

# Wireless Melaka

## Introduction

The Red Snapper (M) Sdn Bhd is a Perak SEDC Associate Company in which The Perak SEDC has a 40% equity stake. TRS deploys long range wireless broadband equipment.

**Wireless Melaka** is a State Government initiative with the objective to transform Melaka by making high-speed Internet access more available and affordable through a smart partnership between Melaka ICT Holdings Berhad, The Red Snapper (M) Sdn Bhd and a local ISP – this synergistic partnership endeavors to assist the *Rakyat* who are not online, gain access with an affordable yet efficient broadband Internet Service, as to enable them to use the technology to improve their educational, employment, health and life opportunities.

Wireless Melaka will facilitate many citizens, businesses, schools, and community organizations to embrace this technology while strengthening Melaka's economy, enhancing the tourist's experience and streamlining states services.

Wireless Melaka, is an important part in the state's economy which acknowledges ICT as a recognized enabler for Melaka economic sector, and an important factor in developing a well balanced knowledge based society.

Wireless Melaka can contribute significantly in accelerating the growth of Melaka (as a sector & enabler), bridging the digital divide which allows ICT education accessible & affordable to the majority of the citizens of Melaka. High priority to be placed on MSC areas, Tourist locations, enabling weaker sections of society, Government Buildings, Educational Buildings and campuses, commercial buildings, parks and open spaces.

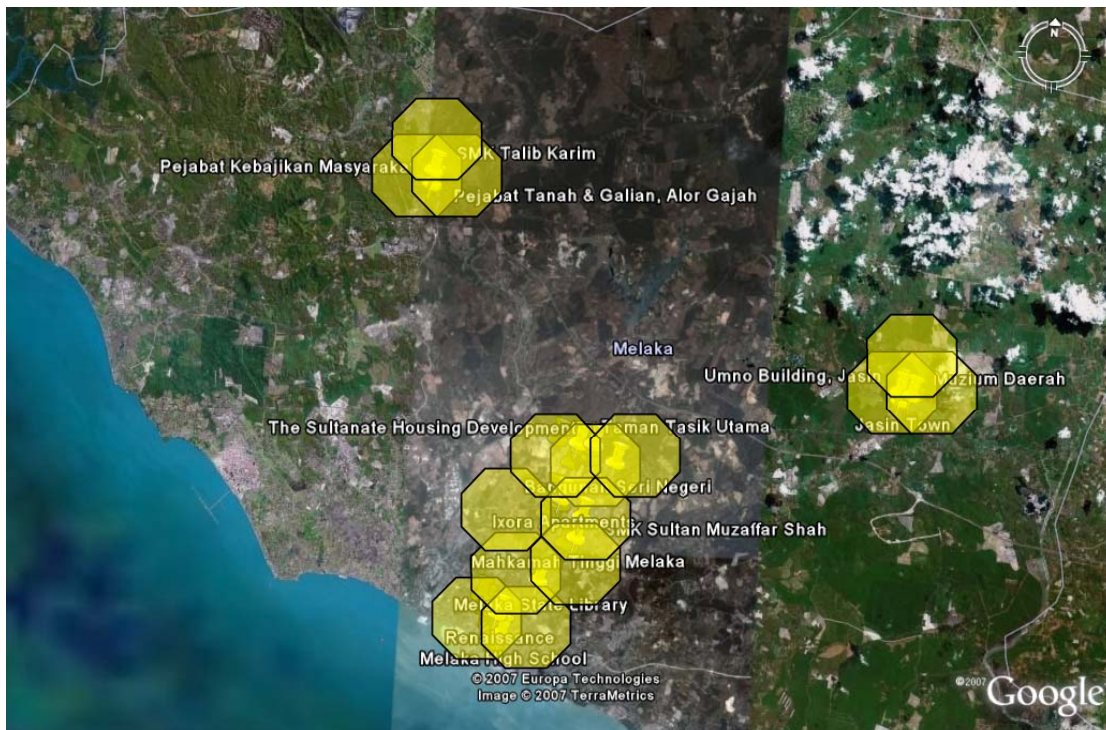
The Melaka Government has thus taken on itself to significantly resolve Melaka's last mile issue. The licensed service providers will be allowed access to this last mile connectivity as long as they eliminate any backhaul related charges that presently create a differential between broadband access pricing in Melaka and that in Greater Kuala Lumpur. At the very least, a business locating itself in the MSC at Melaka should enjoy the same quality and pricing of broadband access as businesses located at the MSCs in Greater Kuala Lumpur. ***The Multi-media Super Corridors need to be digitally contiguous.***

