TECHNOLOGY ROAD MAP FOR THE BUILDING CONSTRUCTION INDUSTRY

A technology roadmap for the building construction industry has been developed by the **Warren Centre for Advanced Engineering**, identifying 80 technology trends which will bring about some fundamental changes in the homes and living conditions of people by 2025.

The Building Construction Technology Roadmap, produced on behalf of an industry consortium headed by the **Copper Development Centre Australia** and supported by **AusIndustry**, is claimed to be the first attempt in Australia or internationally to plot systematically the house of the future and the technologies that will underpin it.

It outlines ten main characteristics of the house of the future, and relates them to 80 specific future home trends, associated issues and enabling technologies. It presents a grid which ranks the market opportunities and availability of all identified enabling technology in Australia.

The characteristics of the home of the future, which are all built around the themes of connectivity and sustainability, are:

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

Sponsors of the Building Construction Technology Road Map include Australian Industry InnovationXchange Network, BHP Billiton, Tyree Group, Connection Magazines, NECA, Enware, Sims Group, AusIndustry, Crane Enfield Metals and the Copper Development Centre.Australia.

It can be downloaded at http:// www.copper.com.au/technology_ roadmap/index.html.

SURVEY OF CONSTRUCTION INDUSTRY INNOVATION

The CRC for Construction Innovation has released a national survey of innovation in the industry under its BRITE (Building Research, Innovation, Technology and Environment) research project.

The BRITE project aims to improve innovation in the construction industry by conducting innovation case studies every second year over the life of the CRC, and innovation surveys in the intervening years.

The survey, which attracted 383 respondents including main contractors, consultants, clients, trade contractors and suppliers, found that 6% (25, of whom 17 were consultants), reported `new-to-the-world' technological innovation. Overall, 81 of the 383 responders were defined as `high innovators' who developed innovations, adopted advanced practices and invested in R&D.

The report noted that the industry has a very low successful claim rate (15%) on the R&D tax concession, with most businesses being uncertain about their eligibility.

Recommendations for companies to improve innovation performance included providing employee training and employing new graduates; using more innovations to reduce clients' costs; monitoring inter-industry and international developments; growing linkages with universities and other research institutions; and adopting technology, knowledge, human resources and advanced practices listed in the BRITE survey.

The report also proposed a range of initiatives which governments could introduce to improve the innovation environment for the construction industry. These included:

- implementing programs to assist skill development within industry associations;
- reviewing the value and accessibility of the R&D Tax Concession Scheme for small and medium-sized enterprises within the construction industry in the light of the industry's low rate of access;
- stronger resourcing of education and training programs, given that the construction industry relies more on organisational innovation than the manufacturing industry, and therefore is less able to gain value from other initiatives such as the R&D Tax Concession ; and
- improving regulation of the construction industry to reduce its negative impact on innovation, in part by improving national consistency and moving more rapidly from prescriptive to performance-based approaches.

For more information, see the BRITE website, www.brite.crcci.info or contact the project leader, Dr Karen Manley on (07) 3864 1762.

ACTION AGENDA FOR ADVANCED MANUFACTURING

An Action Agenda is to be developed for the advanced manufacturing sector, with the aim of developing Australian industry and capacity in the areas of precision engineering, machine tool manufacture, die/mould manufacturing, robotics and other automation equipment for manufacture, general engineering and design for manufacture.

Announcing the Action Agenda, the Industry Minister, ***Ian Macfarlane,*** said the advanced manufacturing sector in Australia was facing a range of issues that needed to be addressed, including international competition, an image which needs revitalising and an ageing skilled workforce.

He said there was a pressing need to encourage more industry collaboration to optimise export opportunities and to make local firms the natural suppliers for local industry. Education and training was another urgent issue.