Celtic-Plus Event
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Spectrum Databases: For IoT & Future Wireless Networks

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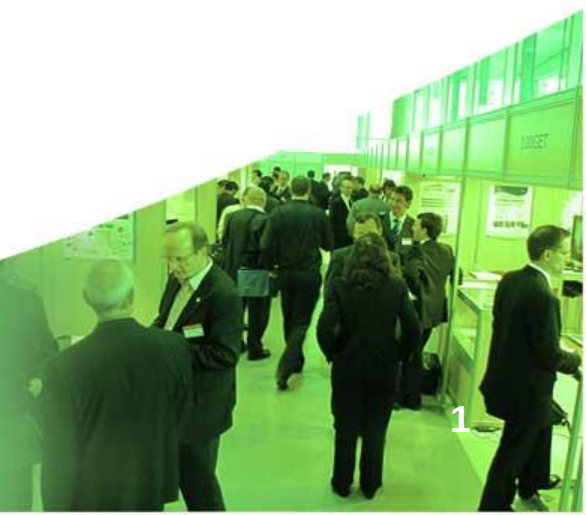

Council for Science & Industrial Research
70 Years !

EUREKA

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through multidisciplinary research addressing challenges in health, energy, the built environment, the natural environment, manufacturing and the information society

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  - Biosciences
  - Built Environment
  - Meraka Institute (Information and Communication Technology)
  - Defence, Peace, Safety and Security
  - Modelling and Digital Science
  - Material and manufacturing
  - Natural Resources and the Environment
- **National Research Centres**
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- **Emerging Research Areas**
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Main ICT R&D

Centre for High Performance Computing, CHPC

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our future through science

Dynamic Spectrum Sharing

- Radio Frequency Spectrum is a scarce natural resource that wireless devices use to realize connectivity & services !

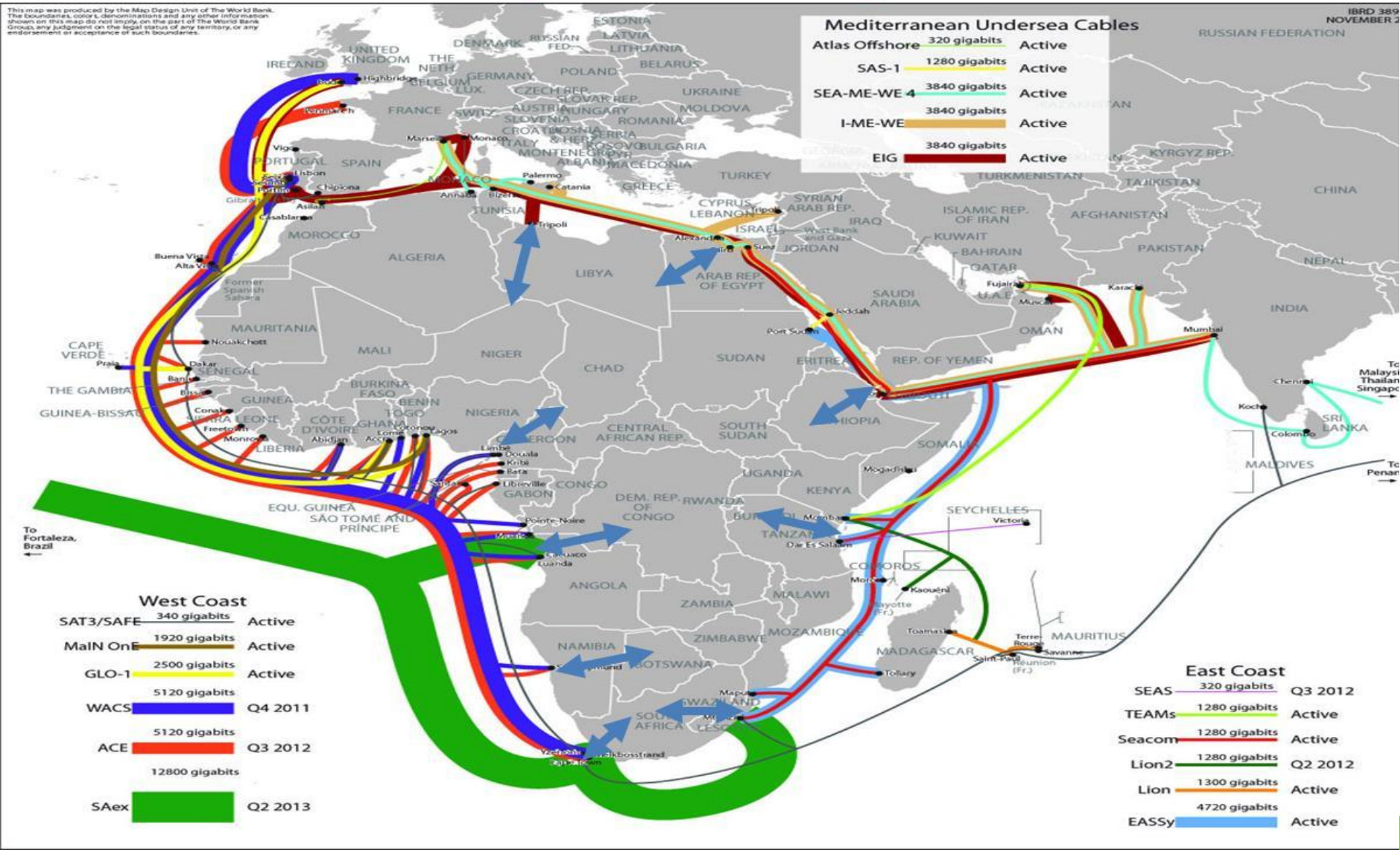
- **Will existing static utilization of RF spectrum be sufficient to provide enough spectrum channels and bandwidth for the wireless connectivity of the next billion broadband subscribers + 50 Billion devices + 7 Billion Cellular Connectivity?**