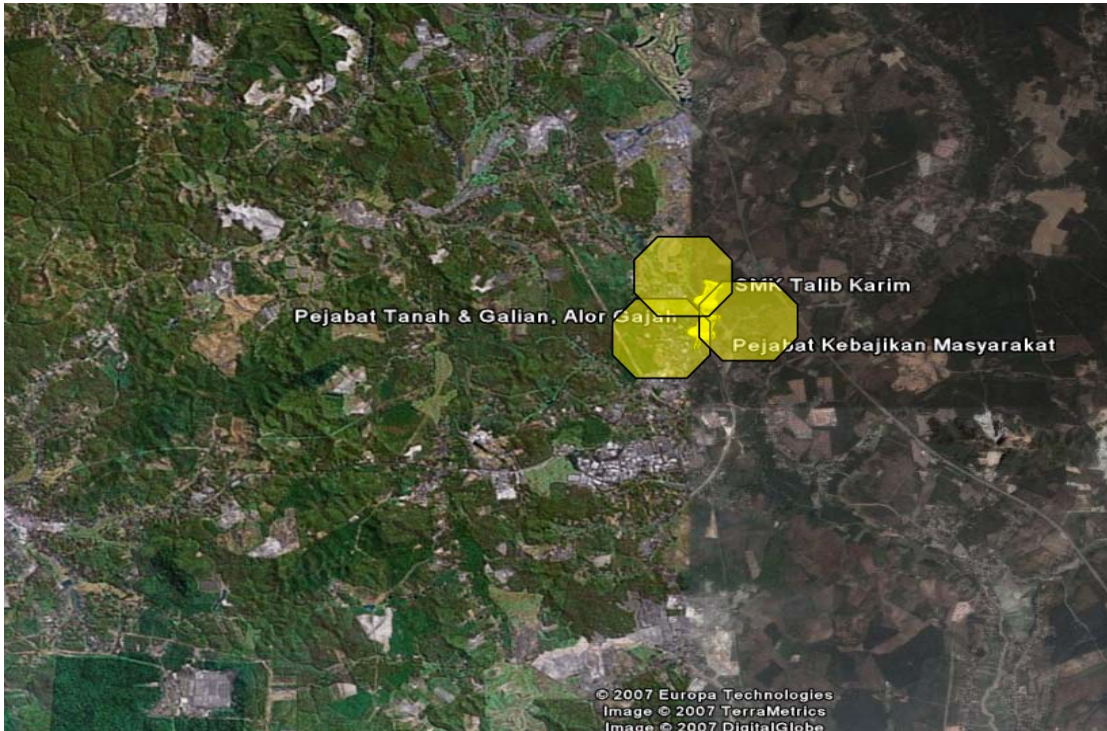
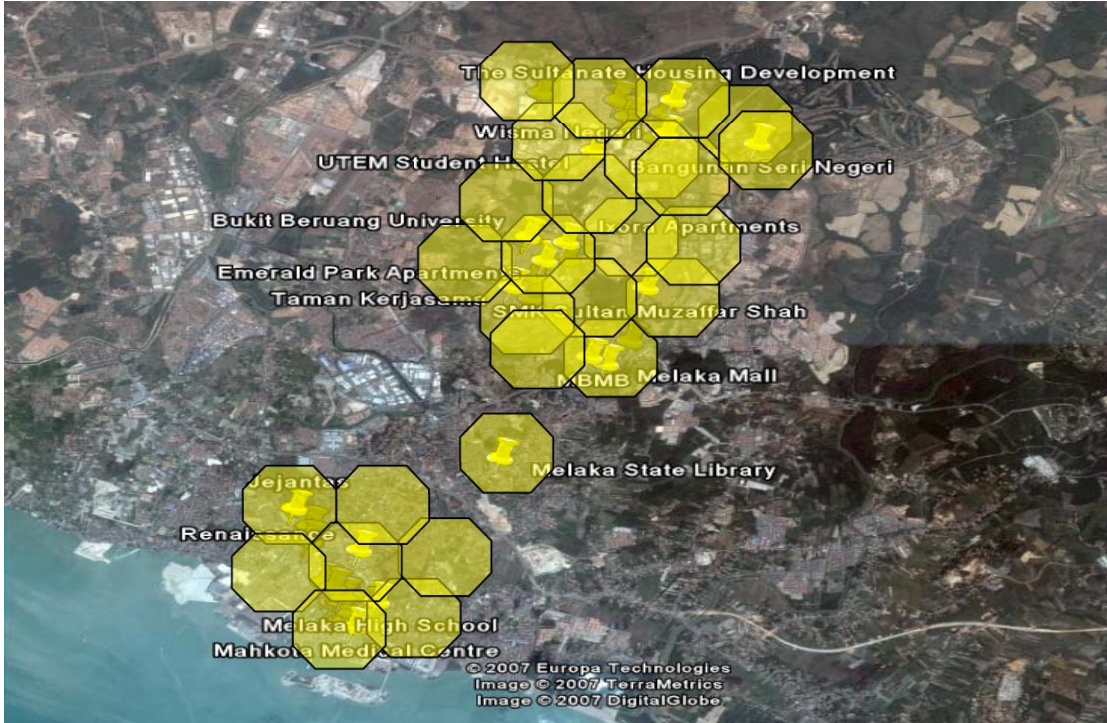
The objective of the Wireless Melaka project is to provide wireless broadband access under the Melaka ICT Holdings Sdn Bhd-Infrastructure; Wireless Broadband Melaka shall be implemented in accordance to the state's ICT Blueprint 2001 -2010, to populated areas in Melaka.

