Tutorial on Virtual Human System

How to run stuff

Patrick Kenny | 9/24/2008

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Agenda

- Brief review of system architecture
- Exercise 1 – Running the Launcher
- Exercise 2 – Running the Graphics Engine
- Exercise 3 – Running Smartbody
- Exercise 4 – Running the Non-Verbal Behavior Generator
- Exercise 5 – Running the NPC Editor
- Exercise 6 – Running Text to Speech
- Exercise 7 – Running Fake Recognizer
- Exercise 8 – Running Speech Recognition
- Exercise 9 – Running Tools

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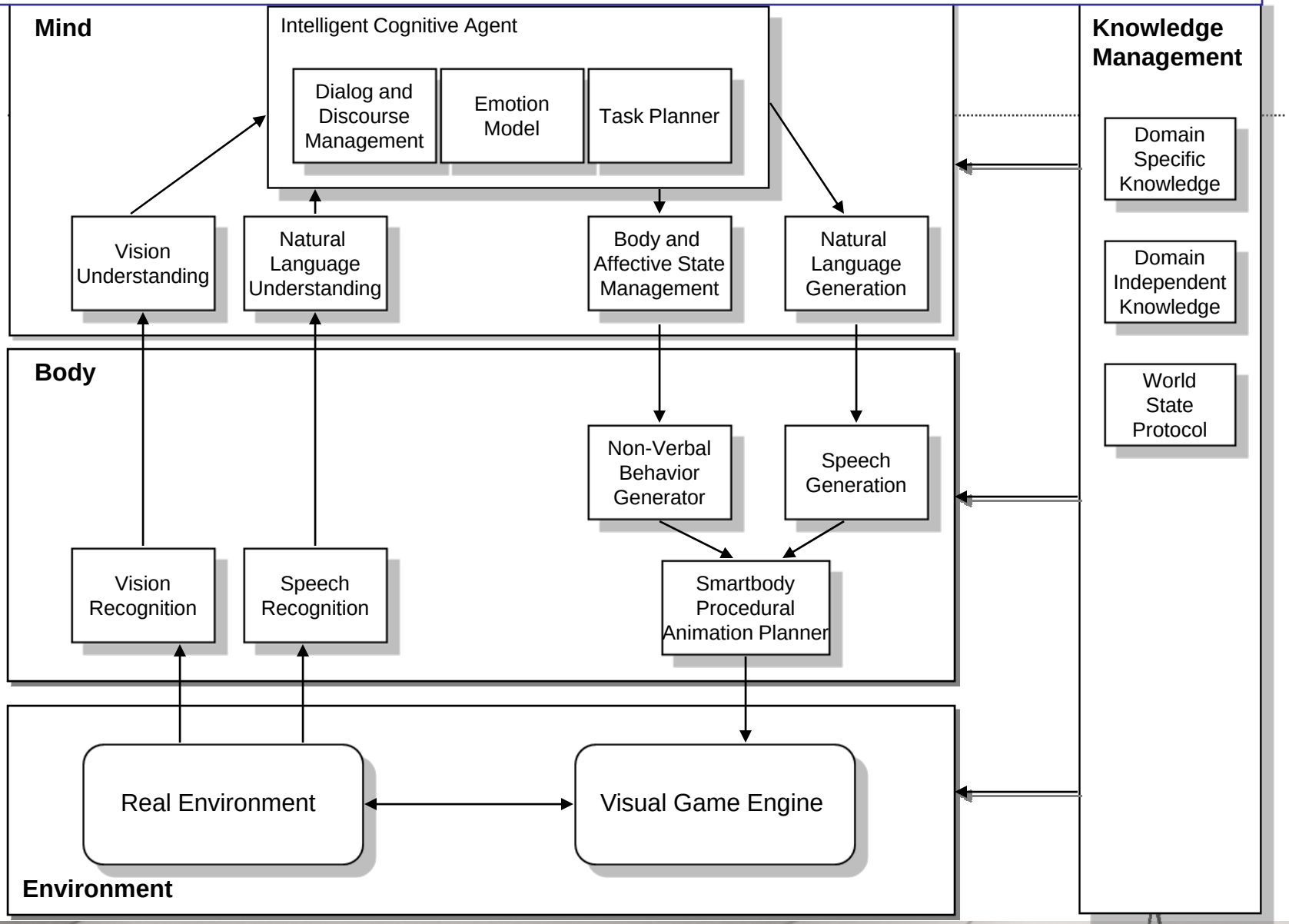
System Installation

- **Code Base:**
  - C:\<SASO_INSTALL_VERSION> e.g. SASO1060
- **Data Directory**
  - C:\saso<version>\saso\data
  - NPC Editor Files
    - C:\saso<version>\saso\data\classifier
  - Smartbody Init Files
    - C:\saso<version>\saso\data\sbm-saso\scripts
- **Core Code**
  - C: \saso<version>\saso\code
- **NVB Editor Files**
  - C: \saso<version>\saso\code\nvb_generator
- **Launcher**
  - C: \saso<version>\saso\Run-SASO.bat

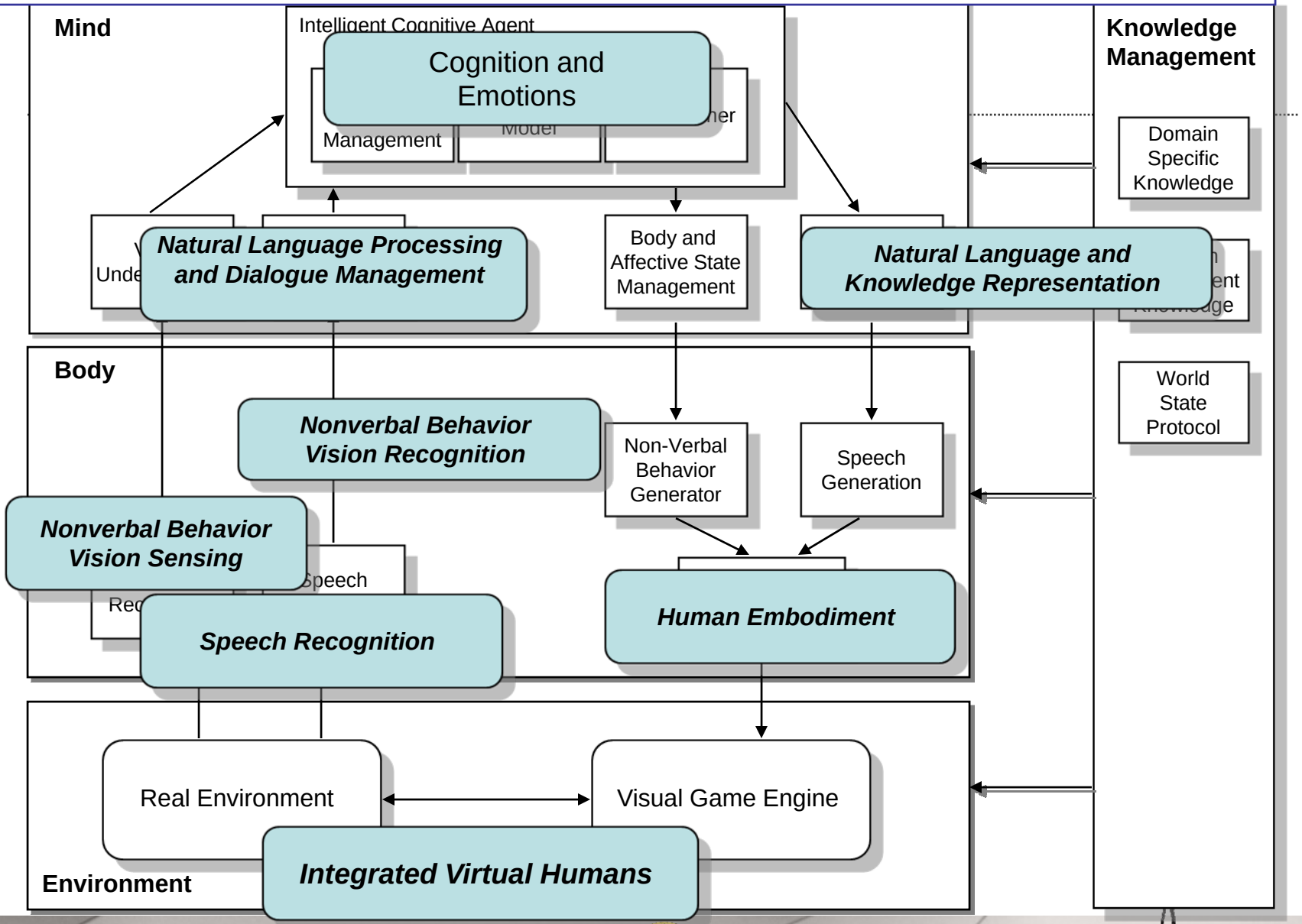
System Tools

- **Editor**
  - UltraEdit
- **Recording videos**
  - Fraps
- **Hardware**
  - Speakers
  - Microphone

