

# Collaboration

Web Pages

Web Pages

Java

Java

C++

C++

**TANGO - Interactive**





**Tango and WebWisdom Training**  
**SC98 Orlando**  
**November 8 1998**

**Tango Team**

**NPAC**

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**tango@npac.syr.edu**

**<http://www.npac.syr.edu/tango>**



# What can we discuss in a Nutshell I?

- ☛ **Tango Collaboration** System applicable to education and training and .....
- ☛ Initial demonstrations of use of Tango in education and training using
  - **WebWisdom 1.0** Perl/JavaScript System
  - **Shared Browser**
- ☛ Tango reasonably robust and has API to most server/client applications -- will hopefully link to Internet Explorer/Macintosh's soon

# What can we discuss in a Nutshell II?

- ☛ **Buena Vista** Multiplatform (UNIX/PC)  
**Audio/Video Conferencing**
- ☛ **Java video and audio** players for low bit rate codecs which allows (shared) viewing of multimedia curricula
- ☛ **LecCorder** system as turnkey video of presentaion -->MPEG-->H263-->Weblinked foils



# What can we discuss in a Nutshell III?

- ☞ **WebWisdomNT 2.0** replacing WebWisdom 1.0 (eventually) with
  - **Database** storage of HTML PowerPoint Multimedia data  
.....
  - **Java Manager** of Courses Users Events Images etc.
  - **Excellent web-linked database interface using XML templates**
  - **Export to file systems**
- ☞ **Prototype works** and can be demonstrated
- ☞ **Needs much more testing and Integration with Tango -- will import existing 26,000 foils and 1,500 family photographs**

# What can we discuss in a Nutshell IV?

- ☛ **NPAC Grading System** which is Oracle (or other database -- currently using MSQL) with Java Servlets to support handling of a class with PAPI type
  - Student Data
  - Grades and Statistics
  - Surveys
- ☛ **Online programming labs** for
  - PERL and Java (natural)
  - HPF and MPI (not so trivial)
- ☛ MPI lab used by JSU in this semester
- ☛ **Cornell's Companion** sophisticated extension of this with security



# New Capabilities we could do .....

- ☛ **Macintosh** and **Internet Explorer** implementations
- ☛ Take specialized resources such as **NCSA Biology workbench** and make collaborative
  - Several ways -- one way is a few days work building shared HTML forms
- ☛ Shared **Macromedia director** presentations
- ☛ Further **shared educational applets** as in physics examples
- ☛ Shared learning environments such as **Belvedere** with multiple linked client side applications
- ☛ Shared **Geographical Information Systems**



**Tango Interactive  
Web Collaboratory  
Share Any Application  
around the world  
PC and UNIX Platforms**

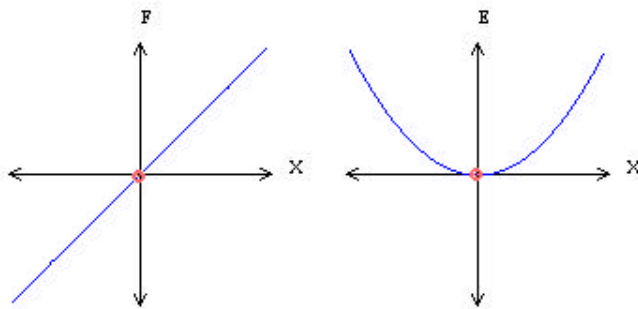


# Distance Learning

## Structure of JSU Distance Education

```
nt2 : That was a preset message
nt3 : There are 3 typers of chats
nt3 : Simple text
nt3 : Neat 2D Chat
nt3 : Beautiful 3D chat
```

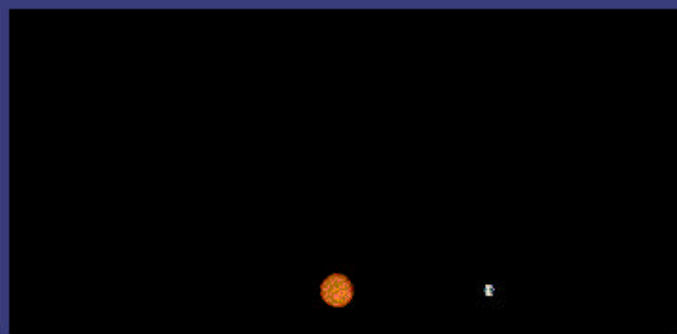
Tlspring - Hook's Law for TANGO Interactive - Netscape



Tango server

Audio Video Conferencing  
Chat Rooms etc.

Tlkep - Kepler Laws Visualization for TANGO Interactive - Netscape



- Pause
- Continue
- Zoom In
- Zoom Out
- Show Velocity
- Show Acceleration
- Show Orbit
- Erase Lines

NPAC Web Server

Address at JSU of Curriculum Page

Teacher's View of Curriculum Page

Teacher/Lecture

www.npac.svr.edu gcf@npac.svr.edu



Tlryh - ...

- Respond
- Raise hand
- LOST !!!

# Electronic Communities

95

goodbye

2d chat hello

95

hello

Microsoft Word - Document1

TANGO CONTROL PANEL - Netscape

EXIT TANGO USER: 95 SERVER: foxport2.npac.syr.edu

Collaboratory Tools Users MailBox Configuration Help

Virtual University Tools? Multimedia? Games? Science I? **Microsoft Applications?** Test

MS Word MS Excel MS PowerPt MS VisualC++

Join session	Local close	Session type	Master	Participants
Remote open	Remote close	2D Chat	95	
Become master	Grant master	2DChat	95	
		Microsoft Word	95	
		Simple Whiteboard	nt	

NETMEETING UNDER TANGO

Shapes 100%

Ln 1 Col 32 REC TRK EXT OVR WPH



# CRISIS MANAGEMENT

User: gcf Font: 16

nt : What is Situation?  
gcf : Pretty Bad  
nt : Hang ON!  
gcf thinks it's cool

*type here*

cool

TANGO CONTROL PANEL - Netscape

EXIT **TANGO** USER: gcf SERVER: foxport2.npac.syr.edu

Collaboratory Tools Users MailBox Configuration Help

Generic Collaboratory Tools? Virtual University Tools? **Multimedia?** Games? Science I?

BuenaVista

VoD

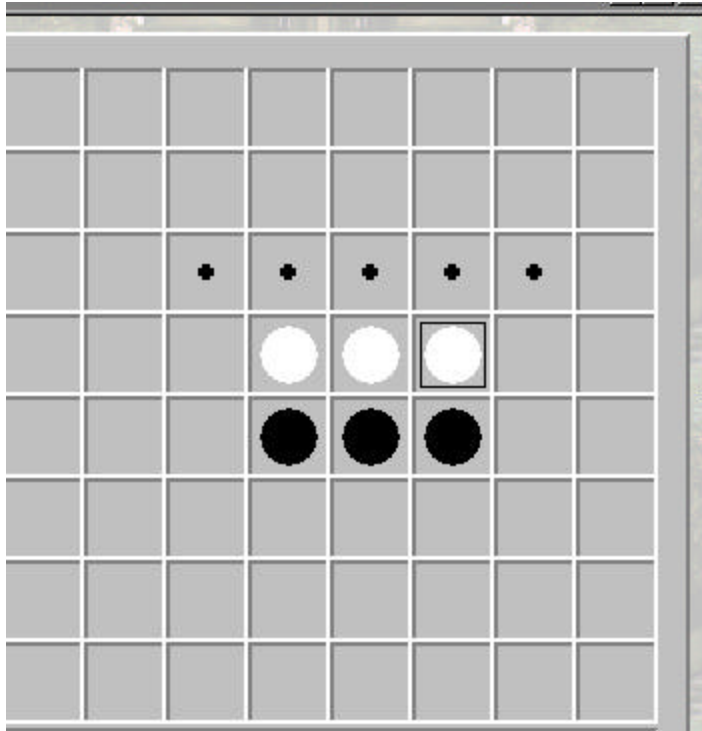
VPlayer

APlayer

Join session	Local close	<b>Session type</b>	<b>Master</b>	<b>Participants</b>
Remote open	Remote close	Mapper	nt	
Become master	Grant master	Chat	gcf	
		Video Player	gcf	

<http://foxport2.npac.syr.edu/data/prowler.2f>

Browse >>



Pass << >> Clear B3/W3

B: Master W: Slave L: Low



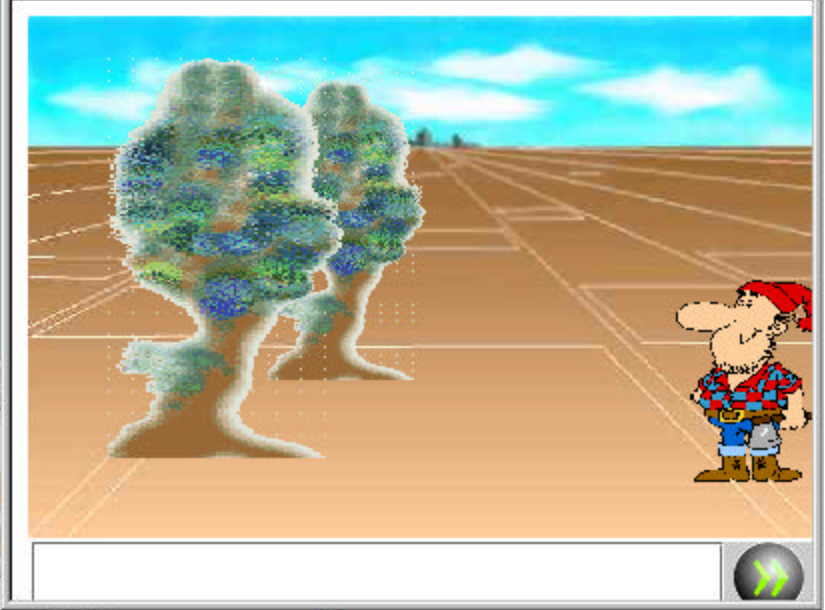
Audio On  
2.2 fps 92 kbps



User: nt:Font

```
95 : you will lose yo  
nt3 : i wll win  
95 : no way
```

type here



maryland.npac...

