Imagination

Overview 2017

Have Imagination on your side

“...we have a passion for innovation and the drive to develop technologies that enrich users’ lives.”

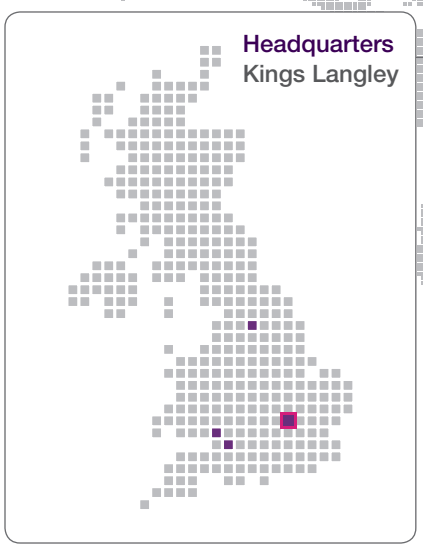
At Imagination we create and license market-leading processor solutions for graphics, video and vision processing, general purpose and embedded processing (CPU), and multi-standard communications.

Our broad range of silicon IP (intellectual property) includes the key processing blocks needed to create the Systems on Chips (SoCs) that power electronic devices.

We call these processing engines our ‘core technologies’, and each has a strong technology differentiation compared to competing solutions. They are: PowerVR multimedia, MIPS processors, and Ensigma communications.

Imagination has been chosen as a partner by many leading innovators in electronics. We achieved that position because we have a passion for innovation and the drive to develop technologies that enrich users’ lives by solving key problems in new, more efficient ways.

Our technologies have not only already been instrumental in key segments such as mobile phones, home electronics, automotive and networking; they are also enabling new kinds of devices across the Internet of Things (IoT), AR/VR and other markets.



