VOICES Project : m-health pilot for epidemiological surveillance in Senegal

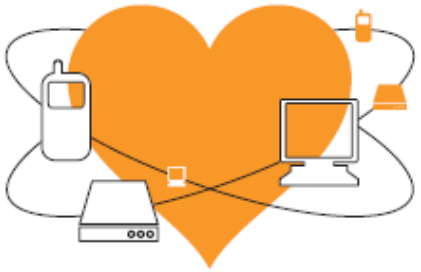
Michel Seiler, Orange Healthcare

“e-tools and social networks for epidemiology”, 21 May 2013

Orange = our key assets are our strong customer base and ability to cover all communication fields

226

million customers worldwide (+8% in one year)



mobile

167 million customers worldwide (+17 million in one year)
over **74 million** customers in Africa and the Middle East (+15.6 million in one year)

internet and fixed

59 million customers worldwide including **14.4 million** fixed broadband customers (+691,000 in one year)

business services

presence on **5** continents
3,700 multinational business customers
3,600 cloud computing customers

Orange customers

147 million customers under the Orange brand

- Orange helps modernize the **healthcare infrastructure** as well as healthcare systems as a whole, and equip healthcare facilities with communications solutions

- we are convinced that the medicine of tomorrow is a connected medicine in which the **management of healthcare data** and medical information play an essential role

joining up healthcare

Objectives of the m-Health pilot : EC project 2010-2013

- Explore the potential of mobile and speech technologies to improve healthcare systems in developing countries
  - Explore how disease surveillance and medical public laboratory technicians training in Senegal could benefit from mobile and speech technologies
- Deploy and test mobile and speech based m-health services in Senegal to demonstrate that it is possible
  - to enhance the transmission of epidemiologic data from peripheral laboratories to the national health authorities
  - to support medical laboratory technicians training
- 6 Partners involved : Orange, TNO, CSIR, ESMT, the Senegalese National Network of Laboratories (RNL) and Fondation Mérieux.

voices

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Methodology

- Understand stakeholders' and end users' needs, expectations, issues and activities
- Several meetings and workshops with stakeholders and end-users in Senegal
  - laboratory technicians, RNL staff, medical doctors in health centers, the head of the disease surveillance department
- Field work
  - visits to three laboratories (two district laboratories and one regional laboratory)
  - interviews with laboratory technicians and head doctors of health centers
- Co-elaboration with the RNL of four use cases

- Use case # 1 : **Disease surveillance** (Cholera, Shigellosis, Meningitis)

Department of epidemiological surveillance

Network of Laboratories

Regional Laboratories

District Laboratories

FICHE DE COLLECTE DE DONNEES DE LABORATOIRE POUR LA SURVEILLANCE DES MALADIES PRIORITAIRES

Laboratoire: _____ District : _____ Région : _____

Mois : _____ Année : _____ Date d'envoi : _____

Numéro d'identification PPP-RRR-DDD-YY-NNN (same format as AFPstools) PPP = Pays RRR= Région, DDD = District, YY = Année, NNN = Numéro d'ordre durant l'année)	Maladie : - Choléra - Diarrhée Sanguino-lente (Shigellose) - Méningite - Autres	Numéro d'identification du labo	Nom du Patient	Date du prélève-ment	Date de réception au labo	Etat du produit pathologique 1 = Bon 2 = Mauvais	Agents pathogènes isolés - *Vibrio cholerae 01* - *Shigella dysenteriae Type 1* - Autres Shigelles - Méningocoque - Autres pathogènes - Pas d'isolement de pathogène	Autres résultats	Date d'envoi des Résultats au District/ ou niveau National	Date d'envoi au Réseau National de Laboratoires

Nine watched diseases: Cholera, Shigelloses, Meningitis, Tuberculosis, Malaria, Syphilis, HIV, Measles, Poliomyelitis.

