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SPACE POLICIES TOWARDS SMES IMPLEMENTED BY THE ITALIAN SPACE AGENCY (ASI)-
INDUSTRIAL ASSOCIATIONS COOPERATION INITIATIVE TO ENCOURAGE INNOVATIVE SPACE
APPLICATIONS AND SERVICES IN ITALY

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This paper offers a contribution of how space industry applications and services are encouraged in Italy. The Italian Space Agency (ASI) has been implementing a specific policy mainly focused on space SMEs, that are a strategic portion of space industry in Italy, able to fulfill very well the requirements of the demand of innovative applications and services, both institutional and private. For this reason ASI is engaged in a three-year cooperation agreement with the national Space Industry Associations (namely AIAD, AIPAS and ASAS), with the aim of promoting an effective industrial policy for the development and growth of Italian SMEs. The framework of reference of this cooperation agreement is wide and ranges from the periodical issue of thematic ITTs (according to a co-funding pattern) specifically reserved to SMEs to a detailed analysis of the population of space SMEs in Italy: competences, geographical distribution, organization in clusters (namely Space Technology Districts, an evolution of the more traditional experience of Industrial Districts), international cooperation, etc. This paper analyzes the effects of these policies on the involved space SMEs at the end of the first year of the cooperation agreement (February 2011), mainly through the identification of quantitative and qualitative indicators of growth and market development (new and already existing markets both public and private) of space services and applications: pre-competitive prototype technologies/products/services development, ex-post analysis of the economic sustainability and permanence of these markets, industrial competitiveness at the international level (both at the ESA/EU and extra-European countries level). This ASI-Associations platform is strongly engaged also in the involvement of the Large System Integrators community, the Italian Government (specifically the Presidenza del Consiglio) and the local communities (Technology Districts, Regions and Municipalities) in order to create a coherent national system aiming to support the growth and development of Italian Space SMEs.

I. INTRODUCTION

Under the last administration the Italian Space Agency (ASI) has implemented a specific policy focused on space SMEs, consistent with the guidelines provided by the EU, according to which the needs of SMEs are at the heart of the Lisbon Growth and Jobs Strategy. Small and Medium companies cover a significant share of the Italian economy in general and the space sector is not an exception. However, SMEs are, by definition, multi-faceted and widely distributed along the value chain and, from a territorial point of view, over the national territory. Beside that, they encompass a variety of requirements and characteristics, that is why Industrial Associations can represent their

interests towards the institutions (the National Space Agency and other national and international Organizations) in a better organized and coordinated way. In Italy there are three Industrial Associations, namely AIAD, AIPAS and ASAS, each of them representing specific typologies of industrial activities and/or sectors.

According to this framework, the Italian Space Agency (ASI) engaged a three-year cooperation agreement with the national Space Industry Associations with the aim of promoting an effective industrial policy for the development and growth of Italian SMEs. Among the purposes of this cooperation agreement there is the periodical issue of thematic ITTs

(according to a co-funding pattern) specifically reserved to SMEs.

The aim of this paper is to analyze, after the first year of the agreement, some of the results of the initiatives undertaken. In the second paragraph a general overview of the Italian space sector is presented, with a specific focus on the relevance and role played by Space SMEs. The economic relevance of the space sector in Italy is not well estimated because the official statistics are not able to recover the data related to space activities of companies whose core business is not necessarily in Space. That is why the effort of ASI, in collaboration with the Industrial Associations, is to create an Economic Observatory and, at the same time, to build up a constant and reliable tool through which it is possible to monitor the sector.

In the third paragraph the authors provide a quick look at the improvement of the Economic Observatory (ASI industrial DB) after one year of life, together with a description of the first efforts undertaken to encourage a fruitful cooperation between SMEs and Large System Integrators (LSIs) in Italy.

In the fourth paragraph the authors present a assessment of the proposals received by ASI in the first two ITTs: themes, typologies of aggregation among SMEs, geographical distribution and other aspects.

II. THE SPACE SECTOR IN ITALY

It is well known that the relevance of the space sector goes over the simple economic assessment of the turnover and the number of employees. Indeed, the direct and indirect impacts of space activities are wide and sometimes difficult to identify. However, a reliable and steady monitoring of the main economic indicators of the national space industrial sector represents the bottom for an effective space policy.

