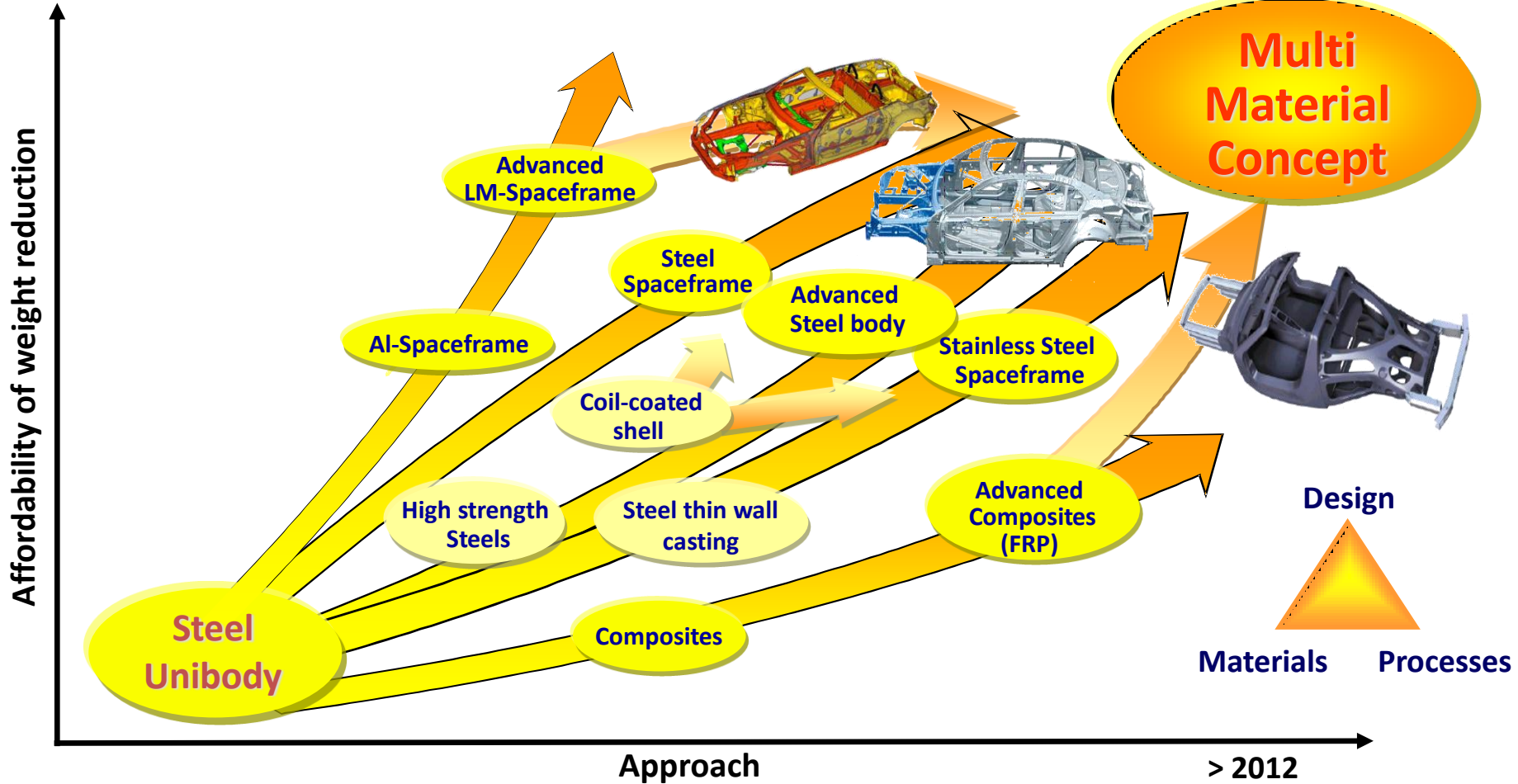
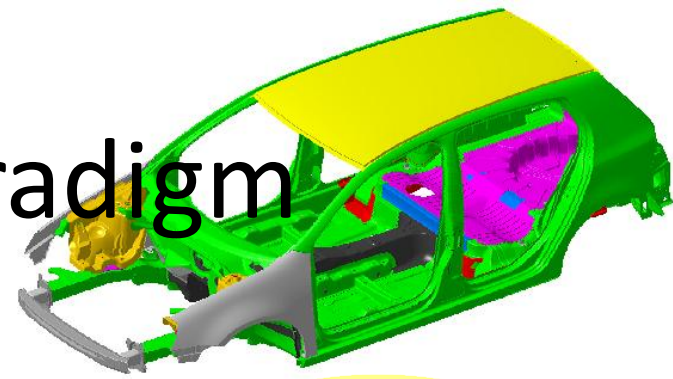


