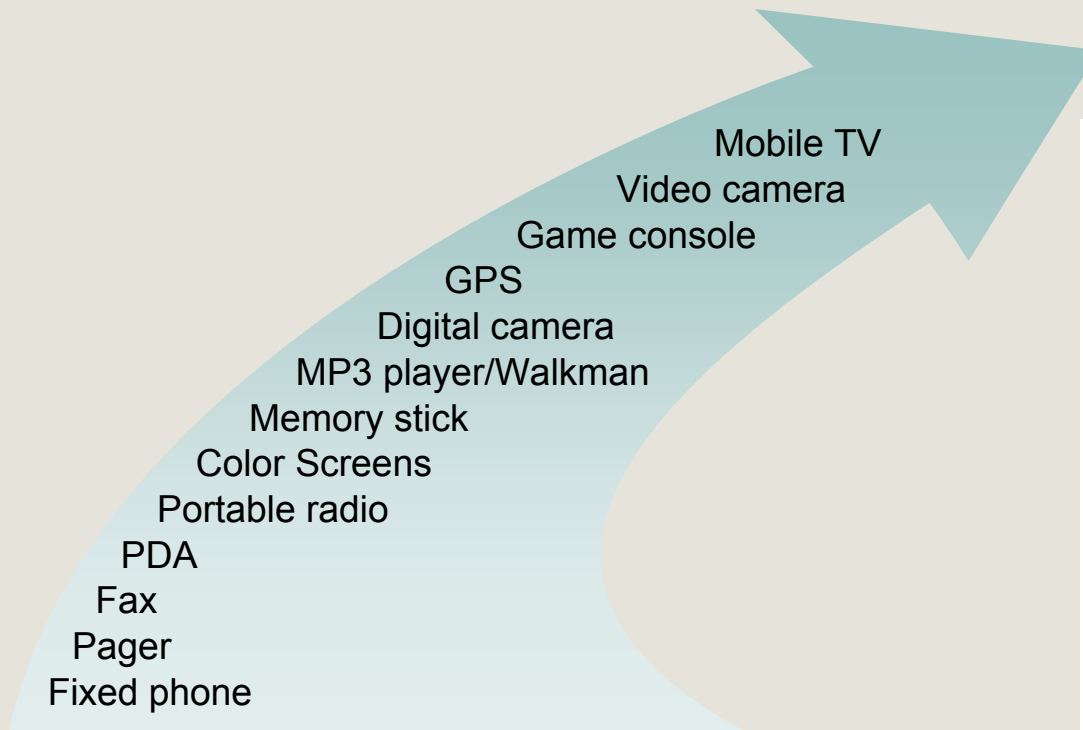


**DV Club - RTP**  
**Angela Hopkins**  
**Ericsson Mobile Platforms**  
**September 07, 2007**

# The Mobile Handset

Embracing and embedding feature after feature



**Communication, Entertainment,  
Transaction & Navigation center**



**Personal Communications  
& Content center:  
Voice, SMS, MMS, e-mail, etc**

# Digital BB ASIC

Multi-Site IP Development  
Sweden, US, Japan



- Block/Subsystem Level Verification
  - IP (CPU/Peripherals, Multi-Media, Modem)
- ASIC Level Verification
  - FPGA validation
  - HW/SW Co-verification

## Block/Subsystem IP Integration

- ~120 IP Blocks delivered for ASIC Integration.
  - Internal IP
  - External IP (3<sup>rd</sup> Party providers)
- Checkpoint criteria for Block quality (RTL and verification status).

## ASIC Design Environment

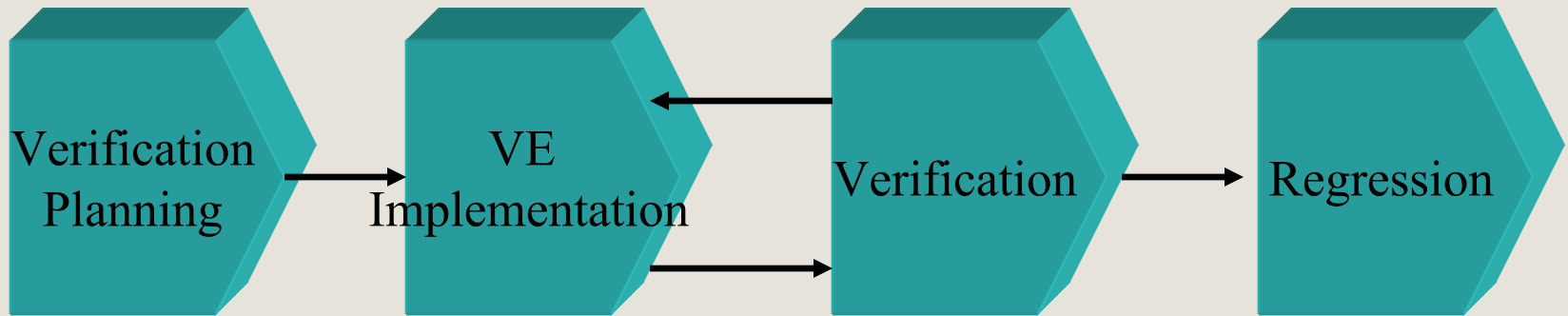
- Specman – Development environment for random-constrained verification.
- vManager – Regression engine.
- Applied to Key IP in all Subsystems.

