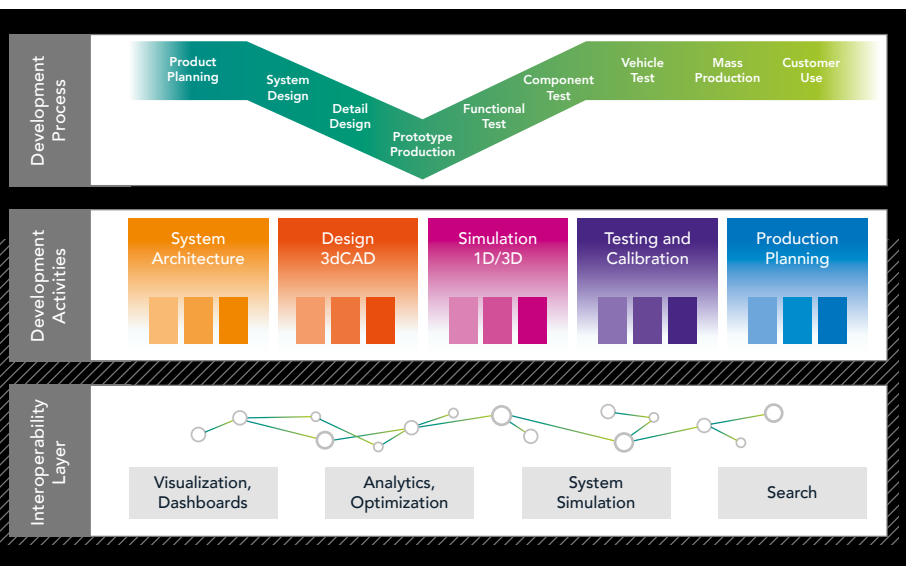


Augmented Development and the Ecosystem

A new era of automotive technology calls for revolutionary development thinking. And that is just what AVL is offering with the development ecosystem

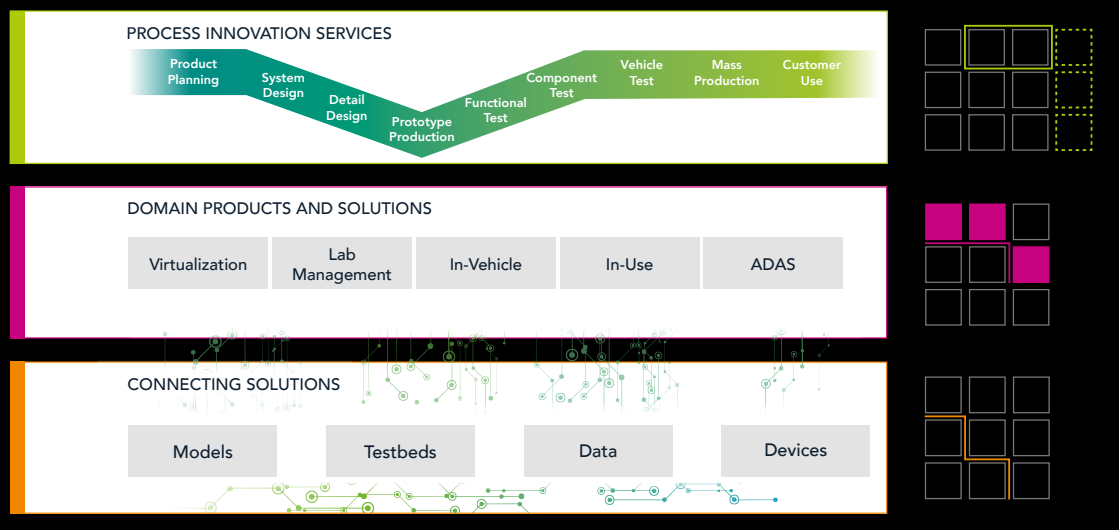
The three layers of the ecosystem approach: the development process, development activities and an interoperability layer.

Enterprise IT



Connecting all stages of development and augmenting it with the vehicle in-use phase and digital twins to increase speed and flexibility.

Tools, services and solutions as they relate to ecosystem approach.



— For more than seven decades AVL has been creating products and solutions for every aspect of powertrain development. From combustion sensors to emission measurement systems, NVH solutions, thermal management and beyond. A broad product portfolio of tools which address every inch of the vehicle and every individual development phase, backed up with the know-how of a global network of highly skilled experts.

The conventional vehicle as we know it has been developed over more than a hundred years. But as new, highly complex electrified powertrain configurations and autonomous driving technologies represent the future of mobility, OEMs don't have the next century to bring mature products to market.

The answer to these challenges is not simply individual tools, solutions and areas of expertise. Instead it's about bringing all of these things together to realize a revolutionary new vision of what the development process should look like. And that's exactly what we're doing at AVL.

A HOLISTIC, ECOSYSTEM APPROACH

Typical vehicle development involves different teams working on individual domains and parts of the vehicle. One team might be working on thermal management for example, another on NVH characteristic design, and another on the transmission system.

While all of these teams and disciplines work towards a shared goal of the complete vehicle, they also have individual goals to meet. And it's not until systems and components are integrated – on the testbed or in costly prototypes – that the cross influences can be thoroughly investigated, and synergies understood.

This conventional approach is expensive, time consuming, and results in unwanted development loops. And in this period of automotive transfor-

mation and growing vehicle system complexity, where efficiencies must be found in every part of the development process, it is becoming increasingly impractical to develop vehicles this way.

And so, at AVL we have brought our years of expertise, our tools and methodologies together in a single, unified approach, that revolutionizes the way we approach vehicle development.

Using digitalization, simulated digital twins and an end-to-end development philosophy that extends to the in-use phase, we are helping OEMs and Tier1 suppliers break out of this siloed thinking. Our approach allows teams to easily share their work and progression, right across the project. Furthermore, it utilizes the power of data intelligence to share goals and drive optimization all the while significantly reducing the need for prototypes. This diminishes time to market, saves money and accelerates innovation.

CONNECTED TOOLS AND LAYERS

By harnessing our cross-domain know-how and our Open and Integrated Development Platform (IODP), the development ecosystem allows the rapid realization of project goals on both micro and macro levels. This ecosystem approach can be used to create new development workflows, or to augment existing architectures. It is organized into three layers: the development process, development activities and an interoperability layer. In accordance with this, AVL provides services and tools that match this ecosystem.

The first layer, Process Innovation Services, is designed to optimize each step of the process, from product planning to functional design and component testing, right through to mass production and customer use.

The second layer, Domain Products and Solutions, provides tools for specific domains / applications. It covers virtualization, lab management, in-vehicle testing, the in-use phase and ADAS system development.

The final layer is the Connecting Solutions layer. This allows the best use and sharing of data from all activities across the development process - independent of tools or suppliers. It includes our IODP solutions, Model.CONNECT™, Testbed.CONNECT™, Device.CONNECT™ and Data.CONNECT™.

These layers allow every domain, every process and every activity to be conducted with the bigger picture in mind. And, crucially, given the vast amounts of testing that are currently required for ADAS and autonomous systems, it extends into the in-use phase. This allows real world usage data from the latest connected vehicles to inform the development of the next vehicles coming off the production line.

To explore the AVL development ecosystem approach in greater detail, over the next few issues Focus magazine will be highlighting different aspects of this revolutionary approach. In this issue, we begin with a detailed look at Virtualization.

