, etc.)

    d. "Network Information" displays the Public IP Address, testing your internet connection and shows packet loss.

    e. The part "About your Machine" displays and monitors your PC network, CPU usage and disk.

3.1.3 Reset window Position

To set Koala window to default position.

3.1.4 Documentation

To open documentation in your browser.

3.1.5 Exit

To exit the KOALA client software.

3.2 BOOKINGS MENU

3.2.1 Start an Ad Hoc Meeting:

The meeting starts immediately and it is set by default to last for 8 hours and you enter to meeting automatically using your preferred videoconferencing client. The meeting information is broadcast to all the other members of the community so there are able to join the meeting via a simple click. When the system detects that there are no participants for more than 20 seconds (after the initial 10mn) then it closes the meeting automatically.

a. Enter name on "Meeting Title".
b. Enter additional information in "Meeting Description".
c. Enter Password (Optional).
d. Select which community you want the meeting to belong to by using the pull down menu.

3.2.2 Book a meeting

Booked meetings start at a time in the future, they cannot be backdated.

a. Select the community from the pull down menu
b. Enter meeting name in the "Title".
c. Enter additional info in the field "Meeting Description"

    d. Enter the meeting password (optional)
    e. Enter meeting starting date and time with the pull down menu at " From"
    f. Select meeting ending date and time with the pull down menu at "To".

Check the "Recurrence" box if you want the meeting to be repeated in a regular time interval. Checking this box will bring up the options associated with the "Occurs" option.

WEEKLY:
    a. Click on the "Weekly" radio button
    b. Then select the day/s of the week that you want the meeting to occur
    c. "Repeat for" – Enter total number of meetings scheduled.

BY DAY:
    a. Click on the "By Day" button
    b. "Every" – Enter the number of days between meetings
    c. "Repeat for" – Enter total number of meetings scheduled.

3.2.3 Edit current Meeting (Grayed out -unavailable)

    a. This function is only available during and from an ongoing meeting session
    b. Only the creator of the meeting has the privilege to edit the current meeting, (e.g. extending the meeting time).

Note: If the system detects that the meeting reaches its ending time but there is still participants connected then it will extend the meeting by half and hour slots up to one hour maximum.

3.3 CALL MENU

In EVO, it is possible to call any H323 or SIP client directly from Koala. You have 2 options to invite a remote participant to a meeting: (1) to make a call from inside the meeting to invite him/her into this particular meeting or (2) to make the call without joining a meeting. In the latter case, the system will automatically create a Private Meeting.
In the Koala menu choose "Call" and then choose the type of call you want to initiate: H.323 or SIP, or select the recent call list menu for quick call set-up.

3.3.1   H323 Call

You may call any H323[3] hardware device (e.g. Polycom, Tandberg, Aethra, etc.) or H323 software clients (Ekiga, Xmeeting VCON, etc.). Click on "Call" and then on "H323"; then, a new window will appear:
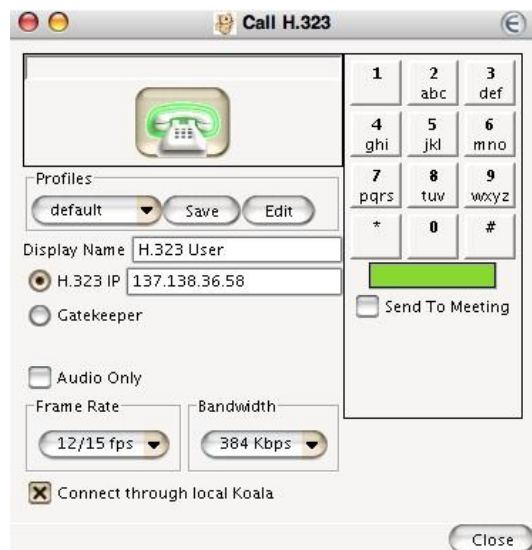
"Profiles"

    a. You may have several profiles stored, so you don't need to type all the parameters every time. To create a new profile, click on the "Edit" button, choose "New" and type the name. Select your new profile from the roll out menu ⟨ default ▾ ⟩ and fill in the parameters; hit "Save" button.

"Display Name"

    b. The call is shown in Koala as another participant. The name which you type in this field will appear as the name of this participant.

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[3] The H.323 standard provides a foundation for audio, video, and data communications across IP-based networks (see at: http://www.protocols.com/pbook/h323.htm)

"H.323 IP"

      c. Type your H.323 client's IP address in the field if you want to make a direct call using the IP address of the remote client.

"Gatekeeper"

      d. If your machine is registered on a Gatekeeper enter the "Alias of your H323 client"@"IP address of the Gatekeeper".

"Audio only" will only send and receive only audio.
"Frame Rate" will define the maximum frame rate of your video.
"Bandwidth" represents the maximum bandwidth that you will send to the other participants.

"Connect through local Koala"

      f. If you are behind firewall for example, you may want to check this option, as the call will be established from your PC instead of the Panda server to which you are connected, so the call will be made within your network.

As soon as you finish filling all the necessary information, hit the call button to make a call. If you want to cancel the call, hit hang up button.

      g. In EVO you can connect both H.323 stand-alone clients or bridge a meeting in a H.323 MCU (H.323 Multipoint systems such as for example the ESNET video service). In this case, you may send DMTF tones. This can be useful, since it allows you to operate the video layout display (works with Codian MCUs) and send commands to the MCU, to create an Ad-Hoc meeting with password, etc.
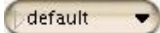
      h. Usually you don't want other participants to hear the DTMF tones, especially when you are sending a password or other codes. Uncheck "Send To Meeting" to disable sending these tones to the meeting. If the device is not connected using "Connect through local Koala" option, the only way to send the tones to H.323 client is to check "Send To Meeting".

3.3.2 SIP Call

If you want to make a SIP[4] call protocol call it via Koala. Click on "Call" and then on "SIP". A new window will appear:
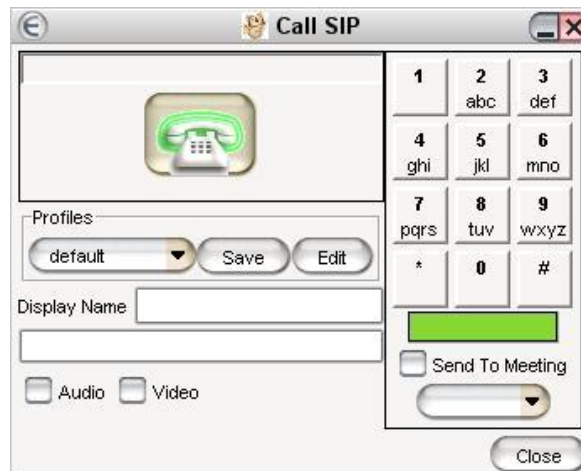
"Profiles"

a. You may have several profiles stored, so you don't need to type all the parameters every time. To create a new profile, click on "Edit" button, choose "New" and type the name. Select your new profile from the roll out menu `default ▼` and fill all the parameters; hit "Save" button.