Multi Material Paradigm

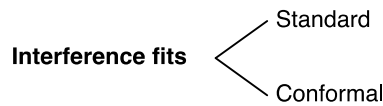
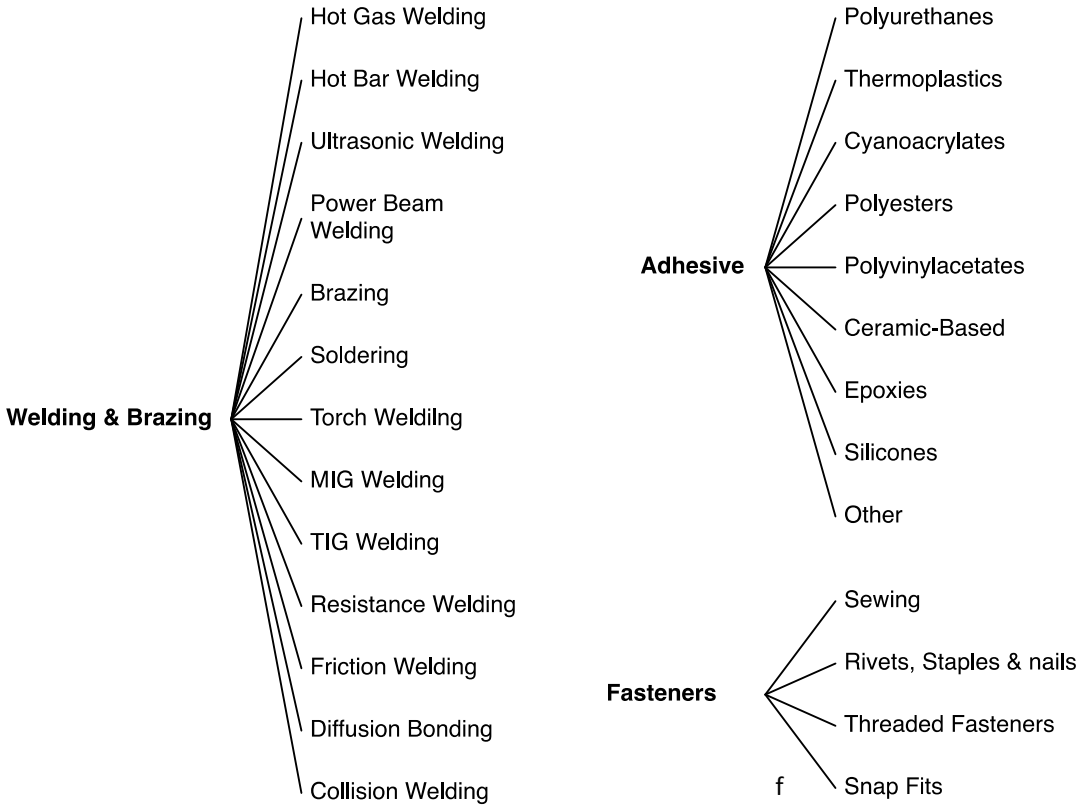
Glenn S. Daehn