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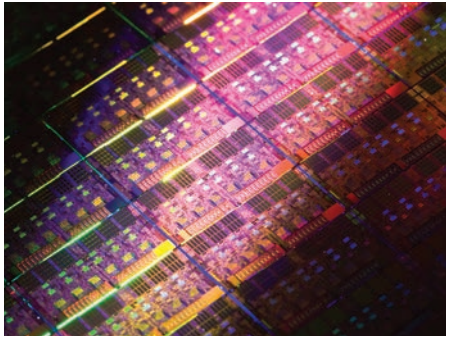
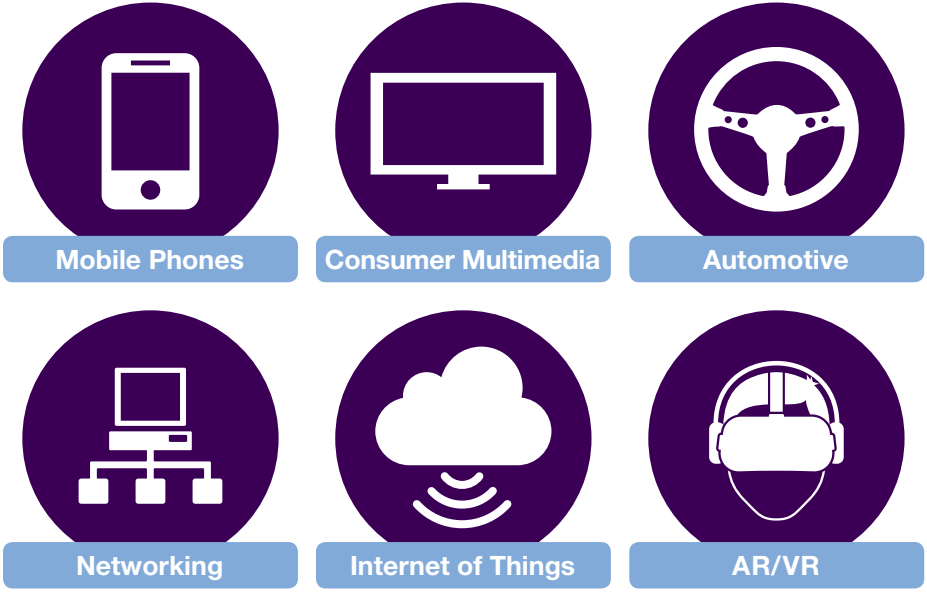
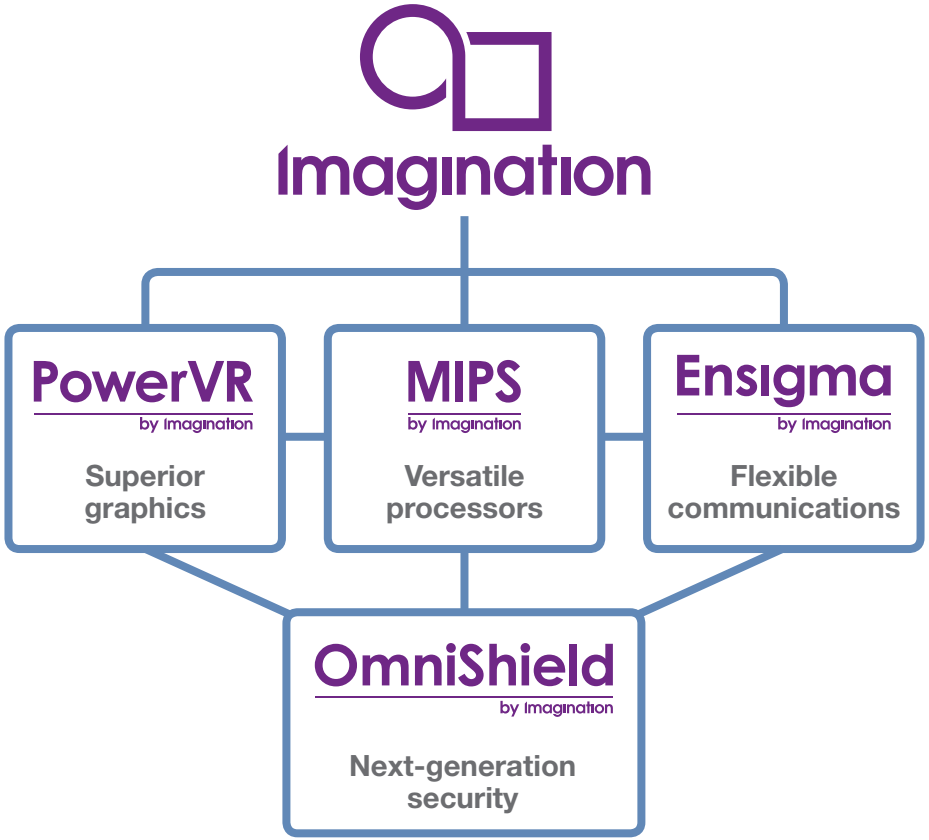
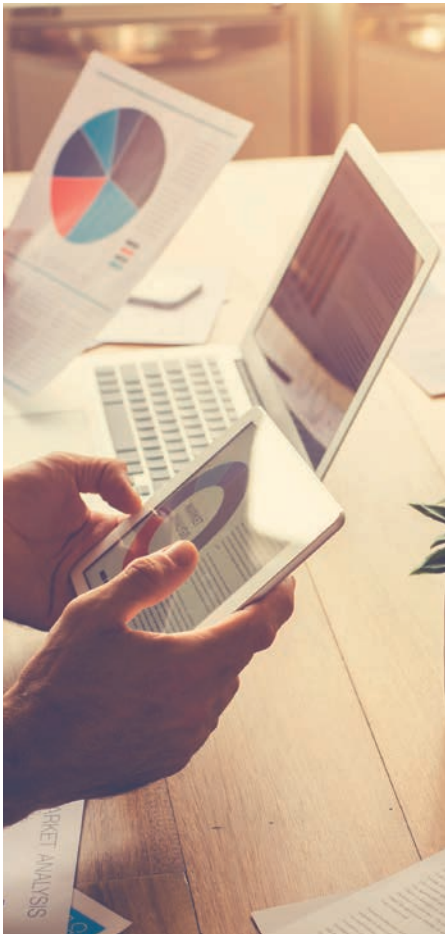


“Our goal is to help create a smarter, more connected world that enriches the lives of billions of people.”

