

# Tutorial on Virtual Human System

## How to run stuff

Patrick Kenny | 9/24/2008



**USC**

The projects or efforts depicted were or are sponsored by the U.S. Army Research, Development, and Engineering Command (RDECOM), and/or the US Army Research Institute. The content or information presented does not necessarily reflect the position or the policy of the Government, and no official endorsement should be inferred.

**ICT**  
INSTITUTE FOR CREATIVE TECHNOLOGIES

# 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**

# System Installation

---

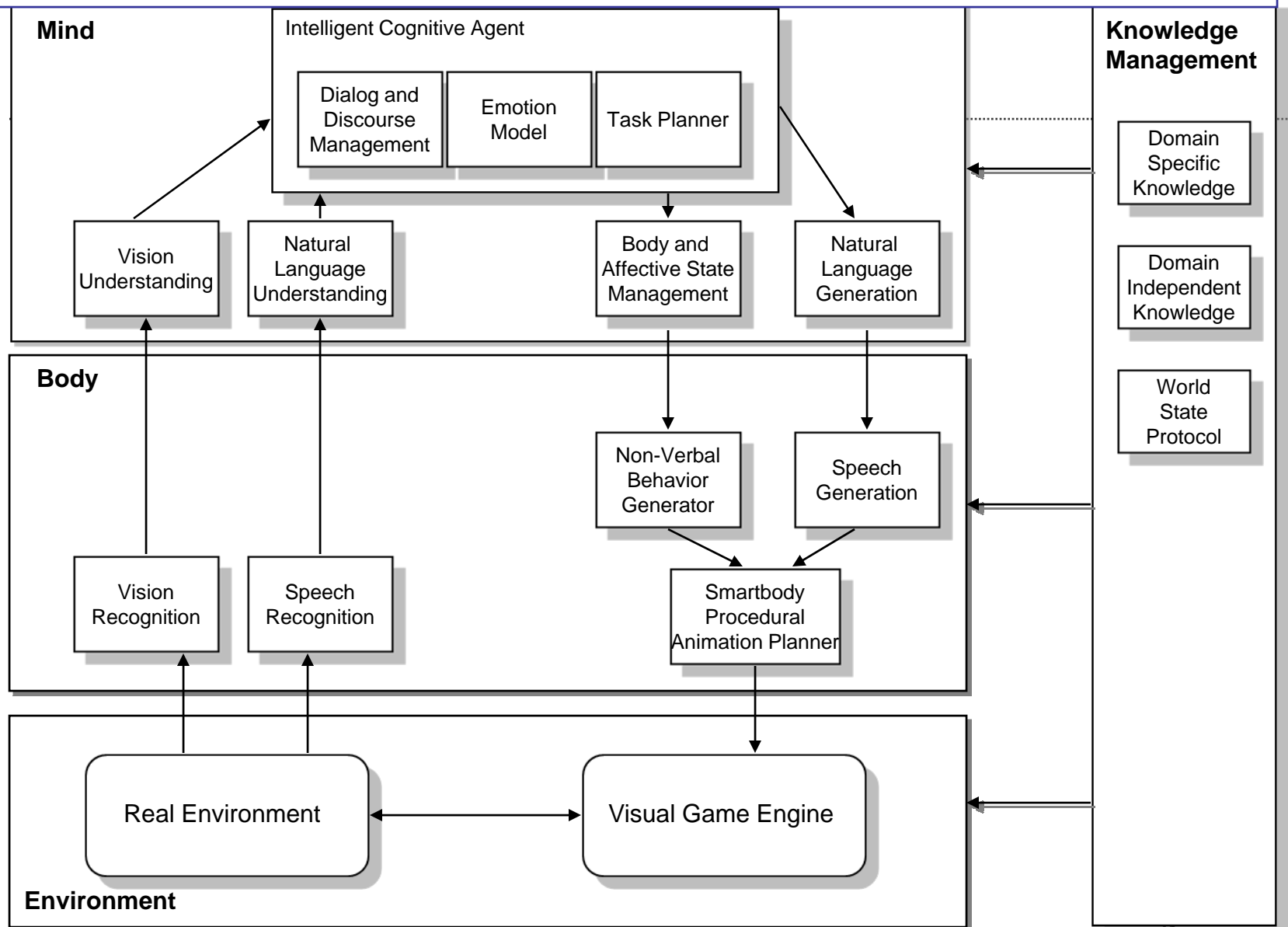
- **Code Base:**
  - C:\<SASO\_INSTALL\_VERSION> e.g. SASO1060
- **Data Directory**
  - C:\saso<version>\saso\data
  - NPC Editor Files
    - C:\saso<version>\saso\data\classifier
  - Smartbody Init Files
    - C:\saso<version>\saso\data\sbm-saso\scripts
- **Core Code**
  - C: \saso<version>\saso\code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