- Use case # 1: **disease surveillance** (Cholera, Shigellosis, Meningitis)

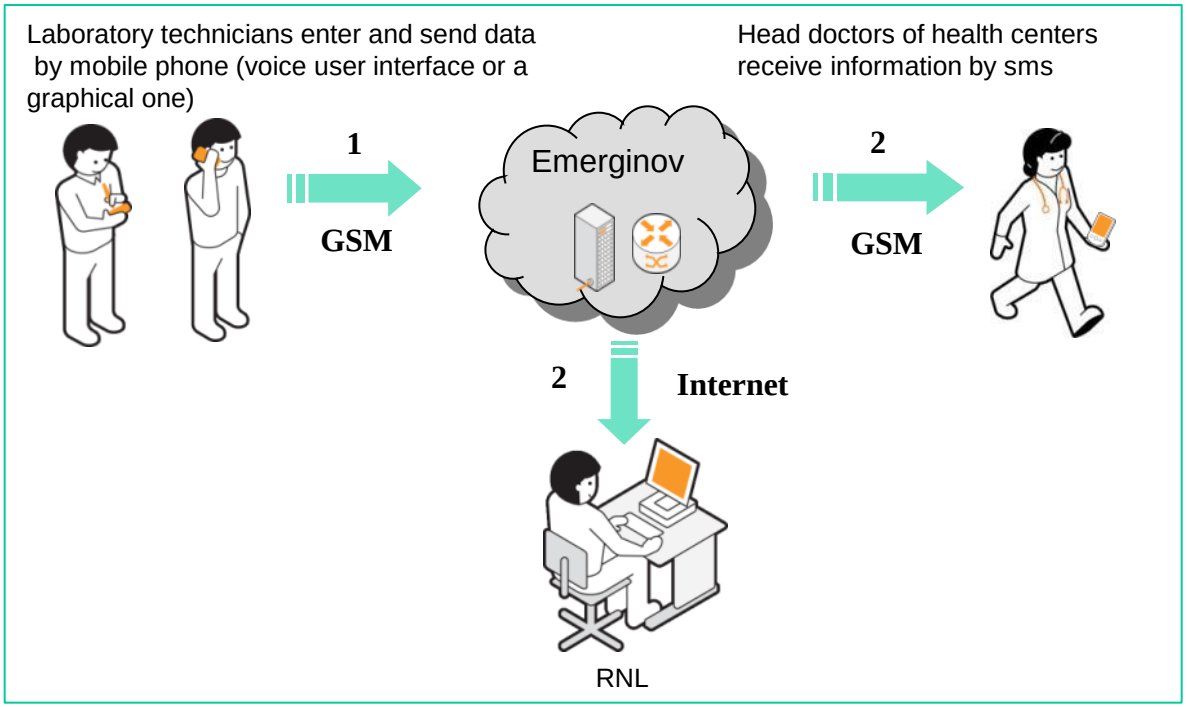


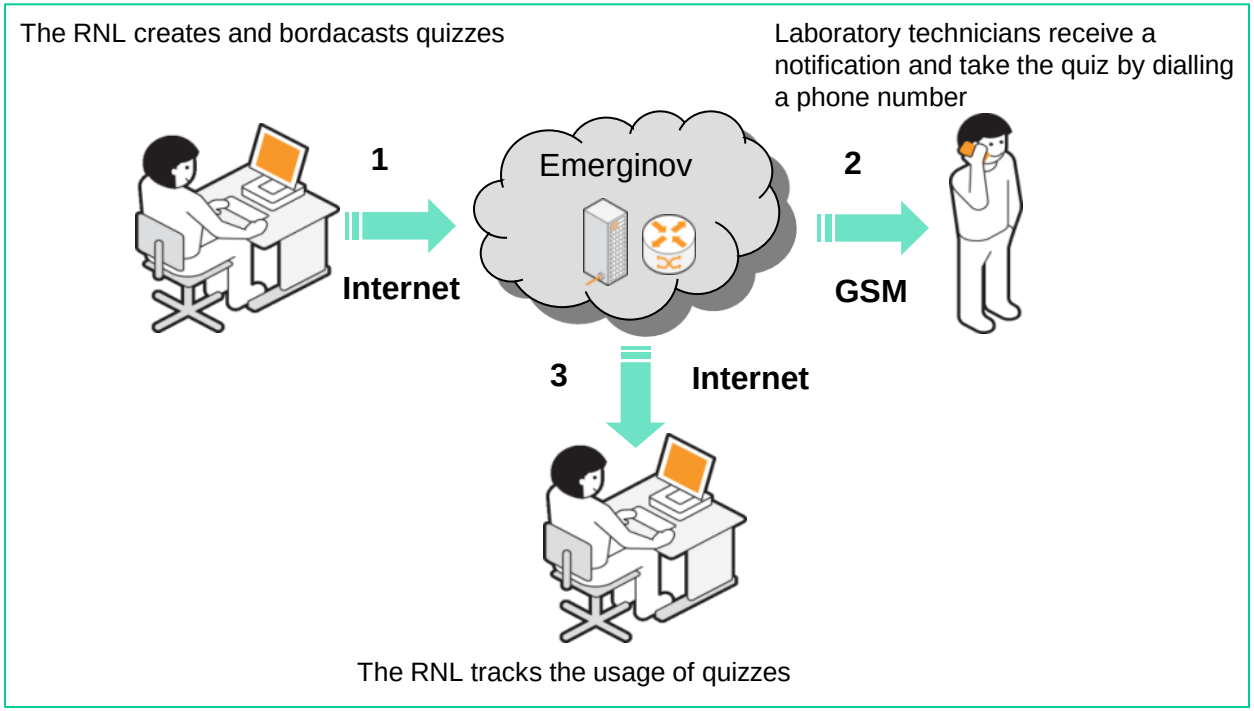
