Potential Path Forward for Channel Modeling Ad Hoc

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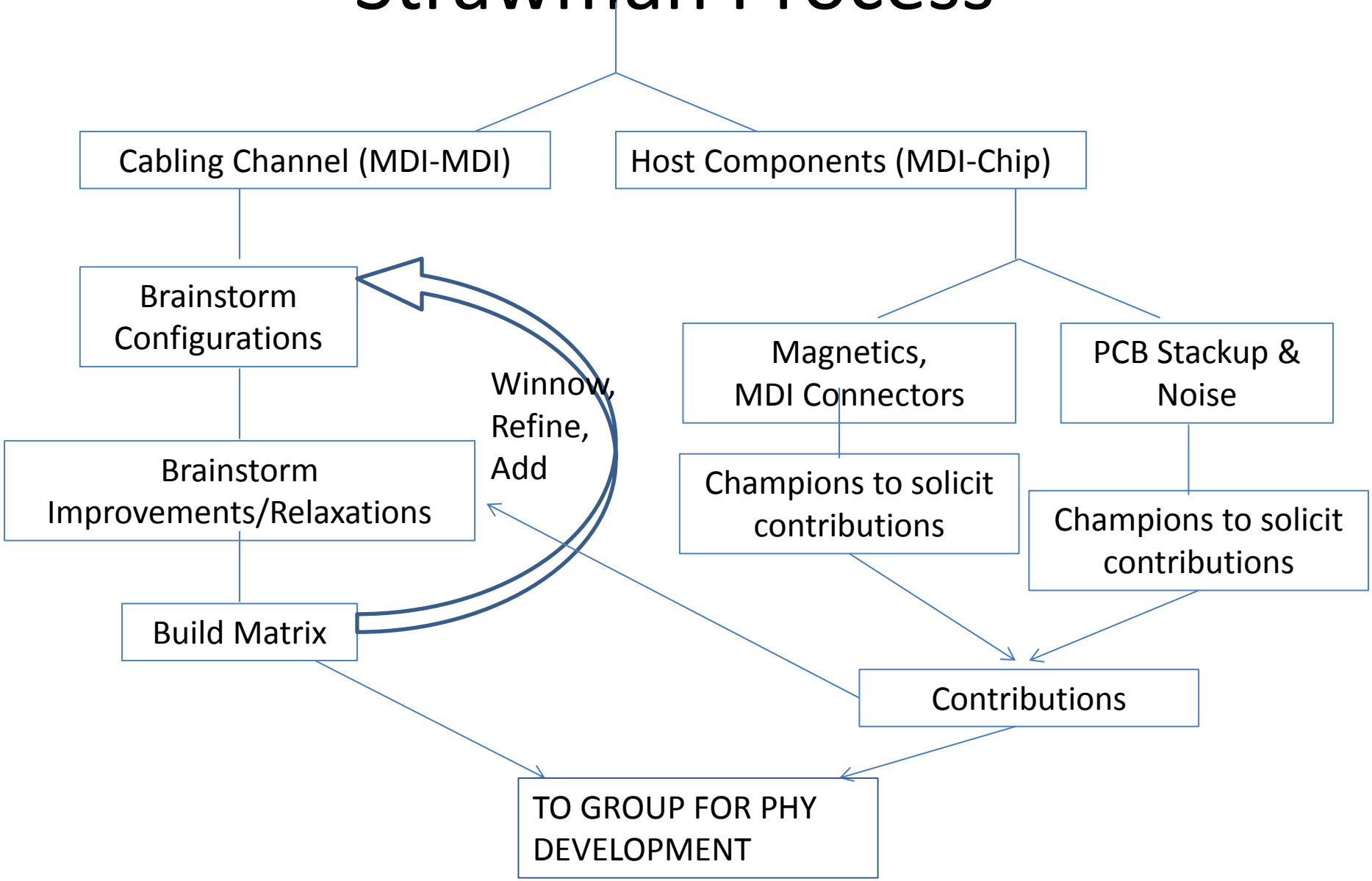
(Updated during May 17th ad hoc meeting)

Things Needed

- Matrix of Relevant Cabling Channels from Standards
  - E.g., 30m, 1-28-1 ISO Cl 1, …
- Matrix of Relevant Improvements & Relaxations to Cabling Standards
  - E.g., RL+2dB, 4dB, PSNEXT?, IL?
- List of Component elements for on-board model
  - E.g., MDI connector, Magnetics, PCB, etc.
- Matrix of Host board scenarios
- **Action items to solicit needed data**

Strawman Process



Possible On Board Elements

- Magnetics, OEM PCBs, etc.
- MDI Connector IL, Crosstalk, RL
- Magnetics Crosstalk, IL, RL
- PCB Passives IL
- PCB trace model
- PCB Noise models
- IC package models

Possible Channel Configurations

- "X-Axis" – Cable classes
  - A: ISO Class 1, up to 30m (x-y-z)
  - B: ISO Class 2, up to 30m (x-y-z)
  - C: TIA Category 8, up to 30m (x-y-z)
    - Can this be merged with A?

- "Y-Axis" – Topologies/lengths
  - D: Short channels
    - 150mm-3m-150mm ("really short") – Worst case reflection #1
    - 0.5m-3m-0.5m ("pretty short") - Worst case reflection #2
    - 3m - Endpoint to TOR
    - 5m TOR-adjacent
  - E: Other target channels
    - 1m-10m-1m (ISO short reference channel)
    - 30m
    - 30m single patch cord (assuming there is one that meets IL…)
    - 30m asymmetric #1 (1m-26m-3m) – Data center configuration #1
    - 30m asymmetric #3 (1m-24m-5m) – Data center configuration #2

- "Z-Axis" Improvements/Relaxations on A, B, C (reference grimwood_01_0513_40GBT.pdf); "What if" scenarios
  - Improvements
    - 2, 4, 6 dB improved RL
    - 2, 4 dB improved PSNEXT (A,C)
    - Coupling attenuation (Example: Class I/Class II – Contributions show that cabling "far exceeds" current specification)
  - Relaxations
    - Bandwidth (1.6GHz vs. 2.0GHz)
    - Others TBD