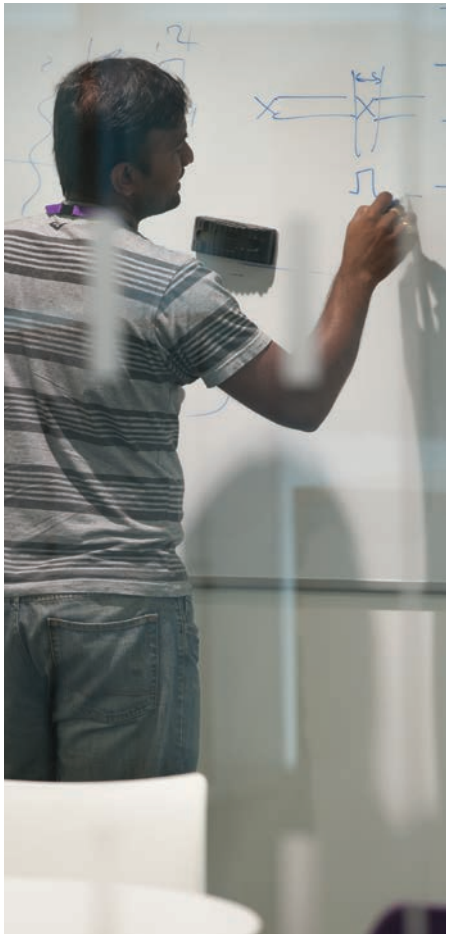
Over 10 billion units have shipped containing our technology – but we regard this as merely the start. Our goal is to help create a smarter, more connected world that further enriches the lives of billions of people.







Imagination has three core offerings that can work individually, or together, to help you create the highly optimised SoCs to meet your customer's requirements. Underpinning all of them is Omnishield, a next-generation, multi domain security solution for creating trusted embedded platforms.

