

# The PRT Project Phase 1 Design & Engineering

## The Future of PRT in Korea



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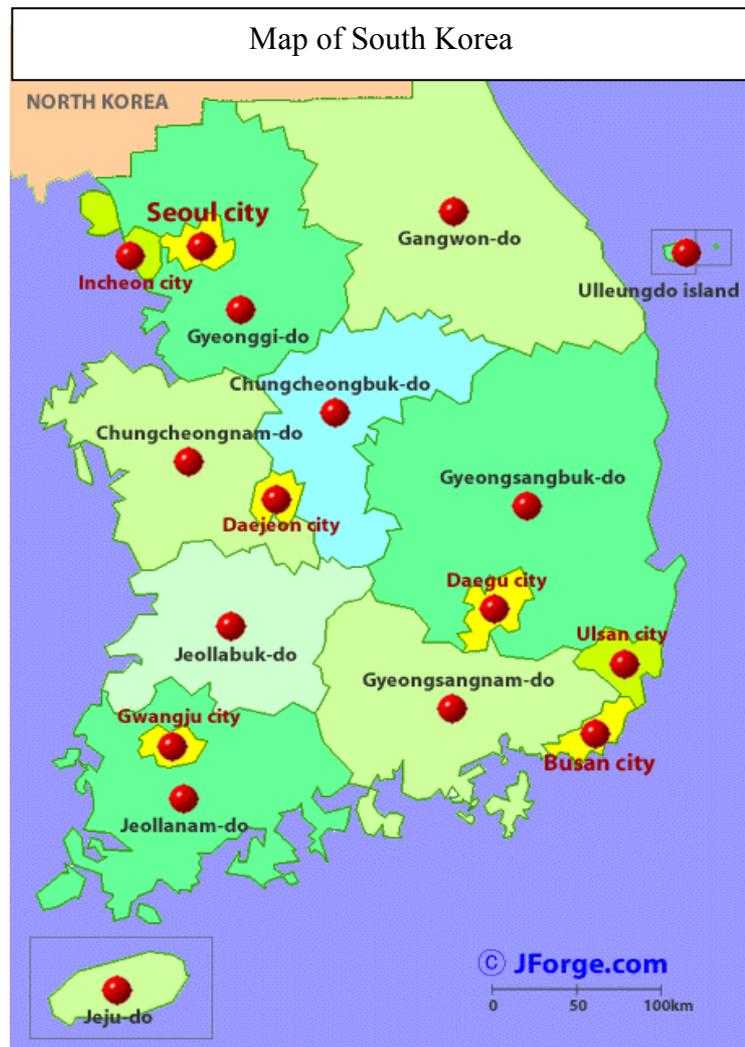
# THE FUTURE OF PRT IN KOREA

## 1 Introduction

Korea, including North Korea, is situated on the Korean Peninsula, which spans 1,100 kilometers north to south. The Korean Peninsula lies on the northeastern section of the Asian continent. The peninsula shares its northern border with China and Russia. To its east is the East Sea, beyond which neighboring Japan lies. Except North Korea, South Korea encompasses a total of 100,000 square kilometers with 45 million populations. It is a highly populated country.

Everyday almost all Koreans travel to work using public or private transportation systems. However, especially in big cities, like Seoul and Busan, heavy traffic jams and air pollution caused by a lot of vehicles are very serious problems. A few weeks ago, Seoul was recorded as the worst city in terms of air pollution from the capitals of OECD (Organization for Economic Cooperation and Development) countries. In an

attempt to minimize these problems, central and local governments have tried to establish more public transportation systems. As the alternative to private vehicle for movement of people in cities, heavy subway, LRT, and buses have been seriously considered and deployed. However, these transportation systems are facing limits because of their high costs and/or inefficiency. For example, in spite of the advantage that it carries a lot of people swiftly at a time, subway systems in Korea have lost money continuously because of its huge initial construction cost (USD 80M/km) and high operating expense. Every year the Korean government is spending huge sums to cover the deficit. By the same token, LRT is expected to have same problems with subway systems. In addition, buses have not fully fulfilled their functions because of heavy traffic congestions in the big cities. As a result, many people think that new transportation system should be developed and introduced for solving these serious problems for the high-density population in Korea. They have intensive aspirations for the new system; comfortable, economical (low-energy consumable), and environmental friendly.



In short, the PRT (Personal Rapid Transit) system represents a revolution in urban transportation. Furthermore, since PRT can provide many advantages to passengers and governments in urban areas, large number of people would like to use a PRT system instead of driving their own vehicles in the heavy traffic jams. First of all, the PRT system can make people travel fast with comfort and cheap price from the low construction and operation costs. Also, it will not cause any air pollution because it is electrically-powered and consumes the low level of energy. Accordingly, we strongly believe that the PRT system could be the best idea to solve the current Korean traffic conditions.

## 2 Potential Opportunities (Markets) for PRT

### 2.1 Special Economic Areas

Korean government has developed an ambitious plan to be an economically-central country in the region of East-North Asia by implementing well-organized social infrastructure in west coast (especially around Incheon-city). According to the plan, much foreign capital will be attracted and many famous international big companies will do their businesses in these areas.

