AUSTRALIANS @ HOME

Australians@Home in 2029
By Steve Sammartino for
Samsung Electronics Australia

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Introduction

The Australian home has transformed significantly over the last decade

And exponentially so over the last four years as households nationwide opened the doors to remote work. Technology has been a pivotal factor to this change.

In fact, the quickly accelerating rate of technological change has made consumer devices and appliances more capable and accessible. This has created a new world of possibilities for the way we live and communicate in the home.

With the consumer experience and connected intelligence in mind, technology continues to help innovate and bring meaningful solutions to Australian lives by embedding solutions that are designed with the sole purpose of making life more convenient and connected.

Fresh from displaying its latest innovations in consumer electronics at CES 2024, Samsung Electronics Australia has partnered with **Steve Sammartino**, the nation's leading futurist, to explore five potential key areas technology could transform for **Australians@Home in 2029**.

[Disclaimer]: The views expressed in this report are of Steve Sammartino's and are for information purposes only. These views are not reflective of Samsung and are not indicative of future Samsung products or features.

Steve Sammartino pictured.

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01

Ambient AI

Homes surrounded by sound, ideas and things

We stand on the brink of a transformative era in how our homes function and how we live. Just as electricity became a necessity a century ago, AI is set to follow suit, propelled by massive advancements in consumer technology.

We are deep in the process of instilling our living spaces with ‘smarts’ that are subtle and unobtrusive, serving without disruption. By embedding AI capabilities into certain product categories, Samsung is working to create products that are designed with the sole purpose of bringing meaningful change to Australian homes.

The evolution of AI may also help dismantle barriers by weaving together the fabric of each room and device. This is an extension of Samsung’s SmartThings offering, which currently lets Australians monitor their smart products directly from the app, enabling them to sync compatible products, automate everyday tasks, and customise their home environment to suits their needs.

In years to come, consumers will reap benefits progressively, as new devices join an interconnected system. Devices will not only communicate and recognise their functions but could also help discern the needs of people within the home.

AI’s emergent capabilities could signify that our homes will think, respond, anticipate, and manage our requirements with fluidity — forging a central nervous system enabled by interconnected smart devices.

Until recently, AI was seen as a tool used for specific tasks. Now, we’re entering an era which Samsung deems as **AI for All**. We are starting to see this with Galaxy AI, which is rolling out across Samsung’s Galaxy S24 series of mobiles and has introduced meaningful intelligence aimed at enhancing every part of life.

Almost every device will be part of a unified whole, employing multimodal AI — systems that are capable of interpreting multiple streams of audio, images, text, and video, and synthesising them to help inform decisions.

AI can help act upon verbal commands, translate conversations in different languages, help monitor the movements of people and items, and contribute to the home as a family member would.

It’s likely that AI will be ever-present, responding instinctively and mirroring human interaction, including the subtlety of our senses. It will streamline our routines through habit recognition and query us on our potential needs to manage household operations from temperature control, security and entertainment to energy finances and food delivery.

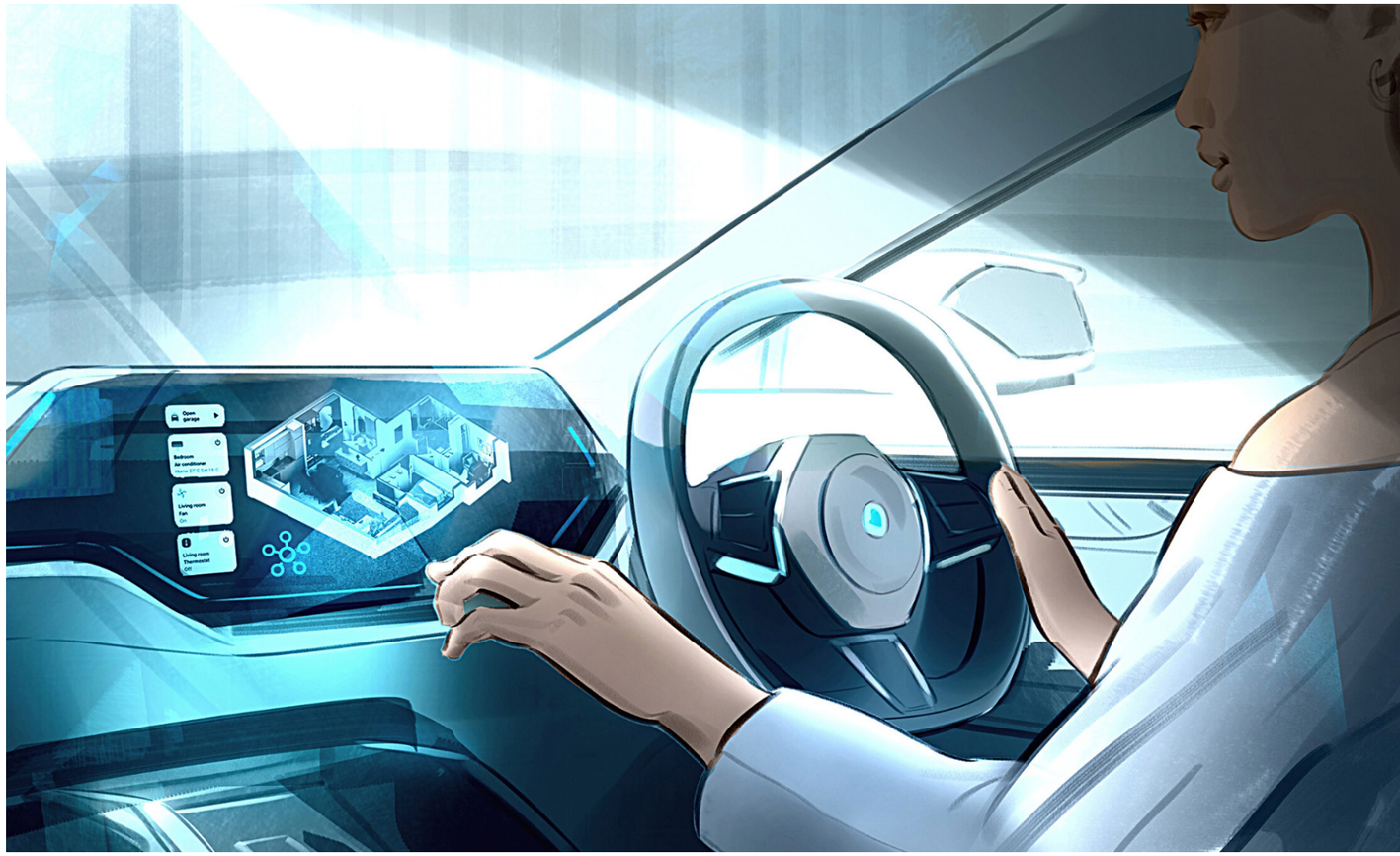
The home, aware of its contents and requirements, will cater to who needs what and when. Spaces could transform based on the time of day, week, and year to adapt to social, logistical, or work requirements.