Generic Tools... Applications... De

Audio Mapper

2.4 fps 97 kbps



Arrange Level:5

4 5 6 - +

# PLAY GAMES



**Sharing  
Your Web**

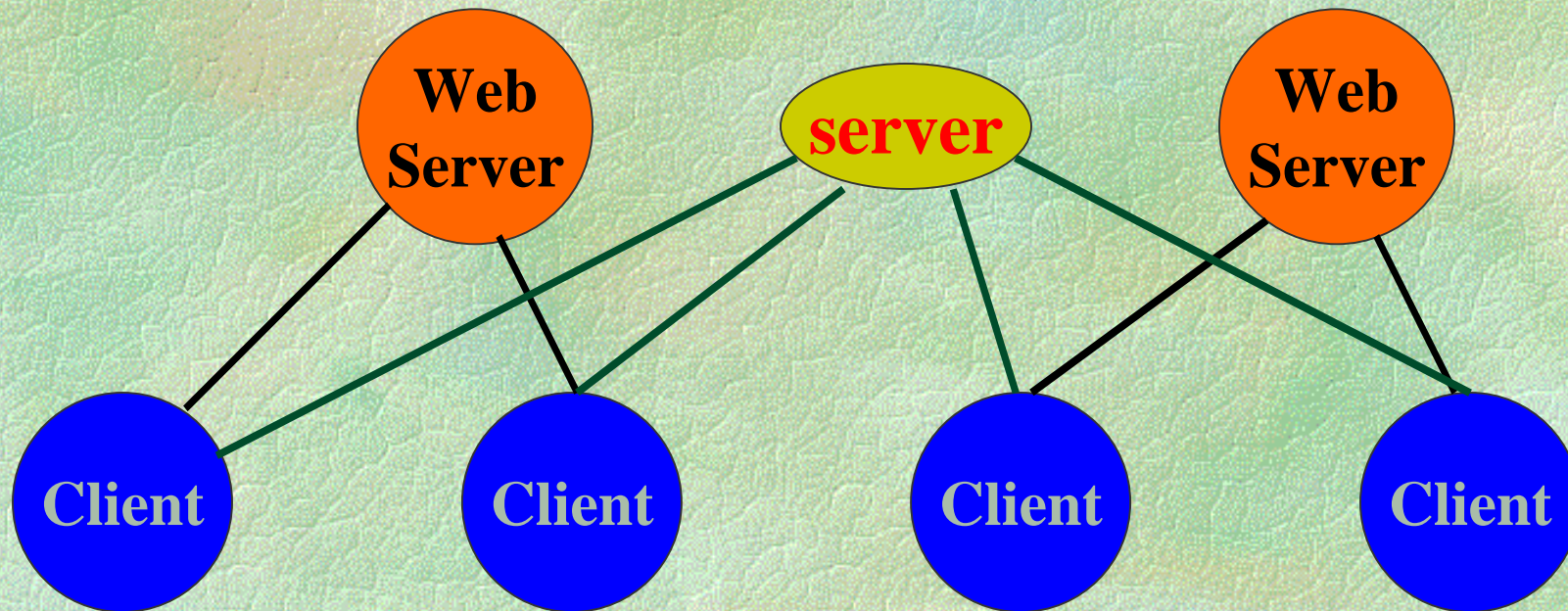
**Application**

**TANGO - Interactive**



# Getting Started with Tango I

- Using Tango is just a mouse click to download an applet as long as certain preparations have been made
- Tango involves a bunch of collaborating machines (called clients) which are linked together by a Java Tango server. There are default Tango servers which can always be chosen but specialized Tango applications often use their own server.
- A Tango client fetches programs from a Web Server NOT from the Java Server





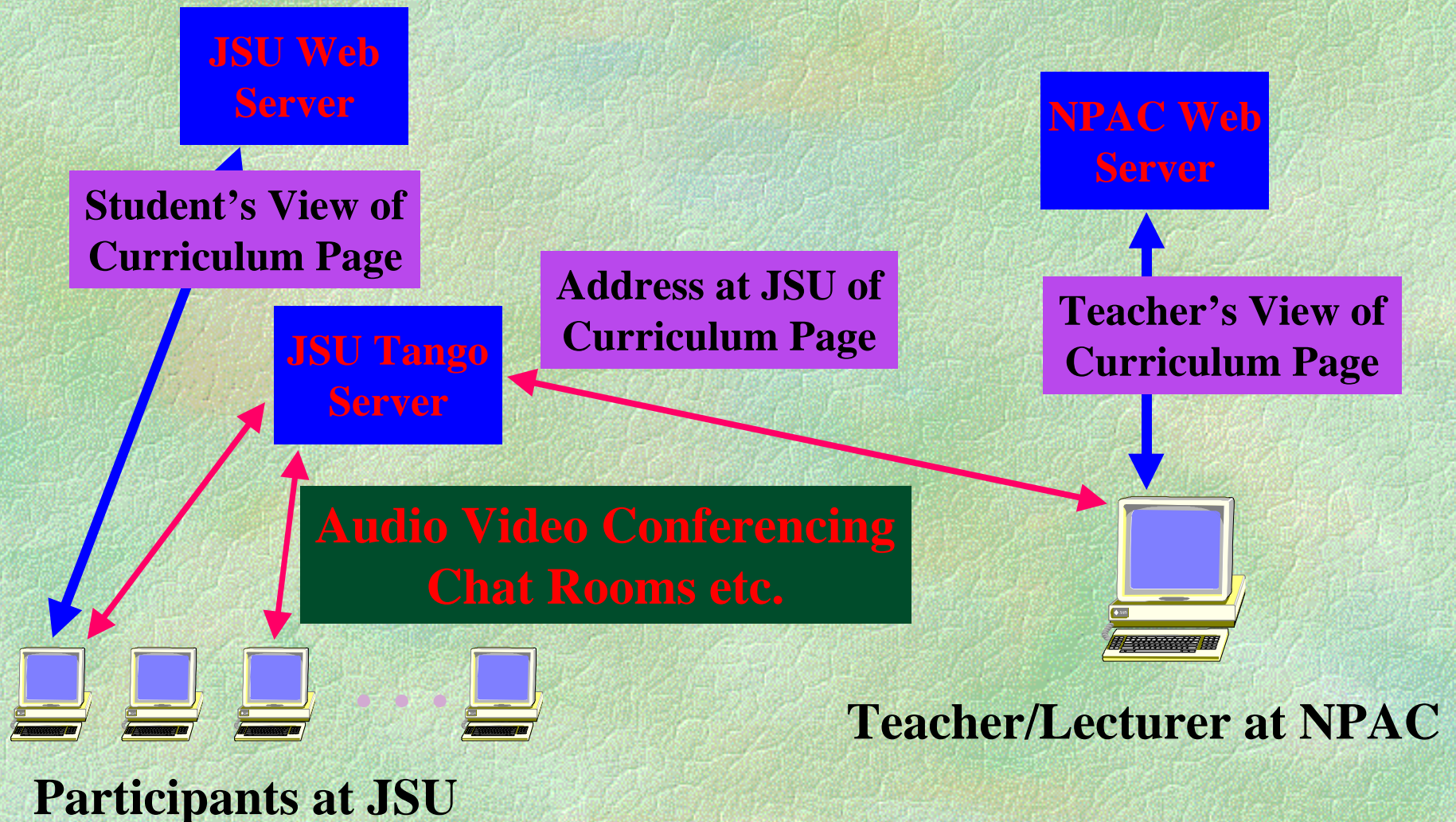
# Getting Started with Tango II

- ☛ **After understanding which Server you will use, Tango must be installed on your machine. This involves installing a Netscape plug-in and also a C++ audio-video conferencing system Buena Vista**
- ☛ **Then each time you wish to load Tango, one must download the “control application” (CA) which is a Java Applet.**
  - **This involves selecting a particular Web Server and clients setup with different Web Servers can collaborate using the same Java Server**
  - **Each downloaded client has a (possibly different) configuration file specifying where each Tango application is to be loaded from. This allows one to use mirror sites to improve performance**
  - **In simplest case, everybody chooses the same Web Server**
- ☛ **Collaboration involves two or more clients sharing information and this covers both the teacher-students interaction in education; commander-firefighters interaction in a crisis; and the linkage of researchers in a distributed scientific collaboratory.**



# An Example of Tango Java Server, Web Servers and Clients

## Architecture of JSU Distance Education





# Some Details on Tango Architecture

☛ The previous page shows the architecture of our distance education project where we taught CSC499 from Syracuse University to Jackson State fall 97 and spring 98. Note the mirrored Web servers (one at Syracuse and one at JSU) but single Java Server

- Note The Java Server does not receive or dispense a large amount of data. For basic curricula it just transmits a URL string (a few bytes) while for audio-video conferencing data, the server establishes the session but the multimedia data is transmitted on separate channels.
- The server is very robust and can handle many users

☛ The next page shows the

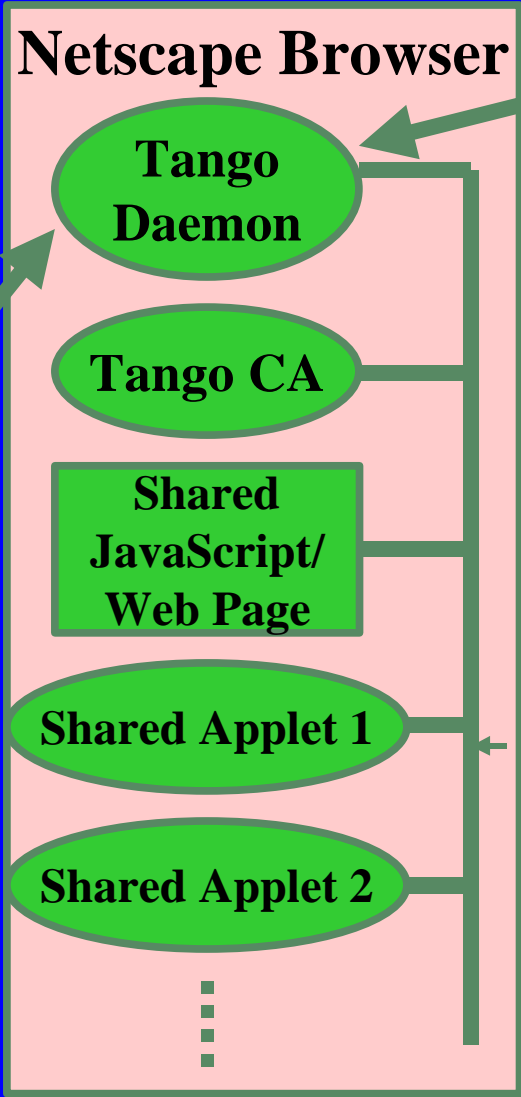
- Tango daemon downloaded in the plug-in
- The Control Applet downloaded from a Web Server
- The Java Server -- a Java application running on NT or UNIX -- which must be instantiated ahead of time
- shared applications can be C++, JavaScript or Java (applet or application)



