Chapter 5
Emerging Markets and Space Applications

Stella Tkatchova
RHEA System S.A., Belgium

“The Moon is the first milestone on the road of the Stars”
Arthur Clarke

1. INTRODUCTION

Telecommunications, navigation and earth observation space systems have become essential for the safety in our daily lives. Research on-board space stations has contributed to the development of new drugs, osteoporosis treatments, development of new materials, medical equipment and development of new methods for water purification and processing.

In recent years, space agencies have started encouraging the development of new markets and new industrial applications for the wider use of navigation (i.e. Galileo, GPS) and earth observation space systems (i.e. GMES). Space agencies and private companies involved in the development of space applications will face numerous challenges in market segmentation definition, however the space applications with their technology and process solutions may contribute to energy production, environment and disaster management processes and protection.

Only a few years ago, the idea of private citizens paying for trips to the ISS was in the realms of science fiction. Today in 2011 it has become a reality and entrepre-
neurs are investing in the development of sub-orbital transportation vehicles and construction of space ports. Space agencies have started recognizing the importance of commercial crew and cargo transportation services and NASA has even allocated a budget for encouraging the development of these services. Nevertheless, investing in commercial space projects is still considered to be challenging and risky, as funding is limited and is primarily available through prize competitions or partial project funding from agencies.

Today space exploration is considered by many visionaries and scientists, as a future source of energy through the use of solar power satellites and the construction of lunar solar power stations.

2. FUTURE MARKET EVOLUTION

Markets evolve through different phases of development; nascent, frenzied, turbulent and moderate. Nascent is when new markets are created, first-time buyers appear and markets are strongly regulated by governments. Frenzied is when markets start to expand and profits raise, while the turbulent phase is when profits of companies are high and there is a stable group of competitors. The final phase is the mature one where profits of companies start to reduce and government withdraw from the process and industry consolidation processes start taking place.

For example, in the early days of the ISS commercialisation, space agencies initiated commercialisation, new markets were created, profits were negative and customers were unknown. Thus, in the early days the ISS markets entered into the nascent stage of market development (S.Tkatchova, M.Pelt 2008) as presented in Figure 1. Due to the low market demand for ISS on-board facilities/services and because of the ISS partners’ political and strategic decisions, ISS commercialisation was terminated for NASA and ESA. Nevertheless, the lessons learned from encourag-

Figure 1. ISS markets phases of development (Tkatchova, 2008)
INDUSTRY PERSPECTIVE: Restrictions on Worldwide Space Technology Exports

Augmentation Systems: The Use of Global Positioning System (GPS) in Aviation
Mohammad S. Sharawi (2012). *Technology Engineering and Management in Aviation: Advancements and Discoveries* (pp. 283-293). www.igi-global.com/chapter/augmentation-systems-use-global-positioning/55981?camid=4v1a