# High-Performance UVM Verification IP for SpaceWire Codec

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# OUTLINE

- Introduction
- UVM-based SpaceWire Codec Twin Model
- UVM-based Verification Environment Architecture
- Verification Campaign
- UVM-based Approach Advantages
- Results and Conclusions
- Q&A

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Promotion of UVM-based Verification Approach

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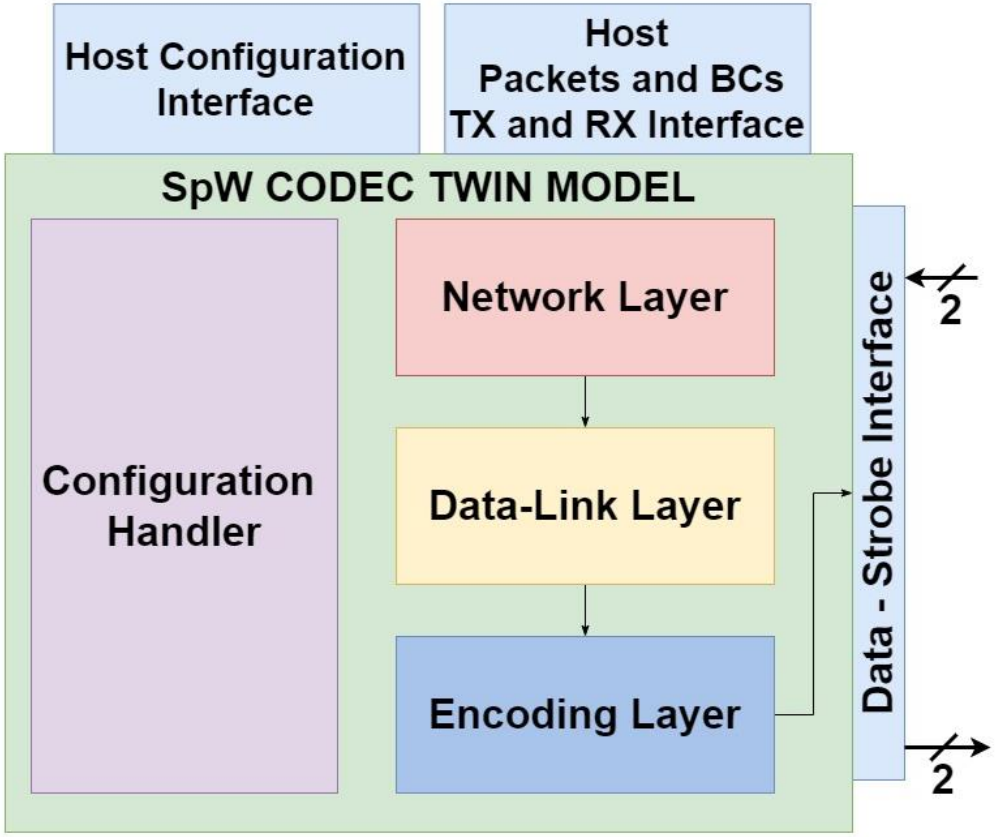

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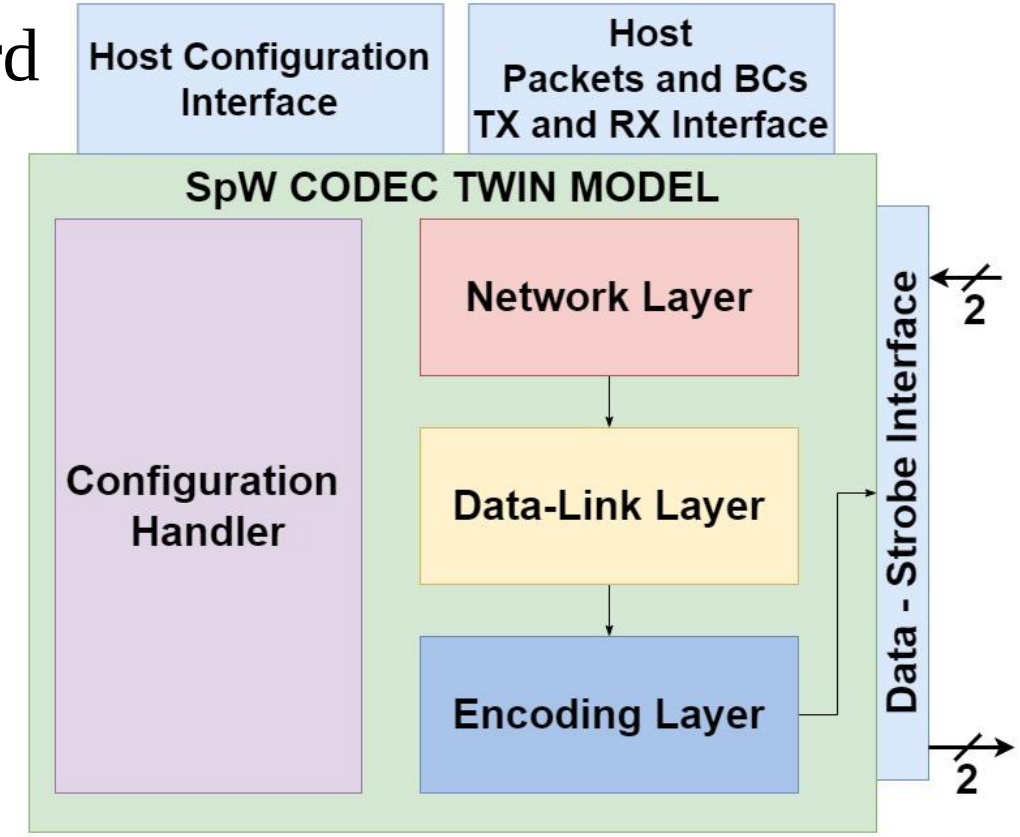

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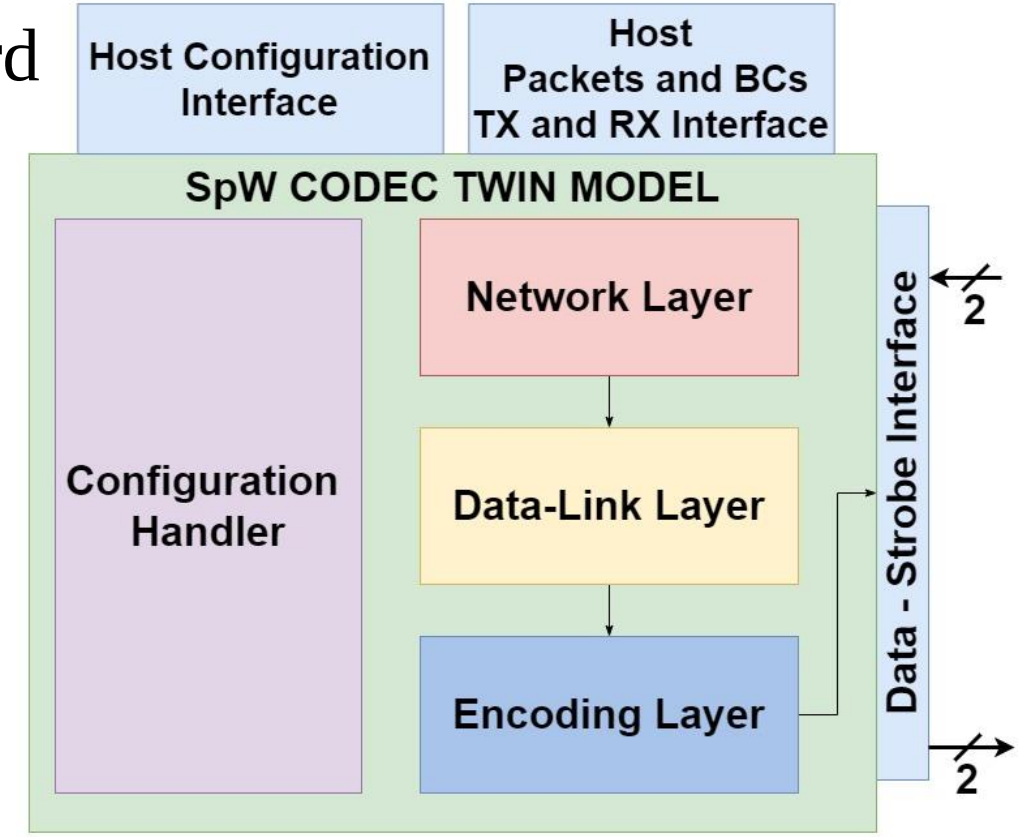

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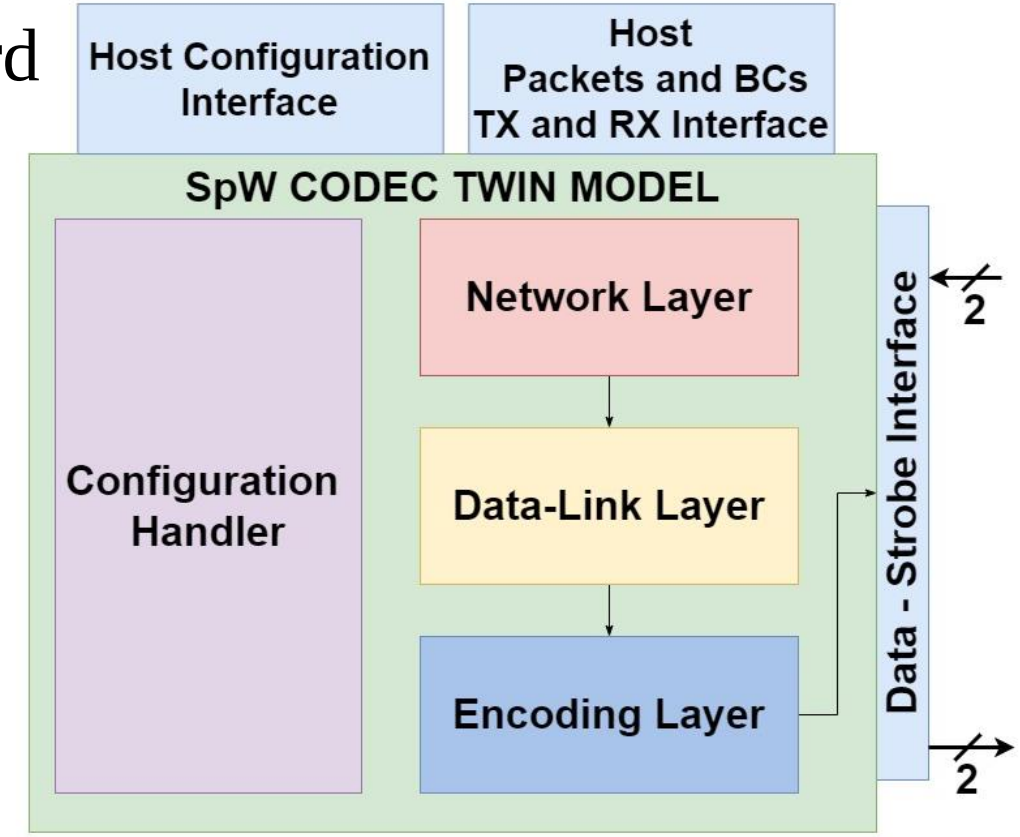