Not all the space companies have their core business in space and, according to the national statistical organization (ISTAT) procedures, they identify their main activity through statistical codes (ATECO codes) which are not necessarily representative of their space activities. For this reason specific studies devoted to the space sector appeared necessary in the past and ASI decided to create an economic observatory.

According to a study commissioned by ASI and made by TechSight in 2011 (referred to consolidated data of 2007), at a first glance the space industrial sector in Italy is represented by around 130 companies, 75% of which are SMEs. This number comes from the census of the companies able to produce space technologies, that

is why they can be considered the core group of the space industry in Italy*.

This core group of space companies represents a value of production of 4.430 billions of Euros and 20.250 employees in 2007. These companies operate not only in the space sector: the approximate rate of space share is 40% (i.e. around 1.850 billions of Euros and 7.800 employees). About 90% of the value of production in space is produced by large companies, but a certain percentage of it is subcontracted to SMEs, that is why 79% of employees are in large industries.

The structure of the space industry in Italy has a significant base on SMEs: 47% are micro companies (less than 10 employees), 31% are small (less than 50 employees), 14% are of medium dimension (less than 250 employees). 32% of the companies belonging to the core group are large industries and they belong almost all to the Finmeccanica Holding. Another aspect regards the distinction between manufacture and services/applications: according to the mentioned study, 66% of the value of production is covered by manufacture activities and 33% by services, with similar figures for the number of employees.

From a geographical point of view, the space industries are distributed along the Italian territory in a quite unbalanced way. Territorial clusters of industries can be highlighted: Rome and its surroundings represents the most important pole for Space, followed by Turin, Milan, Naples, Pisa and Lucca in Tuscany. Significant operative units are present also in Matera (Basilicata) and Bari/Brindisi (Apulia), in correspondence with ASI centers of excellence, mainly in the field of EO applications.

III. THE ROLE PLAYED BY INDUSTRIAL ASSOCIATIONS AND THE COOPERATION AGREEMENT ASI/ASSOCIATIONS

SMEs play a significant role in the Italian space sector both in terms of number of companies and typology of activities performed. For this reason these companies manifested the need to organize their voice

* Other two typologies of companies, not included in this data elaboration are: companies that integrate space technologies using space products and services to realize their final goods/services (i.e. Selex Communications or STMicroelectronics); and companies that use space technologies to offer their products or services (i.e. ENAV or Telecom Italia).

in a coordinated way, in order to be better represented towards institutions. In Italy there are three industrial organizations, each one with its own peculiarities.

The first one is a Federation, namely the Italian Industries Federation for Aerospace, Defence and Security (AIAD), the final of the successive evolutions of the first Aeronautic Industries Association (A.I.A.), created in 1947. The second Association in chronological order is the Italian Space SMEs Association (AIPAS), created in 1998; and the third is ASAS, the Association for the Services, Applications and ICT for Space, created in 2004. AIAD is strongly focused on Defence and Security and is mainly an expression of the large industry; AIPAS supports the specific interests of space SMEs in Italy and ASAS is focused on space companies operating in the service segment. All together these Associations are able to represent the universe of the space industry in Italy and represent for institutions the ideal interlocutor towards industry.

Under the last ASI administration a specific Unit devoted to SMEs has been created, with the aim of appointing a team of people to deal with issues related to SMEs.

This Unit (that is under the Direction for National and International Relations) begun an intense cooperation activity with national industrial organizations and, among the other initiatives, organized in Rome, in 2009, an international event: "Space SMEs in Europe: from birth to maturity. International and national policies to support innovation and competitiveness in space related SMEs", in the framework of the first *EU SME week*, which hosted the most relevant European stakeholders for space in Europe[†].

This event has been the occasion to officially launch the cooperation between ASI and the Associations, which culminated with the signature, in February 2010, of a Memorandum of Understanding (MoU). This MoU aims at promoting an effective industrial policy for the development and growth of Italian space SMEs and maintaining and spreading the strategic positioning of Italian Space SMEs in national and international markets, with a special attention to the field of services and applications. The framework of reference of this cooperation agreement is wide and ranges from the

[†] Further details on ASI website http://www.asi.it/it/news/lasi_punta_sulle_pmi and on the EU website http://ec.europa.eu/enterprise/archives/sme-week-2009/events/italia/20090511-12_it.htm

periodical issue of thematic ITTs specifically reserved to SMEs to a detailed analysis of the population of space SMEs in Italy (the Economic Observatory): competences, geographical distribution, organization in clusters (namely Space Technology Districts, an evolution of the more traditional experience of Industrial Districts), international cooperation, etc.

