

Pandorabots – a Common Lisp-based Software Robot Hosting System (5/03 - Japan)

Presenter:

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History

- Winter 2001- Gabriel of Sun and Kunze of Franz prepare analysis of Internet Bubble from a *cost of technology* view point
- Key Points
 - Approximately 2000 “internet companies” failed in the US during the years 2000-2003
 - Initial cost of technical infrastructure ranged from \$2 million to \$20 million – average \$10million

History – Continued

- Technical infrastructure costs – averaged \$10 million – included high-costs for Oracle, Sun (HP, IBM, etc) servers, Cisco Routers, Backup systems, mirrored systems, etc. On-going costs: 20% of initial cost
- High staff costs – use of Java implied more than 10 high-quality programmers. Ongoing costs > \$1.5 million.

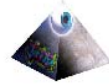
History – Continued

- Use of Lisp in conjunction with linux-based PCs and low-cost data bases (mysql) could reduce technology costs across all components by factors between 10 and 1000!
- Winter 2002 – Pandorabots development started with goal of demonstrating this low-cost conclusion. Pandorabots was published in May 2002.

History – Continued

- Pandorabots began as an effort to put an updated version of the famous therapist program: “eliza” – now known as *Alice* - on the web – and allow others to build and host their own versions.
- Updated “eliza” came from the non-profit open source repository at the Alice Foundation

http://www.alicebot.org/



A.L.I.C.E. AI Foundation

Promoting the adoption and development of Alicebot and AIML free software.

[A.L.I.C.E. Silver Edition](#)

[C.L.A.U.D.I.O Personality Test](#)

[DAVE E.S.L. bot](#)

[GET \[V\]HOST™ AVATARS](#)



Welcome to the ALICE A.I. Foundation.

1. Chat with a bot
...[A. L. I. C. E.](#)
...[Practice E. S. L.](#)
...[Personality Test](#)
2. Learn to host your own bot.
3. Make money with your own chat robot.

Foundation Information

Find out **who we are**.

Join the ALICE A. I. Foundation!

Read our **mission statement**.

Read our **charter and bylaws**.

Discover the **history** of ALICE and AIML

See our list of Foundation **members**.

Press and Media

27 February 2003 **Artificial Stupidity (Part 2)** (Salon)

26 February 2003 **Artificial Stupidity (Part 1)** (Salon)

17 November 2002 **The ALICE Bot-Off** (Slashdot)

18 October 2002 **Quark Soup: Communications Can be Tough** (L. A. Weekly)

September 2002 **Virtual Hindi Chat Deepti, the Talking Computer** (Siliconeer)

26 July 2002 **Alicebot Creator Dr. Richard Wallace Expounds** (Slashdot)

7 July 2002 **Approximating Life** (New York Times Magazine)

10 June 2002 **A.I. Expert Lands in Real**

Alicebot and AIML Resources

Download Alicebot and AIML tools.

Get **documentation**.

Locate Alicebot/AIML **companies**.

Read or join an **Alicebot mailing list**.

See some **live Alicebots**.

Find A.L.I.C.E. in **public discourse**.

AIML Specification (Working Draft)

Activities and Committees

Take **The Tao of AIML** course.

Enter a **Bot Contest**.

Join the **Alicebot and AIML Architecture** committee

Visit a **Conference or Tradeshow**



A.L.I.C.E.:

FEATURES

Action

Chat with a bot!

...[A. L. I. C. E.](#)

...[Practice E. S. L.](#)

...[Take a Personality Test](#)

Host An Alicebot

Make Money with your bot

Articles / Suggested Reading

[A Body for A.L.I.C.E.](#)

[Alan Turing Statue in Manchester, England](#)

[Recreating AIML](#)

[Www.AIML.info](#)

[Frontiers of Free Marketing](#)

[AIML Pattern Matching Simplified](#)

[Language Use, Personality and True Conversational Interfaces](#)

[Computing Machinery and Intelligence](#)

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The Alice Foundation, a NON-profit Foundation formed by Dr. Richard Wallace, promotes International standards for the development of Software Robots or Chatbots.