**Typical Client**

**Socket Connections**

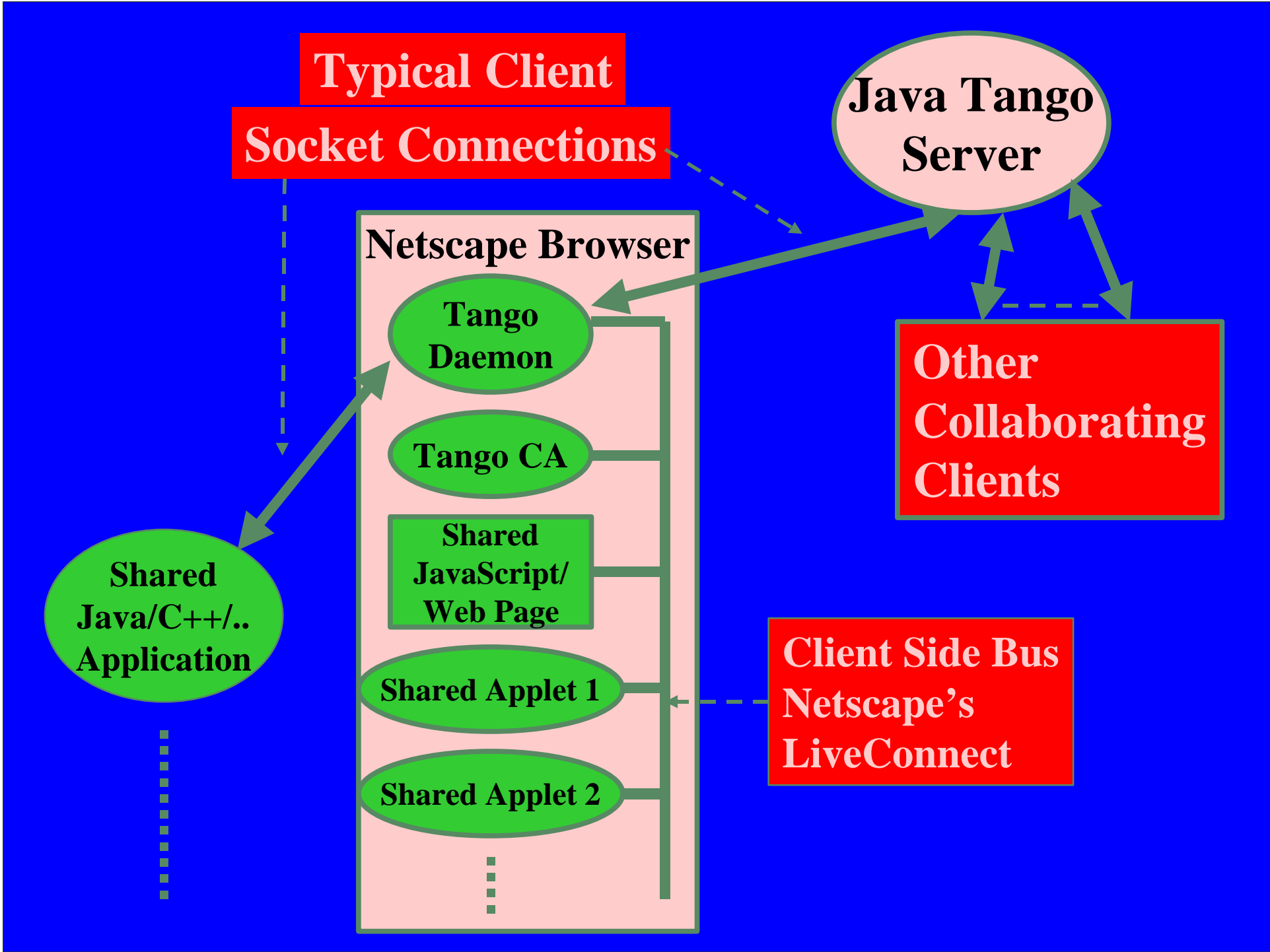
**Java Tango Server**



**Other Collaborating Clients**

**Shared Java/C++/.. Application**

**Client Side Bus  
Netscape's LiveConnect**





# Collaboration

Web Pages

Web Pages

Java

Java

C++

C++

**TANGO - Interactive**





# Start with One Click

## TANGO Interactive

You have started TANGO Interactive - a Web collaboratory tool.

TICA - TANGO Interactive Control Application - Netscape

Select settings for your TANGO Interactive session:

Control interface:

Collaboration server:

For a server not on the list,  
type server location here:

# Tango Interactive is Integrated into Web Browser




# Getting Started with Tango III

- After requesting a Tango download of control applet, one may get a security dialog (grant permission to download and remember decision), and first one is asked (as on previous page) to choose a server
  - Servers are available for distribution but typically start with default one
  - one also asked to choose a “control interface” which just correspond to different selections of applications to share
- After a while, if all goes well, one gets the request to “login” which currently just requires that you type in a unique “handle” by which you are known in the collaboration room.
  - In Tango1, each server supports a single room but we will see that although all users are potential participants in a shared application, one can set up complex relationships as any given session can involve a different subset of users.
  - Currently Tango has no security mechanisms in the login process although one has some control over allowed actions in a given shared application.
- Note we define a **session** as an instance of an application shared by a set of users. One can have any number of sessions based on a given application which separate instantiations of the application and different subsets of users. As we will see users decide who joins a given session.



# Download the Java Controls Login into the Java Server

TICA - TANGO Interactive Control Application - Netscape

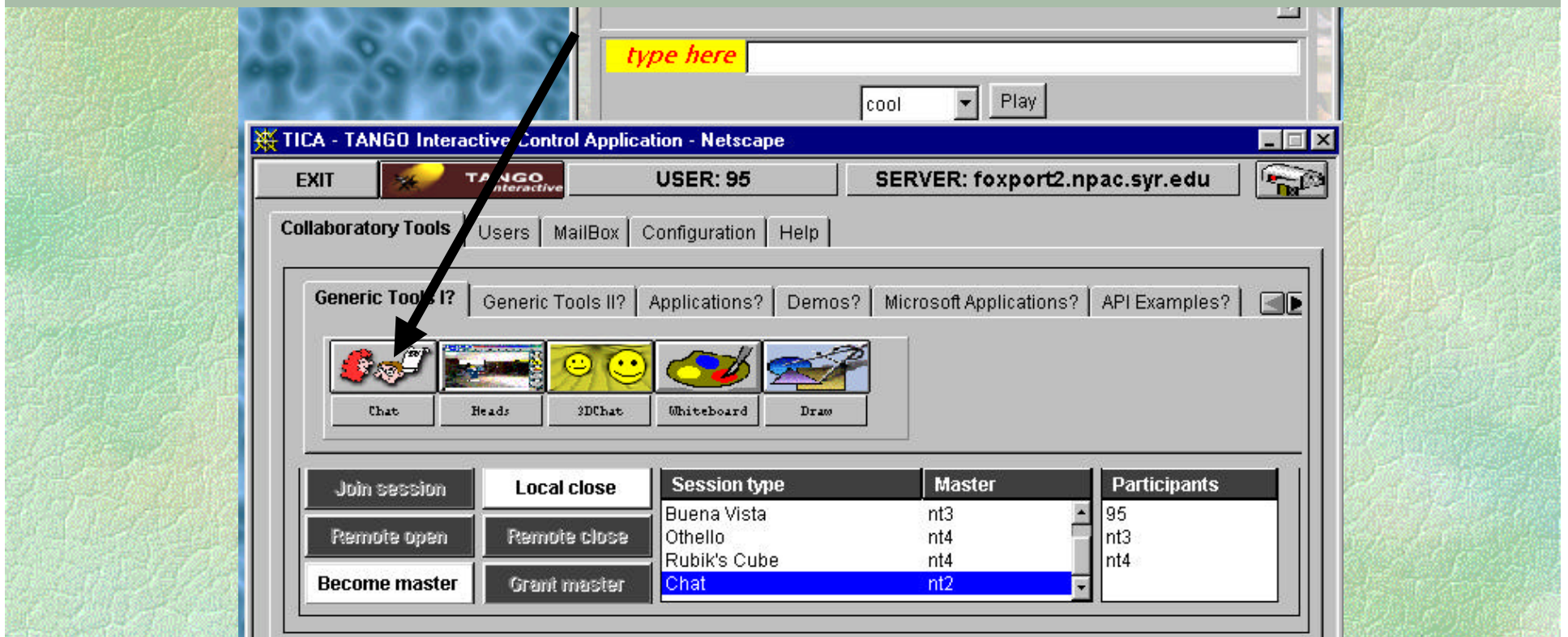


User name:





# Click the Chat Icon to start a Session

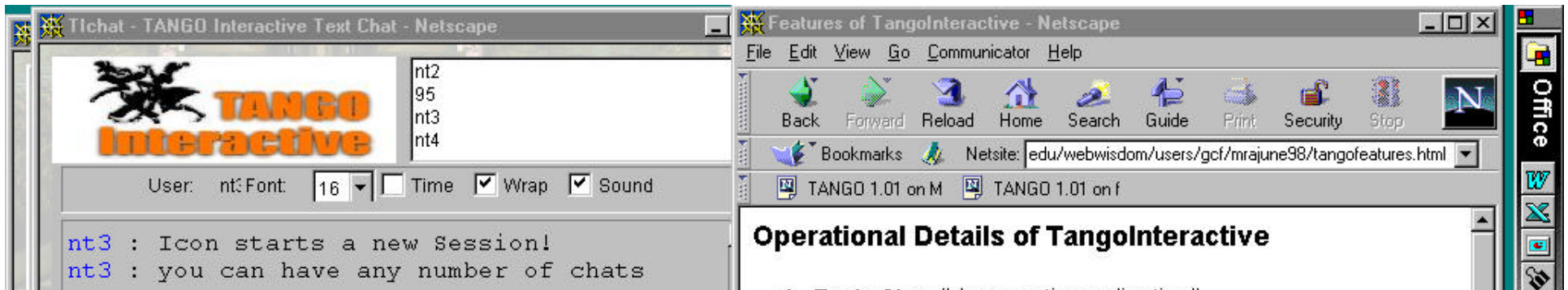




# Starting or Joining a Session

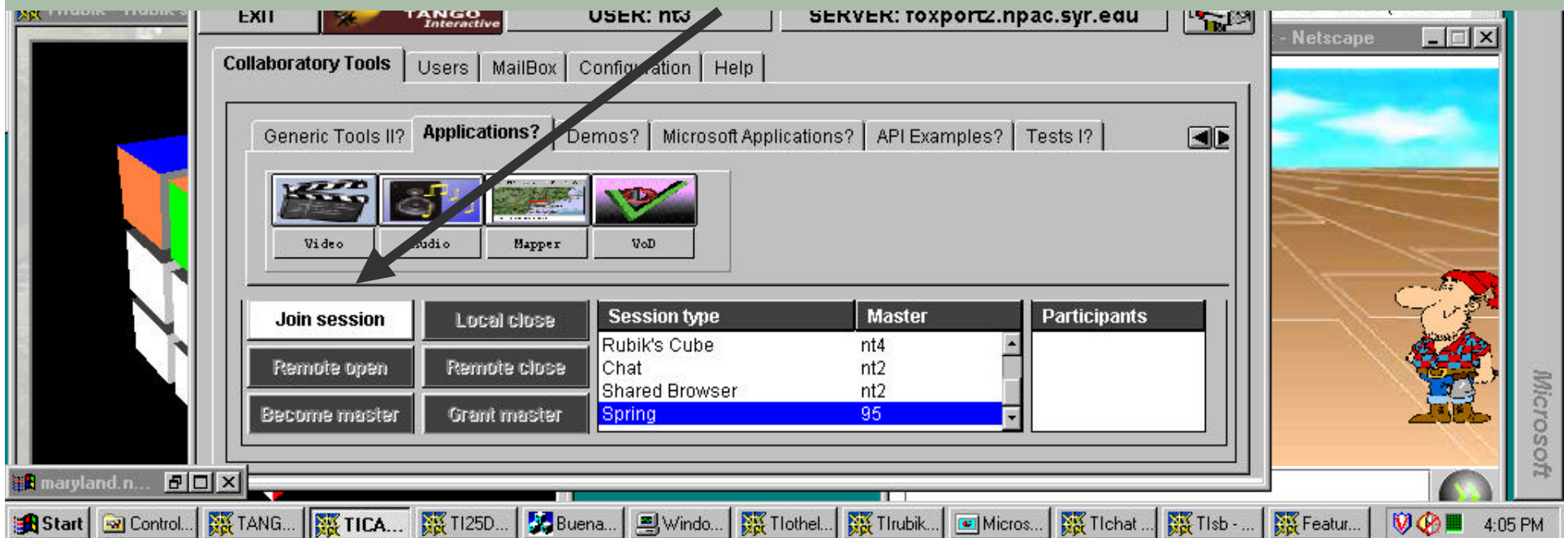
- ☞ Sessions can either be started or joined
- ☞ Sessions can be **joined** either because the master adds a user or because a user requests it.
- ☞ Sessions are **started** from the icons under the tags in the middle of the CA's user interface
- ☞ Suppose the teacher has started a chat or other session. Then it appears on the list of sessions at the bottom middle section for ALL clients. **Highlighting** it, one see that **join** is an option (shown in left bottom panel)
- ☞ Click the join button and you become part of this session
  - The chat applet is downloaded to client that joined. Highlighting chat now shows this client as a participant.
- ☞ For chat, this happens almost instantaneously. For more complex applications, the registration process takes longer as Tango only accepts a joined client when The Java applet is properly loaded