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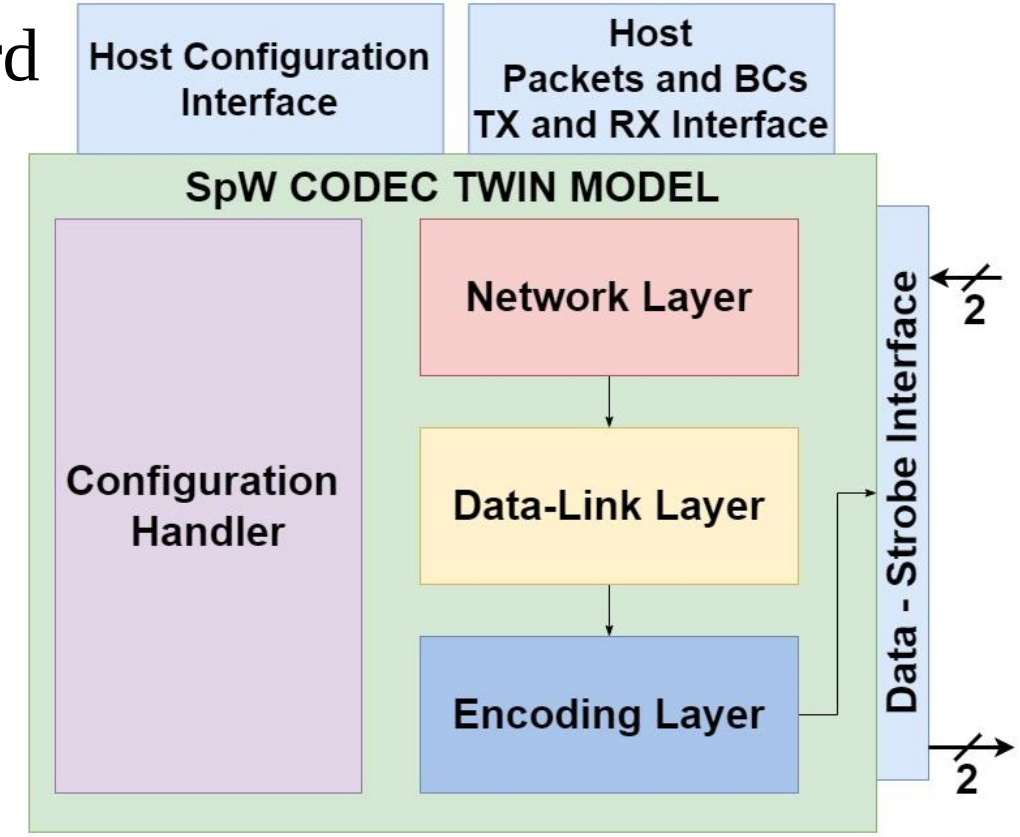

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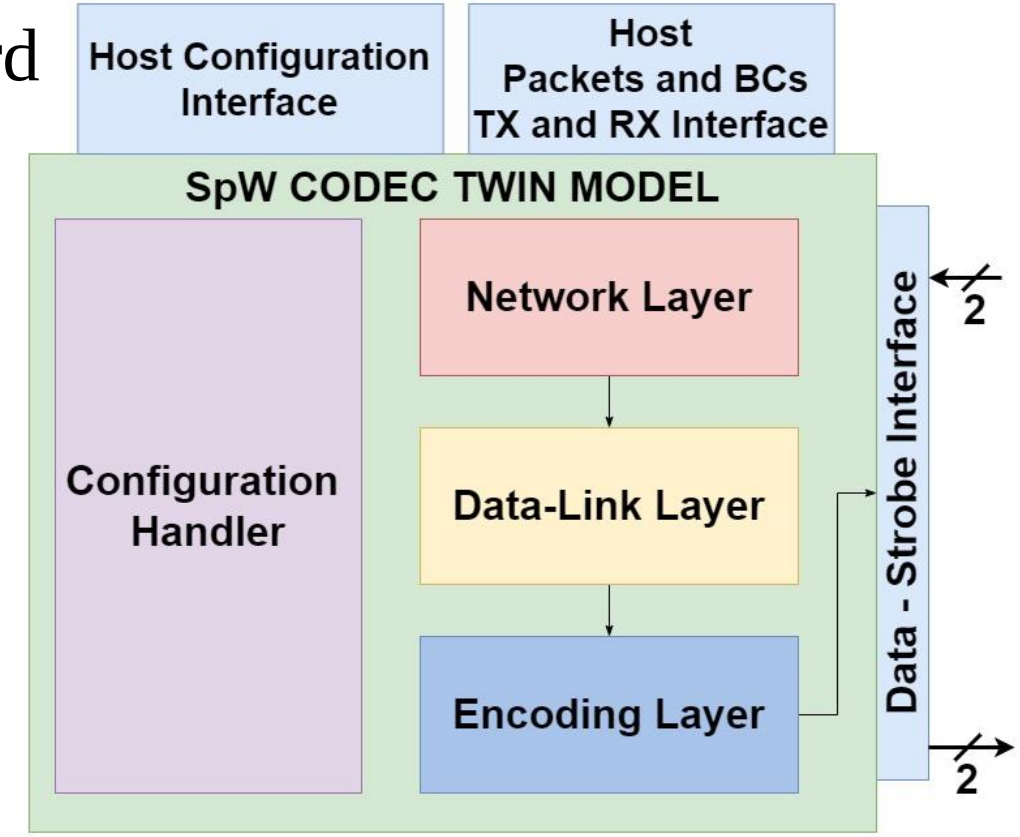
- Data-Strobe interface
  - Communication with DUT or any system with SpW interface



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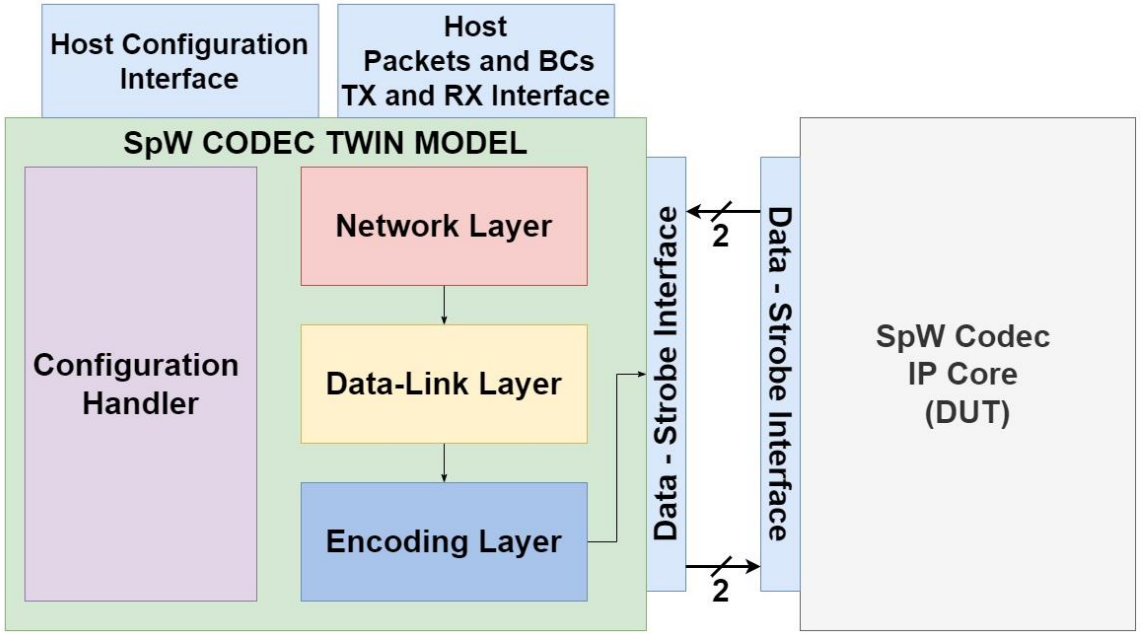

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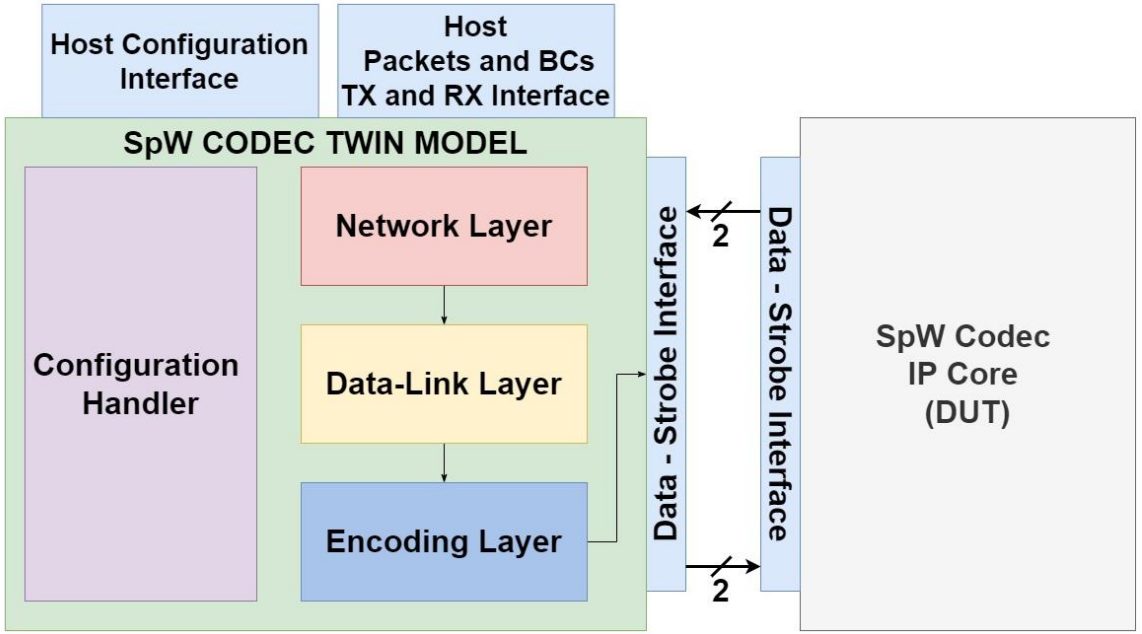

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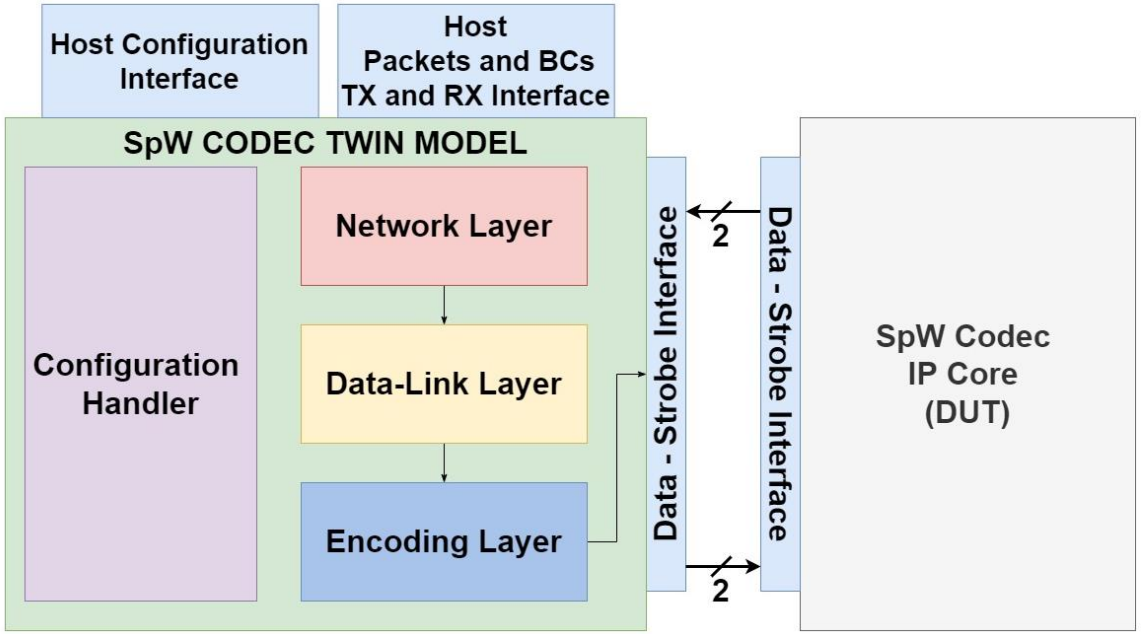

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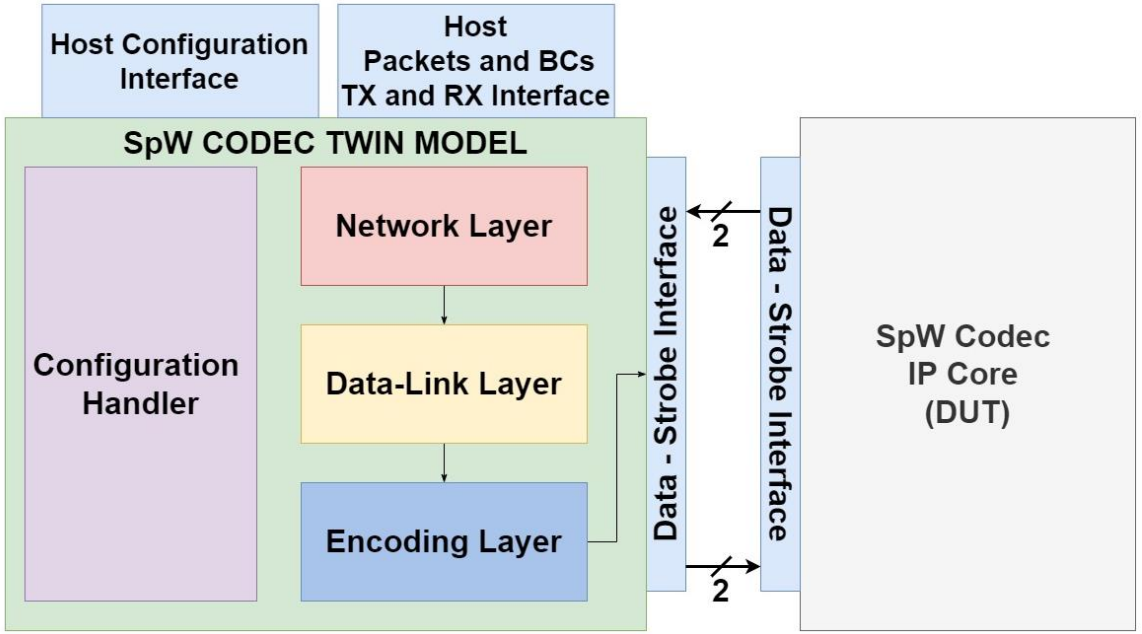