The foundation has made available under the GNU license - several software robots - along with their content. Here is a sample interaction with a chatbot:

You: Hello

Lauren: Hi There!

You: What is your name?

Lauren: My name is Lauren

 say

The English Language content now exceeds 70,000 sentences.

Pandora Bots



Welcome to pandorabots.com, the place where you can create and unleash virtual personalities. Pandorabots.com is an experimental software robot (bot) hosting service based on the work of Dr. Richard Wallace and the A.L.I.C.E./AIML free software community (www.alicebot.org).

From any browser, you may create, design and publish your own software robots – and make them available to anyone via the Internet. Click [here](#) to sign-up for an account to begin creating your own virtual robots. If you already have an account, please sign-in below with your email address and password.

What's New?

- Want to talk to the winner of the 2002 Divabot Pageant? If so, click [here](#).
- Create a customized face for your Pandorabot. Click [here](#) to learn more about the new Oddcast Vhost Site Pal feature.
- Make Money off of your Pandorabot. Click [here](#) to learn more about our new subscription service.
- Take a look at the day's most active bots. Login and click on **Most Active** and see if your bot has made the Top 20!
- We've had problems connecting publishing Pandorabots on

Email:

Password:

www.pandorabots.com

hosts Alice Foundation Chatbots

Pandorabots - began 5-13-02

- all accounts are free – remember – this is a demonstration
- hosts over 18,000 separate accounts (5/03)
- hosts over 21,000 separate Chatbots (5/03)
- Number of accounts has been doubling every 3 months
- over 2000 AOL Instant Message Accounts
- over 350 Bots for sale
- Services between 5,000-20,000 interactions/hour
- Some bots have more than 100,000 interactions/day
- bots are built with a browser, by non-computer programmers!
- built in Common Lisp and uses Allegro Serve
- uses linux as the OS and the mysql database

www.pandorabots.com

- bots are multi-lingual
- Japanese word splitting – uses Chasen
- bots can execute arbitrary programs
- bots can serve pictures and music
- bots speak (currently English and French,
Japanese will be added soon)
- bots can be embodied by Characters
(e.g. - Hello Kitty, Doraemon, etc)
- bots can do database queries
- bots can interact with other web sites

www.pandorabots.com/pandora/talkoddcast?botid=f6d4afd83e34564d



Human: hello
lauren: Hi there!

The Alice Foundation's Chatbots are derived from Eliza - the original Chat bot - created by Joseph Weizenbaum in 1966

You:お名前は何ですか？

Robot: ロレンです

You:日本人ですか？

Robot:違います！日本人に見えますか？

 say

Joseph Weizenbaum



- ELIZA (1966) The first Chatbot
- Computer Power and Human Reason (1976)