Virtual Human Architecture



Virtual Human Architecture



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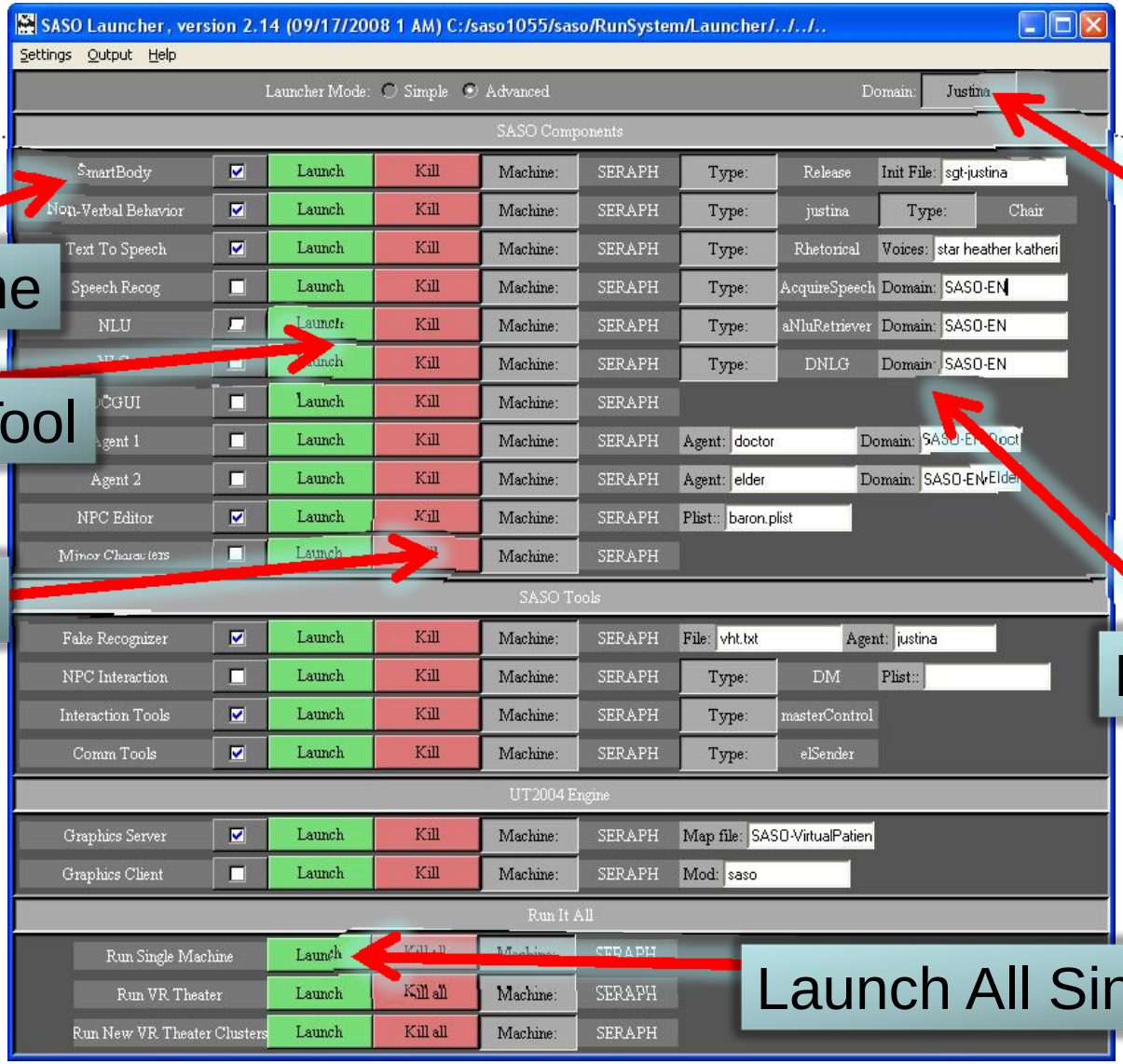
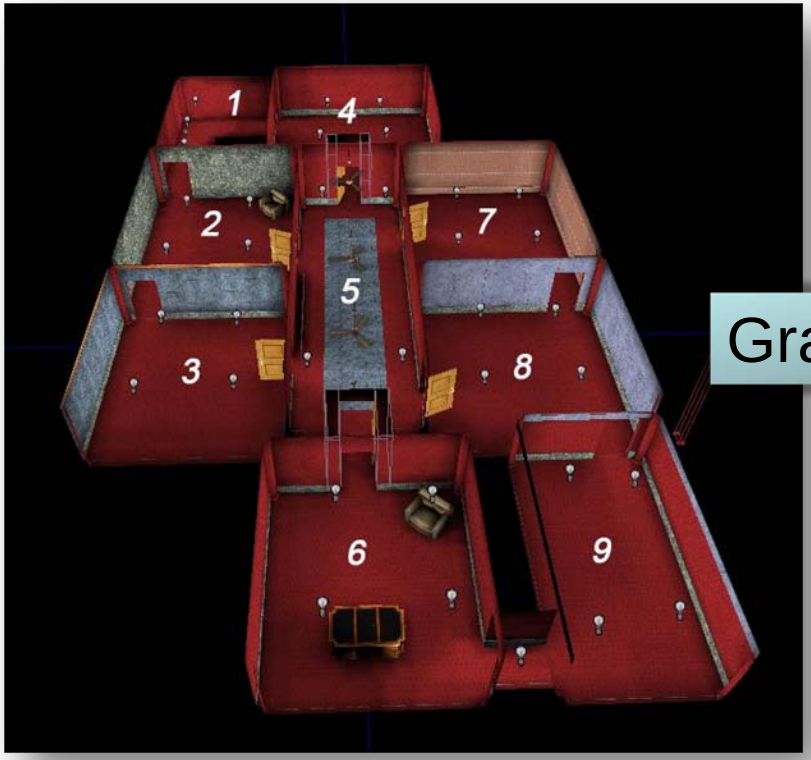
Exercise 1 – Running the Launcher

- **Launcher**
  - Go to “C: \saso<version>\saso\”
  - Click on Run-SASO.bat

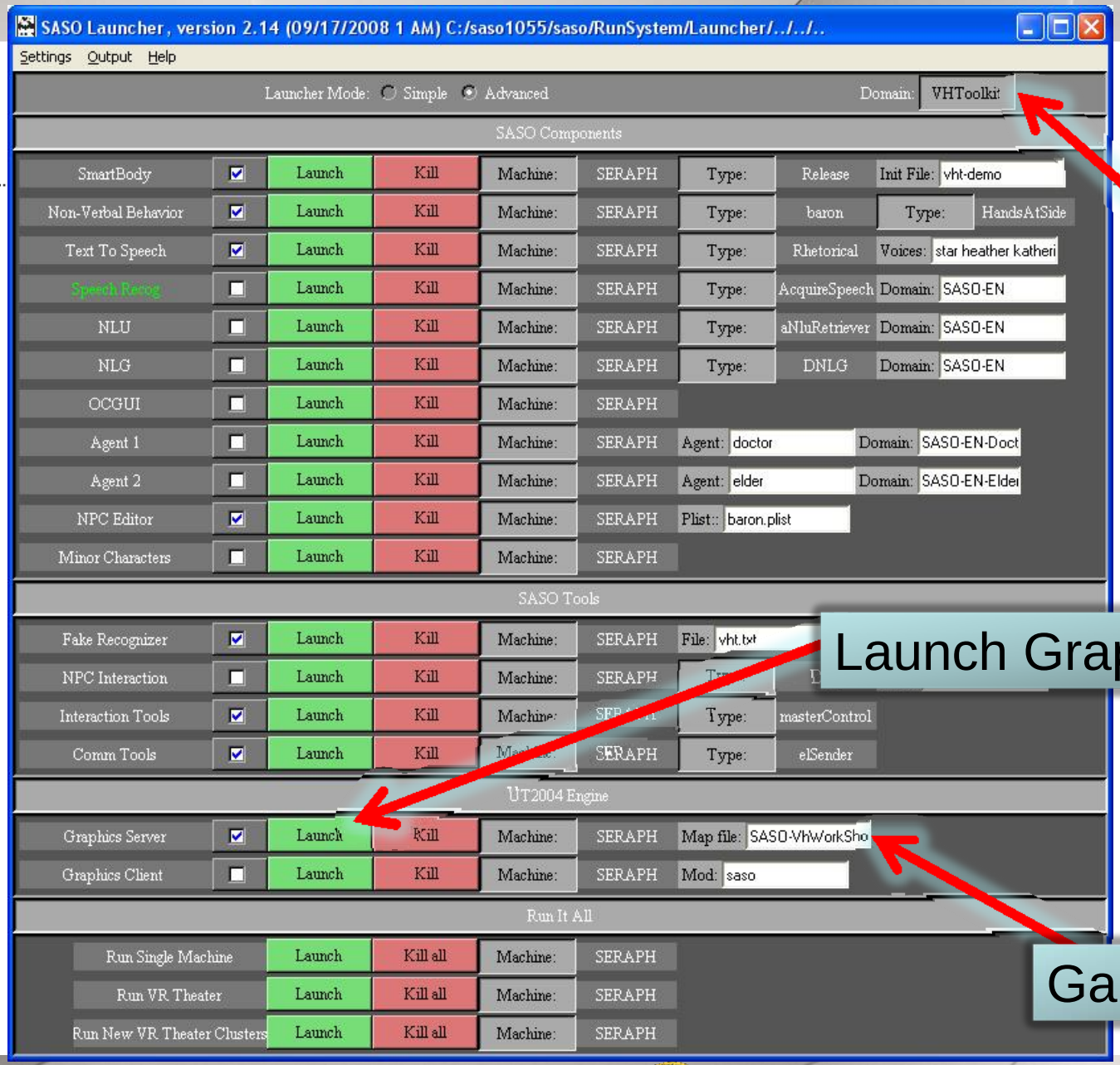

SASO Launcher, version 2.14 (09/17/2008 1 AM) C:/saso1055/saso/RunSystem/Launcher/../../..
Settings Output Help
Launcher Mode: Simple Advanced
Domain: Justina
SASO Components
SmartBody Launch Kill Machine: SERAPH Type: Release Init File: sgt-justina
Non-Verbal Behavior Launch Kill Machine: SERAPH Type: justina Type: Chair
Text To Speech Launch Kill Machine: SERAPH Type: Rhetorical Voices: star heather katherine
Speech Recog Launch Kill Machine: SERAPH Type: AcquireSpeech Domain: SASO-EN
NLU Launch Kill Machine: SERAPH Type: aNluRetriever Domain: SASO-EN
Launch Kill Machine: SERAPH Type: DNLG Domain: SASO-EN
GUI Launch Kill Machine: SERAPH
Agent 1 Launch Kill Machine: SERAPH Agent: doctor Domain:
Agent 2 Launch Kill Machine: SERAPH Agent: elder Domain: SASO-EN-Elder
NPC Editor Launch Kill Machine: SERAPH Plist:: baron.plist
Launch Machine: SERAPH
SASO Tools
Fake Recognizer Launch Kill Machine: SERAPH File: vht.txt Agent: justina
NPC Interaction Launch Kill Machine: SERAPH Type: DM Plist::
Interaction Tools Launch Kill Machine: SERAPH Type: masterControl
Comm Tools Launch Kill Machine: SERAPH Type: elSender
UT2004 Engine
Graphics Server Launch Kill Machine: SERAPH Map file: SASO-VirtualPatient
Graphics Client Launch Kill Machine: SERAPH Mod: saso
Run It All
Run Single Machine Launch
Run VR Theater Launch Kill all Machine: SERAPH
Run New VR Theater Clusters Launch Kill all Machine: SERAPH
Tool Name
Launch Tool
Kill Tool
Domain
Parameters
Launch All Single Machine

