



On behalf of the Dutch and Belgium URSI
Committees (“URSI Benelux”)
and the AFRICON/URSI-BEJ Organizing
Committee

Arnold van Ardenne
(ASTRON & Chalmers Technical University)
Chair

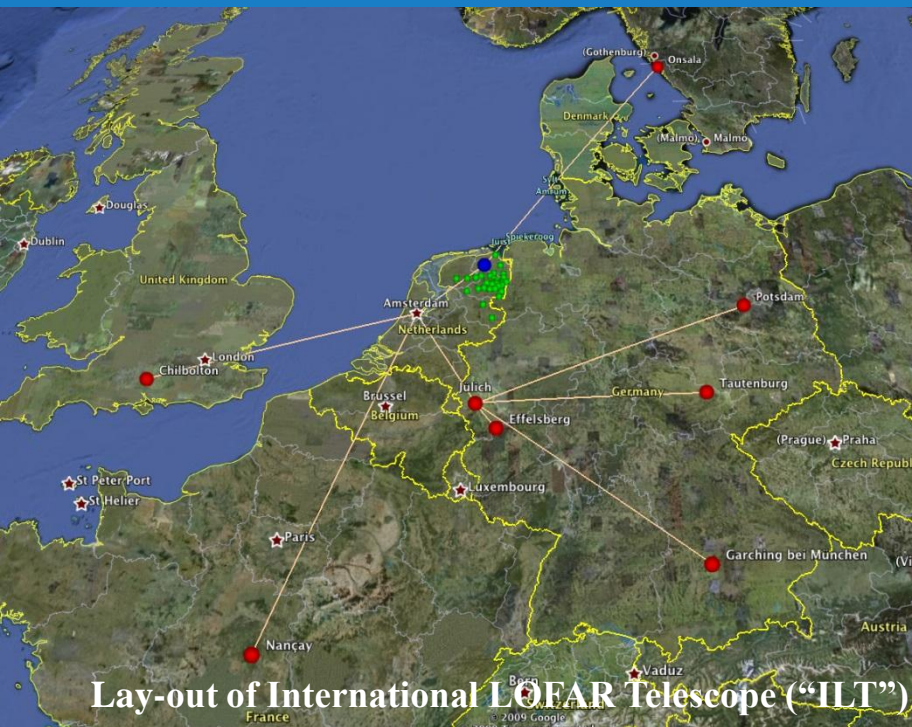


The case

- Connecting to international scientific unions like IAU and URSI is investing in key components in a vital knowledge and HC infrastructure
- AFRICON/URSI-BEJ as first time event is a unique and timely opportunity to connect URSI

