IEEE

IEEE South Africa Joint AP/MTT/EMC Chapter

Brief history of IEEE AP/MTT/EMC and its conference in South Africa

Dr Albert Lysko

Chairperson: SA IEEE Joint AP/MTT/EMC Chapter

2014-05-05

Content

- About IEEE

- IEEE in South Africa

- Key milestones relevant to AP/MTT/EMC

- History of the Conference

IEEE South Africa Joint AP/MTT/EMC Chapter

About IEEE

- The **I**nstitute of **E**lectrical and **E**lectronics **E**ngineers
- read *I-Triple-E*
- Professional Association
  - Corporate Office in New York City
  - Operations Center in Piscataway, New Jersey
- Dedicated to advancing technological innovation and excellence
- **Founded on January 1, 1963**
  - Origins - merger of the American Institute of Electrical Engineers and the Institute of Radio Engineers
- Supported by:
  - 38 societies (each is focused on a certain knowledge area)
  - 7 technical councils
  - 2 technical committees
- Has about 429,000 members in about 160 countries
- Revenue : US$330 million

http://en.wikipedia.org/wiki/Institute_of_Electrical_and_Electronics_Engineers

IEEE

IEEE South Africa Joint AP/MTT/EMC Chapter

Growth and diversification of IEEE in SA

- IEEE South Africa Section founded in August 1977

- 18 Chairpersons since 1977

- Chairs based primarily in Pretoria, Johannesburg, Stellenbosch, and Cape Town

- 15 IEEE Awards Recipients from South Africa

  http://www.ieeer8.org/awards/awards-history/ieee-region-8-awards-recipients/

http://www.ieeeghn.org/wiki/images/0/06/South_Africa_Section_petition_letter.pdf

4

Growth and diversification of IEEE in SA

05-Aug-77	Founding of South African IEEE Section
18-Apr-86	SA Sect. Jt. Chapter, AP03/MTT17, activity of & interest in Section/Chapter

EMC27 added in 2011
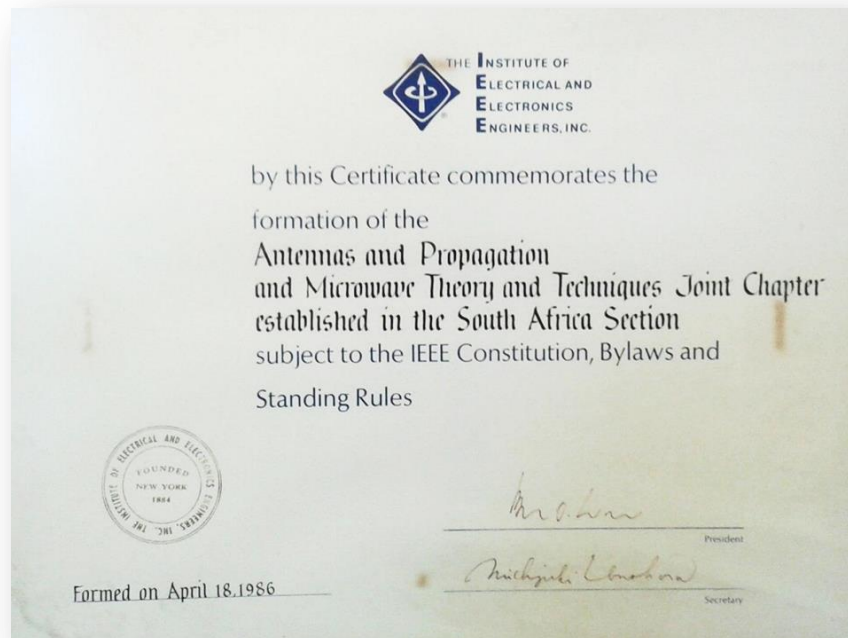
Growth and diversification of IEEE in SA

now 17 Chapters

Date	Description
05-Aug-77	**Founding of South African IEEE Section**
18-Apr-86	**SA Sect. Jt. Chapter, AP03/MTT17**, with EMC27 added in 2011
13-Jun-86	SA Sect. Jt. Chapter, SP01/COM19, Joint Chapter
13-Apr-87	SA Sect. Chapter, C16 Chapter
16-Apr-90	SA Jt. Chapter, IE13/PE31/IA34/PEL35, Joint Chapter
08-Jul-91	SA Sect. Chapter, AES10/GRS29, Joint Chapter
05-Feb-92	SA Sect. Chapter, CS23/RA24, Joint Chapter
10-Mar-95	SA Sect. Jt. Chap, ED15/PHO36/CAS04, Joint Chapter
23-Jul-99	SA Sect. Chapter, TM14, Chapter
15-Nov-02	SA Sect. (Pretoria) Aff. Grp, GOLD Affinity
18-Jun-05	SA Sect. Chapter,E25, Chapter
08-Aug-05	SA Sect. Aff. Group, WIE Affinity
18-Oct-08	SA Sect. (Cape Town) Aff. Grp, GOLD Affinity
29-May-09	SA Sect. Chapter, SMC28, Chapter
04-Jun-09	SA Sect. Chapter, CIS11, Chapter
16-Jul-09	SA Sect. Chapter, NANO42, Chapter
27-Jan-10	SA Sect. Chapter, PE31, Chapter
11-Mar-10	SA Sect. Chapter, IT12, Chapter

