

# 2019 Vail Computer Elements Workshop

JUNE 23-JUNE 26, 2019 AT THE CHRISTIANIA, VAIL

Program Chair: Steve Miller, Intel  
Program Co-Chair: Brian Hirano, Oracle

Sponsored by the Vail  
Computer Elements Workshop  
in cooperation with



Photographed at the Inmos factory, Newport, Wales.  
<https://www.sciencephoto.com/media/76521/view/iann-barron-electronics-engineer>

## **Keynote: Back to the Future- Iann M Barron**

Iann Marchant Barron CBE is a British computer engineer and entrepreneur, born in June 1936.

During vacation work in 1956-7 at Elliott Brothers while still at Cambridge he designed the Elliott 803.[1] On leaving University he joined the Civil Service in 1958 as a Scientific Officer on special assignment first to the Army Operational Research Group, and in 1960 to the Air Ministry.

He returned to the company now called Elliott Automation as a Project Leader for the Elliott 502 computer team, later becoming the company's Head of System Research.

In 1965 Barron left Elliott Automation to become Founder and Managing Director of Computer Technology Limited, where the Modular One range of computer systems was developed.

In the mid-1970s he formed a new company, Microcomputer Analysis Ltd, which offered consultancy on microprocessors to the semiconductor industry. This brought him into contact with two eminent American semiconductor specialists, Richard Petritz and Paul Schroeder, and in 1978 the triumvirate founded Inmos International PLC, which produced the innovative transputer, and led to the development of SpaceWire.

Barron was elected a Distinguished Fellow of the British Computer Society (DFBCS) in 1986 and was appointed CBE in the 1994 New Year Honours.

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## Sunday June 23

- 5.00 pm Registration
- 5.00 pm Reception
- 6.30 pm Dinner at La Nonna restaurant
- 8.30 pm **Keynote: Back to the Future- Iann M Barron**

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## Monday June 24

8.00 am Self-service breakfast in Sarah's Bar, Christiania

### 9.00 am-12 noon **Session 1 - Processors**

**Chairs: Yahya Sotoudeh, Intel**

1. IBM Power processor and Future Trends - *Edmund Gieske, IBM*
2. Vega 20: World's First 7nm GPU, with 25Gb/s links & 1 TB/sec Memory BW - *Sam Naffziger, AMD*
3. *Group Picture*
4. Energy-Efficient Design Using Sparsity & Low Precision for Edge Computer - *Cormac Brick, David Bernard, Intel*
5. ARM Helium - *Tom Grocutt, ARM*

12 noon Lunch in Sarah's Bar, Christiania

### 1.30 pm - 4.30 pm **Session 2 - Processors & Consumer Electronics**

**Chairs: Atsushi Hasegawa, Renesas; Yoshio Masubuchi, Toshiba Memory Corp**

1. ARM-SVE enabled post-K processor for energy efficiency and sustained application performance in HPC - *Mitsuhisu Sato, Riken and Toro Shimizu Tokyo University*
2. Multicore SoC with DNN Acceleration for Automotive Applications - *Masato Uchiyama, Toshiba Device & Storage*
3. Automotive Flash Microcontroller with Virtualization-Assisted Processor - *Sugako Otani, Renesas Electronics*
4. Storage Economics: The Value in Storing the Long Tail - *James Hughes, UCSC*

5.00 pm Reception

6.30 pm Dinner at the Lancelot Restaurant

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## Tuesday June 25

8.00 am Self-service breakfast in Sarah's Bar, Christiania

### 9.00 am-12 noon **Session 4 - Sensors, IoT, 5G, Automotive and Security**

**Chairs: Michael Allen, ARM; Pete Wilson, Kiva Design Groupe; b0t, Ordo Labs; Bill Huffman, Cadence/Tensilica**

1. Photonics: a Bright Legacy and Future - *Derek Gann, Analog Devices, Inc*
2. Secure Machine Learning at the Edge - *Rob Oshana, NXP*
3. Hacking Telephony 1970 style - *Bill Soley, BillTech*
4. Automotive Control Systems Security - *Peter Gutman, University of Auckland*

12 noon Lunch in Sarah's Bar, Christiania

1.30 pm - 4.00 pm: Free time to explore and socialize

**4.00 pm Planning Session for VCEW 2020. All invited. In Sarah's Bar, Christiania**

5.00 pm Reception

6.30 pm Dinner at the Left Bank Restaurant

8.30 pm - 10.00 pm **Session 5 - Programming Languages**

**Chairs: Ian Bratt, ARM; Gary Lauterbrach, Cerebras**

1. Programming Persistent Memory with golang - *Pratap Subrahmanyam, VMWare*
2. Using persistent object memory for dataflow computing - *Ethan Miller, UCSC*

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Wednesday June 26

8.00 am *Self-service breakfast in Sarah's Bar, Christiania*

9.00 am-12 noon **Session 6 - AI/ML and Data**

1. The Cerebras CS-1 AI Accelerator - *Sean Lie, Cerebras*
2. Xilinx Versal AI Engine - *Samuel Bayliss, Xilinx*
3. Architecting Nvidia GPUs for Deep Learning performance - *Ronny Krashinsky, Nvidia*
4. Beyond CMOS for AI - *Amir Khosrowshahi, Intel*

12 noon *Packed Lunch in Sarah's Bar, Christiania*

*Close.*

**The Prize for the Best Talk at VCEW 2019 was awarded to Sean Lie of Cerebras.**

