



# The Deployment of a Mobile Question Answering System

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SEM 2005

# Outline



- Corporate Background
- Introduction & Motivation
- Nuggets
  - Product & Architecture
  - Lessons Learnt
- Evaluation Issues
- Summary and Conclusion

# Corporate Profile

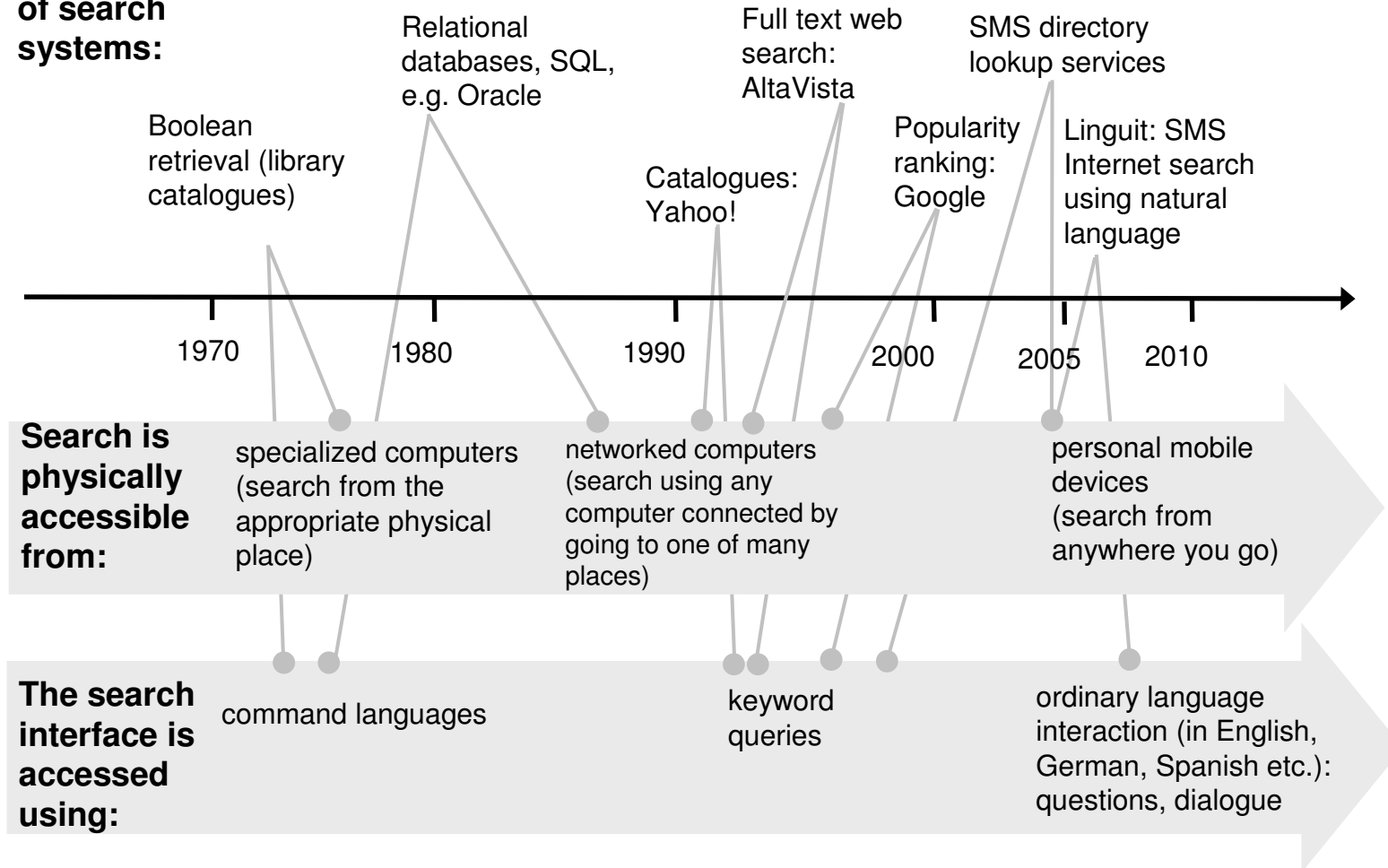


- Linguit history:
  - Project inception 2000
  - Incorporated in Germany in 2001
  - Incorporated in UK in 2005
- Mission:
  - To develop best-of-breed multilingual speech & language software to make information access easier
- Further expertise:
  - Mobile technology, usability, machine learning, LBS