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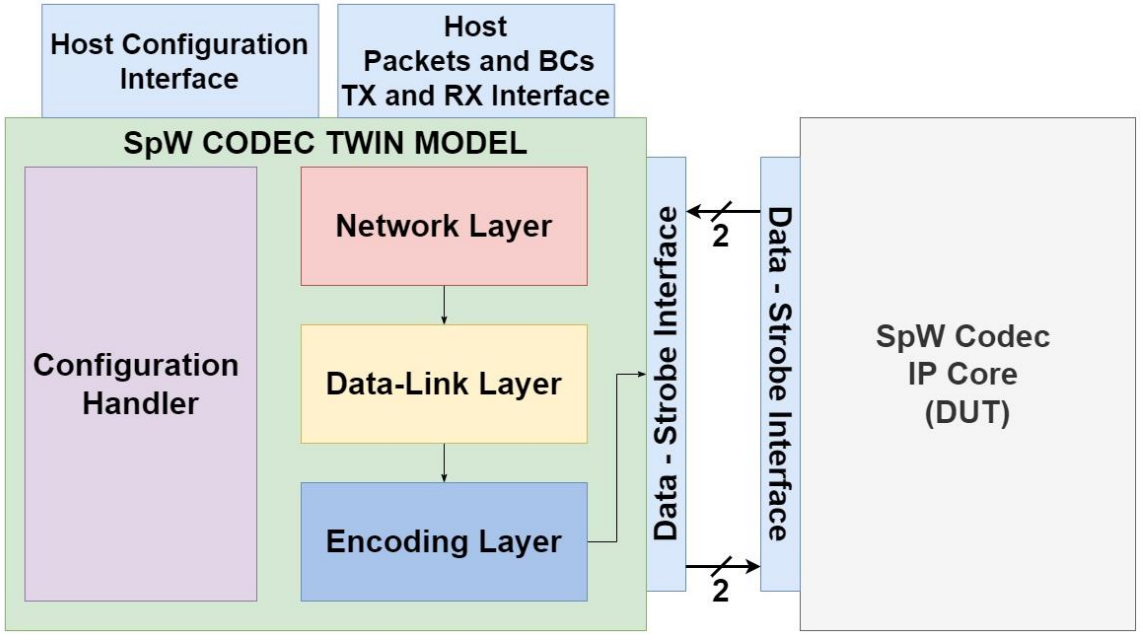

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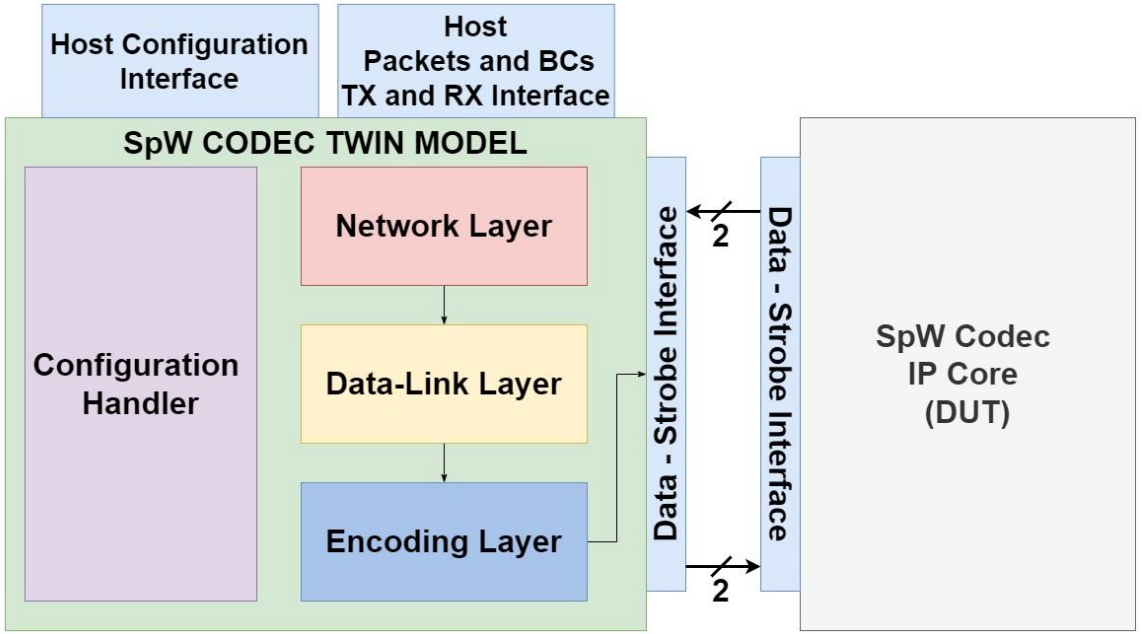

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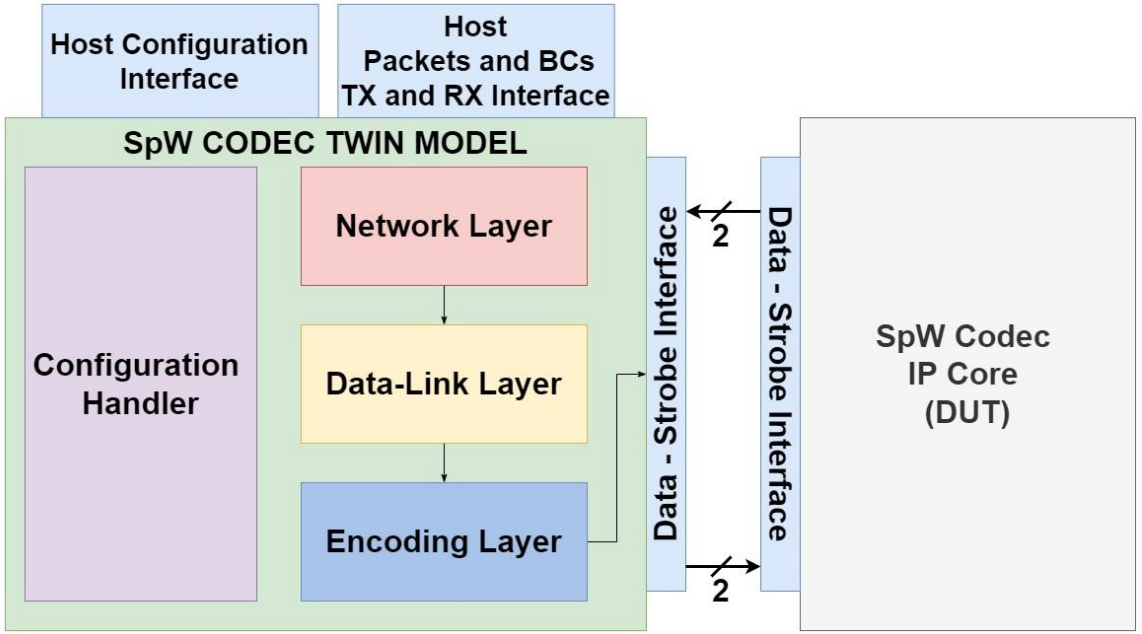
  - Only packets and BCs to be defined



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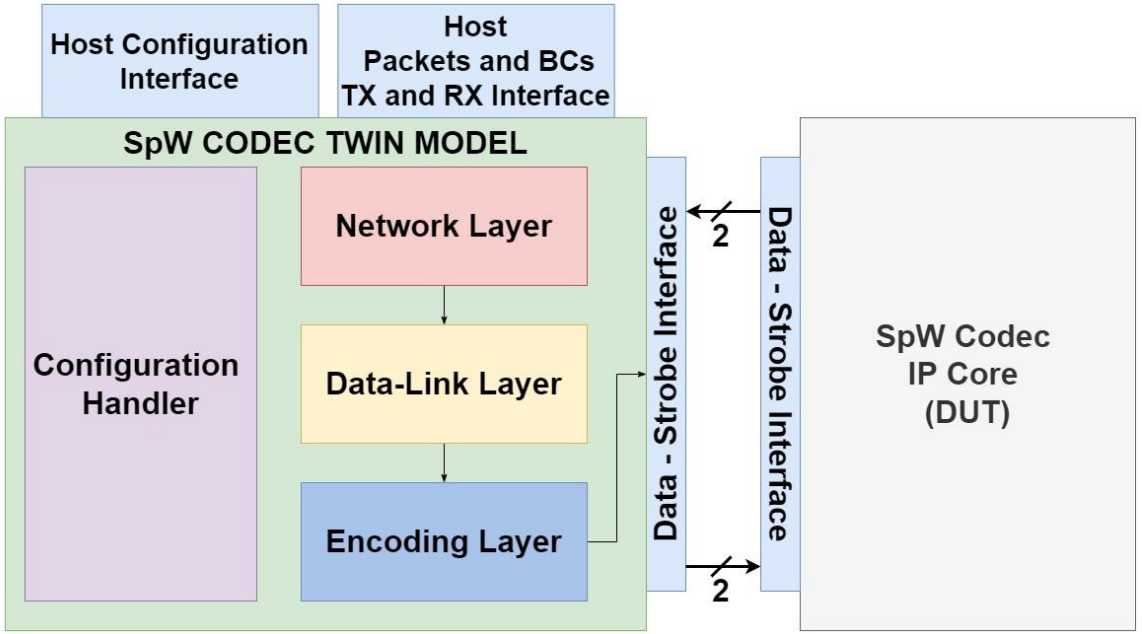


Significant Simplification of the Verification Process
Significant Reduction in Verification Time and Cost

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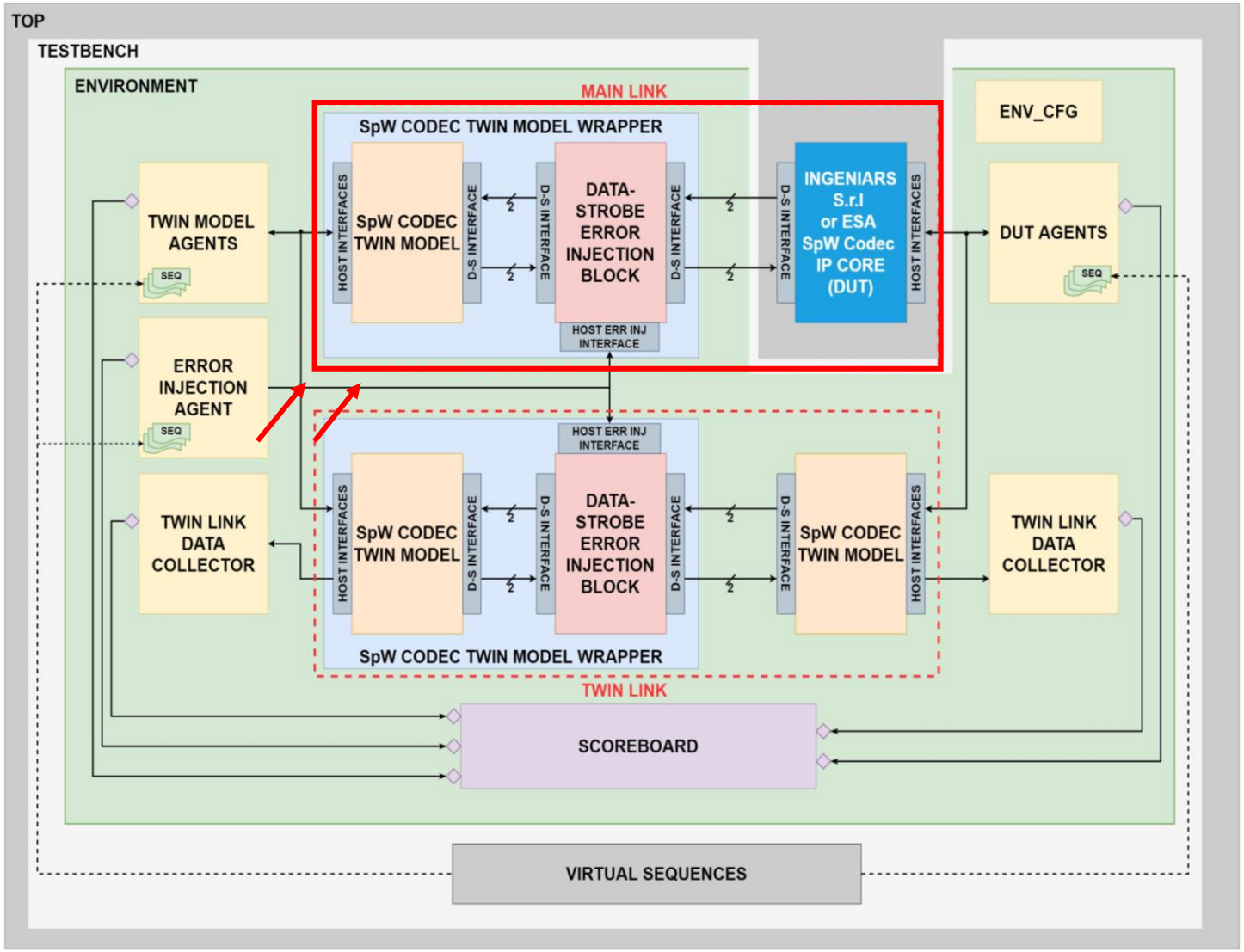
  - Communication between DUT and Twin Model