Exercise 2 – Running the Graphics Engine

- **We use the Unreal Tournament Game Engine**

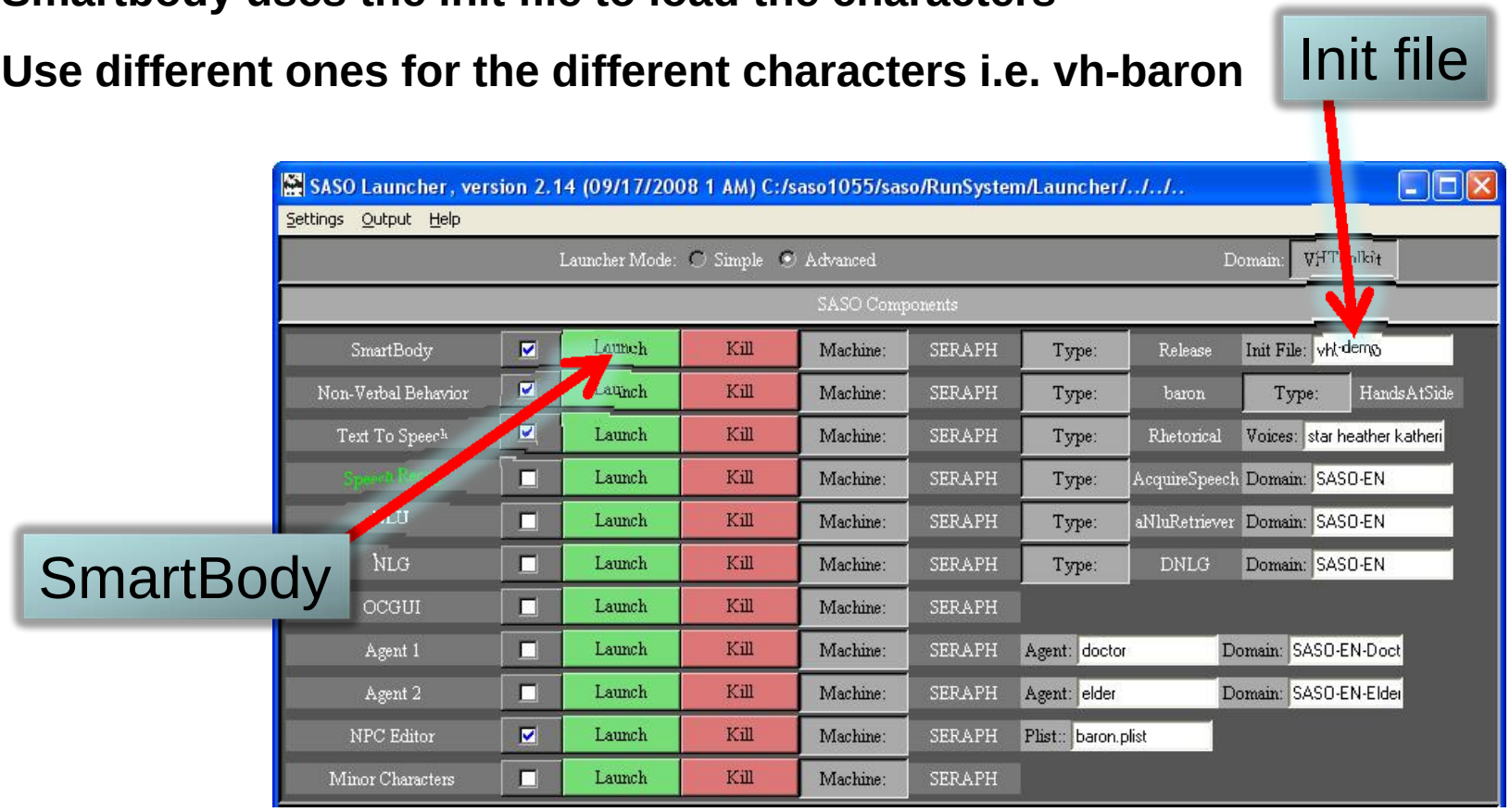


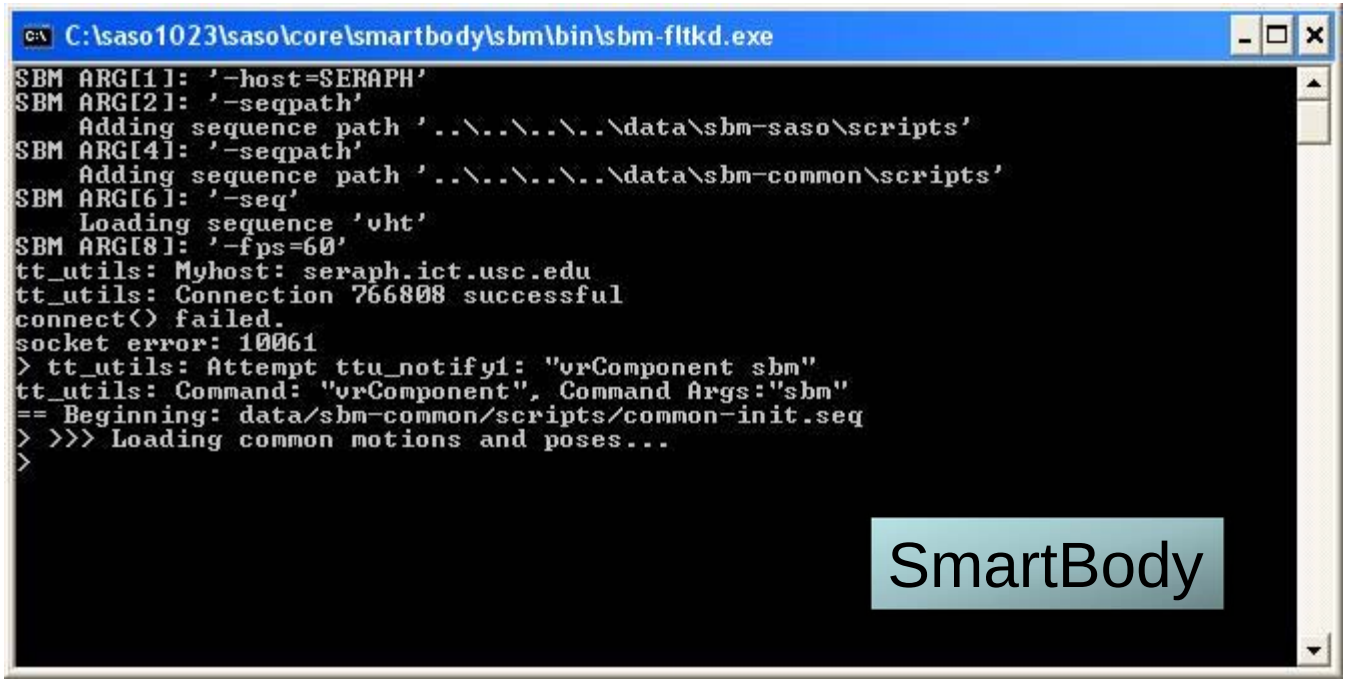
Graphics Engine


SASO Launcher, version 2.14 (09/17/2008 1 AM) C:/saso1055/saso/RunSystem/Launcher/../../..
Settings Output Help
Launcher Mode: Simple Advanced
Domain: VHToolkit
SASO Components
SmartBody Launch Kill Machine: SERAPH Type: Release Init File: vht-demo
Non-Verbal Behavior Launch Kill Machine: SERAPH Type: baron Type: HandsAtSide
Text To Speech Launch Kill Machine: SERAPH Type: Rhetorical Voices: star heather katheri
Speech Recog Launch Kill Machine: SERAPH Type: AcquireSpeech Domain: SASO-EN
NLU Launch Kill Machine: SERAPH Type: aNluRetriever Domain: SASO-EN
NLG Launch Kill Machine: SERAPH Type: DNLG Domain: SASO-EN
OCGUI Launch Kill Machine: SERAPH
Agent 1 Launch Kill Machine: SERAPH Agent: doctor Domain: SASO-EN-Doct
Agent 2 Launch Kill Machine: SERAPH Agent: elder Domain: SASO-EN-Elder
NPC Editor Launch Kill Machine: SERAPH Plist:: baron.plist
Minor Characters Launch Kill Machine: SERAPH
SASO Tools
Fake Recognizer Launch Kill Machine: SERAPH File: vht.txt
NPC Interaction Launch Kill Machine: SERAPH
Interaction Tools Launch Kill Machine: Type: masterControl
Comm Tools Launch Kill SERAPH Type: elSender
UT2004 Engine
Graphics Server Launch Kill Machine: SERAPH Map file: SASO-VhWorkSho
Graphics Client Launch Kill Machine: SERAPH Mod: saso
Run It All
Run Single Machine Launch Kill all Machine: SERAPH
Run VR Theater Launch Kill all Machine: SERAPH
Run New VR Theater Clusters Launch Kill all Machine: SERAPH
Domain
Launch Graphics Server
Game Level

Exercise 3 – Running Smartbody (SBM)

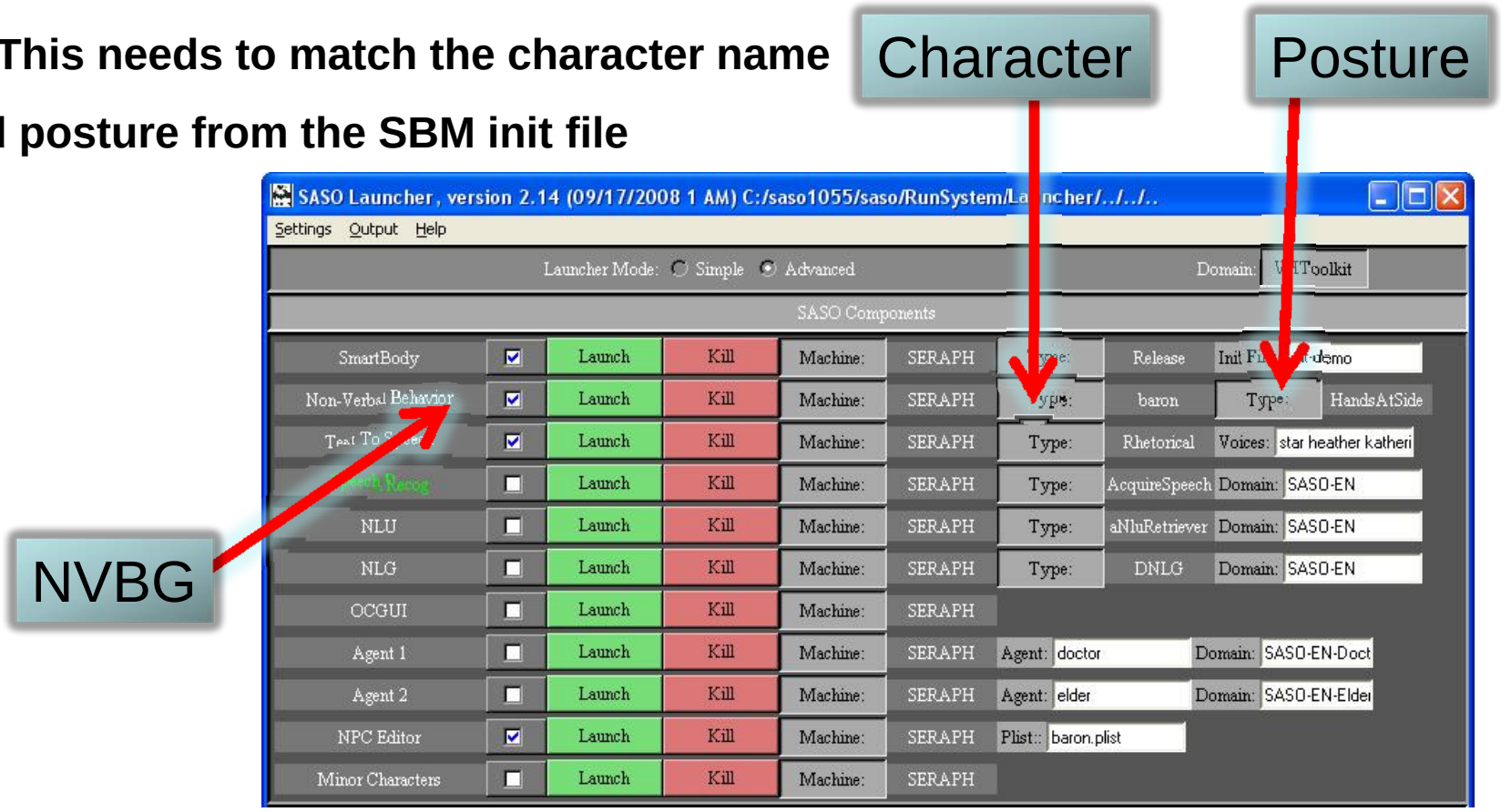
- **Smartbody uses the init file to load the characters**
- **Use different ones for the different characters i.e. vh-baron**