"Display Name"

b. The call is shown in Koala as another participant. The name which you type in this field will appear as the name of this participant.

c. In the field below the "Display Name" type: "Name"@"IP of your SIP client"

"Audio" is used to send and receive only audio.
"Video" is used to send and receive only video.

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[4] "The Session Initiation Protocol (SIP) is an application-layer control (signaling) protocol for creating, modifying, and terminating sessions with one or more participants (see at http://en.wikipedia.org/wiki/Session_Initiation_Protocol)

As soon as you have filled in all the necessary information, hit the call button ![call button] to make a call. If you want to cancel the call, hit the hang up ![hang up button] button.

> **d.** In EVO when you connect to a SIP client, it may be useful to send DMTF tones to the meeting. Check ''Send To Meeting'' to enable sending these tones. The other meeting participants will hear the tones. Default/In Band/SIP Info: These are the type of "tones" that can be generated.

"In Band"

> **e.** This means the tones are sent in the audio band or audible tones like you hear on the phone.

"SIP Info"

> **f.** This is a SIP INFO message that includes the frequencies and duration of the sounds. If you send this to a bridge device it may actually generate the tones to send on telephone lines. You can also then hear the tones.

"Default"

> **g.** This option tries to use the type of tones that was setup randomly at the start of the call. In the SIP call setup, it is supposed to be some indication of which tone type the device will accept in-band or SIP Info.

3.4 CONFIGURATION MENU

3.4.1 My Video Conference client

Here you can choose your videoconference client, which will start when you enter the meeting. After the first start of Koala, the default clients **EVO Tools, EVO SIP** and **EVO H.323** will be automatically installed on your PC. Depending on which tool is selected, the panel on the right will show the settings associated to the specific tool.

3.4.2 Show plugins

EVO allows a great flexibility in its collaboration tools. Users who use different tools can collaborate with each other using EVO as the mediating interface. The array of tools that work with EVO is shown as a list of Plugins, which are downloaded automatically when EVO is first installed.
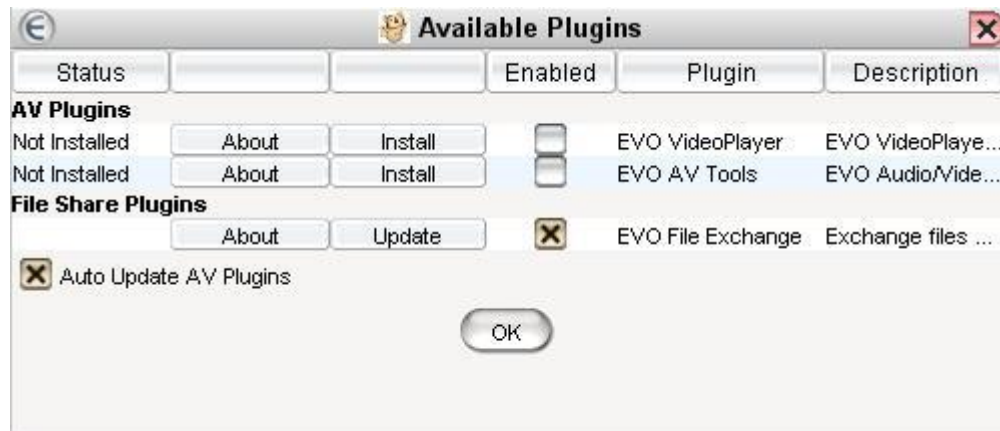
a. Click "Update" for the latest version of the plugin.
b. Click "Install" to install the plug-in.
c. Check the "Auto Update AV Plugins" to allow Koala to always update the latest plugins when you start Koala.

3.4.3 Preferences...

"Presence"
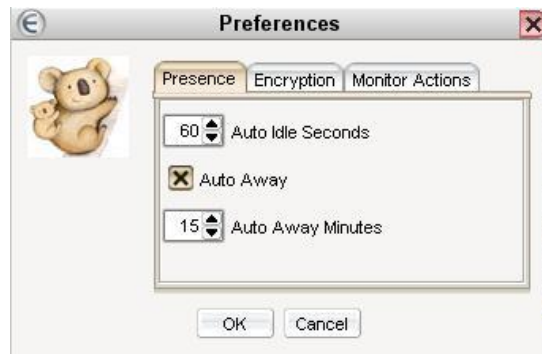
"Presence" controls the icons that indicate your current status at the "Environment" view at the main EVO window.

   a. Set the time before going Idle in seconds.
   b. Check "Auto Away" to turn on the "Away" icon after certain time has elapsed.

"Encryption"
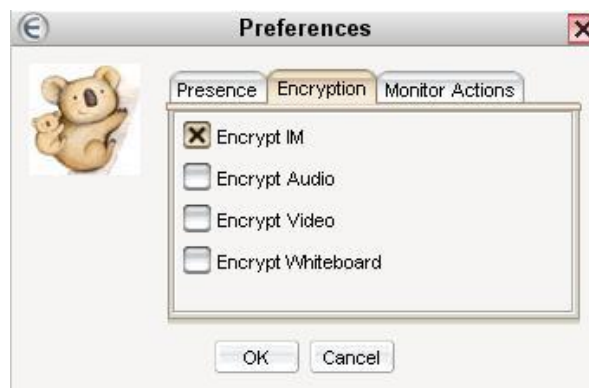
Encryption is available for IM, Audio, Video and Whiteboard. (Note: Turning off encryption allows you to decrease the load on your computer).

„Monitoring"
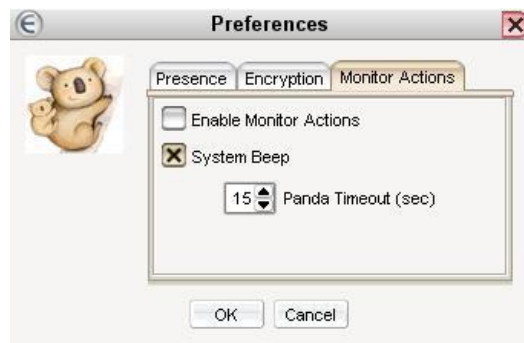
a. Check "Enable Monitor Actions" to allow Koala to monitor the system and dynamically adjust the transmit and receiving setting (i.e. reduce the video bandwidth sent, reduce the number of video streams received, etc...) in function of the local system behavior (CPU load, packet loss, ...) whenever the resource are insufficient.

b. Check "System Beep" to turn on the alarm. Any time when a shortage of system resource is detected by Koala (as described above), it will produce a short beeping noise in regular interval.

c. Panda Timeout value corresponds to the time Koala has to wait when it lost the connection to its panda node before to try to connect to an alternative one.