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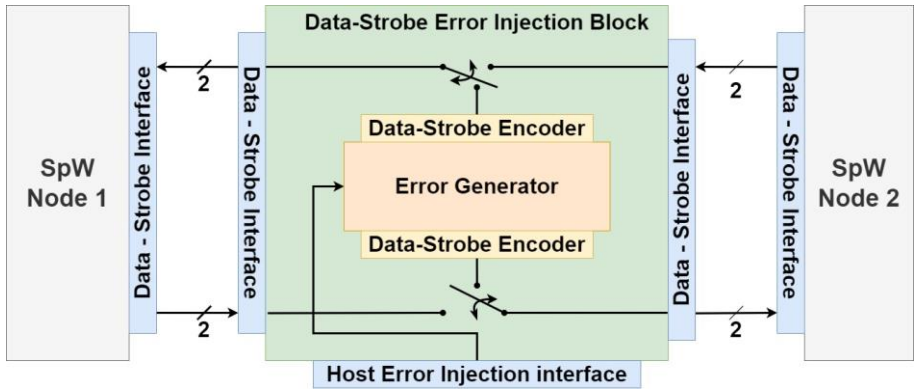


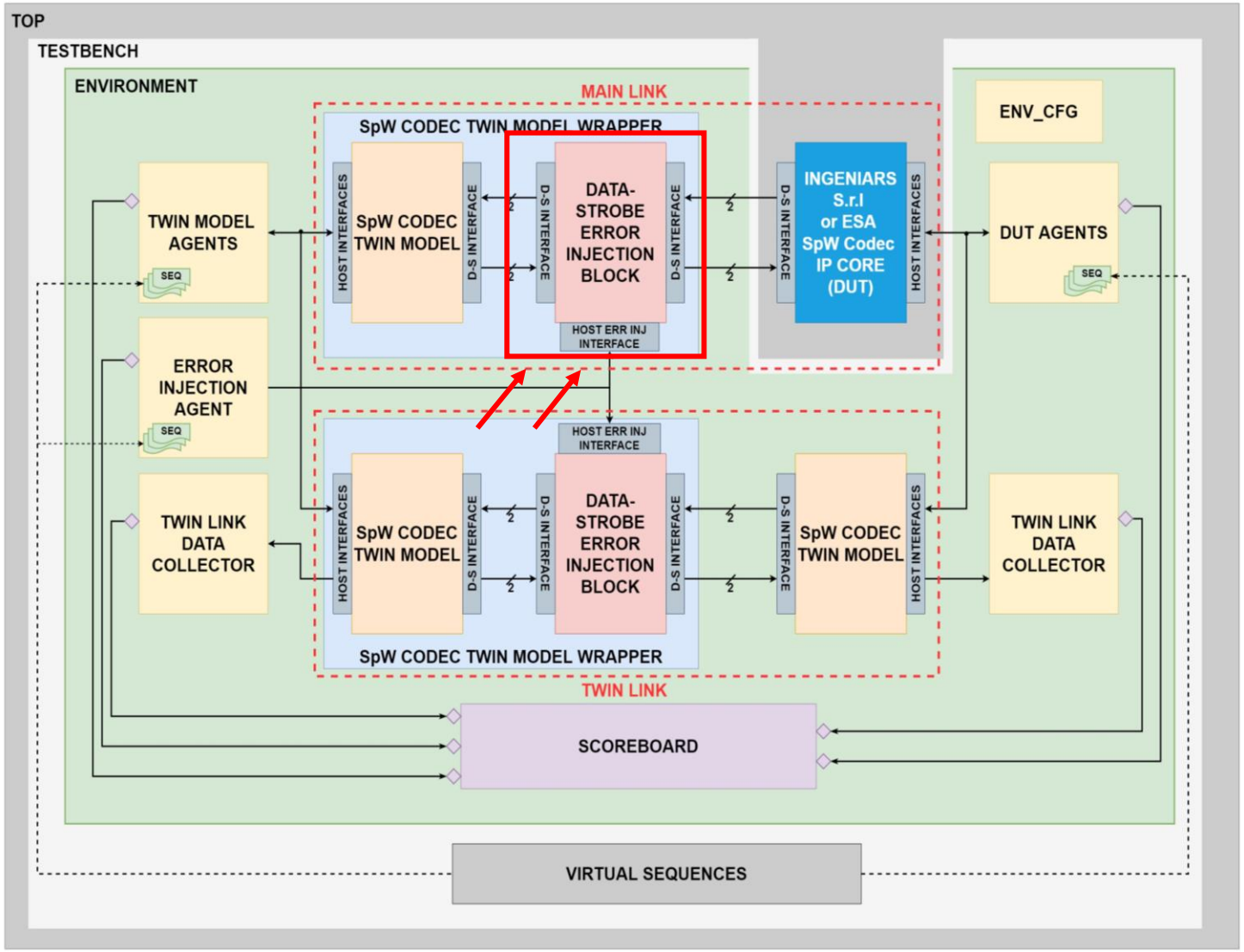

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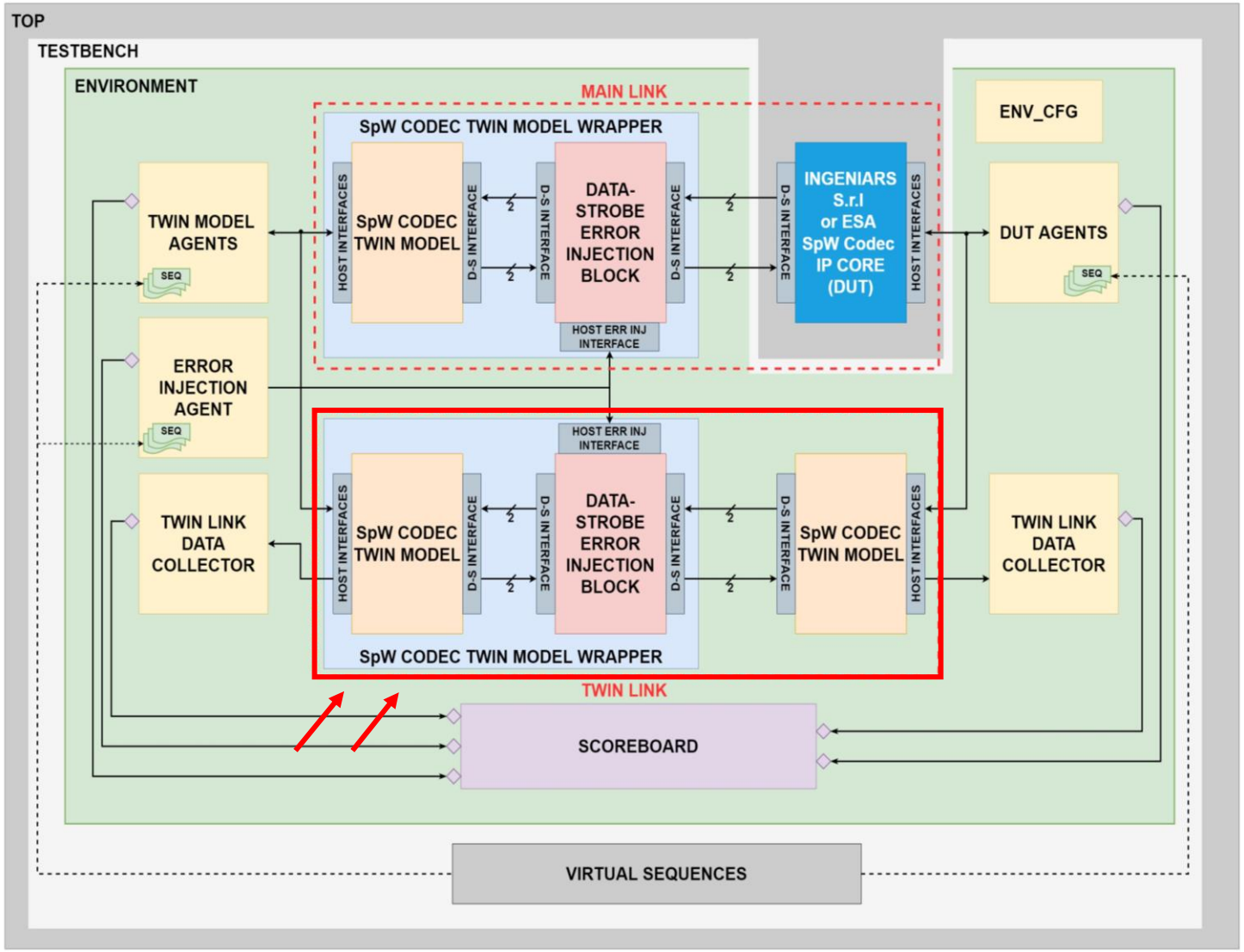

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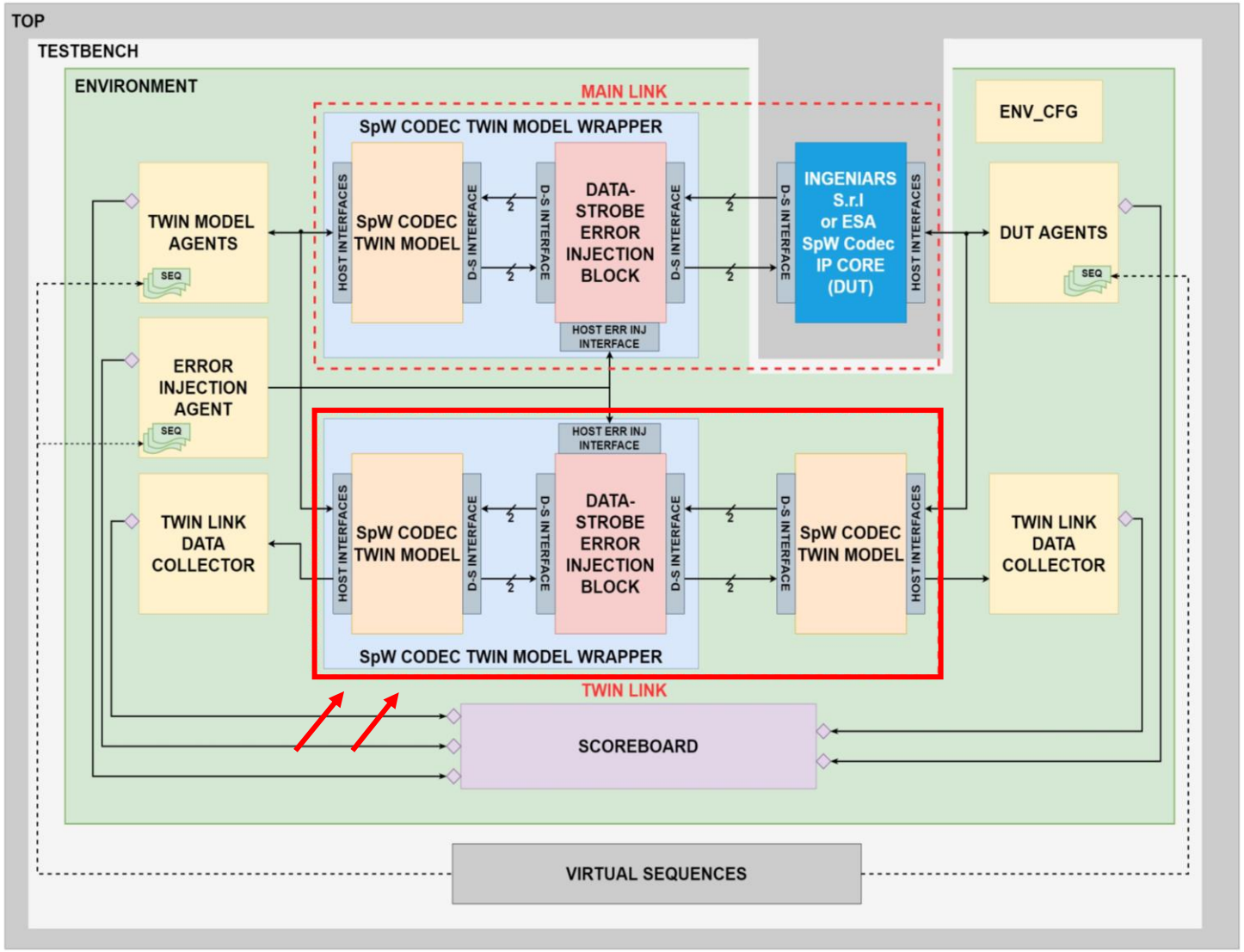