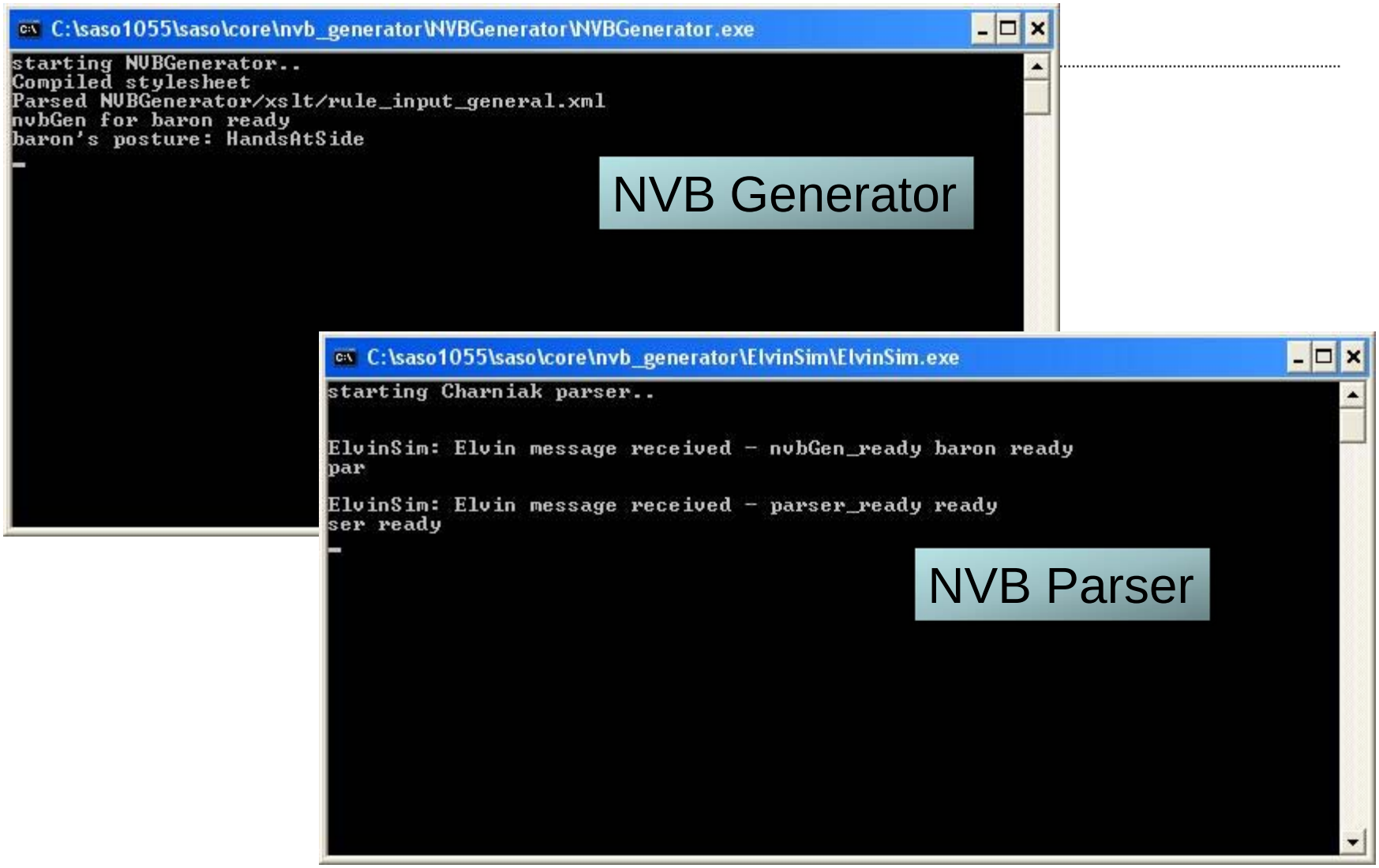



C:\saso1023\saso\core\smartbody\sbm\bin\sbm-fltkd.exe
SBM ARG[1]: '-host=SERAPH'
SBM ARG[2]: '-seqpath'
Adding sequence path '..\..\..\..\data\sbm-saso\scripts'
SBM ARG[4]: '-seqpath'
Adding sequence path '..\..\..\..\data\sbm-common\scripts'
SBM ARG[6]: '-seq'
Loading sequence 'vht'
SBM ARG[8]: '-fps=60'
tt_utils: Myhost: seraph.ict.usc.edu
tt_utils: Connection 766808 successful
connect() failed.
socket error: 10061
> tt_utils: Attempt ttu_notify1: "vrComponent sbm"
tt_utils: Command: "vrComponent", Command Args:"sbm"
== Beginning: data/sbm-common/scripts/common-init.seq
> >>> Loading common motions and poses...
>
SmartBody

Exercise 4 – Running the Non-Verbal Behavior Generator

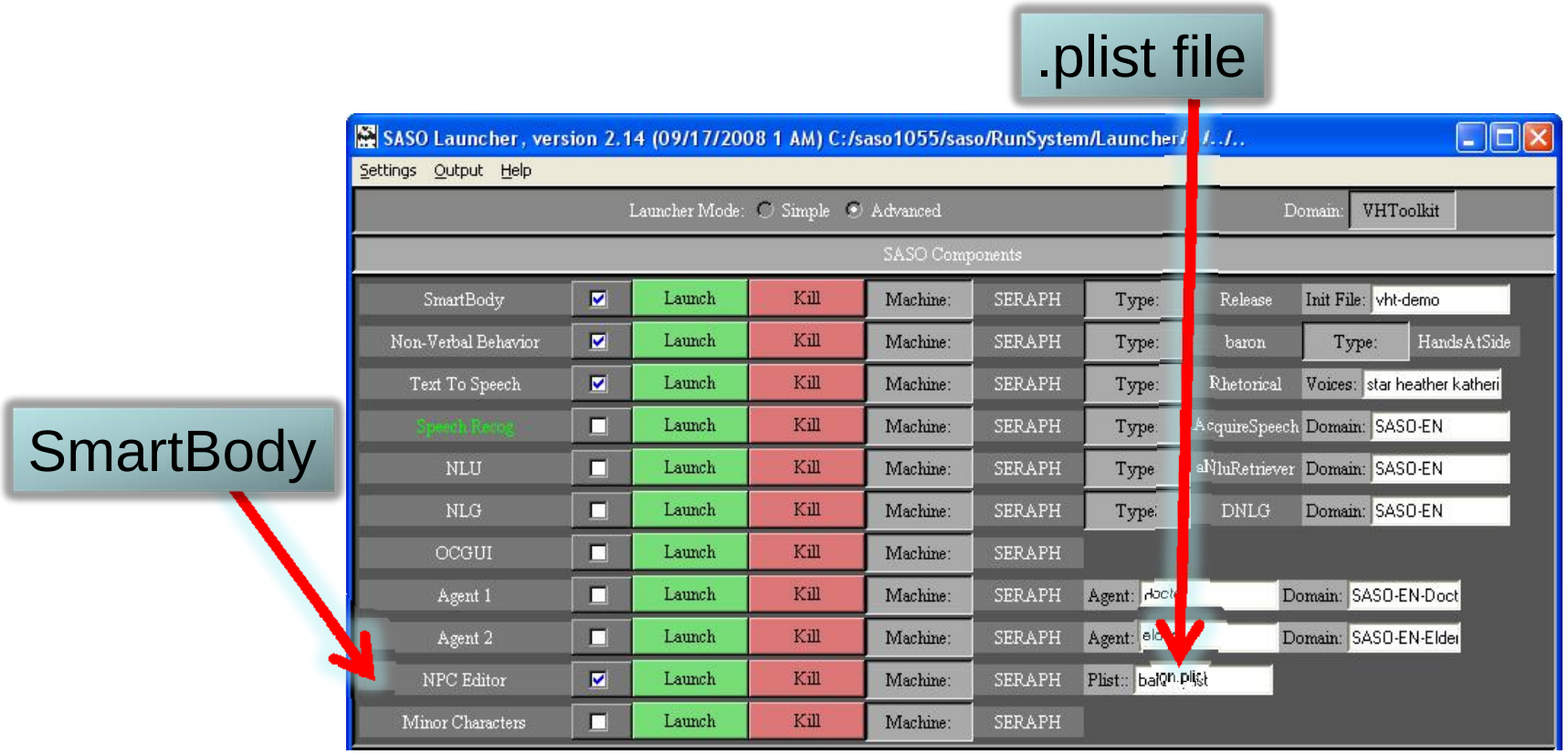
- **The NVB uses the character and posture**
- **This needs to match the character name and posture from the SBM init file**

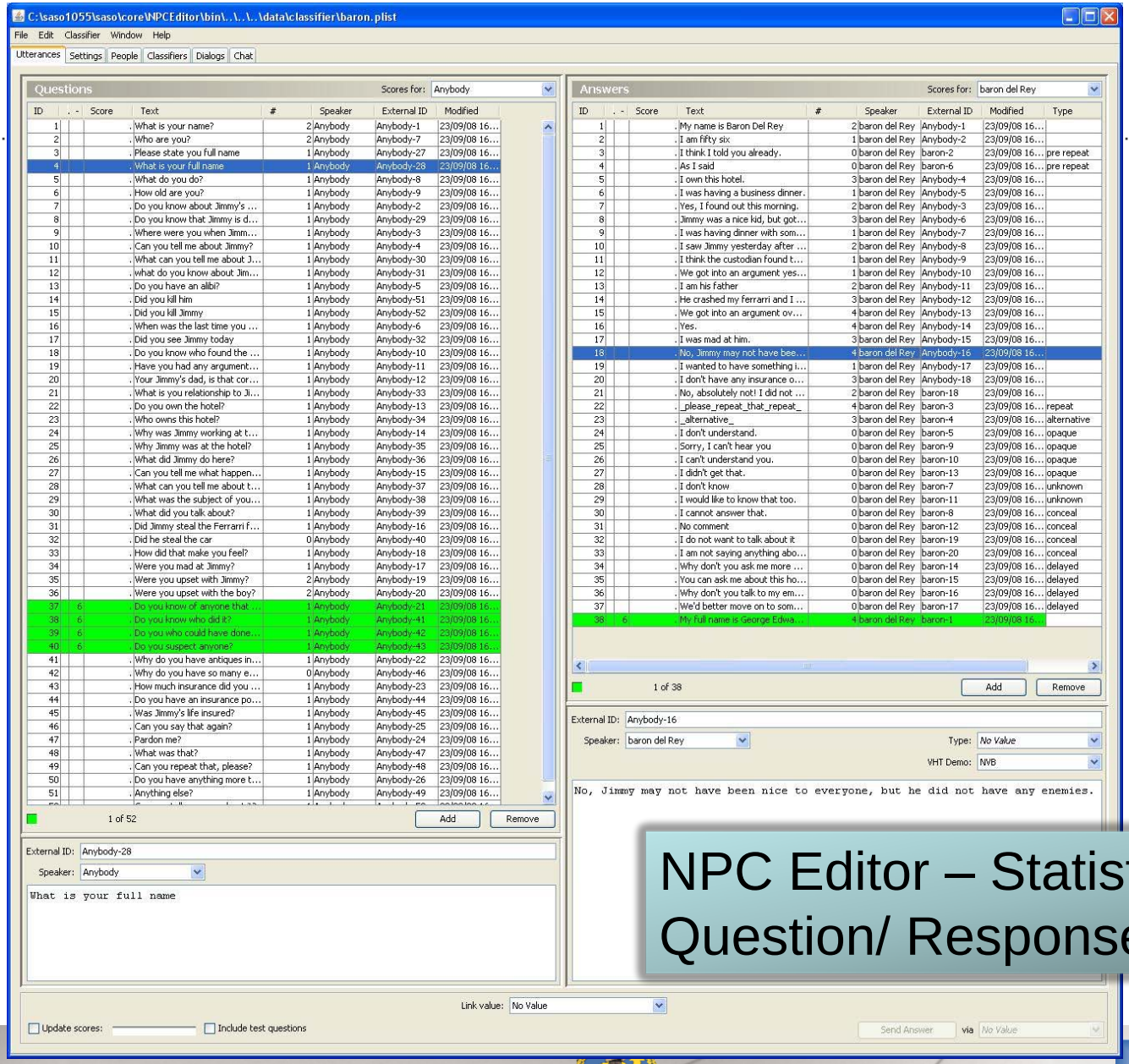



C:\saso1055\saso\core\nvb_generator\NVBGenerator\NVBGenerator.exe
starting NVBGenerator..
Compiled stylesheet
Parsed NVBGenerator/xslt/rule_input_general.xml
nvbGen for baron ready
baron's posture: HandsAtSide
NVB Generator
C:\saso1055\saso\core\nvb_generator\ElvinSim\ElvinSim.exe
starting Charniak parser..
ElvinSim: Elvin message received - nvbGen_ready baron ready
par
ElvinSim: Elvin message received - parser_ready ready
ser ready
NVB Parser