Among the work packages included in this cooperation agreement, there are two main initiatives upon which the activities have been focused: the elaboration of an electronic instrument (DB ASI) able to conduct a census of the space industry in Italy and to provide a reliable and steady economic monitoring of the sector and, on the other side, the setting up of good practices for the management of a cycle of four calls for tender specifically devoted to SMEs.

The authors would like to provide here a quick look at the improvement of the ASI industrial DB after one year of life and, in the next paragraph, a general view of the results coming from the issue of the first two calls for tenders.

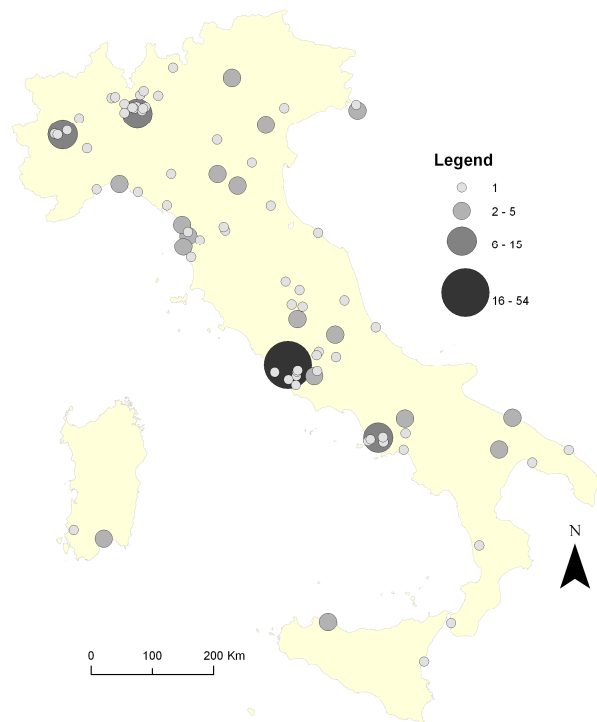


Fig. 1: companies enrolled in the ASI DB (September 2011) and geographical distribution. Source: elaboration on ASI DB data

As for the ASI industrial DB, thanks to the support of the Associations, the number of companies and

organizations registered has significantly increased, so that, as of today, there are 190 registered subjects, 170 of which are industrial actors. The Associations are now working into the data entry of the main economic indicators of the last three years (2008, 2009 and 2010) in order to build a reliable historical set of figures.

The DB is presently under an optimization process and in the next months it will be possible to come out with the first elaborations of economic, technical and geographical data.

Another result of the first year of cooperation between ASI and Association that is worth to mention here is the effort to encourage the cooperation between SMEs and Large Industries. With this regard an important progress is visible in the definition of strict rules for the involvement of SMEs in the largest Italian space program, Cosmo SkyMed Second Generation, the national earth observation system based on synthetic aperture radar (SAR) technology, commissioned by ASI and the Italian Ministry of Defence. ASI, together with the Associations, met the two Primes and determined a strict set of procedures that will rule the subcontracts. The Primes have already published on ASI website the thematic areas that will be object of subcontracts, together with a detail of the procedures of evaluation and assignment of subcontracts[‡].

A clear and reliable set of rules for SMEs involvement in large programs and their collaboration with LSIs, indeed, is considered an issue of capital importance covered by the MoU.

IV. FIRST RESULTS OF THE CALLS FOR TENDER ISSUED BY ASI AND RESERVED TO SMES

The most important result of the cooperation between ASI and the Associations is the issue of four calls for tender specifically reserved to SMEs. A budget of 20 million of Euros has been assigned to this purpose, according to a cycle of four ITTs with different themes:

- materials, components and sensors[§];

[‡] All documents and details are available at the following link:
http://www.asi.it/it/news/le_pmi_per_cosmoskyed_di_seconda_generazione

[§] The successful proposals have been presented on December 17, 2010, at ASI. The descriptions of the proposals are available on ASI website

- earth observation^{**};
- TLC and integrated applications;
- satellite navigation.