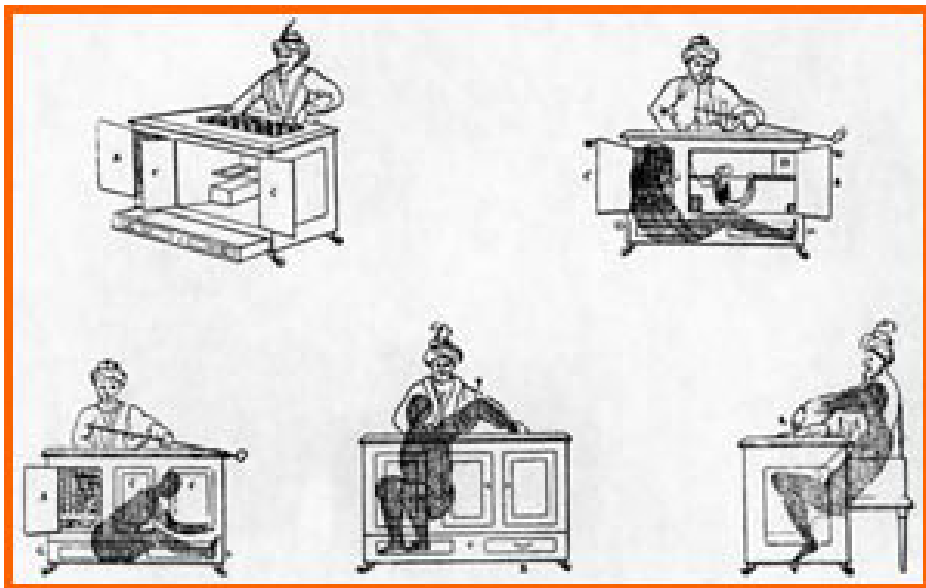
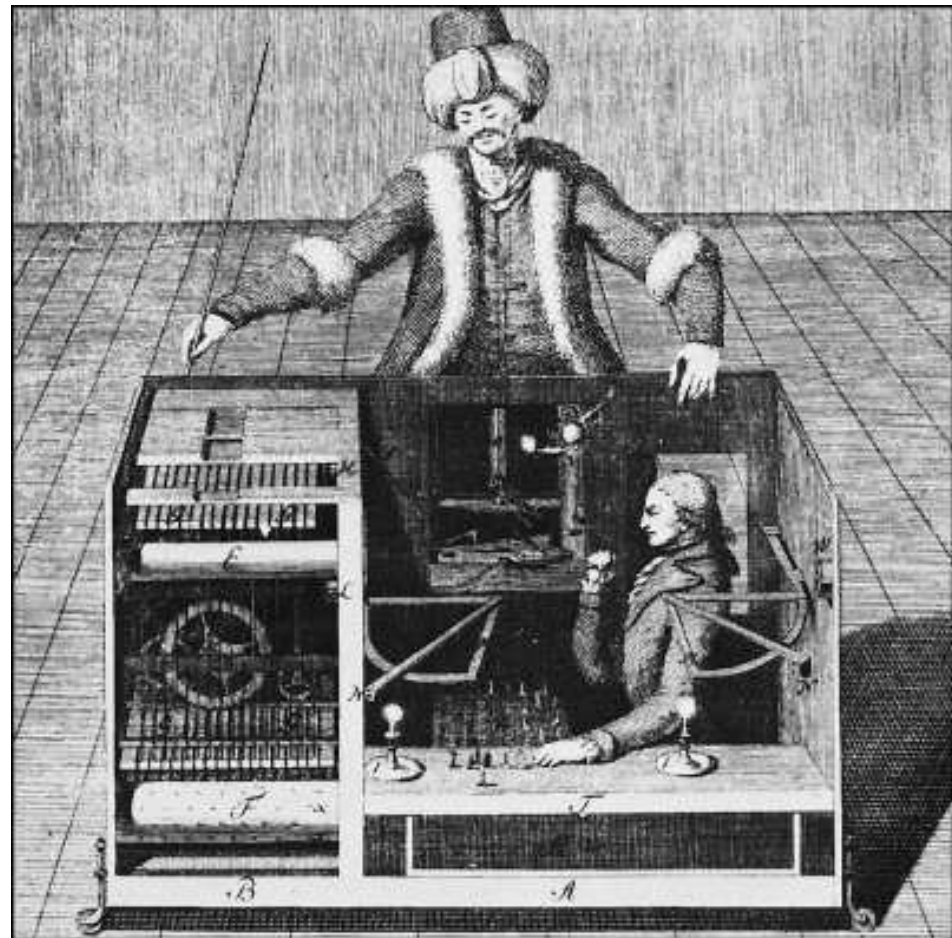
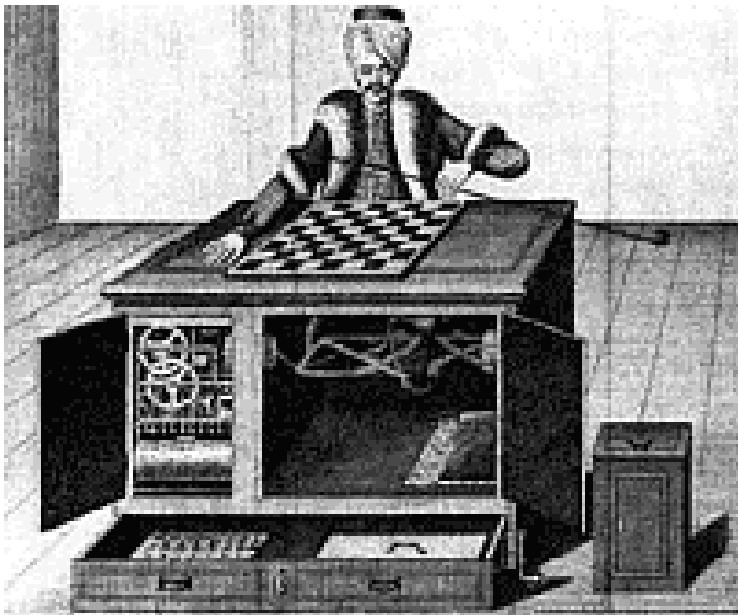
From the Wizard of Oz - the little man behind the screen ...