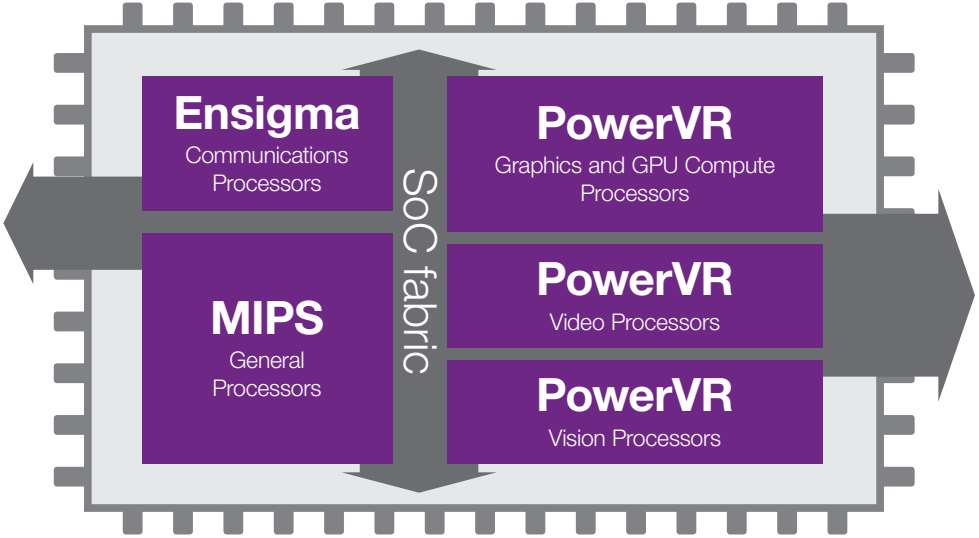


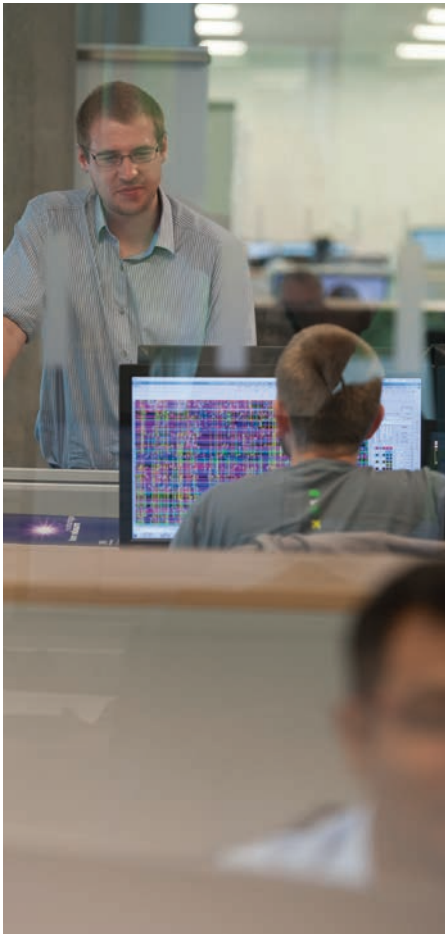
The Imagination difference

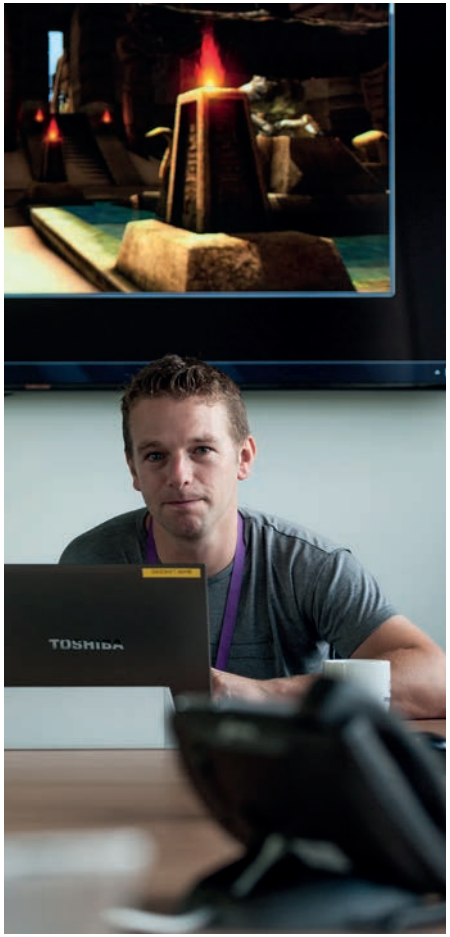
Our technology has unique advantages that make it highly desirable. Our reputation is built on innovation. Our focus on low power consumption, the smallest silicon area, and the highest efficiency are three key reasons our technology is the choice of leading chip companies. These design imperatives permeate everything we do. We are also experts in security, which is increasingly important in heterogeneous SoCs.

We are known for our ‘smart’ solutions to difficult challenges, such as: the tile-based deferred rendering (TBDR) of PowerVR graphics; the disruptive approach of our PowerVR ray tracing IP; the efficient combination of fixed and reconfigurable elements in PowerVR video; the efficiency and multi-threading of our MIPS processors; and the configurable data-parallel heart of our Ensigma communications core. These differentiators help our customers stand out in crowded markets and deliver better solutions to their customers.

“Imagination’s PowerVR ray tracing technology represents the next major disruption in mobile and consumer graphics.”







PowerVR

Consisting of a comprehensive range of multimedia IP, from GPUs for graphics and GPU compute, to video, imaging and vision, PowerVR's technology takes data from sensors or CPUs to screen, delivering stunning images for entertainment, user interfaces and much more. These IP cores combine to create optimized IP platforms that can incorporate customer IP to create highly differentiated, state-of-the-art solutions for all forms of visual experiences from the latest games to smart IoT cameras.

PowerVR graphics

The PowerVR graphics processor (GPU) family leads the market in technological capability, roadmap breadth and ecosystem, setting the benchmark for mobile and embedded GPUs. PowerVR is the leading graphics technology because it is based on a sophisticated and unique architecture. PowerVR's efficiency through tile-based deferred rendering (TBDR) ensures the lowest possible bandwidth usage and the lowest amount of processing cycles per task, and all of this leads to high performance efficiency and the lowest power consumption per frame, outperforming other solutions.

OEMs using chips with PowerVR inside can translate this advantage into products that provide the most amazing visual experiences with the longest possible battery life.