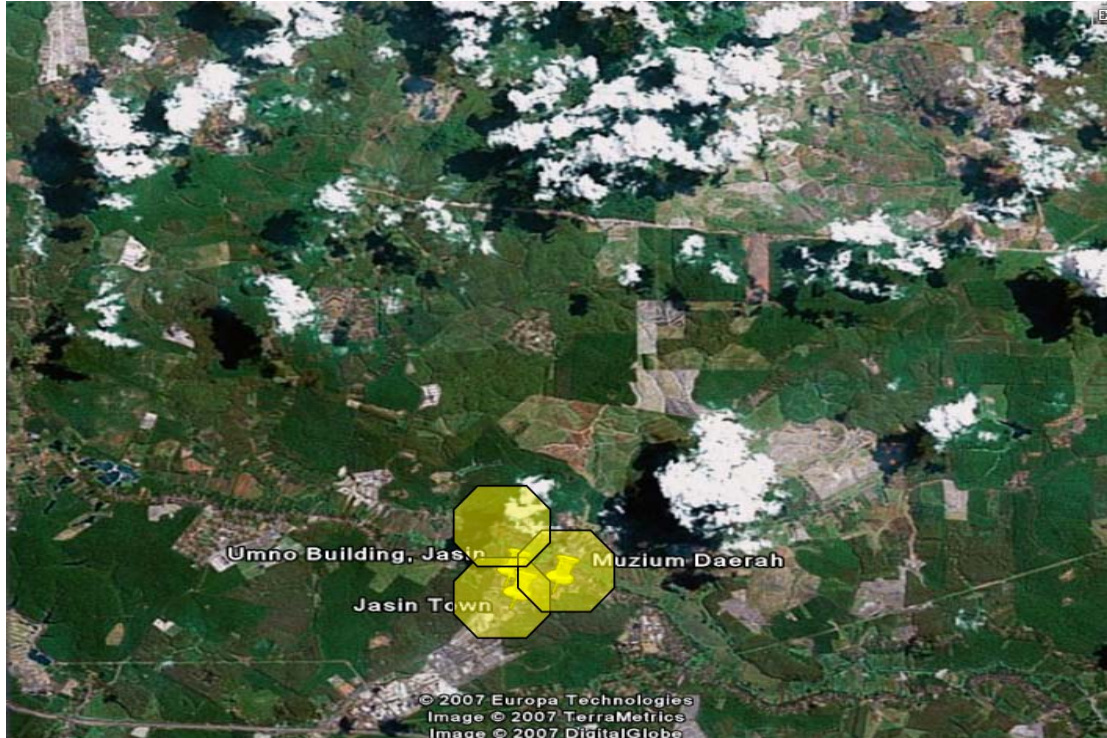
High priority to be placed on MSC areas, enabling weaker sections of society, Government buildings, Educational buildings and campuses, commercial buildings, parks and open spaces


### Wireless Melaka Phase 1

- Phase 1 of Wireless Melaka consists of 44 base stations to cover approximately 45% of the populated areas in Melaka.
- This will provide 60% coverage within the City Centre and 45% coverage within the rest of Melaka.
- 38 Base Stations in Melaka Tengah
- 3 Base Stations in Jasin
- 3 Base Stations In Alor Gajah
- Main concentration of deployments in populated areas and tourist destinations.
- Targeted areas identified to ensure viability and sustainability of the project.



