

A Java-Enabled Telecollaboration System

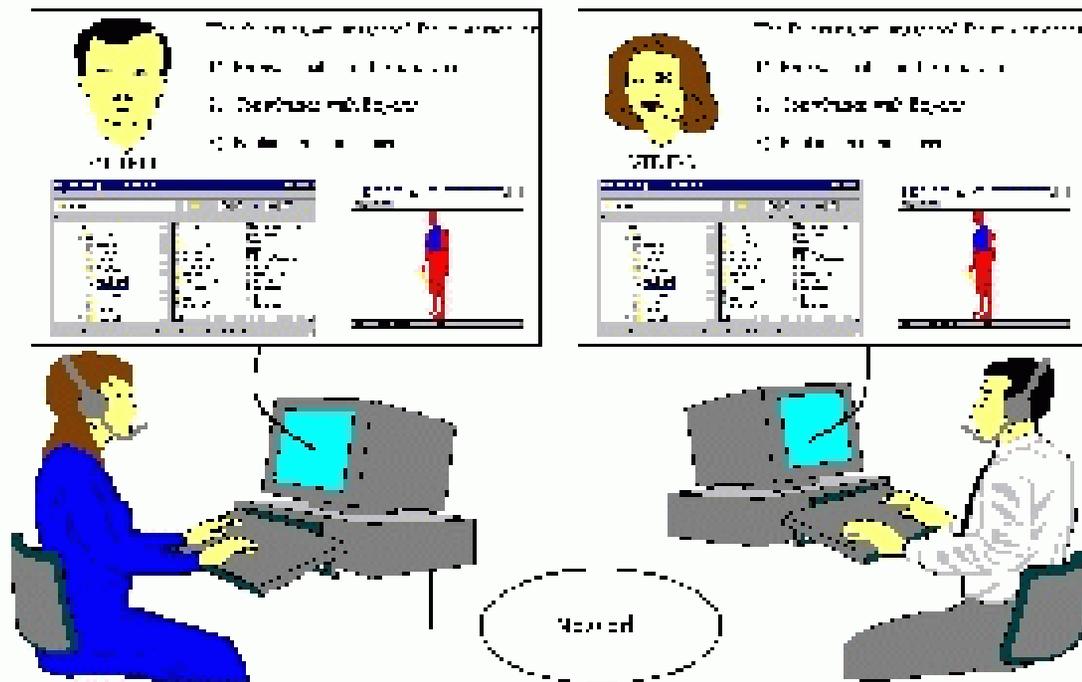
*Multimedia Communications Research Laboratory
University of Ottawa, Canada*



MCRLab, University of Ottawa
Info: georgona@mcrlab.uottawa.ca
Internet: www.mcrlabuottawa.ca

Virtual Conference

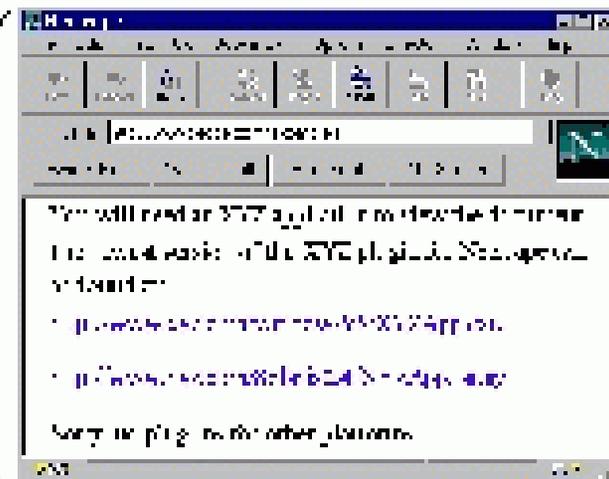
- ◆ real-time sharing of multimedia content via the Internet or Intranets
- ◆ interfaces with Web browsers such as Netscape, IE Explorer
- ◆ platform-independent at the user end; uses Java applets
- ◆ supports HTML and VRML



MCRLab, University of Ottawa
Info: georgana@mcrlab.uottawa.ca
Internet: www.mcrlab.uottawa.ca

