

High- and Multi-Fidelity in MDO

7th Research Consortium for
Multidisciplinary System Design Workshop

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Thoughts for High- and Multi-Fidelity Discussion

- Why would someone develop their own analysis tool?
 - Most efficient approach for obtaining gradients/adjoints, use parallel/distributed computing, modify for coupling
- Coupled adjoint is key for efficient search
- Euler pressure distribution still requires “fix” to handle steep pressure gradient at t.e. of airfoil
 - Analogous situation to fastener weight in finite element analysis
 - Still requires some sort of engineering oversight
- Need geometry to enable coupling and information for high-fidelity analyses

Thoughts for High- and Multi-Fidelity Discussion

- How to balance computational cost with result quality
- Can we reduce the *ad hockery* of some of these approaches?
- Is there really a hierarchy of models and fidelity?
Once recognizing there is uncertainty in all models, do other approaches allow better estimates
- Use of legacy / black box codes; an approach needs to be able to address some of these aspects
 - Finite precision; no response computed; noisy response