CASE STUDY

Blackmagic Design

How semiconductors underpin Australia's electronics industry

Blackmagic-URSA-Cine-12K-LF-100G
Image courtesy of Blackmagic Design

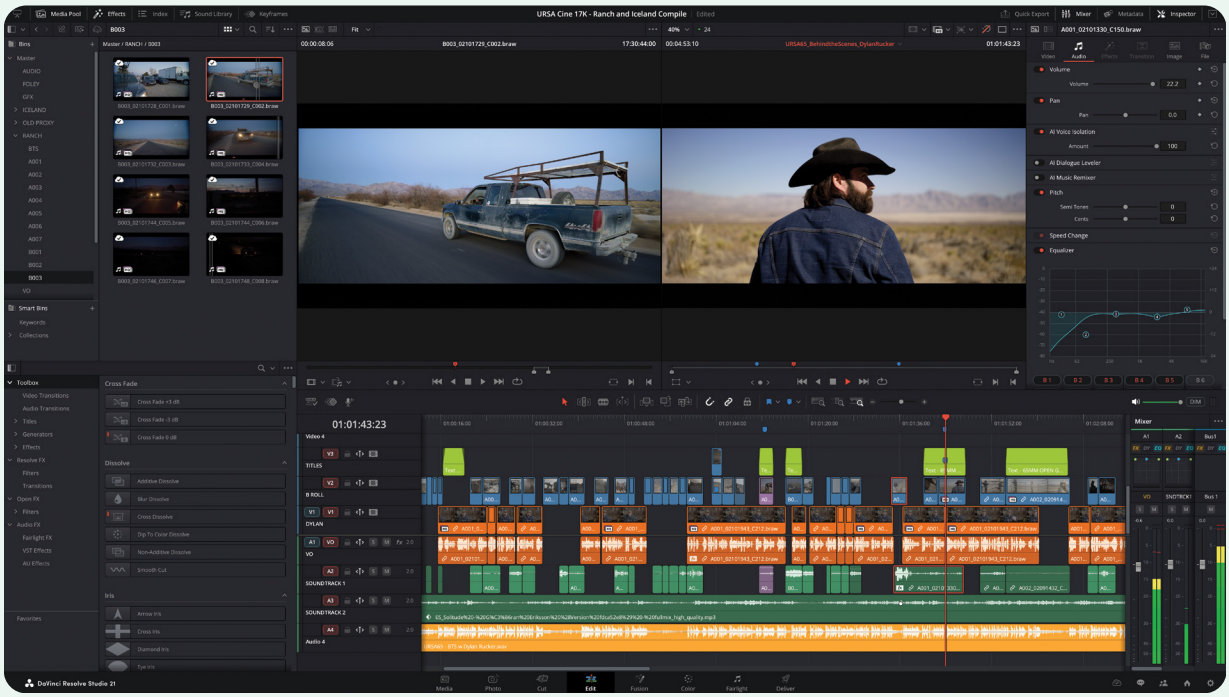
Blackmagic Design shows how systems-level engineering can turn semiconductor components into globally competitive products.

Every piece of modern consumer electronics – whether it's a camera, streaming equipment or a data storage system – relies on semiconductors. A single product can contain many different semiconductor devices, each performing a different function. Some store data, some manage power, some handle communications, while others process information.

Bringing all those components together into a finished product requires systems-level design. This process starts with what the user needs the product to do, then works backward to determine the components, connections, and software required to make it happen – all while keeping costs down and complying with technical standards that are often thousands of pages long.

Blackmagic Design, an Australian company, headquartered in Victoria, and one of the world's leading innovators and manufacturers of creative video technology, starts their process with the customer. "We think about what people want to do, and how we can make a product that lets them do that easily, without costing a fortune." Iain Waugh, Engineering Manager at Blackmagic Design said. That focus on the customer doesn't end once a product drops. Blackmagic Design is continuously innovating and updating its products to keep pace with the changing demands of its customers.

Blackmagic Design develops professional video technology, including cameras, broadcast equipment, and its DaVinci Resolve video editing software, which has been used on most feature films released over the past two decades.



DaVinci Resolve 21
Image courtesy of Blackmagic Design

However, while system-level design underpins a large share of Australia's electronics sector, not every company approaches it the same way. Some companies build around off-the-shelf designs, while others, including Blackmagic Design, do it all themselves. This approach results in developing their own IP.

The core technology underpinning Blackmagic Design's products is field-programmable gate arrays (FPGAs) – special chips that can be configured and reprogrammed to perform custom operations. They are central to how Blackmagic builds its products and are used in almost all of them. Their systems-level design has helped Blackmagic Design build a broad portfolio of professional video products that compete in global markets.

"You can do almost anything you want with an FPGA – we can create a CPU or GPU inside an FPGA if we want. We can create a video compression codec, or audio codec. If something can be done digitally, then we can usually find a way to do it in an FPGA."

Today, Blackmagic Design's products are sold through reseller networks in more than 30 countries, demonstrating the global reach that can come from strong Australian systems-level engineering.