ASTRON

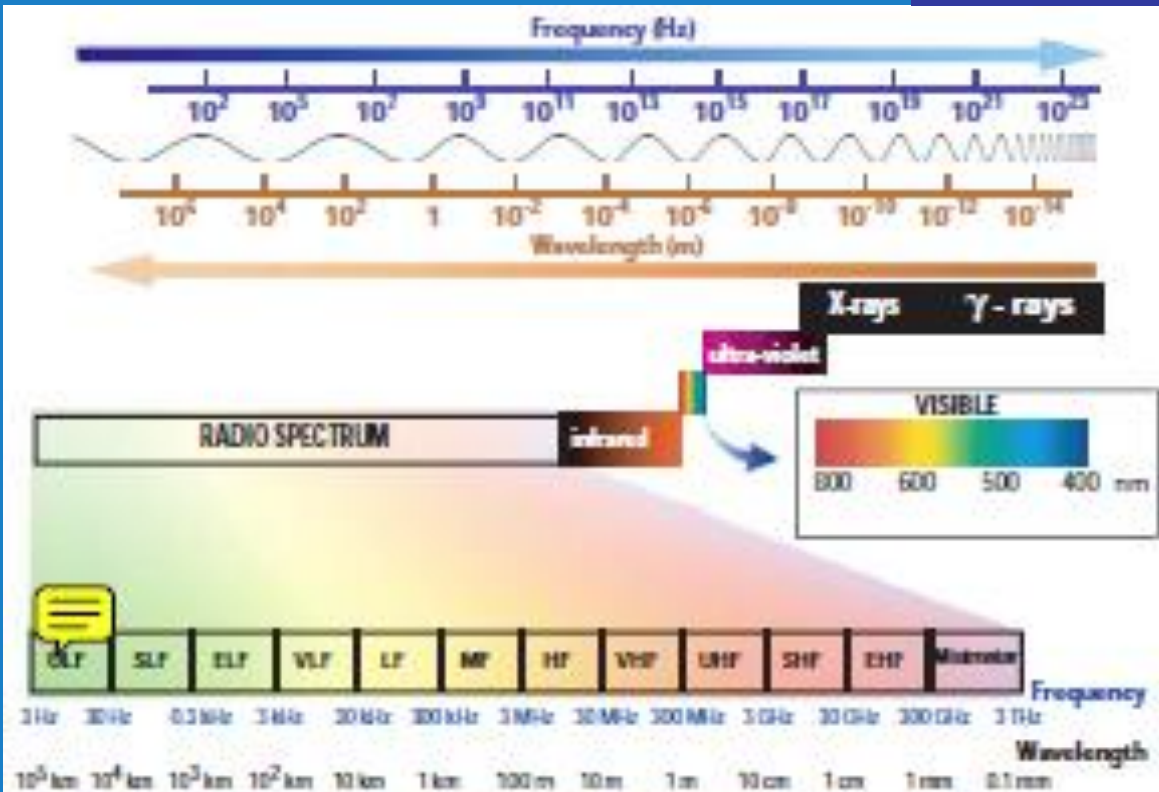
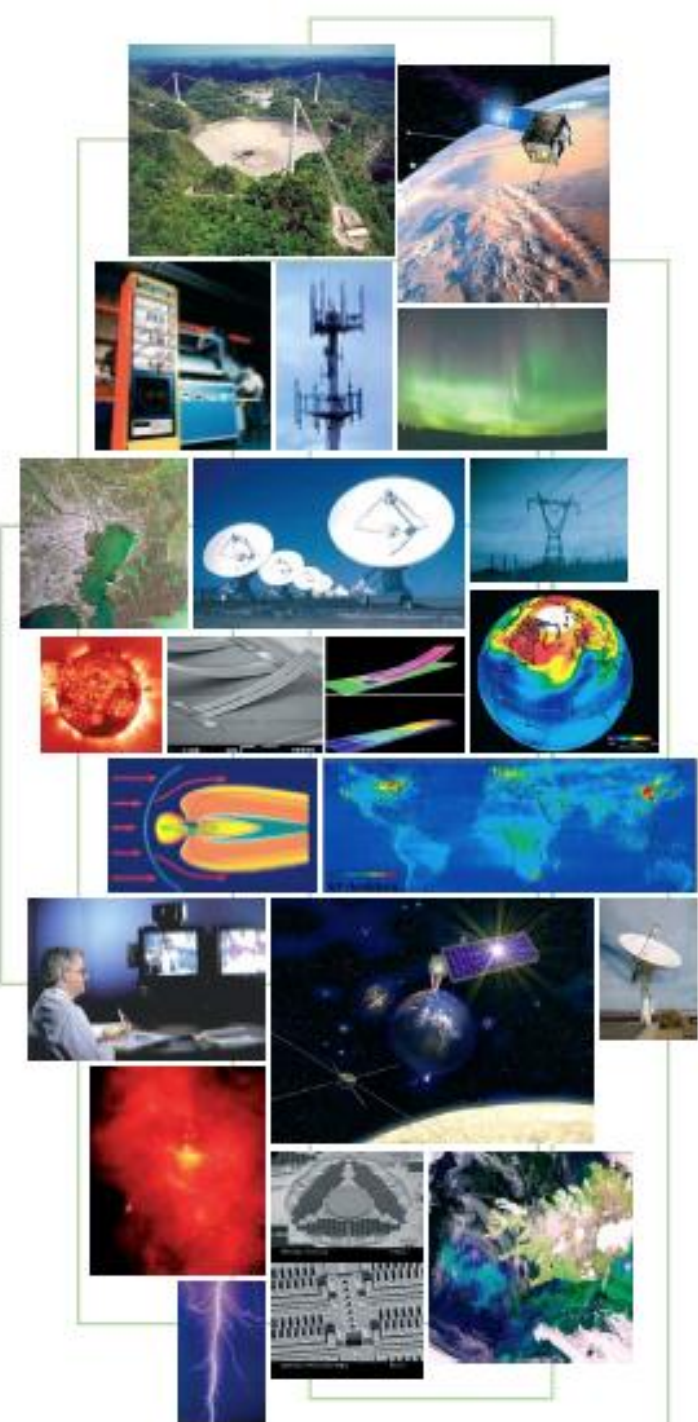
- Netherlands Institute for Radio Astronomy
 - Research in radio astronomy
 - Centre of LOFAR and the Westerbork Observatory
 - Technical R&D in support for RA systems and instruments
 - Member in SKA
 - JIVE host and of ASTRON/IBM Centre of Exascale Computing





