



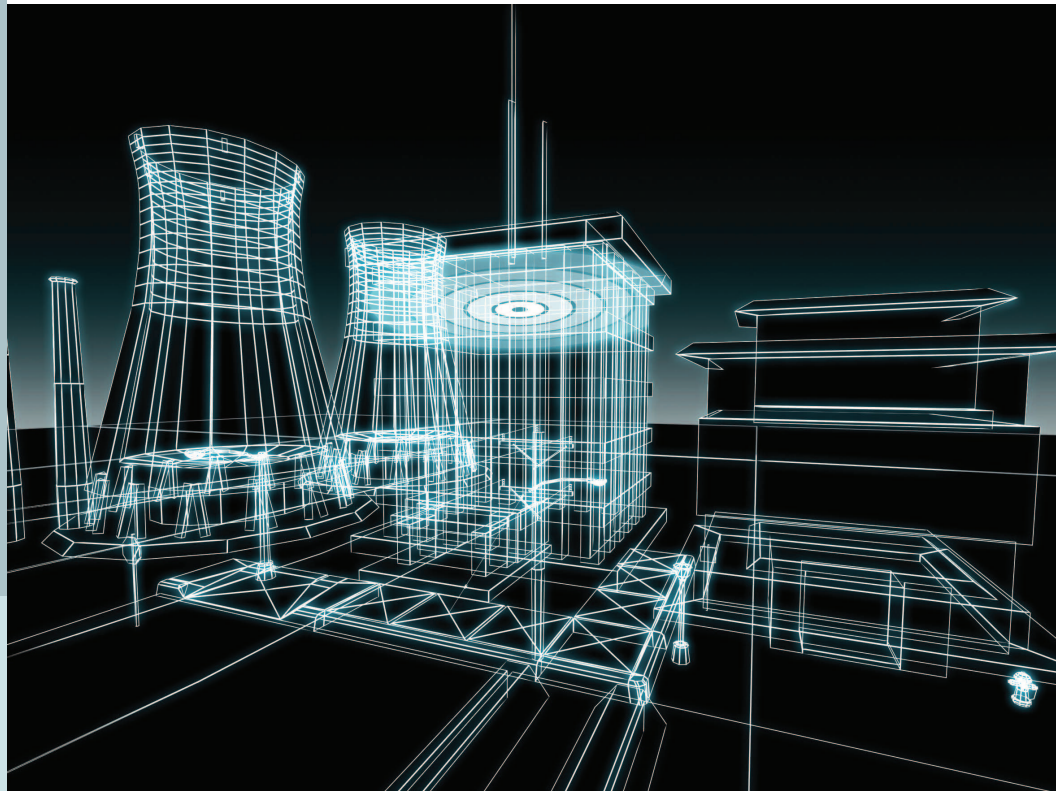
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THE FUTURE OF IN-BUILDING COVERAGE

The awareness of and demand for in-building wireless (IBW) coverage is on the increase. In their 2008 report, analysts ABI predict a huge growth in the IBW market over the next five years, with the market growing to \$15.4 billion by 2013. Whilst the current global economic situation may affect this rate, the industry is still expecting strong growth. There are many factors that have triggered this growth, amongst them:

1. Research shows that 75% of all mobile calls originate inside buildings at work, home or public places. This has in turn led to consumer awareness and expectation of ubiquitous coverage, and the ability to use their wireless devices anywhere.
2. Different building shapes and materials such as steel and metalized glass, cause in-building penetration of RF signals to weaken resulting in reduced data rates and even complete loss of signal. This will become even more apparent over the next few years with the introduction of new 4G technologies which require a considerably higher signal quality and radio frequency than their voice counterpart.
3. High speed data services usage puts increased pressure on the outdoor network. The increased frequency and volume of data handled, drastically reduces the coverage area, therefore making RF penetration less likely.
4. Increasingly, legislation is being introduced to ensure in-building coverage for public safety services.

Femtocell's dominate the consumer market



in providing residential in-building cellular coverage. Although there has been some debate as to whether base stations in a residential setting are as essential as they are in a business environment, they do offer new opportunities to the mobile operator, such as bundling of services for the home. Due to the limitations in terms of capacity and noise, femtocell's realistically could only work as a cellular coverage solution for very small single service businesses .

For the larger building space, active Distributed Antenna System (DAS) and fibre distribution is the most appropriate solution, and is increasingly being acknowledged as essential in the provision of ubiquitous, reliable in-building coverage. DAS is normally fed from a base station or repeater, depending on the size of the site, operator requirements, and the capacity needed. Active DAS can also be fed from a lower cost pico-BTS which can provide lower IP backhaul costs, just as a femtocell does. In most large public areas, such as airports and shopping centres, a multi-operator multi-carrier solution is required. Even in those facilities traditionally seen as single-operator there is an increasing trend towards multi-service solutions. This is because the consumer has a limited interest in the technology that enables the device or service; receiving mobile broadband over 3.5G, LTE or WiMAX is not their concern, the consumer simply expects to be able to connect anytime, anywhere.

To meet the consumer requirement for ubiquitous mobile service coverage IBW needs to be within the reach of operators,

building owners, facility managers and companies. If the cost of IBW solutions becomes more affordable through the development of innovative solutions more systems will be deployed. For each system that is deployed the mobile user experience is improved and the data rates increased, which encourages more demand for the service. Additionally, IBW improves the efficiency of the backhaul network, which directly improves the cost to the operator of service delivery.

Zinwave has developed a unique wideband DAS approach to delivering effective in-building wireless coverage for large buildings. Zinwave's solution is agnostic of frequency, protocol and duplex method and can therefore support any service or technology. This approach makes Zinwave a very cost effective solution for a multi-service environment, and is the ideal solution for new buildings where the final decision on services is not yet concluded. By adopting Zinwave's active, wideband DAS, operators are equipped with a truly future proofed solution that is also flexible and scalable, without the need for costly and disruptive additional service specific components and upgrades. Zinwave's solution supports next generation services, frequency migration and technology upgrades without the need to revisit your in-building coverage solution. In a time of uncertainty and in the current competitive market place it is essential to be armed with solutions that provide operators and building owners with protection over their IBW investment; Zinwave is the only solution that supports all existing and future technologies through its unique wideband active DAS.