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SPACE APPLICATIONS IN EUROPE: ADDRESSING THE TRANSITION BETWEEN  
DEMONSTRATION AND OPERATIONS

**Abstract**

Over the past half century, Europe has become a major player in space and has developed a substantial space infrastructure. The European space programmes have, however, mainly addressed the needs of scientific communities while citizens do not yet fully benefit from the well-developed European space capabilities. Two major exceptions, the European meteorology and telecommunications programmes, have successfully evolved into services to much broader communities, which are today part of people's daily life. The European citizens directly benefit from other space systems, which unfortunately are not European; they are either extra-European, such as the American GPS, or national/multinational, like the defence or SPOT programmes. With the political development of Europe, the closer relations between the European Space Agency and the European Commission and the search for new budgets for space, the European space activities have entered a new phase. In the past decade, the focus has shifted from space systems to their applications and there is now a strong political will to further develop the European downstream industry, thereby strengthening the overall space industry.

The results of the recent European application-oriented initiatives have, however, been uneven and existing space-delivered data and services could be further used to address some of the European citizens' needs in a variety of areas. Many new applications integrating space-based tools are being demonstrated, mainly through publicly-funded projects, but only a limited number of them have become actual operational services. There are various challenges that prevent this transition from demonstrated applications to operational services and those need to be addressed by decision-makers in order to promote the development of space-based services and to fully use the potential of space systems to the benefit of citizens.

This paper analyses the main challenges in transitioning demonstrated space-based applications into operational services and suggests relevant actions to European decision-makers, taking into account the existing initiatives. It first reviews the importance of space-based services for Europe and examines the current situation. It then describes the different phases of the development of space-based services and explains why the transition between demonstrated applications and operational services is the most critical step in the overall process. The two main challenges to this transition, i.e. the aggregation of the demand and the establishment of sustainable structures, are analysed and specific actions are suggested to decision-makers. The last section examines the necessary evolution of the space applications field from the current technology-push to a demand-driven paradigm and the subsequent challenges to the existing organisations and programmes.