TMS320 Algorithm Standard Third Party and Customer View

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Blue Wave Systems

Corporate Overview

- Global Telecom Solutions Provider
- Focus on high density VoIP, Wireless Infrastructure and Enhanced Services Solutions
- Headquarters in Dallas
  - Offices in UK, France, Germany and throughout US
- Circa $30M turnover
  - Nasdaq - BWSI ticker
- Exclusively built upon TMS320 technology
  - C5000 family for VOIP using Telogy software
  - C6000 family for wireless
- BWS Telecom solutions reside under ComStruct banner

What does ComStruct offer ?

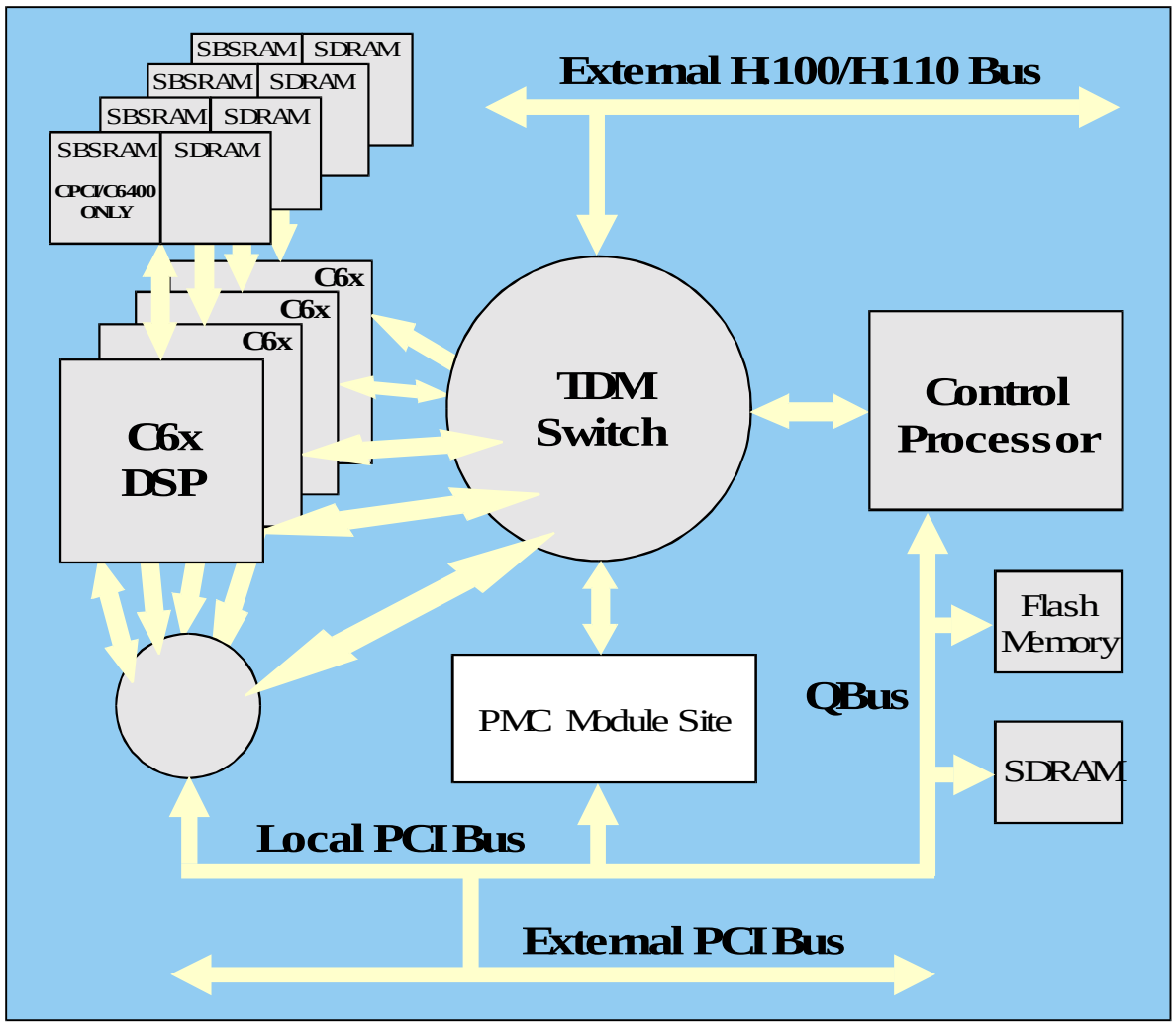
- Building Advanced Telecom Solutions
  - Reduced time to market and risk (up to 80% faster)
  - Full host and Target Side Framework with integrated off the shelf algorithms
  - Access to DSP technology for non-DSP literate users
  - Minimal or no DSP coding
- Open, flexible, extensible and backed by Professional Services
  - ‘Standard’ resources can be combined with specialised algorithms
  - Extensible for future generations and new services
  - Ability to integrate state of the art resources into existing systems - EFR to AMR
- Comprehensive
  - Ready built solutions speed time to market even further
- Built with FACT…….