INTERNATIONAL UNION OF RADIO SCIENCE

Organized in 10 Committees including Com J: Radio Astronomy





Context and objectives

- Radio science and radio astronomy perhaps outstandingly so, pushes the limits of technology lending itself as key element in an open innovation-oriented living lab context

- Science, technology, companies, users, society/education work together

- Huge surge in R.A.

Key Improvement areas in R.A.	Facts and Figures	Enabling key technologies
Sensitivity	~10 ⁵ x in 50 years SKA: 50-> 100x	Collecting Area, Receivers and SW
Angular resolution (“detail”)	~10 ⁷ x in 50 years SKA: same	Baseline extension (“VLBI”), clocks and network-technologies
Field of View (all resolution pixels)	>~10 ⁵ x in 50 years SKA: 100-10⁴x (computing power measure using AA’s)	Array techniques, SW and computing power Peta (symbol: P) is 10 ¹⁵ . LOFAR Exa (symbol: E) is 10 ¹⁸ SKA



Context and objectives

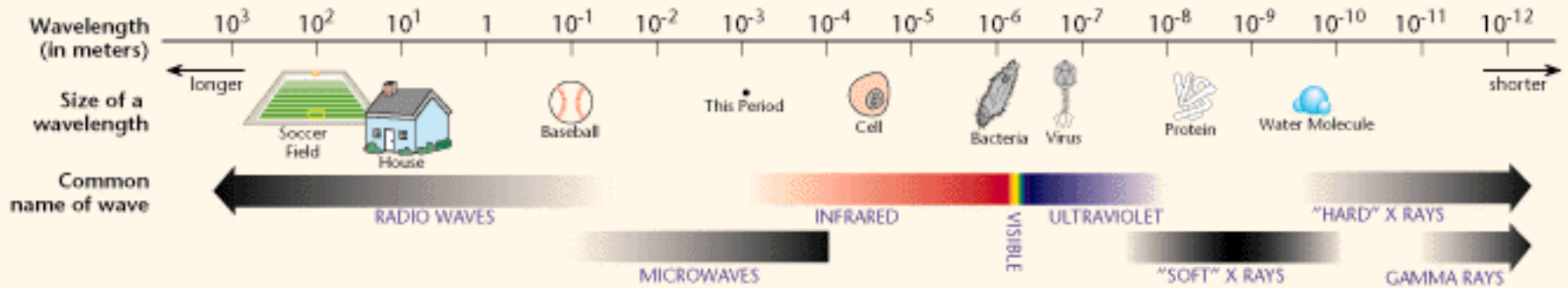
- Radio science and radio astronomy perhaps outstandingly so, pushes the limits of technology lending itself as key element in an open innovation-oriented living lab context
- Science, technology, companies, users, society/education work together
- URSI incorporates all cross-over radio science aspects which are key to societal and HC development
- Africa involved in large new radiotelescope developments

