

The perfect storm: Speech recognition,
social networking and productivity

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handsfree.ly



Agenda

- 1. Overview of handsfree.ly functionality**
- 2. Support for GMail and Yahoo Mail**
 - 1. OAuth for password free access**
 - 2. OpenID for Google Marketplace**
- 3. PayPal Adaptive API**
- 4. Amazon EC2 Deployment**
- 5. Lessons learned + Future Work**



Enable Transactions from phones

What

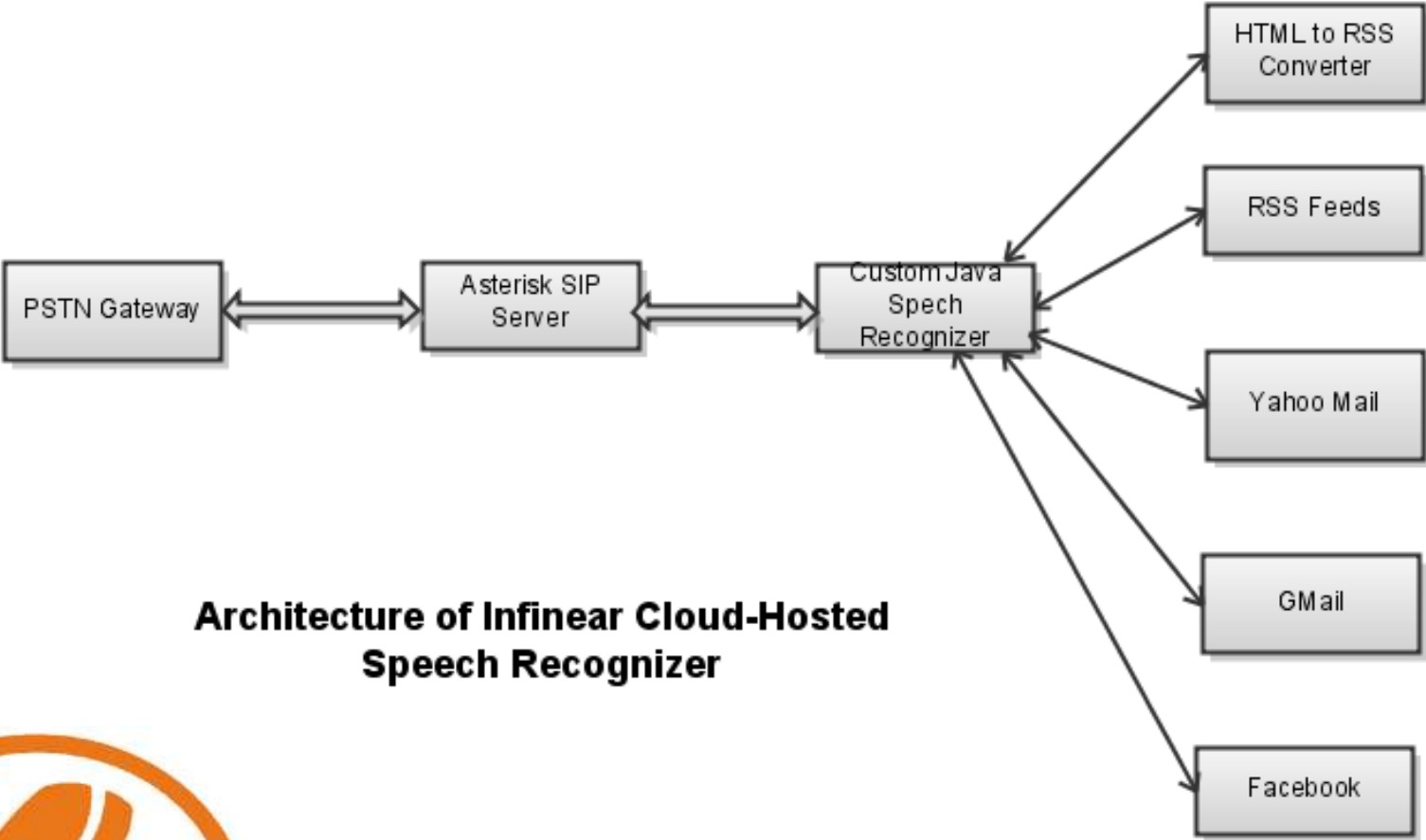
- **GMail & Yahoo Mail**
- **PayPal**
- **Mail functionality:**
 1. **Read**
 2. **Reply**
 3. **Compose**
 4. **Pay sender**
- **Facebook (beta)**

How

- **Sphinx trainer/decoder**
- **Cepstral TTS**
- **Focus on friends/contacts**
- **Voice processed on Amazon EC2**