Applications for the Web

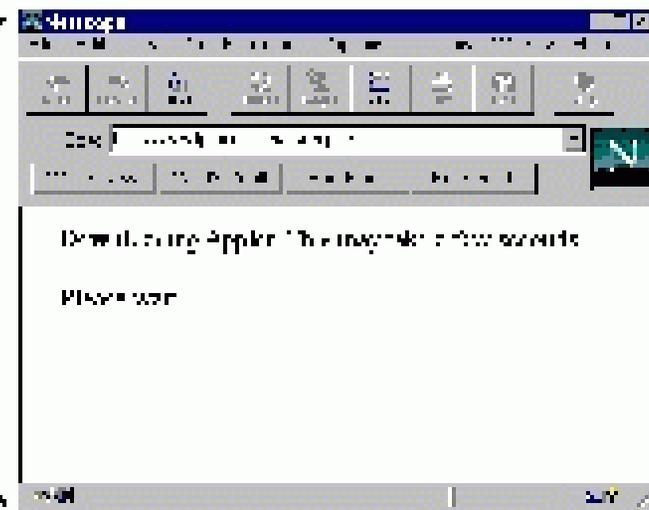
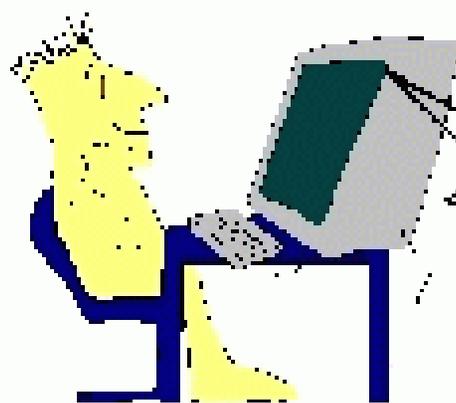
- ◆ **traditional approach:** user must find the application, download it, and install it for the proper platform
 - ◆ **helper applications**
 - ◆ **plug-ins**
 - ◆ **problems:** takes disk space, must keep track of new versions and updates, available for only certain platforms, too many of them



MCRI Lab, University of Ottawa
Info: georgina@mcrlab.uottawa.ca
Internet: www.mcrlab.uottawa.ca

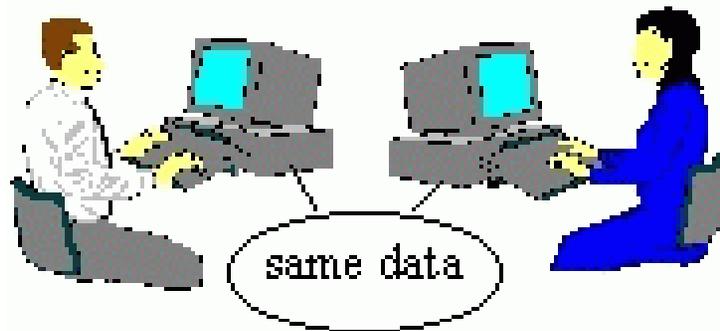
Applications for the Web

- ◆ **new approach:** application comes to the user and runs platform-independently (network-centric)
 - ◆ **applets**
 - ◆ programmed in Java
 - ◆ automatic: downloads itself, runs in the Web browser, removes itself after termination of application



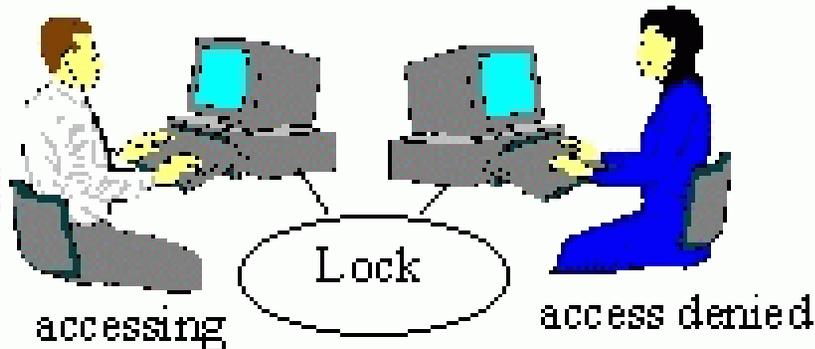
MCR Lab, University of Ottawa
Info: georgina@mcrlab.uottawa.ca
Internet: www.mcrlabuottawa.ca