Department of Materials Science and Engineering,
The Ohio State University

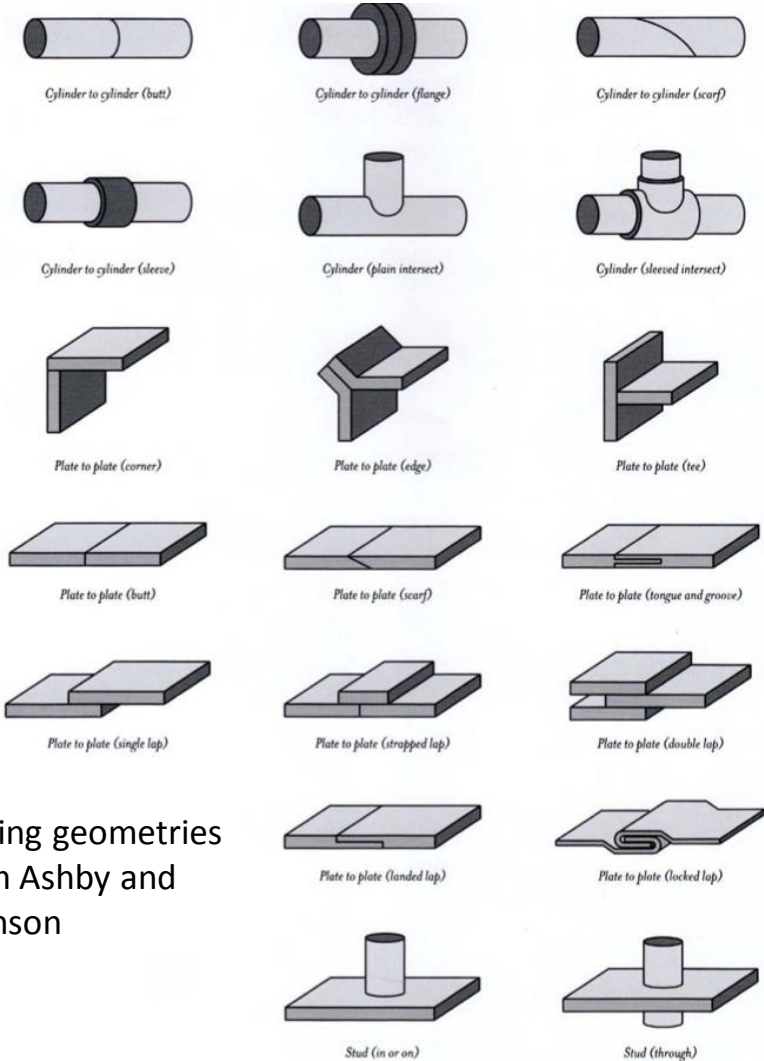
Multi Material Paradigm



Joining problems and methods



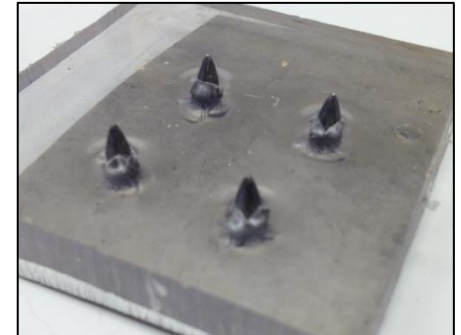
Joining geometries from Ashby and Johnson



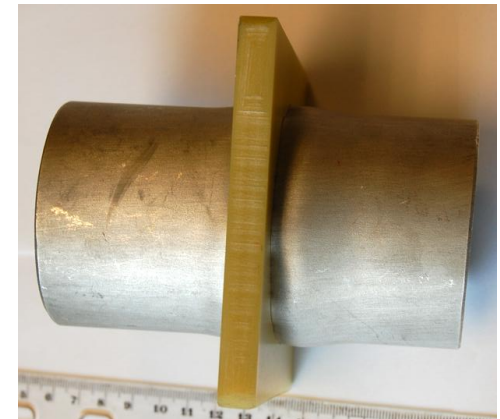
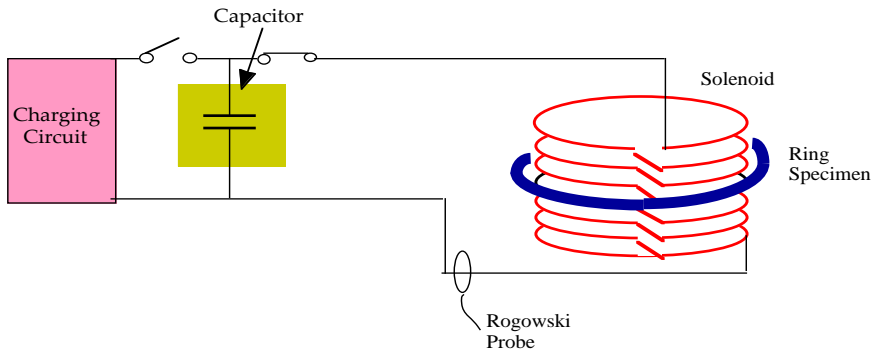
Dynamics + Forming/Joining

