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**BUILDING CONSTRUCTION
TECHNOLOGY ROADMAP**

APPENDIX E

**Brisbane and Melbourne
Briefing Session Reports**

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APPENDIX E:

Notes from Brisbane Meeting

1. Was the issue of microwave cleaning of clothes and people raised?
2. Was there consideration of impact on existing stock?
– focus only on new housing.

Modularisation/Flexibility (Matrix 1)

3. Is the house adaptable to change from being a home to an office?
4. Why will fabrication work this time when it has been such a failure in the past, and only taken up at bottom end of market?
Answer – trade skill shortages, industry concentration, advances in customised manufacturing
5. Limitations of car model for construction – former design around manufacturing, latter around aesthetics
6. Need to think about construction in a different way – new players?
7. What is the assumed foundation of this house?
Answer – Tilt slab
8. What is the size of this house?
9. IKEA approach to fit-out.

Services (Matrices 2 & 3)

10. Basic services best managed at suburb/community/neighbourhood level
11. Solar only useful for special applications, but can contribute to reduction in peak load
12. Cost of solar cells, in bulk, down to \$10k for 1.5kw
13. How do developers capture the benefit of new features (e.g. a reduction in electricity bill from \$300 to \$100 per quarter is seen as a one-off gain)
– in this case savings diverted to body corporate
14. Limitation of batteries.

Security, Safety, Health (Matrix 5)

15. Most likely and obvious of all the predictions
16. Much security rests on a social or emotional belief
– there may not be a greater feeling of security with all these sensors, compared with a nightwatchman
17. Other forms of safety, in design and materials (carry over from OH&S)
18. Most of these technologies are available now, and will be in widespread use in 10 years
19. New technologies such as intelligent software.

Sustainability

20. Economic efficiencies in housing construction
21. Trade organisation no longer appropriate to modern industry; many trades now no more than semi-skilled
22. Grading of timber too fine
23. Soil degradation – what should be allowed to be done on a building block?
24. Natural lighting
25. Desalination
26. Reduced footprint – sustainable land use
27. Life cycle analysis of materials
28. Linked to efficient transport.

Smart Services (Matrix 9)

29. Provision of automated home-based non-discretionary shopping
30. Human-machine convergence
31. Voice-activated smart services

Maintenance Management (Matrix 10)

32. Role for local government, but they have difficulty with liability
33. Business opportunities.

MELBOURNE PRESENTATION (17 JUNE 2004) POST – PRESENTATION NOTES

1. Modularity/Flexibility

1.1 Statistics

Year	Top 100 Australian Builders: Portion of New Homes	Real Term Price	Total No. Builders
1992	17%	1	Approx. 30,000
2004	51%	0.5	Approx. 30,000

Sydney TAFE College 2004: 2 Bricklayers.

- 1.2. Manufactured Housing: Why Now?
- 1.3. Industrial manufactured housing already (warehouses etc). More aesthetically pleasing mass customisation adoption for residential.
- 1.4. Mass Customisation.
- 1.5. Microsoft/Sony/Nike joint initiatives?
- 1.6. Aging as a holistic strategy (not just illnesses): address (e.g. layout reworking).
- 1.7. Design should begin with best use of site.
- 1.8. Smaller houses – will market accept this?
- 1.9. Privacy: gathering private data through appliances and devices – how will this be addressed?
- 1.10. Who wins, who loses? Resistance may slow adoption. Displaced labour issues?

2. Services Into Property

- 2.1. Max Demand Selection and Penalties (similar to industry now) – say 3 to 5 kWh in 5 minute segments.
- 2.2. Appliances that talk to each other and prioritise/optimize usage.
- 2.3. Decentralised /Adhoc/"Piggy-backing" Networks divorced from recognised ISP's – enthusiasts now, mainstream later (including voice).
- 2.4. Disconnected Communities – withdrawing from servicing infrastructure/self sufficient.
- 2.5. Fuel Cell – not using renewable resources.