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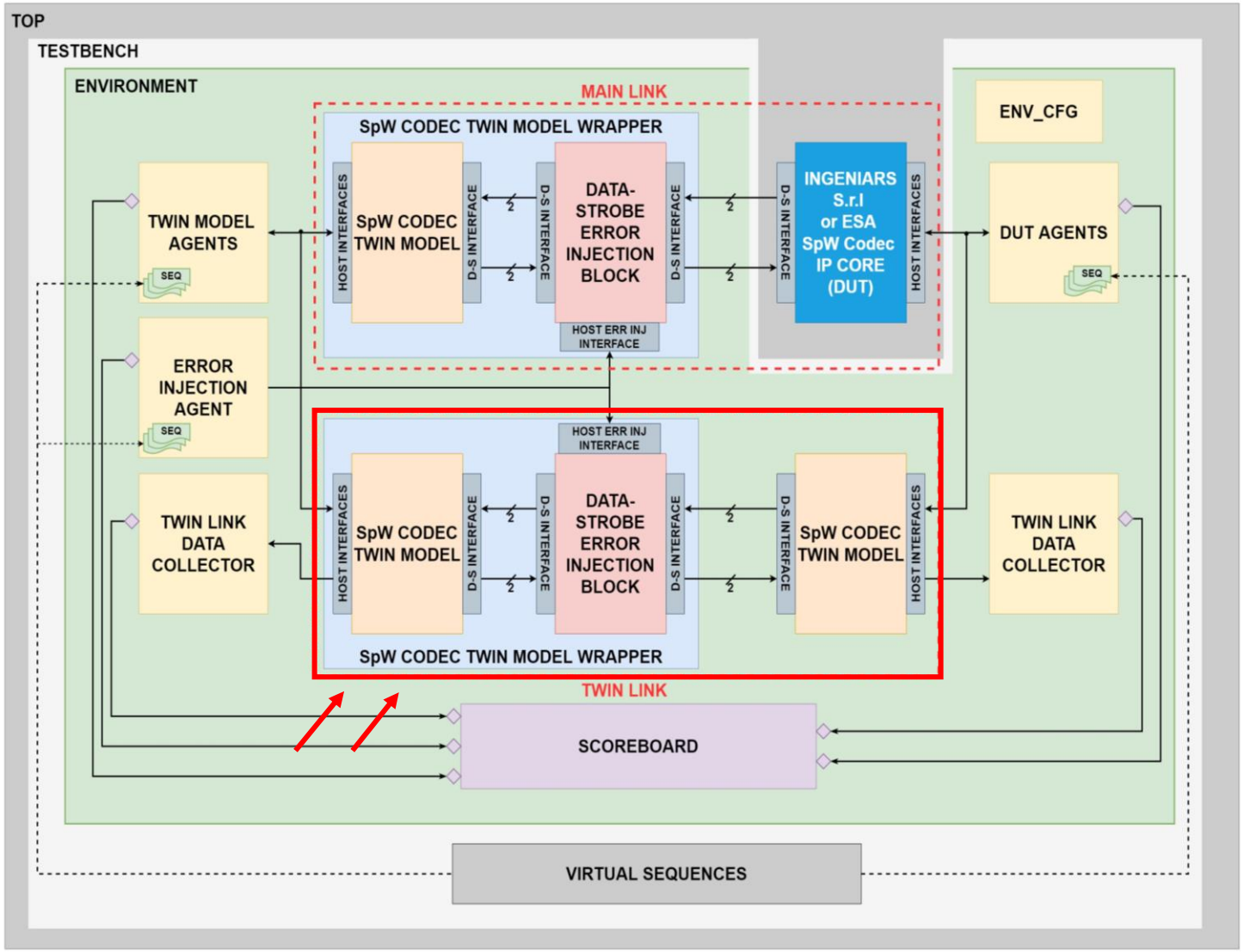

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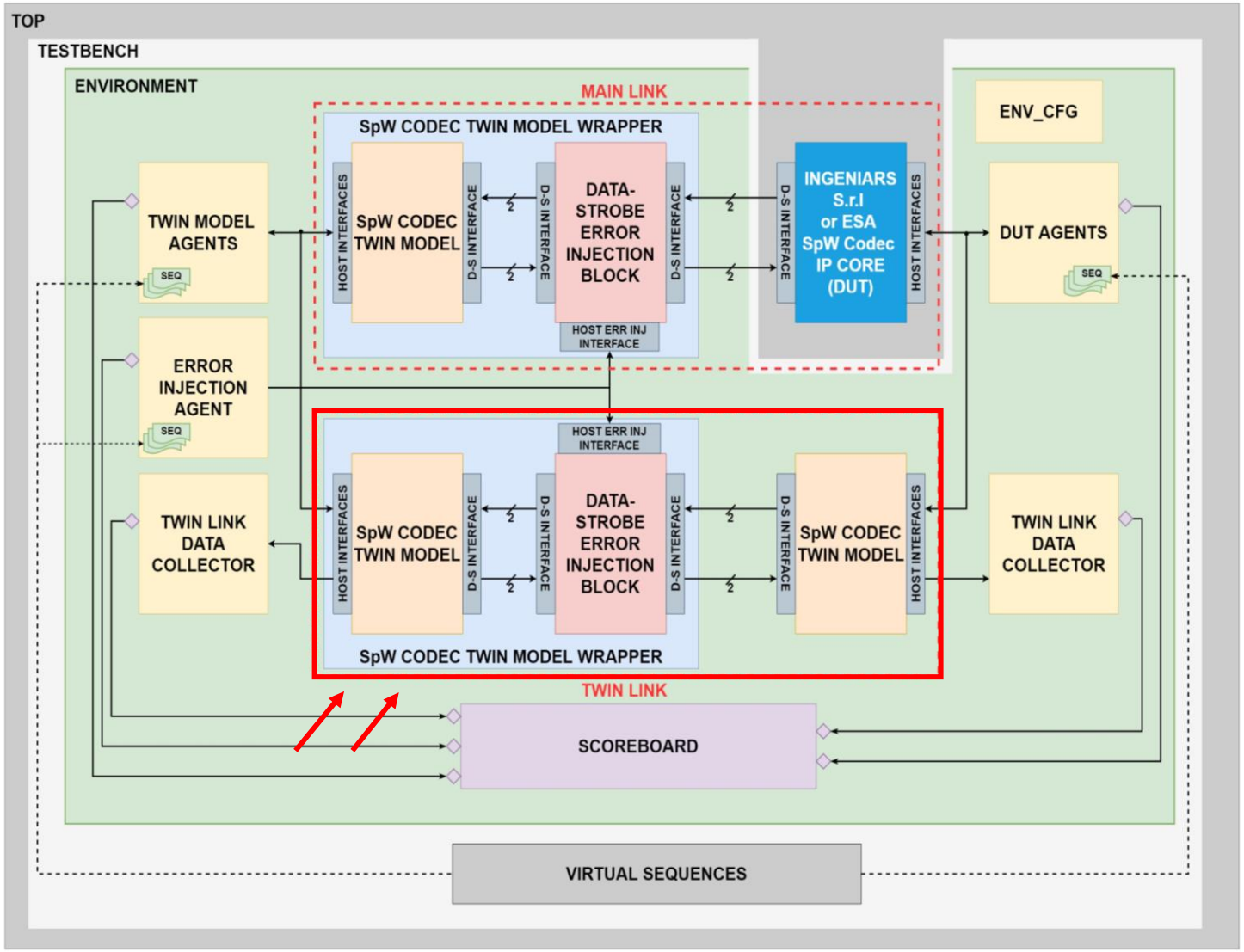
**Support automated verification of all possible simulation scenarios**



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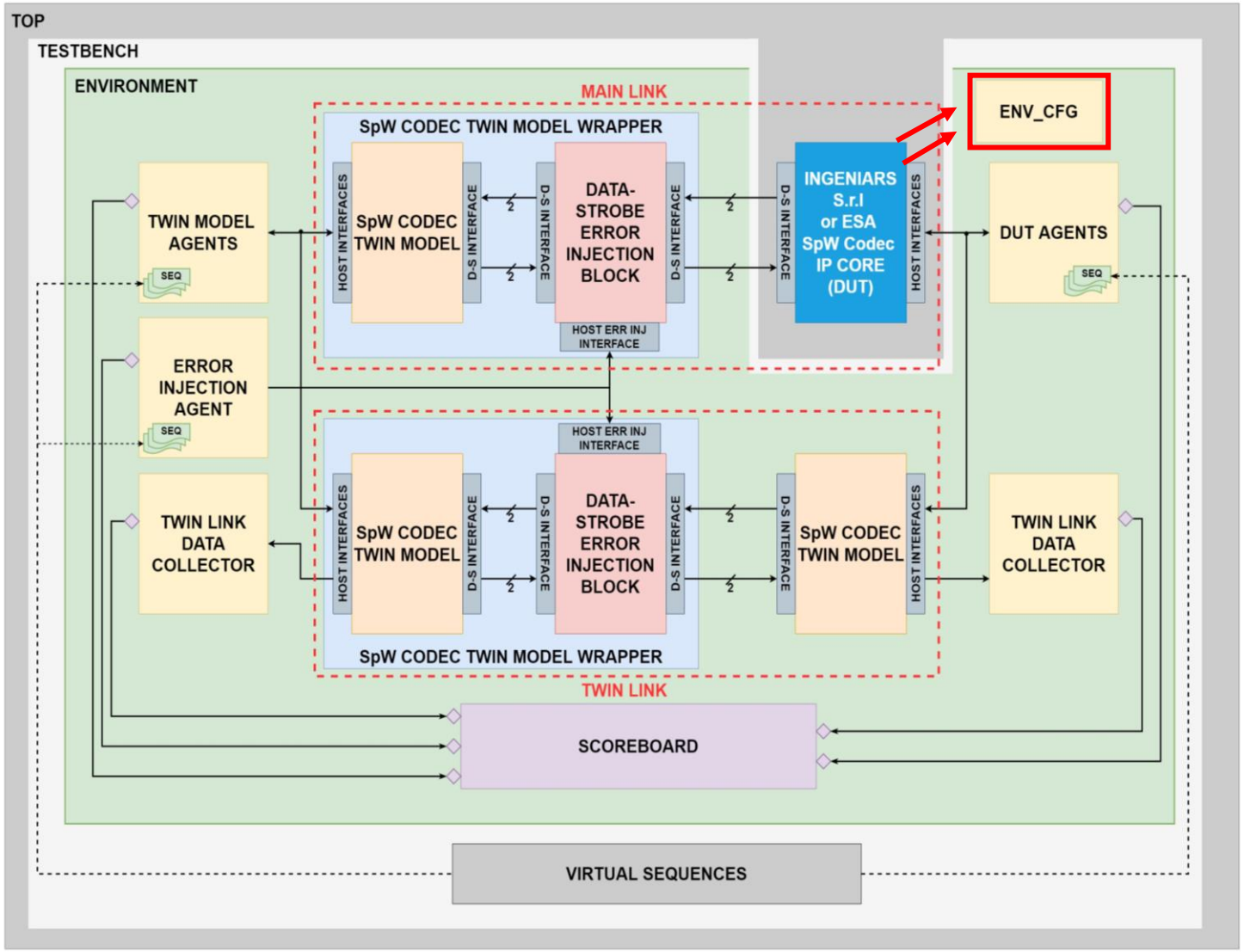

