

A photograph of a road leading to a snow-capped mountain peak under a cloudy sky. The road is dark asphalt with white lane markings, leading towards a large, snow-covered mountain peak. A yellow bus is visible on the road in the distance. The sky is overcast with grey clouds. The foreground shows a metal guardrail on the left and brown, scrubby vegetation on the right.

# MRT12 Breakout

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**Adaptation & Reasoning**

**V&V, Uncertainty, Anticipation**

# Phrases

- **Model survival in change storms (G. Alférez)**
- *How fit is your model (Daniel Sykes)*
- *Mastering evolution using MRT (Sebastian G.)*

# What we know.

- performance of MRT is both sided (at runtime we may know that we just need to verify a small part, whereas at design time we need to check all)
- two sides for verification
  - system evolved by reasoner, which ensures a consistent new configuration
  - system evolves itself/unanticipated - we need to check if the appeared configuration is valid
- define boundaries for runtime adaptation to keep system verifiable/manageable
  - indicated by connections of models and by metamodels
  - constrained evolution to keep system verifiable
- problem space models vs solution space models (we don't verify in problem space)
- we cannot be sure about the correctness of our models collected at runtime
- but we can collect data and make statistical statements about their correctness

# What we don't know.

- Are v&v tools at runtime performant enough
- Are v&v tools able to provide meaningful results (due to too strong assumptions)
- How open do we need to be
- Development processes for M@RT Systems

# Questions for MRT13

- Work on real applications!
- Methodologies / Which tools/approaches are best for which purposes?
- Meta-Reasoning / M@RT-Hierarchies