# A Short History of Search



## Examples of search systems:



# Motivation



- People have information needs
- People move
- Logical consequence: mobile search
- Search on the desktop is already commonplace, but needs to be adapted
- Mobile search means broader audience (many non PC owners own cellphones)
- But: there are many agonies to mobile search that need to be overcome first...

# Agony 1: Setting up WAP



- Users have to use WAP to access information on the Internet
- Desktop paradigm imposed on mobile devices
  - Smaller keyboards, no mouse, smaller screens
- Your mom might not know WAP by name, but she knows it sucks
- Let's see what you have to do in order to set it up, according to a major MNO's Web site:

“If you are familiar with your phone set up you can quickly configure your phone and set up [REDACTED] as your home page by entering the following information. Or, if you need more help simply follow the [step-by-step configuration guide](#) below. **Please note:** When [REDACTED] required to enter 'user@[REDACTED].net', please enter just that. Name [REDACTED]  
Homepagehttp://[REDACTED].comGateway IP 1212.183.137.012Port 19201Timeout2 minutesCSD No. 1+447836900808User Name 1wap Password 1wap Speed (Bps) 19600Line Type 1ISDN Step-by-step guide to configure your phone:

From the main display press the **Menu** key to enter the main menu

Use the **navigation** key to scroll to highlight **Internet Access** and press the **right soft** key

Use the **navigation** key to scroll to highlight **Web Sessions** and press the **right soft** key

Use the **down navigation** key to scroll to highlight **[New Entry]** and press the **right soft** key. If there are no free profiles, you can delete an existing profile by using the **navigation** key to highlight the one you wish to remove and press the **Menu** key. Use the **navigation** key to scroll to highlight **Delete** and press the **right soft** key. (*N.B. It might not be possible to delete some profiles*)

Press the **right soft** key to **CHANGE** the **Name** of the profile

Using the phone key pad, enter [REDACTED] and press the **right soft** key. Use the **left soft** key to delete any unwanted characters

Press the **right soft** key to **CHANGE Homepage**

Use the phone key pad to enter **http://[REDACTED].com** (case sensitive) and press the **right soft** key. Use the **left soft** key to delete any unwanted characters

Press the **right soft** key to **CHANGE Gateway IP 1**

Use the phone key pad to enter **212.183.137.012** and press the **right soft** key. ...”

# Agony 2: Mobile Bus Times

- Mobile access to bus times exists, but...
- “For next departures on a specific route text the bus stop code followed by an exclamation mark and then the bus service number, e.g. 34398765!x26 to 0777 608 2 608”

— [travelinescotland.com](http://travelinescotland.com)

# Mobile Bus Times (2): Analysis

- Mobile service offering exists
- But:
  - user experience: don't like it, cumbersome/technocratic
  - Information need requires human *translation step* into command language or keyword-based query
  - 40 page PDF file with local bus stop codes!

