



STRATEGY FOR BUILDING A LAB - **CASE OF GHANA**

**ITU/MAGHREB WORKSHOP FOR THE ADMINISTRATION OF ALGERIA
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NATIONAL COMMUNICATIONS AUTHORITY
Division



Presentation Outline

- ❑ Budget & Cost of Labs
- ❑ The Testing Scope
- ❑ Operational & sustainability plan
- ❑ Challenges
- ❑ Recommendations for Algeria





Budget and Cost of Labs

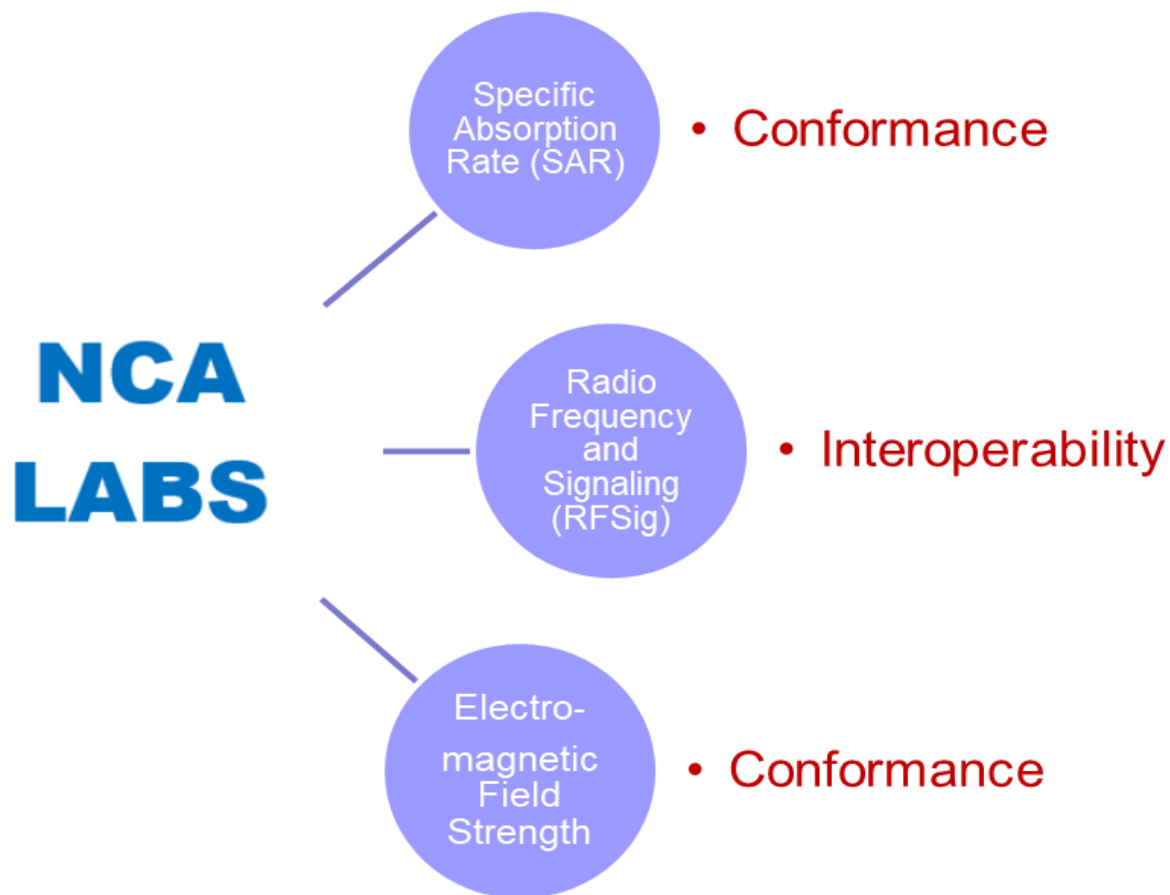
- ❑ Business plan/feasibility study
- ❑ Secured Approvals
 - ❑ Budget estimate of 2M Euros

| LAB | AMOUNT (USD) | SUCCESSFUL VENDOR |
|------------------|--------------|------------------------------|
| SAR | 838,297.00 | Planet Network International |
| RF AND SIGNALING | 543,315.00 | Rohde and Schwarz |
| EMF | 114,314.00 | Planet Network International |





The Testing Labs & Scope





What do we test?