FACT

- Host Framework
  - Host API's provide intuitive access to DSP resources
  - API's include Media, Connections, Players, Recorders, Echo etc.
- DSP Framework
  - Integrated algorithms for standard vocoders, data, tones and echo cancellation
  - Integrated scheduler for handling multiple channels or resources on a single DSP
  - Simple to add new resources
- System Management
  - System management tools
  - Resource allocation and management

Advantages of using FACT

- System Benefits
  - Resource pool approach provides inherent scalability
  - Easy to migrate to new technology
  - Multiple OS support
  - Highly Available and Fault Tolerant
- Deployable
  - Not only a development environment - Immediately ready for deployment
  - Typically less than 1% overhead
  - Based on optimized algorithms and DSP side framework
- Typical System…….


SBSRAM
SDRAM
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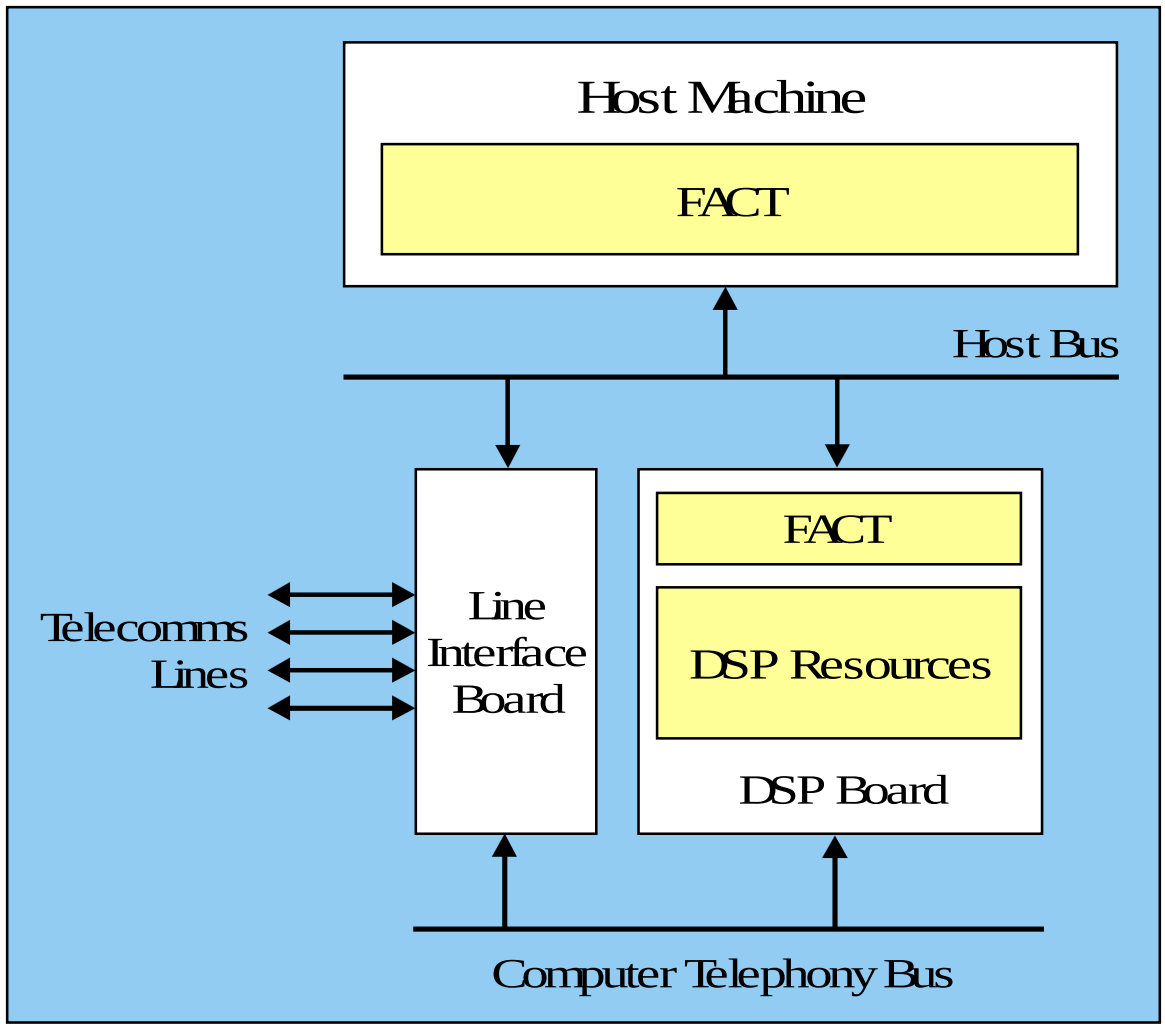
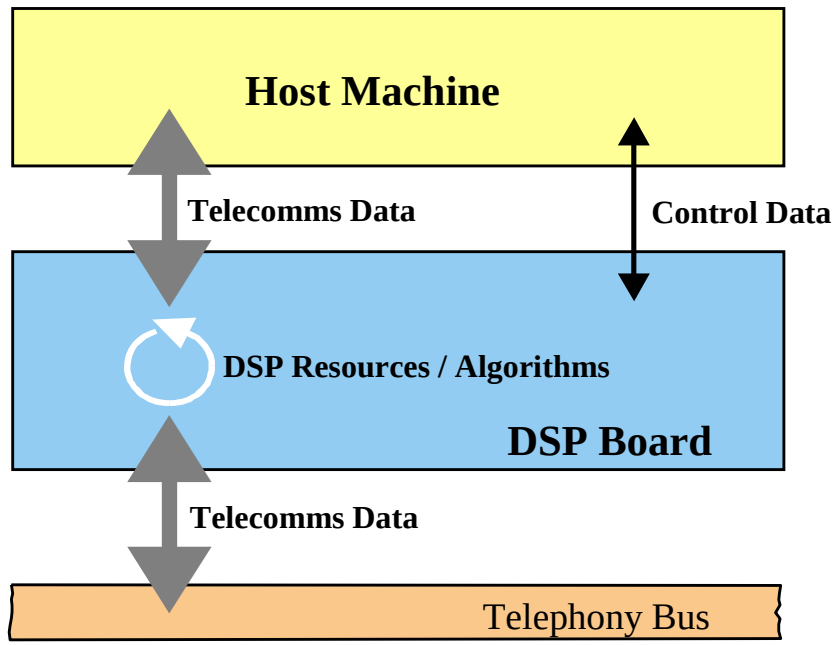
SDRAM
CPCI/C6400 ONLY
C6x
C6x
C6x
C6x DSP
External H100/H110 Bus
TDM Switch
Control Processor
Flash Memory
SDRAM
QBus
PMC Module Site
Local PCI Bus
External PCI Bus


