# M. May take-aways from the SCC workshop, Jan 26-27, 2015

Composed Verification[[1]](#footnote-1): Quantitative verification that a system meets the requirements. It is founded on mathematical principles (e.g., "Formal Methods"), but may be probabilistic. It may have (many) distinguishable parts, each of which is quantitatively verified differently than the other parts.

1. Ultimately, the models and the infrastructure they inhabit should capture a system: As-Conceived, As-Designed, and As-Built.

2. Start-ups and the number of open source efforts by established companies imply experts believe composed-verification at scale is feasible.

3. Big Data Analytics is advancing technologies to automate the analysis of very large unstructured data. Tools and techniques in that field may be useful to composed verification.

4. A key notion expressed in the talks was horizontal integration of models (cross domain) and vertical integration of models (cross refinement granularity). The set of models is unbounded. This hints that a generic approach or algorithm for integration would be useful.

5. As far as I know, the use of Formal Methods for specific domains is rarely taught (for aerospace engineering: U Cinn., MIT, GA Tech.). Teaching it for domains would help students (future demand signal) see the power behind it. The cross-department nature may make it attractive to some schools and professors.

6. The FAA and safety certification community for aviation is currently wrestling with how to certify the "-ilities" using formal verification. If you haven't been exposed to that domain, it's worth following their fora.

7. Requirements need more attention.

8. The DoD has an Engineered Resilient Systems S&T Community of Interest. It focuses on physics-based modeling, but it shares many of the same model integration challenges. Ultimatey, the DoD will want to integrate physical and digital analysis.

1. Made this term up for brevity. [↑](#footnote-ref-1)