- Type of Wireless Devices for Future Wireless Networks:
  - Dynamic Spectrum Sharing & Low Power ?
  - Enabling Technologies: … Dynamic Spectrum Databases,…...

- Eco_system :
  - Mobile Network Operators or
  - New Future Wireless Network Eco-systems ?

Connecting More Communities to Broadband

Extending Fiber Connectivity Inland !

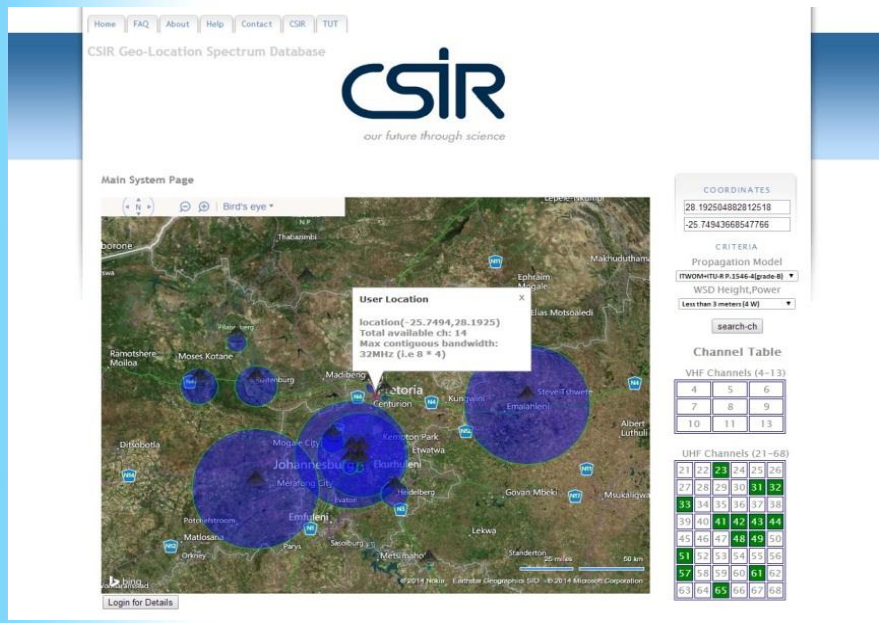


A novel tool set to change frequency spectrum allocation, management and regulation

- Until recently it was tedious to check unused frequency channels and the technology to allow sharing of frequency channels by secondary broadband wireless networks, was unavailable.

- Sharing of white space spectrum channels: Model-based Spectrum Toolbox: Techniques of Sharing and Reusing the spectrum without any interference, 5G, LTE-U,……

- The CSIR has developed a national geo-location spectrum database – A technology rooted in information and communication technology and Wireless Communication Networks. Enabling successful testing of spectrum sharing networks.



Testbed: Cape Town Spectrum sharing TVWS Network

- **No interference & Co-existed with Cellular & broadcast networks.**
- **Connected 10 Rural Schools**
- **16000 students benefitting**
- **Fiber broadband extension**
- **Bridging the rural/urban broadband divide.**
- **Rural health Clinics, Agri-centres in Next Rural Test-bed.**

Partners

Existing Partners:

- ✓ *ICASA, DST, SENTECH,…… Dynamic Spectrum Access (DSA) Regulation and Tools.*
- ✓ *TVWS Test-bed & Regulation Partners: Google, Microsoft, TENET, Redline/Parsec, Multisource,…. Test-beds and.*
- ✓ *R&D & End User Partners: KTH, Aalto, Ghana, Botswana, Tanzania, Ethiopia,…….*
- ✓ *CSIR Expertise in Model-based spectrum databases, White space broadband networking & cloud infrastructure.*

Request for Partners:

- ✓ *Future Wireless Networks R&D, IoT & Cloud based services*
- ✓ *Regulatory & Business development*
- ✓ *Technology Licensing regimes*

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The future is Looking back at us.

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