EU – AFRICA WAVELENGTH COMPLEMENTARITY

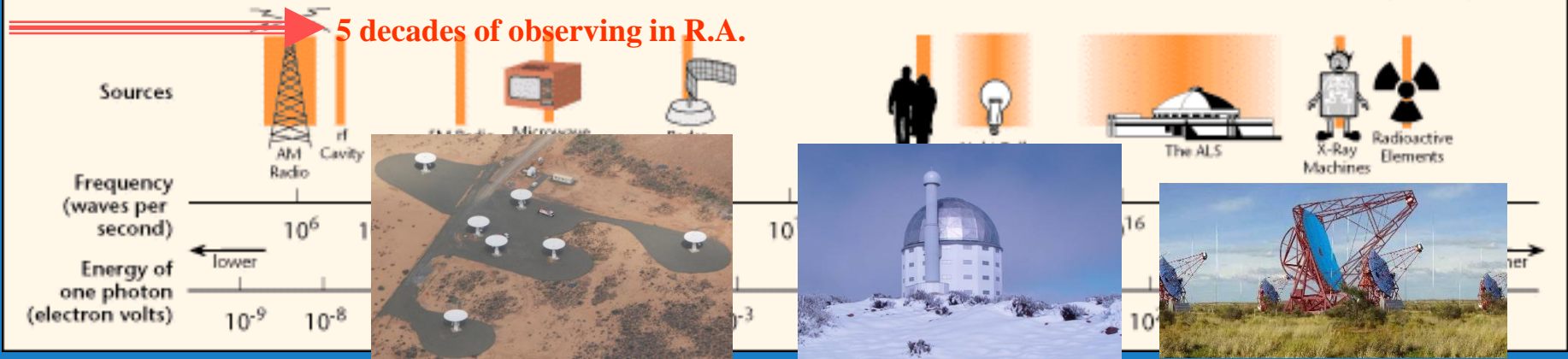
Astronomy is “multi-spectral” to answer big questions
 Needs high-tech facilities at all wavebands
 “Whole is greater than sum of parts”

courtesy George Miley

THE ELECTROMAGNETIC SPECTRUM



5 decades of observing in R.A.



LOFAR (EU)
 SKA (Global)
 AVN
 MeerKAT (SA)
 EU Collaborators

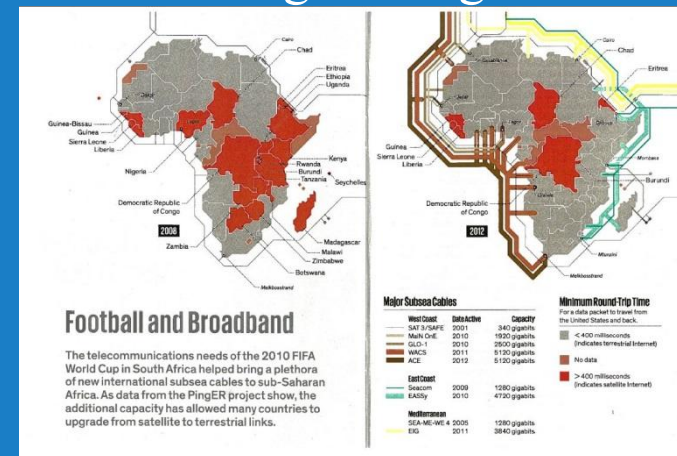
SALT (SA)
 EU partners

H.E.S.S (Namibia)
 EU partners



Africon/URSI BEJ

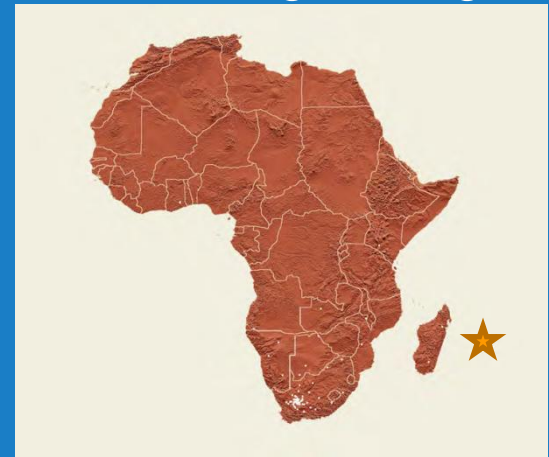
- AFRICON, the top-event of IEEE in Africa “Sustainable engineering for a better future” (<http://africon2013.org/>)
 - 9-12 September 2013 in Mauritius;
 - Partner country of SKA-Africa
 - 300+ participants expected
- IEEE Region 8: Europe, Middle East, Africa
- Africa: Student branches e.g. in Ghana, Kenya, Nigeria, S.A. with non-region branches in Mauritius, Namibia.
- In S.A. various universities e.g. Cape Town. Stellenbosch





Africon/URSI BEJ

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- In S.A. various universities e.g. Cape Town. Stellenbosch
- Now: Euro-African URSI Conference connected to AFRICON with Commissions B,E and J as most relevant to Radio Astronomy





Africon/URSI BEJ

- Advance Radioscience between Europe and Africa; AERAP?!
- Seek synergetic collaborations between IEEE and URSI i.e between science and engineering communities
- Connect/Use the efforts on the new radio telescopes with URSI (and others)
- Establish momentum for larger scale future collaborative events
- Involve more African countries in URSI

*Thanks for your attention and hope to
meet you in September!*