Exercise 5 – Running the NPC Editor

- **NPC Editor loads the plist (Dialog) file parameter**





NPC Editor – Statistical Question/ Response System

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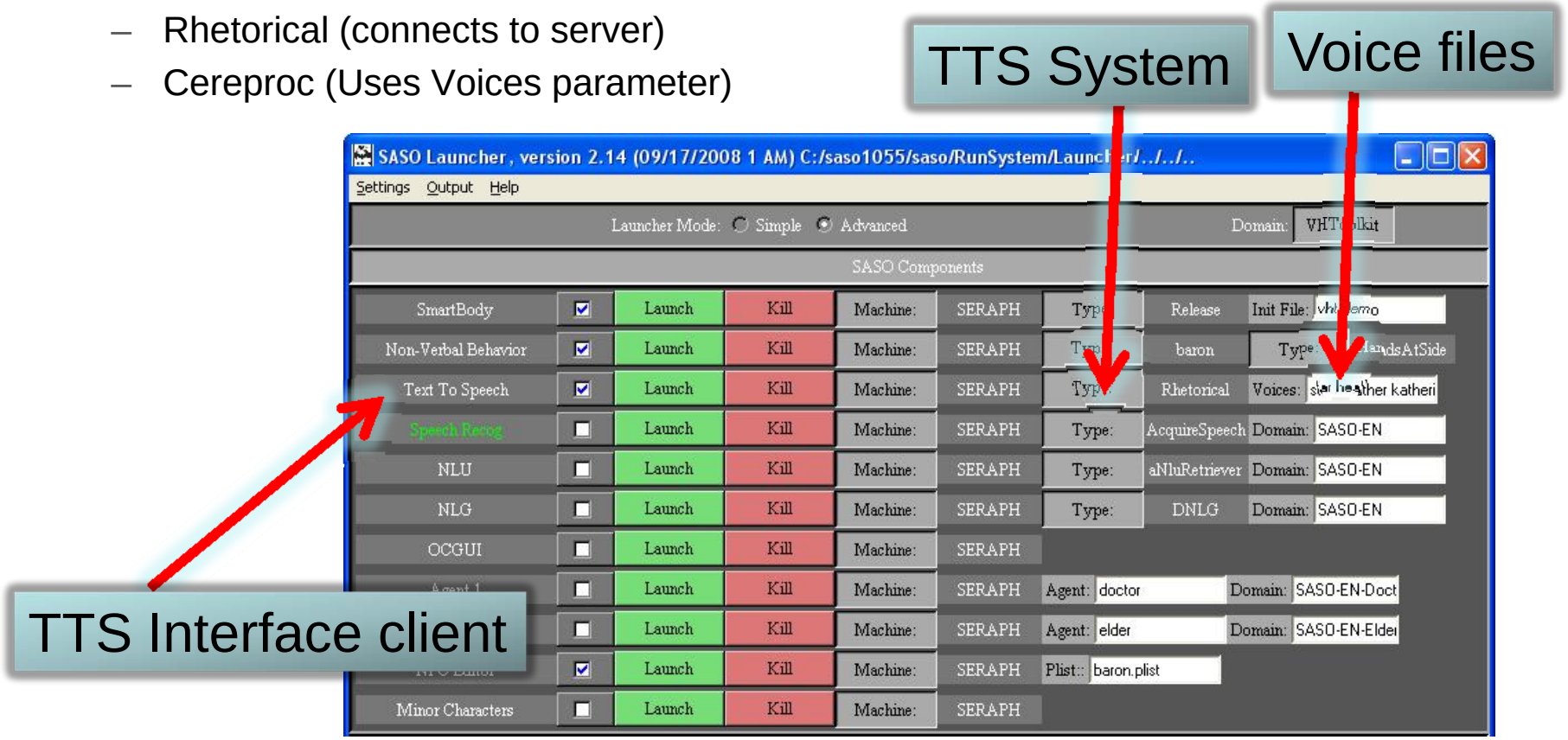
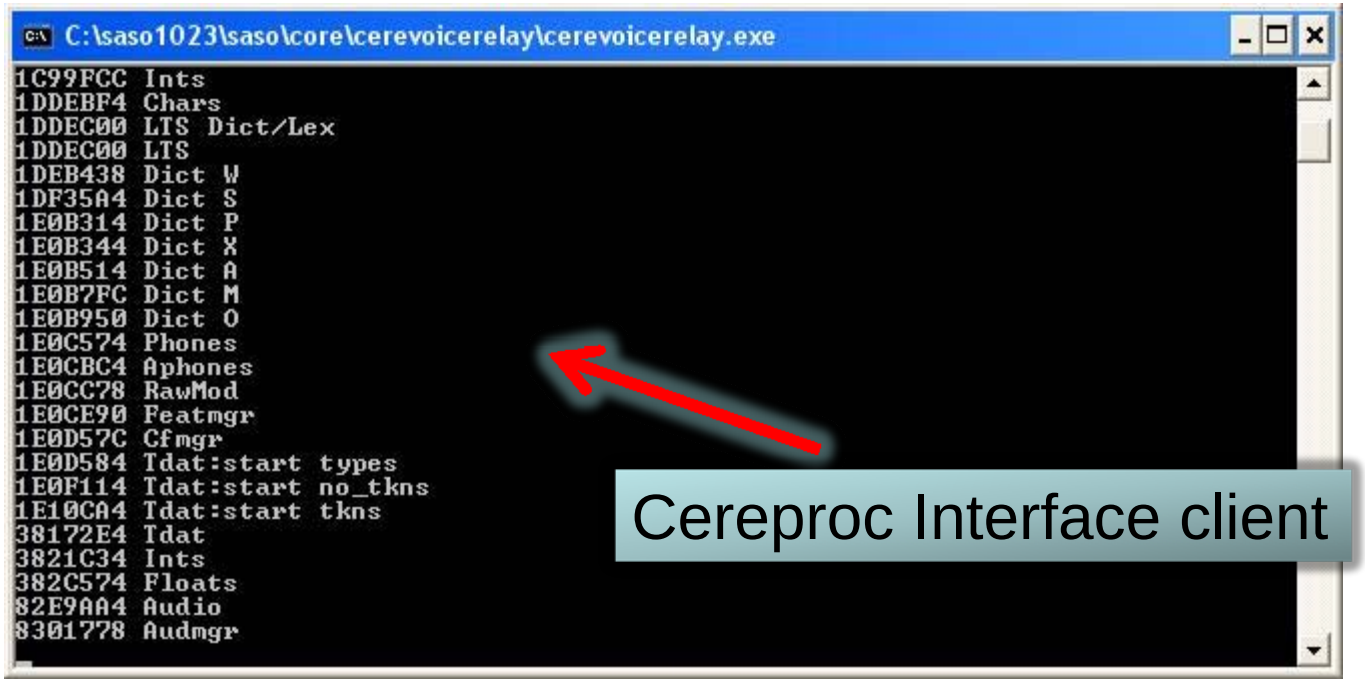
Exercise 6 – Running Text to Speech

- **There are currently 2 TTS:**
  - Rhetorical (connects to server)
  - Cereproc (Uses Voices parameter)