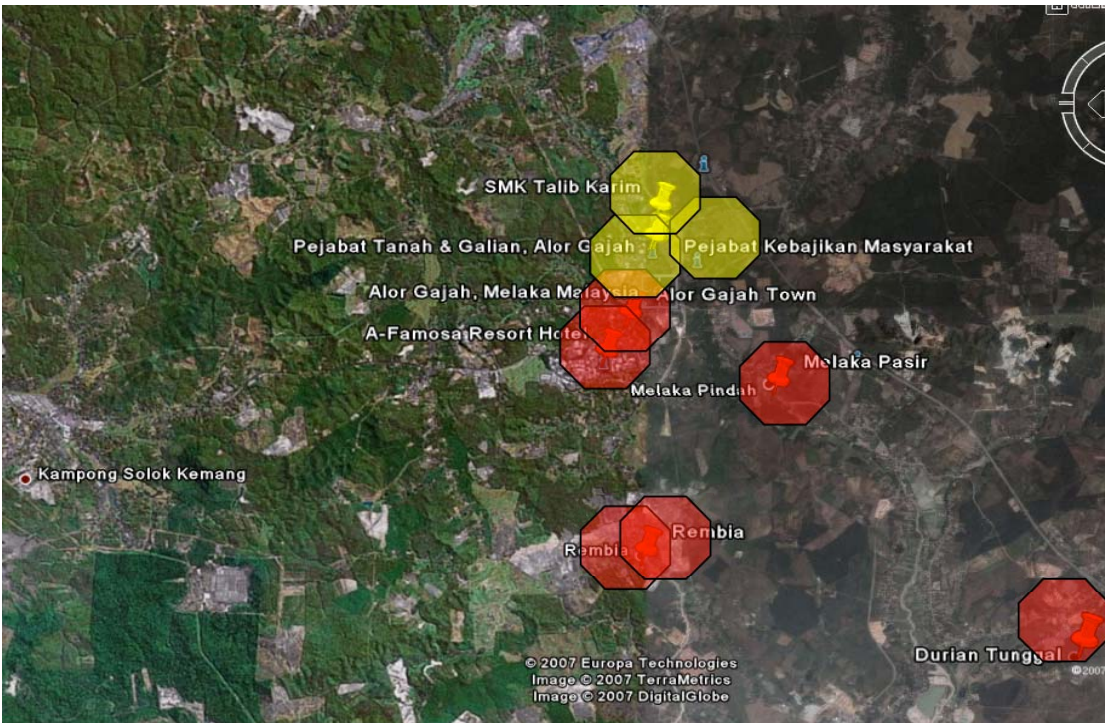
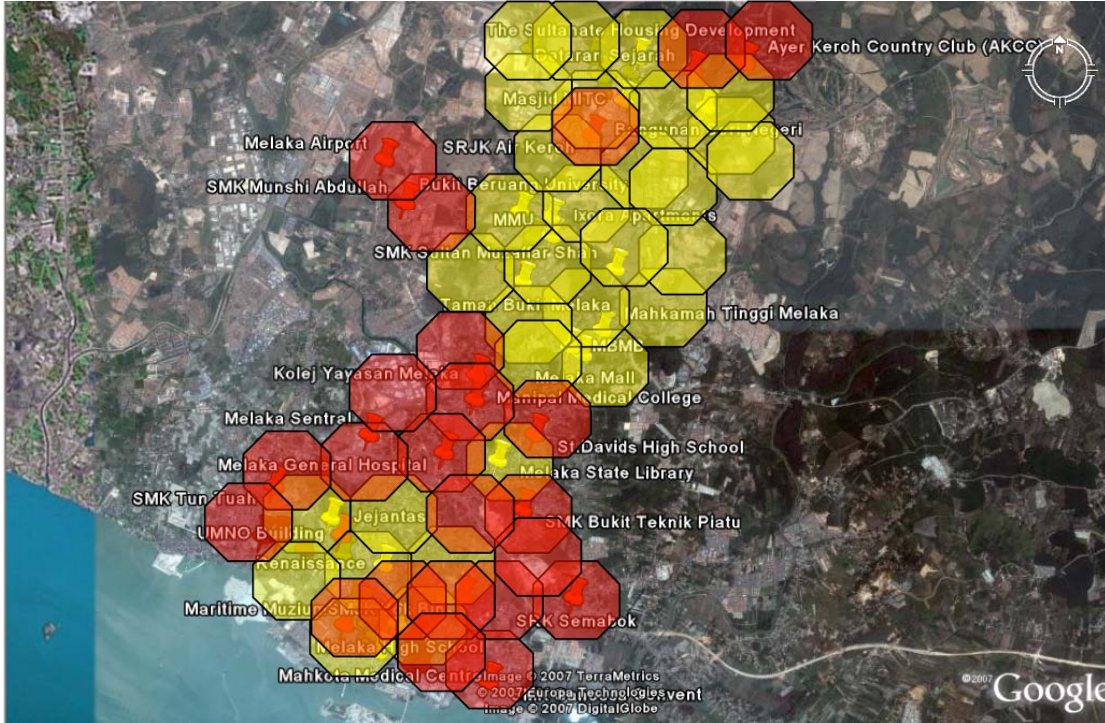