# System Tools

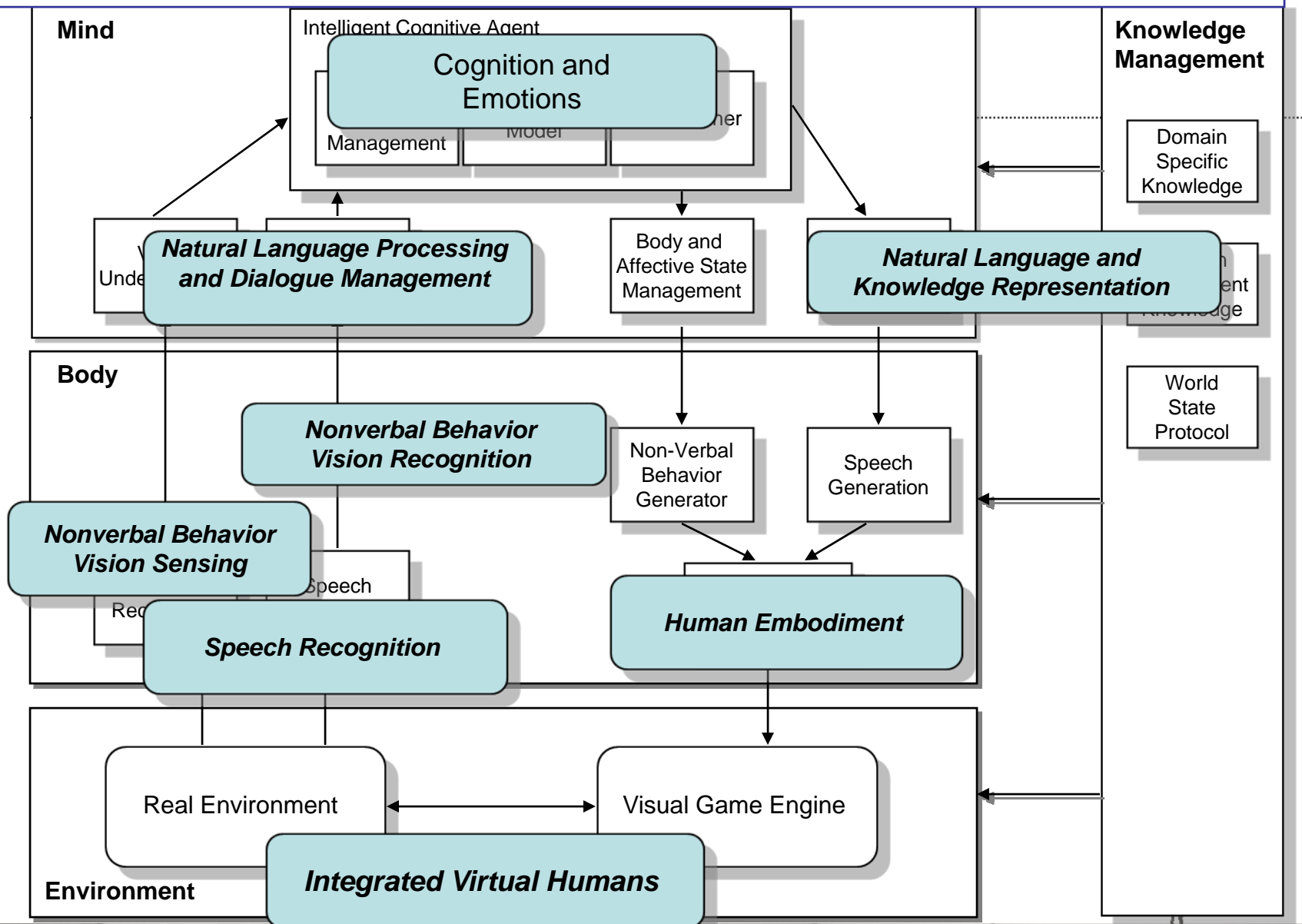
---

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

# Virtual Human Architecture



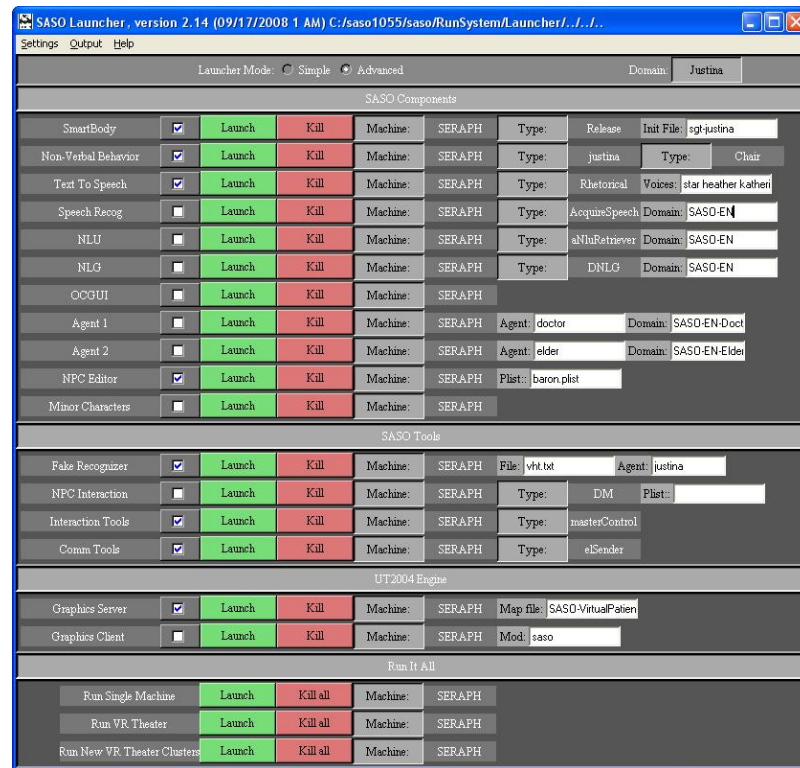
# Virtual Human Architecture



# 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

Tool Name	Launch Tool	Kill Tool	Machine	Type	Parameters
SmartBody	<input checked="" type="checkbox"/>	Launch	SERAPH	Release	Init File: sgt-justina
Non-Verbal Behavior	<input checked="" type="checkbox"/>	Launch	SERAPH	justina	Type: Chair
Text To Speech	<input checked="" type="checkbox"/>	Launch	SERAPH	Rhetorical	Voices: star heather katheri
Speech Recog	<input type="checkbox"/>	Launch	SERAPH	AcquireSpeech	Domain: SASO-EN
NLU	<input type="checkbox"/>	Launch	SERAPH	aNluRetriever	Domain: SASO-EN
...	<input type="checkbox"/>	Launch	SERAPH	DNLG	Domain: SASO-EN
...	<input type="checkbox"/>	Launch	SERAPH		
Agent 1	<input type="checkbox"/>	Launch	SERAPH	Agent: doctor	Domain: SASO-EN/Doct
Agent 2	<input type="checkbox"/>	Launch	SERAPH	Agent: elder	Domain: SASO-EN/Elder
NPC Editor	<input checked="" type="checkbox"/>	Launch	SERAPH	Plist::	baron.plist
Minor Characters	<input type="checkbox"/>	Launch	SERAPH		