# A Session is An Application and a Group of Users

## You can join a session





**TangoInteractive can share**

**Client Java Applets**

**JavaScript**

**Java Applications**

**C++**

**Server Simulations**

**Web-linked Databases**

**CORBA**

**Lotus Notes ....**

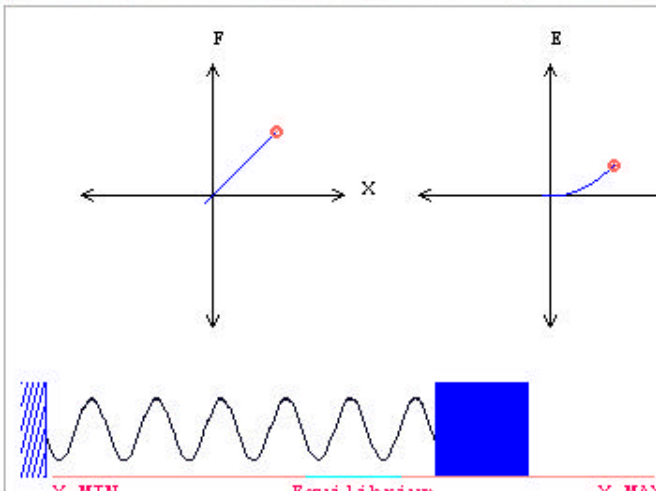


# What does Sharing Mean in Tango?

- ☞ For a **chat**, **sharing** is clear -- one shares the text typed in by the different users.
- ☞ Now start and share in the same way, one or more of the simple physics applets -- **spring** or **cross-product**.
- ☞ The teacher (deemed the master if he or she started it) can move the **Position** of the spring and the **Force** and **Energy** change in response.
  - All applets in the same session follow the behavior of the master
  - **Maybe your spring does not follow?** Did you join this session or another one? Perhaps you started a new session by clicking on spring icon rather than by highlighting spring session and clicking on join!
  - Note that “**slaves**” **cannot move spring position** -- they are meant to gaze in wonder and growing understanding as teacher moves spring and uses video conferencing to wax eloquent about the physical principles
- ☞ In spring case, **Tango shares state defining applet** -- here the position of the Spring.



TIspring - Hook's Law for TANGO Interactive - Netscape




Force vs Displacement graphs and a spring diagram. The graphs show a linear relationship between force (F) and displacement (x). The spring diagram shows a spring oscillating between X MIN and X MAX, with Equilibrium in the center.

2.4 fps | 85 kbps

Master-Slave  
BuenaVista  
File Edit View  
Audio Control  
Speaker

chat - TANGO Interactive Text Chat - Netscape



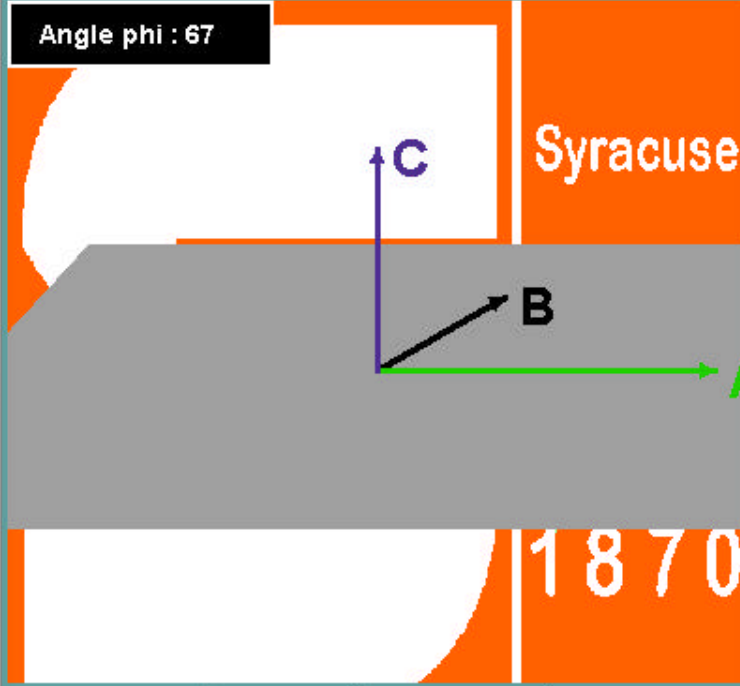
nt2  
95  
nt3  
nt4

User: 95 Font: 18 [ ] Time [x] Wrap [x] Sound [x]

nt2 : Join by Clicking Join Session  
nt2 : Not by Clicking Icon  
nt3 : Icon starts a new Session!  
nt3 : you can have any number of chats  
nt2 : Here we see how to teach physics  
nt2 : and digital video  
nt2 : Note simple specification of state of these applets

Tlccross - Vector Cross Product for TANGO Interactive - Net...

Angle phi : 67



Syracuse

1870

Description Numerical Info.

Kepler | Spring | Hopfield | Floss | Rubik | Othello | OSB

Local close	Session type	Master	Participants
Remote close	3D Chat	nt3	
Grant master	Buena Vista	nt3	
	Othello	nt4	
	Rubik's Cube	nt4	

# Two Shared Physics Simulations and audio video conferencing



# More on Sharing in Tango

- **Tango can share any client or server application** whose state can be determined and set. Tango finds the state from the master and transmits it to the slave clients
  - For efficiency, Tango usually transmits “**the change in state**” and not state itself -- for spring it is as easy to transmit absolute state  $x$  as change  $dx$  in state. For chat, change in state (latest text typed) is natural.
  - **For server applications**, one finds and sets state through web interface which can be URL (perhaps with CGI extension) or even CORBA interface to a distributed object.
- **Porting an application to Tango**, requires sending messages from master with state (change) and receiving them on slave. Hardest perhaps is knowing what the state is!





# Collaboration

Web Pages

Web Pages

Java

Java

C++

C++

**TANGO - Interactive**





# Either Join or Master Remote Opens



# Join or Remote Open Possible

- ☞ We showed how users could be added to sessions by **clients joining a session** initiated by the master.
- ☞ Alternatively, one can use a **remote open** command shown on previous and next two pages
  - This is appropriate when one is sure that a group of users need to participate. This is typically the case in a **distance education** class when students have logged into Tango and teacher wishes to launch a shared application (e.g. the cross-product applet) on all student machines.
- ☞ When teacher **highlights the cross-product** session (and no other users have joined), he or she is offered the allowed choices:
  - **local close** which will terminate session or
  - **remote open** which can spread session to any of the other users
- ☞ The dialog box that jumps up allows one either to select **specific users** or **all** -- the latter is a good option for education when one typically wants all students involved.
- ☞ We will see later how the configuration tab, allows clients to **prevent unwanted remote opens** cluttering their windows



The screenshot shows two browser windows. The left window, titled "TIspring - Hook's Law for TANGO Interactive - Netscape", displays two coordinate systems. The first shows a force vector  $F$  pointing up and a displacement vector  $x$  pointing right. The second shows a force vector  $E$  pointing up and a displacement vector  $x$  pointing left. Below these are a sine wave labeled "Equilibrium" and a blue square. The right window, titled "Features of TangoInteractive - Netscape", shows a menu bar and a list of features:

- 1. Basic Chat:** "democratic application"  
Use to demonstrate local open and join session
- 2. Simplest Simulation Applications -- Spring, Vector Cross Product:** Master-Slave model, discuss simple shared event.  
Discuss remote open
- 3. Microsoft Word under NetMeeting:** Show this page in

# Use Remote Open to add other Users

The screenshot shows the "TANGO Interactive Control Application" interface. At the top, it displays "EXIT", "TANGO Interactive", "USER: nt3", and "SERVER: foxport2.npac.syr.edu". Below this are "Collaboratory Tools" (Users, MailBox, Configuration, Help) and a row of application icons: CrossProd, Kepler, Spring, Hopfield, Flows, Rubik, Othello, and OSB. A "Demos?" tab is selected. At the bottom, there are buttons for "Join session", "Local close", "Remote open", "Remote close", "Become master", and "Grant master". A table shows session details:

Session type	Master	Participants
Chat	nt2	
Shared Browser	nt2	
Spring	95	
Cross Product	nt3	

A "REMOTE OPEN" dialog box is open, showing a table of users and hosts:

User	Host
nt4	maryland.npac.syr.edu
nt2	foxport2.npac.syr.edu
95	foxport1.npac.syr.edu

The dialog box also includes "SELECT ALL", "OK", and "CANCEL" buttons. A signature at the bottom reads "Signed by: SYRACUSE UNIVERSITY". The Windows taskbar at the bottom shows the Start button, several application icons, and the system clock at 4:08 PM.



The screenshot shows a Netscape browser window with two side-by-side windows. The left window, titled "TIspring - Hook's Law for TANGO Interactive - Netscape", displays two coordinate systems. The first has a vertical axis labeled 'F' and a horizontal axis labeled 'X', with a blue vector arrow pointing into the first quadrant. The second has a vertical axis labeled 'E' and a horizontal axis labeled 'X', with a blue vector arrow pointing into the fourth quadrant. Below these are two plots: a sine wave on the left and a blue square on the right, with labels 'X\_MIN', 'Equilibrium', and 'X\_MAX' along the horizontal axis. The right window, titled "Features of TangoInteractive - Netscape", shows a menu bar (File, Edit, View, Go, Communicator, Help) and a list of features:

- 1. Basic Chat:** "democratic application"  
Use to demonstrate local open and join session
- 2. Simplest Simulation Applications -- Spring, Vector Cross Product:** Master-Slave model, discuss simple shared event.  
Discuss remote open
- 3. Microsoft Word under NetMeeting:** Show this page in

# Select the Users for Remote Open

The screenshot shows the TANGO Interactive software interface. At the top, it displays "EXIT", "TANGO Interactive", "USER: nt3", and "SERVER: foxport2.npac.syr.edu". Below this is a "Collaboratory Tools" menu with options: Users, MailBox, Configuration, Help. A "Demos?" tab is selected, showing icons for various applications: CrossProd, Kepler, Spring, Hopfield, Flows, Rubik, Othello, and OSB. A table below lists session details:

Session type	Master	Participants
Chat	nt2	
Shared Browser	nt2	
Spring	95	
Cross Product	nt3	

A "REMOTE OPEN" dialog box is open, showing a list of users and hosts:

User	Host
nt4	maryland.npac.syr.edu
nt2	foxport2.npac.syr.edu
95	foxport1.npac.syr.edu

The dialog box includes a "SELECT ALL" button and "OK" and "CANCEL" buttons. A "Signed by: SYRACUSE UNIVERSITY" watermark is visible at the bottom. The Windows taskbar at the bottom shows the Start button, several application icons, and the system clock at 4:09 PM.





# Sharing Your Web Application

**TANGO - Interactive**



# Changing the Master Status

- ☞ The **master status** can be changed at the request of either **master** or **slave**
  - Highlight the session as usual and the
  - **master** is allowed to **grant master** or
  - any **slave** is allowed to **become master**
- ☞ As in remote open, configuration tab, allows one to control **unwanted transfer of master status**
- ☞ As an example, one could use this in education to allow student to control the spring applet and demonstrate that they understood basic ideas.



Features of T...