- ❑ **Emitting wireless devices such as;**
 - ❑ mobile phones
 - ❑ tablets
 - ❑ laptops
 - ❑ dongles/modems
 - ❑ RFIDs
 - ❑ Walkie-talkies

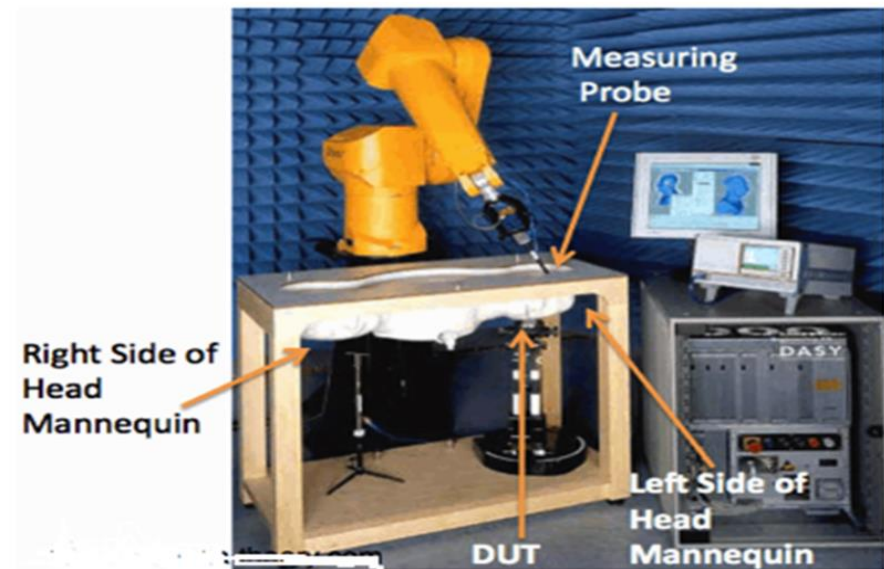
- ❑ **And Telecom base stations, TV and FM transmitters**

- ✓ **To confirm compliance with the established limits/levels**



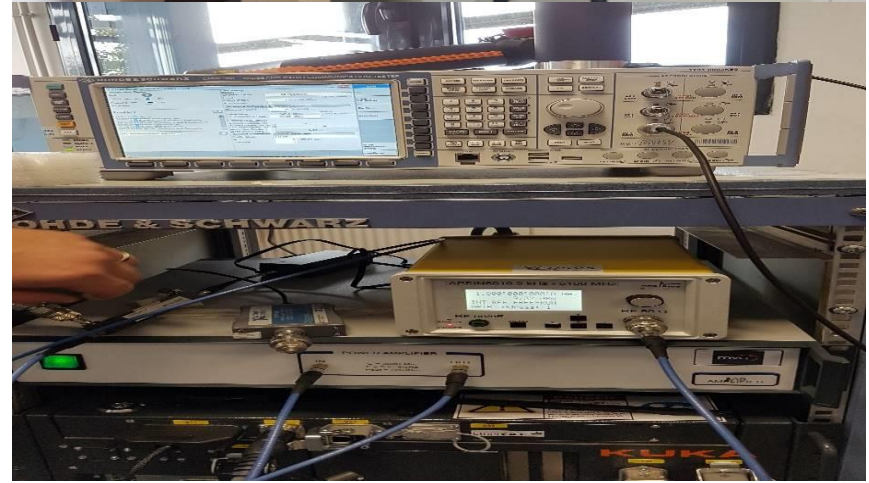
Specific Absorption Rate, SAR Lab (Health & Safety)