3.5 SEARCH MENU

SEARCH allows a user to locate specific meeting or particular individual within the EVO universe.

"Looking for someone? "

a. Enter name (first, last or partial) and hit "Search". A list of matching names will appear on the left panel.
b. Clicking on any contact name will bring up   detailed information about the chosen contact, on the right panel
c. Click on "Add to my Buddies List" will include the user into your "my Buddies" list within the Environment/ Tree view.
d. Click on "Start Chat" to initiate a chat session with the selected user in the chat panel of the main window
e. Click "Close" to close the Search

"Search for meetings"

Search meetings by different criteria.

a. Select the range of date/s from the pull down menu.
b. Select the communities involved from the pull down menu.
c. Check the "Filter Title" box to filter the meetings by entering the full or partial meeting name.
d. Hit "search" button
e. The matching results will appear as a list on the lower half of the window.
f. These results can be sorted by Title, Time, or Community
g. Click "Export" to save the list of meeting to an iCalendar .ics file. Then it will be ready to be imported into the most popular calendar software tools. .
h. Click on any ongoing meetings to enter that specific meeting
i. To find out more about a meeting, click on the blue "I" info icon
j. Click "Close" to close the Search

Appendix A: ViEVO video client

ViEVO is a pure software-based video codec tool. It is used whenever you enter into a meeting. The ViEVO window co-exists independently of the EVO KOALA client window as shown below.

1. MAIN INTERFACE

a. When no one is sending video, you will see the message "no video signal"

b. When users are sending video, for each participant you will see a panel composed by the information about the participant, with a selectable button on the left side and a small video square thumbnail representing the video this person is sending, on the right-hand side.
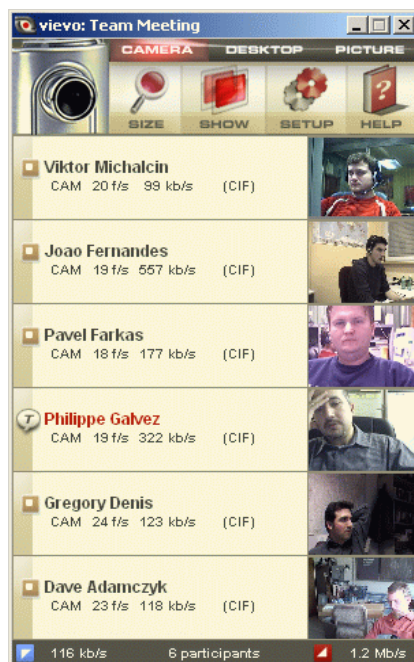
1.1 INFORMATION ABOUT PARTICIPANTS

Enable/disable button

Current speaker

Information about a participant

Uploaded video stream   Total number of the participants   Downloaded video stream

a. The main information about the participants is the name on the left part of the participant's panel. If you click on it you will see a small window with detailed users info (format, cname, tool, email, srcid).

b. You can easily identify the type of source transmitted by the participant: **CAMERA**, **DESKTOP** or **PICTURE**. Each type of source has its own color and it is identified by the shortcut below the name:
CAM = CAMERA
DSK = DESKTOP
PIC = PICTURE
In addition, there is information about frame rate, bandwidth and resolution (format) of the video.

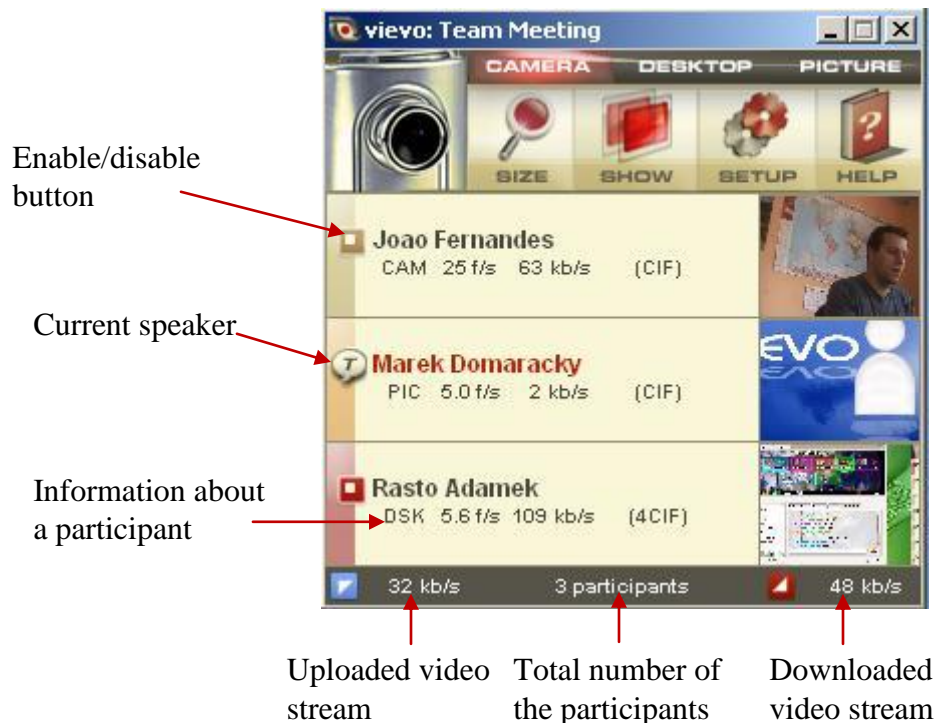c. The set resolution can be QCIF (176x144), CIF (352x288), VGA (640x480), 4CIF (704x576), XGA (1024x768). In case of packet loss from the participants a red value of packet lost in %.

d. On the bottom part of **ViEVO** there is a summary information about the total number of participants (in the middle), uploaded video stream (on the left) and downloaded video stream (on the right).

e. Enabling/Disabling a participant.

On the left part of the participant's panel there is a selectable button which allows you to enable/disable decoding and displaying the video streams from a given participant. Each participant is by default enabled (selected). If you disable a participant in **ViEVO** you stop decoding, displaying and receiving the video stream. You can always enable or disable each participant except the current speaker. When the disabled participant becomes the current speaker his video will automatically become enabled and you will be able to watch his decoded video stream. This is valid only during the period when the given participant is the current speaker.

NOTE: in case you do not have a powerful PC, disabling of some participants will free up some system resources

1.2 TRANSMITTING VIDEO

In the top part of the main ViEVO window you can click and select a video source which will be transmitted to all participants that joined a EVO meeting.

There are three textual buttons: *CAMERA*, *DESKTOP* or *PICTURE* to select and transmit the source.

The selected source will be highlighted with a red background color and on the left side the corresponding icon will be displayed.