36232623  
36235874  
36236865  
36236867

Edinburgh  
Edinburgh  
Edinburgh  
Edinburgh

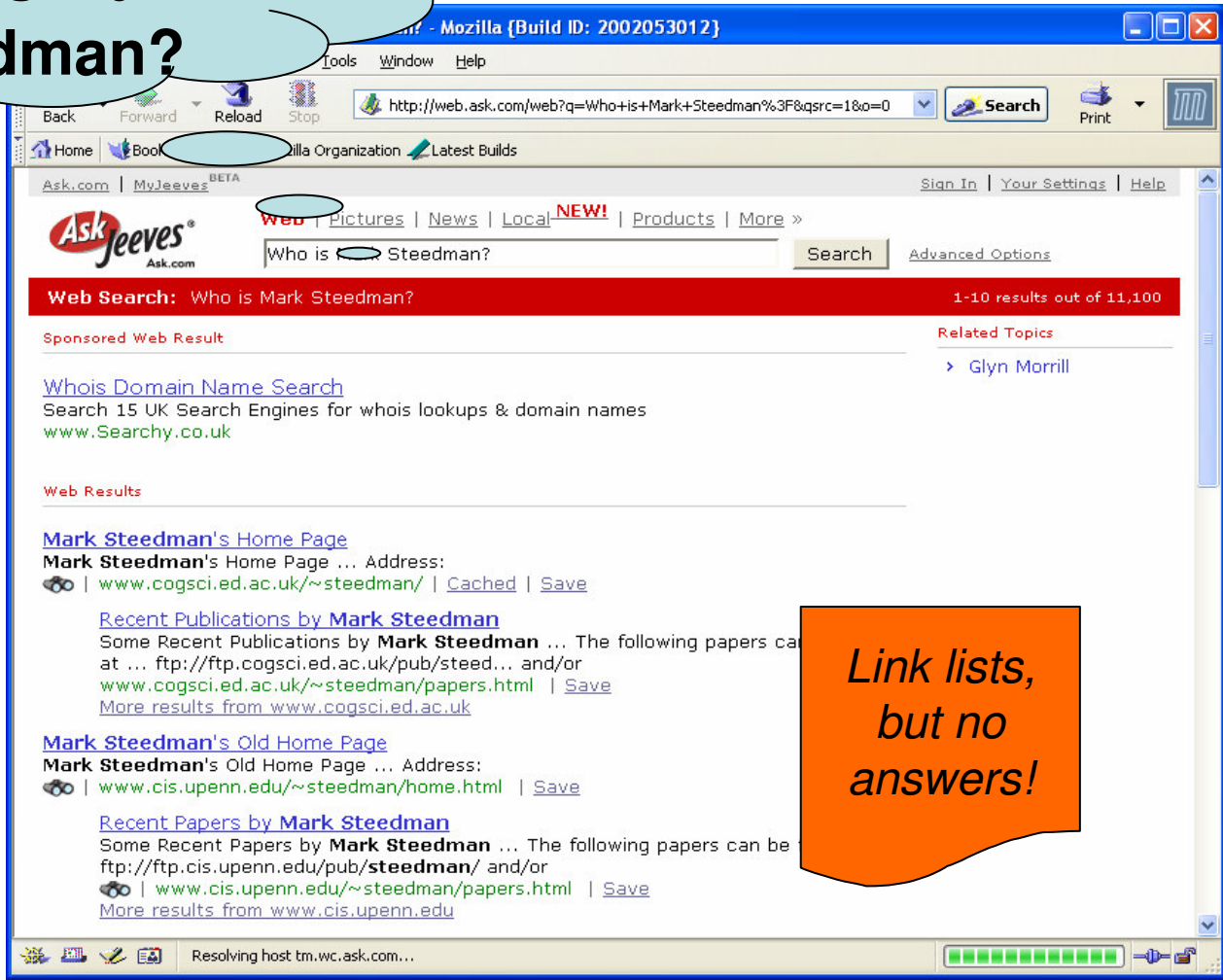
Balgreen Rd Saughton Rose Gdns Wheatsheaf  
Balgreen Rd Whitson Rd  
Bankhead Ave at Stevenson College Medway  
Bankhead Ave Bankhead Crossway North

....

# Agony 3: Keyboard Based Search Fails



Who is Mark Steedman?



