

# Improving collaboration through technology: need for real-time support for diagnostic devices

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World Health  
Organization

réseau rede  
**RAFT**  
red network

soutenir les professionnels de la santé là où on en a le plus besoin  
supporting care professionals where they are most needed  
sostener los profesionales en salud donde se tenga más necesidad  
apoiar os profissionais da saúde onde há mais necessidade

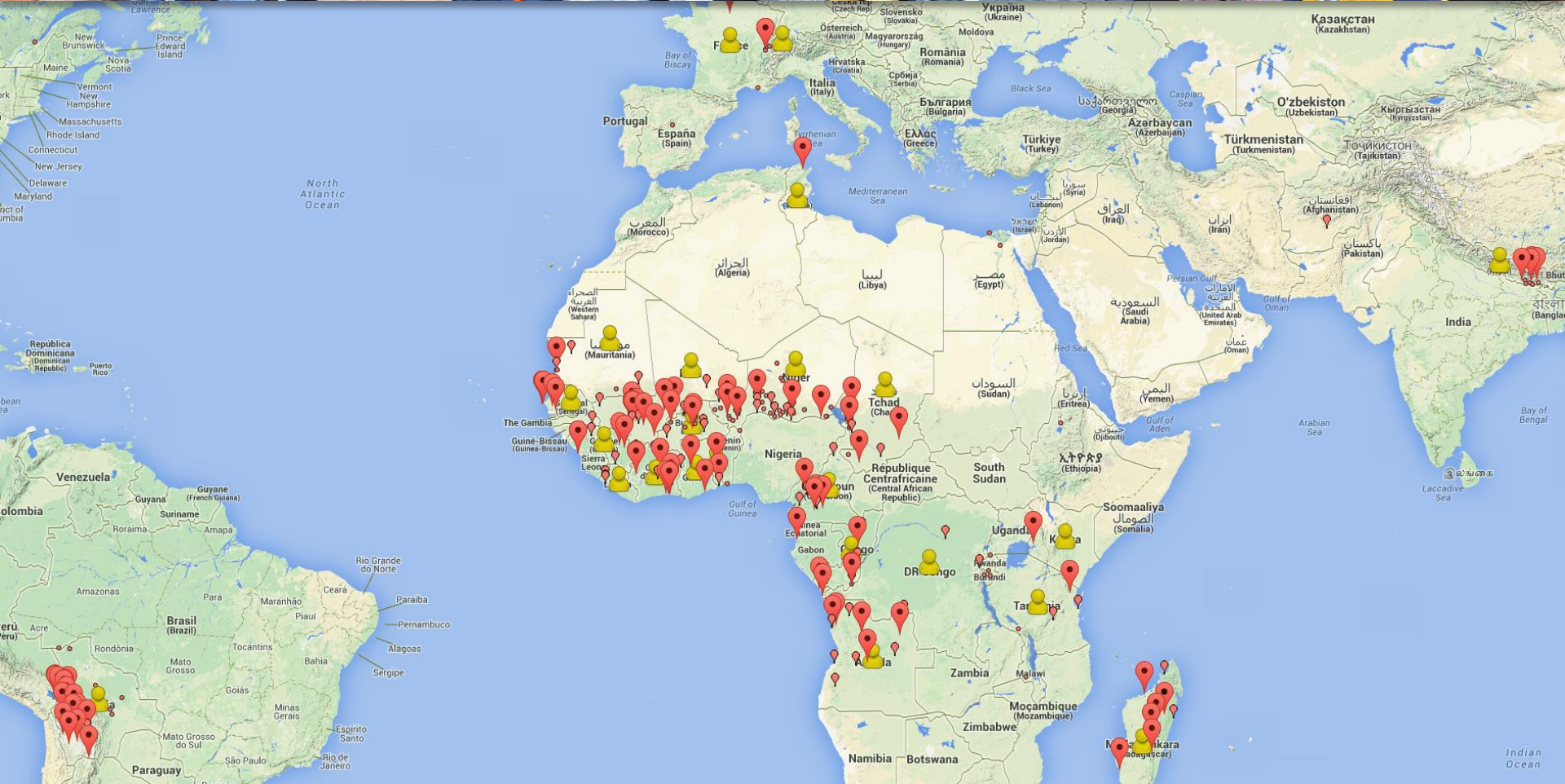


## RAFT Telemedicine network:

- move expertise, not people for supporting isolated healthcare professionals active in medical deserts
- ... and keep them happy, motivated, well-trained, in their remote hospitals ...

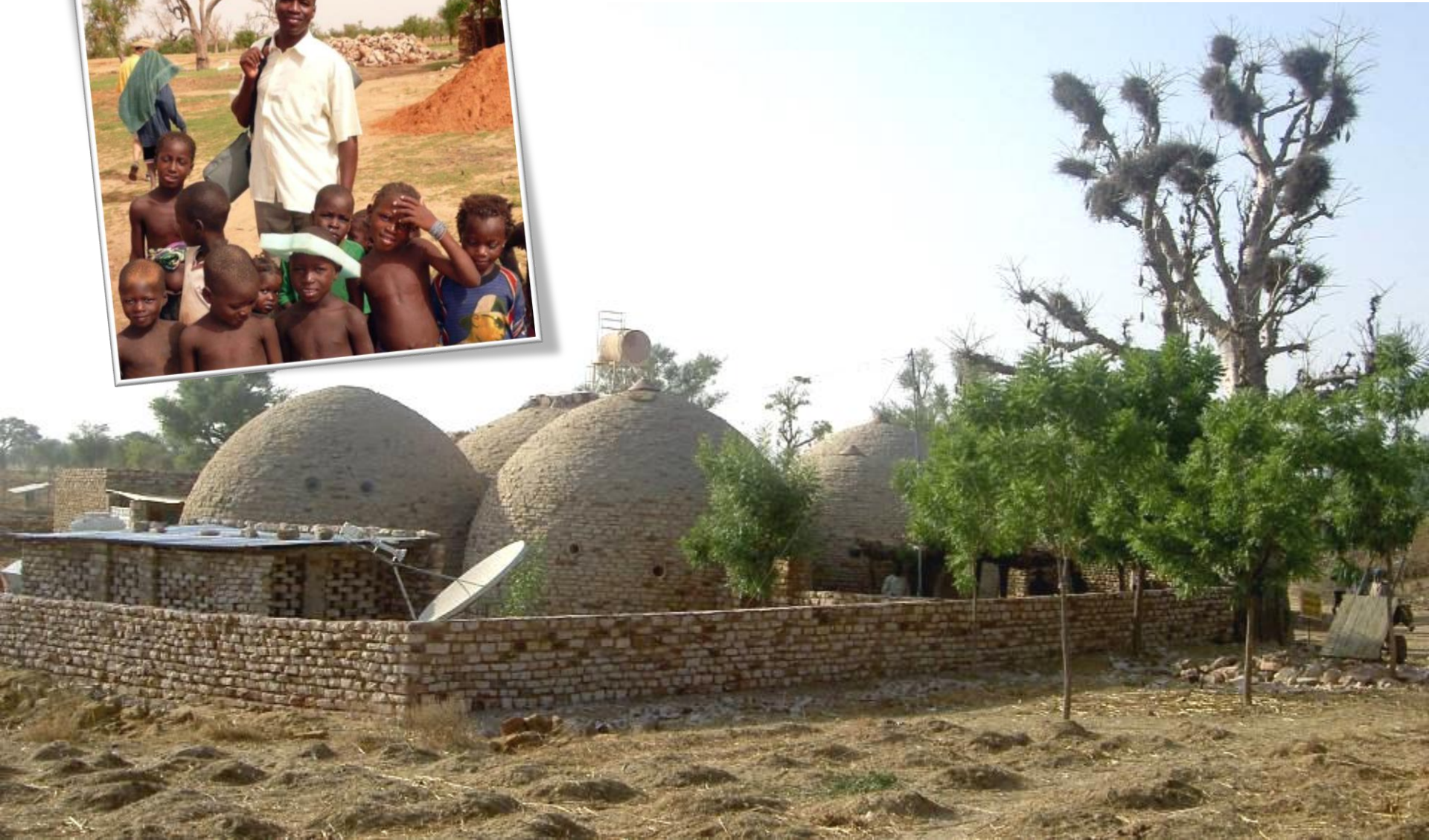
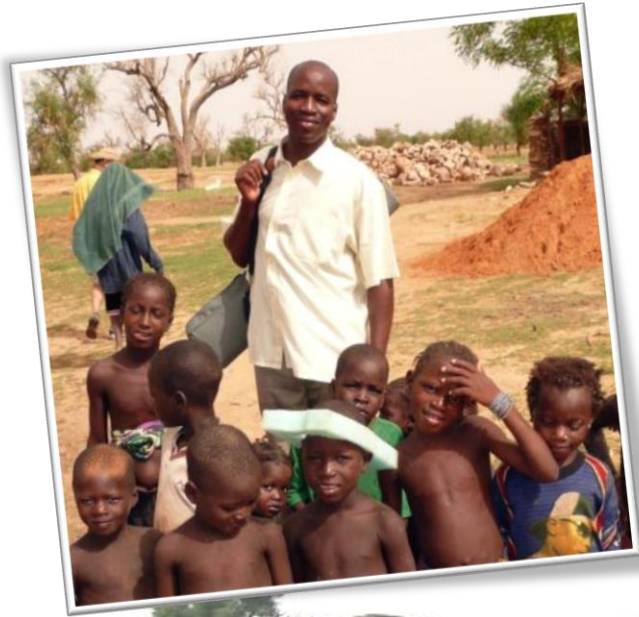
### ● Main activities