Transmitting picture from the camera

Broadcasting of your desktop

Transmitting picture from the file

CAMERA

Transmitting picture
from the camera ⟶

a. Click on **CAMERA** textual button to enable the transmission of your picture from a plugged video camera. This video image will be transmitted to all participants in an EVO meeting.

b. Initially, you will see it as a small video thumbnail on right side of the main ViEVO window.

c. Your small picture will always be present on the top of the list of all displayed pictures received from all participants.

d. To enlarge the small pictures you have to click directly on this small video thumbnail.

e. To stop transmitting, one has to click on **CAMERA** textual button in main **ViEVO** window (red highlight is disabled).

*NOTE: that to transmit picture from your video camera via **ViEVO** you have to have properly connected and installed a video camera (webcam, or video camera plugged into a video card) to your PC.*

DESKTOP

Broadcasting your
desktop ⟶

a. Using *ViEVO* you can also broadcast your desktop to all remote participants. Click on *DESKTOP* textual button and a red transparent window will appear. The part of your screen inside this window will be captured so you can simply select (by moving this window) what you want to broadcast.

b. To stop broadcasting your *DESKTOP*, you have to click on *DESKTOP* textual button in main *ViEVO* window (red highlight is disabled).

NOTE: The red transparent window appears only on Windows and Mac OS X. On Linux the top left corner of the desktop is always captured.

PICTURE

Transmitting picture from the file →

a. **ViEVO** allows you to transmit a still image instead of a picture from a video camera. It is a useful feature in case you do not have a video camera plugged to your PC.

b. Click on **PICTURE** textual button and you will send a still image (default EVO participant blue image) from a .bmp file.

c. If you want to transmit your own image go to Setup and in **Picture** tab click on "**Select Image**" to find the location of your own .bmp file. A user who is sending a bitmap picture will have a title "STILL IMAGE MODE" in the right-bottom corner of his picture. In this way, you can easily distinguish a live video feed from a static picture.

d. To stop transmitting one has to click one more time on **PICTURE** textual button in main **ViEVO** window (red highlight is disabled).

1.3 CHANGING SIZE OF VIDEO

You can change the video size by clicking on **SIZE** in the main ViEVO window and selecting the resolution (size) of transmitted video for the given source. In the case of the CAMERA source, you can select from sizes QCIF (176x144), QVGA (320x240), CIF (352x288), VGA (640x480) and 4CIF (704x576)

NOTE: The number of possible available resolutions depends on the driver of your video camera or video grabber.

In case of using DESKTOP you can select one of three sizes CIF (352x288), 4CIF (704x576) and XGA (1024x768).
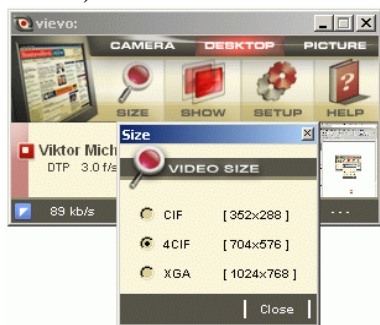
In case of **PICTURE** source only CIF (352x288) size is supported.

1.4 SHOW PARTICIPANTS

If you click on **SHOW** in main ViEVO window, you can select an automatic mode for displaying participant's video in larger windows on your screen:

    a. **Display off** - switches off automatic displaying

    b. **Show selected** only enabled (selected) participants will be displayed. The current speaker will be marked with red text "Talking" in top-left corner of video-window.

    c. **Show only speaker** - only the current speaker will be displayed (in case of sending video) in top-left corner of your screen. In addition, the name of the speaker in main **ViEVO** window will appear in red color together with changed icon.

NOTE: DSK video streams (captured desktops) are not displayed in the "Show selected" mode.

1.5 SHOW PARTICIPANTS – OpenGL VERSION

If your PC hardware (graphical card) is supporting OpenGL[5] version 1.1(hardware accelerated) and upward you can click on **SHOW** in main ViEVO window and you can select one of the 4 possible automatic display modes as it is shown on the next picture, then all participants will be displayed (rendered) in one separate OpenGL window (see next paragraph).

NOTE: In case your PC hardware does not support OpenGL rendering, after joining a meeting with EVO Tools you will be prompted to download and install manually a version of ViEVO without OpenGL.

a. **Display off** – switches off automatic displaying.

b. **Show all selected –** all enabled (selected) participants will be displayed. The current speaker will be displayed in bigger frame and will be marked with red "T". To remove/add displaying of some participant just click on participants video thumbnail in main ViEVO window.

c. **Show only speaker –** only the current speaker will be displayed (if he's sending video)**.** The name of the speaker in the main **ViEVO** window will appear in red color together with the changed icon.

d. **Presentation** - only the current speaker (on the left) and presentation/desktop (on the right) will be displayed in this mode. If you want to display another presentation (in case of more than one presentations/desktops are receiving)

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[5] **OpenGL** (Open Graphics Library) is a standard specification developed by Silicon Graphics Inc. defining a cross-language cross-platform API for writing applications that produce 3D computer graphics (and 2D computer graphics as well). The interface consists of over 250 different function calls which can be used to draw complex three-dimensional scenes from simple primitives.

instead of the automatically selected, you just need to click on desktop (DSK) video thumbnail in main ViEVO window.

NOTE: In "Display off" mode you can display any participant by click on participant's video thumbnail in main ViEVO window.