IEEE South Africa Joint AP/MTT/EMC Chapter

Some of key milestones relevant to AP/MTT/EMC

- 1501 – Post Office Tree in present day Mossel Bay, Western Cape
  - 5 March: Pedro d'Ataide (captaining the first fleet sent to trade in India) leaves a letter and documents in a seaman's boot hung from a White Milkwood tree in Mossel Bay (on homeward journey)
  - 7 July: Letter received by the addressee, Portuguese navigator, Joao da Nova.

© FireflyAfrica

- 1846 – Line of military semaphores built connecting Grahamstown to Fort Beaufort

http://gosouthonline.co.za/the-line-was-a-single-galvanised-iron-wire-mounted-on-wood-poles/

- 1860 – 1st telegraph service in South Africa (between Cape Town and Simonstown)

- 1879, December 27 - Cape linked telegraphically to Europe through Durban and the East Coast Cable system

IEEE South Africa Joint AP/MTT/EMC Chapter
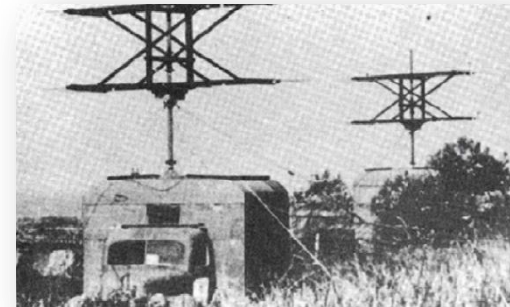
Some of key milestones relevant to AP/MTT/EMC
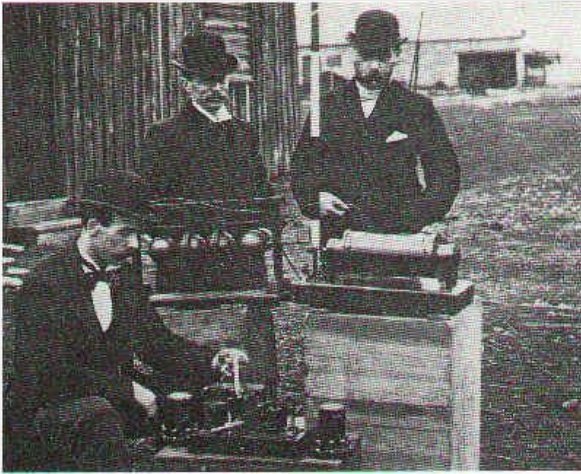
- 1899-1902 – 1st Operational Use Of Wireless Telegraphy in the field occurred during the Anglo-Boer War. The British Army experimented with Marconi's system and the British Navy successfully used it for communication among naval vessels in Delagoa Bay, prompting further development of Marconi's wireless telegraph system for practical uses.

http://www.ieeeghn.org/wiki6/index.php/Milestones:First_Operational_Use_Of_Wireless_Telegraphy,_1899-1902
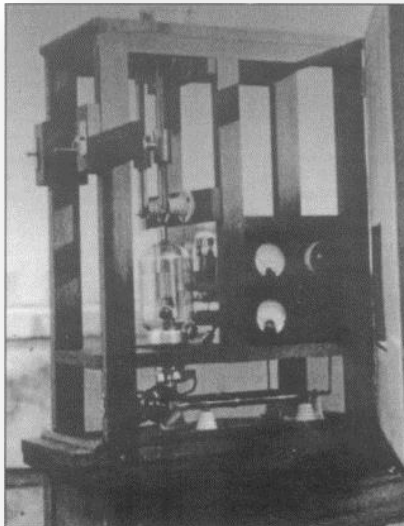
- 1939 - The first experimental radar set in South Africa, JB1 Radar Transmitter, was built by a team under the leadership of Dr Basil Schonland at the University of the Witwatersrand in Joburg, later formed into the South African Corps of Signals.