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- Agents
  - DUT
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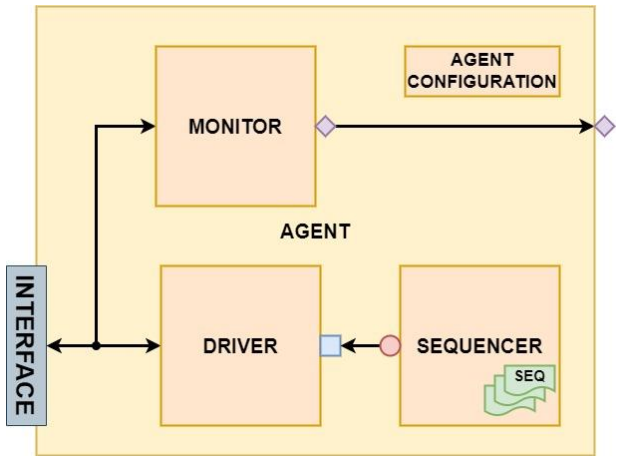
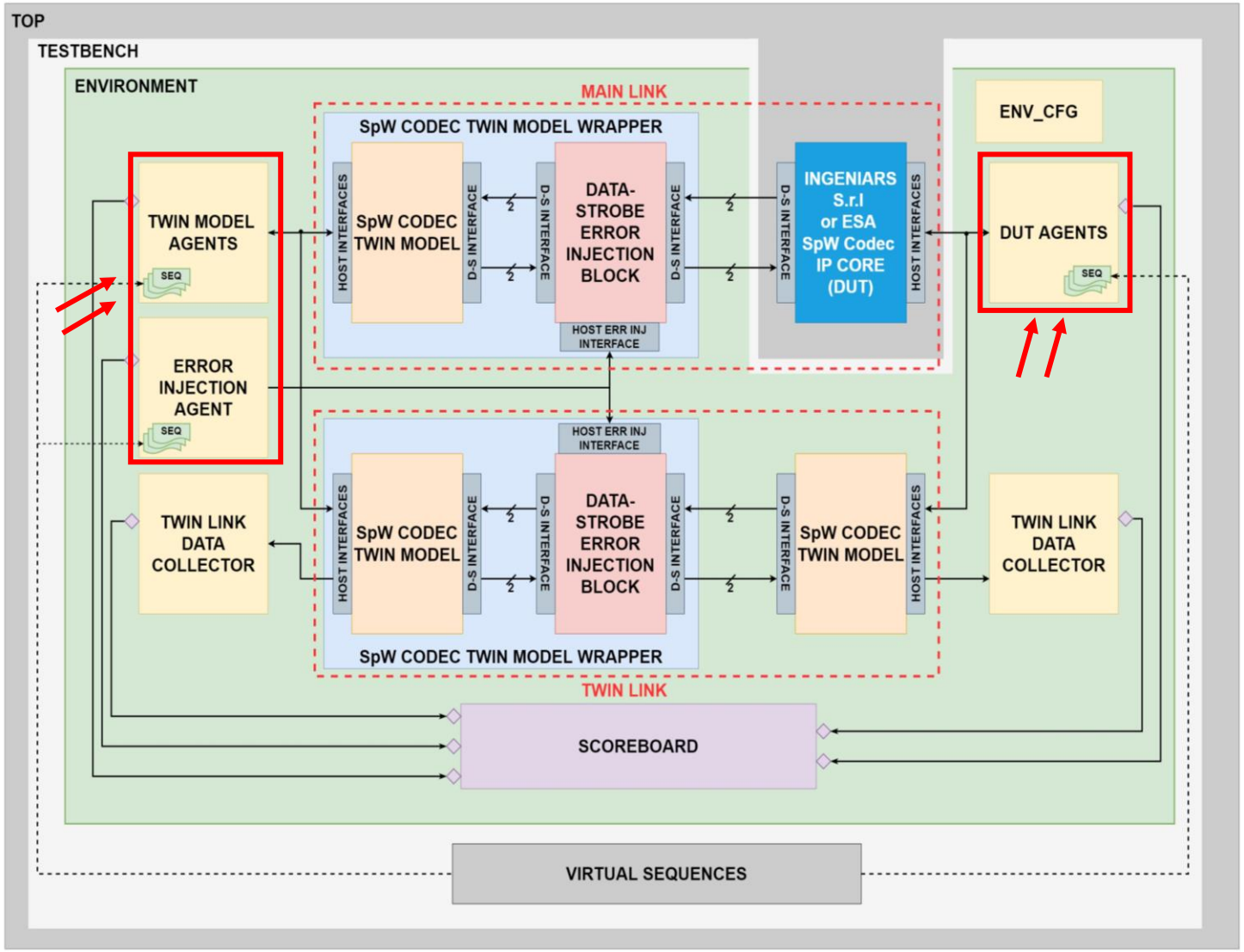
  - Error Injection



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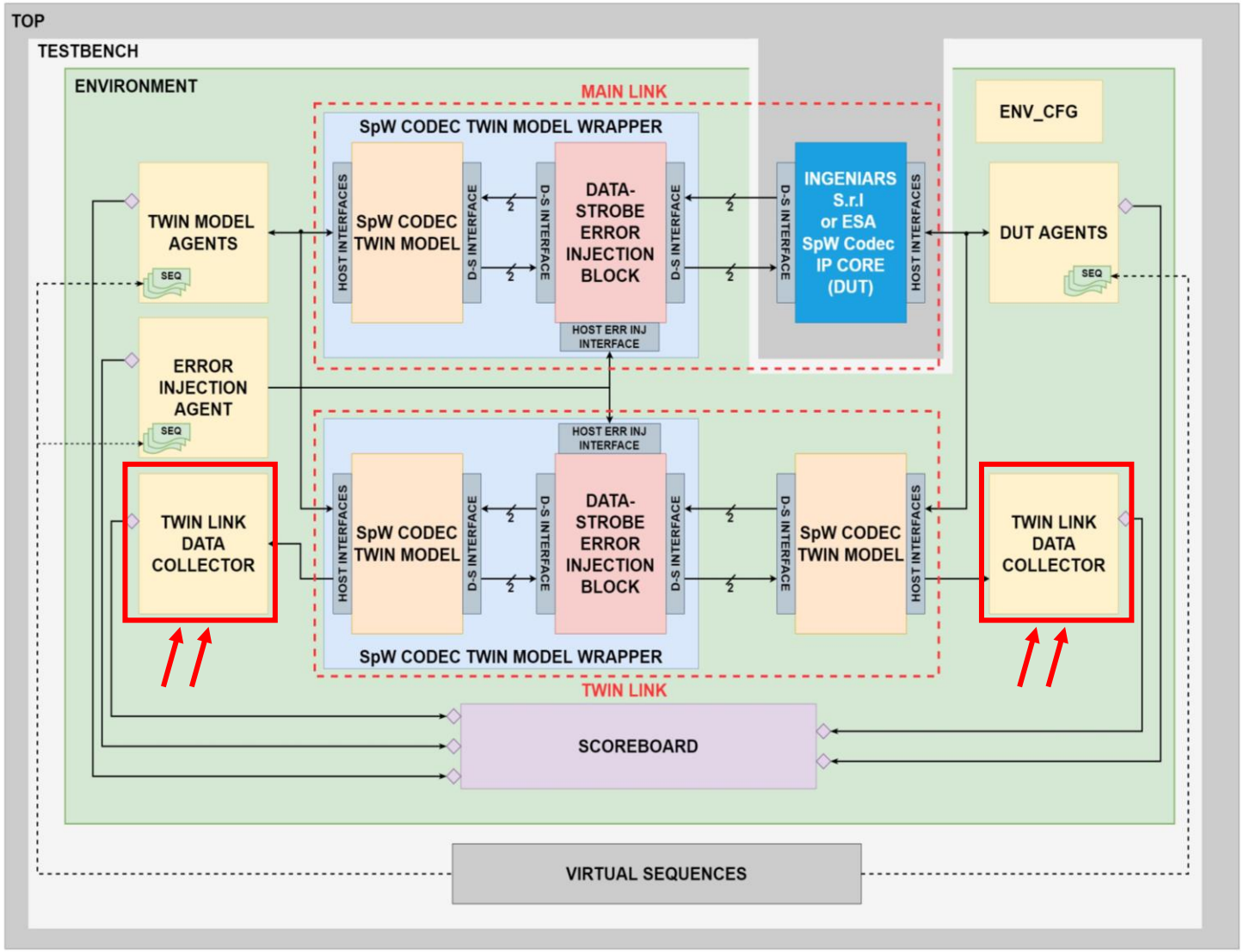

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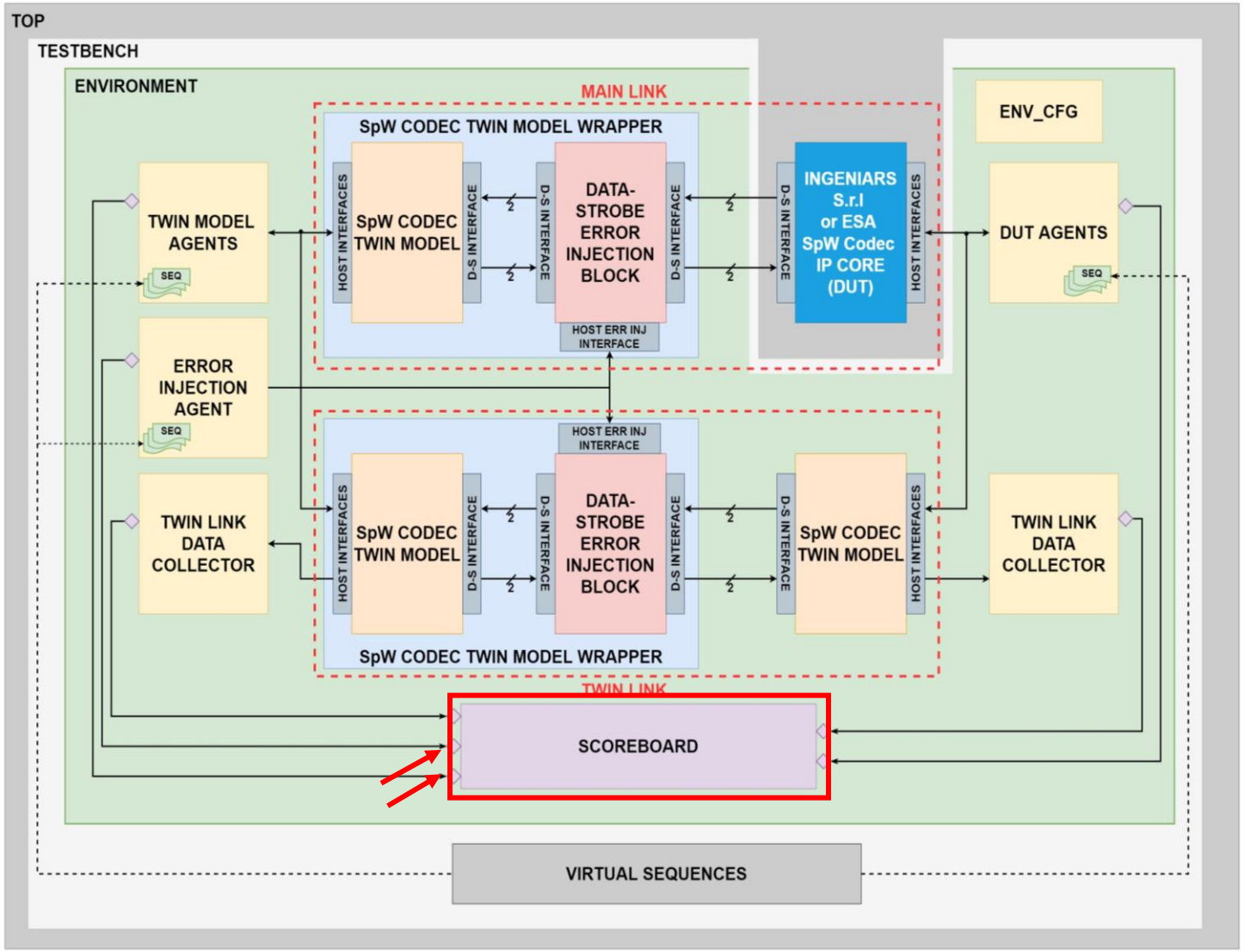