File Edit View

Back Forward

Bookmarks

Instant Message

**Operation:**

- Basic**  
Use to
- Simple**  
Master
- Micros**
- Admin**  
confirm  
master  
the Jav
- Other**  
whiteb

Tlchat - TANGO Interactive Text Chat - Netscape

**TANGO Interactive**

nt2  
95  
nt3  
nt4

User: 95 Font: 18  Time  Wrap  Sound

nt3 : Icon starts a new Session!  
nt3 : you can have any number of chats  
nt2 : Here we see how to teach physics  
nt2 : and digital video  
nt2 : Note simple specification of state of these applets  
nt2 : 95 can transfer master status of spring to nt3  
nt2 : highlight session and press grant master button

Tlccross - Vector Cross Product for TANGO Interactive - Net...

Angle phi : 67

# You can Transfer Master Status

Description Numerical Info.

Collaboratory Tools Users MailBox Configuration Help

Generic Tools I? Generic Tools II? Applications? **Demos?** Microsoft Applications? API Examples?

CrossProd Kepler Spring Hopfield Floss Rubik Othello OSB

Join session	Local close	Session type	Master	Participants
Remote open	Remote close	Chat	nt2	nt3
Become master	Grant master	Shared Browser	nt2	
		Spring	95	
		Cross Product	nt3	



**TangoInteractive can share**

**Client Java Applets**

**JavaScript**

**Java Applications**

**C++**

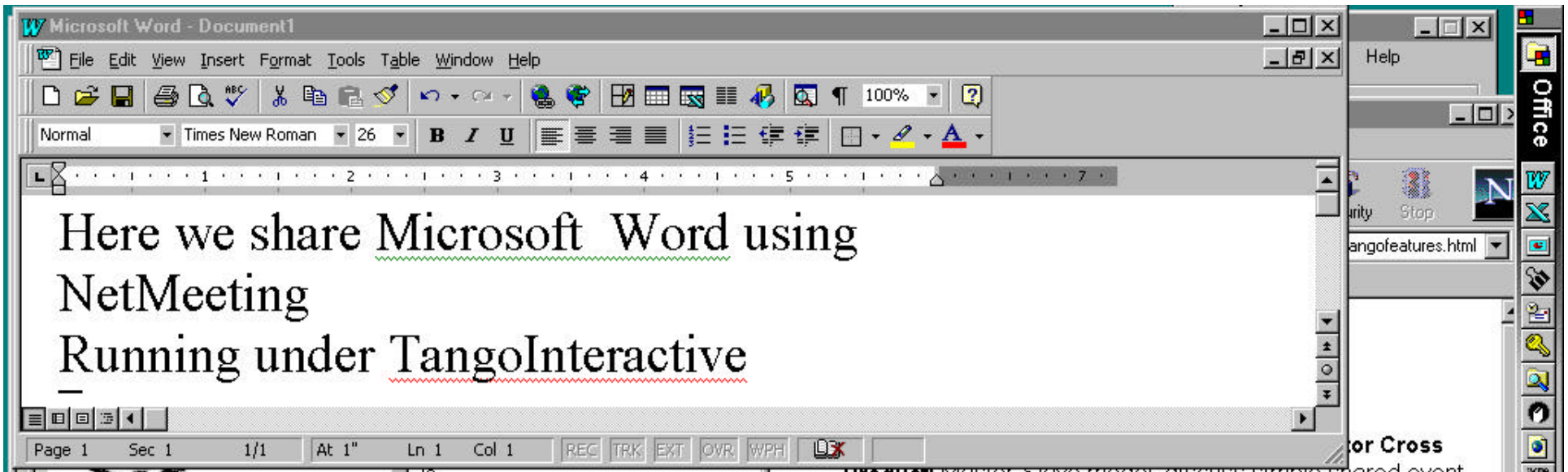
**Server Simulations**

**Web-linked Databases**

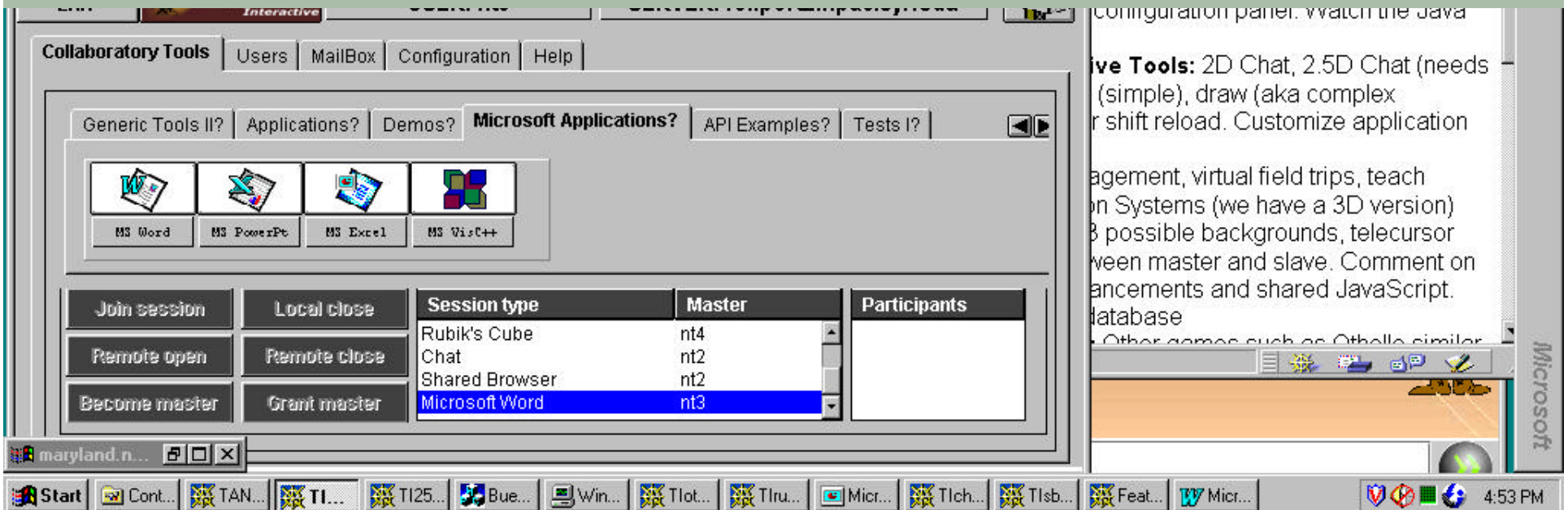
**CORBA**

**Lotus Notes ....**





# Microsoft's NetMeeting runs under Tango -- It has a more limited sharing Model - Master

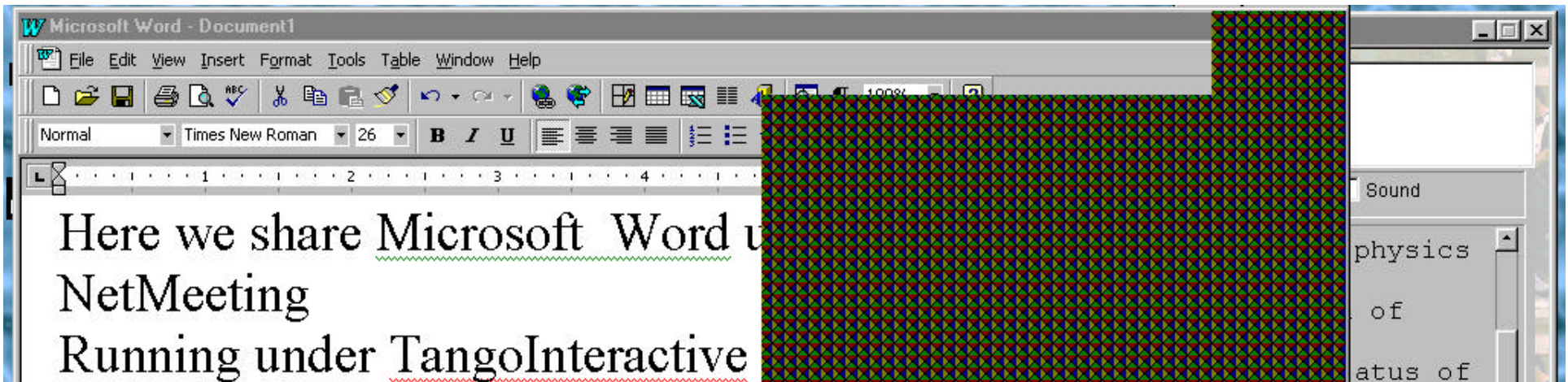




# Tango supports Microsoft NetMeeting

- ☛ Microsoft currently supplies **NetMeeting** for Windows 95/98/NT
- ☛ This supports a different model for sharing
  - When you share Word for example, there is **only one copy** of application running on the master
  - In Tango classic shared event model, the **application (e.g. spring applet) runs separately on each machine**
- ☛ At its simplest, NetMeeting **shares the “display”** (frame buffer produced by application)
  - This explains curious **hatched area** on following page. This corresponds to part of Word window that is obscured on the master but not on the slave.
- ☛ NetMeeting captures **mouse and keyboard actions** in the shared window and treats these as shared events
  - This allows shared editing with a difficult master-slave model
- ☛ This is an example of **Tango interfacing to a C++ client application** -- Microsoft's NetMeeting





# Microsoft's NetMeeting runs under Tango -- It has a more limited sharing Model - Slave

4. Administrativ

TICA - TANGO Interactive Control Application - Netscape

EXIT TANGO Interactive USER: 95 SERVER: foxport2.npac.syr.edu

Collaboratory Tools Users MailBox Configuration Help

Generic Tools I? Generic Tools II? Applications? Demos? Microsoft Applications? API Examples?

CrossProd Kepler Spring Hopfield Flows Rubik Othello OSB

Join session	Local close	Session type	Master	Participants
Remote open	Remote close	Rubik's Cube	nt4	
Become master	Grant master	Chat	nt2	
		Shared Browser	nt2	
		Microsoft Word	nt3	

<http://trurl.npac.svr.edu/tango/runtime/index.html> and show feature/bud list

Play

Sound

physics

of

atus of

2.5D Chat (needs more work),  
teboard). Remember shift reload.

d trips, teach Geographical

unds, telecursor and note difference  
ning whiteboard enhancements and  
atabase

n as Othello similar -- natural

end database system; note applets  
urated

ations -- planets are bound to get out



# Collaboration

Web Pages

Web Pages

Java

Java

C++



C++

**TANGO - Interactive**





# Control Applet has Administrative Tab with users and details about them

EXIT  USER: 95 SERVER: foxport2.npac.syr.edu 

Collaboratory Tools **Users** MailBox Configuration Help

User	Host	is	Comment	Last change at
nt3	mainereal.npac.syr	PRESENT	BUSY!! Please don't disturb	Mon Jul 20 11:01:25 EDT
nt2	foxport2.npac.syr.ei	absent	i run the server	Mon Jul 20 11:01:48 EDT
95	foxport1.npac.syr.ei	absent	im the brave 95 user	Mon Jul 20 11:04:04 EDT
nt4	maryland.npac.syr.	absent	im a rather sick machine	Mon Jul 20 11:06:07 EDT

**PRESENT** **BUSY** **ABSENT**  **CLEAR**



# Users Information in Tango

- ☞ There are other capabilities of **Control Application** with **users**, **mailbox**, **configuration** and **help tabs**
- ☞ The **users tab** can tell you more about all the users who are logged into the Tango Server
  - Their **handle** (login name), **name of their client machine**, **status message**, and **time** they last changed status
- ☞ Each user is responsible for setting status message
- ☞ On next page, we show the result of **double clicking** on a given user.
  - Up pops more information!
- ☞ You can **ping the user** -- send a message to see the user machine is still alive.
- ☞ If the ping works, try a **hail** which tries to wake the user up so he or she can collaborate with you.
  - Use a chat window to have a more detailed dialog with a hailed user