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# Remedy: What Users Want

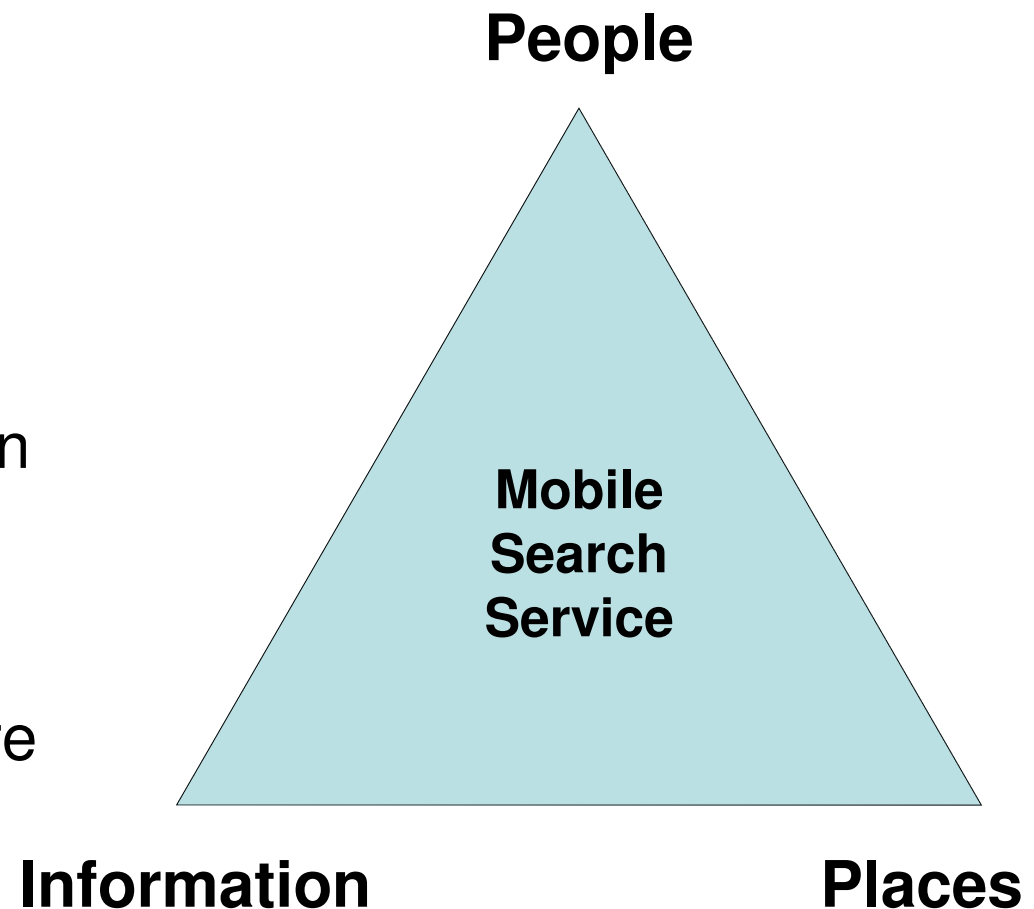


- So this is all bad
- But: how to fix mobile search?
- Solution (the end of agonies?):
  - Observe users' preferred (existing) mode of interaction (→SMS!)
  - Information needs are most naturally expressed in question form
  - Use *SMS for Internet access in natural language*
  - *Provide single point of contact*
  - Result is convenient, accepted and efficient interface

# The Big Picture



- People can have information needs anywhere
- People move in space
- Connecting people in places through mobile devices with information in a *personalized* way (modified after Andy Hopper)
- Software and device are perceived as a unit



# Enter Nuggets



- Operational since August 2004
- Technology showcase now available in the UK on the four major networks
- **First fully-automatic natural language mobile search**
- Patent-pending technology:
  - answers English questions without human intervention
  - Renders answer summaries to fit in 160 character messages
- Further unique Features:
  - *Fast*: 15 seconds round trip time
  - *Scalable*
  - *Cheaper* than using human call centers



