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### **Special roundtable discussion: 70 years electronic digital computing that changed the world.**

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#### **Panelists**

Mike Williams, John Gustafson, and others.

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# Special Roundtable Discussion 70 Years Electronic Digital Computing That Changed The World **COMPSAC 2009**

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## Introduction

The main goal of this roundtable discussion at IEEE COMPSAC 2009 is to mark the 70 years since the first proof-of-concept prototype of electronic digital computer became operational in 1939. The discussion will recognize the exceptional contributions of John V. Atanasoff for the invention and development of electronic digital computing and computers. In 1937, after significant research and practical investigations, Atanasoff invented the basic design principles of electronic digital computing:

- use of electronics technology for computational speed,
- use of binary arithmetic for simplicity of implementation,
- use of digital calculation for accuracy, and
- use of dynamically refreshed memory for low cost and reliability.

On the basis of these revolutionary concepts and after further practical investigation, a proof-of-concept prototype and a full-scale operational unit (the Atanasoff-Berry Computer, or ABC) for solving systems of equations using digital electronics were developed and demonstrated between 1939 and 1942 by John V. Atanasoff and his graduate assistant Clifford Berry. Atanasoff was the first to use digital electronics to implement arithmetic operations. His four design principles propagated via ENIAC and EDVAC to most of the modern computer designs, and remain at the core of the electronic digital computing technologies today.

## Topics covered in the position statements and presentations

The expert panelists will present their views about the following topics:

1. The variety of different technologies explored and used in the early days of automatic computing.
2. The advantages of digital vs analog calculations.
3. The importance of binary arithmetic for electronic digital computing.
4. The engineering challenge for the design of dynamically refreshed memory.

## Discussion

The second part of the session will be a lively discussion with questions from the audience including the following.

1. How the main principles of electronic digital computing invented by John V. Atanasoff propagated to most of the IT designs today?

2. Does the introduction of electronic digital computing mark the beginning of a new information revolution in human history?
3. Why the recognition of John V. Atanasoff's invention has taken so long and what was the impact of the 1973 federal court decision on this process?
4. When and in what circumstances the name Atanasoff-Berry Computer (ABC) was first used and how many ABC machines have been built so far?

## **Panelists**

Mike Williams, John Gustafson, and others.