Our homes will evolve into ecosystems shaped by our preferences. Yet, they will also shape us, evolving into trusted advisors for enhanced efficiency and humanity.

The epoch where technology commandeers our attention will wane as AI matures under the ethos of **AI for All**.

02

Rolling Lounge Room



Artist: Paul Könye. Image simulated for illustrative and informative purposes only.

AI driving car and home symbiosis

As our homes and phones have become smart, so too will our vehicles. As major manufacturers transition to more resource efficient all-electric fleets, AI and connectivity could reshape driving experiences. This is most evident in the developing relationship with the house and energy grid.

Cars are evolving into rolling computers — electrified and equipped with intelligent features that enable a symbiosis between home and mobility. These personal spaces are now extending into our digital lives, as seen through Samsung Electronics Co., Ltd.'s latest partnership with Hyundai Motor Group.

We can expect cars to match the intelligence of our devices and become rolling lounge rooms. Comfort levels will be upgraded to mirror our living spaces. Seats may become ergonomically adaptive, conforming to each occupant's body shape for optimal support using memory foam and smart materials that respond to temperature and pressure.

Infotainment capabilities will also work in tandem with those of the home, learning from interactions in both settings to respond proactively.

Cars may have the capability to understand routines through a clear connection with the home. Vehicles could communicate with home devices to set climate control and lighting, play preferred music, or provide work briefings during travel. Data shared between home and car AI systems will optimise travel routes, maintenance schedules, and even suggest shopping lists based on travel patterns.

Cars could also monitor the external environment and provide driving assistance while also focusing on the driver and passengers for heightened safety. Systems may be able to track eye movement, heart rate, and cognitive load to prevent driver distraction. They will gauge the well-being of passengers and take pre-emptive action if health or safety risks are detected.

The shift to battery electric vehicles introduces a new level of efficiency, integrating cars into the home energy management network.

03

Soft Robotics

Emergence of physical AI with a human touch

The promised age of humanoid home assistants is here, thanks to multimodal AI and advanced language models making affordable micro-robots a reality.

Previously, bots with general AI capabilities were confined to static devices like computers and smartphones. Now, with the rapid advancement of AI, it has found its way into mobile robots capable of performing household tasks traditionally done by humans.

Ballie is presently under product testing and development and is not available for purchase in Australia. Image simulated for illustrative purposes.

Building on ambient AI, these bots have the ability to evaluate the environment and owner's needs, reacting to direct commands. This is a domestic step change from the sci-fi or industrial robots our minds traditionally skip to.

We are now entering the age of soft robotics, where bots are equipped with 'soft skills' and 'soft exoskeletons' for human-like interaction, offering warmth, friendliness, and a human touch.

An example is Samsung's Ballie, which exhibits human traits through its mobility and integrated verbal and visual capabilities.

Mobile AI bots of the future won't be limited by location. They will accompany people throughout the home and connect to any smart device, bringing screens and vital daily information directly to us, wherever we are — be it through high-definition projections in the office, on walls, or even ceilings during a workout.