Illustration of the graphical interface

Comparative testing

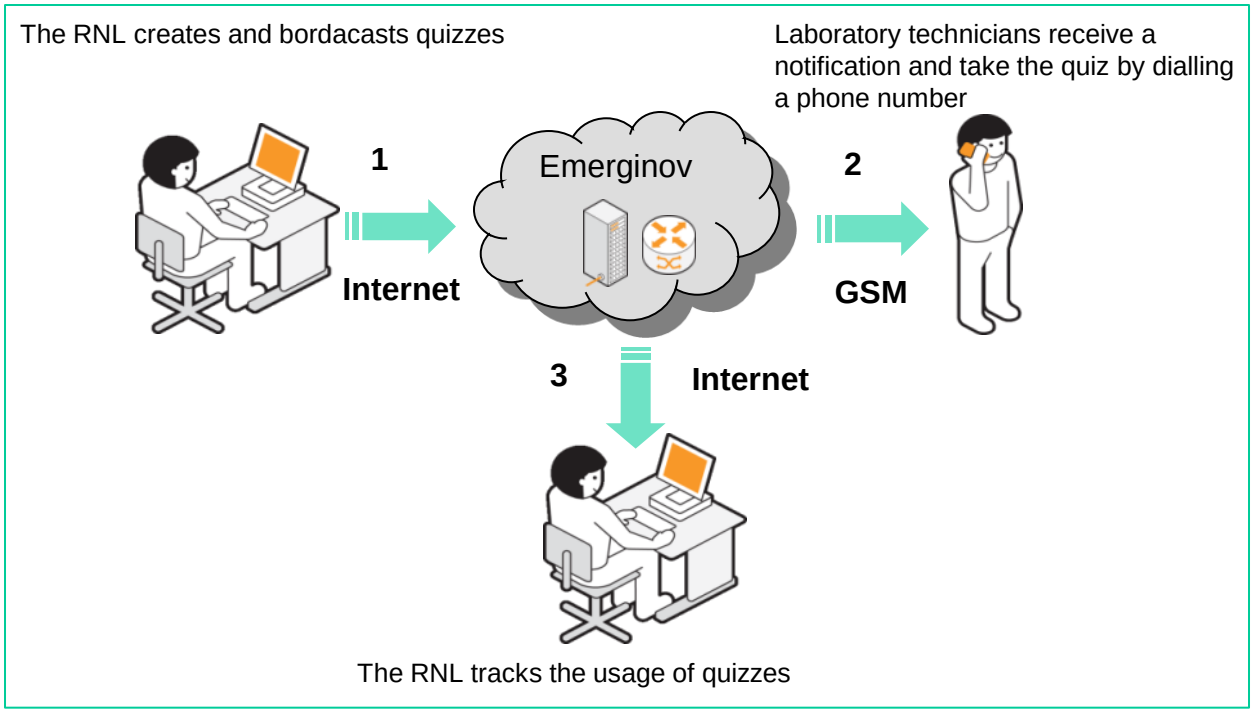
Illustration of a voice interaction pattern

