Coverage Panel
HVC'08

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Coverage criteria

- For a metric to be valuable it must:
  - Correlate well to the objective
  - Be simple and easy to understand
  - Be cost effective to use
  - Be measureable
  - Be objective
  - Be trustworthy
- How do our existing metrics stack up?
  - In my opinion not very well.

Correlation

- We are trying to verify the functionality of a design matches a specification
  - Code coverage and functional coverage are stimulus metrics
  - They have no relation to the act of verification
  - Directed testing was an act of verification
    - Code coverage was an orthogonal metric
    - Still leaves many holes, especially with concurrency
  - Constrained random generation targets functional coverage – does not target verification
  - New intelligent testbenches could be even worse

Objectivity

- A mixed bag
  - Code coverage is objective
    - We know what 100% means even if it is incomplete
  - Functional coverage is not objective
    - Advise from EDA companies – use code coverage to find the holes in functional coverage
  - Assertions (Properties)
    - No real commercial solutions to find holes

Trustworthy

- If any of the current metrics were trustworthy…
  - Why do so many chips require re-spins
- Why *do* we trust the metrics that are being used?
- It is time we re-thought coverage metrics and made sure they tie directly to an act of verification!