1.5.1 OpenGL display window

The background picture of this window is identical with meeting background picture in Koala. You can resize this window on arbitrary size. During resizing of the window all displayed participants will be automatically rearranged and resized according to OpenGL window size.
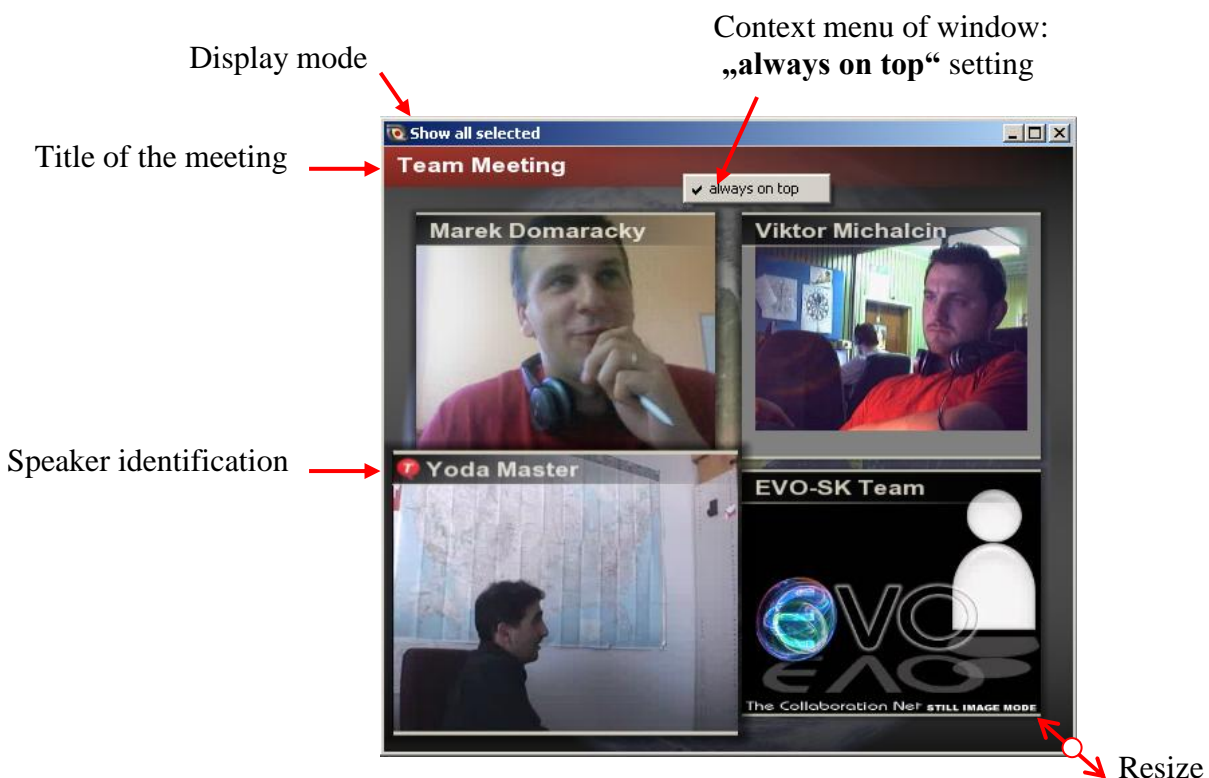
NOTE: Usage of OpenGL allows displaying very effectively, a huge number of videos and saving your CPU. In addition, it also allows you to display videos with 3D effect (push "e" key).
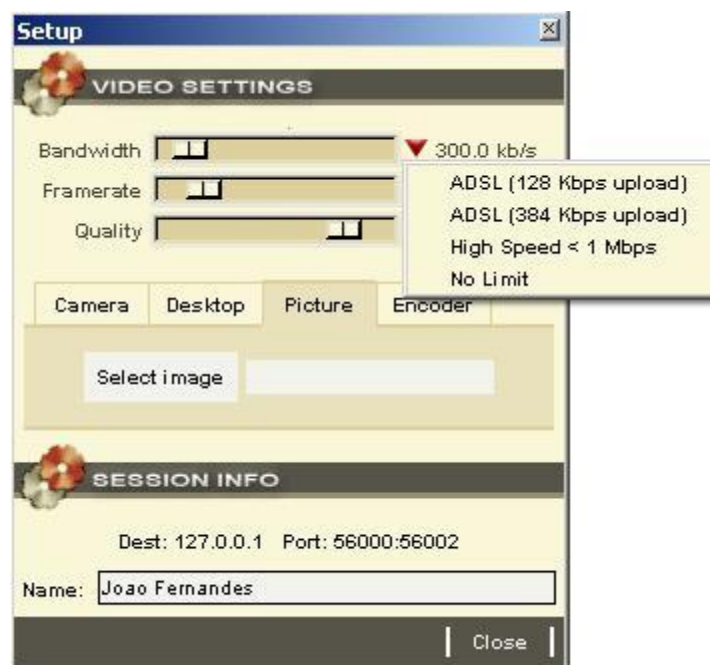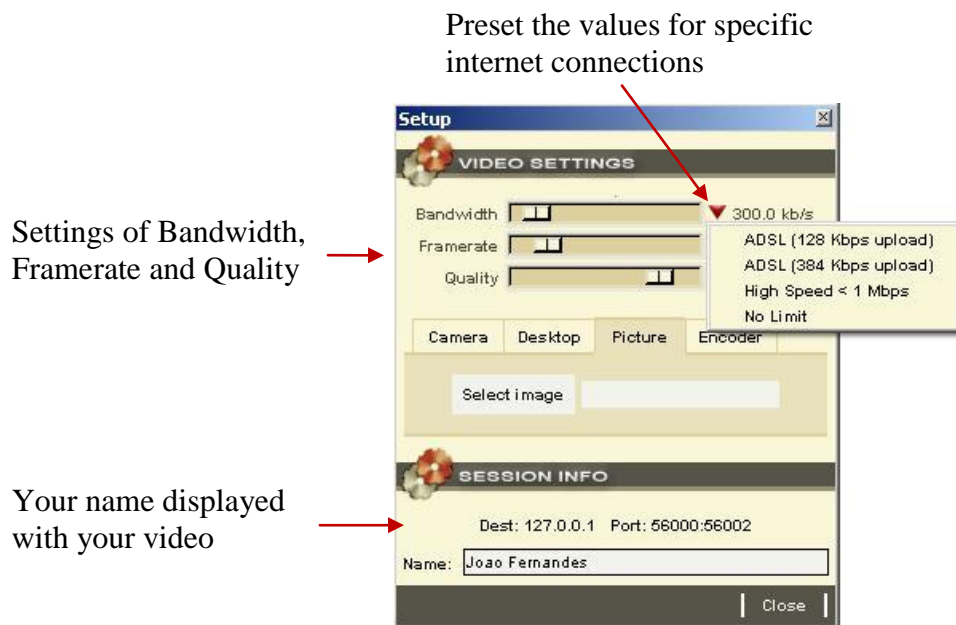
1.6 SETUP OF TRANSMITTED VIDEO

Click on SETUP in the main **ViEVO** window to set **Bandwidth**, **Frame Rate** and **Quality** parameters of the transmitted video.

    a. The **Bandwidth** control slider is used to control the transmitting bandwidth of the video. It ranges from 1kbps to 4Mbps.

    b. The second slider is used to control the video **Frame Rate** . It ranges from 1 to 30 frames per second (fps).

    c. The last slider is called **Quality** to control video quality. The best quality corresponds to 2, and the worst to 30. Typically the value of 5 is already considered a good quality to use.

NOTE: If these settings are too complex for you, just click on little red triangle on the right side of Bandwidth slider and select your internet connection.

This will change automatically the settings to ensure a maximum quality and smoothness of video stream according to your network connection.
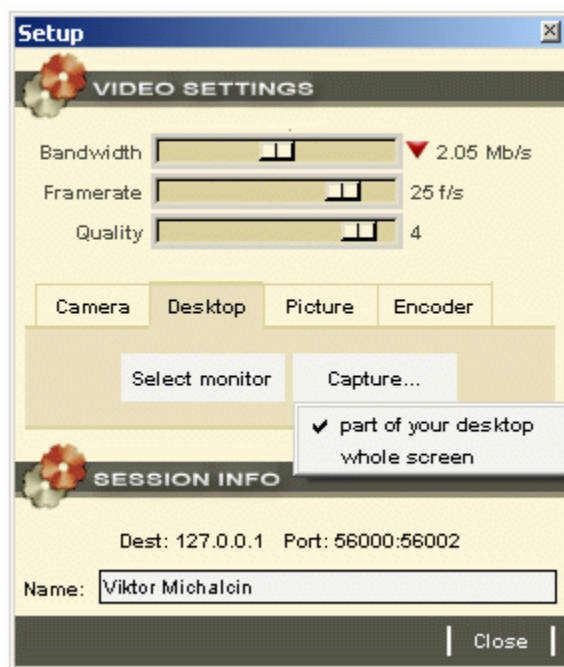
Preset the values for specific
internet connections

Settings of Bandwidth,
Framerate and Quality

Your name displayed
with your video

1.6.1 Camera

If you click on **Select camera** you can select the correct driver for your plugged video camera.