say

The Chatbot has the appearance of intelligence - which arises as an illusion created entirely by consciousness

The Chess Playing Machine



Despite their simplicity, chatbots based on the Alice Foundation open source technology consistently are judged as more human than other “AI-based” chatbots.

Alice Chatbots consistently win the annual Loebner prize - a contest in which humans judge chatbots and select the one that is most human-like.

You: 日本語を話せますか？

Robot: 勉強中です！まだ勉強中で日本語を話
せません！



say

The chatbot program is quite simple: the input is read and matched against a collection of *patterns*. When a match is found, the sentence is transformed according to an *output template* associated with the matched *pattern*.

You: あなたは私を好きですか？

Robot:わかりません。好きになるか



say

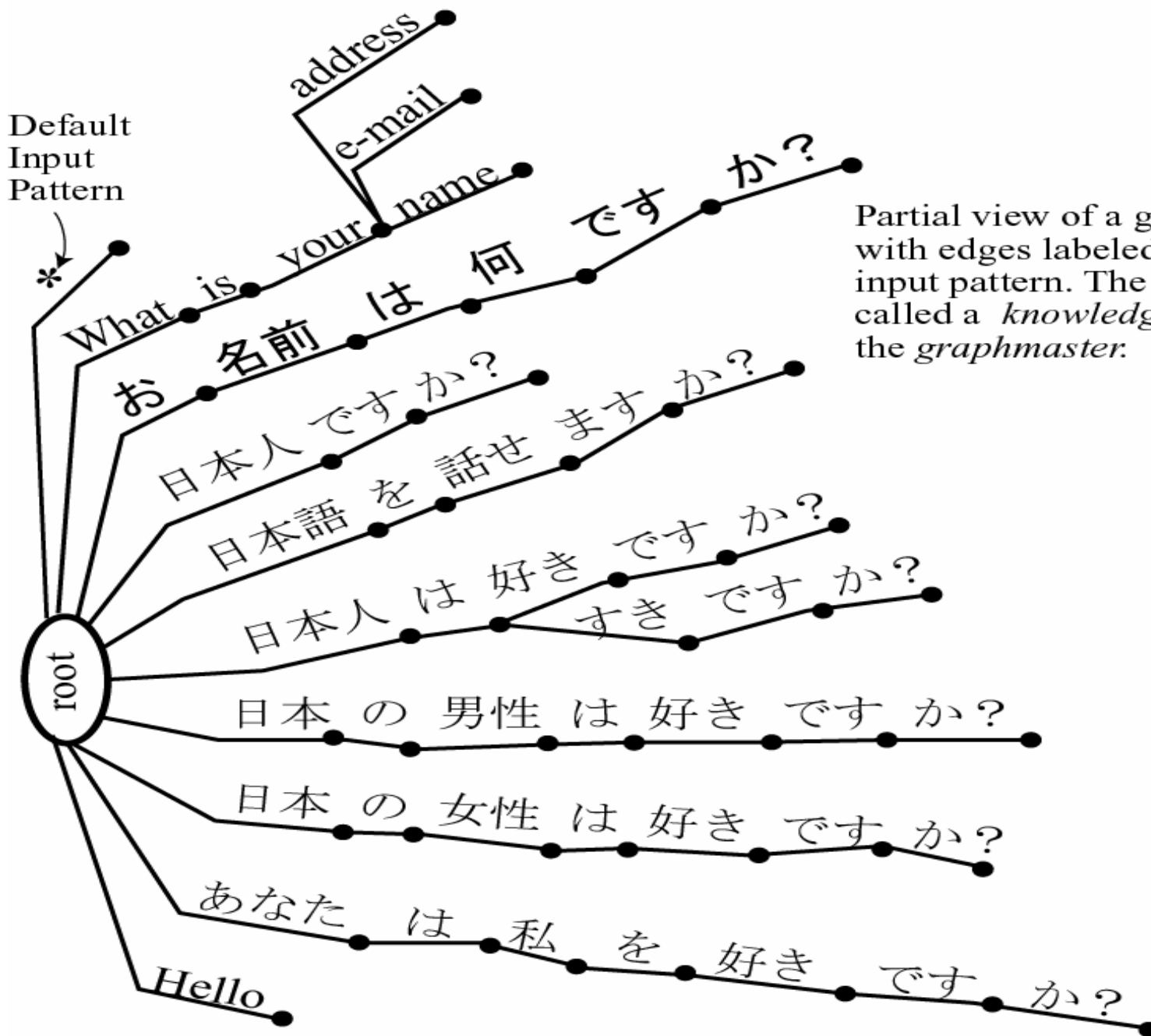
Human: あなたは私を好きですか？
lauren: わかりません。好きになるかしら？