Host Machine
FACT
Host Bus
FACT
DSP Resources
DSP Board
Line Interface Board
Telecomms Lines
Computer Telephony Bus

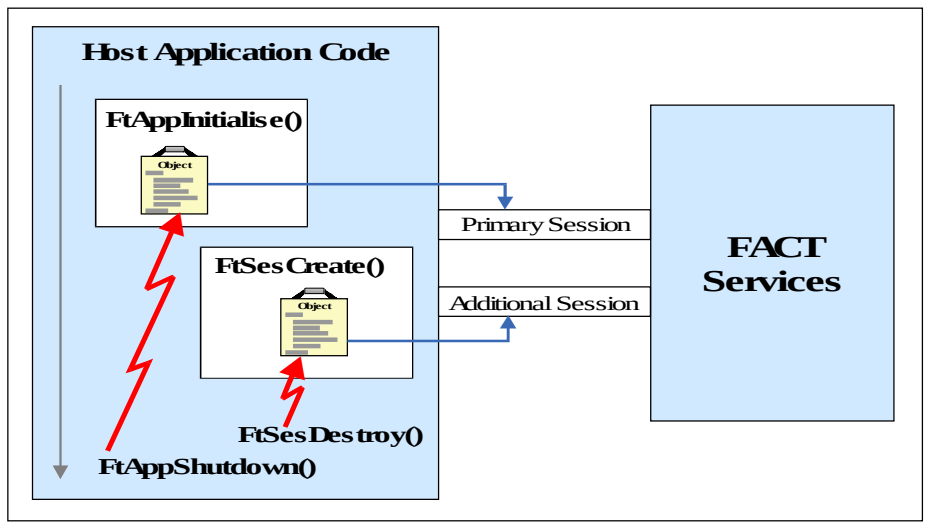
FACT Elements

- Transfer of telecomms data between DSPs and :
  - TDM bus
  - Host machine
  - Media file
  - Host application
- Process data
  - transcode, vocoder, data
- Transfer control data between DSPs and host machine
- All bi-directional channels