1.6.2 Desktop

a. You have the possibility to Select a monitor (if you have more than 1 monitor connected to your PC), from which your desktop will be captured. NOTE: This works only on Windows platforms.

    b. From the **Capture**... menu you can select 2 different possibilities:

- **Part of your desktop** - a red transparent window will appear. The part of your screen inside this window will be captured so you can simply select (by moving this window) what you want to capture.
- **Whole screen** – the whole desktop will be captured and stretched to the selected size - *not on Linux systems*.

NOTE: the transparent red window is working only on Windows and Mac OS X. On Linux the top left corner of desktop is always captured.
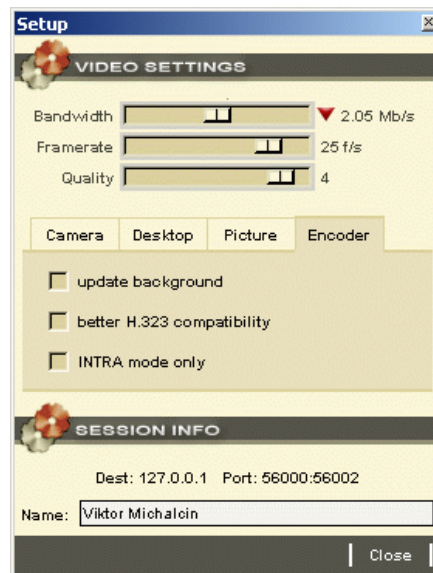
1.6.3 Picture

To transmit your own image, instead of the default one, click on **Select Image** to find the location of your .bmp file.
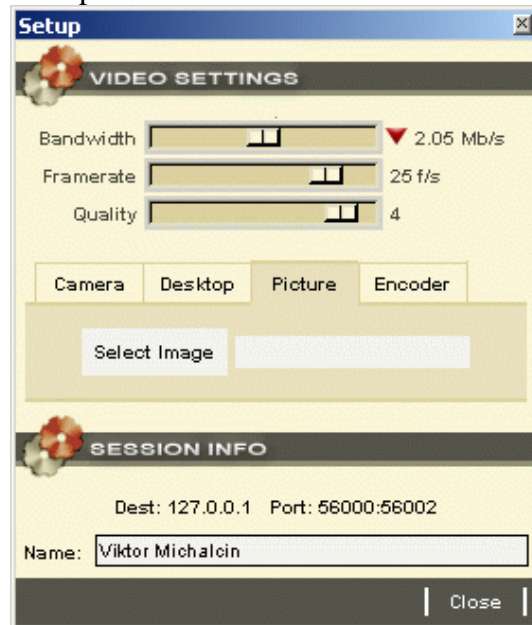
NOTE: Only bitmap (.bmp) file with CIF (352x288) resolution is currently supported.

1.6.4 Encoder

The encoder settings are used specially to ensure a better compatibility with H.323 devices.

a. **Updated background** – It will enable faster updating of non-moving (unchanged) parts of the picture

b. **Better H.323 compatibility** - Check this option if someone using an H.323 client has problems decoding your video (e. g. video is frozen, some artifacts in your video, etc.).
NOTE: This option will increase the stream bandwidth

c. **INTRA mode only** - your video will be encoded only in INTRA mode (as a simplified encoder). It is useful if there is packet loss on your side or if your CPU is overloaded. (no present on the Mac platform)

1.7 VIDEO ENLARGED WINDOW (ONLY FOR NON-OPENGL VERSION)

If you click on any video thumbnail in the main **ViEVO** window you will get an enlarged video window. At the bottom of the new window, there is a small menu bar with two buttons: **Size**... and **Close**.
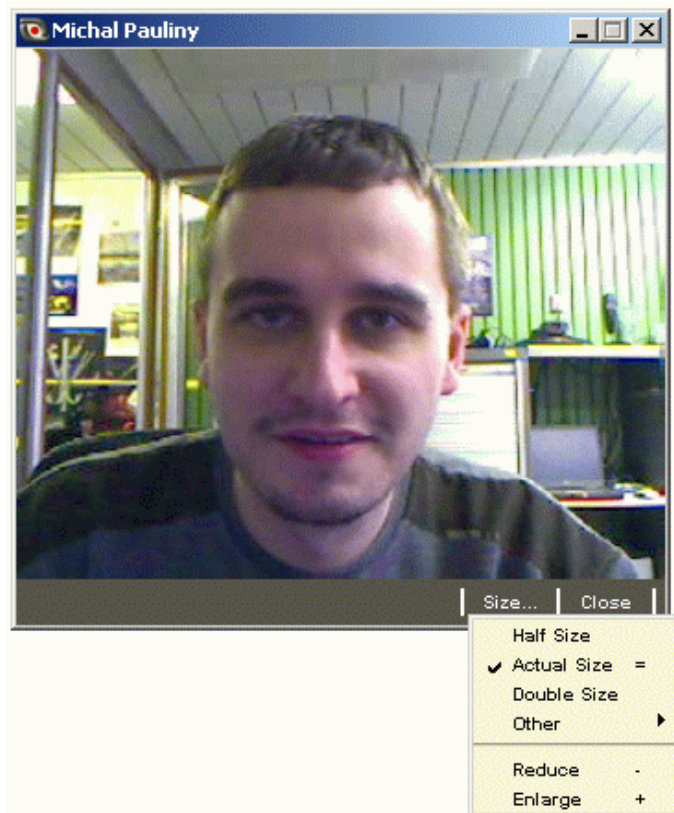
a. The Size menu will allow you to set the size of the window. You can select Half Size, Actual Size and Double Size.

b. You can also select **other** different video formats: QCIF (176x144), CIF (352x288), 4CIF (704x576), 1/16 NTSC (160x120), 1/4 NTSC (320x240), NTSC (640x480), 1/16 PAL (192x144), 1/4 PAL (384x288), PAL (768x576).

c. The **Close** button will close the window.

NOTE: You can reduce the size of the video window by using the shortcut "- ". To enlarge it you can use shortcut "+ ". To display it in Actual Size you can use shortcut " = ".