Imagine a personal assistant that understands verbal commands and is always present, liberating our hands and eyes for our daily activities. This non-invasive integration into our personal space will manage everything from entertainment to work meetings. It will also connect to our home's smart devices to build knowledge of household patterns and help us manage our homes.

Soft robotics will recognise and adapt to different household members, switching seamlessly between preferences based on cloud-stored data. They could help flag potential medical concerns and form a bond that responds to our moods and requirements, with incredible accessibility options for people with disabilities and special needs.

Moreover, in-home bots could help bolster home security by patrolling every nook and corner, autonomously and on demand. They could even tend to pets on command or through observation, ensuring the well-being of both home and all its inhabitants.

04

Energy Management

Your home as a mini power plant

We are in the midst of an energy revolution. The methods by which we generate, store, and use energy are evolving, adapting to a world steeped in AI.

Renewable, intelligent, and decentralised energy production is essential for making this happen.

As we aim for more efficient households, our homes could be reconfigured, in which by 2029, buildings may be power plants, generating and storing much of the energy they need to function efficiently.

Currently, Samsung implements automated Power Control and AI Energy Modes into select domestic appliances and Samsung TVs, helping to bring smart solutions to the household to help make life smoother.

Functions such as SmartThings AI Energy Mode can help keep track of different kinds of variables on compatible appliances[1]. For example, when a refrigerator door is opened or a room's temperature dips, SmartThings' algorithm takes notice, building a bigger picture of household usage patterns[1].

In five years, we'll see an evolution of this technology, which will include solar technology and in-home batteries. We'll also see device connectivity enable the distribution and synchronisation of energy use, enhancing in-home efficiency.

Resources will be allocated in real-time, with planning that minimises energy demands while optimising generation, storage, and the transfer of energy across homes and cars — potentially even generating profit for homeowners.

We'll trade energy similarly to how we share content on social media. The **'Energy Internet'** will become a common parlance and provide a systemic improvement in how energy moves.

Homes filled with connected devices and platforms like SmartThings will spearhead this shift, as AI teaches them to function in the most efficient way possible, relieving us of the burden.

This includes knowing when to power down, charge, and suggest alternative usage patterns, which smart devices will then autonomously implement.

[1]Available on Android and iOS devices. A Wi Fi connection and a Samsung account are required.

05

Transparent Displays

The debut of invisible devices

TVs have traditionally dominated the rooms they occupy. While they're no longer bulky boxes, they still essentially act as prominent pieces of furniture. However, emerging transparent screen technology seen at CES 2024 is set to revolutionise our visual and interactive experiences with screens.

In 2029, transparent displays will start to roll out in both business and public entertainment venues, and will begin reshaping the functionality and aesthetics of personal living spaces.

They will offer incredible resolution and facilitate interactions once exclusive to virtual reality, which disconnects users from their surroundings. These screens will enable us to view enhanced content like live sports augmented with real-time stats and data — without obscuring our view of the physical environment.

Beyond entertainment and computing, transparent screens will also serve as versatile technological canvases, displaying artwork, virtual vistas, or interactive content — seamlessly 'vanishing' when not in use.

Samsung's transparent MICRO LED represents a leap forward in screen possibilities. Resembling a pane of transparent glass, it features tiny MICRO LEDs and a precision manufacturing process that eliminates seams and light refraction, providing a crisp, uninterrupted display suitable for both home and commercial settings.

The modular design of MICRO LED technology allows for customisation to fit any space, representing Samsung's commitment to innovation, drawing on its semiconductor expertise. This approach enables the embedding of LED operation circuits directly onto the glass, reducing the brightness loss typically associated with conventional displays.

The future promises smart walls, capable of altering both the function and look of living spaces. These thin, web-connected materials can adhere to various surfaces, allowing easy relocating as needed.

Imagine screens as flexible and portable as paper, yet with the advanced capabilities of augmented reality, real-time data, and the highest-resolution displays.

Samsung's transparent MICRO LED on display at CES 2024. Australian availability is yet to be confirmed.

Appendix

Spotlight on Exponential Change

The pace of change isn't just fast, it is actually accelerating.

The Law of Accelerating Returns states that technological change is exponential and drives a compounding effect. This means that consumer technology becomes more capable and more affordable.

The oft referenced **Moore's Law**, where it was predicted that the number of transistors per a silicon chip would double every two years, is only one of many such laws. Acceleration applies to all digital processes.

Many consumer technologies leverage these realities simultaneously. Creating a new world of possibilities for the way we live and communicate in the home.

Let's consider:

01 Koomey's Law

states that the energy required for computation halves every 18 months.

02 Kryder's Law

states the amount of information we can store doubles for the same amount of space every 18 months.

03 Butter's Law

states the amount of data we can put through optic fibres doubles every nine months.

04 Nielsen's Law

states that Internet bandwidth for the average home doubles every 21 months.

05 Swanson's Law

states that the cost of solar panels drops 25% every doubling of manufacturing capacity.

06 Haitz's Law

states that the amount of light generated by an LED increases 20 times each decade and the price falls 90%.

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