Before the entrance into force of the MoU, there has been a common work of definition of the rules and procedures governing these calls for tenders, with the aim of reducing the administrative burdens. Among the results is the definition of a contract template which is simplified with respect to the traditional one, including the rules of Intellectual Property Rights (IPR).

Another important detail that has been agreed together with the Associations is the timing of these ITTs, which will have to be issued in a span of time of less than three years after the signature of the MoU.

These contracts follow a co-funding pattern, according to which the Agency grants up to 50% of the project, whose total value cannot overcome 1.000.000 Euros. In all cases the purpose is to grant projects aiming at the development of prototypes and/or pre-competitive technologies, products and services consistent with present and future programmes and missions envisaged in the ASI institutional Space Plan. For this reason ASI, with the support of the Associations, will also perform an ex-post analysis of the economic sustainability and market development, both at national and international level.

The SMEs are encouraged to participate in aggregation with other SMEs (at least two SMEs, eventually including one start-up or one university spin-off) and/or centres of research and universities, in order to reinforce their cooperation with research organizations.

At the time the authors are writing this paper, the first two ITTs have been issued: in the first case the winner companies have already signed the contracts and are presently working into the projects, while in the second case the companies are in point of signing the contracts and beginning the activities.

The authors here intend to present some first evidence coming from the proposals received, the nature of industrial aggregations created and other information useful to manage the next ITTs.

http://www.asi.it/it/news/primo_bando_pmi_la_presentazione_dei_dieci_progetti_selezionati_0

^{**} The successful proposals have been presented on July 13, 2011 at ASI. The descriptions of the proposals are available on ASI website
http://www.asi.it/it/news/asi_incontra_le_pmi

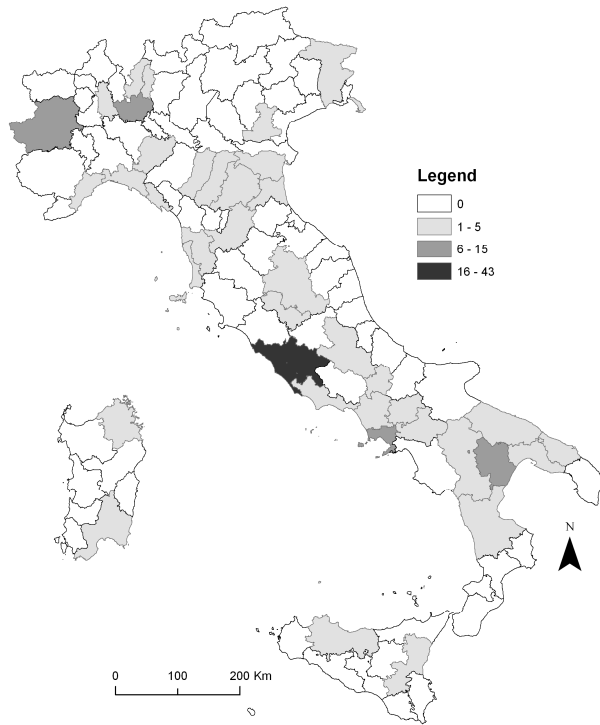


Fig. 2: total number of companies that participated to the first and second calls for each Italian Province. Source: elaboration on ASI data

A quite large number of companies participated at the first two calls, more than 140, clustered in 61 industrial groups.

As it is showed in fig. 2, analyzing the geographical distribution of the companies, it is possible to identify the main areas specialized in space activities. Rome and its surroundings is confirmed as the main space pole of Italy, thanks to the presence of the major companies of the sector, important centres of research and the headquarters of ASI and other Institutions; followed by Milan and Turin, where are located other important companies and the operative units of many firms with institutional office in Rome. In the South of Italy Naples represents another important pole, thanks to a significant tradition in Aeronautics, followed by Matera, where the ASI Earth Observation Centre is located, and Bari/Brindisi (in Apulia, the heel of Italy). Other significant locations for space SMEs are visible in Tuscany and Emilia Romagna (Centre/North); Abruzzo (centre of Italy), at Fucino (L’Aquila), where is located the well known space centre “Piero Fanti”, managed by Telespazio; and Benevento (Campania), where a small cluster of SMEs operate.