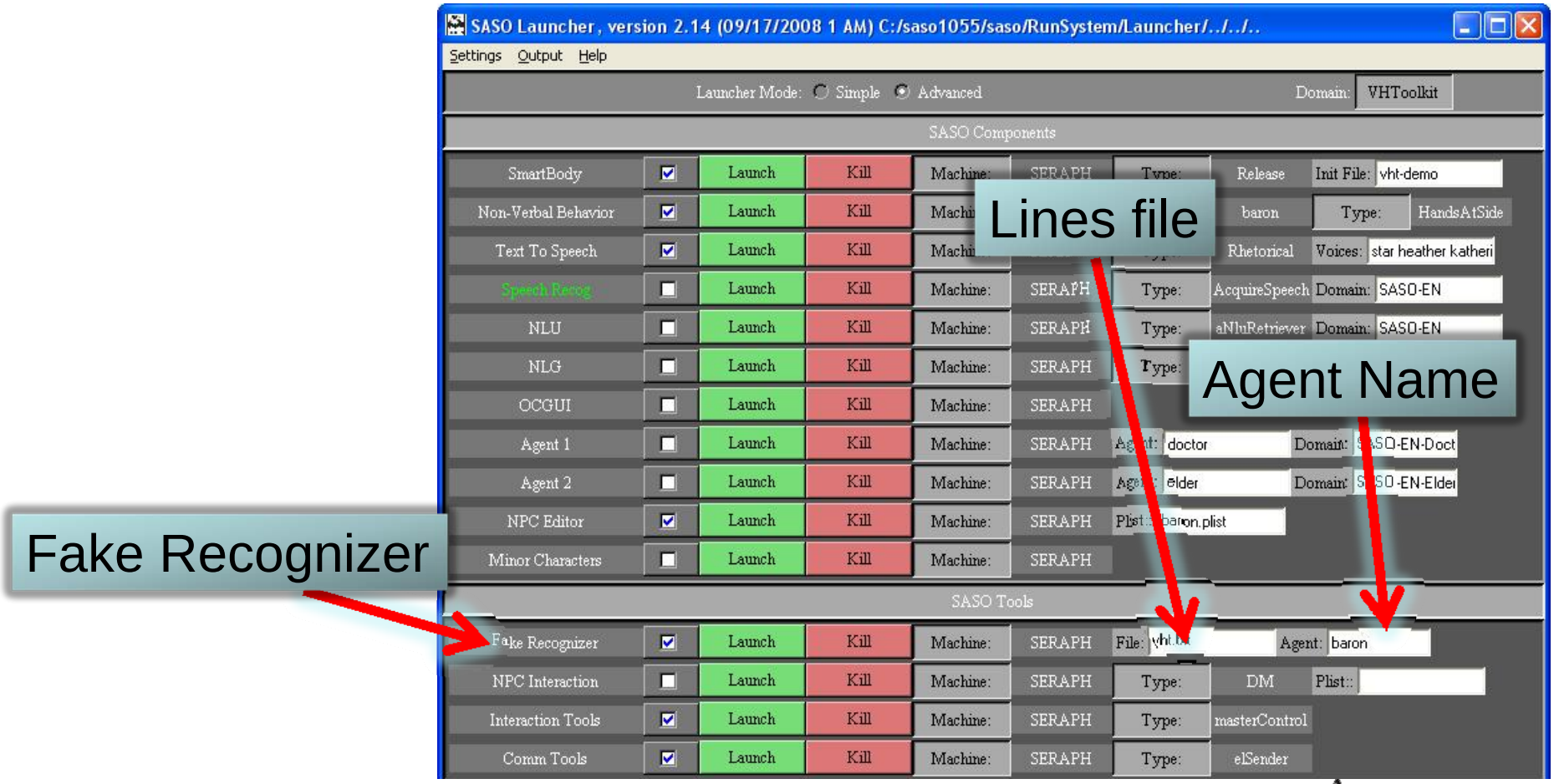
Rhetorical (Rvoice) Interface client



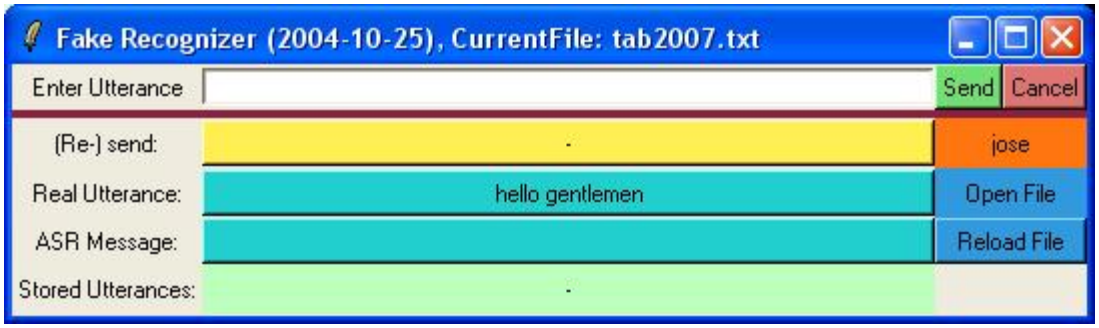
Cereproc Interface client

Exercise 7 – Running Fake Recognizer

- **Text based speech recognition interface**



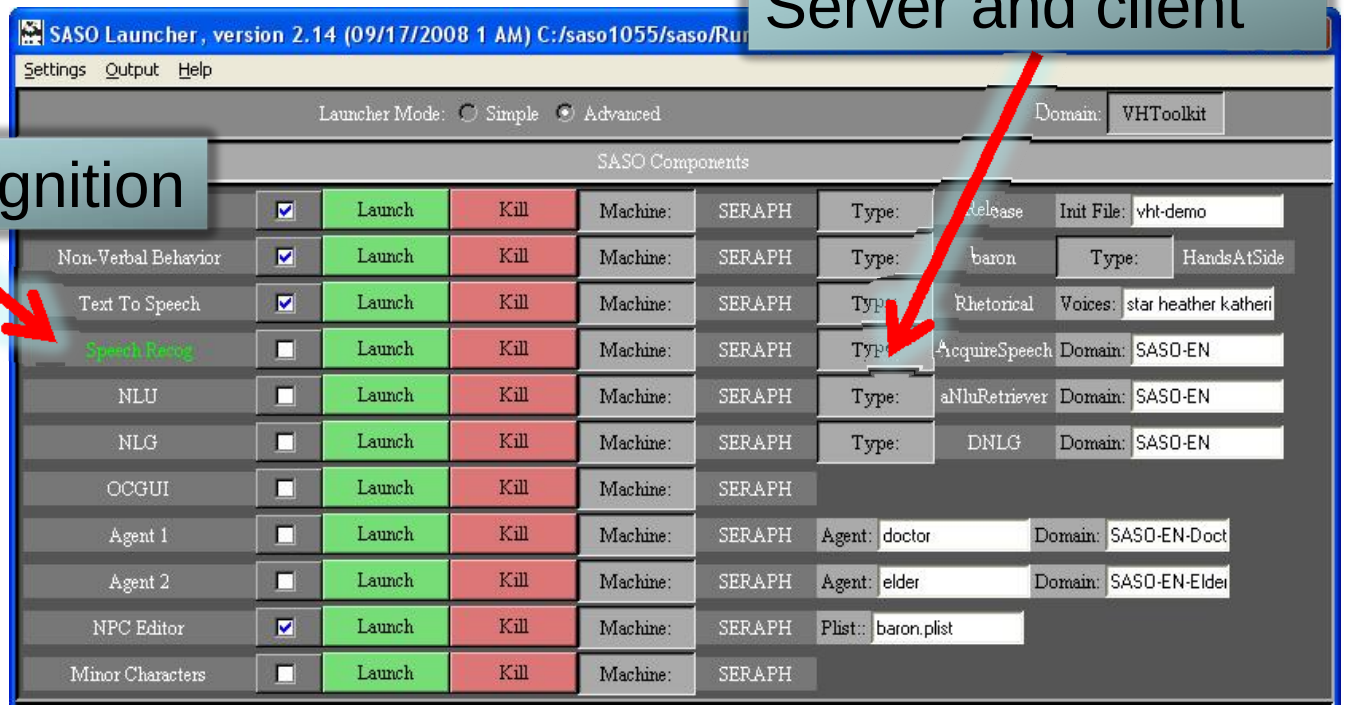
Fake Recognizer



Exercise 8 – Running Speech Recognition

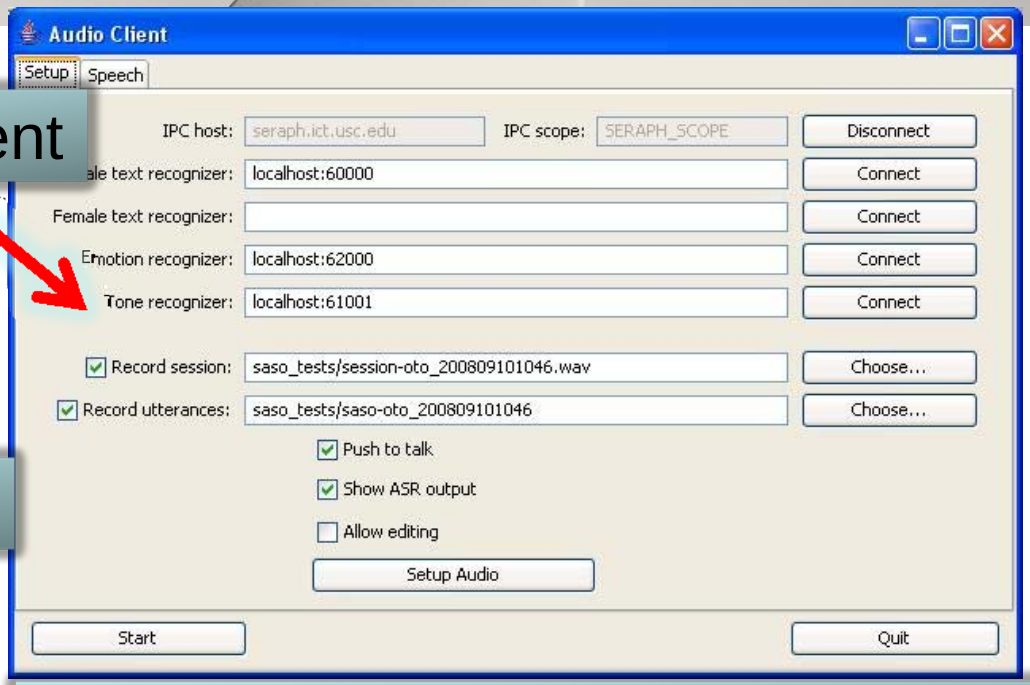
Batch file to launch Server and client

Speech Recognition

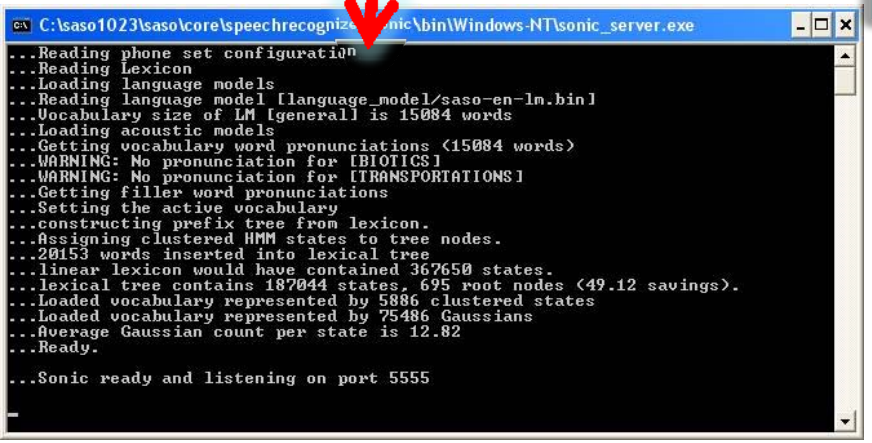


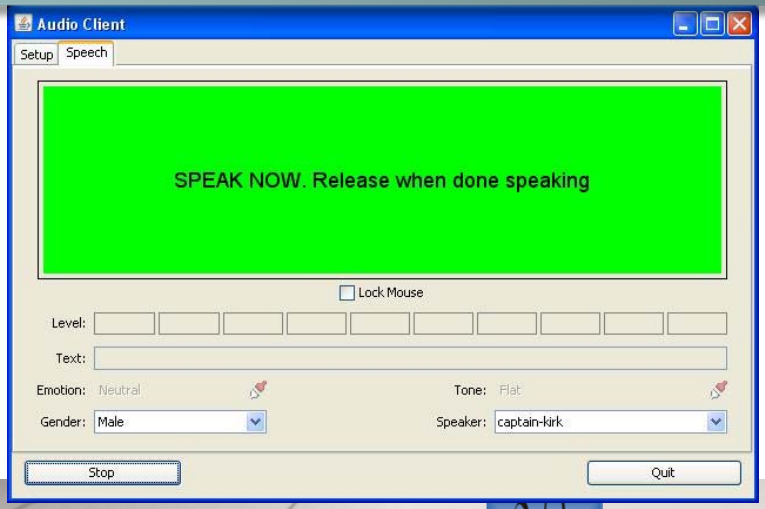
Speech Recognition client

