Reusing Sequences in a Multi-Language environment using UVM-ML OA

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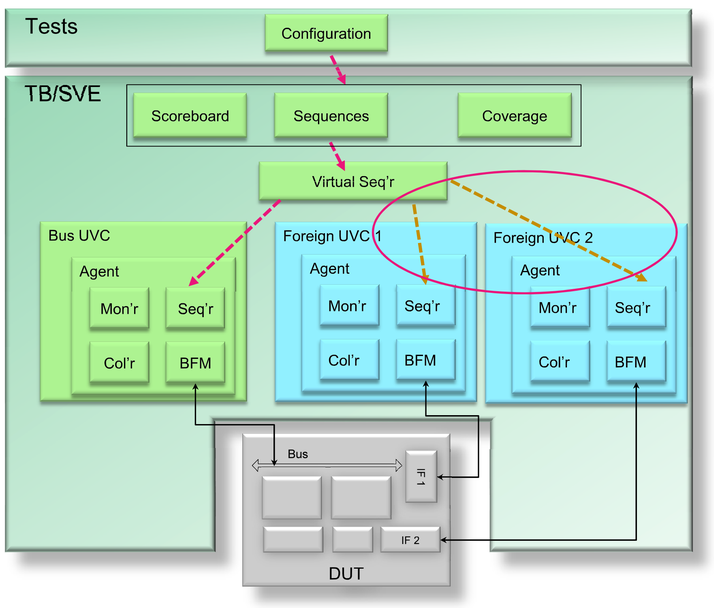
Sequence Reuse in multi-language Verification Environments



How can it be done?

UVM-ML Open Architecture Library

Cadence has provided a broad UVM-ML solution since 2009

+ Provided on OVM first, and then on UVM
+ Enables integration of 3 languages (SV, *e*, SC)
– Part of Cadence® Incisive® Functional Verification Platform

In 2013, Cadence (w/ AMD) expand multi-language offering significantly

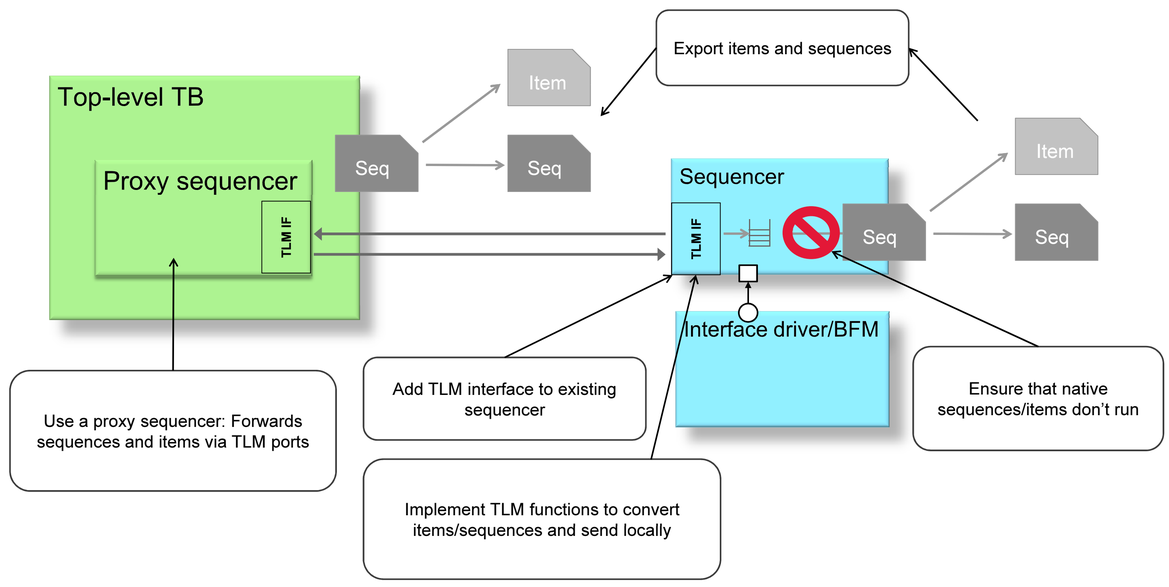
UVM-ML Open Architecture (UVM-ML OA)

- Open source, standardization ready (submitted to MLV-WG for consideration)
- Simulator independent
- Available on Accellera download
- Main features
  - Modular and extensible architecture
  - TLM communication (TLM1 and TLM2)
  - Unified hierarchy solution
  - Multi-language configuration
  - Multi-language sequence layering
  - Coordinated initialization
  - Pre-/post-/runtime phase synchronization

Sequence reuse – Choose Use Model that fits best

Use Model	Controllability	Integration Effort
Side by Side - instantiate VIPs in parallel and configure locally	• No interaction with top level sequencer • Users need to carefully import files to make sure correct sequences are selected	• Least effort
Unified Configuration - use the UVM-ML configuration mechanism to select the default/MAIN sequence	• Only the topmost sequence can be selected => might be sufficient in some cases	• Medium Effort • Users need to use UVM-ML OA library and use unified hierarchy
Unified Control - use UVM-ML proxy sequencer and TLM solution	• Full control for sequences and items • Ability to integrate in virtual sequencer	• High Effort • Requires type mapping for sequences and items

Unified Control – using proxy sequencers and TLM ports



CONCLUSIONS

Sequence reuse can be achieved in multiple ways

+ Trade off between integration effort and top-level controllability of sequences and items

UVM-ML OA library has infrastructure and features to enable users to chose different sequence reuse use models

- Multi-language configuration can be used for low controllability solution
- Multi-language TLM communication and proxy sequencer types/templates can be used to achieve fine grained control of sequence and sequence items

REFERENCES

[1] UVM-ML Open Architecture (Overview and download)
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[2] B. Sniderman, V Yankelevich, "Multi-Language Verification: Solutions for Real World Problems", DVCon 2014, San Jose, CA
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