Knowledge is stored in an XML-compliant language called AIML (Artificial Intelligence Markup Language)

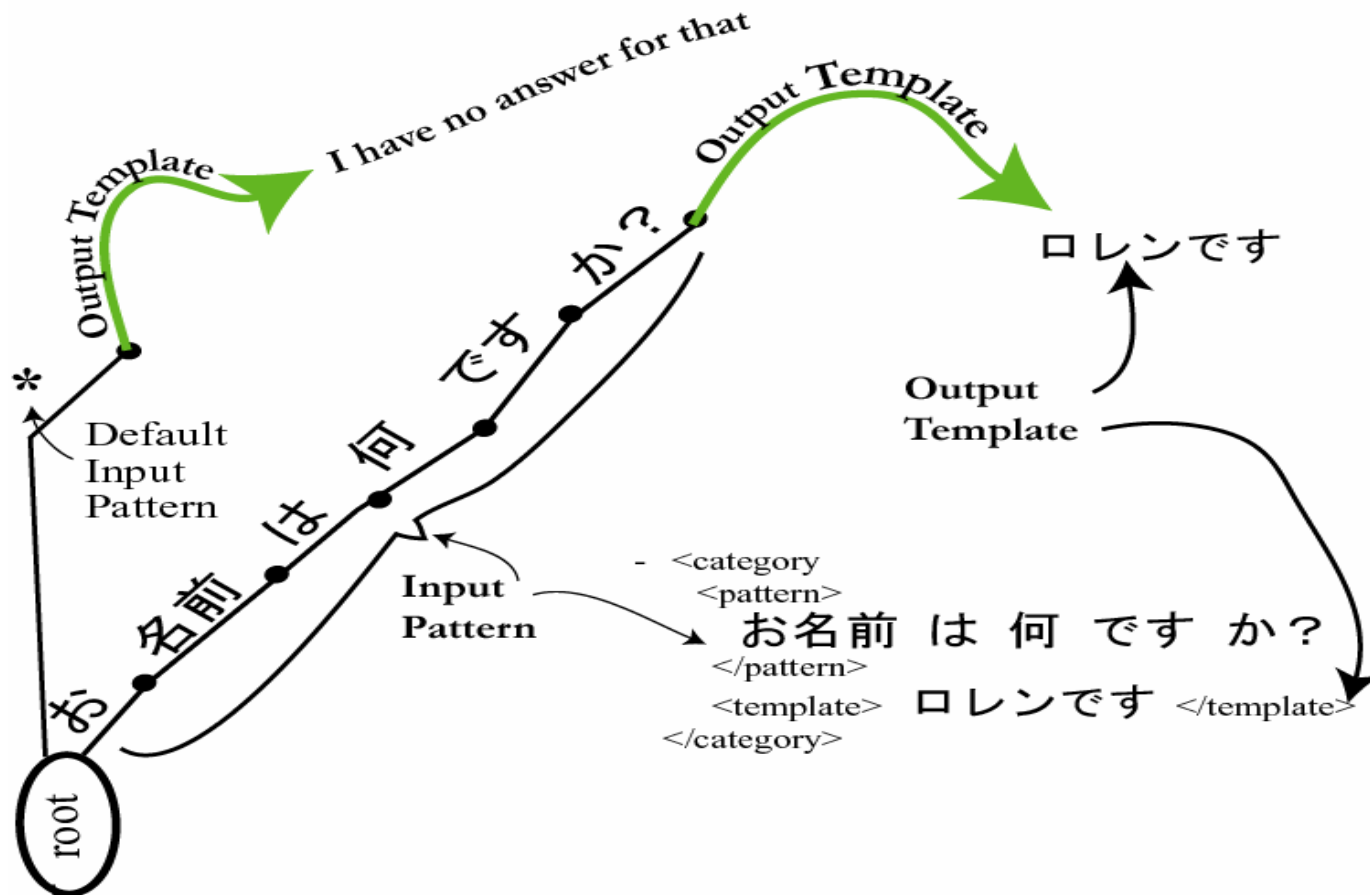
A Pandorobot begins life with over 70,000 sentences - called *categories* - and these are usually shared by all the bots at www.pandorabots.com.