SASO Tools

Tool Name	Launch Tool	Kill Tool	Machine	Type	Parameters
Fake Recognizer	<input checked="" type="checkbox"/>	Launch	SERAPH	File: vht.txt	Agent: justina
NPC Interaction	<input type="checkbox"/>	Launch	SERAPH	Type: DM	Plist::
Interaction Tools	<input checked="" type="checkbox"/>	Launch	SERAPH	Type: masterControl	
Comm Tools	<input checked="" type="checkbox"/>	Launch	SERAPH	Type: eISender	

UT2004 Engine

Tool Name	Launch Tool	Kill Tool	Machine	Parameters
Graphics Server	<input checked="" type="checkbox"/>	Launch	SERAPH	Map file: SASO-VirtualPatien
Graphics Client	<input type="checkbox"/>	Launch	SERAPH	Mod: saso

Run It All

Tool Name	Launch Tool	Kill Tool	Machine
Run Single Machine	Launch	Kill all	SERAPH
Run VR Theater	Launch	Kill all	SERAPH
Run New VR Theater Clusters	Launch	Kill all	SERAPH

Tool Name

Launch Tool

Kill Tool

Domain

Parameters

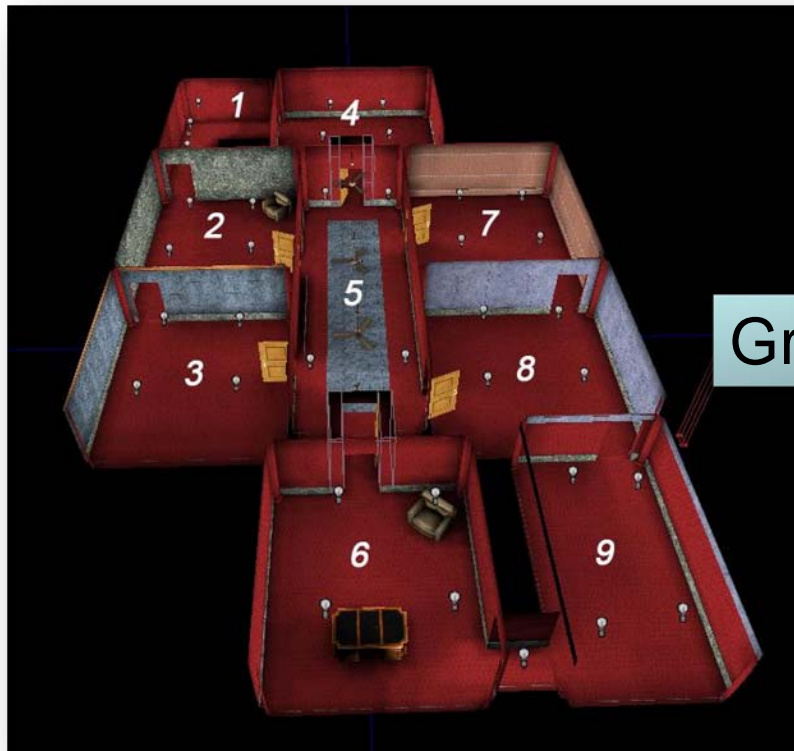
Launch All Single Machine



## 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	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	Release	Init File:	vht-demo
Non-Verbal Behavior	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	baron	Type:	HandsAtSide
Text To Speech	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	Rhetorical	Voices:	star heather kateri
Speech Recogn	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	AcquireSpeech	Domain:	SASO-EN
NLU	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	aNluRetriever	Domain:	SASO-EN
NLG	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	DNLG	Domain:	SASO-EN
OCGUI	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH				
Agent 1	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Agent:	doctor	Domain:	SASO-EN-Doct
Agent 2	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Agent:	elder	Domain:	SASO-EN-Elder
NPC Editor	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Plist::	baron.plist		
Minor Characters	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH				

SASO Tools

Fake Recognizer	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	File:	vht.txt		
NPC Interaction	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:			
Interaction Tools	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	masterControl		
Comm Tools	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	elSender		

UT2004 Engine

Graphics Server	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Map file:	SASO-VhWorkSho		
Graphics Client	<input type="checkbox"/>	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

Init file

SmartBody

The screenshot shows the SASO Launcher application window. The title bar reads "SASO Launcher, version 2.14 (09/17/2008 1 AM) C:/saso1055/saso/RunSystem/Launcher/...". The interface includes a menu bar (Settings, Output, Help), a Launcher Mode selector (Simple, Advanced), and a Domain dropdown menu (vh-baron). Below this is a table of SASO Components. A red arrow points from the "Init file" text to the "vh-baron" dropdown in the Domain field. Another red arrow points from the "SmartBody" text to the "Launch" button of the SmartBody component.

