SAP presentation

SAP presentation

- The SAP concept
- The SAP syntax
- The SAP tools
- Demonstration of general usage

The SAP concept

- Service Access Point (SAP)
    - Based on the layered protocol stack model
- Purpose of the SAP
    - Provides a clearly defined interface for the entity to other entities at a higher level
    - Interface defined by primitives or functions
- SAPs defined and described in Word
    - Specific format
- Processed by the TI tool chain
    - a set of includable source files (C declarations)

The SAP concept

- Output used throughout the tool chain
  - Implementation tools
  - Test tools
  - Tracing tools
- Developer point of view
  - Includable source files (C declarations)
  - Documentation in form of the original SAP document

The SAP concept

- Code structured according to the code standard
- Ensures consistency in declarations
  - E.g.valid flags, naming, counters, etc.
  - No name clashes due to PREFIX on entity level
- Integrated with implementation, test and trace

The SAP concept

- Single source concept
  - Code and documentation in one
- Possible to maintain documentation and code at the same time

The SAP syntax

- How to create and maintain SAPs
- Declaration possibilities
- Example of usage and declarations
  - Example SAPs

The SAP syntax

- SAPs created in Word
- 5 main sections in a SAP document
  - Introduction
  - Constants
  - Primitives
  - Functions
  - Parameters

The SAP syntax

- Each of the main sections have subsections according to their nature
- Primitive
  - Description
  - Definition
  - Elements
  - History

The SAP syntax

● Mandatory ◉ Optional ○ Illegal	Description	Pragma	Definition	Elements	Values	History
Constants	●	◉	●	○	○	●
Primitives	●	○	●	●	○	●
Functions	●	○	●	●	○	●
Parameters	●	○	●	◉	◉	●

The SAP syntax

- Available C types
  - U8, S8, U16, S16, U32, S32
  - STRUCT
  - ENUM
  - UNION

The SAP syntax

- Simple declaration
  - Constants
  - Primitives
  - Elements
  - Arrays and dynamic arrays
  - Optional elements
  - Comments

The SAP syntax

- Advanced declarations
  - Linked parameters
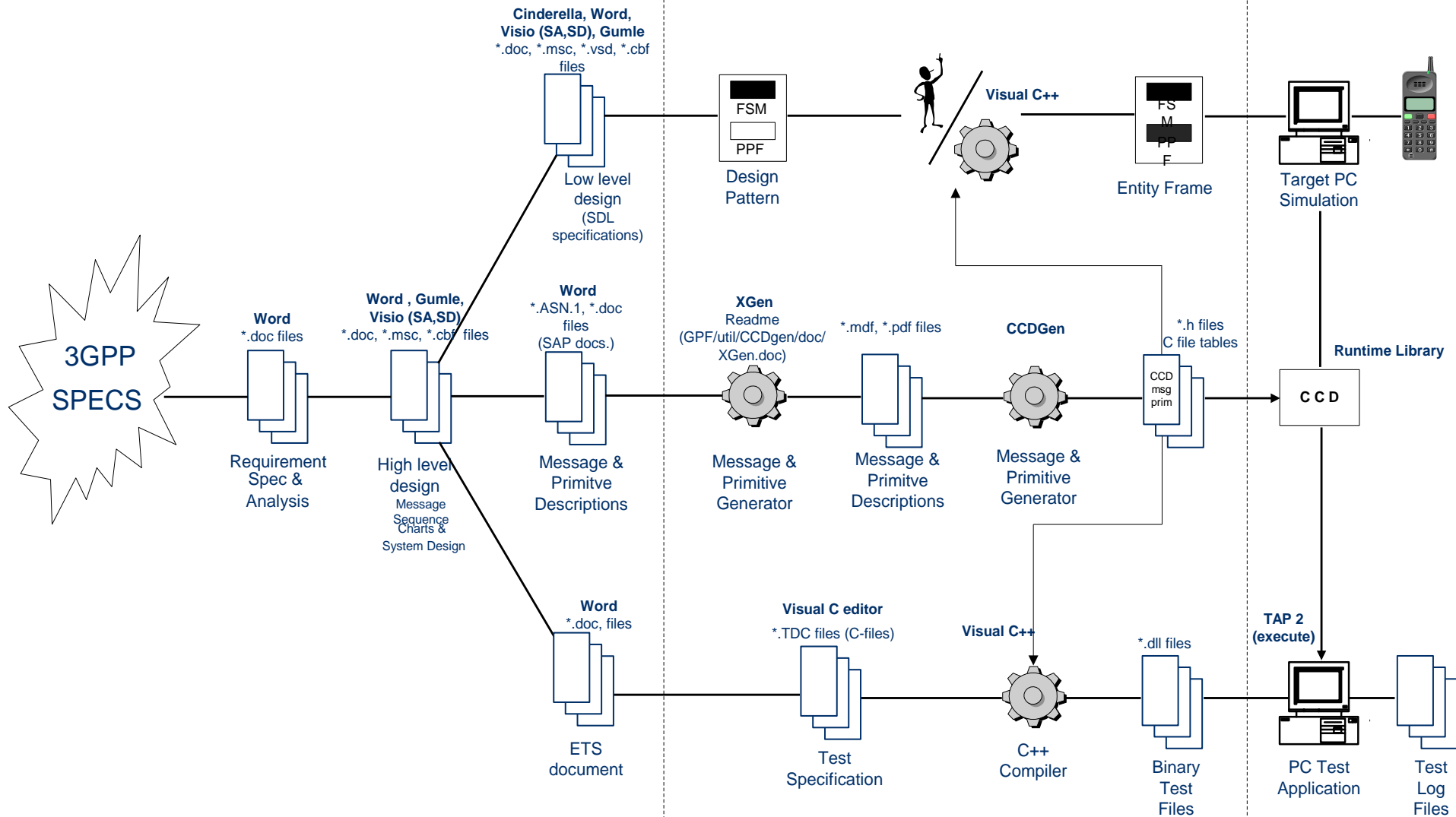 - Functions
  - Pointers
  - Groups
  - C-name

The SAP tools

- Next point is now how to compile SAPs

- Example of usage
  - Illustration of simple primitve definitions and declarations

Specification

Generation

Run & Test

Cinderella, Word, Visio (SA,SD), Gumle
*.doc, *.msc, *.vsd, *.cbf files

FSM
PPF

Design Pattern

Low level design (SDL specifications)

Visual C++

FSM
PPF

Entity Frame

Target PC Simulation

3GPP SPECS

Word
*.doc files

Requirement Spec & Analysis

Word , Gumle, Visio (SA,SD)
*.doc, *.msc, *.cbf files

High level design
Message Sequence Charts & System Design

Word
*.ASN.1, *.doc files
(SAP docs.)

Message & Primitve Descriptions

XGen
Readme
(GPF/util/CCDgen/doc/ XGen.doc)

Message & Primitive Generator

*.mdf, *.pdf files

Message & Primitve Descriptions

CCDGen

Message & Primitive Generator

*.h files
C file tables

CCD msg prim

Runtime Library

C C D

Word
*.doc, files

ETS document

Visual C editor
*.TDC files (C-files)

Test Specification

Visual C++

C++ Compiler

*.dll files

Binary Test Files

TAP 2 (execute)

PC Test Application

Test Log Files

GPF Homepage
(public_view/gpf/html/gpf.html)

TEXAS INSTRUMENTS

The SAP tools

- From SAP to .h files (C declarations)
- Tools
  - Myantiword (doc2txt)
  - Xgen
  - CCDgen
- These steps are transparent to the developer

Demo

- Illustration of output h files