Authors use a browser to modify or add new knowledge to their bots. These changes are not shared by other robots.

The next few slides present a view of the knowledge as a graph and show how the knowledge has been structured.



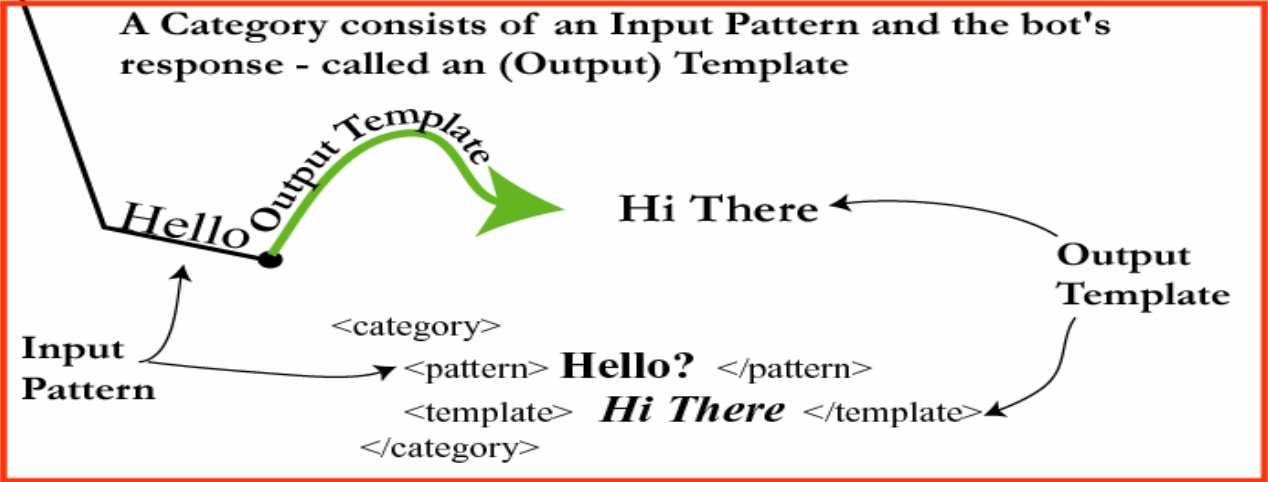
Partial view of a graph with edges labeled with input pattern. The graph is called a *knowledge web* or the *graphmaster*.



```

- <category
  <pattern>
    お名前は何ですか?
  </pattern>
  <template>
    ロレンです
  </template>
</category>

