Dialog Semiconductor, headquartered near Stuggart, Germany, is a leading developer and supplier of mixed signal ASICs (Application Specific Integrated Circuits) for (CODEC) audio conversion and power management applications. Dialog Semiconductor designs, tests and delivers the chips whilst outsourcing their manufacturing to a contract foundry (the so-called “fabless” business model). The company focuses on high volume applications where it can exploit mixed signal expertise, IP analog design library and quick execution from specification to delivery.

Since the foundation of the company in 1986, Dialog Semiconductor has developed more than 220 mixed signal chips which are sold to various blue chip manufacturers in the wireless communications market and automobile industry and to date it has delivered more than 150 million chips.

Dialog Semiconductor has additional design centres in the UK, USA, Sweden, Austria and Japan.

**Wireless Communication ASICs**

Dialog Semiconductor’s power management chips aim to maximise the supply and minimise the consumption of power, primarily affecting the total talk and standby times of mobile telephones. The Audio CODEC subsystem is the critical interface between the real world analog signals (such as the human voice) and the digital data processing inside the mobile phone. It is therefore the main contributor to the voice quality of a mobile phone. Dialog Semiconductor has also designed microphone amplifiers for ceramic peizo and dynamic transducers, which are devices that convert energy (such as pressure or temperature) into an electronic signal. These designs can control low noise performance, re-amplification and filtering/noise shaping for loudspeaker or earpiece interfaces as used in personal stereo headphones.

Power management products include voltage regulators, charging/discharging controls, DC-DC converters, power-on reset, under/over voltage lockouts, thermal shutdowns, reverse battery protection, which protect ASIC from being destroyed when supplied with the wrong polarity. Dialog Semiconductor has these functions on a single chip and these can be rapidly modified to meet a customer’s specific needs.

The continued growth in wireless communications and increased demands for new applications and technical improvements will heighten demand by handset manufacturers for the ASICs that Dialog Semiconductor supplies. Dialog Semiconductor continues to develop its business through close relationships with leading handset vendors such as Ericsson, Motorola and Siemens.

**Automotive and Industrial ASICs**

Automotive dashboards are now used to deliver more information and data to drivers for safety and convenience. Dialog Semiconductor produces a variety of automotive dashboard control ASICs for customers such as Bosch and TRW, that relay information from various on board sensors (such as fuel level, oil pressure, speed and engine heat) through micro controllers to the dashboard. For the automotive electronics sector, in the areas of safety and dashboard semiconductor products, Dialog Semiconductor produces signal conditioning ASICs for TEMIC DaimlerChrysler. These ASICs, when combined with micro-mechanical chips, form the principal components of the sensors used in airbag systems.

Dialog Semiconductor also has a product range consisting of dimming motor control, sensor and power management ASICs for use in lighting systems and ASICs for use in data communications for companies such as Tridonic and Adran.

**Investment History**

In March 1998, Apax Partners’ double management buy-out of Dialog Semiconductor created some internal records at Apax Partners. We organised
Ericsson’s pre-emptive purchase of Dialog Semiconductor (preventing a sale to Atmel) from Daimler Benz and Ericsson’s subsequent sale to Apax Partners Funds all in a period of three and a half weeks. Apax Partners Funds took the majority of the equity in an investment worth in excess of $30 million. Apax Partners Funds had a 67% share of the business, whilst the US datacoms company Adtran had 15% and Ericsson retained its 7% share. Dialog staff shared the remaining 10%. The management buy-out enabled the Chief Executive, Roland Pudelko, to realise his dream of creating an independent business that would capitalise on the explosive growth of the semiconductor and wireless telecommunication industries.

Dialog Semiconductor completed an Initial Public Offering (IPO) on EASDAQ and the Neuer Markt in October 1999 (trading symbol DLGS) and in June 2000 completed a $550m secondary offering on NASDAQ - which remains the largest fabless semiconductor offering in history.

“It normally takes private equity specialists several months to structure even the simplest buy-out. Complex negotiations can drag on for a year or more. So Apax Partners was performing something of a high-wire act when it recently took on the back-to-back purchase of an international technology company in a matter of weeks.”

APRIL 1998 – FINANCIAL TIMES