Theme	Opening and closing date	Proposals received	Tot companies involved in proposals	Successful proposals	Spin off	Start up	Tot of companies in successful proposals
Materials, Components and Sensors	December 2009 March 2010	33	72	11	2	10	25
Earth Observation	August 2010 October 2010	28	69	15	8	7	39
TLC and integrated applications	Fall 2011	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Satellite Navigation	Spring 2012	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table 1: main figures of the first two ITTs reserved to SMEs. Source: elaboration on ASI data

If we overlap fig. 1 and fig. 2, it is clear that the companies enrolled in the ASI DB reflect the real distribution of space companies over the national territory.

The companies’ participation at the first and second call is mapped in fig. 3 and 4 and shows a different density and distribution, together with different specializations.

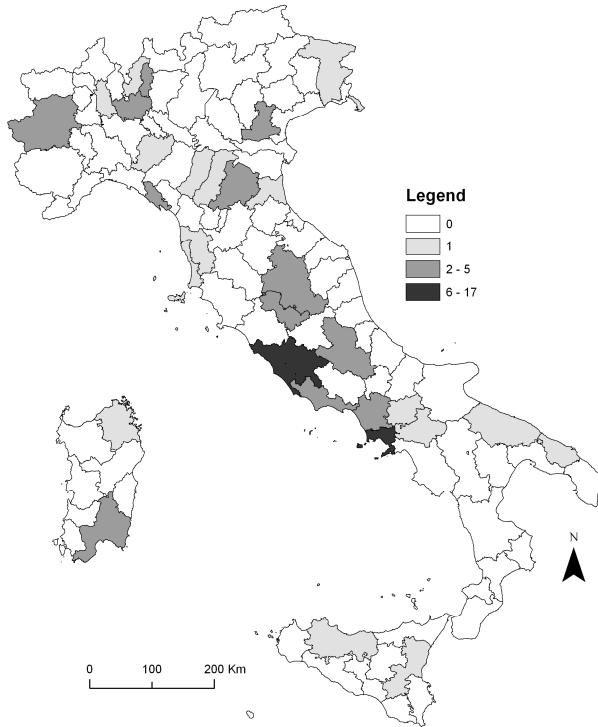


Fig. 3: total number of companies have been participating to the first call for each Italian Province. Source: elaboration on ASI data.

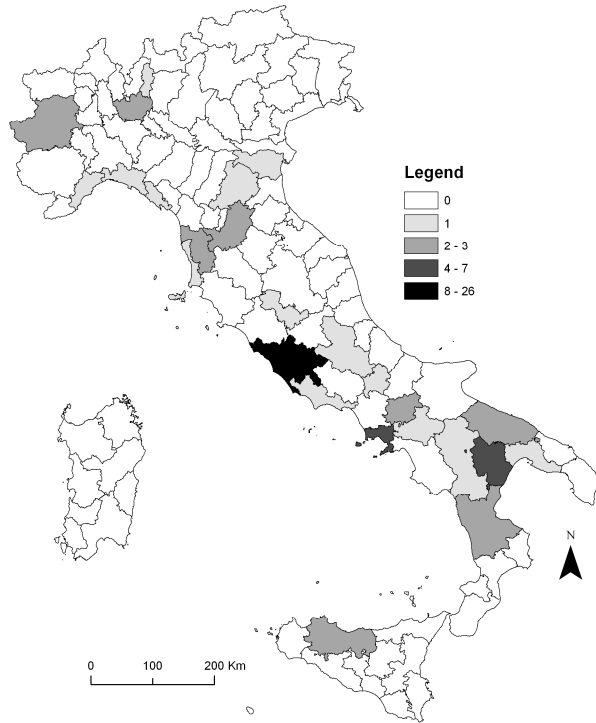


Fig. 4: total number of companies have been participating to the second call for each Italian Province. Source: elaboration on ASI data.