Multiuser Applications



1. consistency

2. access control

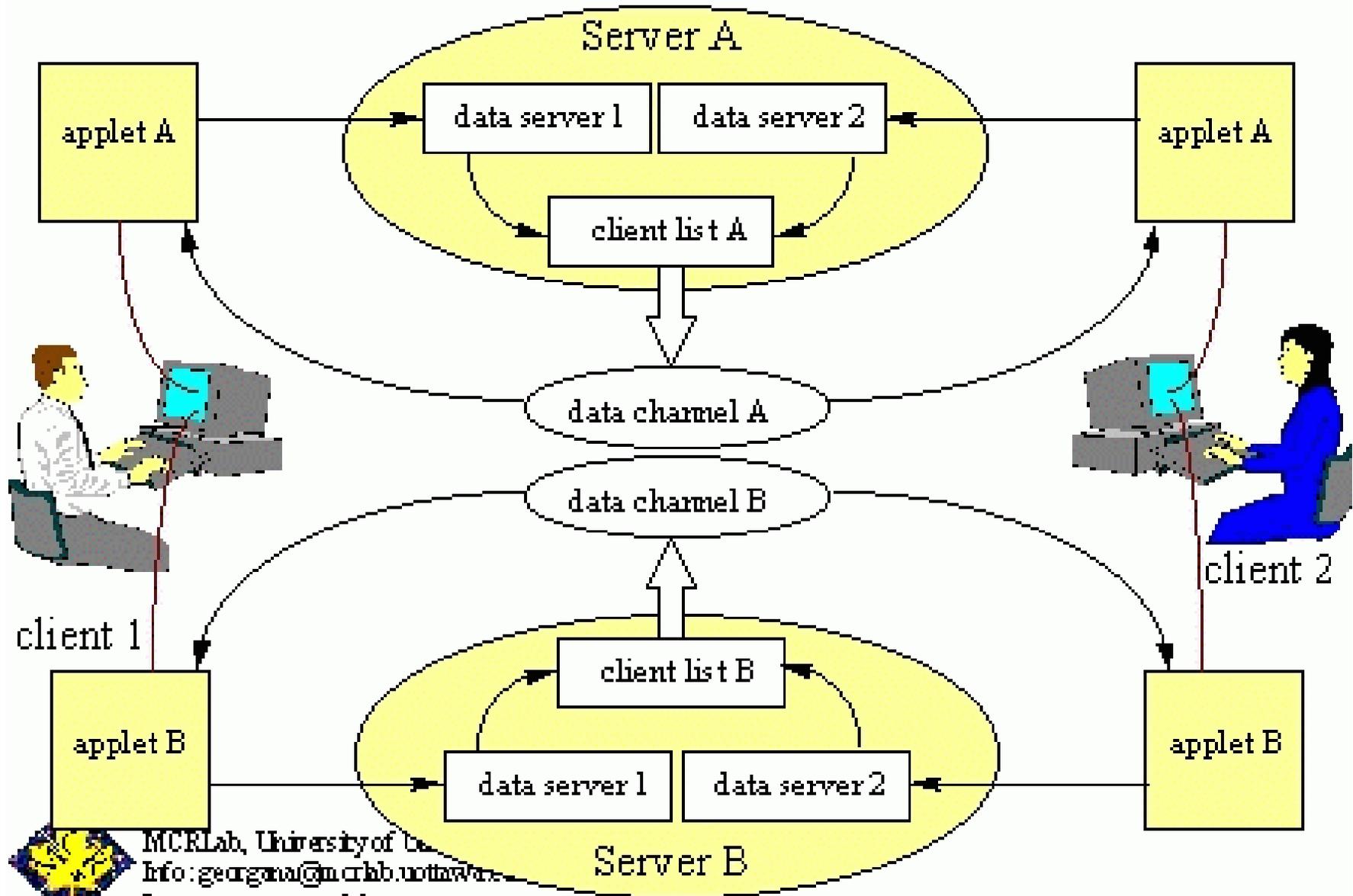


3. data passing



MCR Lab, University of Ottawa
Info: georgina@mcrlab.uottawa.ca
Internet: www.mcrlabuottawa.ca

JETS Architecture

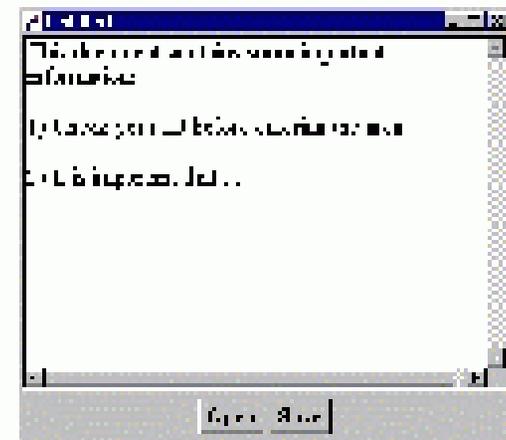


MCRLab, University of Ottawa
Info: georgina@mcrlab.uottawa.ca
Internet: www.mcrlab.uottawa.ca