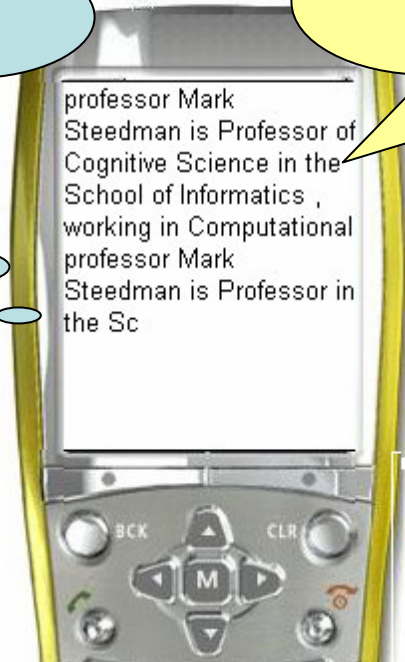
# We Can Do Better



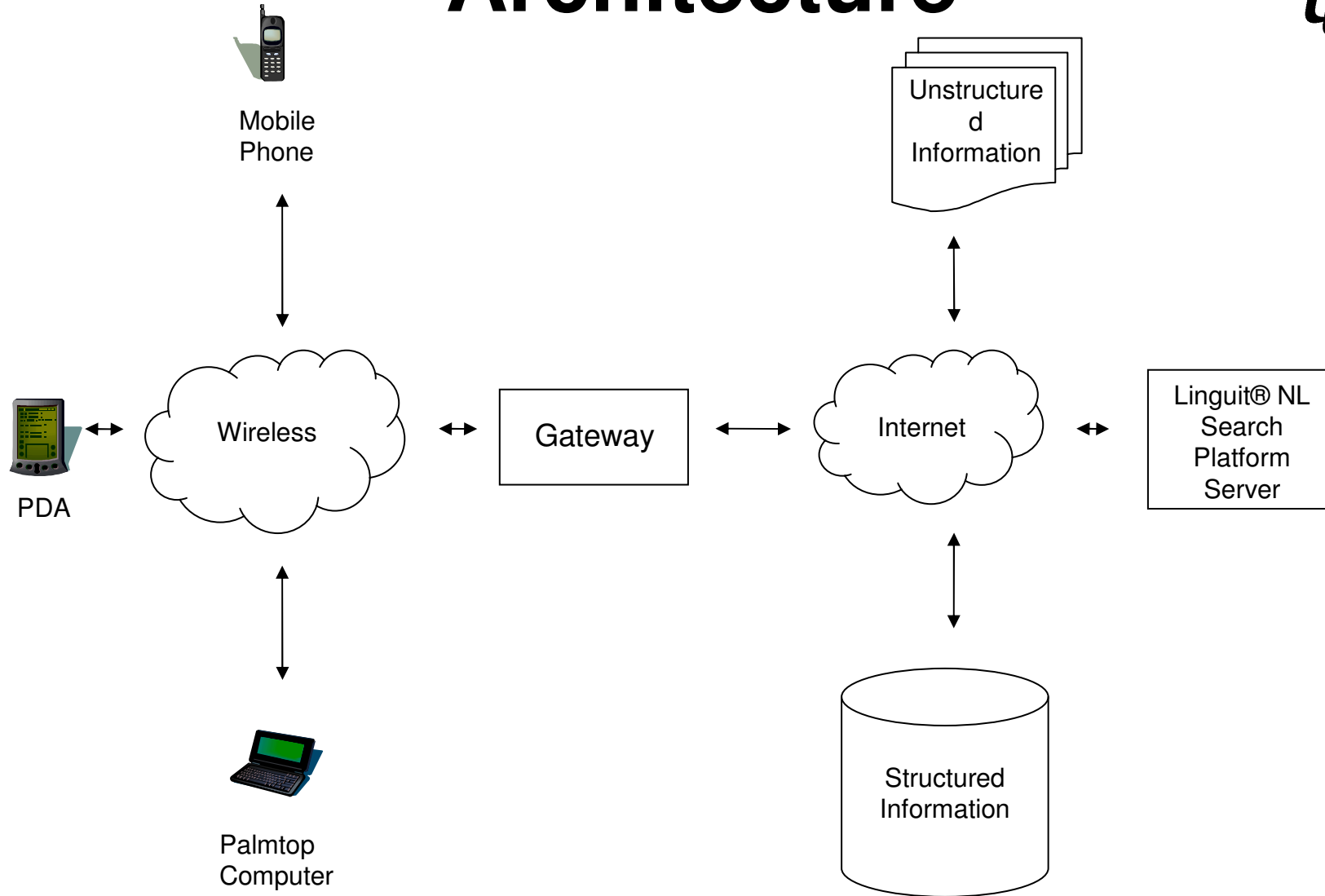
Who is Mark

Who is Mark Steedman?

“Mark Steedman is Professor of Cognitive Science in the School of Informatics...”