PowerVR ray tracing

Imagination's PowerVR ray tracing technology represents the next major disruption in mobile and consumer graphics. PowerVR ray tracing cores deliver astonishing realism and performance at mobile power budgets for the first time. This technology enables more immersive games and apps with real-life dynamic

lighting effects, dynamic soft shadows, and lifelike reflections and transparencies. PowerVR ray tracing is also highly scalable, and can be truly disruptive to many other markets beyond mobile. This technology represents the next step of graphics across games consoles, automotive, AR/VR and more – delivering hyper-realistic images with reduced cost and complexity.

PowerVR video

Our differentiated, multi-standard approach has made PowerVR video the most deployed mobile video technology. Our flexible video architecture addresses a wide range of applications from mobile phones and tablets to Ultra-HD TV and beyond.

Multi-standard and multi-stream capabilities are standard across the range. With PowerVR video encoders, our partners can add a wide range of features and solutions to deliver the highest possible efficiency or the highest performance depending on the application.

PowerVR vision and imaging

Our innovative vision and imaging cores include low-power, highly-configurable camera image signal processor (ISP) cores designed for SoC integration that take camera-based image processing to the next level. Our growing portfolio of vision-aware technologies will enable a new breed of SoCs that support smart computer vision, computational photography and new gaming and social experiences. PowerVR vision and imaging cores can work with Imagination's other PowerVR graphics and video cores, to form a complete, integrated smart vision platform.

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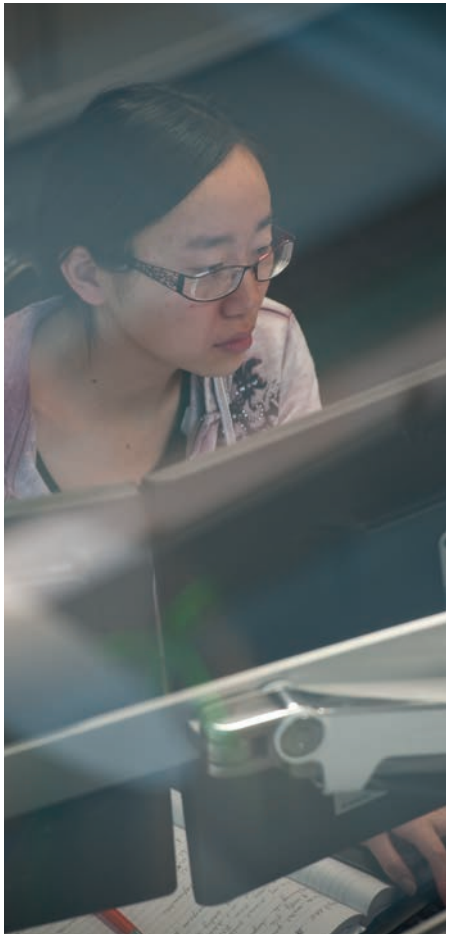

MIPS

The MIPS family of CPU IP is a comprehensive portfolio of low-power, high-efficiency 32/64-bit processor architectures and cores, ranging from the ultimate high-performance cores for high-end applications processors down to extremely small cores for deeply embedded microcontrollers.

With a strong position in home entertainment, embedded, and networking products, MIPS CPUs power billions of products around the globe, and are supported by a broad ecosystem of commercial and open source software, operating systems and tools.

The IP cores come in three classes of performance and features. M-class: entry-level ultra-low power and ultra-small cores for embedded and microcontroller applications; I-class: highly scalable mid-range, feature-rich cores for a wide range of consumer, networking, automotive and embedded applications; P-class: high-performance cores for the most demanding applications.

The MIPS architecture provides a number of differentiated features. Firstly, it is the industry's most efficient RISC (reduced instruction set) architecture, designed to perform a limited set of instructions extremely quickly. As such it can deliver the best performance and lowest power consumption in a given silicon area. SoC designers can use this efficiency advantage for significant cost and power savings, or to implement additional cores to deliver a performance advantage in the same power, thermal and area budget. The multi-threading capability in many I-class CPUs provides the ability to effectively perform as multiple CPU cores within just one core. The MIPS architecture also provides hardware

virtualization throughout its range of cores, letting designers save costs by safely and securely consolidating multiple CPU cores with a single core, save power where multiple cores are required, and dynamically and deterministically allocate CPU bandwidth per application.