APENDIX B. – EVO checklist

1. EVO checklist

Before participating in an EVO session, **we advise you** to complete this checklist to set up EVO on your system and environment. Following this checklist will eliminate the most common pitfalls, which can be detrimental to a successful session.

1.1.1 Minimum PC hardware requirements

To run EVO properly, your PC needs to fulfill certain minimum hardware requirements, especially if you intend to send/receive video/audio with good quality and interactivity:
- Intel PC: Pentium 4 1,5 GHz, 512 MB RAM (minimum) or 1Gb RAM (recommended)
- Macintosh with PowerPC processor: 1 GHz, 512 MB RAM (minimum) or 1Gb RAM (recommended)
- Macintosh with Intel processor: 512 MB RAM (minimum) or 1Gb RAM (recommended)

1.1.2 Ensuring sufficient network bandwidth to receive/send good video/audio signal

To communicate with other participants and receive/send good video and audio using EVO, your network connection should fulfill these minimum requirements (we assume that 384kbps is sufficient to provide a very good visual/audio quality):
- 384 kbit/s + 64 kbit/s = 448 kbit/s download speed for each participants you're receiving video and audio from (i.e. if there are two external participants, you need a download speed of 2 x 448 kbit/s = 896 kbit/s) unless you select the "Voice switch" mode (using this mode, you will receive only the video from the current speaker)
- 448 kbit/s upload speed (for each EVO station in the network you wish to send good video and audio stream)
- **Important note:** the figures quoted above refer to the *minimum sustained bandwidth which must be dedicated to your connection* during the EVO session if you want to get some assurance to receive and send good video/audio and have a very good interactivity. You will not have a successful meeting for example, if your 1Mbit connection is shared by several other computers, which all generate network traffic at the time that you want to have a meeting. You may need to ask your network administrators to dedicate bandwidth for your connection, referring them to the figures above (448 kbit/s download and upload)
- To test the download and upload speed of your internet connection, use the tool available here: http://www.speedtest.net/ (measure you speed with a server close to the participants you'll be communicating with in EVO)
- **Important note:** It is advised to conduct the test at the same time of day as the actual EVO session so you get an accurate situation of your network.

- **Important note:** It is advised do not connect to EVO by a wireless connection unless you have no alternative. It will eliminate some possible network breakout (Wireless connections are notorious for fluctuating bandwidth and are usually shared with other computers on the network and so quality is unpredictable).

1.1.3 Installing and updating Java on your PC (Windows, Linux or Mac)

EVO is a Java application, and needs to have the Java virtual machine installed on the PC from which it is to be run. Version 1.5 and upward is supported by EVO.

- Go to the Java website at http://java.com
- Click on **Verify installation** to make sure that java is installed or to get the newest version of Java
- If you don't have it or want the newest version (recommended), click on **Download** to get it

1.1.4 Registering for an EVO account

Before you can use EVO, you need to register for an EVO account.

- Click on **Register** at http://evo.caltech.edu
- Fill in your details
- You will receive a confirmation email. Click on the link in this mail to enable your account

1.1.5 Setting up Koala, the EVO client

Koala is the EVO client which you use to book and access meetings, register with different communities, chat with other participants etc.

- If you're running Windows, it is advise that you're logged in with administrator privileges otherwise you may experiment some unexplained phenomena (depending of the local security set-up)
- Click on **Start** at http://evo.caltech.edu
- If a message from the Windows firewall pops up asking you if you want to keep blocking EVO, click on **Unblock**
- Take a note of which Panda (all EVO servers are called Pandas) you are connected to (symbol at the bottom left of the screen): Connected to Panda **CERNext_CH**
- The last two letters indicate a country code. Make sure these letters correspond to your country (or your neighboring country – it's important that you're connected to a server close to you)
- If you're not connected to a Panda which is geographically close to you, click on **Koala** -> **Koala Monitoring** and get a drop-down list of the best servers to connect to following some real-time network measurements:

> You can also manually select the panda closest to your location by clicking on the "Manual Panda Selection" button.
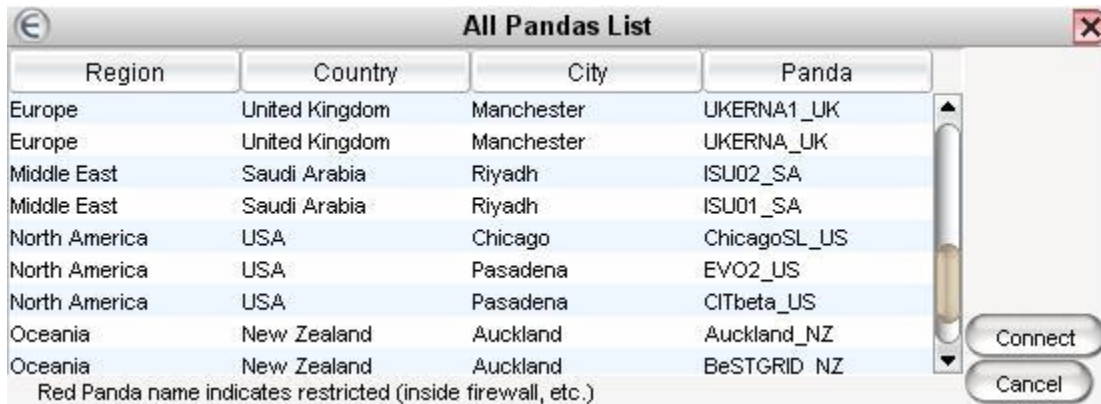
1.1.6   Selecting you preferred Videoconference client when joining a EVO meeting

EVO client support several videoconferencing clients and protocols. While EVO provide by default some video/audio tools called EVO Tools, the user may decide to use his most familiar application such as an H.323 device or a SIP client.

1.1.6.1   Setting up EVO to use a H.323 device as you preferred videoconference tool

EVO can be used with an H.323 device (e.g. a hardware device which uses the H.323 "videoconferencing over IP" protocol).

Especially if you're in an auditorium or other large room and you're going to broadcast the incoming audio into EVO, using a hardware H.323 device gives you **superior echo cancellation** and also the ability to move the camera around (e.g. zooming in on the audience if someone has a question to the remote site in EVO).

- Before entering a meeting, click on **Configuration** -> **Videoconference client** and choose **EVO H.323** as the client
- Enter the IP address of your H.323 device (or the gatekeeper address and E.164 alias if your device uses a gatekeeper)
- Select your video frame rate and bandwidth (25/30 fps and 384 kbit/s is a good starting point)

1.1.6.2   Setting up EVO to use EVO tool as you preferred videoconferencing tool (using a webcam and microphone)

If you're on your own and want to communicate with other participants in EVO, you can use a webcam and a headset.