Supported web services



Architecture of Infinear Cloud-Hosted Speech Recognizer



GMail vs Yahoo Mail

GMail

- OAuth support April 2010
- IMAPS (incl. idle)
- No integration with Twitter or Facebook

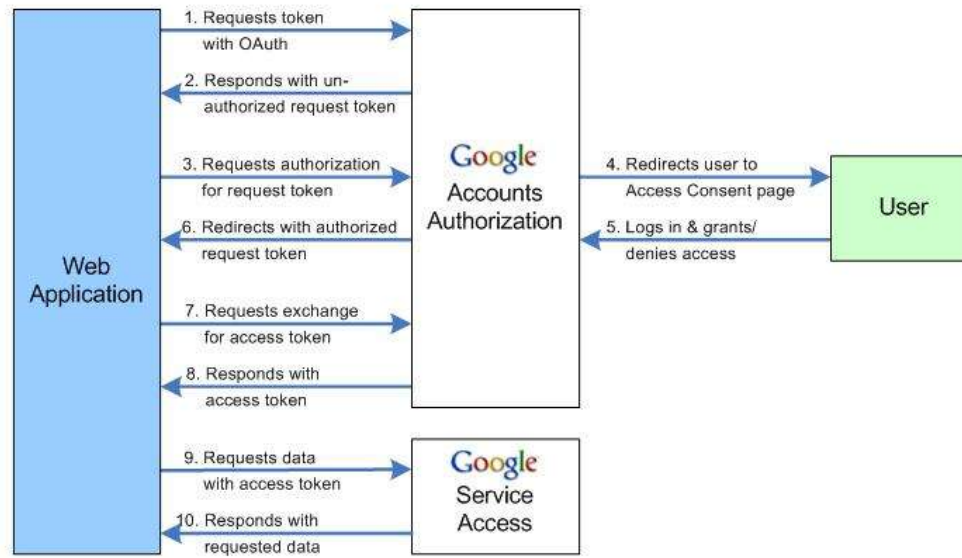
Yahoo Mail

- BBAuth (OAuth April 2010)
- Proprietary API
- Facebook integration

**PayPal integration via Adaptive APIs
(OAuth style) for both GMail and Yahoo
Mail**



OAuth Typical Flow

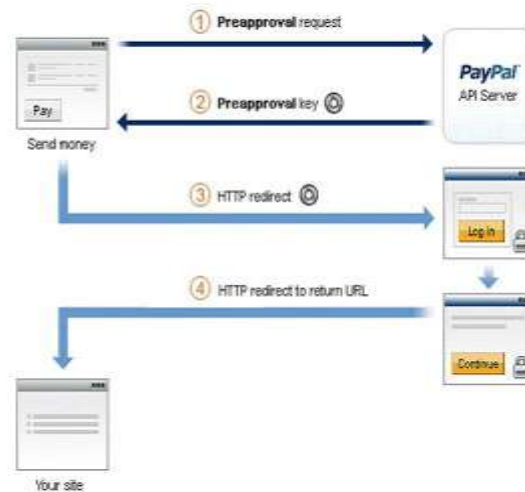


1. The web application contacts the Google Authorization service, asking for a request token for one or more Google service.
2. Google responds with an unauthorized request token.
3. The web application directs the end user to a Google authorization page, referencing the request token.
4. On the Google authorization page, the user is prompted to log into their account (for verification) and then either grant or deny limited access to their Google

