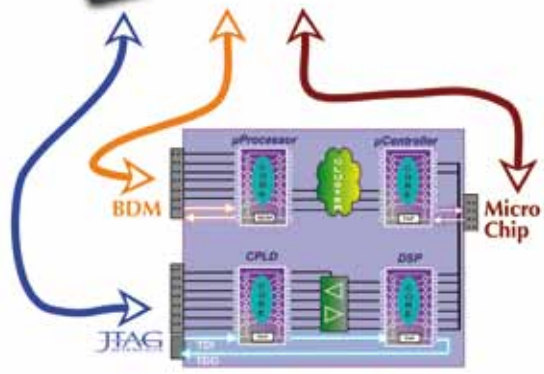
'SCIP' Family - Serial controlled IC programmers

JTAG Technologies In-system programming tools



- **Solutions for programming µProcessors, µControllers, DSP's etc. with embedded flash.**
- **Multiple busses and protocols supported (JTAG, BDM, Microchip, SPI, I2C) using JTAG SCIL modules where required.**
- **In-system programming (ISP) technique minimizes device handling and reduces static and mechanical damage.**
- **Re-use existing JTAG hardware (JT 37x7) for both ISP and testing.**
- **Reduced fixture complexity and costs as a result of reduced hardware considerations.**

Embedded Flash - Background

While many devices have standardized on JTAG (IEEE Std 1149.1) as the preferred hardware interface for programming and testing, there has been little in the way of standardization regarding the way internal (flash) memories are programmed. The use of 'private' instructions and non-standard state machine implementations have meant that standard JTAG/boundary-scan tool sets are unable to cope with the variety of devices that now use JTAG as their programming interface.

Furthermore there exists a secondary layer of devices that use other, often lower pin count, interfaces to support their programming requirements. Examples of these alternative interfaces are BDM, SPI, Spy-bi-wire, etc.

JTAG Technologies SCIP family is a broad range of software modules that can be used by test and production engineers to broaden the scope of their in-system device programming facilities without adding much, if anything, in the way of additional hardware.

SCIP Strategies

To accommodate the various device types and their often unique programming requirements JTAG Technologies has devised a number of different programming mechanisms that are summarized as follows:

- Ready to Run (R2R). Devices supported by this system use the low-level BSX format files that have been factory prepared to support the nuances of each device type to be programmed. Due to the inherent flexibility of the BSX code both JTAG and some similar non-JTAG interface parts are supported by R2R files. In the case of non-JTAG parts, a hardware adapter (SCIL module) is often required. R2R files are usually devised with the assumption that only one target device is in the serial 'chain'. Customized versions can however be created on request.

- ProVision Modeled (PVM). All standard NOR flash, NAND flash and many SPROMs are supported by ProVision models that will allow the user to generate Erase, Program, Verify type routines. What is less well known however is that many Micro-Chip PIC devices can be programmed in this way. Often it is convenient to access the PIC programming signals via a JTAG DIOS module that can be added into the interface pod itself.

- Other mechanisms. A few devices are supported by special-to-type (STT) APL syntax files, SVF syntax files or modified IEEE Std 1532 format files.

Table 1) below you will see a summary of the current SCIP supported devices

Device Family	Option Name	Strategy Type	SCIL Adapter*
Analog Devices Blackfin	N/A	PVM	N/A
Atmel AT91SAM7SExx	AT91SAM7SEProg	R2R	N/A
Atmel ATMega64 (TAP)	N/A	SVF	N/A
Atmel ATMega8 etc (No TAP)	N/A	PVM	N/A
ATtiny	N/A	PVM	N/A
Freescale MPC500	MPC500Prog	R2R	SCIL-018
Freescale MCF52xxx 'ColdFire'	N/A	APL	N/A
Freescale MPC55xx 'PowerPC'	MPC5500Prog	R2R	N/A
Freescale MC56F8000	MC56F8000Prog	EXE	N/A
Freescale MC68HC908	HC08Prog	R2R	SCIL-017
Freescale MC9S08	HCS08Prog	R2R	SCIL-017
Freescale MC9S12	HCS12Prog	R2R	SCIL-017
Infineon XC16x	XC16XProg	EXE	N/A
Infineon XE16x	XE16xProg	EXE	N/A
MicroChip PICs (four families)	N/A	PVM	N/A
NXP LPCxxx (15 families/42 devices)	LPC2xxxProg	R2R	N/A
NXP SJA2020	SJA2020Prog	EXE	N/A
Renesas H8S/21xx	H8SProg	R2R	SCIL-011
SI Labs 8051	8051Prog	R2R	N/A
ST Micro STM32F10xxx	STM32F10Prog	R2R	N/A
ST Micro STR91xFxxx	STR91xProg	1532	N/A
TI TMS320F28xx	TMS320Prog	R2R	N/A
TI UCD 9240	UCD9xxxProg	R2R	N/A
TI MSP 430 (five familes)	MSP430Prog	R2R	N/A

Example SCIL Module #017 for Freescale HCS08 interfacing

Prerequisites:

- All R2R files are in BSX format are required to run on a JT 3710, JT 3717 or JT 3727 hardware controller.
- PVM supported devices can be programmed with the full range of JTAG Technologies controllers that support both basic and optimized modes. A ProVision licence for Flash development is also required.
- SCIL adapters connect in place of a generic JTAG TAP Pod JT 2149 within a QuadPod transceiver unit.

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