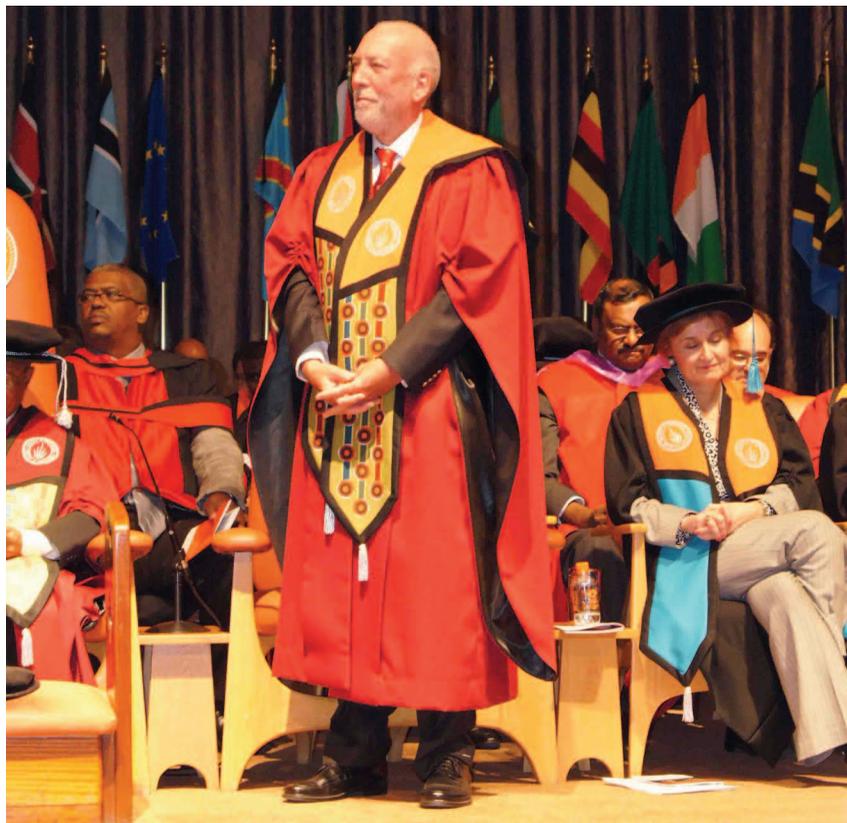


IEEE CE Society Fellow Kees Immink Receives Honorary Degree

Engineers have the power to change our world. New environments present new opportunities, driving innovation and a call for change. This was the message from Prof. Kornelis (Kees) Antonie Schouhamer Immink that inspired graduates at the University of Johannesburg (UJ), South Africa, on 10 June 2014.

Prof. Immink, one of the most prolific inventors of the 20th century in consumer electronics, accepted an honorary doctoral degree—Doctor Honoris Causa for Technical and Scientific Research—during the university’s second graduation series. UJ’s Faculty of Engineering and the Built Environment conferred the honorary doctoral degree on Prof. Immink as acknowledgment for his instrumental role in the development of digital audio, video, and data recording systems and for the profound impact his contributions and inventions have made in today’s digital society.

In his address, Prof. Immink expressed his gratitude and spoke about his passion for science and engineering, saying: “I am an engineer because I have a sincere passion for science and engineering. I’ve had this passion since I was a young boy. I have always loved everything that moves—from steam engines, to bicycles and locomotives, to sailing boats and planes.” He added, “I would have loved to work side by side with James Watt on the design of a new steam engine or to have worked with Michael



Prof. Immink accepted an honorary degree in recognition of his fundamental contributions to the field of coding techniques for digital audio and video data.

Faraday on developing the first electrical motor. These are fascinating inventions by pioneering engineers.”

Prof. Immink emphasized that throughout history, engineers have changed the world in which we live. “Book printing, gunpowder, and even the industrial revolution are the results of engineering. Steve Jobs hired John Sculley from PepsiCo with the legendary pitch, ‘Do you want to

sell sugared water for the rest of your life? Or do you want to come with me and change the world?’ Sculley went on to join Apple, one of the world’s biggest technology companies. The results were evident. So, yes, engineers do change the world.”