- **Specific Absorption Rate (SAR)** measures the amount of radio frequency energy (radiation) absorbed by the head or body when using any wireless transmitting device such as **mobile phone, laptop, tablets**, etc.
- There are limits sets by the **ICNIRP, FCC** and **EU**. Any device operating above these **SAR** levels are considered "not safe".
- The **FCC** limit is **1.6 W/kg** and **EU/ICNIRP** is **2.0W/kg**



Radio Frequency & Signaling Lab (QoS support)

- RF & Signaling testing aims to check the correct interworking between the **User Equipment (mobile Phone)** and the **Network (GSM, WCDMA, LTE, WLAN & Bluetooth)**.
- The following e2e tests are conducted
- **GSM, WCDMA, LTE, WLAN/WIFI UE** conformance and functional testing
- **Intra Technology Handover (eg GSM to GSM or WCDMA to WCDMA)**
- **Inter Technology Handover (eg GSM to WCDMA)** and vice versa
- **Signal Strength**



Radio Frequency & Signaling Lab (QoS support)

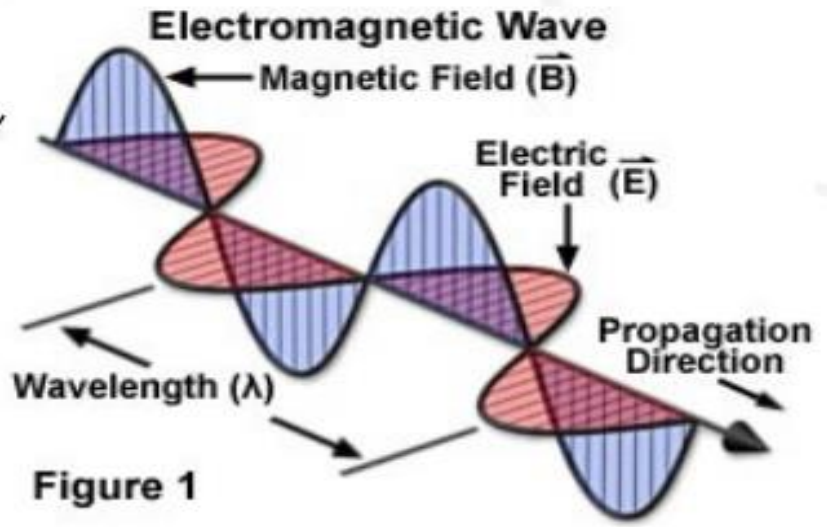
- Two different set of test can be performed on mobile devices namely;
 - Conducted Test
 - Radiated Test

- The devices are tested accordance to following 3GPP technical specifications
 - TS 51.010 for GSM/GPRS/EGPRS/ and
 - TS 34.121 for WCDMA / HSDPA/ HSUPA