Speech Recognition Server



Push and hold mouse button to talk





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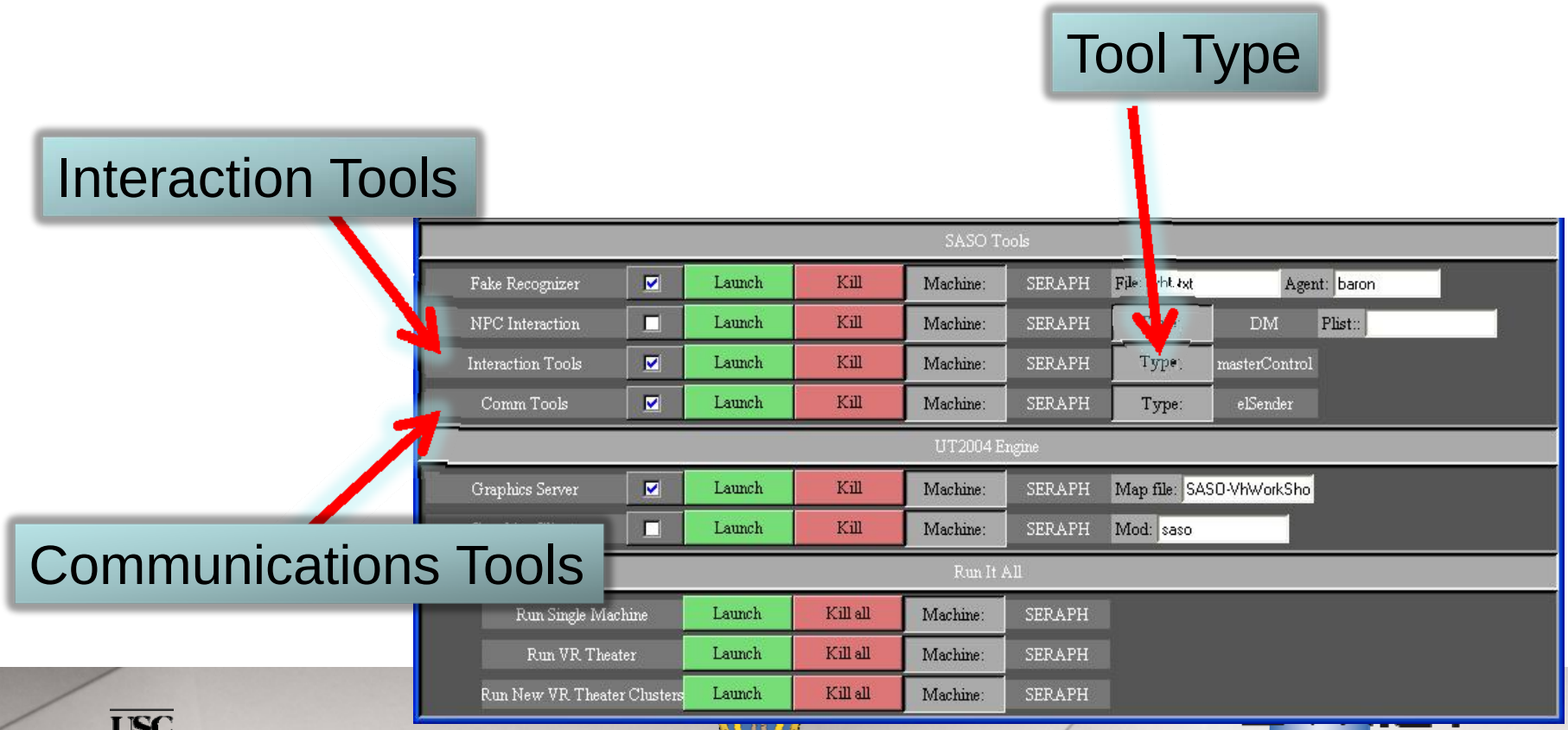
Exercise 9 – Running Tools

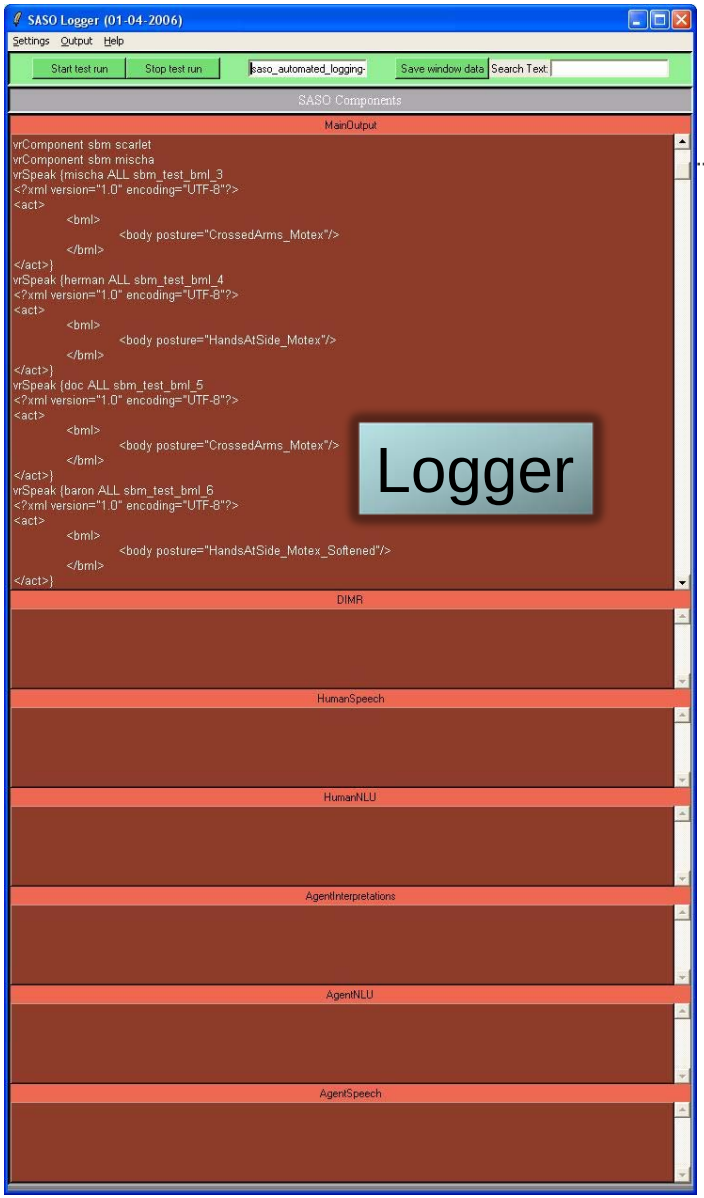
- **Interaction tools**
  - Master control program
    - Object Creation
    - Camera Movement
  - Smartbody GUI (SasoTest GUI)

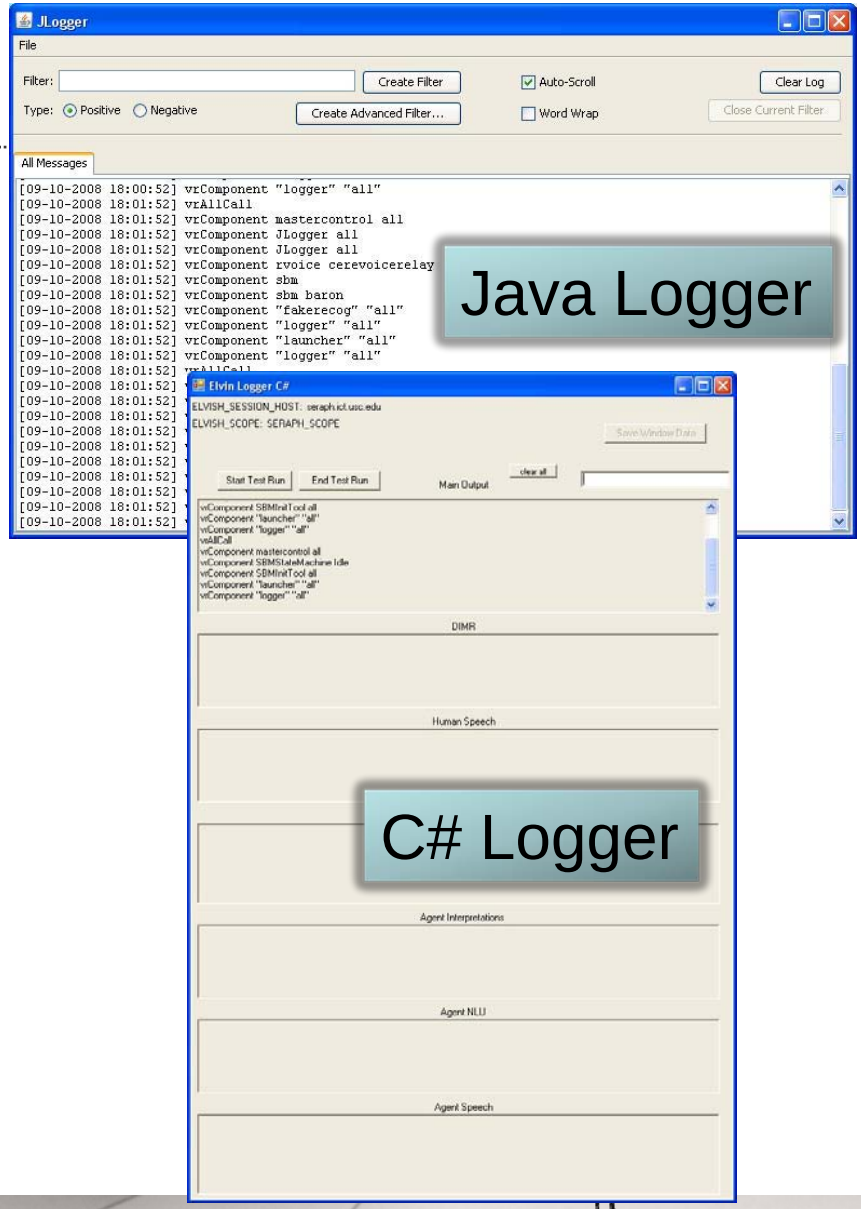
- **Communications Tools**
  - Loggers
    - TCL Logger
    - Java Jlogger
    - C# Logger
  - Message Sender and Logger
    - Elsender