This is confirmed by the representation of the geographical distribution of the clusters of companies that participated at the first and second call (fig. 5 and 6). In these maps each industrial aggregation is represented by the same symbol and it is quite clear a trend to privilege aggregations among companies located close by (often the same province). This confirms the fact that, especially in sectors of high technology and high levels of innovation, personal contacts still matter. This is more evident analyzing the detail of the Province of Rome, both for the first and second call, where groups of two or three SMEs decided to participate together (fig. 8 and 9).

It is also worth to notice that there are different specializations among Italian regions. Indeed, while at the first call (materials, components and sensors) mainly participated companies from centre and north of Italy; at the second call there has been a prominent participation of companies from centre and south of Italy, particularly from Matera, where the ASI Earth Observation Centre is located.

Table 2 is significant because it underlines the rate of neighbour collaboration between companies from the same province.

	Total N° of Provinces	Groups per province	N° of Provinces with groups	Concentration rate
First call	31	10	7	23%
Second call	25	15	9	36%

Table 2: total number of Italian Provinces represented in the first two calls, number of groups for province, number of Italian Provinces with more than two companies of the same aggregation in the same province. Source: elaboration on ASI data.

Indeed, the first column refers the number of province which companies participating at the first two calls come from, the second one indicates the number of industrial aggregations with at least two companies from the same province, the third the number of

provinces with at least an industrial aggregation composed by 2 or more companies from the same province, while the last column returns a concentration rate as the rate between N° of Provinces with groups/ Total N° of Provinces. This rate indicates a more concentration in the second call, which was on earth observation, than in the first one, which was on material, components and sensors.

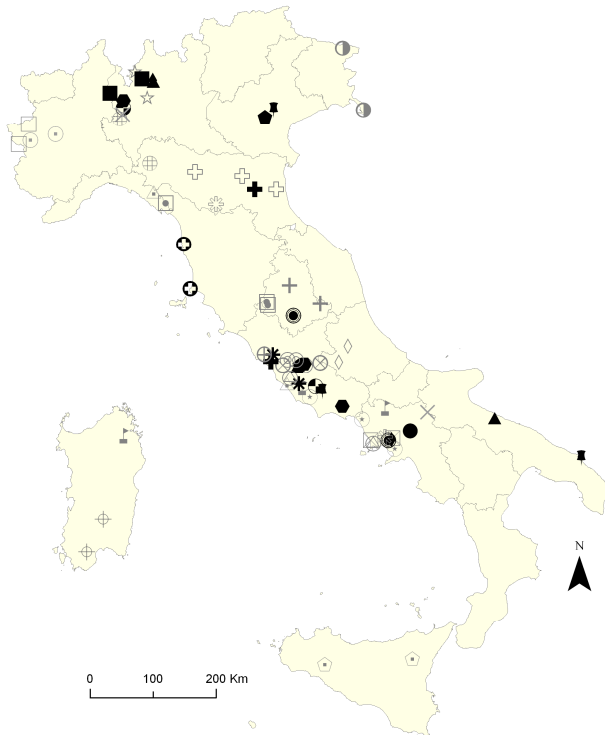


Fig. 5: industrial aggregations for the first call (each group is represented by the same symbol). Source: elaboration on ASI data.

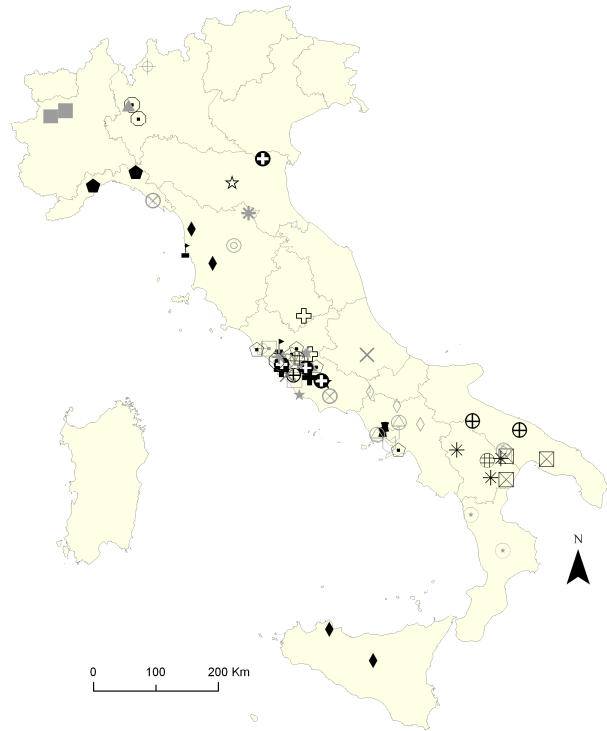


Fig. 6: industrial aggregations for the second call (each group is represented by the same symbol). Source: elaboration on ASI data.