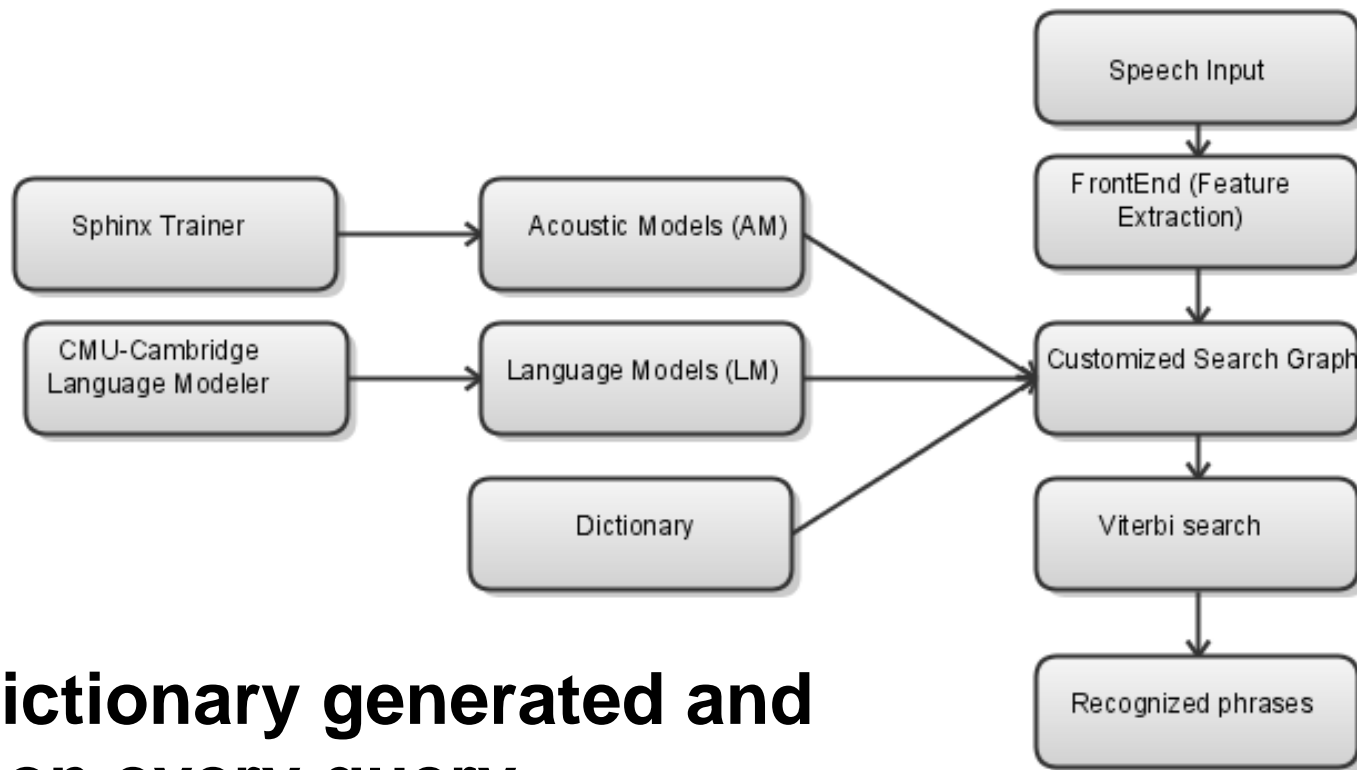


PayPal Adaptive API

1. User preapproves website (handsfree.ly) for \$\$
2. Website makes payments as proxy for user (upto a limit with preapproval pin)