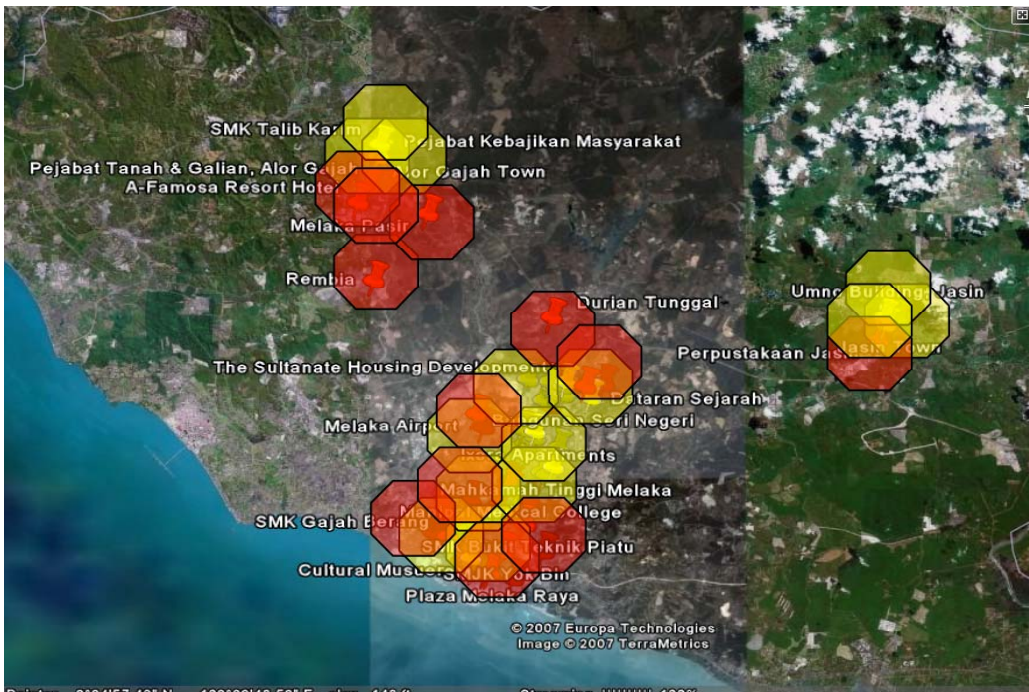
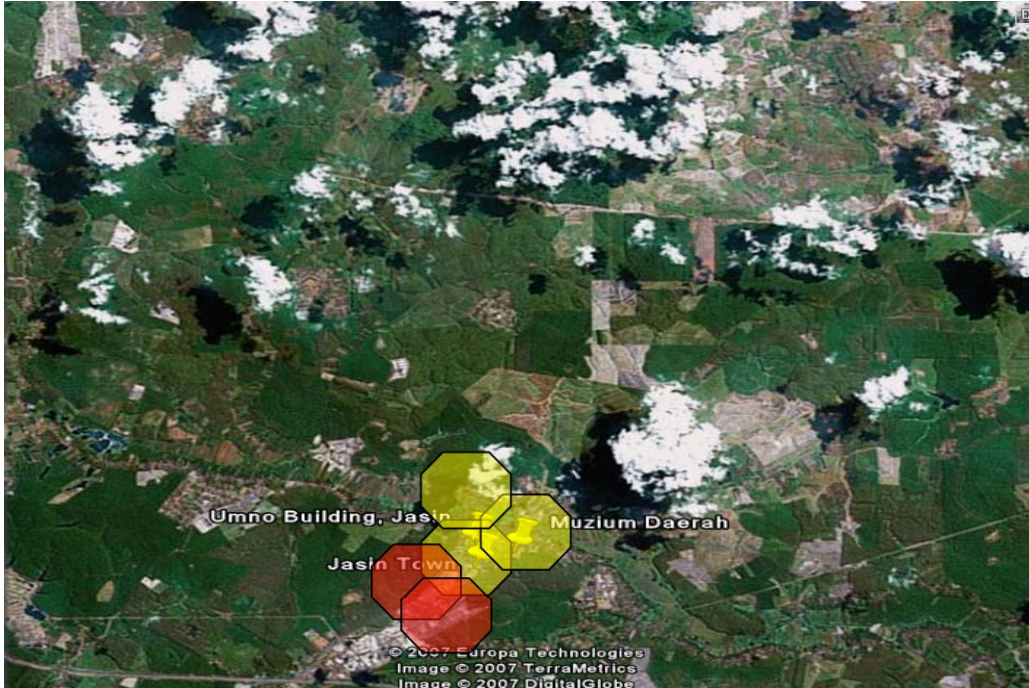


Legend	
	Phase 1

## Wireless Melaka Phase 2

- Phase 2 of Wireless Melaka will consist of additional deployment of 25 base stations in all three districts; the phase shall increase the coverage of populated areas to 60%.
- Melaka City Centre will have 75% coverage upon full deployment of phase 2, while there will be approximately 60% coverage of populated areas in the rest of Melaka
- Phase 2 will still focus on extending the reach in high traffic areas in Melaka Tengah to ensure feasibility and sustainability of the project whilst increasing the coverage in Alor Gajah and Jasin respectively.
- 15 Base Stations in Melaka Tengah
- 7 Base Stations in Alor Gajah
- 3 Base Stations in Jasin