IEEE South Africa Joint AP/MTT/EMC Chapter

Source: Dirk Vermeulen, Some Highlights in the growth of Electrical Engineering in South Africa

Some of key milestones relevant to AP/MTT/EMC

- 1947 - Dr Trevor Wadley developed one of the first practical broadband radios in the world, the Barlow-Wadley Broadband Radio

The Original Barlow Wadley

http://zs6rsh.blogspot.com/search/label/SA%20Radio%20History

- 1948 - Dr Wadley invented the first crystal-controlled radio in the world, based on the Wadley Loop. It could be accurately and consistently set to any frequency between audio and 30 MHz, and avoided the "fading" that was typical of most of its competitors. Wadley's All-Wave Communications Receiver was made by Racal in the UK and became the standard high frequency radio for the British Navy for many years. Racal later became Vodafone, UK


Dr. Wadley examining the Wadley-Loop Receiver at RACAL, Berkshire, England

http://trevorlloydwadley.com/index.php?option=com_content&view=article&id=50&Itemid=55

Some of key milestones relevant to AP/MTT/EMC

- 1959 – Dr Wadley revolutionised surveying by creating a portable mechanism for measuring distance accurately and quickly (up to 50km, accurate 0.5m).

  His Tellurometer, Micro-Distancer M/RA 1, led to the world standard.
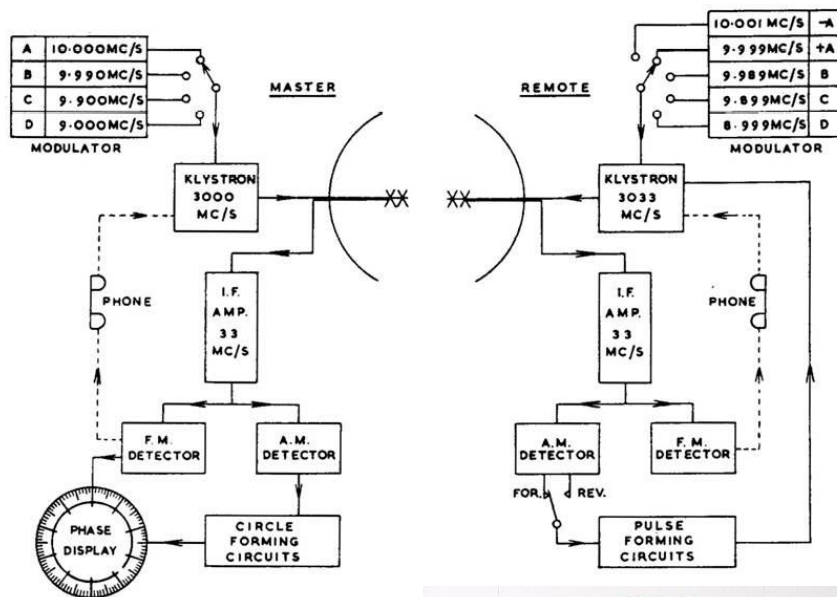
http://www.fig.net/pub/fig2008/ppt/hs01/hs01_03_sturman_wright_ppt_2833.pdf

http://celebrating200years.noaa.gov/distance_tools/tellurometermra1.html

Some of key milestones relevant to AP/MTT/EMC

- Today – SKA – the bid for a multibillion euro worth, world-most sensitive telescope was won by South Africa (partially shared with Australia)