Sample Applets



shared whiteboard with on-line images, slide presentations, and chat space



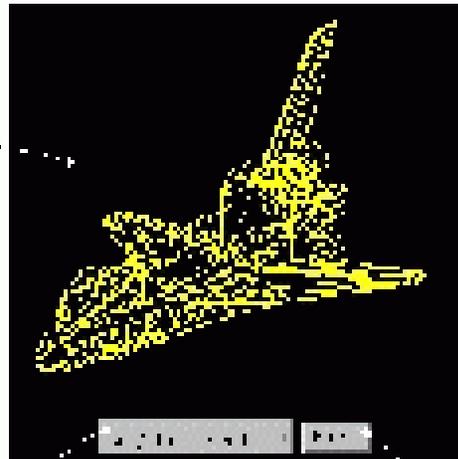
shared text editing



MCRI Lab, University of Ottawa
Info: georgina@mcrlab.uottawa.ca
Internet: www.mcrlab.uottawa.ca

Sample Applets (cont'd)

3D object (cube)



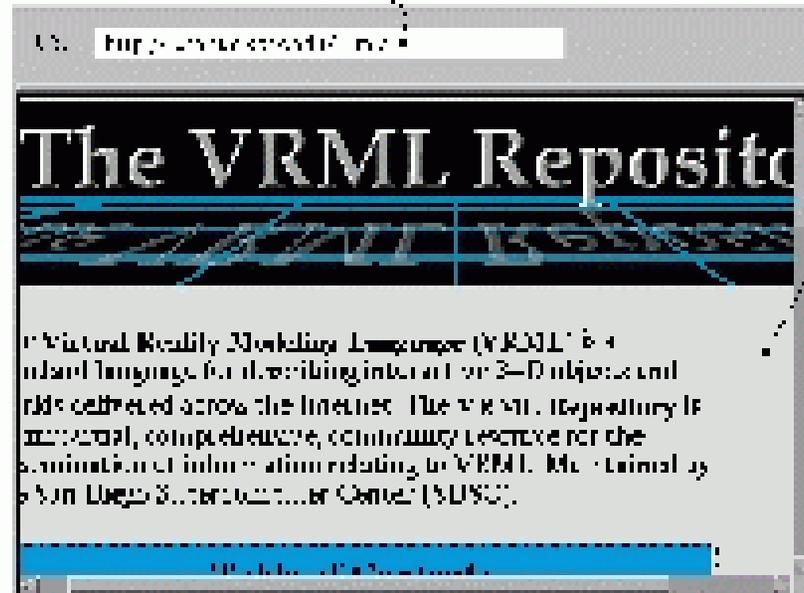
file choice list

file push button

shared 3D viewer
(VRML)