User dials a number	System welcomes the user	Selects Disease	Enters patient name	Enters pathogen agent	Enters date of swab	Enters date of reception of swab	. . .
			Voice recording		DTMF	DTMF	

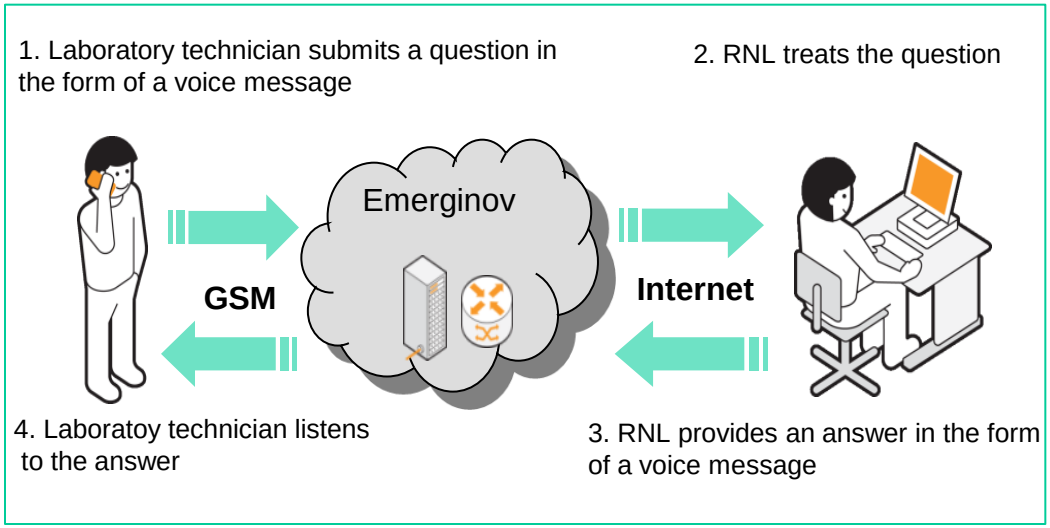
- Use case # 2 : To enhance technicians' medical knowledge related to their work activities (about diseases, technical procedures, etc.) through **Quizzes**



