

[<< go to Preface](#)

BUILDING CONSTRUCTION TECHNOLOGY ROADMAP

Executive Summary

Executive Summary

The Building Construction Technology Roadmap is the first attempt in Australia, and internationally, to systematically plot the house of the future and the technologies that will underpin it.

Long overdue, this Roadmap is both timely and visionary.

After decades with little real intrinsic change, Australian housing faces new pressures. By 2025 we will have added an additional 3 million homes to the nearly 8 million that already exist, and these pressures will not only affect how we build them, but also the way we manage, service and equip them.

Many of those changes are already underway. In particular, technologies like microprocessors or sensors that have been applied in the car and aviation industries are now being progressively applied to domestic housing and consumer electronics.

The Home Construction Industry is also changing. In the last decade the number of new homes built by the country's top 100 builders has jumped from 17 per cent to 51 per cent of the total.

Based on a series of workshops in Sydney, Melbourne and Brisbane, with input from national and international experts, the Roadmap is a snapshot of the issues, trends and market opportunities that will emerge over the next 20 years.

Demographic, environmental and technological factors will increasingly dictate where and how we will live at home in the future:

- A rapidly aging population, increased divorce rates, the emergence of women as a major economic force and the growth in home-based service work will continue to mean high-density, low-occupancy, flexible housing and communities.
- The "green" imperative will strengthen, making housing more energy efficient and less wasteful, requiring improved home rating, and influencing housing design, equipment and management systems.
- Communication and information technology continue to evolve and are now being applied to our homes through increased data, connectivity and automated capacity. This will also allow for the decentralisation of "mini-cities" that act as community-factory centres.

The Roadmap outlines 10 main characteristics of the house of the future:

1. Flexibility, modularity & materials

Home construction will increasingly rely on prefabrication and off-site construction, allowing infrastructure and technology to be embedded. Houses will also be built to permit greater flexibility in use, occupancy and lifestyle.

2. Water

The need to save and use water responsibly will see the rise of the third pipe in houses for the collection and re-use of treated grey water. We expect improved collection and management of residential water, with a network of rewards and sanctions built in.

3. Energy

Greater pressure to reduce electricity usage will see homes with built-in alternate energy capacity, increased smart metering, technology embedded to run smart appliances and automated management.

4. Communications

Homes will have increased data and connectivity capacity using a hybrid system of smart wiring and wireless, greater linkage between systems and hardware/appliances, and self-diagnosis of problems.

5. Security, safety & health

Population pressures and safety concerns will see homes become smart "havens" using fail-safe data transmissions, automated security systems, remote diagnostics, virtual community networks and germ management.

6. User-friendliness, comfort & safety

As complex technology is applied to the home there is pressure to make it simple and meet real human needs through automatic environmental control, convergence of systems and controls, smart furniture, and full visible spectrum lighting.

7. Home operations base

Greater data capacity and changing patterns of work will see the residential home act as the office/factory, with increasing use of communication technology such as holographic/video conferencing.

8. Entertainment

Home theatre is already a major trend and this will become ubiquitous as the home becomes the conduit for sophisticated entertainment, interactive recreation and information services. Products that deliver universal ambience (light and sound) are already available.

9. Smart services, appliances & fittings

This emerging industry will grow based on increased home capacity for online and remote services, program linked appliances, and Internet software updates.

10. Maintenance management

Home maintenance and servicing will be revolutionized through electronic supply of plans and manuals, automatic condition monitoring of structural defects, low maintenance self-cleaning materials, longer life coatings, and online appliance diagnostics.

Linked to these 10 characteristics are over 80 specific future home **trends**, a network of associated **issues** and the **enabling technologies** that will underpin them. An accompanying grid also ranks the market opportunities and availability of all identified **enabling technology** in Australia.

Connectivity and sustainability in the home is a core message from the Roadmap, the unifying theme behind all future trends and technologies that will deliver the energy efficiency, communication, home management, and automation of the future home.

The Roadmap is clearly a first step for all the stakeholders in the building and construction industry in Australia, an opportunity to think strategically about the housing market.

A list of potential industry participants is also a reminder that innovation is often a cooperative process. Government, industry and research agencies now have a more realistic process to identify new technologies, develop them creatively and forge new commercial partnerships.

About the Copper Development Centre

The Roadmap was initiated by the Copper Development Centre, Australia Limited (CDC) in an effort to focus a broader understanding of how residential housing was likely to change, but also to provide a framework to adapt strategically to those challenges and opportunities.

Home building uses around 60 per cent of the total copper output in Australia each year, and the Roadmap provides a specific section to identify how evolving home and technology trends will impact that market.

**BUILDING CONSTRUCTION
TECHNOLOGY ROADMAP**

Executive Summary

END

[go to Part 1: Introduction >>](#)