


Arts & Science

Action for Analogue

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It's a digital world...



Digital technology is the headline technology behind huge strides in electronics



A Google™ search for “Digital World” returns **276,000** hits

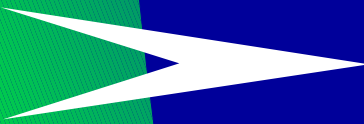


“Analog World” returns **8,460** hits



“*Analogue* World” returns **1,540** hits


But is it *really* a digital world?



Digital logic is only the base process within the complex products which now pervade every walk of life




To be useful, products and systems need to interface with the real world




At the boundary between the *internal* world of digital logic and the *external* world of cause and effect, electronic signals mimic - create analogues of - the outside world


The Analogue world...



Analogue electronics is where careful design and physical precision govern the ultimate performance of products and systems



Digital is strictly computational, but analogue spans an entire spectrum of applications - from nerve impulses to national power distribution



Analogue and mixed analogue/digital circuits are vital components of almost all electronic systems


The infiltration of electronics into every field of human endeavour has been led by the brisk deployment of digital technology

**But • breadth of application
and • the pace of new product introduction
are outstripping the capacity of analogue
designers
to provide the necessary interfaces to the
outside world**

**Despite this, the House of Lords report
“CHIPS FOR EVERYTHING”
relegates analogue to a footnote:**

¹⁵ Some parts of digital computers may still include analogue aspects — for example, to convert analogue sound signals to digital data and vice versa.


The analogue skills challenge



An entire generation of budding design engineers has been attracted to digital design, which they perceive as not only ground-breaking but **easy**



They see analogue as intellectually challenging (and just plain difficult)




Digital design is easily and routinely automated. This not the case for analogue, which needs experience and applications-related problem solving

Rising to the skills challenge



There is a huge age gap: to plug this quickly we need to convert analogue-aware engineers to become analogue-capable engineers



Companies are extraordinarily vulnerable: project teams of dozens of people may depend on one analogue designer




A campaign is needed to make companies aware and then to prioritise employment - *old and new*

The analogue research challenge



Analogue, pervading into all applications, and at every interface between electronics and the real world presents a great multiplicity of research challenges




Analogue design research must be tackled with great urgency *if the progress of electronics as a whole is not to be slowed*

The analogue research challenge

- three overarching problems:



The severe problem of automating the analogue design process



The quantifying and countering of parasitic effects that dog the exact manufacture of theoretical designs



The capturing and describing of applications environments in terms that can be integrated with electronic design


**Analogue is a "Technological Cinderella"
left behind by a generation of digital
advances but now recognised as
fundamentally important**

**Elevating analogue from a curricular
backwater to the status of a front-line
topic will mean winning hearts and
minds in the teaching, research, and
business communities**

Action for Analogue:



Gain recognition for analogue at government, academic and board-room level



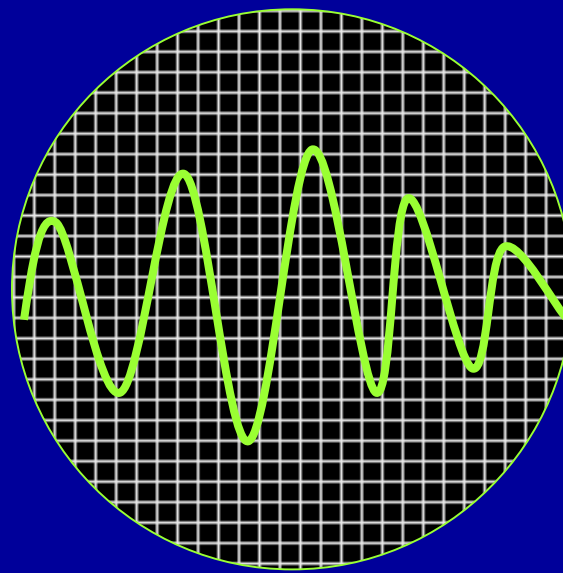
A step change in analogue research - pulling in cross-disciplinary applications knowledge



Rapid deployment of training for existing employees showing aptitude



The identifying, attracting and recruiting of new career entrants *keen to face a challenge*



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