

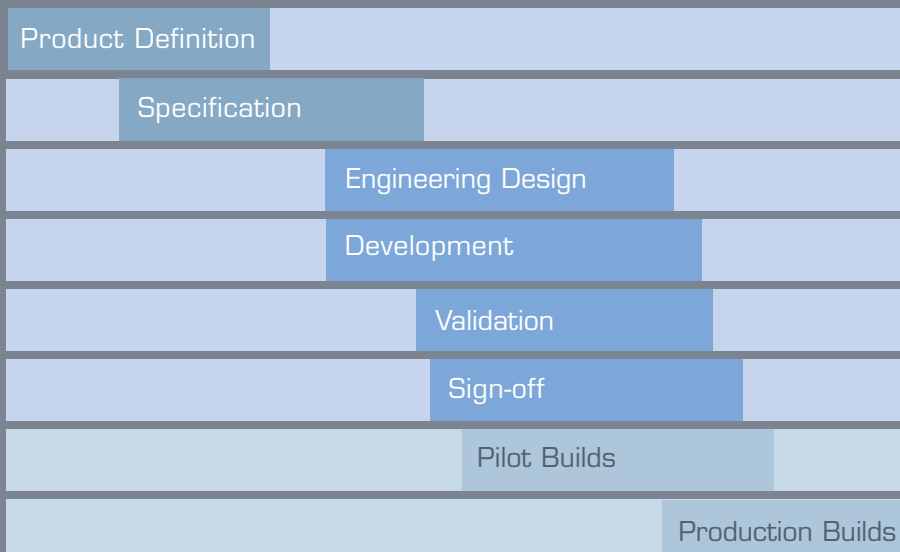
Powertrain Integration

Application Areas



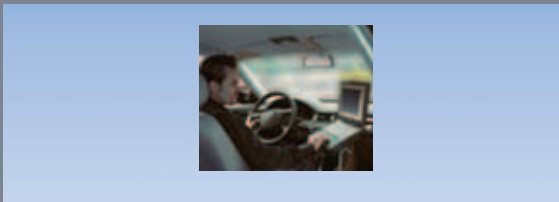
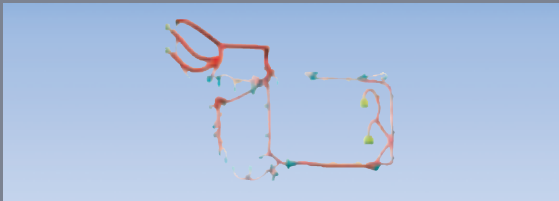
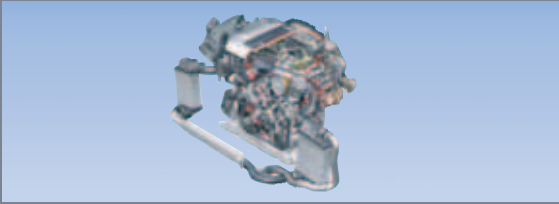
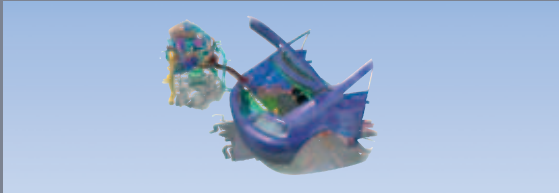
IAV offers a complete, production-ready engineering solution for the integration of complex powertrain systems into new vehicles. Whether it's a minor modification assignment or a multinational vehicle program with 20+ derivatives - IAV possesses the knowledge and experience to complete the job. As the world's recognized leading powertrain system integrator, IAV provides maximum project efficiency and exceptional value.

- ▶ Diesel engines
- ▶ CNG/LPG/H₂ engines
- ▶ Gasoline engines
- ▶ Catalysts, deNOX and DPFs
- ▶ Automatic transmissions
- ▶ DC and CV transmissions
- ▶ Hybrid powertrains
- ▶ Fuel cell systems
- ▶ Control system design
- ▶ Software engineering
- ▶ SiL/Hil testing
- ▶ Advanced DoE techniques
- ▶ Axles and driveline
- ▶ Powertrain calibration



IAV has a logical systems approach to integrating customer powertrains.





Packaging & Specification

At the start of every powertrain integration program, IAV investigates the most beneficial package design for the given engineering goals. From this, we create the specifications for all necessary modifications to the powertrain.

Engine & Transmission Modifications

IAV can perform all required engineering integration changes to the engine and transmission. IAV utilizes the latest design, calculation, and simulation tools. IAV facilities, among the most modern in the world, are set up for component design through to system testing. In addition, we have implemented proprietary development processes ensuring a high level of quality and development efficiency.

Engine Bay Modifications

IAV has full capability to design, package, analyze and release the engine bay components including those within the powertrain mounts, induction, exhaust, thermal, HVAC and fuel systems. We control the component and system suppliers from design release, through development, PPAP and into saleable production launch.

Vehicle System Modifications

In some cases it is beneficial to make minor changes to the target vehicle system (e.g., improvements to overall NVH, safety, or cost). IAV forms and recommends these changes and we also execute the resulting vehicle changes.

Wiring

IAV engineers design, develop and launch production-ready wiring systems for power and signal distribution also charging and energy storage. Additionally, we supply high fidelity, functionally robust prototype harnesses for our customers' powertrain and vehicle systems.

Complete Calibration

IAV deploys advanced tools, processes, laboratories and skilled personnel for the total calibration of engine, transmission and driveline control systems. ECUs are calibrated for optimal emissions, driveability, performance, fuel economy, NVH, safety and control quality.

ECU System Development

In order to make the powertrain fit seamlessly into the increasingly complex electronic environment, IAV manages all changes within the ECU system. This includes the generation of hardware and software changes. The final software coming from the ECU supplier is quality-checked using IAV's hardware-in-the-loop systems. IAV also writes production-intent software code in-house.

Homologation and Production Support

IAV ensures that all specified government requirements such as emissions regulations, OBD and government safety standards are met. We support our customer through the homologation process and if needed, we expertly support the documentation and submission process required for vehicle homologation.