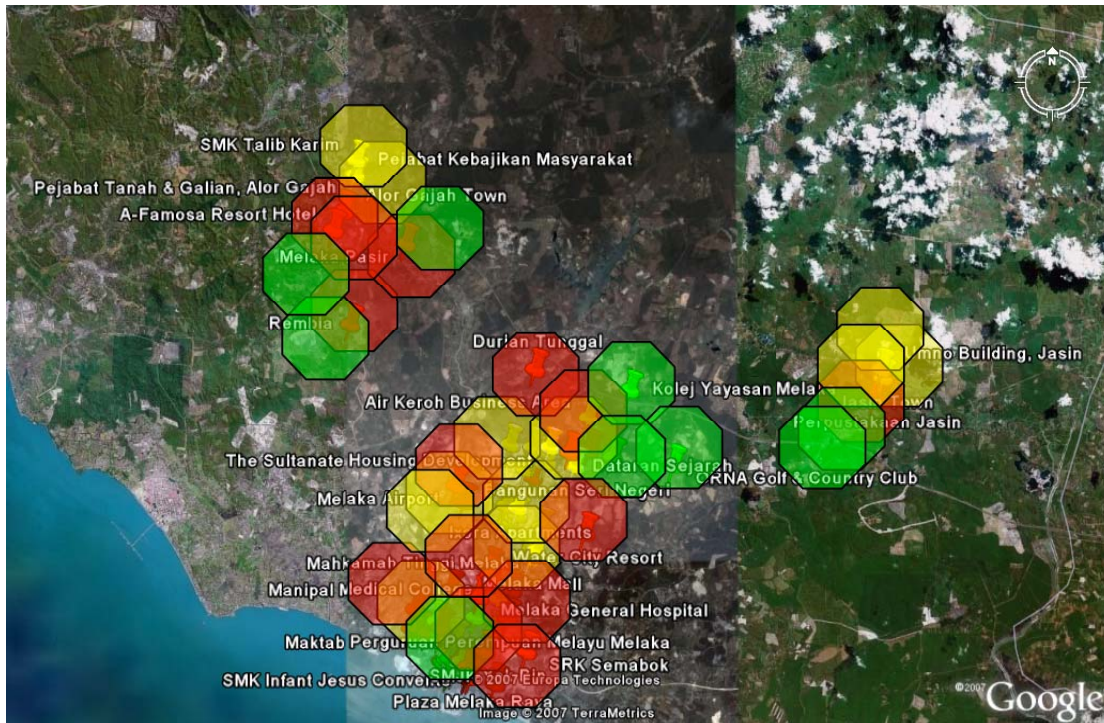


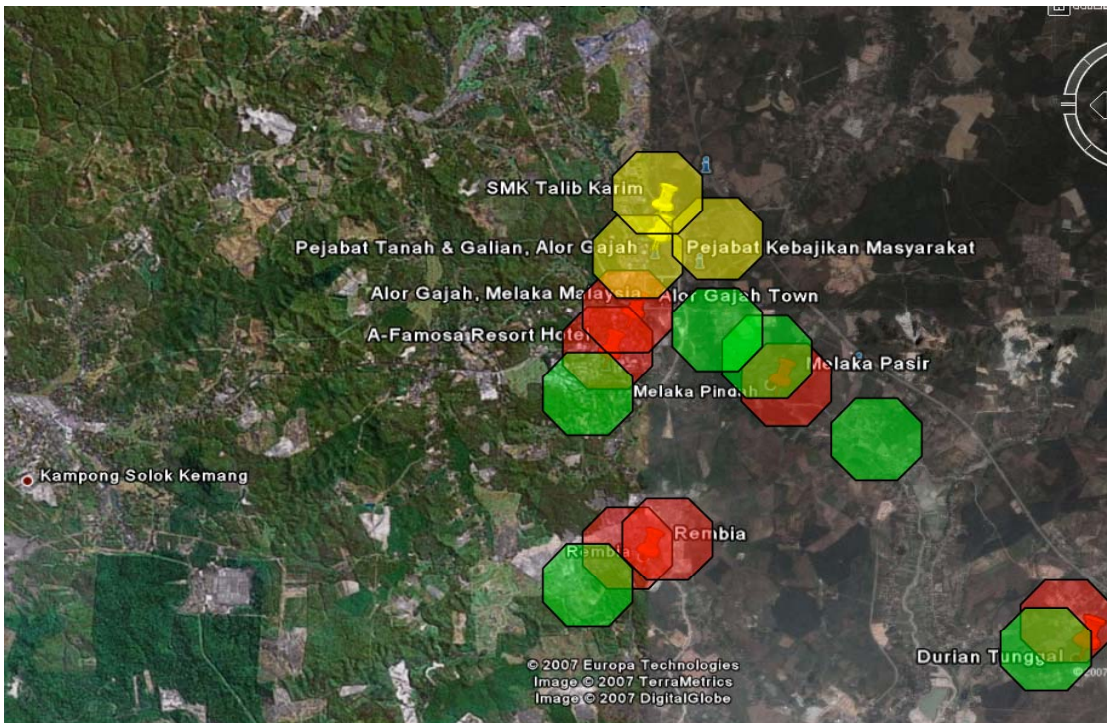
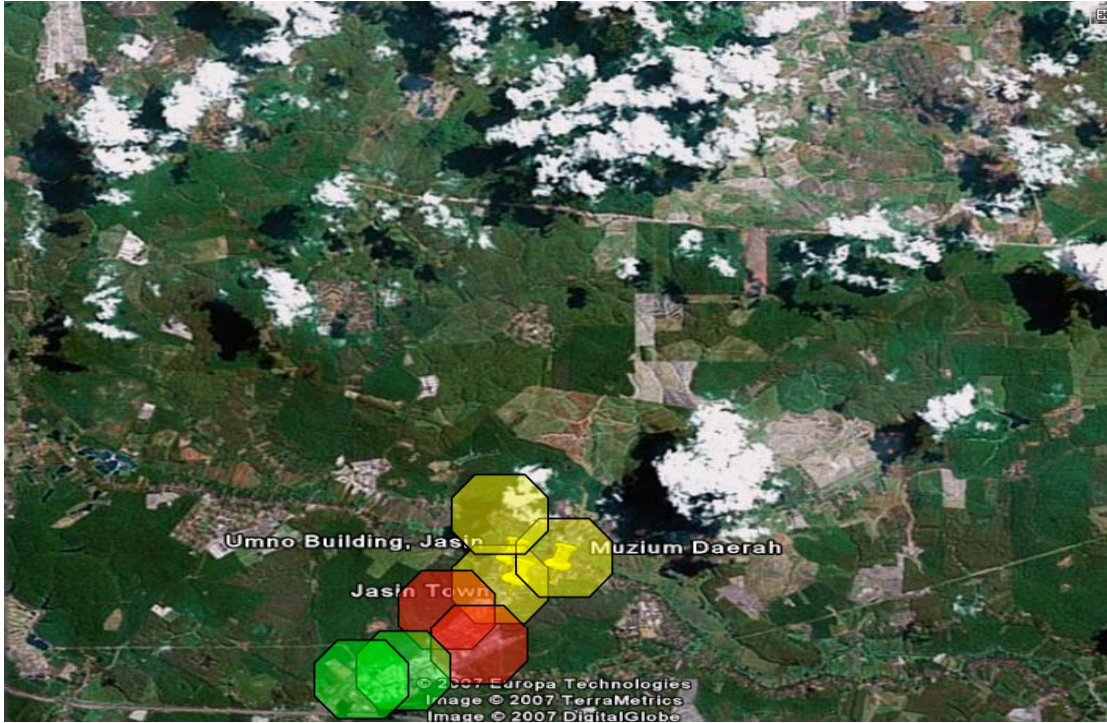