```



```

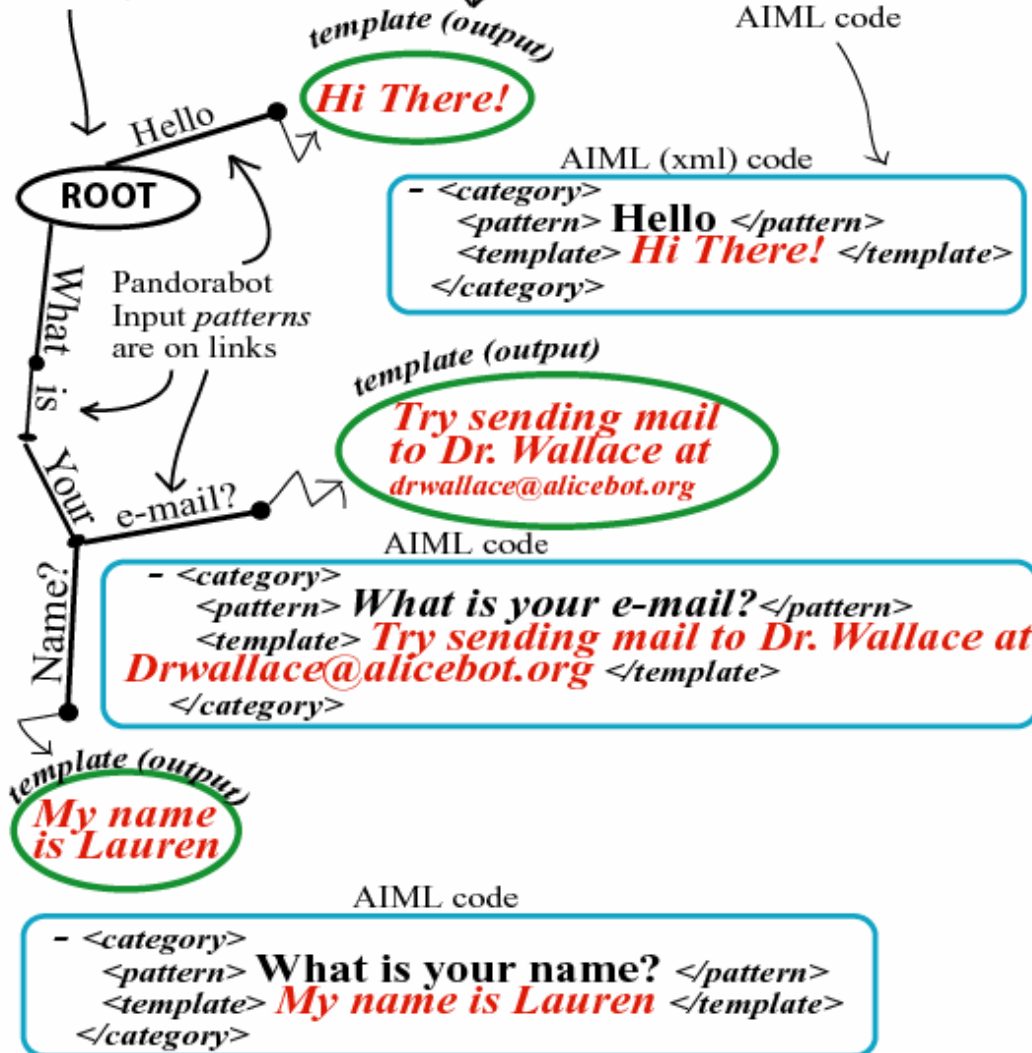
<category>
  <pattern>
    Hello?
  </pattern>
  <template>
    Hi There
  </template>
</category>

```

Knowledge Web (only a few links and nodes are shown)

Pandorabot responses are described in *templates* outlined in green circles in this diagram

Knowledge is encoded using AIML, a subset of XML. The blue boxes outline the AIML code