Component	Checked	Launch	Kill	Machine	Agent	Type	Domain
SmartBody	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH		Release	vh-baron
Non-Verbal Behavior	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH		baron	HandsAtSide
Text To Speech	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH		Rhetorical	star heather kateri
Speech Recognition	<input type="checkbox"/>	Launch	Kill	SERAPH		AcquireSpeech	SASO-EN
ASR	<input type="checkbox"/>	Launch	Kill	SERAPH		aNluRetriever	SASO-EN
NLG	<input type="checkbox"/>	Launch	Kill	SERAPH		DNLG	SASO-EN
OCGUI	<input type="checkbox"/>	Launch	Kill	SERAPH			
Agent 1	<input type="checkbox"/>	Launch	Kill	SERAPH	doctor		SASO-EN-Doct
Agent 2	<input type="checkbox"/>	Launch	Kill	SERAPH	elder		SASO-EN-Elder
NPC Editor	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH		baron.plist	
Minor Characters	<input type="checkbox"/>	Launch	Kill	SERAPH			

```
C:\sas01023\saso\core\smartbody\sbm\bin\sbm-fltkd.exe
SBM ARGV[1]: '-host=SERAPH'
SBM ARGV[2]: '-seqpath'
Adding sequence path '..\..\..\..\data\sbm-saso\scripts'
SBM ARGV[4]: '-seqpath'
Adding sequence path '..\..\..\..\data\sbm-common\scripts'
SBM ARGV[6]: '-seq'
Loading sequence 'vht'
SBM ARGV[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

Character

Posture

NVBG

The screenshot shows the SASO Launcher application window. The title bar reads "SASO Launcher, version 2.14 (09/17/2008 1 AM) C:/saso1055/saso/RunSystem/Launcher/...". The interface includes a menu bar (Settings, Output, Help), a Launcher Mode selector (Simple, Advanced), and a Domain dropdown (VIToolkit). Below is a table of SASO Components with various settings.

Component	Checked	Launch	Kill	Machine	Agent	Type	Release	Init File
SmartBody	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH				demo
Non-Verbal Behavior	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH		baron		HandsAtSide
Test To Server	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH		Rhetorical	Voices: star heather katheri	
Speech Recogn	<input type="checkbox"/>	Launch	Kill	SERAPH		AcquireSpeech	Domain: SASO-EN	
NLU	<input type="checkbox"/>	Launch	Kill	SERAPH		aNluRetriever	Domain: SASO-EN	
NLG	<input type="checkbox"/>	Launch	Kill	SERAPH		DNLG	Domain: SASO-EN	
OCGUI	<input type="checkbox"/>	Launch	Kill	SERAPH				
Agent 1	<input type="checkbox"/>	Launch	Kill	SERAPH	Agent: doctor		Domain: SASO-EN-Doct	
Agent 2	<input type="checkbox"/>	Launch	Kill	SERAPH	Agent: elder		Domain: SASO-EN-Elder	
NPC Editor	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH	Plist: baron.plist			
Minor Characters	<input type="checkbox"/>	Launch	Kill	SERAPH				

```
C:\sas01055\sas0\core\nvb_generator\NVBGenerator\NVBGenerator.exe
starting NUBGenerator..
Compiled stylesheet
Parsed NUBGenerator/xslt/rule_input_general.xml
nvbGen for baron ready
baron's posture: HandsAtSide
```

NVB Generator

```
C:\sas01055\sas0\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

**.plist file**

**SmartBody**

SASO Components	
SmartBody	<input checked="" type="checkbox"/> Launch Kill Machine: SERAPH Type: Release Init File: vht-demo
Non-Verbal Behavior	<input checked="" type="checkbox"/> Launch Kill Machine: SERAPH Type: baron Type: HandsAtSide
Text To Speech	<input checked="" type="checkbox"/> Launch Kill Machine: SERAPH Type: Rhetorical Voices: star heather katheri
Speech Recogn	<input type="checkbox"/> Launch Kill Machine: SERAPH Type: AcquireSpeech Domain: SASO-EN
NLU	<input type="checkbox"/> Launch Kill Machine: SERAPH Type: anInuRetriever Domain: SASO-EN
NLG	<input type="checkbox"/> Launch Kill Machine: SERAPH Type: DNLG Domain: SASO-EN
OCGUI	<input type="checkbox"/> Launch Kill Machine: SERAPH
Agent 1	<input type="checkbox"/> Launch Kill Machine: SERAPH Agent: racker Domain: SASO-EN-Doct
Agent 2	<input type="checkbox"/> Launch Kill Machine: SERAPH Agent: elder Domain: SASO-EN-Elder
NPC Editor	<input checked="" type="checkbox"/> Launch Kill Machine: SERAPH Plist: balon.plist
Minor Characters	<input type="checkbox"/> Launch Kill Machine: SERAPH