3. Security/Safety/Health

- 3.1. Aging implications: healthy and those with disabilities.
- 3.2. Balance remote and direct personal contact.
- 3.3. Privacy implications with sensors and home-prison style technologies to track movement.
- 3.4. Health care robotics.
- 3.5. Electronic Neighbourhood watch.

4. Aesthetics/Comfort/User-Friendliness

- 4.1. Usability hugely important to successful adoption of technology.
- 4.2. Technology indigestion an issue.
- 4.3. Convergence of electronics and computers in the home: e.g. many separate controls/computers/processors into one – less clutter, less maintenance, easier to use, cheaper, e.g. email + fax + voicemail.
- 4.4. Greater use of RFID.
- 4.5. Ruggedisation: making shock-proof/less fragile/water-proof.
- 4.6. Intuitively navigable and configurative GUI's and Menus one approach.
- 4.7. Touch-screens.
- 4.8. Many HVAC Building Systems decommissioned due to over complexity for users.
- 4.9. Readable, well structured manuals essential (online?) – good technical writers needed.
- 4.10. Hard-wired to software trend (approx. 10 yrs to reliability).
- 4.11. Open Source solutions vs. Microsoft.
- 4.12. Market will react as a matter of course.
- 4.13. Privacy: Data gathering by industry from homes, and direct marketing an issue.
- 4.14. Big Brother Watching issues.

5. Operations Base

- 5.1. Technical Support/Diagnostics an issue in home environment, especially with online world (firewalls, patches, virus updates, successful attacks, bugs, maintenance etc).
- 5.2. Quantum Cryptology solution to one aspect of security: secure communications/transactions between parties – however acceptable protocols exist.
- 5.3. Major technology security issue more direct.
- 5.4. Smart Dust/Nano Sensors – heat, temp, security, facial recognition, ease of use.

6. Entertainment

- 6.1. Plasma screens will become much cheaper (50% reduction soon).
- 6.2. Move from "Chip to Print" Technology.
- 6.3. O-LED Screens next breakthrough.
- 6.4. Thin film on walls set to revolutionise moving pictures (O-LED?).
- 6.5. Ruggedised touch screens.

7. Smart Services

- 7.1. Self cleaning nano-paint and carpets?
- 7.2. Robots currently available – e.g. vacuum cleaners.
- 7.3. Microwave cleaning?

8. Planned Maintenance/Instructions

- 8.1. Home/house electronic manuals.

9. Sustainability

9.1. Lighting

- 9.1.1. Japan: fewer windows, more fibre-optic piped sunlight.
- 9.1.2. Digital lighting: able to select desirable light from sunlight spectrum e.g. cut out UV.
- 9.1.3. Learning enhanced with correct light.
- 9.1.4. Sun tracking dishes.
- 9.1.5. LEDs approx 20% more efficient than incandescent(?).
- 9.1.6. Australia lags UK in energy efficient lighting (50% less fluorescents).
- 9.1.7. LV Tungsten Halogen very inefficient (produce heat) – 20% less efficient than fluorescents.

9.2. Water

- 9.2.1. Water tanks in walls?
- 9.2.2. Water tank water not necessarily used for drinking.
- 9.2.3. Issues with water tanks
 - Retrofitting.
 - Underground storage, sandstone.
 - More cost effective capture and storage options?
 - Pressure, pumps.
 - Third pipe to collective treatment.
- 9.2.4. Hong Kong: sea-water to toilets since 1920.
- 9.2.5. Sea water cannot be recycled, nor can any water that it is mixed in with – perhaps issue.
- 9.2.6. Open top dams not good storage strategy – evaporation (even Phoenicians had underground storage in 2000 BC).
- 9.2.7. Middle-east style desalination plants (reverse osmosis).
- 9.2.8. Microwave washing?

9.3. Electric Motors: More widely used, because cheap – but energy inefficient.

9.4. Good Building Design & Use of Site

9.5. Regulation & Business Models

- 9.5.1. Hurdle to take out "Travants".
- 9.5.2. Accelerated capital depreciation schemes.
- 9.5.3. Sustainability tax on residence sale.
- 9.5.4. Grey water re-use illegal until recently!
- 9.5.5. Carrot and stick required.

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END