# ASIC Design Environment

- Common standardization of VE (SUE).
- Libraries, packages and components.
- Directory structure for verification related files.
- Startup scripts and GUIs for interactive simulation and regression tests.

VE = Verification Environment

# Block/Subsystem Verification Flow

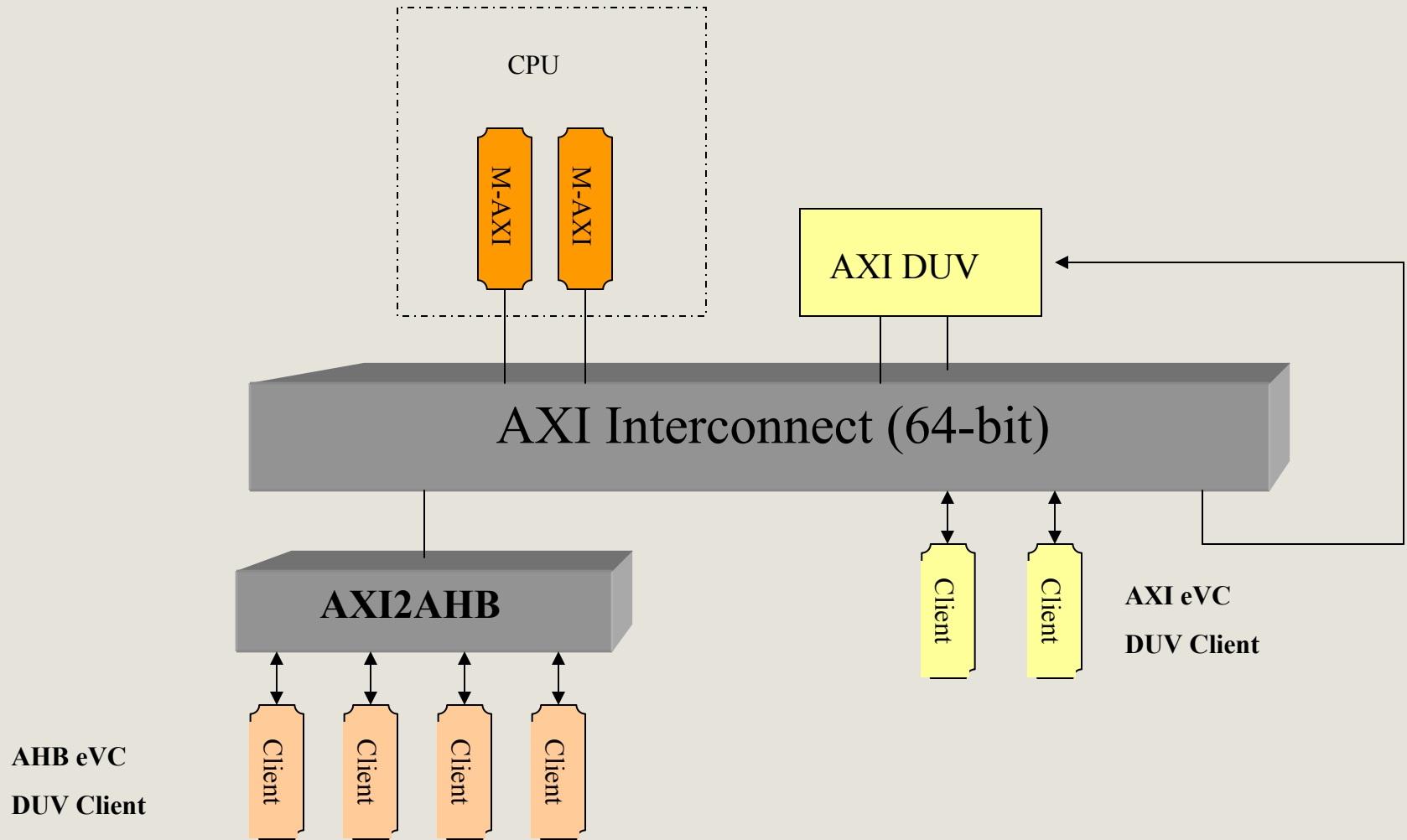


# Verification Planning

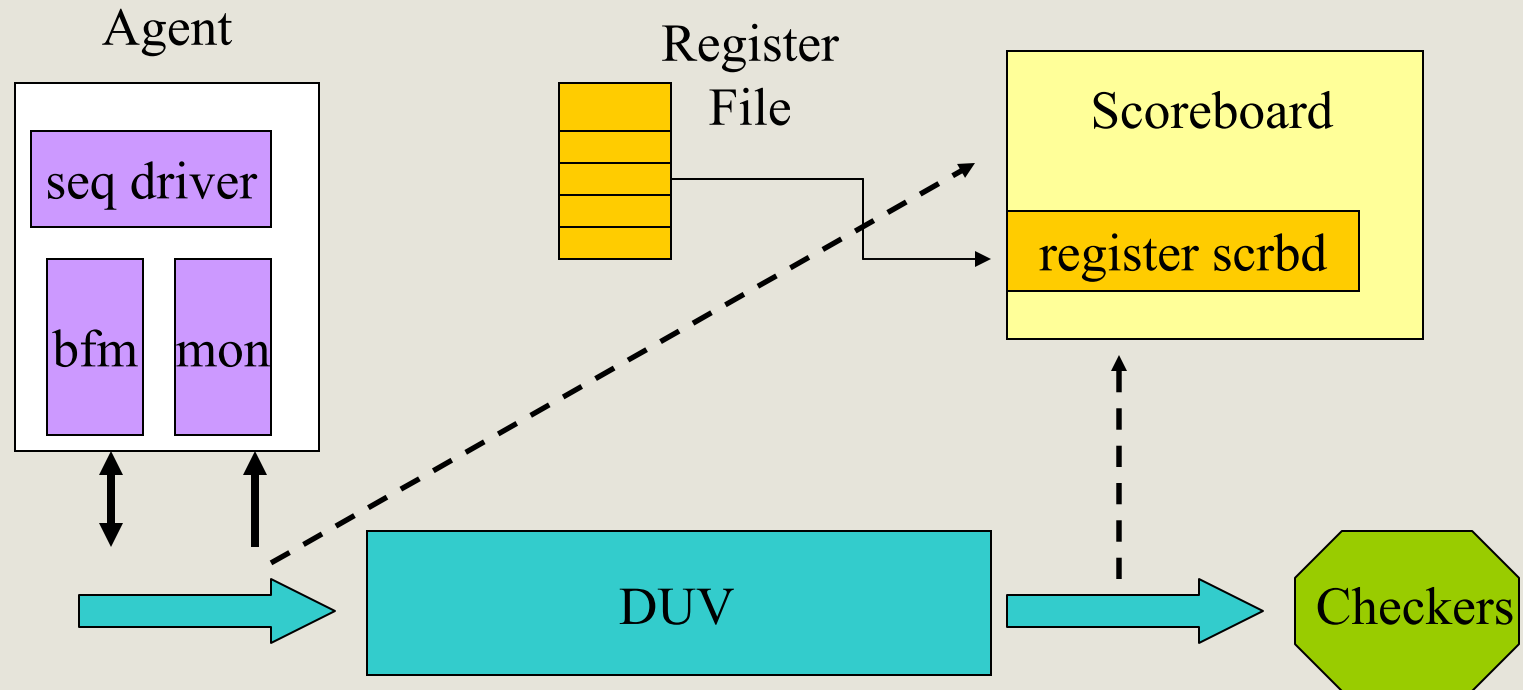


- Develop Verification strategy based on Design features.
- Inputs from RTL, VE, S/W teams.
- Priorities of verification task.

AXI Master DUV Env



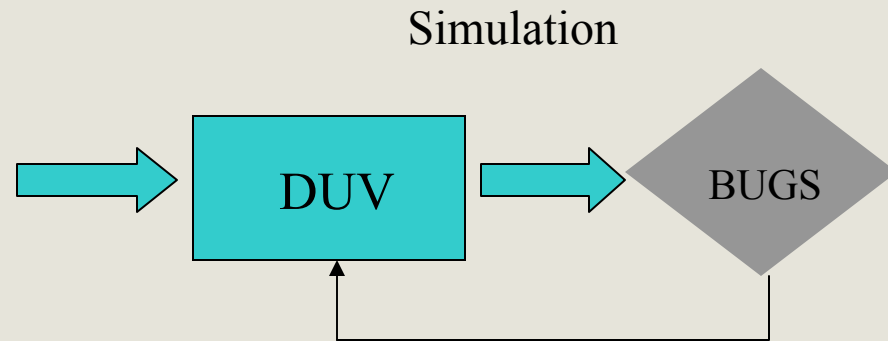
# VE Implementation (I)



## VE Implementation (II)

- Sequences
  - register sequences for DUV configuration
  - traffic generation and testcase scenarios
  - Data items
- Scoreboards, monitors and checkers.
- Coverage
  - coverage items
  - vPlan

# RTL Verification



- Simulation and feedback
- Bug reports and fixes
- Coverage tuning

# Regression

- Batch simulations
- Test ranking – coverage efficiency
- Signoff regression suite – reproducible pass/fail results.

## Block/Subsystem Verification Metrics

- Bug Curve
- Pass/Fail Ratios
- Coverage Grade



## Summary

- Verification planning matters – seek feedback early!
- IP quality improves – better metrics.
- VE implementation takes more effort – schedule appropriately.