C:\saso1055\saso\core\NPCEditor\bin\...\.data\classifier\baron.plist

File Edit Classifier Window Help

Utterances Settings People Classifiers Dialogs Chat

Questions Scores for: Anybody

ID	Score	Text	#	Speaker	External ID	Modified
1		What is your name?	2	Anybody	Anybody-1	23/09/08 16...
2		Who are you?	2	Anybody	Anybody-7	23/09/08 16...
3		Please state your full name	1	Anybody	Anybody-27	23/09/08 16...
4		What is your full name	1	Anybody	Anybody-28	23/09/08 16...
5		What do you do?	1	Anybody	Anybody-8	23/09/08 16...
6		How old are you?	1	Anybody	Anybody-9	23/09/08 16...
7		Do you know about Jimmy's ...	1	Anybody	Anybody-2	23/09/08 16...
8		Do you know that Jimmy is d...	1	Anybody	Anybody-29	23/09/08 16...
9		Where were you when Jimm...	1	Anybody	Anybody-3	23/09/08 16...
10		Can you tell me about Jimmy?	1	Anybody	Anybody-4	23/09/08 16...
11		What can you tell me about J...	1	Anybody	Anybody-30	23/09/08 16...
12		what do you know about Jim...	1	Anybody	Anybody-31	23/09/08 16...
13		Do you have an alibi?	1	Anybody	Anybody-5	23/09/08 16...
14		Did you kill him	1	Anybody	Anybody-51	23/09/08 16...
15		Did you kill Jimmy	1	Anybody	Anybody-52	23/09/08 16...
16		When was the last time you ...	1	Anybody	Anybody-6	23/09/08 16...
17		Did you see Jimmy today	1	Anybody	Anybody-32	23/09/08 16...
18		Do you know who found the ...	1	Anybody	Anybody-10	23/09/08 16...
19		Have you had any argument...	1	Anybody	Anybody-11	23/09/08 16...
20		Your Jimmy's dad, is that cor...	1	Anybody	Anybody-12	23/09/08 16...
21		What is your relationship to Ji...	1	Anybody	Anybody-33	23/09/08 16...
22		Do you own the hotel?	1	Anybody	Anybody-13	23/09/08 16...
23		Who owns this hotel?	1	Anybody	Anybody-34	23/09/08 16...
24		Why was Jimmy working at t...	1	Anybody	Anybody-14	23/09/08 16...
25		Why Jimmy was at the hotel?	1	Anybody	Anybody-35	23/09/08 16...
26		What did Jimmy do here?	1	Anybody	Anybody-36	23/09/08 16...
27		Can you tell me what happen...	1	Anybody	Anybody-15	23/09/08 16...
28		What can you tell me about t...	1	Anybody	Anybody-37	23/09/08 16...
29		What was the subject of you...	1	Anybody	Anybody-38	23/09/08 16...
30		What did you talk about?	1	Anybody	Anybody-39	23/09/08 16...
31		Did Jimmy steal the Ferrarri F...	1	Anybody	Anybody-16	23/09/08 16...
32		Did he steal the car	0	Anybody	Anybody-40	23/09/08 16...
33		How did that make you feel?	1	Anybody	Anybody-18	23/09/08 16...
34		Were you mad at Jimmy?	1	Anybody	Anybody-17	23/09/08 16...
35		Were you upset with Jimmy?	2	Anybody	Anybody-19	23/09/08 16...
36		Were you upset with the boy?	2	Anybody	Anybody-20	23/09/08 16...
37	6	Do you know of anyone that ...	1	Anybody	Anybody-21	23/09/08 16...
38	6	Do you know who did it?	1	Anybody	Anybody-41	23/09/08 16...
39	6	Do you who could have done...	1	Anybody	Anybody-42	23/09/08 16...
40	6	Do you suspect anyone?	1	Anybody	Anybody-43	23/09/08 16...
41		Why do you have antiques in...	1	Anybody	Anybody-22	23/09/08 16...
42		Why do you have so many e...	0	Anybody	Anybody-46	23/09/08 16...
43		How much insurance did you ...	1	Anybody	Anybody-23	23/09/08 16...
44		Do you have an insurance po...	1	Anybody	Anybody-44	23/09/08 16...
45		Was Jimmy's life insured?	1	Anybody	Anybody-45	23/09/08 16...
46		Can you say that again?	1	Anybody	Anybody-25	23/09/08 16...
47		Pardon me?	1	Anybody	Anybody-24	23/09/08 16...
48		What was that?	1	Anybody	Anybody-47	23/09/08 16...
49		Can you repeat that, please?	1	Anybody	Anybody-48	23/09/08 16...
50		Do you have anything more t...	1	Anybody	Anybody-26	23/09/08 16...
51		Anything else?	1	Anybody	Anybody-49	23/09/08 16...

1 of 52

External ID: Anybody-28  
Speaker: Anybody  
What is your full name

Link value: No Value

Update scores:  Include test questions

Send Answer via No Value

Answers Scores for: baron del Rey

ID	Score	Text	#	Speaker	External ID	Modified	Type
1		My name is Baron Del Rey	2	baron del Rey	Anybody-1	23/09/08 16...	
2		I am fifty six	1	baron del Rey	Anybody-2	23/09/08 16...	
3		I think I told you already,	0	baron del Rey	baron-2	23/09/08 16...	pre repeat
4		As I said	0	baron del Rey	baron-6	23/09/08 16...	pre repeat
5		I own this hotel.	3	baron del Rey	Anybody-4	23/09/08 16...	
6		I was having a business dinner.	1	baron del Rey	Anybody-5	23/09/08 16...	
7		Yes, I found out this morning.	2	baron del Rey	Anybody-3	23/09/08 16...	
8		Jimmy was a nice kid, but got...	3	baron del Rey	Anybody-6	23/09/08 16...	
9		I was having dinner with som...	1	baron del Rey	Anybody-7	23/09/08 16...	
10		I saw Jimmy yesterday after ...	2	baron del Rey	Anybody-8	23/09/08 16...	
11		I think the custodian found t...	1	baron del Rey	Anybody-9	23/09/08 16...	
12		We got into an argument yes...	1	baron del Rey	Anybody-10	23/09/08 16...	
13		I am his father	2	baron del Rey	Anybody-11	23/09/08 16...	
14		He crashed my ferrarri and I ...	3	baron del Rey	Anybody-12	23/09/08 16...	
15		We got into an argument ov...	4	baron del Rey	Anybody-13	23/09/08 16...	
16		Yes.	4	baron del Rey	Anybody-14	23/09/08 16...	
17		I was mad at him.	3	baron del Rey	Anybody-15	23/09/08 16...	
18	6	No, Jimmy may not have bee...	4	baron del Rey	Anybody-16	23/09/08 16...	
19		I wanted to have something l...	1	baron del Rey	Anybody-17	23/09/08 16...	
20		I don't have any insurance o...	3	baron del Rey	Anybody-18	23/09/08 16...	
21		No, absolutely not! I did not ...	2	baron del Rey	baron-18	23/09/08 16...	
22		_please_repeat_that_repeat_	4	baron del Rey	baron-3	23/09/08 16...	repeat
23		_alternative_	3	baron del Rey	baron-4	23/09/08 16...	alternative
24		I don't understand.	0	baron del Rey	baron-5	23/09/08 16...	opaque
25		Sorry, I can't hear you	0	baron del Rey	baron-9	23/09/08 16...	opaque
26		I can't understand you.	0	baron del Rey	baron-10	23/09/08 16...	opaque
27		I didn't get that.	0	baron del Rey	baron-13	23/09/08 16...	opaque
28		I don't know	0	baron del Rey	baron-7	23/09/08 16...	unknown
29		I would like to know that too.	0	baron del Rey	baron-11	23/09/08 16...	unknown
30		I cannot answer that.	0	baron del Rey	baron-8	23/09/08 16...	conceal
31		No comment	0	baron del Rey	baron-12	23/09/08 16...	conceal
32		I do not want to talk about it	0	baron del Rey	baron-19	23/09/08 16...	conceal
33		I am not saying anything abo...	0	baron del Rey	baron-20	23/09/08 16...	conceal
34		Why don't you ask me more ...	0	baron del Rey	baron-14	23/09/08 16...	delayed
35		You can ask me about this ho...	0	baron del Rey	baron-15	23/09/08 16...	delayed
36		Why don't you talk to my em...	0	baron del Rey	baron-16	23/09/08 16...	delayed
37		We'd better move on to som...	0	baron del Rey	baron-17	23/09/08 16...	delayed
38	6	My full name is George Edwa...	4	baron del Rey	baron-1	23/09/08 16...	

