

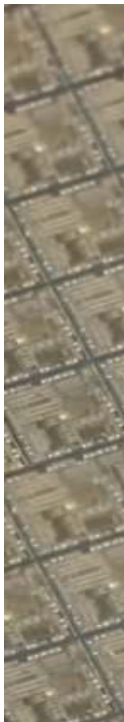
VHDL RF & MW: **Radio Frequency & Microwave Extensions to VHDL for Mixed Signal Design & Verification**

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Who Needs VHDL-RF/MW?

- * Telecommunications designers
- * Navigation system designers
- * High-speed digital systems designers
- * Test equipment users & designers



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Modeling Characteristics

- KHz, MHz: “Radio Frequency”
- GHz: “Microwave”
- Interconnects are active components (*rather than state or managed queues*)
- Parasitic interactions critical to modeling system behavior (*need to efficiently model meaningful parasitics*)
- Some components naturally modeled in frequency domain (*rather than time domain*).
- System components operate at dramatically different time-scales (*seconds through optical frequencies*)

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Language Basis

- VHDL delivers constructive framework: types, concurrency (~upward compatible)
- VHDL-AMS delivers simultaneous systems of equations (~upward compatible)
- Verilog/Verilog-AMS inter-operability required (need to support legacy)
- Microwave Hardware Description Language (MHDL) provides important technical and cultural legacy (good ideas, minimal impact).

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Process

- Project Authorization Request in process
- Current phase: requirements gathering
- Initial language design (due Dec 2001)
- Realistically expect 2004-2005 ballot.



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PAR Statement...

Purpose:

Language functionality for modeling component and system characteristics of KHz, Mhz and GHz mixed-signal systems.

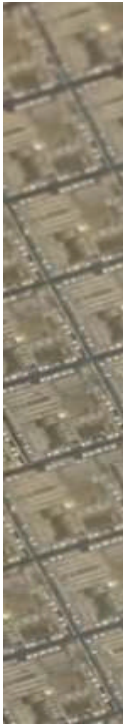
Scope:

- **Distributed parameter modeling**
- **Frequency domain modeling**
- **Noise modeling**
- **System components operating at radically distinct time scales**

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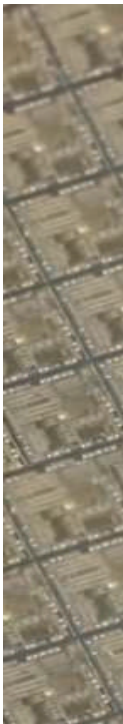
Why not VHDL/Verilog-AMS?

- VHDL/Verilog-AMS are well-suited to lumped parameter, low-frequency systems.
- For RF and MW systems, they do *not* model critical system aspects needed for rapid, successful system design.

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Further Information

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