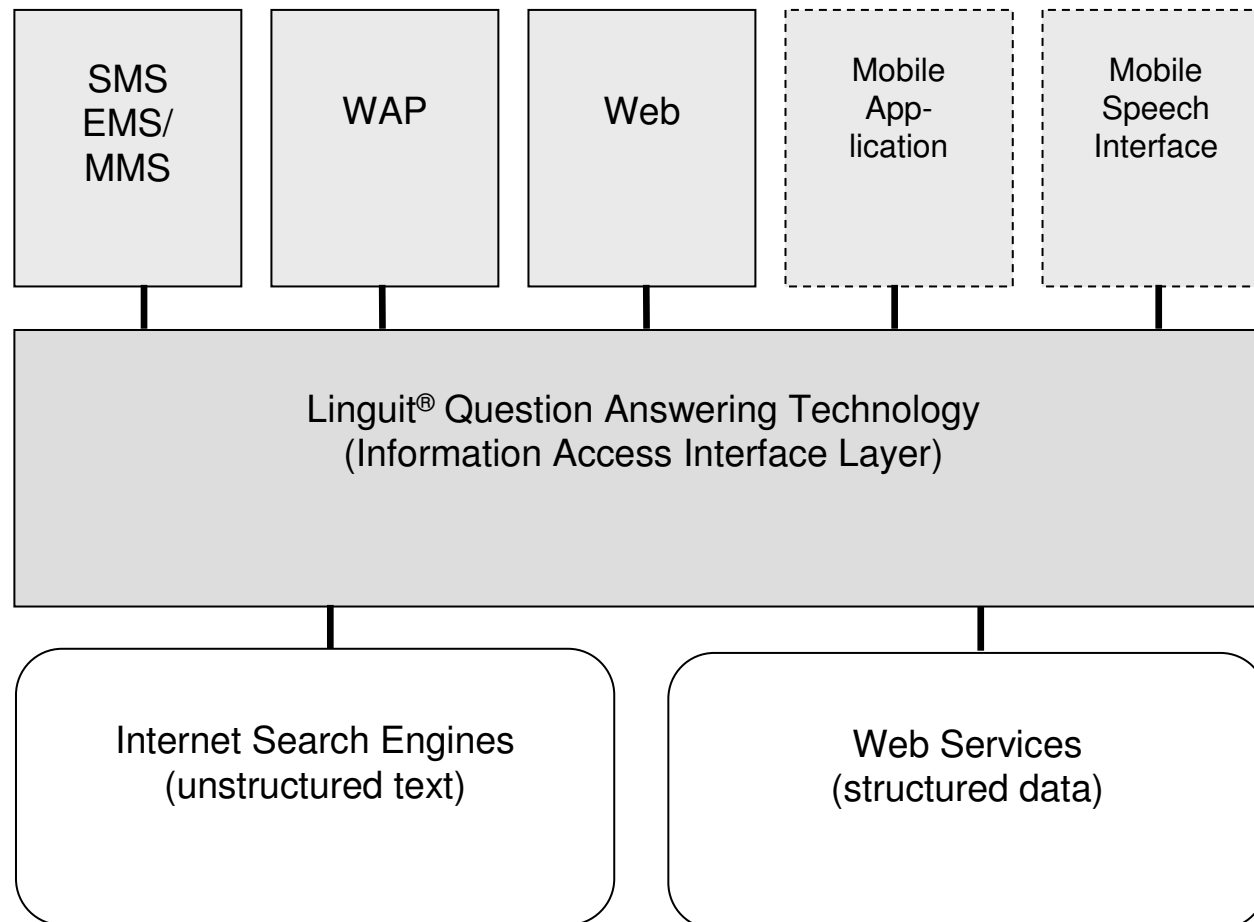
# Architecture



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# Linguit NL Search Platform



# Questions People Ask (1)



**Q:** what is the capital city of mali ?

**A:** bamako Bamako is the capital city of Mali .

**Q:** When was Jimi Hendrix born?

**A:** 1942 James Marshall Hendrix was born on November 27th , 1942 in Seattle , Washington

**Q:** where are the bermuda islands?

**A:** atlantic Bermuda Islands also include the most northern reefs and mangrove swamps in the Atlantic Ocean , and are located within ... sided mountains , the largest of which supports the Bermuda Islands we know today

**Q:** When was Marvin Gaye born?

**A:** 1939 April 2 , 1939 Marvin Gaye was born . 1939 singer Marvin Gaye Marvin Gaye ( April 2 , 1939 1963 July 20 , 1963 Marvin Gaye 1963 1963 Marvin Gaye sang " Hitch Hike . "

**Q:** What is the population of germany ?

**A:** Overall , the population of Germany was growing at a rate of less than 0.1 % in the late 1990s Germany had an estimated population in 1998 of 82.1 million

# Questions People Ask (2)



**Q:** Who is Larry Page ?

**A:** Larry Page is one of the founders of Google internet search engine . engine Larry Page is a co-Founder

**Q:** , what is the longest river in the British Isles?

**A:** Shannon is situated on the Shannon , which is the longest river in the British Isles  
shannon F o y n e s Y a c h t C l u b The river Shannon is the longest river in the British Isles . Shannon Ireland ( Shannon