- Before entering a meeting, click on **Configuration** -> **Videoconference client**
- Select **EVO Tools** as your client

- Check **Auto Transmit Audio** and **Auto Transmit Video** and then click **Save** if you want to start transmitting automatically when you enter your meeting
- Enter the meeting room called **Testing** (or another meeting room booked by you) to fine-tune your audio settings
- Make sure your microphone is unmuted (the microphone icon should be like this: , not like this:)
- Check that your audio meter doesn't go into the red area (this means your audio is set too high)
- The auto gain control will adjust the level of your microphone automatically but in case you disable this function (see on the AV Controls panel the "Advanced" option), you can adjust it by clicking on the meter
- If your audio meter doesn't give any indication at all, click on and and make sure your **Audio Transmit Device** is set to the microphone you're using
- If you can't hear the other participants, check that **Audio Receive Device** is set correctly
  If you're using an USB headset and EVO doesn't list it under **Audio Receive Device**s, you have to close Koala; plug in the headset and then start Koala again.
- Optimizing the local audio setup

It's very important that your audio setup doesn't give rise to echoes (this wouldn't be audible to you; an incorrect setup at your end would only be heard by the other participants, who would get a very annoying echo of themselves whenever they speak).

Our recommendations depends of the videoconference tool selected and the room environment
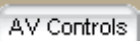- H.323 Client:
  o Connect to EVO with a H.323 hardware device, which has (superior) built-in echo cancellation
- EVO Tool[6]
  o If connecting by EVO Tools and only for yourself, use a headset, if possible
  o Alternatively, when connecting with EVO Tools, use a speakerphone with built-in echo cancellation (like Logitech QuickCall, Phoenix Duet etc.)

Important note: adapting an audio setup meant for one person (headset or webcam microphone/PC speaker) to a medium/large group of people in a room will most probably NOT WORK or result in bad audio. When using a room with a large group of people you have to

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[6] Note: Using EVO Tools with any other setup without the use of a local echo suppression system (e.g. if you're in an auditorium and need to broadcast the incoming audio into EVO to the audience using the sound system in the room) requires you to mute your microphone whenever you're not talking. In this case you must establish routines for muting your microphone quickly – either by having a person by the computer to mute in EVO, or by switching the microphone off.

ensure that the local audio is adapted to the room, by using an H.323 device or a good echo suppression audio system connected to the EVO PC station.
Troubleshooting

Problem	Cause	Solution
Starting Koala		
EVO gives an error message when starting up or it doesn't start at all	Windows-specific issue: sometimes, after updating Java (by automatic update or by installing a newer version), the Java cache needs to be deleted	Click **Control Panel** -> **Java**. Under **Temporary Internet Files**, click on **Settings...** -> **Delete Files...** and select to delete everything
	Your Koala settings have become corrupted	In Windows: delete the directory C:\Documents and Settings\username\.Koala In Linux and Mac OS X: delete the directory /home/username/.Koala
Audio		
I can't hear the other participants at all	Audio configuration problem	Check that you're receiving audio by checking the 🔊 icon If not: you must ask the other participants to unmute If yes: click on AV Controls, Audio and select the correct playback device
The other participants can't hear me	You're muted or using an incorrect input device	Check that you're not muted (🎤) Click on AV Controls, Audio and select the correct input device
Audio quality is choppy	Your PC is too slow	Your PC must meet the minimum system requirements
	You're using a wireless network connection	Avoid this at all cost – ask the network administrator to activate or provide a network plug in the location where you'll be doing the EVO session
	Insufficient bandwidth/network congestion	Ask your network administrator to dedicate bandwidth to your EVO session
	You're connected to the wrong Panda	Click on **Koala** -> **Koala monitoring** and reconnect to a different Panda

Video		
I can't see the other participants at all	Remote site not sending video	If remote site is using EVO Tools: have them make sure camera is activated (the button in vievo then lights up CAMERA)
	Incorrectly configured firewall	See http://nextgen-caltech.cern.ch/evoGate/FAQ/faq.htm#confg on how to configure your firewall
Video quality is poor	Insufficient bandwidth	Make sure your network has at least 384 kbit/s upload and download speed for each participant you're receiving audio and video from
	You're using a wireless network connection	Avoid this at all cost – ask the network administrator to activate or provide a network plug in the location where you'll be doing the EVO session
	The remote site has incorrect video settings	Ask the remote site to check their video settings

If remote site is using H.323: ask them to click AV Controls , choose lower bandwidth, Reconnect

If remote site is using EVO tools: ask them to click on **Setup** in the vievo window and then adjust the bandwidth down |

APENDIX C. – Firewall settings for Koala

<u>Mandatory:</u>
While EVO works fine in a <u>Network Address Translation environment (NAT)</u>, the local or institute firewall (if any) should permit communication on the following port.

- **IN/OUT** *- UDP/TCP*: **46015**

<u>Optional:</u>
Allowing these TCP outgoing ports will offer the possibility to your Koala client to estimate in real-time what are the best Panda servers to connect to in function of your location, network parameters (bandwidth, packet loss...) and load.

- **OUT** *- TCP* on specific IP
    1) LUSs Services: **4042, 4043, 4044**
        evo01.cern.ch (192.91.244.138)
        evo01.caltech.edu (131.215.116.151)

    2) Proxy Services: **60001, 60002, 60003**
        evo01.cern.ch (192.91.244.138)
        evo01.caltech.edu (131.215.116.151)

    3) Topology Services: **10090**
        evo01.cern.ch (192.91.244.138)

APENDIX D. – Files created by EVO in home directory

.Koala			Main Koala directory.
	lisa		
	plugins		In this directory you can find all plugins.
		EVO_Transcoder	Directory, which contains the transcoder application.
		EVO_Transcoder.crc	CRCcChecking file
		EVO_Transcoder.exe	Application which mixes 4 video streams into one.
	EVO_MixerR.jar		Application which mixes/transcodes the audio streams from all participants.
	EVO_MixerR.jar.crc		CRC checking file
	EVO_Transcoder_win.zip		Transcoder zip file.
	EVOTools.properties		Saved settings of EVOTools plugin.
	fileXchangePI.jar		File exchange plugin.
	policy.JAT		JAVA policy file
	ViEVO		Directory which contains the ViEVO application.
		Default.bmp	The default bmp file for the picture mode in ViEVO.
		earth.bkg,…	Background image for the opengl window.
		Transparent.exe	Application for sharing desktop.
		ViEVO.crc	CRC checking file
		ViEVO.exe	ViEVO application.
	Vievo_win.zip		ViEVO application zip file.
	Koala.log		Output from the java console.
	Koala.properties		File created as soon as you quit Koala. Contains the last used Koala environment settings.
	missingStrings.txt		Depends of your language selection, it will dynamically includes the missing translation words.
	Plugins.xml		EVO XML plugins definition file
EVO Recorded Streams			Directory where all your recordings will be stored by default.
DownloadedByEVO			All files download from "Shared files" will be stored here by default.