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| DUT | Compliance with SpW Standard | Compliance with SpW Standard Rev.1 | Code Coverage – Statements | Code Coverage - Branches |
|---|---|---|---|---|
| IngeniArs S.r.l. SpW Codec IP Core | ✓ | ✓ | 96.05% | 92.08% |
| ESA SpW Codec IP Core | ✓ | X | 95.24% | 91.72% |

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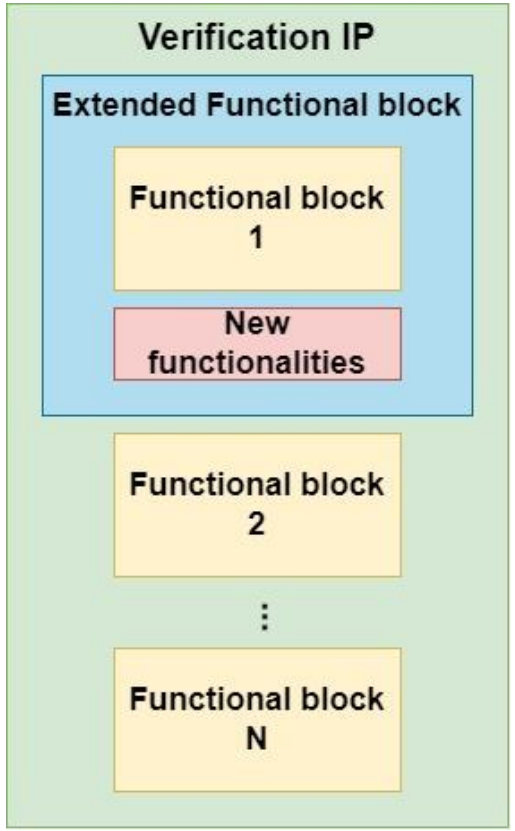

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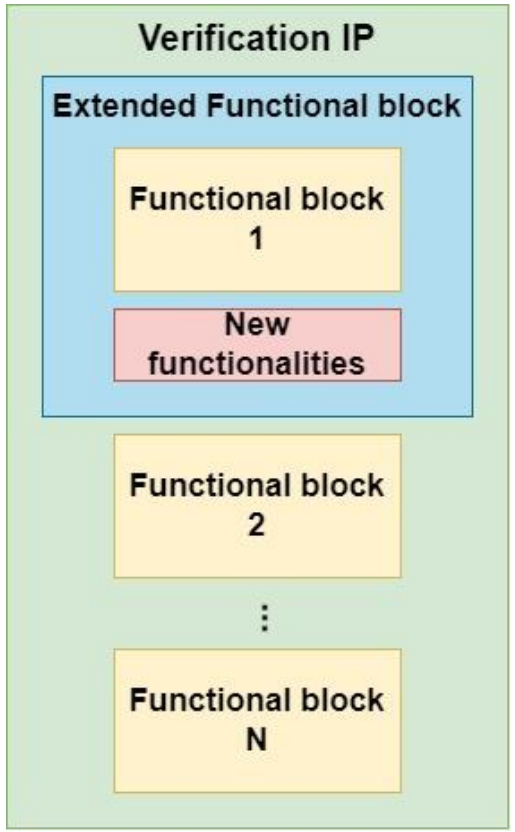
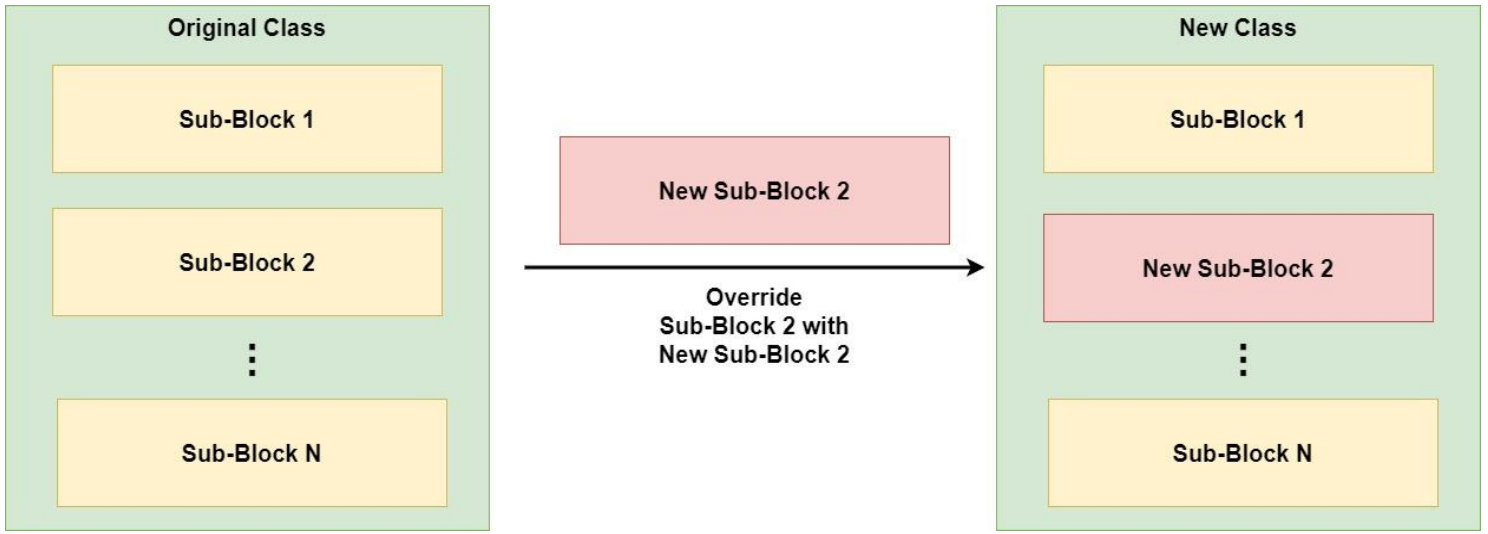
  - ➢Update functionalities (override)



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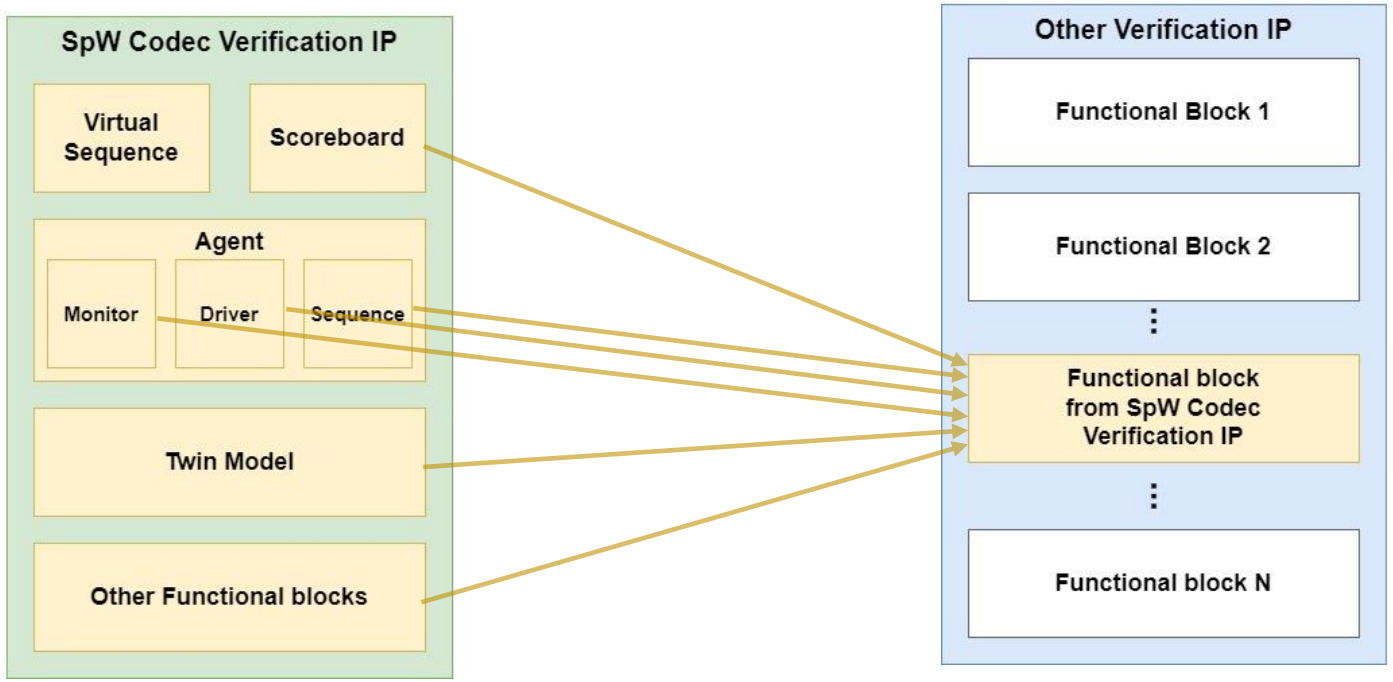

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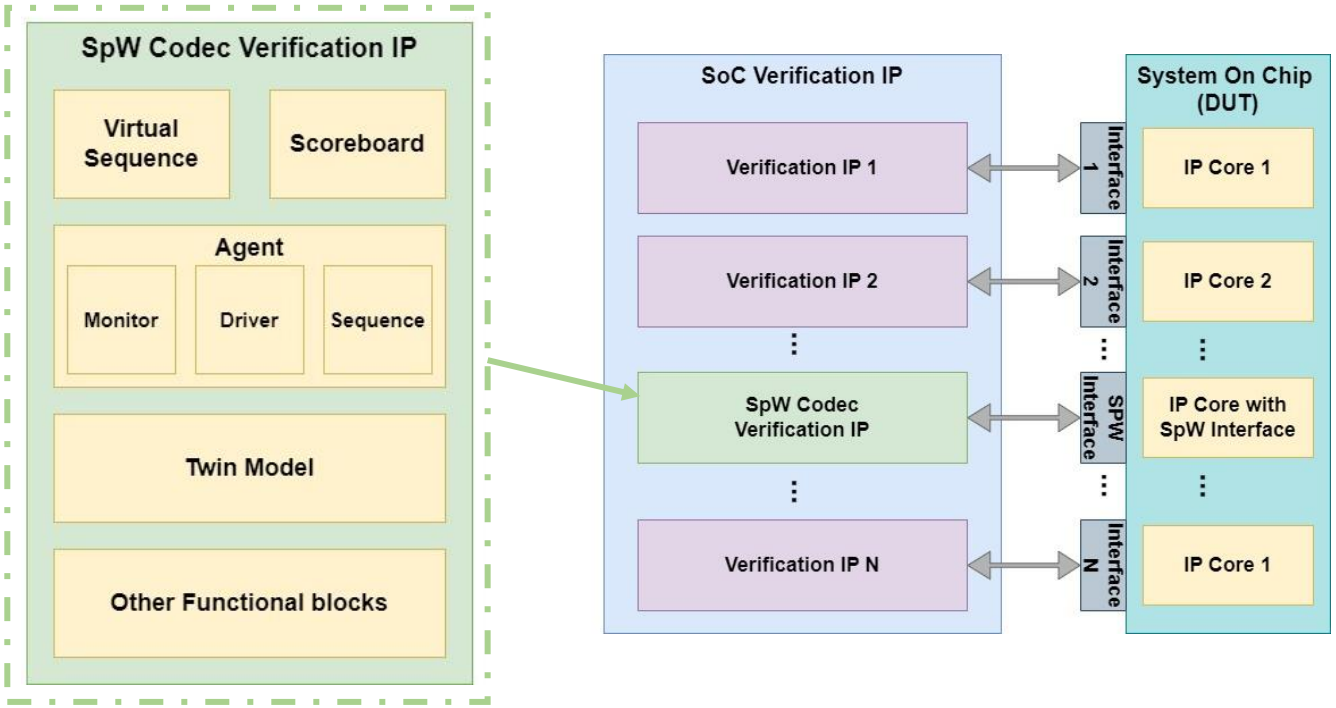


