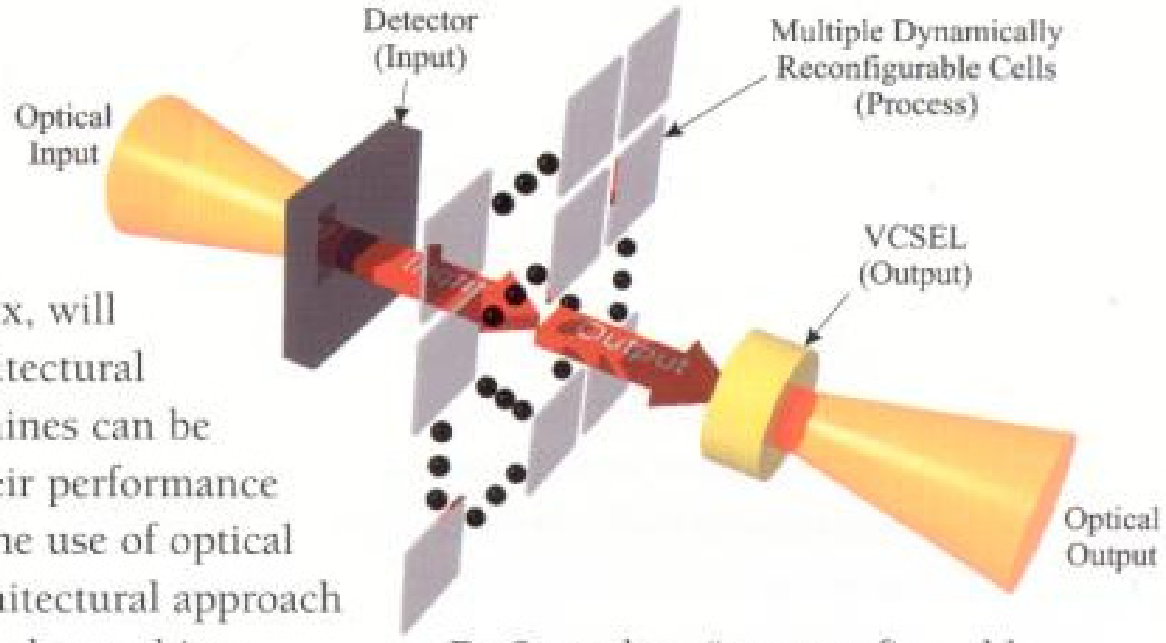
Light Gate



The worlds of electronic computing and optical communications look set to collide in new research taking place at Heriot-Watt University and the University of Edinburgh. The work focuses on how an emerging technology, Optically connected Field Programmable Gate Arrays (OFPGAs), can act as an interface between electrons and light.

"Many groups have concentrated on demonstrating that higher bandwidths and lower latencies are generally achievable with optical technologies, rather than copper lines," comments Dr John Snowdon of Heriot-Watt University, "our research, undertaken with hardware system specialists Xilinx, will show how architectural aspects of machines can be altered (and their performance enhanced) by the use of optical links." The architectural approach chosen is to bond two chips together using flip-chip technology – where chips are placed face down and circuits are connected by small 'bumps' of solder. While one chip will handle the interface with optoelectronic devices, linking to optically 'malleable' semiconductors, the other will act as a standard Field Programmable Gate Array.

"In many ways this is an elegant match of technologies," says Dr Snowdon, "as reconfigurable computing is frequently bottlenecked by the data rates required for the reconfiguration process itself."

By the end of the project the team hope to have designed a generic optoelectronic component that combines the advantages of reconfigurable electronics with the communications abilities of optics.

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