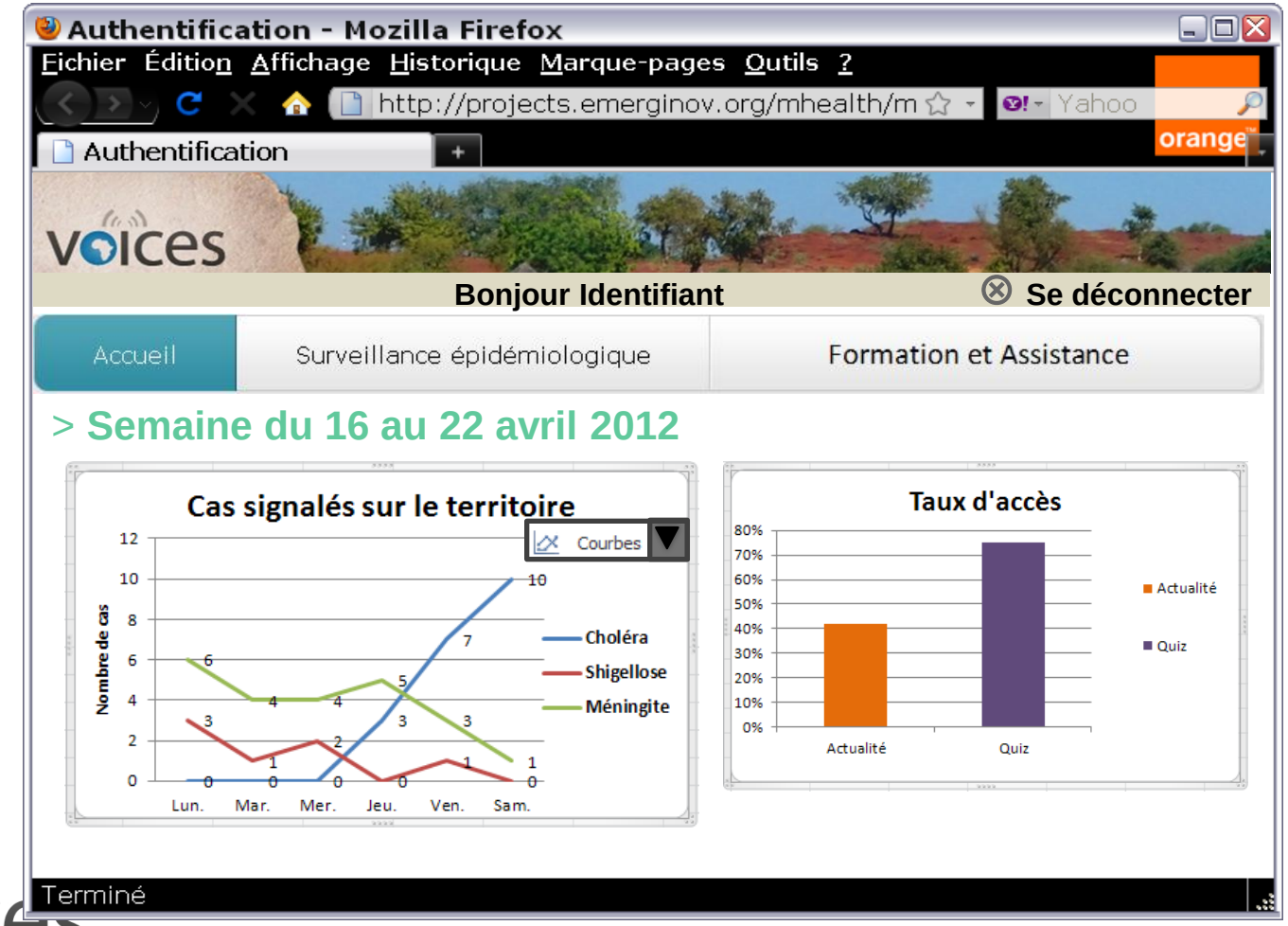
- Use case # 3 : **Information of the Month**. To enhance technicians' medical knowledge through the delivery of educational content.



- Use case # 4 : **Expert support.** To enable technicians to post questions to the RNL via a voice service



- Web interface for the RNL



Conclusion and perspectives

- Usability tests of the applications
  - the RNL and all technicians found the applications useful for their activities
  - for scenarios 2 & 3: Human voice was preferred to speech synthesis
  - scenario 4 well perceived because allows semi-direct access to reference sources of information
- Next steps
  - Analyse feed back of revised version of the applications
  - Manage to install the service on a fully reliable exploitation environment
  - Agree with Health Ministry a commercial offer covering extension to all labs within the RNL
  - Work with Health Ministry on the extension to other data collection services


Thank you
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