CMU Sphinx-4 based Architecture



LM and Dictionary generated and switched on every query

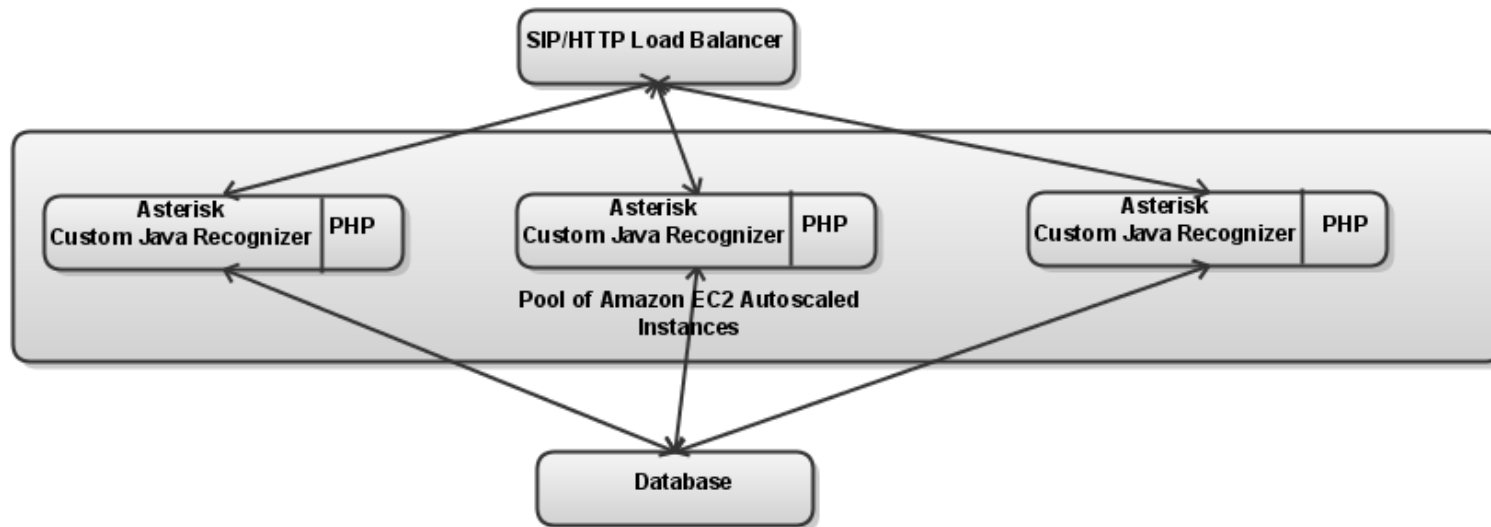


Amazon EC2 Basics

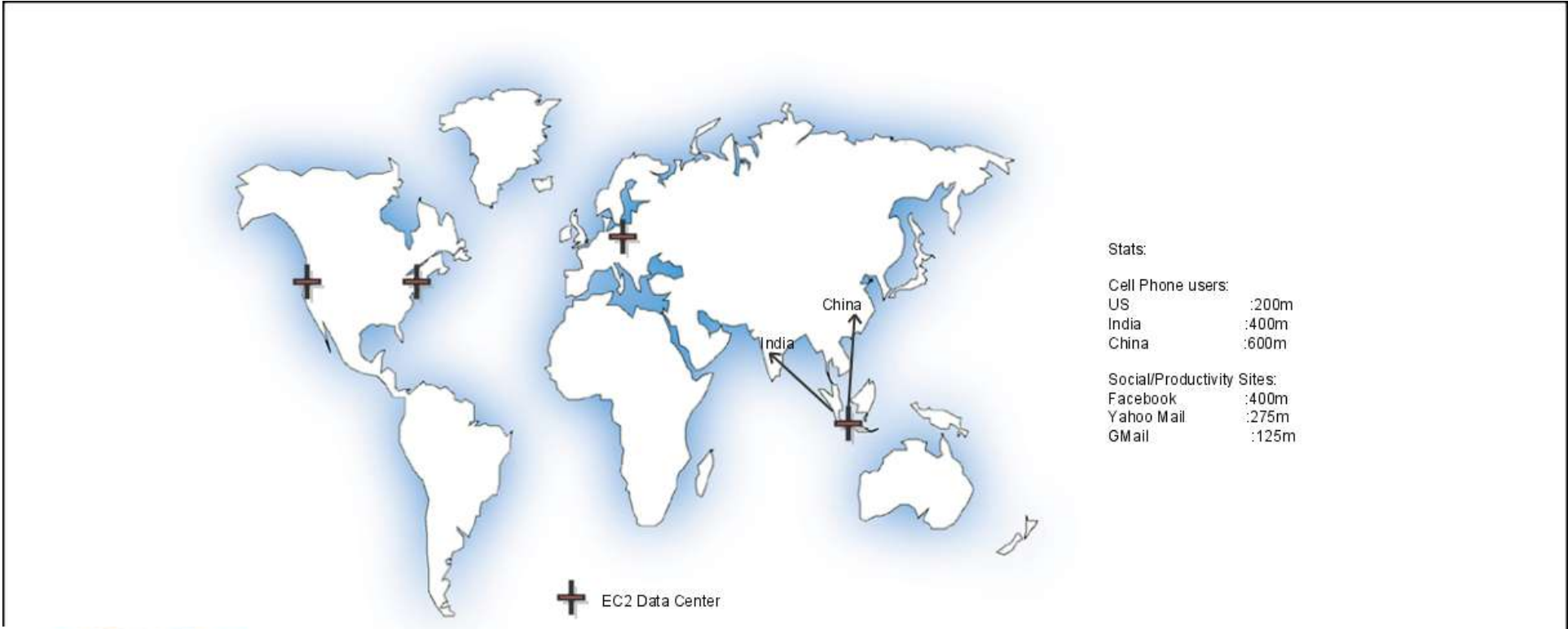
- AMI --Amazon Machine Image
- Amazon Elastic Block Store – Persistent file system
- S3 -- Persistent Blob storage
- Elastic IP Addresses – Static IP addresses
- Auto Scaling – Increase or decrease #AMIs on demand
- Elastic Load Balancing – Declaratively balance across AMIs



Autoscaled/Pooled EC2 deployment



Global Availability via EC2 DataCenters



Lessons learned + Future work

1. An open source good quality medium vocabulary recognizer available across mobile platforms needed
2. SSO (OAuth style) for Twitter, Facebook, PayPal needed
3. Economy of scale in cloud deployments needs to be highlighted with consumer apps
4. Push vs Pull content presentation
5. Location aware speech apps maybe in 2011??