Today MIPS is used in all kinds of electronics devices and is increasingly becoming the choice of visionary and disruptive companies. MIPS will be the choice of tomorrow's SoC designers too; Imagination is the only company to offer a contemporary CPU core for academic use in unobfuscated form. Today more than 400 universities worldwide are teaching their students how to use MIPS with this revolutionary program.

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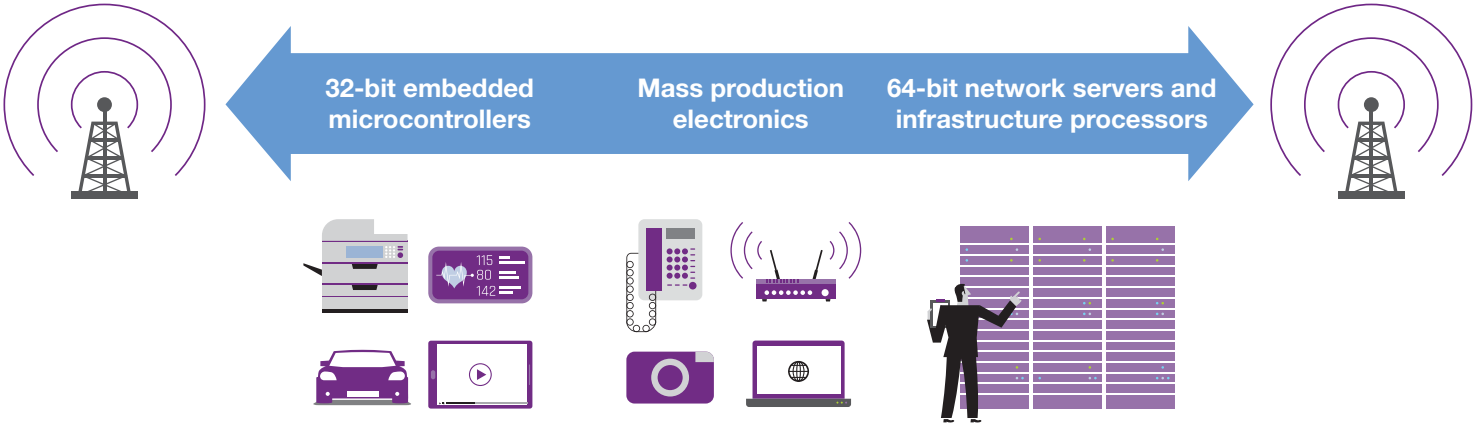
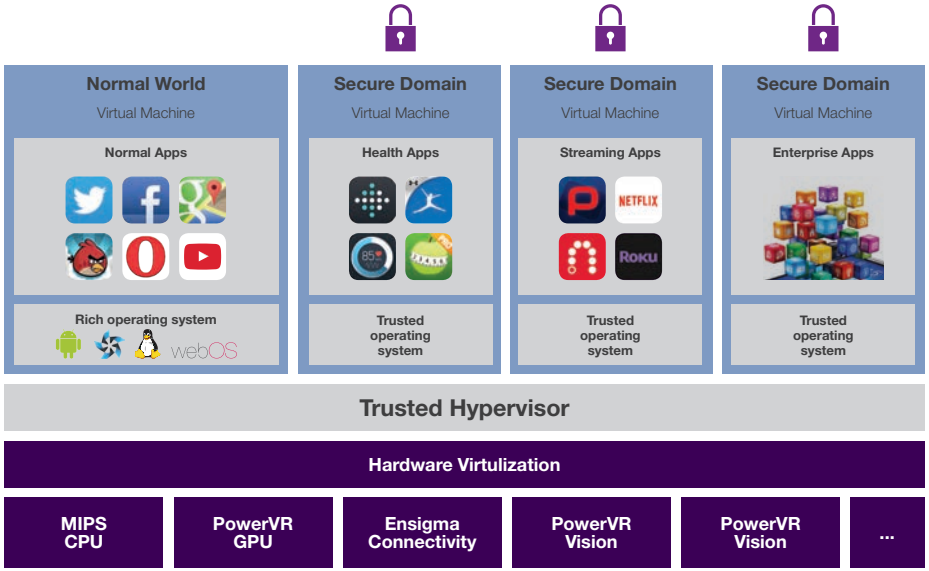


