Quantifying the Unknown

- Personal Views -

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1) Be the “smartest person” in the room

2) Have thought of every question the decision maker will ask and have a good answer

3) Admit deficiencies upfront and state when you don’t know
How do you convey VVUQ information?

- Decision makers need to understand the importance of the simulation and the potential pitfalls in the modeling (VVUQ context).
- Validation – Plots of a QOI (measured and predicted) are expected (plots are 2-D and data may not be).
- UQ – don’t focus on results, focus on the method, the specific uncertainties considered, and justify distributions.
How do we translate metrics we can compute to decision making metrics?

Develop the decision making metrics first.

1. Develop a set of QOI
2. Develop a safety limit for each QOI
Unknown Unknowns…

They exist and some will become knowns one day

– Fukushima type event
– A model doesn’t match reality

Currently, we rely on Safety Margin to act as a buffer

Need better UQ framework (e.g., what is the impact of uncertainties in your assumed distributions?)