FACT Sessions

- FACT Resources
  - Player
  - Recorder
  - Signal Generator
  - Signal Detector
  - Signal Monitor
  - Transcoder
  - Detector
  - Custom
    - User defined



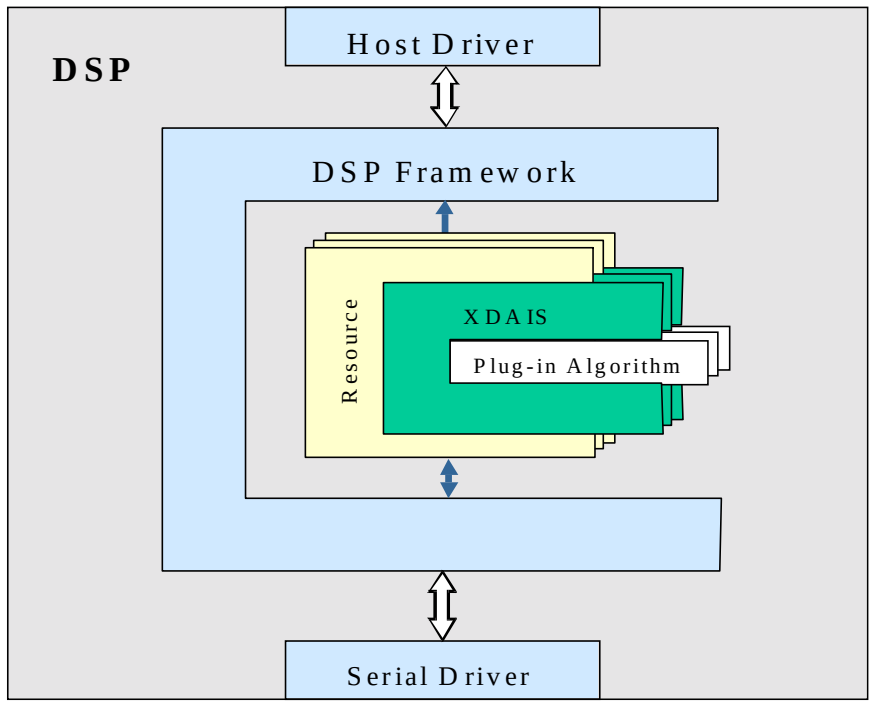
Achieving the Solution…..

How the TMS320 algorithm standard helped us

Blue Wave Systems

Objectives

- TMS320 Algorithm Standard
  - Allows integration of algorithms from multiple vendors
  - Specifies the algorithm level APIs
- FACT
  - Manages multiple DSP resources
  - Specifies the system level APIs
  - Handles resource scheduling



FACT Solutions

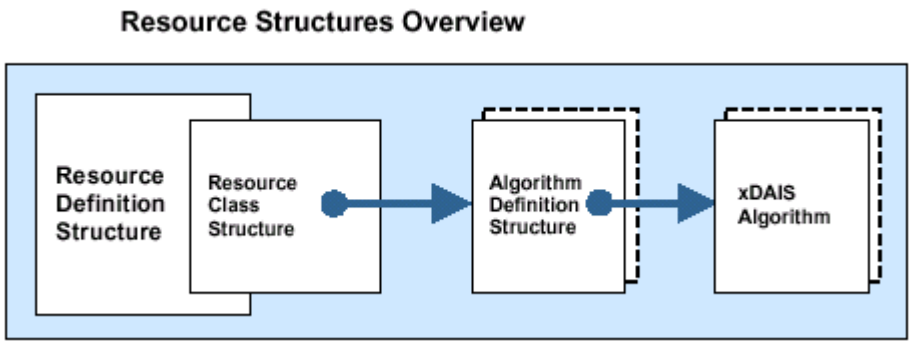
- TMS320 Algorithm standard is key
  - Created an open market for algorithms
  - End solution comes from experts in all fields
  - Numerous partners enables us to address most business models
- Illustrated by the wide range of applications FACT addresses
  - Wireless, IVR, Voice archivers…….
- Integrated resources add value to the Blue Wave solution
  - Compression algorithms, e.g. Vocoders such as G.723.1, G.726
  - Specialised wireless algorithms, e.g. GSM EFR, AMR

Algorithm Standard empowers the…..