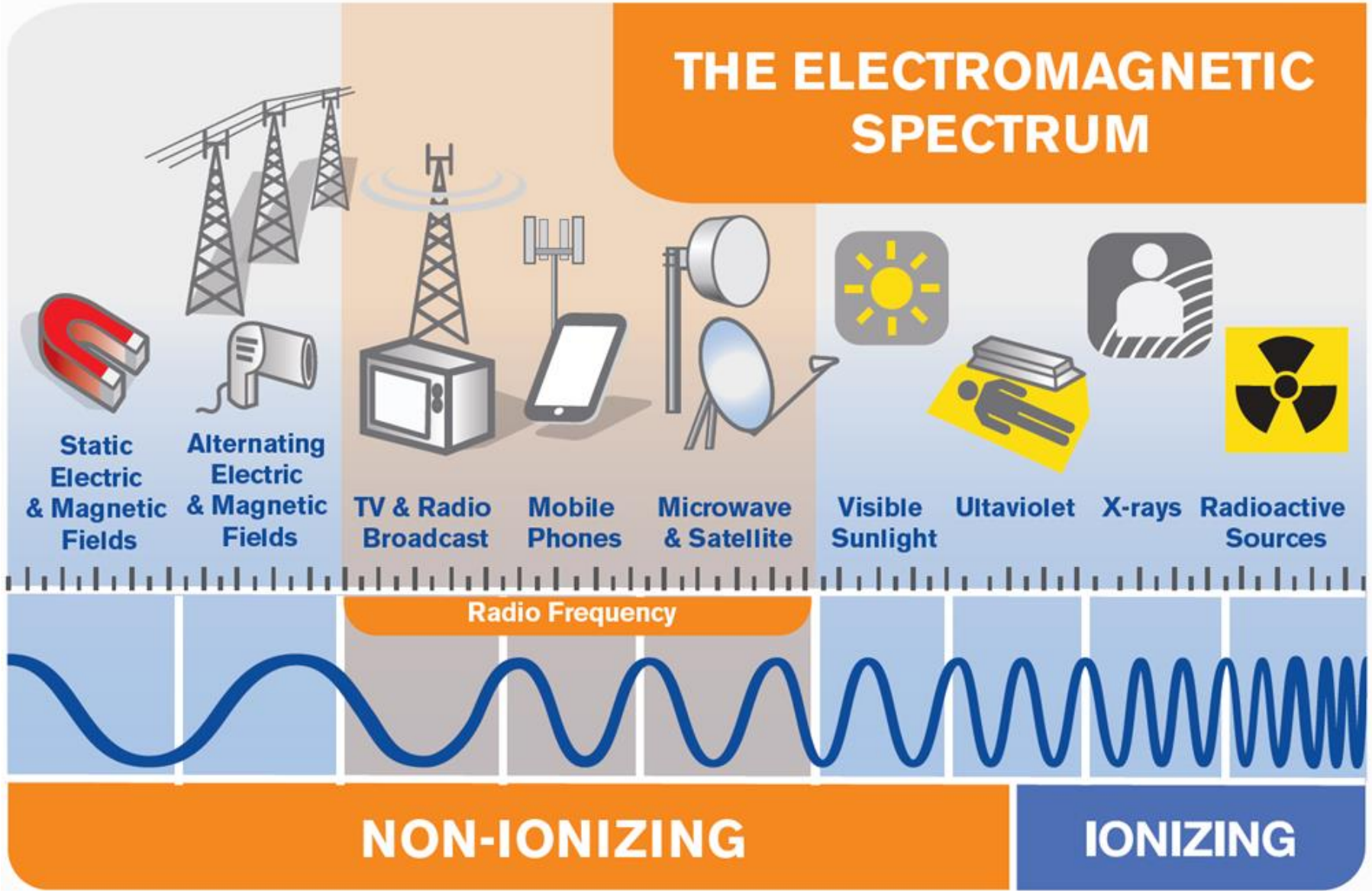
Electro-magnetic Field Strength, EMF Lab (Health & Safety)

What is EMF?

- EMF stands for electromagnetic field.
- This is a physical field produced by electrically charged objects.
- It is called "electromagnetic" because it contains properties of both magnetism and electricity.



THE ELECTROMAGNETIC SPECTRUM



Electromagnetic Field Testing (EMF)

- ❑ Measures emission levels from **Mobile base stations, FM and TV transmitters** and alerts of potential public exposures
- ❑ We monitor the actual levels and compare with international limits
- ❑ Our measurement results are used to address the public concerns on EMF exposures, associated biological effects and concerns on the siting of towers and base stations