- Remote continuing medical education
- Remote help for diagnosis, for choosing and for monitoring treatments
- Remote supervision of specialized diagnostic devices



# A remote hospital

800 km away from the capital  
120 km away from the first Internet access  
20 km away from telephone access





What we do in the hospitals in which we operate:

- Implementation of infrastructure (internet connectivity, power supply...)
- Setting up of capacity building programs for care professionals (distance CME)
- Support for implementation of telemedicine activities (telediagnosis, teleexpertise)



## Distance continuing education over slow connections:

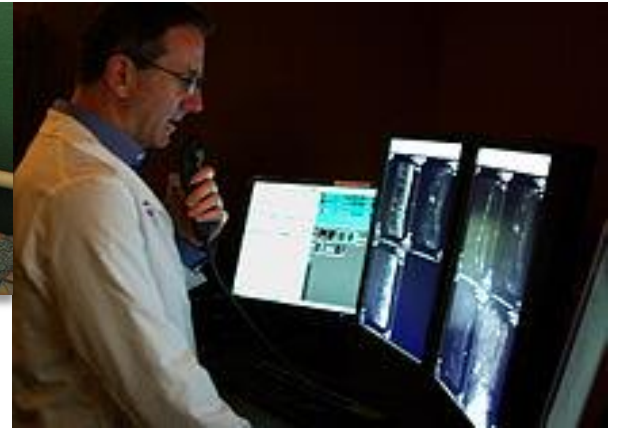
- 700+ hours of e-courses (~12 hours per month)
- 85% of which are now produced in Africa
- on average, 20 different sites are connected for these e-courses (~hundreds participants)
- courses are generally followed by 20 minutes of discussion involving all participants



- Telediagnosis and teleexpertise started since 2007.
- **Current use case (3 steps):**
  - Use of diagnostic devices (ultrasonography, ECG, fundoscopy, etc.) by non-expert for capturing data (**images++**, etc.)
  - Delayed transmission of images to expert via the teleexpertise platform
  - Asynchronous support of expert (based on the description of the case and recorded images) to non-expert for better management of the patient.
- Live (synchronous) connections between experts and non-experts have not been implemented: due to insufficient bandwidth.