1 of 38

External ID: Anybody-16  
Speaker: baron del Rey  
Type: No Value  
VHT Demo: IWB

No, Jimmy may not have been nice to everyone, but he did not have any enemies.

# NPC Editor – Statistical Question/ Response System



# Exercise 6 – Running Text to Speech

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



SASO Launcher, version 2.14 (09/17/2008 1 AM) C:/saso1055/saso/RunSystem/Launcher/.../...

Settings Output Help

Launcher Mode:  Simple  Advanced Domain: VHT Toolkit

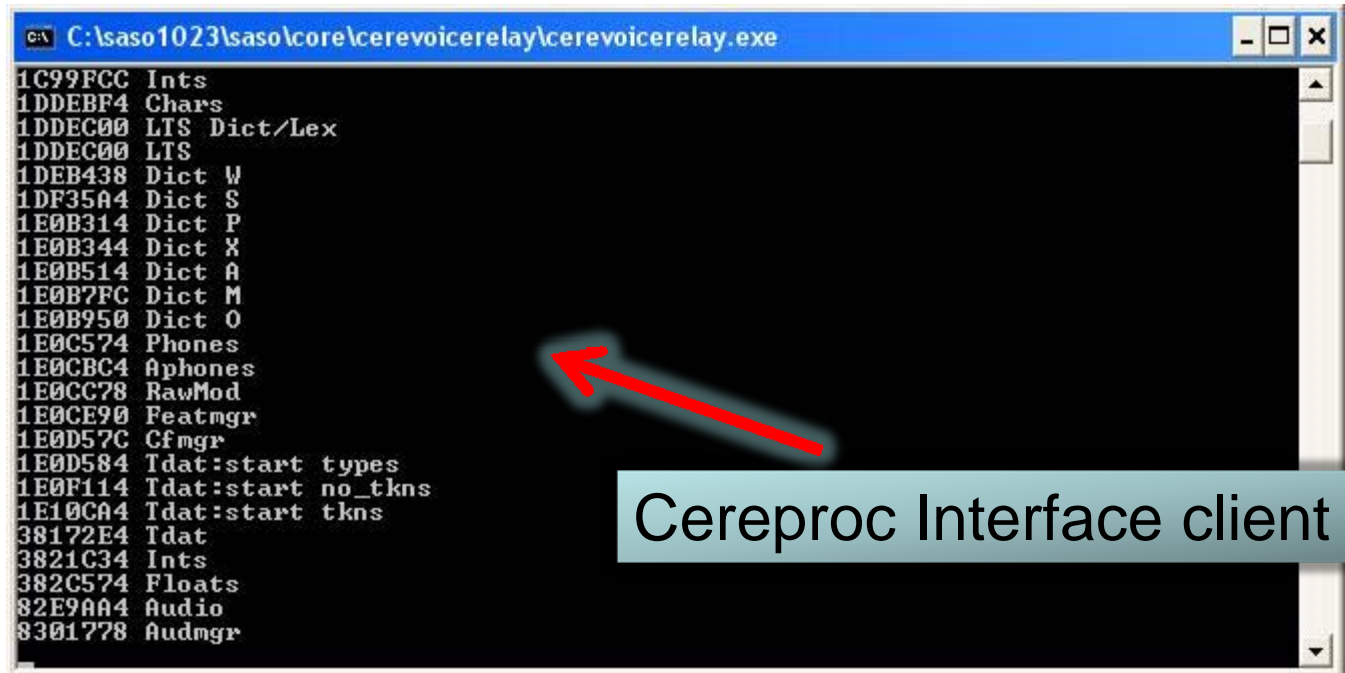
SASO Components

Component	Checked	Launch	Kill	Machine	Type	Release	Init File
SmartBody	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH	Type:		whisper
Non-Verbal Behavior	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH	Type:	baron	Type: landsAtSide
Text To Speech	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH	Type:	Rhetorical	Voices: star heather katheri
Speech Recogn	<input type="checkbox"/>	Launch	Kill	SERAPH	Type:	AcquireSpeech	Domain: SASO-EN
NLU	<input type="checkbox"/>	Launch	Kill	SERAPH	Type:	aNluRetriever	Domain: SASO-EN
NLG	<input type="checkbox"/>	Launch	Kill	SERAPH	Type:	DNLG	Domain: SASO-EN
OCGUI	<input type="checkbox"/>	Launch	Kill	SERAPH			
Agent 1	<input type="checkbox"/>	Launch	Kill	SERAPH	Agent: doctor	Domain: SASO-EN-Doct	
Agent 2	<input type="checkbox"/>	Launch	Kill	SERAPH	Agent: elder	Domain: SASO-EN-Elder	
TTS Editor	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH	Plist: baron.plist		
Minor Characters	<input type="checkbox"/>	Launch	Kill	SERAPH			

