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(57) Abstract

A method and apparatus for coupling an External Device to a Host Computer, such that program code to be executed by the external device may be stored in the Host Computer memory and yet be essentially independent of the Host Computer. Hardware and software enable the logical displacement of a program and address bus across inter-processor interfaces. An External Device preferably provides direct access to program code stored within Host Computer memory by means of a conventional DMA function. Program code which is to be executed by the External Processor within the External Device is transferred from the Host Memory to an Instruction Buffer memory within the External Device. The External Processor determines when to request additional instructions from the Host Memory over the DMA channel on a timed interrupt basis. The External Processor requires an instruction that is not present in the buffer, then the buffer returns an instruction to the External Processor that causes the External Processor to request additional instructions from the Host Memory which include the required instruction. A multiplexer is provided which allows instructions to be provided to the External Processor from a special purpose program memory in which instructions for special purpose functions are stored. Functions within the program code stored within the Host Memory (i.e., "CP" functions) are preferably not time critical functions. Accordingly, the program code that is stored in the Host Memory and which is to be executed by a processor within the External Device is referred to as a "CP Function Program Code". Time critical functions to be performed by the processors of the External Device are preferably not performed by the CP Function Program Code, but rather are performed by executing program code that is stored locally (i.e., "External Program Code").