European Commission

This fiche is part of the wider roadmap for cross-cutting KETs activities

'Cross-cutting KETs' activities bring together and integrate different KETs and reflect the interdisciplinary nature of technological development. They have the potential to lead to unforeseen advances and new markets, and are important contributors to new technological components or products.

The complete roadmap for cross-cutting KETs activities can be downloaded from:

http://ec.europa.eu/growth/industry/key-enabling-technologies/eu-actions/ro-ckets

Potential areas of industrial interest relevant for cross-cutting KETs in the Health and Healthcare domain

This innovation field is part of the wider roadmap for cross-cutting KETs activities developed within the framework of the RO-cKETs study. The roadmap for cross-cutting KETs activities identifies the potential innovation fields of industrial interest relevant for cross-cutting KETs in a broad range of industrial sectors relevant for the European economy.

The roadmap has been developed starting from actual market needs and industrial challenges in a broad range of industrial sectors relevant for the European economy. The roadmapping activity has focused on exploring potential innovation areas in terms of products, processes or services with respect to which the cross-fertilization between KETs can provide an added value, taking into account the main market drivers for each of those innovation areas as well as the societal and economic context in which they locate.

Taking the demand side as a starting point, cross-cutting KETs activities will in general include activities closer to market and applications. The study focused on identifying potential innovation areas of industrial interest implying Technology Readiness Levels of between 4 and 8.

H.2.2: Improved delivery systems, surface coatings and coating techniques for drugs

Scope:

To develop new and improved delivery systems and surface coatings for conventionally fabricated tablets.

Demand-side requirements (stemming from Societal Challenges) addressed:

- Tackle the "health, demographic change and wellbeing" societal challenge

Demand-side requirements (stemming from market needs) addressed:

- Improved efficacy of therapies

Specific technical / industrial challenges (mainly resulting from gaps in technological capacities):

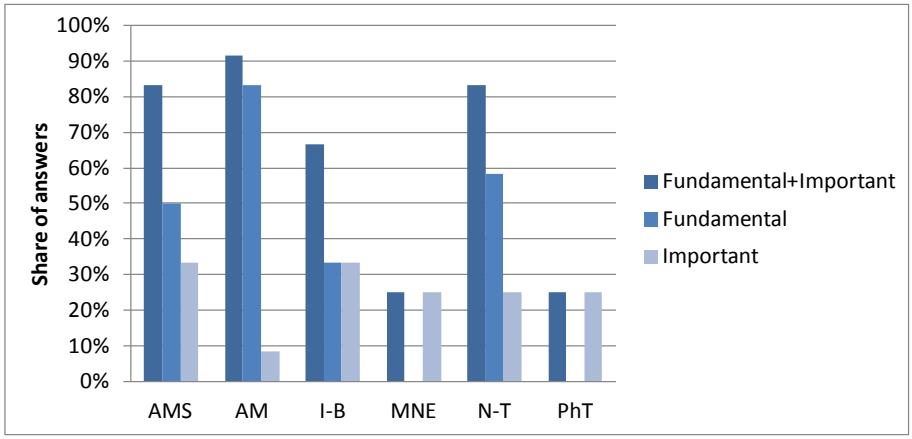
- Improvement of conventionally fabricated tablets by new delivery systems as well as surface coatings and coating techniques achieved through optimised formulation research

Contribution by cross-cutting Key Enabling Technologies:

In respect to this Innovation Field, the integration of KETs could contribute to the development of more efficient drugs delivery systems, surface coatings and coating techniques for drugs, building on improved drugs formulation and the incorporation of drug molecules into new delivery systems.

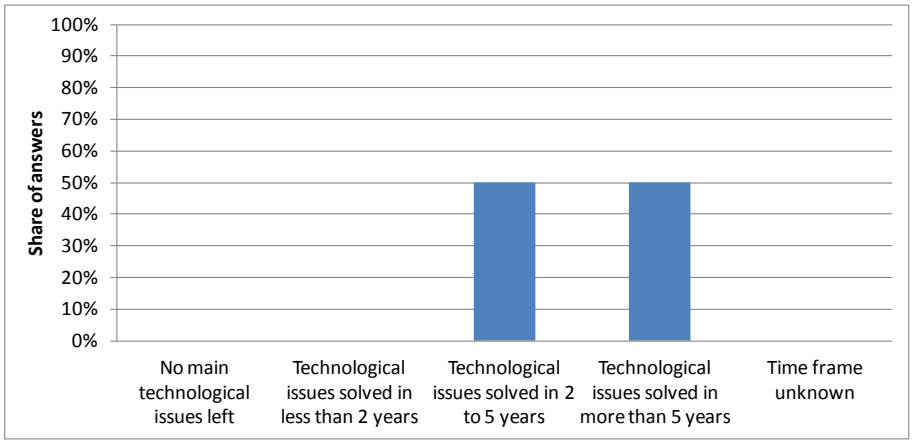
To this aim, the combination of KETs experts' opinions collected through the dedicated survey (whose result is depicted in the below bar chart), the examination of KETs-related patenting activity in respect to this Innovation Field, and desk research activities, have allowed identifying a rather strong interaction of KETs with respect to this Innovation Field, with either fundamental or important contribution mainly by the following KETs:

- Advanced Manufacturing Systems (AMS)
- Advanced Materials (AM)
- Nanotechnologies (N-T)
- Industrial Biotechnology (I-B)



Timing for implementation:

According to the majority of KETs experts' opinions (whose result is depicted in the below bar chart), desk research, and in line with the KETs-related patenting activity in this field, it is considered that the main technological issues holding back the achievement of cross-cutting KETs based products related to this Innovation Field could be solved in a time frame of either 2 to 5 years or more than 5 years:



Hence, considering the fact that research in this field is of the incremental type, the provision of support in the short to medium term should be taken into consideration within this framework.

Additional information according to results of assessment:

- ***Impact assessment:***
  - The market for drug delivery systems, which include several product types (among which oral, parenteral, inhalation, implantable, transdermal) will continue to grow at a high rate along with an increasingly aging population in Europe.
  - Today's drug delivery technologies enable the incorporation of drug molecules into new delivery systems, thus providing numerous therapeutic and commercial advantages. A large number of companies are involved in the development of new drug delivery systems, which is evident by an increased number of products in the market.
  - Today, drugs formulation is more challenging in terms of the development of improved delivery systems than in terms of formulation itself. Fast disintegrating or dissolving tablets, which are tablets that dissolve or disintegrate in the mouth in the absence of additional water upon introduction into the mouth, for easier administration of active pharmaceutical ingredients responding to today's lifestyles, are a clear example thereof, having received ever-increasing demand during the last decade so that the field has become a rapidly growing area in the pharmaceutical industry (Source: Fast disintegrating tablets: V. Parkash et al., Opportunity in drug delivery system, Journal of Advanced Pharmaceutical Technology and Research, 2011 October-December; 2(4): 223–235).
  - Oral drug delivery remains the preferred route for administration of various drugs with a huge market that is expected to grow.
- ***Results of patents scenario analysis:***
  - 1 KETs-related patent identified in the period 2001-2011 for the specific Innovation Field
  - Hence, no significant patent-related indicators can be reported in this field