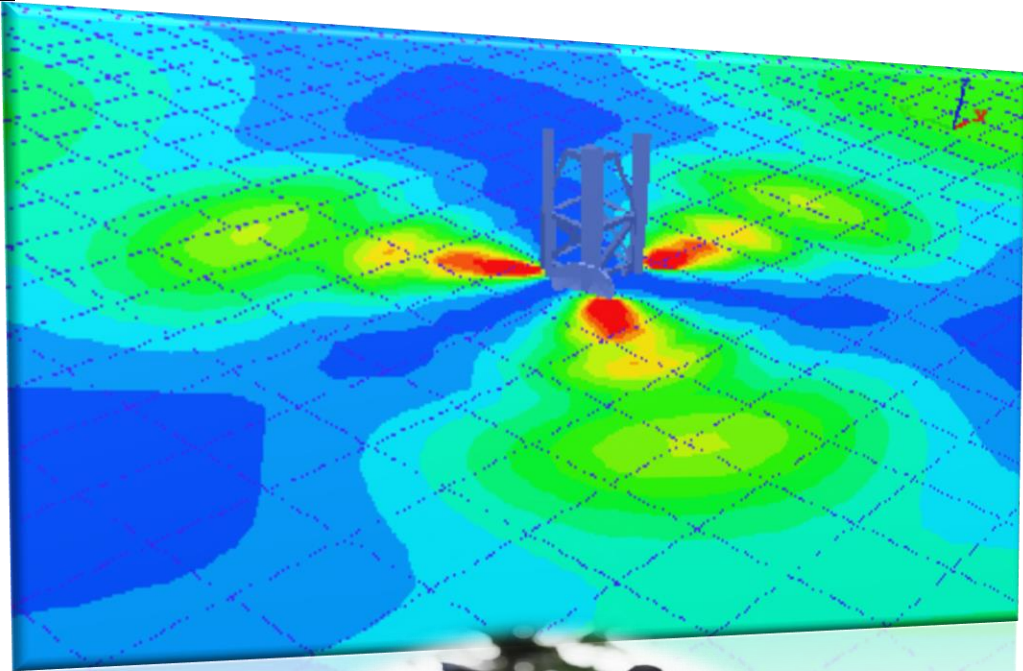
EMF LAB MEASURES...

Public and Worker exposure to EM Fields from telecommunication bases, Wi-Fi/WIMAX antennas and other telecom infrastructure and networks using probes/ANTENNAS systems capable of measuring frequencies from **100kHz – 6GHz**.



Simulate amount of radiation by antenna on a rooftop either FM or Telecom Mast or even indoor radiation





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Operational & Sustainability Plan



- ❑ Local testing and certification
- ❑ Advertise the labs as testing hub for West Africa
 - ❑ Development of sub-regional MRA
- ❑ Collaborate with ITU to make the labs the testing hub for training & capacity building within the African region
- ❑ The labs will be used to train (ITU members) at least twice a year
 - ❑ Pillar 3 (Capacity Building)
 - ❑ Convert into training institution and include other subject areas





Revenue – Expenditure Analysis

- ◆ Devices expected to be tested per year
- ◆ Fees for testing
- ◆ Participants for ITU training per year
- ◆ Cost of training per participant
- ◆ Estimated yearly revenue from testing of devices does not include expected revenue from testing devices submitted by other institutions & countries in the sub-region.
- ◆ Estimated revenues from ITU training





Current Challenges

- Lack of awareness of the existence of the labs
- Porous and unapproved routes in Ghana
- Public confusion of Type Approval process with Dealership Licence
- ISO/IEC Accreditation status
- Marking or labelling requirements





Recommendations for Algeria

- Set priorities, consider local needs & don't duplicate efforts
- Budgeting
- Build capacity ahead of time
- Consult those who have done it before
- Prepare early commercial & technical specifications
- Prepare space for the labs
- Management & Accreditation is key
- Identify possible challenges and mitigation plan



شكرًا

A gold fountain pen with a black barrel, positioned as if writing the word 'شكرًا' (Shukran) in dark blue Arabic calligraphy.

Any Questions?