file choice list

HTML document displaying time

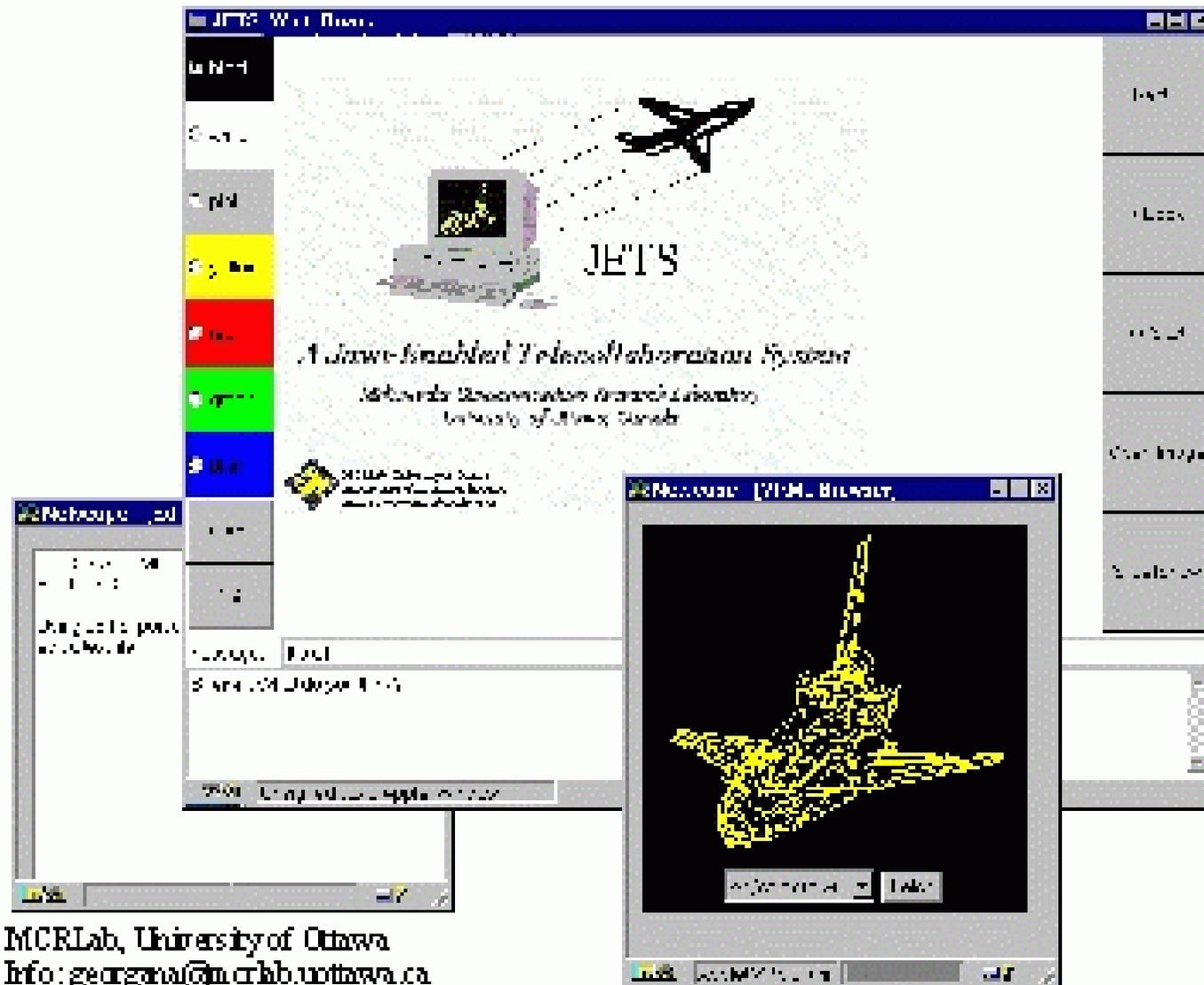


Shared Browsing



MCRLab, University of Ottawa
Info: georgina@mcrlab.uottawa.ca
Internet: www.mcrlab.uottawa.ca

User Interface (Netscape example)



MCR Lab, University of Ottawa
Info: georgina@mcrlab.uottawa.ca
Internet: www.mcrlab.uottawa.ca

Performance Evaluation

◆ platform:

- ◆ very good performance on Pentium 100 MHz 16MB RAM
- ◆ good performance on SUN Sparc 20, slow on Macintosh

◆ network:

- ◆ client-to-client delay (CCD) measures application level to application level delay
- ◆ compliant with MMCF parameters on Intranets

Network:	messages confirmed	duration (msec)	CCD (msec/byte)
local Ethernet	8763	900044	51.35
local ATM	8850	900005	50.85
OCRinet (Metropolitan ATM)	8786	900001	51.22
long distance Internet	697	900780	646.2

← Dijon-Ottawa



MCR Lab, University of Ottawa
Info: georgina@mcrhb.uottawa.ca
Internet: www.mcrlabuottawa.ca

Current Development

◆ Conference Management System

- ◆ enables one person to act as the chair of the meeting and control the participants' rights

◆ Video/Audio capability

- ◆ displaying of video in form of a Java applet
- ◆ playing of audio in u-law or GSM format
- ◆ video/audio capture must be done platform-specificly



MCRLab, University of Ottawa
Info: georgina@mcrlab.uottawa.ca
Internet: www.mcrlabuottawa.ca

Recap

◆ JETS is very accessible:

- ◆ runs in default web browsers such as Netscape
- ◆ platform independent
- ◆ takes advantage of existing *de-facto* technologies such as VRML, Java, and HTML
- ◆ entire effort from user is to go to the right web page

◆ JETS is easily extendible

- ◆ easy to use API
- ◆ new application can be added in form of an applet inside a browser frame or standalone window
- ◆ runs in non-PC devices such as Web TVs, network stations, ...



MCRLab, University of Ottawa
Info: georgina@mcrlab.uottawa.ca
Internet: www.mcrlabuottawa.ca