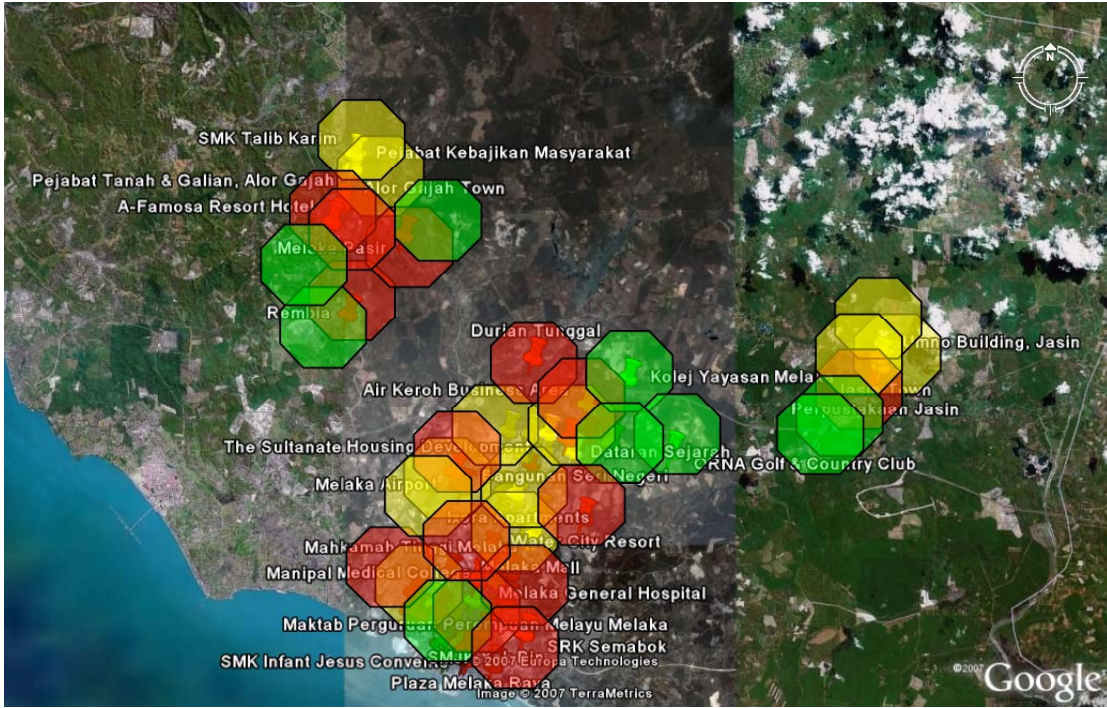
Legend	
	Phase 1
	Phase 2

### Wireless Melaka Phase 3

- Phase 3 of Wireless Melaka will consist of additional deployment of 20 base stations in all three districts; the phase 3 shall increase the coverage of populated areas to 85% within the City Centre and 70% within the rest of the state.
- Phase 3 will still focus on eliminating blind spots in coverage areas in Melaka Tengah while extending the WiFi Coverage to reach the rural communities in Alor Gajah and Jasin in tandem with bridging the digital divide amongst rural and urban areas.
- 12 Base Stations in Melaka Tengah
- 4 Base Stations in Alor Gajah
- 4 Base Stations in Jasin