The important point is that these areas will be newly developed with modern style and careful plans. From this point of view, the government will try to deploy the up-to-date transportation system that is different from the traditional ones as a method for movement of people. Especially, Incheon-city announced in 2002 that a PRT system would be constructed in Songdo-city and Kimpo areas. Therefore, if it is proven with no technical and operational problems, the PRT system, that are currently being developing in Norway by PRT JV, will be highly likely to be chosen as a new standardized transportation method for these areas. There are several reasons why we think so. First of all, PRT's high-tech image, advantages and functions fit well fit in with newly developed areas. Second, in spite of the government's announcement to apply the PRT, no competitors have a better solution than the PRT JV. The JV PRT system will maximize its functions by being harmonized with other transportation systems, such as buses and private vehicles. There are three areas considered.

#### Songdo-City

In 2000, Incheon-city announced plan to develop Songdo area as a north-east Asian business hub city. This city will provide pleasant business and living environment. And, based on the plan, NSC (New Songdo City Development Limited Liability Company) will be established on 20<sup>th</sup> April, 2003. The company, owned by Gale and POSCO E&C, will develop Songdo in earnest. Already, the master plan for the new city was approved by Incheon-city in November, 2002. And, until 2008, NSC will develop 5.5 M square meter. The new city is going to be specialized in economic zone for the newest industries. And, convention center, hotels, office buildings, and residential districts will be constructed, step by step.



Blueprint Map of Songdo-City

## Kimpo area

As the second choice, Kimpo will be developed as a center of international finance and leisure town. Totally, it encompasses a total of 18 M square-meter (1M for international finance area, 5.5M for residential area, and 10.5M for leisure town). According to the local government's whitebook, the construction period will be from 2006 to 2008.

## Youngjong-island area

The third one is located in Youngjong-island that includes the newly opened Incheon airport. Because of the strategic position close to the airport, this area (19M square-meter) will be prepared for specializing in air transportation business and important travel position.

## 2.2 New capital

Seoul, the capital of Korea and the largest city, is highly populated city with over 11 million people. As a result, the city has severe problems, such as the terrible traffic jam, air pollution and high cost of living. In an attempt to minimize these problems, the new president of Korea, Mr. Noh, promised that he would build the new capital in Chungcheong-Do, in the middle part of Korea (refer to Map above).

The central government has a plan to select one city in Chungcheong-Do as the new capital in 2004, start to build from 2007, and move its central office from Seoul to the new capital in 2010. The capital will be newly constructed with sophisticated plans, realised step by step. Especially, we (POSCO) strongly believe that the PRT system, the state-of-the-art system, will be adapted as a new transportation system in the new capital owing to many reasons described above.

## Gangnam-Gu (Seoul)

Gangnam-Gu, located in southern part of Seoul, is the one of most crowded business areas in Korea. There are so many buildings, people, and cars. Therefore, the traffic congestion is a pain of neck in this area. In an attempt to resolve this troubles, local government has tried to make plan to introduce the new transportation systems including the PRT system, several times. However, no system has been introduced because of the following reasons.



The brief past plan for PRT in Gangnam-Gu

The PRT system, the best solution considered, has not been a commercialized proven system. Also, other transportation systems, such as LRT and Monorail, have been rejected because they did not meet functional, environmental, or economical requirements.

Based on the facts described above, if the PRT system we are developing can be proven in the Fornebu project, there is no doubt that local government will decide to introduce this system in the Gangnam-Gu.

### 3 LRT Markets

Besides the areas mentioned above, many local governments are seeking the new transportation systems. As a solution to minimize the traffic problems, they are planning to introduce the LRT system since they don't have any better ideas. However, the LRT system includes many problems. First of all, the initial construction cost of the LRT system is not reasonable (USD 40M/km). Second, it is not an environmental-friendly system because of its heavy structure and noise.

Therefore, if the PRT system that we are developing is proven, the local governments are highly likely to change their plans from LRT to PRT. PRT will satisfy their requirements by providing many advantages described above.

City	Length (Km)	System	Period	Operation	Budget (USD M)	Participants
Hanam	7.8	AGT	99□06	2007	342	Hyundai E&C Consortium (Hyundai+Sambu)
Eujungbu	10.3	AGT	03~06	2007	362	POSCO E&C Consortium (Dongbu+ROTEM+POSCON+POSDATA+EGIS(France:Operation))
Yongin	21.3	LIM	04~07	2008	506	Daelim Consortium (Daelim+Bombardier)
Kimhae	23.9	AGT	03□07	2008	919	Hyundai Dev. Consortium (POSCOE&C+Hyundai + SYSTRA(France))
Buchun	15.2	-	04~09	-	454	Planning
Kimpo	18.8	-	04~05	-	583	Planning
Kangnam	10	-	-	-	259	Planning
Bansong	11.7	-	-	-	694	Planning
Choeup	7.3	-	-	-	240	Planning
Yongdo	9	-	-	-	320	Planning
Junju	19.4	-	-	-	333	Planning
Buchun	11.5	-	-	-	355	Planning

- Current on-going Projects and Plans -

## 4 Conclusion

The density of population in Korea is so high. In other words, many people are living in the small areas. Due to this undesirable situation, many traffic troubles have happened, in spite of much effort of central and local governments. Also, the new era for more-advanced transportation system will come by all means.

In conclusion, Korea is one of the best markets for PRT. Even though PRT cannot solve all problems related to traffic, it could provide fresh solutions to passengers who have been tired of the traditional transportation systems.