	Electro-Magnetic	Vap. Foil / spark gap	Laser Impulse	Explosive/ Other
Enhanced Formability	✓	✓	✓	(✓)
Conformal Joining	✓	✓		?
Impact Welding	✓	✓	✓	✓✓
Embossing	✓	✓	✓	✓
Cutting	✓	✓		✓
Precision Shape Control	✓	✓		(✓)
Flanging/Hemming	✓			

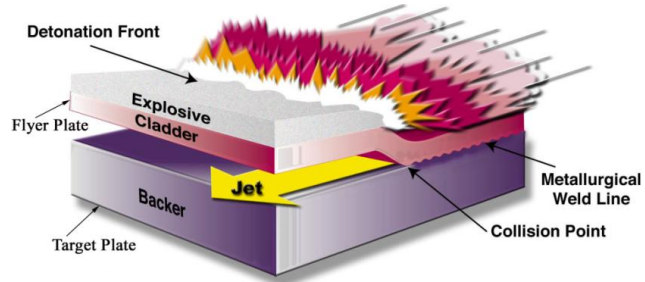
Example: **Böllhoff Rivtac** high speed tacking used to join cast Mg sheet and Polycarbonate.



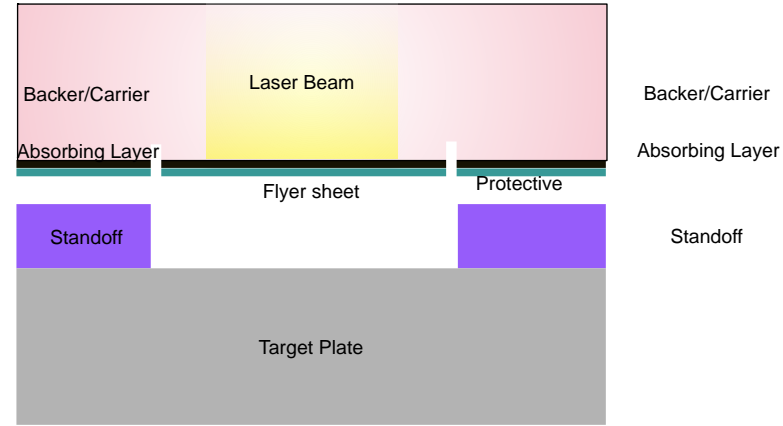
Conformal Interference Joining



Collision Welding

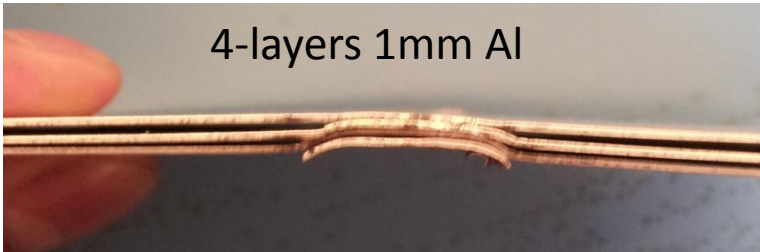


Laser Driven: 8ns Nd-YAG 1044 nm



Vaporizing Foil

4-layers 1mm Al



Al to Steel



AA6061 T6 -- AZ91D (Mg)