Use to demonstrate local...  
 2. **Simplest Simulation** discuss simple shared...  
 3. **Microsoft Word und**  
 4. **Administrative Base**

**INFORMATION ABOUT A TANGO USER**

USER: nt2 AT HOST: foxport2.npac.syr.edu

LOGGED ON AT: Tue Jul 21 11:09:03

TOTAL WORKING TIME: 1 hours 20 minutes

ACTIVE SESSIONS

- Shared Browser
- 3D Chat
- Spring
- Mapper
- Chat
- Video Player

OK HAIL USER PING USER

Signed by: SYRACUSE UNIVERSITY's VeriSign Trust Network ID

**HailWindow**

YOU ARE BEING HAILED BY nt4

OK

Signed by: SYRACUSE UNIVERSITY's VeriSign Trust Network ID

**TICA - TANGO Interactive Control Application - Netscape**

EXIT **TANGO Interactive** USER: 95 SERVER: foxport2.npac.syr.edu

Collaboratory Tools **Users** MailBox Configuration Help

User	Host	is	Comment	Last change at
nt3	c219-162.s98.sigg	PRESENT		Tue Jul 21 08:40:35 EDT
95	c219-131.s98.sigg	PRESENT		Tue Jul 21 10:10:08 EDT
nt2	foxport2.npac.syr.edu	PRESENT		Tue Jul 21 10:56:32 EDT
nt4	c219-150.s98.sigg	PRESENT		Tue Jul 21 11:22:05 EDT
toms	audix.npac.syr.edu	PRESENT		Tue Jul 21 11:33:31 EDT
Grzes	kain.npac.syr.edu	PRESENT		Tue Jul 21 11:36:09 EDT
marek	trurl.npac.syr.edu	PRESENT		Tue Jul 21 12:14:29 EDT

**Wake Up a User! Find their sessions and work status**





# Sharing Your Web Application

**TANGO - Interactive**



# Set Your Preferences in Configuration Tab

TICA - TANGO Interactive Control Application - Netscape

EXIT TANGO Interactive USER: 95 SERVER: foxport2.npac.syr.edu

Collaboratory Tools Users MailBox Configuration Help

Control Application vs. 1.2.0

Show Tango Console

Voice messages on

Confirmation options

Confirmation always needed

Always approved

Always disapproved

Reread TANGO configuration file

CONFIGURATION OF TANGO APPLICATIONS

NAME	URL or PATH
Chat	http://foxport2.npac.syr.edu/tango101/applets
Talking heads	http://foxport2.npac.syr.edu/tango101/applets
3D Chat	http://foxport2.npac.syr.edu/tango101/applets
Whiteboard	http://foxport2.npac.syr.edu/tango101/applets
Drawing tool	http://foxport2.npac.syr.edu/tango101/applets
XEmacs	XEHACS\xemacs
Shared Browser	http://foxport2.npac.syr.edu/tango101/applets
WebWisdom	http://foxport2.npac.syr.edu/webwisdom/users/

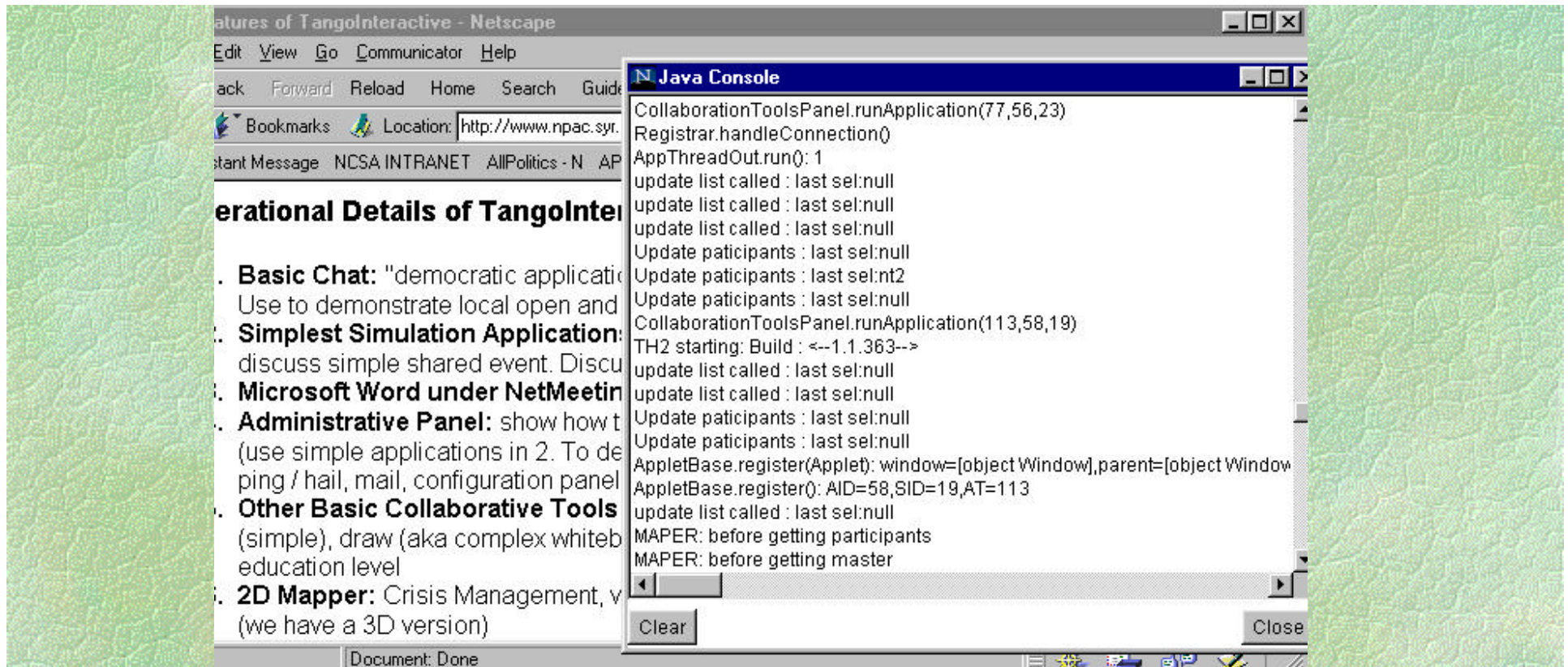
CLICK AN ENTRY FOR APPLICATION HELP!



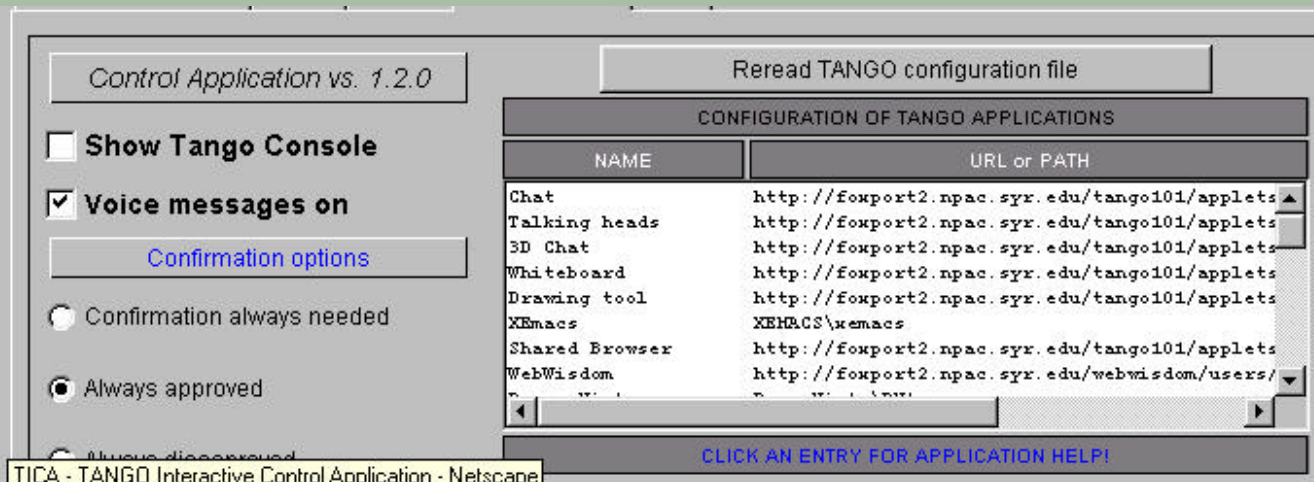
# The Configuration Tab

- ☞ Clicking the **configuration tab**, we can inspect some useful system parameters
  - The **Tango Console** should be left unchecked by most users -- default
  - **Voice messages** are defaulted to on but this is pretty silly -- **turn them off** -  
- as generally they are just a distraction
- ☞ One can define the processing of **remote requests** -- change master status and remote open/close
  - **always approved** is default but you can choose **always disapprove** or that a **confirmation box** be displayed at each such request
- ☞ On the right, one has a **configuration file window** which is only useful if there is a problem -- it will tell you where the information for each application is stored.
  - Maybe some wizard can use this to a debug a problem





# Use Java Console from Netscape to Debug





# Don't forget the Java Console!

- ☞ Although the **Tango Console** is not so useful, one can usefully invoke the **Java Console** from the **communicator** menu at the top of the Netscape window
- ☞ The Java Console can tell you if Netscape or Tango has made a mistake
  - Even if you can't interpret it, copy and paste the console into your **bug reports** so the Tango team can diagnose problems
- ☞ Note you can start the Console at any time and still see past information and so you can wait till a problem develops