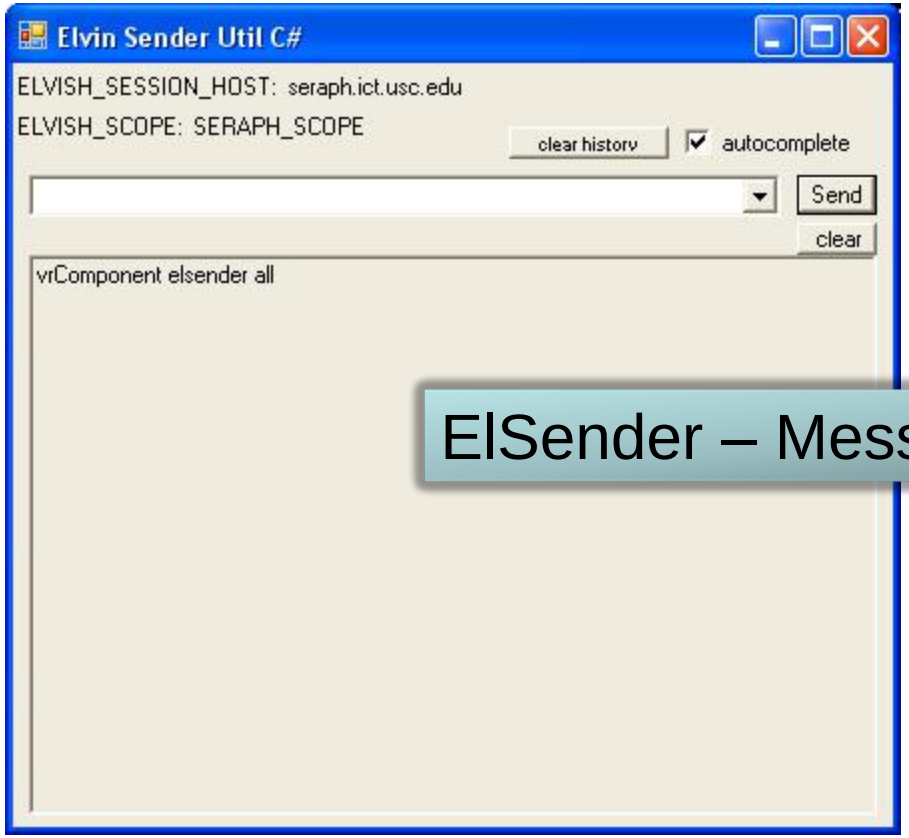
Exercise 8 – Running Speech Recognition

- **2 Tool types, Interaction and Communcations**

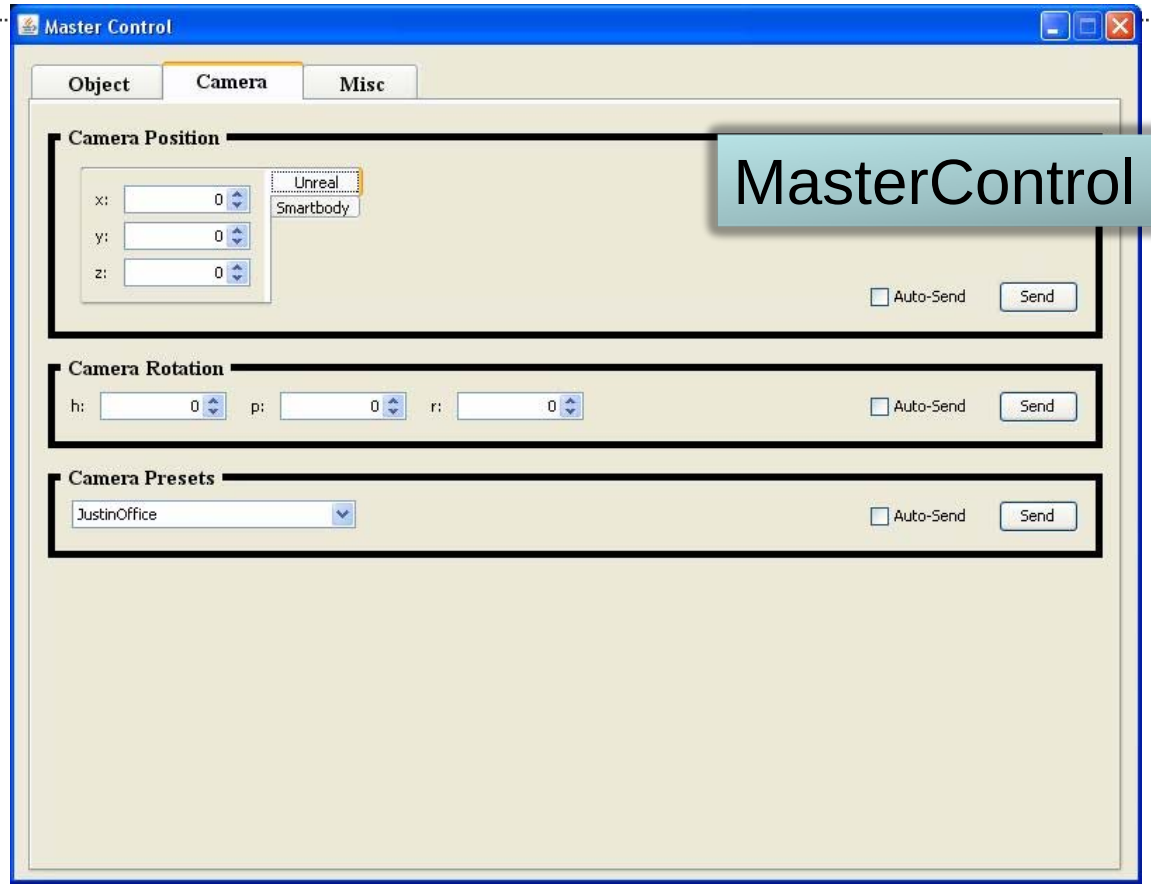



SASO Logger (01-04-2006)
Settings Output Help
Start test run
Stop test run
saso_automated_logging-
Save window data
Search Text:
SASO Components
MainOutput
vrComponent sbm scarlet
vrComponent sbm mischa
vrSpeak (mischa ALL sbm_test_bml_3
<?xml version="1.0" encoding="UTF-8"?>
<act>
<bml>
<body posture="CrossedArms_Motex"/>
</bml>
</act>)
vrSpeak (herman ALL sbm_test_bml_4
<?xml version="1.0" encoding="UTF-8"?>
<act>
<bml>
<body posture="HandsAtSide_Motex"/>
</bml>
</act>)
vrSpeak (doc ALL sbm_test_bml_5
<?xml version="1.0" encoding="UTF-8"?>
<act>
<bml>
<body posture="CrossedArms_Motex"/>
</bml>
</act>)
vrSpeak (baron ALL sbm_test_bml_6
<?xml version="1.0" encoding="UTF-8"?>
<act>
<bml>
<body posture="HandsAtSide_Motex_Softened"/>
</bml>
</act>)
DIMR
HumanSpeech
HumanNLU
AgentInterpretations
AgentNLU
AgentSpeech
Logger


JLogger
File
Filter:
Create Filter
Auto-Scroll
Clear Log
Type: Positive Negative
Create Advanced Filter...
Word Wrap
Close Current Filter
All Messages
[09-10-2008 18:00:52] vrComponent "logger" "all"
[09-10-2008 18:01:52] vrAllCall
[09-10-2008 18:01:52] vrComponent mastercontrol all
[09-10-2008 18:01:52] vrComponent JLogger all
[09-10-2008 18:01:52] vrComponent JLogger all
[09-10-2008 18:01:52] vrComponent rvoice cerevoicerelay
[09-10-2008 18:01:52] vrComponent sbm
[09-10-2008 18:01:52] vrComponent sbm baron
[09-10-2008 18:01:52] vrComponent "fakerecog" "all"
[09-10-2008 18:01:52] vrComponent "logger" "all"
[09-10-2008 18:01:52] vrComponent "launcher" "all"
[09-10-2008 18:01:52] vrComponent "logger" "all"
Java Logger
Elvin Logger C#
ELVISH_SESSION_HOST: seraph.ict.usc.edu
ELVISH_SCOPE: SERAPH_SCOPE
Save Window Data
Start Test Run
End Test Run
Main Output
clear all
vrComponent SBMInitTool all
vrComponent "launcher" "all"
vrComponent "logger" "all"
vrAllCall
vrComponent mastercontrol all
vrComponent SBMStateMachine Idle
vrComponent SBMInitTool all
vrComponent "launcher" "all"
vrComponent "logger" "all"
DIMR
Human Speech
Agent Interpretations
Agent NLU
Agent Speech
C# Logger

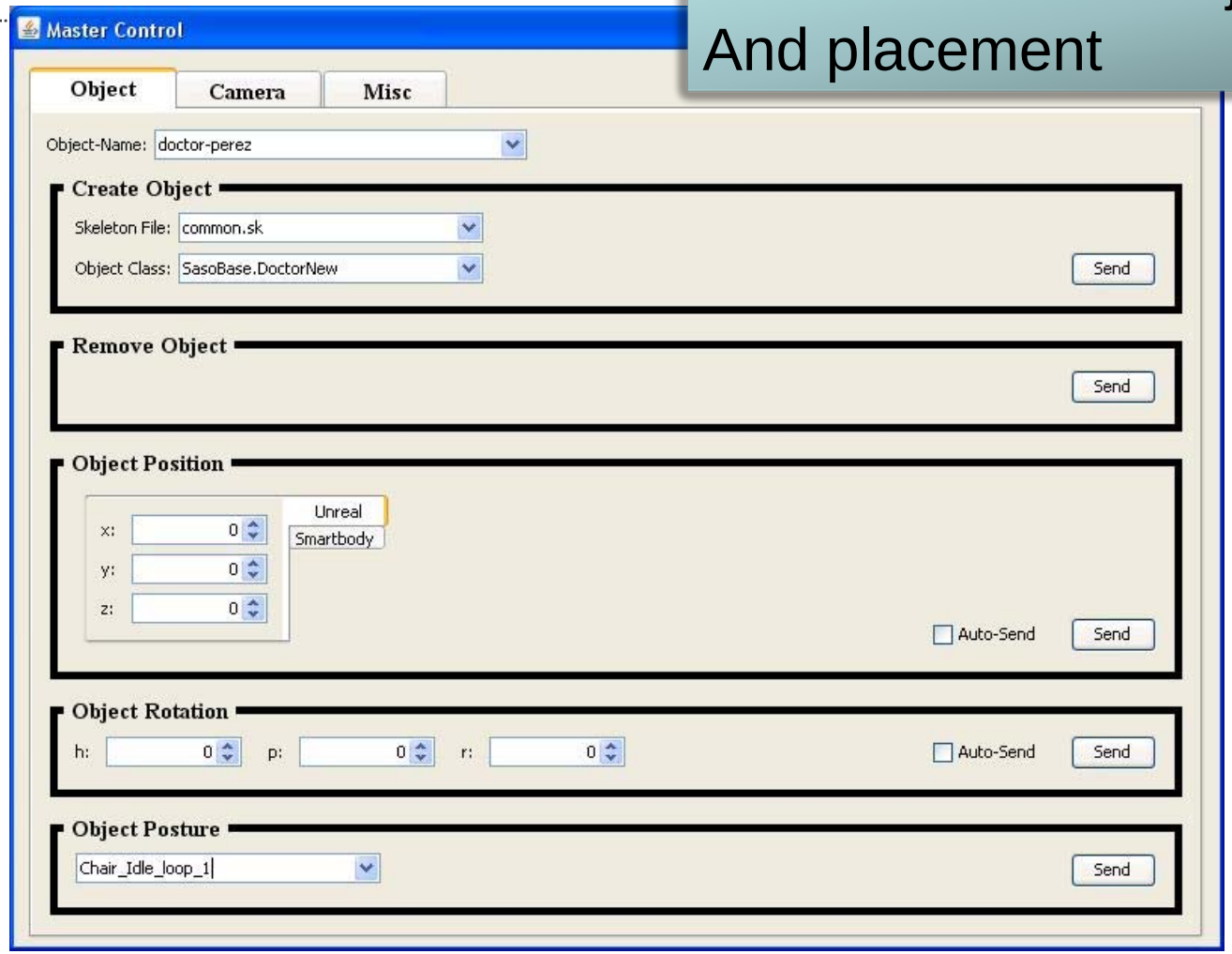


ElSender – Message Sender Tool



MasterControl – Camera Position

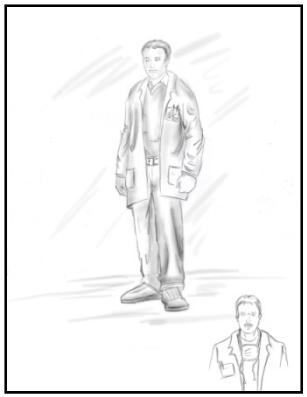
MasterControl – Object Creation And placement



Pipeline to Building a Virtual Human

Design

History and background
Artwork
Character
Environment



Develop

Knowledge
Language
Behavior
Goals and
Task Model

Apply

Training
Research
Interaction
Entertainment

Application Requirements

Choose Components

Collect Data
Assess System
Measure Value

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