**Q:** Who is Madonna?

**A:** Ciccone Madonna Louise Veronica Ciccone ( born August 16 , 1958 ) , simply known by the stage name Madonna , is a pop singer

**Q:** Who invented the telephone ?

**A:** Bell The mobile telephone was invented by Bell Telephone Company and introduced into Bell Build Your Own Telephone Kit at Heathrow In 1876

**Q:** distance from London to Cairo ?

**A:** from London to Cairo , a distance of 2,168 miles , in just unknown by riverboat in two

# Evaluation Issues



- An answer is judged correct when it meets the information need of the user
- Distinguish between **answer nucleus**, **justification context** (to built trust in the system), and *further information*

When was Jimi Hendrix born?

**1942 James Marshall Hendrix was born on  
November 27th , 1942 *in Seattle ,*  
*Washington***

# Lessons Learnt



- People like instant answers
- Trust building is vital
- Your users can show you new use cases  
(Daily Telegraph crosswords, "ego check")

# Summary & Conclusion



- Linguit has experimentally deployed the first commercial natural language Internet search for cellphones
- First user experience to technology showcase "Nuggets beta" positive
- Future work:
  - We are currently working on versions for other European languages
  - More focus on personalized search

# Contact Us



- You are welcome to talk to us
- Get a demo and find out about licensing opportunities:

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# References



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- Le Bodic, Gwenaël. 2003. Mobile Messaging - Technologies and Services: SMS, EMS and MMS. Wiley.