# Collaboration

Web Pages

Web Pages

Java

Java

C++

C++

**TANGO - Interactive**

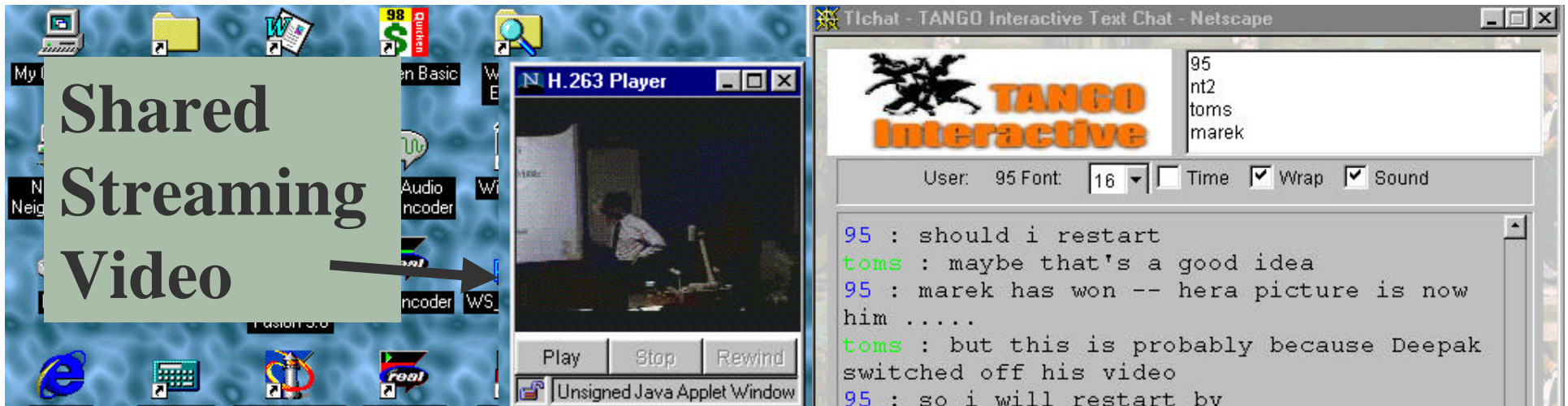




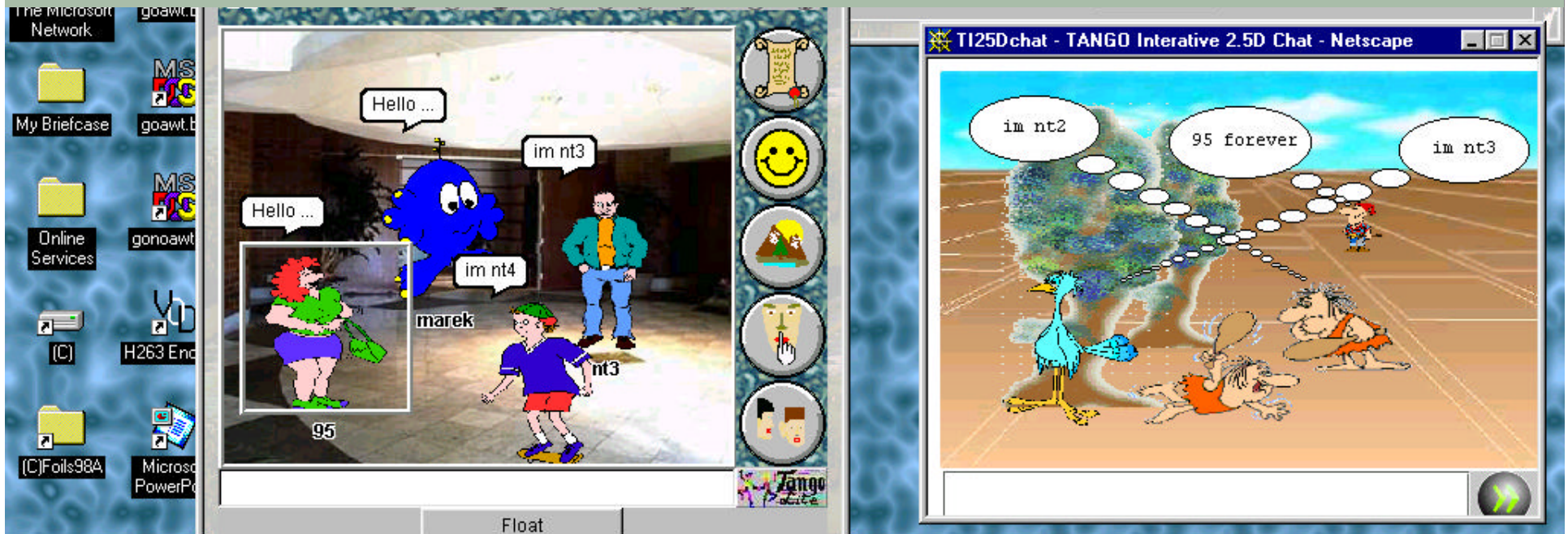
# Tango has many Applications

- ☞ **Tango has lots of applications** ranging from the serious to the frivolous; from the essentially bug-free to cases which are only illustrative due to implementation problems.
- ☞ **Tango has a well defined API** which allows diverse applications to be ported to it.
- ☞ For instance, the current release of Tango sports **three versions of chat**.
  - Each of these can be invoked any number of times.
  - They have different tradeoffs from the serious dull text only version to the cool 2.5D graphical version which is cool (to a K-12 audience) but perhaps not the most efficient (to our busy executive)





# TangoInteractive is a flexible framework -- 3 chats

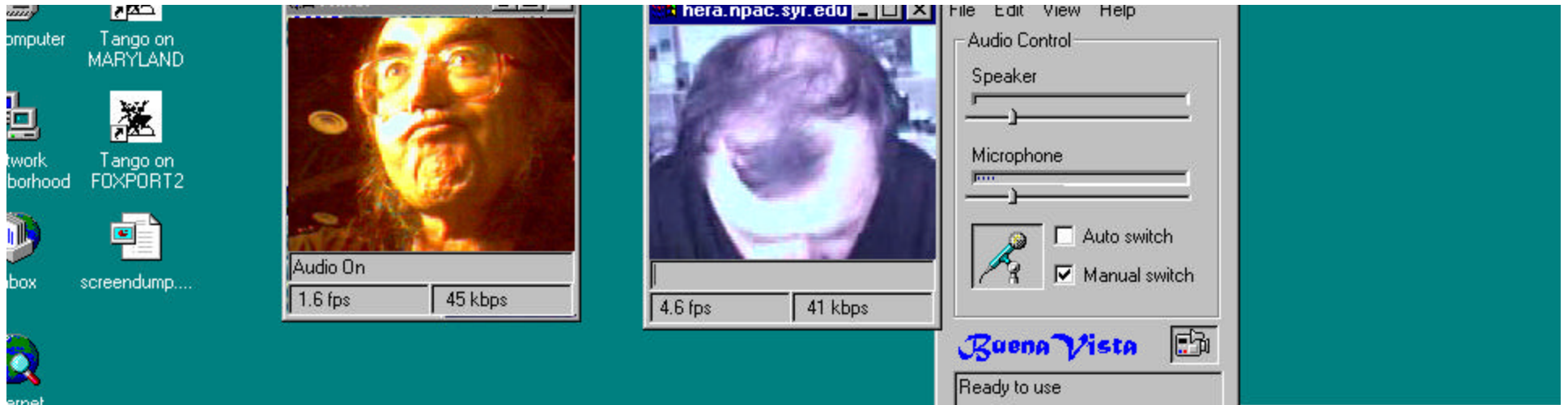




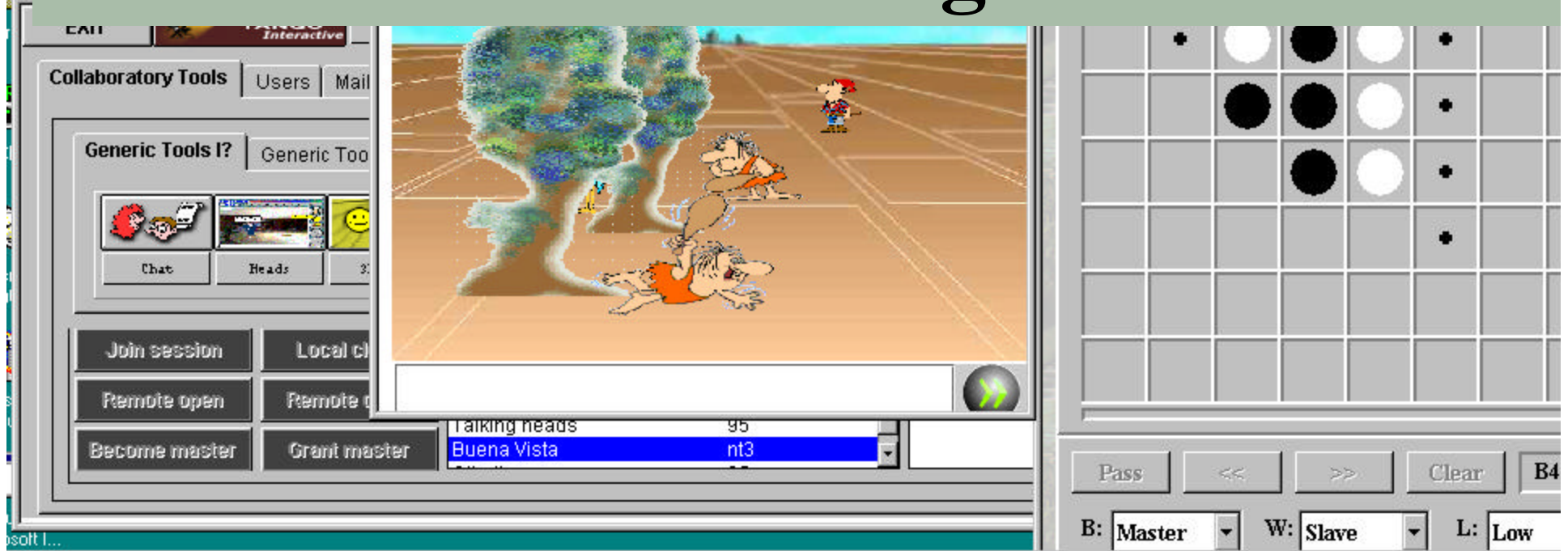
# Multimedia Applications

- ☞ Tango has several **multimedia applications**
  - We have already seen the **digital audio-video conferencing** system Buena Vista
  - However we can also share audio and video files
- ☞ The multimedia applications **only use the Tango Server for control information**. The high volume data is sent by separate channels outside the Tango Server
  - This ensures that the Tango server is highly robust and scales well as number of users increases.
- ☞ The deployed version of Tango shares audio and video files using Java applets to decode multimedia data on the client (Video is **low bandwidth H263**)
  - Inside NPAC, we support a high end version with both MPEG and H263 codecs





# Download The Built in Digital Audio Video with Tango Client





**Tango Interactive  
Web Collaboratory  
Share Any Application  
around the world  
PC and UNIX Platforms**



# Tango Offers Two White Boards

The image displays two instances of the TANGO Interactive Whiteboard application. The left window, titled "Simple TangoInteractive Whiteboard", features a toolbar with drawing tools (line, circle, rectangle, erase) and a color palette. It shows a black circle and a red rectangle drawn on a white background. A properties dialog box for a circle is open, showing the following details:

class tm.wbd.WbdOval	
Geometry	
Position:	228 53
Size:	122 234
SizeLock:	<input type="checkbox"/>
Line	
Style:	Solid
Width:	2
Color:	000000
Fill	
Color:	b27a7a

The right window, titled "Tlwb - TANGO Interactive Whiteboard - Netscape", displays a presentation slide with a blue background and white text. The slide content includes:

- Location: <http://dagger.npac.syr.edu/webwisdom/users/gcf/alliance98/collaboverview/seporgi>
- TANGO Interactive Tutorial
- Overview of Collaboration Systems
- by Geoffrey Fox, Ma...
- and TANGO team
- NPAC, Syracuse University
- Alliance '08 April 27th '08

A grey oval is drawn on the slide, and a red arrow points to the circle tool in the toolbar.