TTS Interface client



Rhetorical (Rvoice) Interface client



Cereproc Interface client

# Exercise 7 – Running Fake Recognizer

- Text based speech recognition interface

The screenshot shows the SASO Launcher application window. The title bar reads "SASO Launcher, version 2.14 (09/17/2008 1 AM) C:/saso1055/saso/RunSystem/Launcher/...". The interface includes a menu bar (Settings, Output, Help), a Launcher Mode selector (Simple, Advanced), and a Domain dropdown (VHToolkit). The main area is divided into two sections: SASO Components and SASO Tools. Each component/tool has a checkbox, a Launch button, a Kill button, and various configuration fields.

SASO Components									
SmartBody	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	Release	Init File:	vht-demo
Non-Verbal Behavior	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	baron	Type:	HandsAtSide
Text To Speech	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	Rhetorical	Voices:	star heather katheri
Speech Recogn	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	AcquireSpeech	Domain:	SASO-EN
NLU	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	aNluRetriever	Domain:	SASO-EN
NLG	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:			
OCGUI	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:			
Agent 1	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Agent:	doctor	Domain:	SASO-EN-Doct
Agent 2	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Agent:	Elder	Domain:	SASO-EN-Elder
NPC Editor	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Plist:	baron.plist		
Minor Characters	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH				
SASO Tools									
Fake Recognizer	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	File:	vht...	Agent:	baron
NPC Interaction	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	DM	Plist:	
Interaction Tools	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	masterControl		
Comm Tools	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type:	elSender		

Annotations in the image:

- A red arrow points from the "Fake Recognizer" label to the "Fake Recognizer" row in the SASO Tools section.
- A red arrow points from the "Lines file" label to the "File:" field of the "Fake Recognizer" row.
- A red arrow points from the "Agent Name" label to the "Agent:" field of the "Fake Recognizer" row.

Fake Recognizer

Lines file

Agent Name

# Fake Recognizer

**Fake Recognizer (2004-10-25), CurrentFile: tab2007.txt** [Minimize] [Maximize] [Close]

Enter Utterance	<input type="text"/>	Send	Cancel
(Re-) send:	·	jose	
Real Utterance:	hello gentlemen	Open File	
ASR Message:		Reload File	
Stored Utterances:	·		

# Exercise 8 – Running Speech Recognition

Speech Recognition

Batch file to launch Server and client

SASO Launcher, version 2.14 (09/17/2008 1 AM) C:/saso1055/saso/Ru

Settings Output Help

Launcher Mode:  Simple  Advanced

Domain: VHToolkit

SASO Components

Component	Checked	Launch	Kill	Machine	Type	Other Fields
Non-Verbal Behavior	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH	Type: Release	Init File: vht-demo
Text To Speech	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH	Type: baron	Type: HandsAtSide
Speech Recogn	<input type="checkbox"/>	Launch	Kill	SERAPH	Type: AcquireSpeech	Domain: SASO-EN
NLU	<input type="checkbox"/>	Launch	Kill	SERAPH	Type: aNluRetriever	Domain: SASO-EN
NLG	<input type="checkbox"/>	Launch	Kill	SERAPH	Type: DNLG	Domain: SASO-EN
OCGUI	<input type="checkbox"/>	Launch	Kill	SERAPH		
Agent 1	<input type="checkbox"/>	Launch	Kill	SERAPH	Agent: doctor	Domain: SASO-EN-Doct
Agent 2	<input type="checkbox"/>	Launch	Kill	SERAPH	Agent: elder	Domain: SASO-EN-Elder
NPC Editor	<input checked="" type="checkbox"/>	Launch	Kill	SERAPH	Plist: baron.plist	
Minor Characters	<input type="checkbox"/>	Launch	Kill	SERAPH		

# Speech Recognition client

# Speech Recognition Server

```

C:\saso1023\saso\core\speechrecognizer\bin\Windows-NT\sonic_server.exe
...Reading phone set configuration
...Reading lexicon
...Loading language models
...Reading language model [language_model\saso-en-1n.bin]
...Vocabulary size of LM [general] is 15084 words
...Loading acoustic models
...Getting vocabulary word pronunciations (15084 words)
..WARNING: No pronunciation for [BIOTICS]
..WARNING: No pronunciation for [TRANSPORTATIONS]
...Getting filler word pronunciations
...Setting the active vocabulary
...constructing prefix tree from lexicon.
...Assigning clustered HMM states to tree nodes.
...20153 words inserted into lexical tree
...linear lexicon would have contained 367650 states.
...lexical tree contains 187044 states, 695 root nodes (49.12 savings).
...Loaded vocabulary represented by 5886 clustered states
...Loaded vocabulary represented by 75486 Gaussians
...Average Gaussian count per state is 12.82
...Ready.
...Sonic ready and listening on port 5555
  
```

Push and hold mouse button to talk

# 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 Communications

The screenshot displays the SASO Tools interface, which is organized into several sections. Three callout boxes with red arrows point to specific elements:

- Interaction Tools:** Points to the 'Interaction Tools' row in the 'SASO Tools' section.
- Communications Tools:** Points to the 'Comm Tools' row in the 'SASO Tools' section.
- Tool Type:** Points to the 'Type:' dropdown menu in the 'NPC Interaction' row.