Prof. Immink concluded: “An engineer must be creative and be able to solve technical problems. To be an inventive engineer, you have to be willing to live with

the bipolar feeling that either the problem at hand is too complicated or that you are just too dumb to solve it. An engineer must have an excellent education. To achieve excellence in engineering requires good governance in our academic institutions and beyond and the freedom to conduct independent research. To the new engineers and scientists gathered together in this room, I'd like to say: Spread out over the world, and change it to a better one. You can do it; your fellow engineers and scientists of the past have paved your way."

Prof. Immink was, for over 25 years, Phillips' leading engineer in the creation and development of digital audio and video products. His many inventions are universally found in all digital media, such as the compact disc (CD), DVD, and Blu-ray disc.

The impact of his work on consumer electronics is so large that it is virtually impossible to cite digital audio or

video that does not reflect his work. In the mid-1970s, Prof. Immink conducted pioneering experiments on digital optical recording that led to the creation of the CD, which gave way to the DVD and Blu-ray disc.

He conducted the very first experiments on digital audio recording using optical discs in 1976. In 1977, Prof. Immink developed the coding method that made digital optical recording much less sensitive to disc damage, making it possible to introduce the CD. In 1982, he conducted the very first experiment with erasable CDs, paving the way for home-recordable discs.

Fueled by his practical contributions, he has made seminal contributions to information theory, shaping the fundamental knowledge of digital coding and techniques. He wrote more than 150 articles on constrained coding and has published widely on the construction and properties of codes. He has authored four

books, including the landmark *Codes for Mass Data Storage Systems*. Prof. Immink has collaborated for several years with the Centre for Telecommunications at UJ, South Africa. His creativity has resulted in more than 1,100 patents across the world, covering inventions in disciplines such as optics, mechanics, coding, and electronics.

Prof. Immink received several tributes that summarize the impact of his contributions to the digital audio and video revolution. Among the accolades he received are the IEEE Edison Medal for a career of creative contributions to the technologies of digital video, audio, and data recording as well as an individual Technology Emmy Award by the National Academy of Television Arts and Sciences. In 2000, Queen Beatrix of The Netherlands bestowed upon him the honor of knighthood.

—Peter Corcoran

Introduction to the IEEE 1874 Open Manual Format, "oManual"

IEEE Standard 1874, *Standard for Documentation Schema for Repair and Assembly of Electronic Devices*, is a simple, open XML-based standard for semantic, multimedia-rich procedural manuals. It is commonly referred to as "oManual" or the open manual format.

The IEEE 1874 specification describes the data model, Web services application programming interface (API), and bundle file format (a collection of structured files containing a category and guide XML files). The specification may be expanded in the future to enable additional types of documents.

AN INTRODUCTION OF MANUALS

Manuals have always included images, part diagrams, and references to other documents. Those links and metadata are a significant part of what makes a manual effective. The Internet is perfect for allowing these documents to come alive, making it possible to connect procedures with tools and reference specifications. Unfortunately, the vast majority of manuals distributed online do not take advantage of this flexibility. PDF documents are static and have no structure to their data.

A huge amount of useful data is buried, trapped in static documents where it cannot be leveraged, built upon, and repurposed. The IEEE 1874 specification, or oManual, solves this problem. Publishing manuals as both user-friendly PDF/

HTML and machine-friendly oManual files allows for the best of both worlds: manuals that retain their ease of use but are also easy to maintain and build upon.

HOW DID oMANUAL GET STARTED?

oManual started when O'Reilly Media [1] (a leading publisher of technical books) and iFixit [2] (the free online repair manual) started searching for a data format to exchange their procedural manuals. The existing XML specifications were overly broad and convoluted, ill-suited for procedural manuals. So a specialized format to fill the gap was created.

WHO IS IT FOR?

oManual is for anyone who wants to publish manuals, whether they are