2014 Time Inc.

IEEE South Africa Joint AP/MTT/EMC Chapter
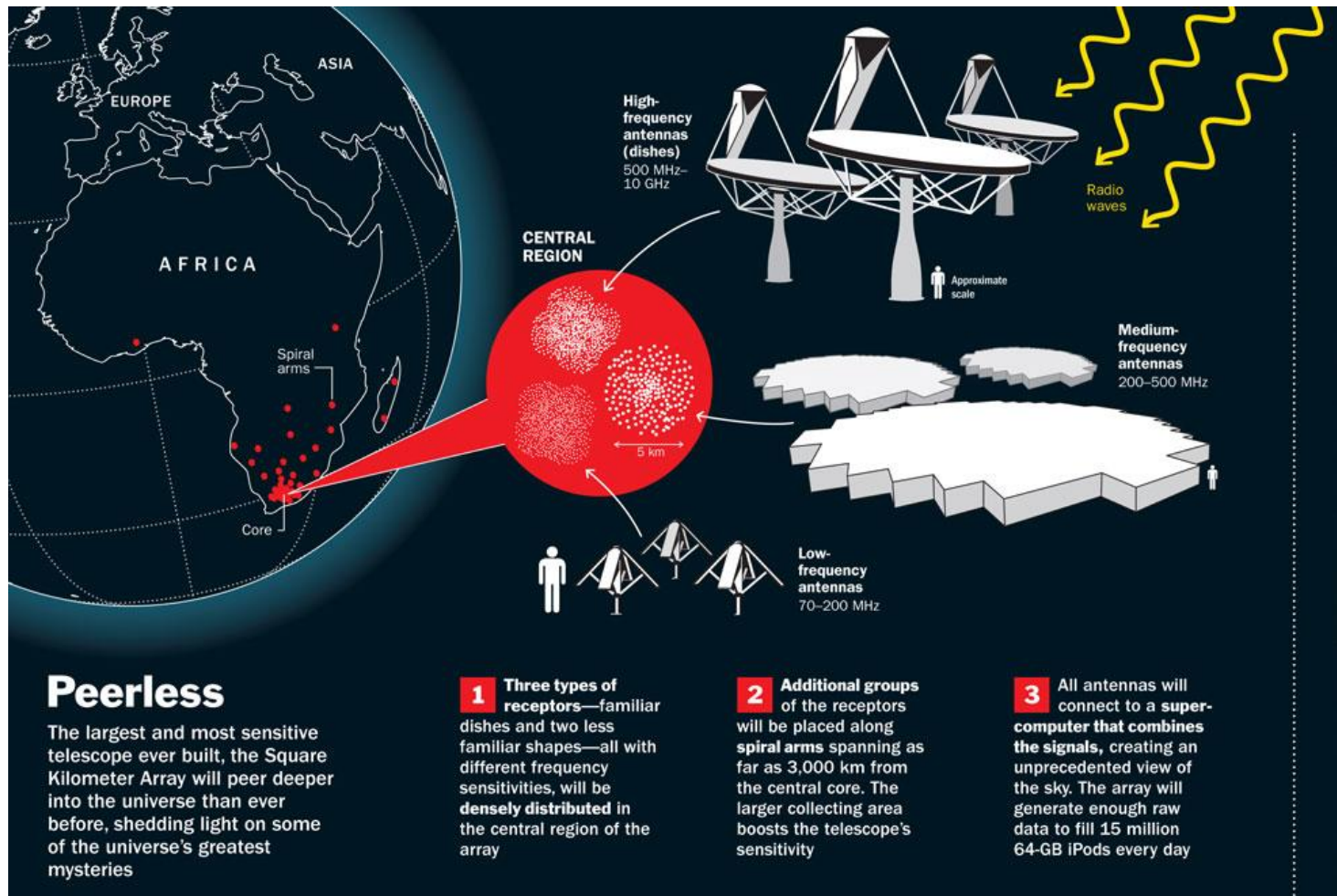
History of the conference

- Begun with The South African Institute of Electrical Engineers (SAIEE) Symposium on Antennas and Propagation, held at the CSIR Conference Centre, Pretoria in May 16-18, 1983
- 1st Joint Symposium on Antennas and Propagation/Microwave Theory and Techniques held in August 19-21, 1986
- Second Joint Symposium was in 1988
- First Conference followed in 1990
- The 1990, 1991, 1992, 1993, 1994 and 1995 symposia and conferences were jointly organized by the SAIEE and the local IEEE AP/MTT Joint Chapter and held at various venues around the country
  - The 1994 conference was joint with SS&C 94, Compsys 94 and Signal Processing Conference
- In 1998, the conference was run jointly with the IEEE South Africa ComSig Joint Chapter
- Followed by joint efforts with Africon conferences, until 2005
- South African IEEE AP/MTT conference was established in 2005
  - Run with the present format of having only invited papers, every two years – in 2005, 2007, 2009 and 2011, and held in Stellenbosch
  - This 2014 conference is diversifying the location by returning to Pretoria

IEEE South Africa Joint AP/MTT/EMC Chapter

Now … why we meet …

http://hqwide.com/wallpapers/l/1600x900/26/funny_antenna_house_old_woman_roof_autumn_1600x900_25066.jpg

IEEE South Africa Joint AP/MTT/EMC Chapter

WELCOME to the conference of
South African IEEE Joint AP/MTT/EMC Chapter 2014

Sponsored by University of Pretoria, CSIR Meraka Institute, DS Communications, CST, EM Software & Systems, ANSYS, GEW Technologies, Protea Electronics, Inala Technologies, Concilium Technologies, EU COST Action IC1102 VISTA and Department of Science and Technology

A special thanks goes to Professors D Davidson, D Baker, PW Van Der Walt, and Jan Malherbe for the information they have kindly provided for this presentation.

14