SASO Tools							
Fake Recognizer	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	File: <input type="text" value="ht.txt"/>	Agent: baron
NPC Interaction	<input type="checkbox"/>	Launch	Kill	Machine:	SERAPH	<input type="text" value="Type:"/>	DM Plist: <input type="text"/>
Interaction Tools	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type: masterControl	
Comm Tools	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Type: elSender	

UT2004 Engine							
Graphics Server	<input checked="" type="checkbox"/>	Launch	Kill	Machine:	SERAPH	Map file: SASO-VhWorkSho	
	<input type="checkbox"/>	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		



SASO Logger (01-04-2006)

Settings Output Help

Start test run Stop test run | kaso\_automated\_logging | Save window data Search Text: \_\_\_\_\_

SASO Components

Main Output

```

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>
  
```

Logger

DIMR

HumanSpeech

HumanNLU

AgentInterpretations

AgentNLU

AgentSpeech

J.Logger

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 rvoice cerevoicereley
[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"
[09-10-2008 18:01:52] vrAllCall
  
```

Java Logger

Elvin Logger C#

ELVISH\_SESSION\_HOST: seraph.kit.usc.edu

ELVISH\_SCOPE: SERAPH\_SCOPE

Save Window Data

Start Test Run End Test Run Main Output clear all

```

vrComponent SBMinTool all
vrComponent "launcher" "all"
vrComponent "logger" "all"
vrAllCall
vrComponent mastercontrol all
vrComponent SBMSLabelMachina Idle
vrComponent SBMinTool all
vrComponent "launcher" "all"
vrComponent "logger" "all"
  
```

C# Logger

DIMR

Human Speech

Agent Interpretations

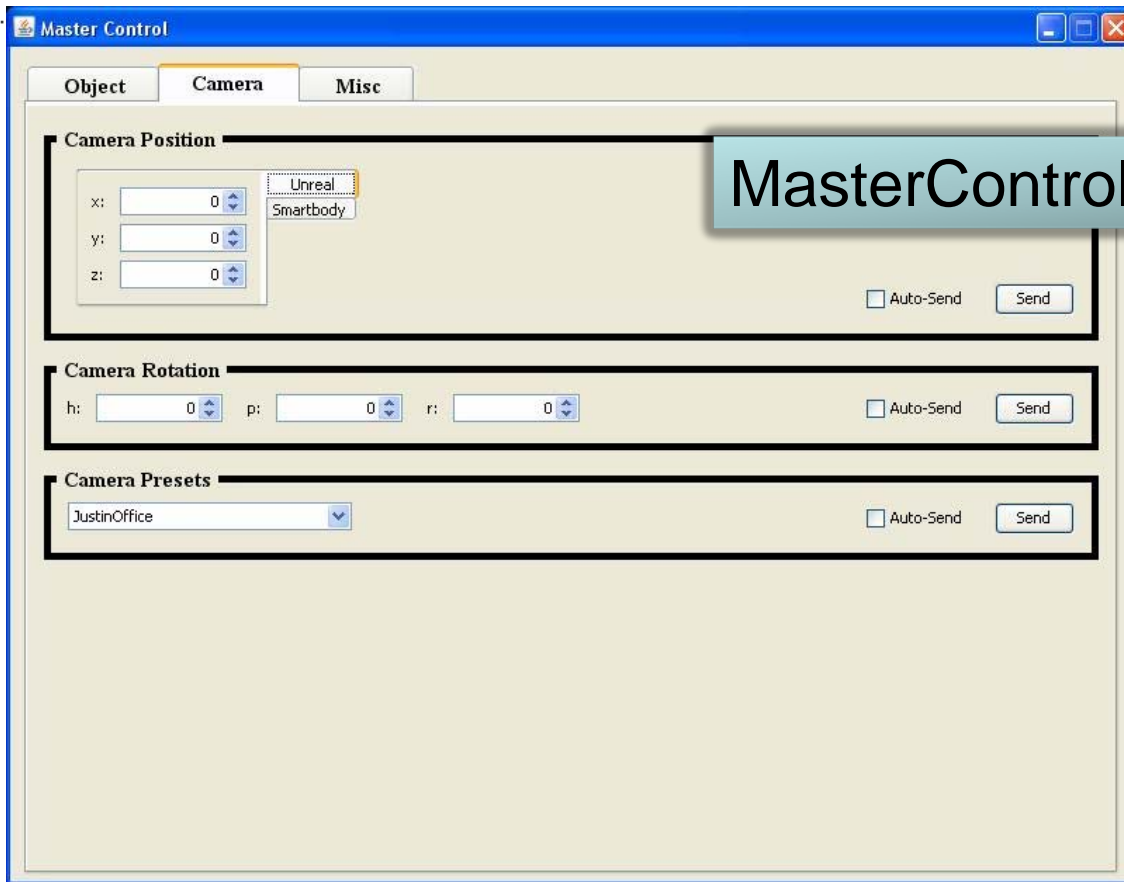
Agent NLU

Agent Speech





## EISender – Message Sender Tool



## MasterControl – Camera Position

# MasterControl – Object Creation And placement

Master Control

Object Camera Misc

Object-Name: doctor-perez

**Create Object**

Skeleton File: common.sk

Object Class: SasoBase.DoctorNew

**Remove Object**

**Object Position**

x: 0 y: 0 z: 0

Unreal  
Smartbody

Auto-Send

**Object Rotation**

h: 0 p: 0 r: 0  Auto-Send

**Object Posture**

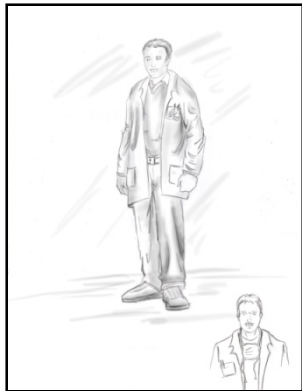
Chair\_Idle\_loop\_1

# 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