# Need for Real-time support for diagnostic devices



*From Wikipedia*

- The ability to achieve **live remote supervision** of non-experts in these settings for manipulating diagnostic devices would enhance the quality of services provided to the network's participants.
- Therefore there is a need to develop a system/software that may **compress, encrypt, transmit video images** and **support non-experts in real-time**.
  - First domain: **Radiology (ultrasonography)**



# Real-time support for diagnostic devices: some specifications

- Progressive video compression tools
  - with the constraint of an uplink bandwidth of about 40 kbps, including remote command of the non-expert operator by voice.
- End-to-end encryption of the signal.
  - for confidentiality and integrity of data
- A test environment
  - where uplink and downlink bandwidths and latency can be manipulated in order to test various technical configurations and use cases.
- Possibility of execution on mobile platforms (tablets)
  - as these are becoming the preferred devices for accessing the internet.

# Real-time support for diagnostic devices: some specifications

- The system would be developed and validated with the help of radiologists from Geneva University Hospitals
- Local tests will be done by the RAFT coordination teams in several countries
  - where these tools are already deployed (Africa, Latin America and Asia).
- Other applications of such a system would include live remote supervision for other diagnostic devices (e.g., fundoscopy) or treatment activities (e.g., minor surgery, wound care).

# Thank you for your attention!

The screenshot shows the RAFT website interface. At the top, there is a navigation bar with links for 'Accueil', 'Sites', 'Cours', 'Outils', 'Actualités', 'S'enregistrer', and 'Communauté'. A language selector is set to 'Français'. Below the navigation bar is a large banner image of a tented camp with people. Overlaid on the banner is the RAFT logo (réseau red RAFT rede network) and a green box with the text 'Brazzaville, Congo'. Below the banner, there are two columns of course listings. The left column is titled 'Prochains cours' and lists courses such as 'Anaphylaxie', 'Arthrite juvénile idiopathique', 'Maladie à Virus Ebola', and 'Invagination intestinale'. The right column is titled 'Derniers cours émis' and lists courses such as 'Diabète, un tueur silencieux', 'Syndrome de Stevens Johnson', 'Abscesses au niveau du site d'injection', and 'Insuffisance hépatorenale'. At the bottom right of the page, there is a search bar and a newsletter sign-up form.

Geneva Global Health Platform Connexion

Accueil - Sites - Cours - Outils - Actualités - S'enregistrer - Communauté - Français

réseau red **RAFT** rede network

Brazzaville, Congo

Formation en santé mentale pour les non-spécialistes

Prochains cours

- Anaphylaxie 17/09/2014 de 10:00 à 11:00 TU
- Arthrite juvénile idiopathique : comment poser le diagnostic? 18/09/2014 de 09:00 à 10:00 TU
- Maladie à Virus Ebola : épidémiologie, physiopathologie, diagnostic, traitement et prévention 18/09/2014 de 10:00 à 11:00 TU
- Invagination intestinale 24/09/2014 de 10:00 à 11:00 TU
- Syndrome de Henock Schonlein 24/09/2014 de 10:00 à 11:00 TU

Derniers cours émis

- Diabète, un tueur silencieux. Apprenons à le débusquer 11/09/2014
- Syndrome de Stevens Johnson 10/09/2014
- Abscesses au niveau du site d'injection 03/09/2014
- Insuffisance hépatorenale 27/08/2014
- Crises convulsives généralisées 20/08/2014

Tous les cours...

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ENVOYER

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email: [ag@hcuge.ch](mailto:ag@hcuge.ch)

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