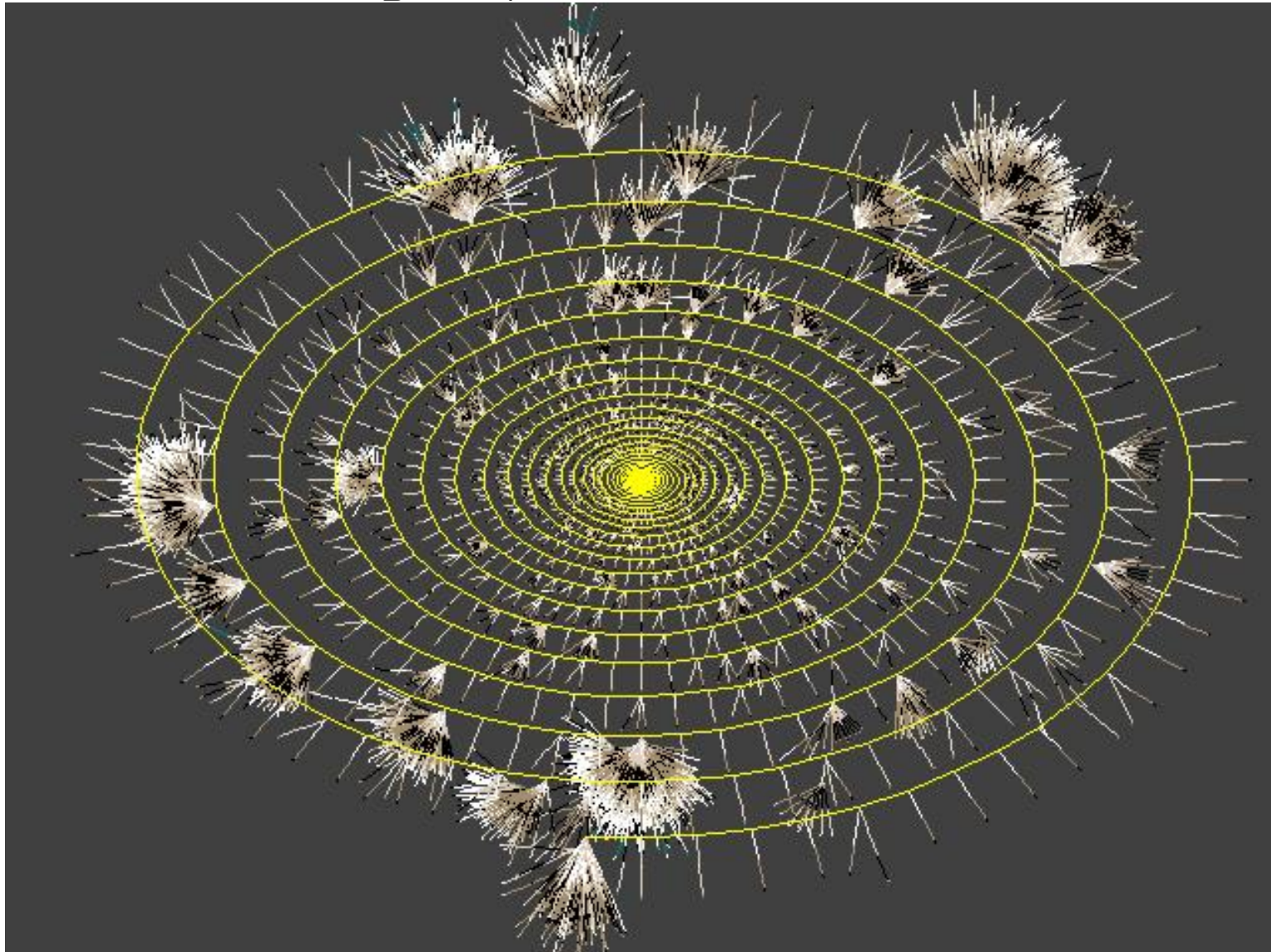
The Chatbot's knowledge is stored as a Graph - which is called the Knowledge Web or the Graphmaster.

The bots are *multi-lingual*. These robots can interact in any language simultaneously.

The next two slides show two views of the Graphmaster.

Graphmaster (spiral form)

Visible Subgraphs mark common words



Programs

- **A** – SETL / Java
- **B** – Java 1
- **C** – C/C++
- **D** – Java 2 (reference)
- **dB, E, M, P**
- **Z - Lisp**

Implementation Details for Pandorabots

Summary Form

- Built entirely in common lisp
 - allows system updates while the site is live
 - very low-cost hosting, developing and on-going maintenance
- Source code is about 1 megabyte
- Server uses linux, unix or MS Windows - runs on any hardware platform
- System hosts over 20,000 bots on a single PC (java version hosts 15 bots)
- 25,000,000 English Sentences have been collected over a one year period
and stored in a relational database