Peter Macfarlane Access Summary

Peter McFarlane, discussed his pioneering work in automating electrocardiogram (ECG) analysis at the University of Glasgow. Initially using a PDP-8, McFarlane's team developed software to digitize and interpret ECGs, which later transitioned to a PDP-11. This work led to commercial collaborations with Siemens and Burdick, resulting in worldwide distribution of the software. McFarlane highlighted the significant impact of DEC's support, including a major grant that enabled further development and expansion. The software has since been licensed to over 20 companies globally, contributing to major clinical studies and the widespread use of statins in heart disease prevention.

Peter McFarlane's Background and Early Career

- Gavin Clark introduces the interview with Peter McFarlane.
- Peter McFarlane shares his background: born in Glasgow, 1942, attended primary and secondary schools in Glasgow, and studied mathematics and natural philosophy at the University of Glasgow, graduating in 1964.
- Peter describes his initial research at the Royal Infirmary, focusing on automating the analysis of electrocardiograms (ECGs) using pencil and paper due to the lack of automated ECG interpretation knowledge.
- He recounts his educational tour in the U.S., where he learned about the PDP-8 desktop computer, which he later used for his research at the Royal Infirmary.

Development of ECG Analysis Software

- Peter explains the challenges of using the PDP-8, including the need to transfer data between the PDP-8 and the university's KDF-9 computer.
- He describes the breakthrough of transferring deck tape data onto KDF-9 tapes, which required sending tapes by courier and occasional trips to Bristol.
- Peter details the development of the software to interpret ECGs, initially using three waveforms and later expanding to 12 waveforms.
- He mentions the acquisition of a PDP-11, which significantly reduced processing times for ECG analysis.

Commercialization and Collaboration with Siemens

- Peter discusses the commercialization of the ECG analysis software, leading to a contract with Siemens Lima in Stockholm.

- He explains the transition of the software to work on Siemens equipment and its introduction to the North American market via Siemens' acquisition of Burdick.
- Peter highlights the University of Glasgow's licensing of the software to over 20 companies worldwide, including in China, North America, India, and Europe.
- He recounts the involvement of DEC in supporting the further development of the ECG analysis software, including the provision of PDP-11s and other equipment.

Impact of DEC and PDP Computers

- Peter reflects on the impact of DEC and the PDP computers on his research, emphasizing the importance of the PDP-8 and PDP-11 in automating ECG analysis.
- He describes the transition from machine code to Fortran and then C, which improved the efficiency and usability of the software.
- Peter shares his experiences with DEC's customer service, particularly the support provided by John Barrett, the Scottish service engineer for DEC.
- He highlights the importance of DEC's involvement in the early stages of his research, which laid the foundation for the widespread use of the ECG analysis software.

Advancements in ECG Analysis and AI

- Peter discusses the advancements in ECG analysis, including the use of artificial intelligence (AI) to analyze heart function and contractility.
- He expresses concerns about the limitations of AI in screening the entire population but acknowledges its potential in certain applications.
- Peter mentions the ongoing collaboration with companies developing AI-based ECG analysis tools.
- He reflects on the evolution of ECG analysis from the initial focus on interpretation to the current use of AI for more advanced diagnostics.

Training and Support from DEC

- Peter recounts his training experience with DEC in Reading, where he learned basic programming for the PDP-8.
- He describes the classroom setting and the hands-on experience with the PDP-8 during the training courses.
- Peter mentions the ongoing support from DEC, including advanced programming courses and regular updates on new developments.

- He highlights the importance of DEC's training and support in enabling the successful development and implementation of the ECG analysis software.

Relationship with DEC and Community Involvement

- Peter discusses the long-term relationship with DEC, including the support provided by Geoff Shingles and John Barrett.
- He recounts the personal connections with DEC employees, such as his school chum who worked at the DEC factory in Ayr.
- Peter shares anecdotes about DEC's community involvement, including sponsoring local football teams and supporting local initiatives.
- He reflects on the positive impact of DEC's community engagement, and the lasting relationships formed with DEC employees and local communities.

Legacy of DEC and Future of ECG Analysis

- Peter reflects on the legacy of DEC and its impact on his research and the development of ECG analysis software.
- He highlights the role of DEC in providing the initial stepping stones for the advancements in ECG analysis.
- Peter discusses the future of ECG analysis, including the potential of AI and the ongoing collaboration with international partners.
- He expresses gratitude for DEC's support, and the significant contributions made to the field of cardiovascular research.