Legend	
	Phase 1
	Phase 2
	Phase 3

# 1. Critical Success Factors for Wireless Project

The success of a wireless broadband project depends on the following:

- i) **Selection of Equipment:**

This forms a critical role in the success or failure of a wireless project. If the goal is to have a network that is in large coverage areas, required to support voice, provide high bandwidth (several mbps speed) and has to have high capacity (large number of users eventually), selection of mesh equipment for such project could result in disastrous consequences for the project. If the goal is to deploy an adhoc network without much planning and the main use of such network does not entail much capacity (general emergency services network), a Mesh network could be selected. Hence this first step is critical.
- ii) **Radio Planning:**

Proper radio planning is the first step towards the success of any wireless project. Without such planning, coverage will be bad, spotty and the entire project could be ruined. Radio planning requires both good tools as well as experienced engineers. It is as much an art as it is science. Most radio planners that helped build cellular networks across the world have been some of the most sought after professionals in the wireless industry.
- iii) **Availability of backhaul:**

Wireless project we are currently discussing involves deployment of broadband data and voice access. Reliable and low-latency backhaul is a must for such deployments. When backhaul goes down the entire network could go down. Similarly of the latency is high, the network will collapse for voice applications and management issues.
- iv) **Site Availability:**

Site acquisition is a major part of any wireless deployment. The site where the BTS will be mounted is very important. Its selection should be done very carefully and the actual site should be acquired in time. Timely conclusion of wireless projects hinge on availability of sites.
- v) **Proper Management:**

Wireless projects are long-term projects that involve considerable amount of fine-tuning in the initial phases to address the needs of the population. Proper management of resources, vendors, deployment and provision of the right features becomes paramount for success of such projects.
- vi) **Expertise:**

The team involved in the deployment of such networks should be highly trained. Any errors in the early stage of a wireless deployment could result in significant loss of capital and time. Hence, it is extremely important to have well trained staff available for such projects.

## 2. Consideration Specific to Wireless Perak & Wireless Melaka deployment – Choice of equipment.

**Higher throughput across the network:** to deliver broadband speeds to all users and to make possible the simultaneous use of multiple applications across different user classes. Mesh-based solutions (2<sup>nd</sup> generation or earlier) has limitations.

**Lighter infrastructure requirements:** The use of 2 base stations per square km with options for rooftop or light-pole install will facilitate speed of deployment over broad coverage areas and reduce self-interference within the network that has bedeviled overly dense installations to date.

**Simply better coverage:** Thanks to smart-antenna technology and a “cellular” style approach, the technology employed will get to places others’ cannot.

**Much lower costs of coverage per square km for broadband:** The reality of existing deployments is that they have either (a) matched this cost and offered nothing resembling broadband speeds or (b) approximately doubled this figure to provide megabit-class service. We will be able to offer both multi-megabit service and hit these cost figures. This is mainly due to the long range coverage of a single BTS that enables less base station needed to cover the same area as oppose to other systems.

## 3. Technology Approach

The choice of equipment stems from the technology and the approach to network design. The micro-cellular approach is a perfect solution for building a large area broadband network that is capable of carrying real-time application traffic. The network management approach is one similar to carrier networks. The technology platform is capable of frequency re-use makes this a highly desirable network.

The salient features are:

- System designed based on Micro-cellular deployment methodology
- Capability to carry real-time applications
- High bandwidth (design goal of upwards of 12 mbps) at each BTS
- Lower number of BTS to cover any given area

## Technology selection

The selection criteria were the following:

### 1. Technology Criteria

#### *a. RF Access – Outdoor*

- i. Standards based technology – WiFi is already wide spread. There are numerous devices already available in the market. The technology should be able to cater to that market.
- ii. Enhancements to address pre-standard features but still backward compatible – For instance, 802.11r fast handoff is currently not available but, systems can be implemented using the existing chipsets etc to be fully backward compatible.
- iii. Rugged equipment for outdoor use
- iv. System that is easy to deploy– This is important since it adds to our CAPEX
- v. A System that is low maintenance – Reduced OPEX
- vi. System that can provide an architecture to support real-time applications
- vii. System that can provide enough capacity (throughput)
- viii. Configurable coverage to minimize interference
- ix. Centralized radio optimization support
- x. QoS support to address real time applications
- xi. Flexibility in deployment options (pole top, roof top, etc.)
- xii. Multiple backhaul options (Wired, wireless etc.)

#### *b. RF Backhaul*

- i. Capability to support Point-to-Point and Point-to-Multi-Point backhaul
- ii. System that provides for backhaul throughputs of up to 40 mbps.
- iii. Flexibility of deployment (pole, roof, or any structure with several mounting options)
- iv. Outdoor equipment for severe weather conditions
- v. Ability to configure channels to avoid interference

Based on these business criteria, we selected technology from different vendors to set up an architecture that will cater to the requirements of the project.