The most scalable processor architecture

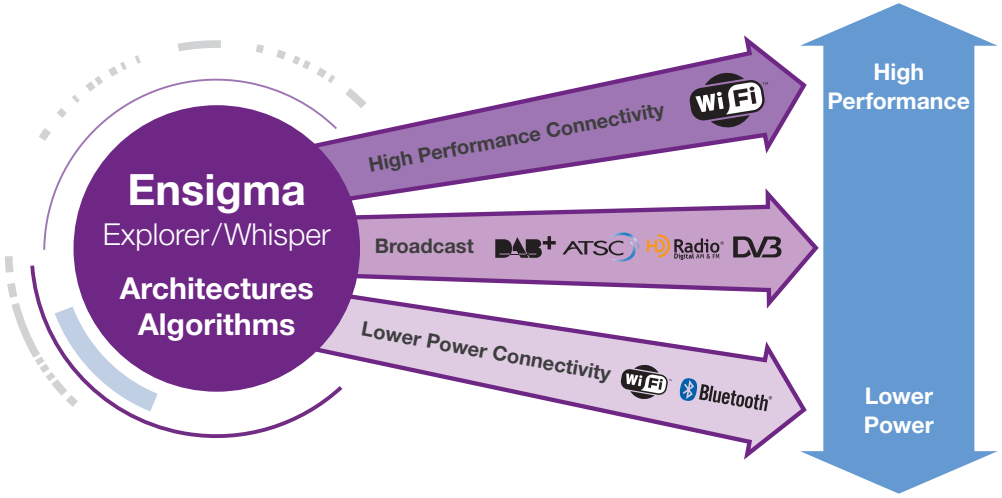
OmniShield

Imagination's OmniShield security technology is designed to provide the industry's most scalable and secure solutions for protection of next-generation SoCs. Imagination is ensuring that customers' SoCs and OEMs' products are designed for security, reliability and dynamic software management as use models and services evolve across a wide range of connected devices.



Ensigma

Ensigma blends programmable and fixed-function blocks to deliver a family of highly scalable multi-standard wireless communication platforms that offer exceptional performance as well as outstanding silicon efficiency. This is vital, as today's consumers expect to be connected wherever they go with whatever device they use.



The Ensigma Whisper wireless communications family is a collection of flexible ultra-low power sensor and cloud connectivity IP processors, designed specifically to enable the integration of low-power communications in SoCs targeting wearables, IoT and other connected devices that require exceptional battery life and low price points.

The Ensigma Explorer family is focused o n enabling high-performance on-chip wireless communications with Wi-Fi and Bluetooth connectivity, as well as global DTV, digital radio, and FM receiver capabilities.

All of our Ensigma cores address the ever-growing challenge of proliferating broadcast and connectivity standards by supporting all of them on a single engine, and enabling them to be integrated onto SoCs for the lowest possible system cost. By moving away from using separate wireless combo chips and integrating connectivity onto the main application processor, Ensigma users can reduce power consumption, silicon footprint and bill-of-materials.

Working with Imagination

“We build win-win partnerships that enable our customers to differentiate their products using our IP, and together create unique products and successful businesses.”

Our business model is simple. We receive a payment when we license our core technologies, and when those companies create products in volume using our technologies, we also receive a royalty for each unit shipped. Our licensees include many of the world’s leading semiconductor manufacturers, network operators and OEMs/ODMs (Original Equipment/Device Manufacturers). We build win-win partnerships that enable our customers to differentiate their products using our IP, and together create unique products and successful businesses.

We enable world-class companies to deliver truly life-enhancing products, developers to create engaging user experiences, and students and ‘makers’ to create exciting new applications for education and entertainment. Through our market-leading and innovative customers, we are in some of the most iconic and culturally important products of the 21st century.

We are intensely relationship focused, working closely with our partners to help them get successfully to market, ultimately shipping high volumes of advanced semiconductors containing our technologies.

As a royalty-based business, our partners' success is our success so we are passionate about delivering the highest quality products, enabling ease of integrations and providing excellent customer support.

Innovation and collaboration are in our DNA. Thanks to the long and deep relationships we have with other innovation driven businesses, we believe the lives of billions of consumers around the world are being enriched by Imagination.

Find out more about how Imagination might be the right strategic partner for you at www.imgtec.com

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