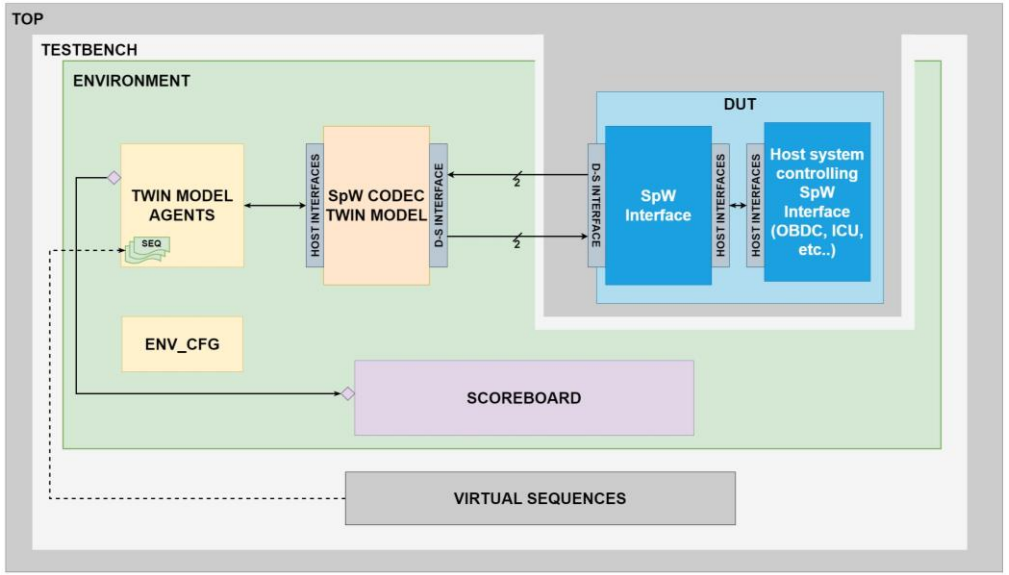

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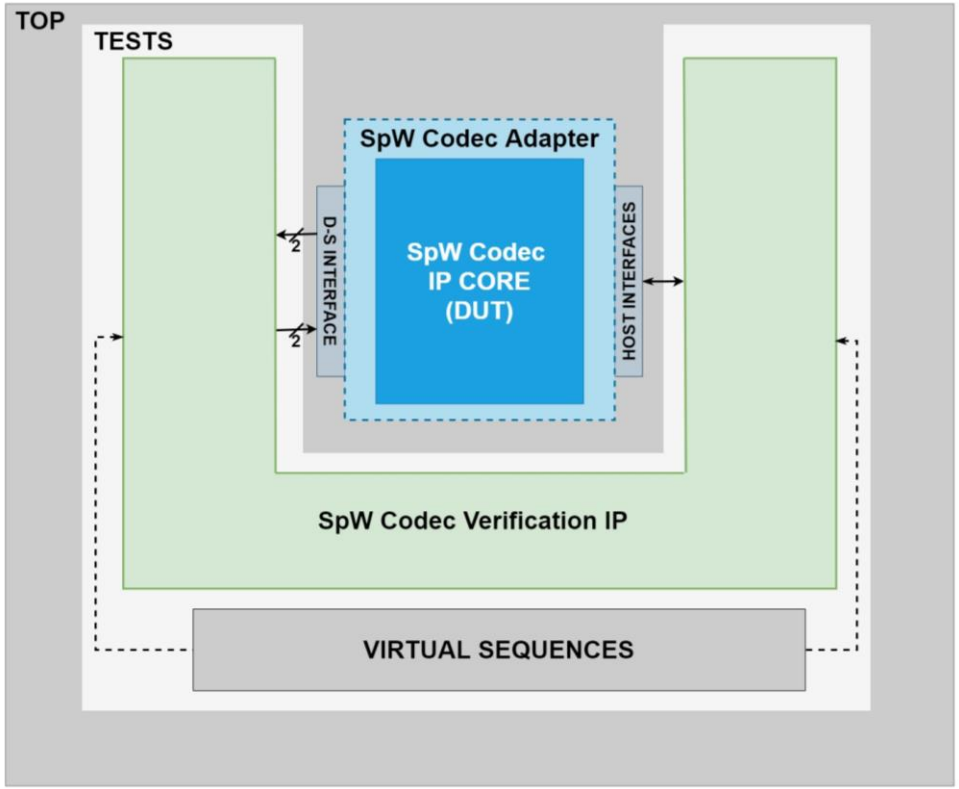

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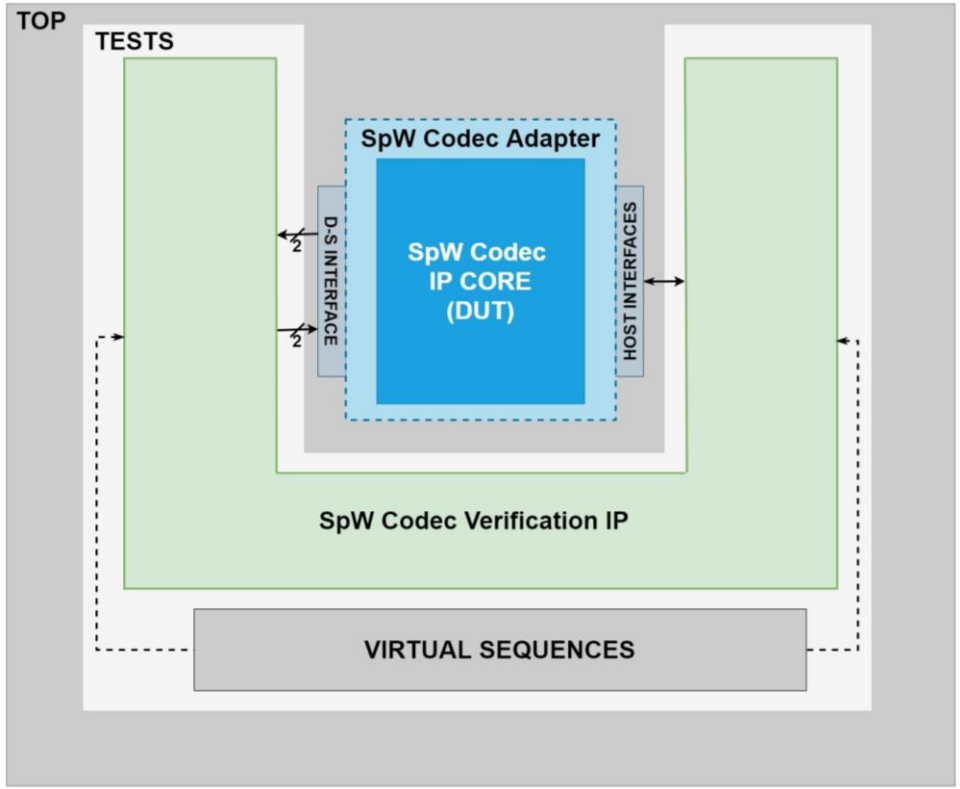

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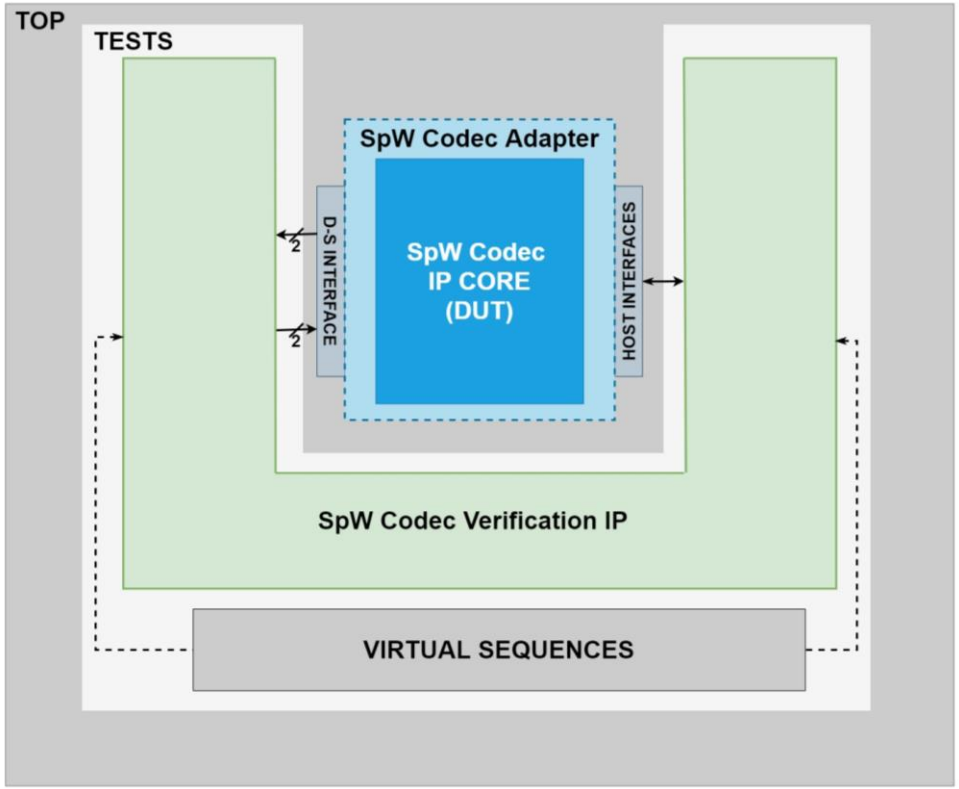

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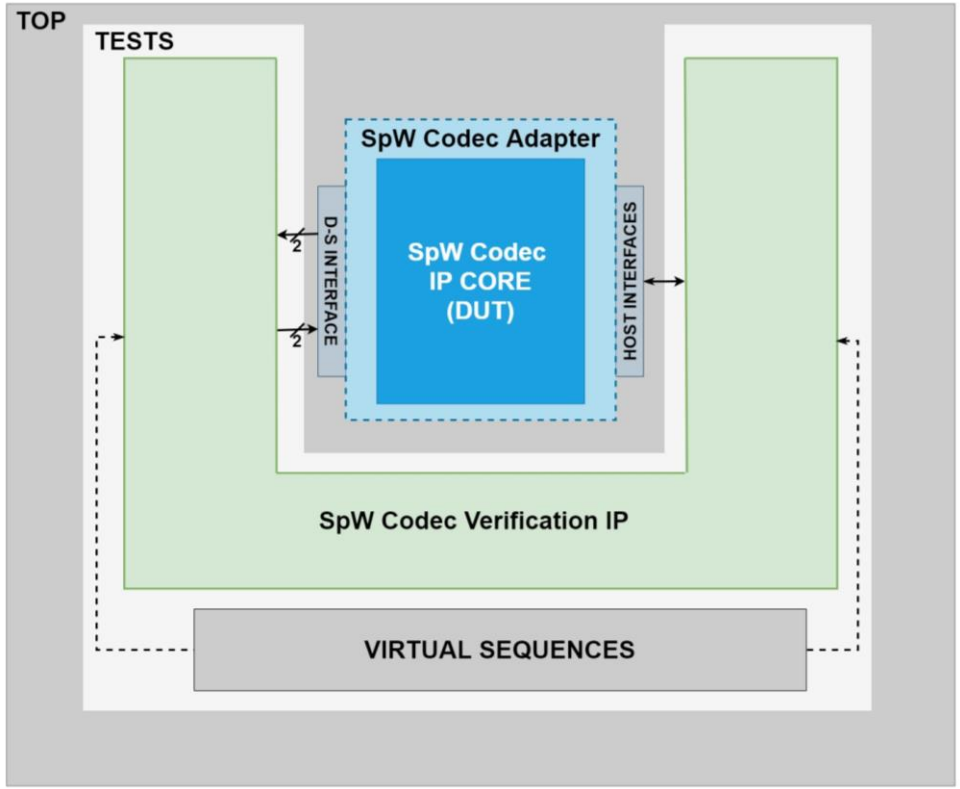


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# OUTLINE

- Introduction
- UVM-based SpaceWire Codec Twin Model
- UVM-based Verification Environment Architecture
- Verification Campaign
- UVM-based Approach Advantages
- Results and Conclusions
- Q&A

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**Significant reduction of verification time and costs**
**Significant increase of DUTs reliability**

# QUESTIONS & ANSWERS

## Thanks for your attention!

## For more information about SpW Codec Verification IP:

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