# There are many Whiteboards

☞ **Tango offers two basic whiteboards**

- One has a simple intuitive interface but is not so powerful
- The other is much powerful but is harder to use
- This sophisticated whiteboard is also used as part of the **WebWisdom** shared curricula tool as one optional display mode

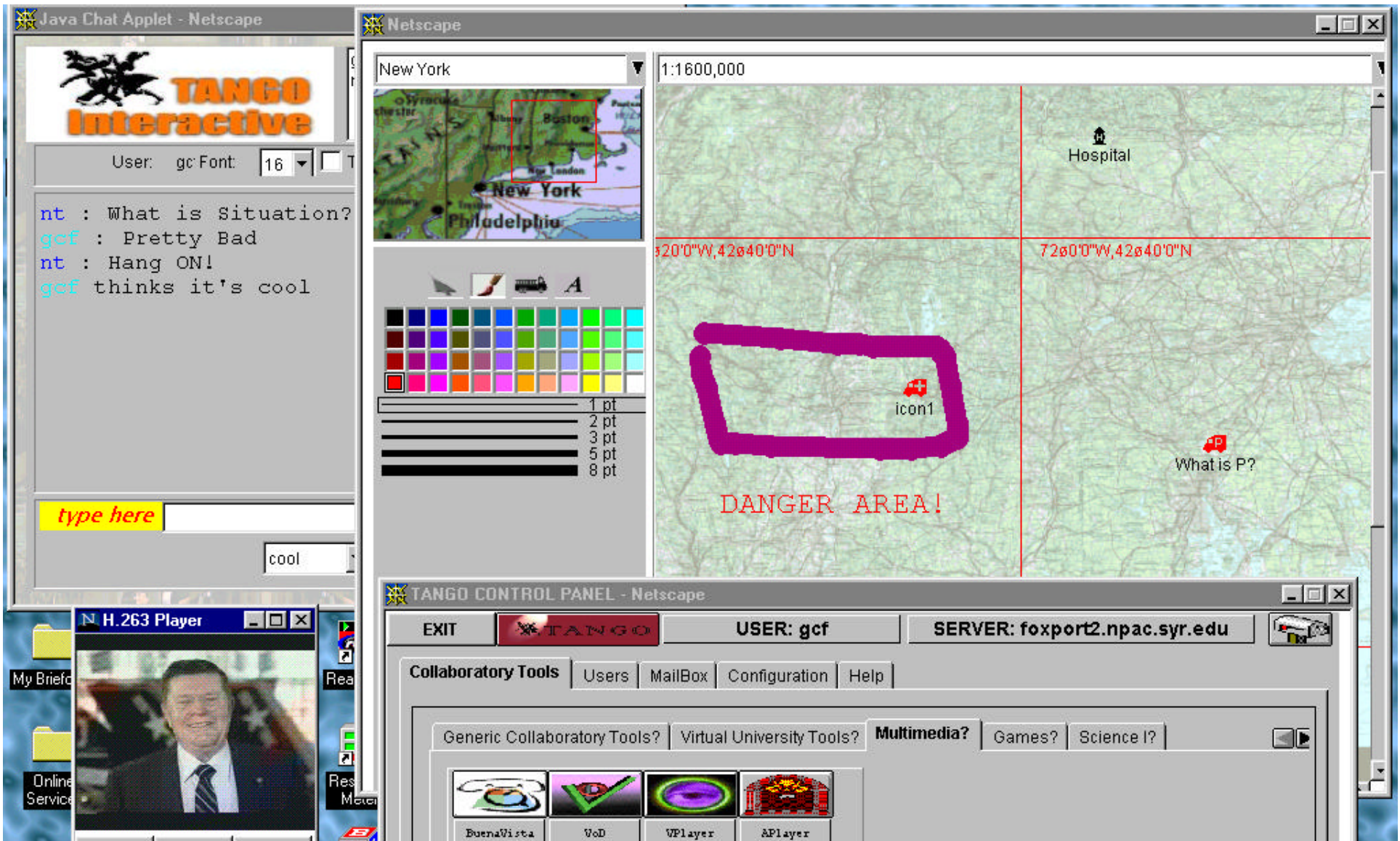
☞ **The variety of such tools is a key advantage of a framework like Tango -- you can adopt it for your particular application and expect that the open API will allow a variety of basic tools such as whiteboards and chats to be developed to support your application**

- You are not locked into a particular generic support tool

☞ **Another whiteboard** is used in the popular **mapper** shared application where one has maps displayed on the whiteboard

- Pan through the maps with interface at top left
- Add **shared icons, text** and **freehand** drawing





# A Shared Java Mapper used in Crisis Management



# You Choose what to share in Tango

- ☞ These whiteboards illustrate **your freedom in defining shared events in Tango**
- ☞ For each of the three examples just discussed (basic whiteboards and mapper), **all users in the session can freely modify the whiteboard**
  - For the mapper for instance anybody can add icons (and everybody sees them) and anybody can change the viewpoint (controlled by graph on top left)
- ☞ We could have made a **different choice**, with for instance only the master able to set the viewpoint.
  - Each event can be treated differently -- all could set icons with master only setting viewpoint and text
  - these choices can also be dynamically changed
- ☞ This illustrates **power of shared event model** as one can choose which events to share and change this at any time
- ☞ It is all **“just software”!**





# Sharing Your Web Application

**TANGO - Interactive**



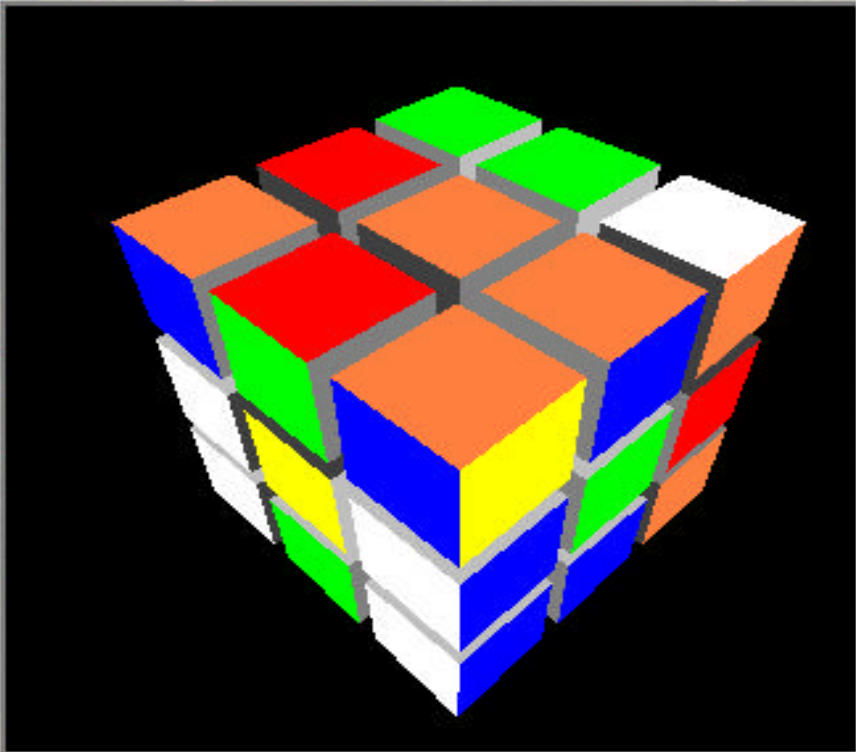
# Games are Natural in Tango

## Othello and the Magic Cube

Comment on backend database

### 8. Games -- Rubik's Cube: Other games s

Tlrubik - Rubik's Magic Cube for TANGO Interac...



Cube Face Original Arrange Level:

Puzzle Solve 2 3 4 5 6 - +

Othello - Othello Game for TANGO Interactive - N...

		○	○	○		
	+	+	○		+	
	+	○	●	○	+	
		●	●	○	+	
			●	○	+	
					+	

Pass << >> Clear B4/W8

B: Master W: Slave L: Low



# More Applications: Games and Physics

- ☞ So games are a natural applications of collaborative system
  - **Othello** is an interesting and serious 2 player game where you can also play as an individual against the computer
  - The **magic cube** can use use the the ability of transferring master status to allow a slave(observer) take control and solve the puzzle started by the original master
- ☞ We showed two simple **physics** applications but we also have more sophisticated shared applets illustrating **planetary motion** and **computational fluid dynamics (CFD)**
  - **CFD** just shares data and display options and solves the equations (written in Java) fully on each machine
  - **Planetary motion** will start and stop the planets motion and then resume the simulation



# Shared Simulations -- Fluid Flow and Planetary Motion

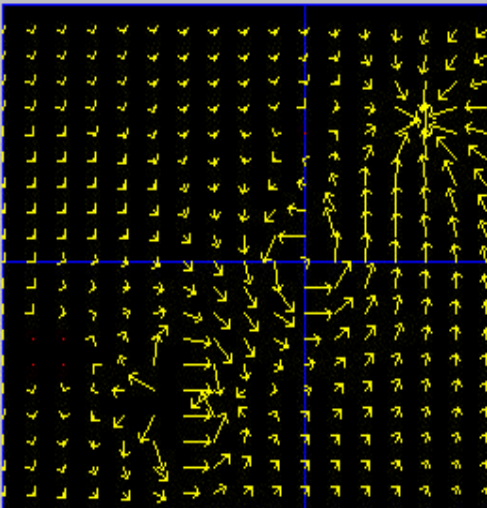
## Superposition of Flows

2 : Vortex at (0.0, 0.0) 1.0  
 1 : Sink at (2.0, 2.0) 1.0  
 3 : Doublet at (-2.0, -2.0) 1.

Add to   Delete   Clear All

Type:    Strength:   
 Xpos:    Ypos:   
 Uniform Flow  
 Direction:    Velocity:   

Pos(x, y): (1.62, 0.37)   Velocity(u, v): (-0.02, ...)



Generic Tools I?   Generic Tools II?   Applications?   **Demos?**   Micro:

Pause   Continue  
 Zoom In   Zoom Out

Show Velocity  
 Show Acceleration  
 Show Orbit

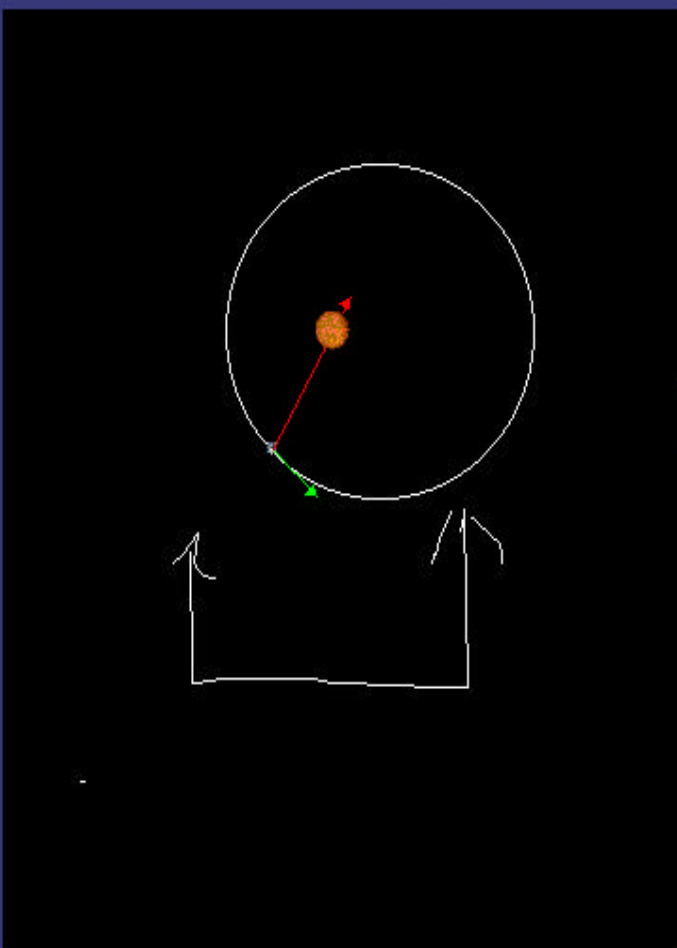
Erase Lines

Star's Mass:   
 Semimajor:   
 Eccentricity:

Start Sweeping   Stop Sweeping   Erase Areas

Time:      
 Area:

Sweeping    Ready





**TangoInteractive can share**

**Client Java Applets**

**JavaScript**

**Java Applications**

**C++**

**Server Simulations**

**Web-linked Databases**

**CORBA**

**Lotus Notes ....**