- Engineering Teams
  - Ensured compatibility of algorithms
  - Removes the problem of incompatible API's
  - Reduced development time from several days/weeks to hours
- Customers
  - More resources removes the need to integrate algorithms
  - Easier benchmarking and lower risk when new resources are needed
- Professional Services
  - Market for ready developed algorithms that they can call on
  - Hours not weeks to get a demonstrator built

Integrating An Algorithm

- **The interface between FACT and the algorithms**



- **Only two files need to be modified for integration**
  - **Linker command file (.cmd)**
  - **Skeleton C source file (.c)**
    - Example skeleton for eXpressDSP algorithm provided
      - cust_skel.c

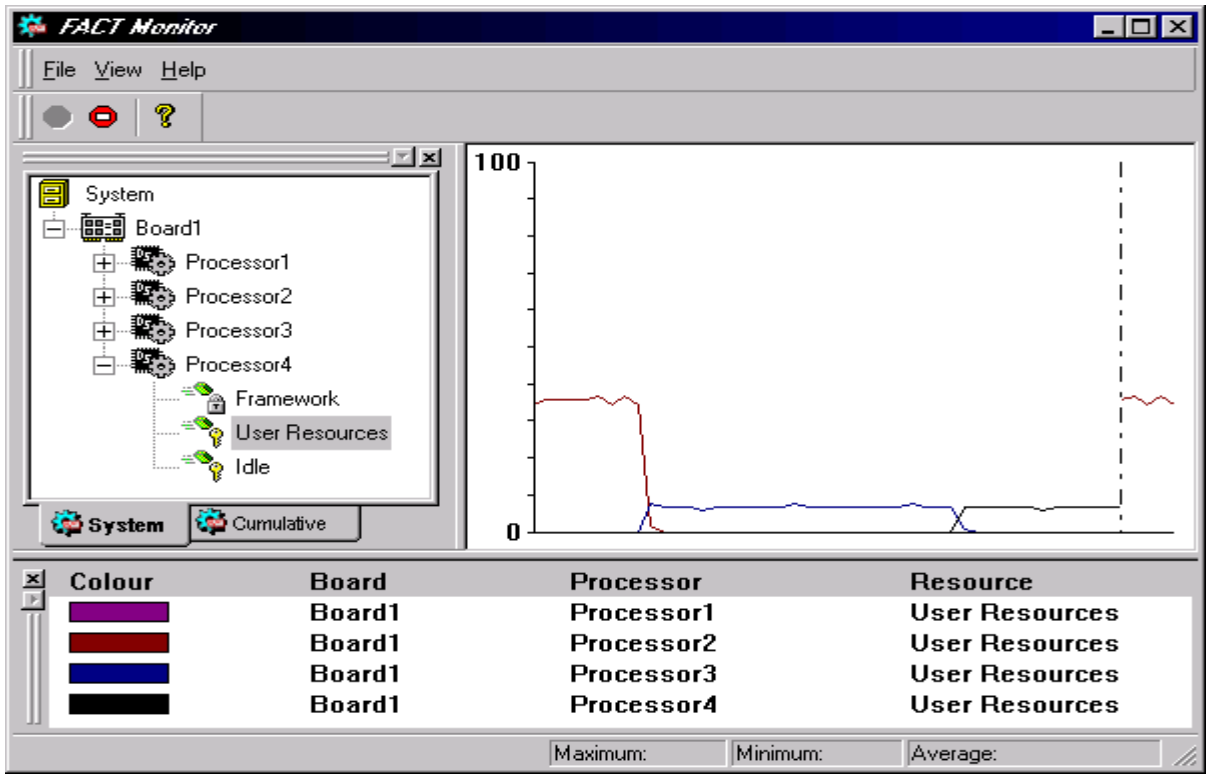
Benefits of FACT and Algorithm Standard

- Synergy significantly benefits developers
  - Faster time to market, reduced risk
- Standardization simplifies system integration
  - An open market for algorithms
  - Removes the need for customers to be experts in DSP coding
- Frameworks enhance the benefits further
  - Algorithm standard still assumes a level of DSP knowledge
  - Solutions such as FACT opens market to DSP unaware users

DSP Software Initiative Benefits

- DSP/BIOS II
  - Scheduling and resource management
    - Different resources can execute at different priority levels
    - Multiple instances of a resource run at the same priority level
  - Standard kernel API
  - Configuration tool

FACT Demonstration



DSP #1 - XDAIS DTMF detection
DSP #2 - XDAIS GSM Enhanced Full Rate playback
DSP #3 - XDAIS G.729A playback
DSP #4 - G.729A playback

Thank you very much for your time

Are there any questions ?