

Recommendation 3

(Regarding the roadmap development process):

SONNETS has designed a **roadmap development process** building on other market-pull & technology-push approaches and using the multi-criteria assessment tool WBAT [1, 2].

The different steps of the process have been validated by the experts committee and also during the SONNETS validation workshop.

We therefore recommend this process as a methodological aid for developing research and technology roadmaps.

SONNETS had the aim to base its recommendations on societal and public sector needs and also on emerging ICTs which could potentially innovate the public sector. Therefore, it made sense to use a roadmap approach which is based both on needs (or on the 'market' in the business language) and also on available technologies on the other side. Thus, the SONNETS roadmap incorporates the general idea of the **EIRMA (European Industrial Research Management Association) approach** of including both market-pull as well as technology-push aspects into the development of the roadmap.

In SONNETS we had to make some adaptations to this generic roadmap, due to the fact that our roadmap is not intended to be used in a company, but as a recommendation on how to innovate the public sector with emerging ICTs. Thus the final roadmaps contain information regarding necessary technology R&D activities or rather suggestions for adaptations, modifications or enhancements, actions in the public sector itself (like training, infrastructure, processes..) and also necessary measurements to deal with ethical, legal and societal challenges. Methodologically, we followed a three step approach, which is based on other roadmap development processes like the one from EIRMA [1] or the T-plan approach [2]

First step: This step contains an analysis of emerging ICTs regarding their technology-readiness level, current research projects, actors and existing and potential applications, solutions and services of these technologies in the public sector and also in other domains.

Second step: In this step we changed the perspective and set the focus on the societal and public sector needs. Each need has been assigned to one or more emerging ICTs, which have the potential to satisfy the need when implemented in the public sector. For each technology assigned to a specific need a to-do list has been developed containing a list of all necessary research and non-research activities needed to implement and use this technology successfully in the public sector. Methodologically, this was done by using the Weighted Bit Assessment Table (WBAT) method [3, 4].

Third step: In this step these to-do lists have been filled with life. For each emerging ICT one societal, business or public sector need has been selected, for which this technology has the highest impact. This technology-need matching has been validated during an expert's workshop. For each of these technology-need combinations a roadmap has been developed containing information regarding the current state of the art and existing applications and also necessary technological and non-technological activities to implement these technologies successfully in the public sector.