As for the dimension of companies that participated to these calls (fig. 9), it is interesting to notice that in both cases there is a prevalence of micro companies (less than 10 employees), followed by small companies (less than 50) and medium companies (less than 250). The most significant difference between the two calls is that, on average, the first (materials, components and sensors) attracted a typology of SMEs with a larger dimension than in the second call, focused on earth observation.

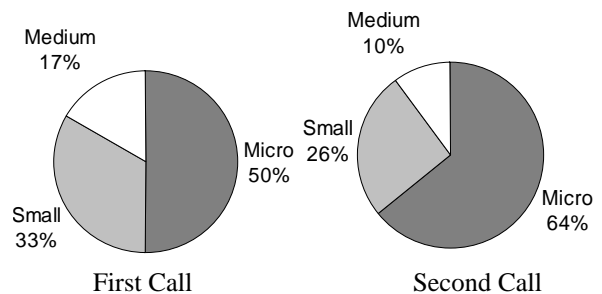


Fig. 7: dimension of companies participating at the first two calls. Source: elaboration on ASI data.

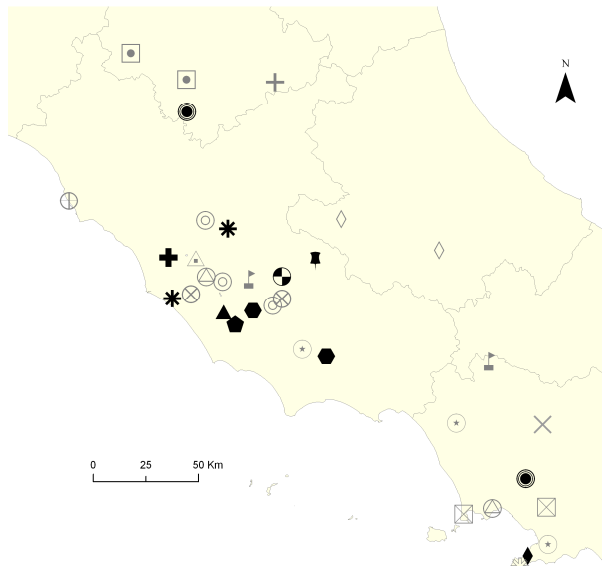


Fig. 8: industrial aggregations (each group is represented by the same symbol) in the area of Rome and Central Italy (first call). Source: elaboration on ASI data.

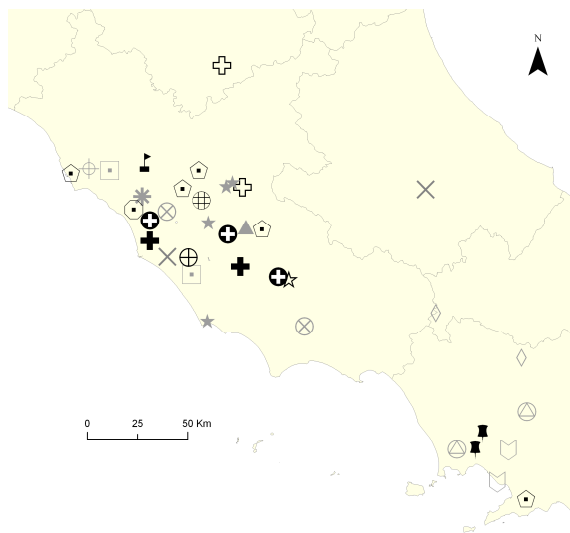


Fig. 9: industrial aggregations (each group is represented by the same symbol) in the area of Rome and central Italy (second call). Source: elaboration on ASI data.

V. FINAL REMARKS

SMEs are the engines of Europe's economic growth, they represent a source of jobs and a driver for innovation. Europe's 23 million SMEs employ more than two thirds of the private sector workforce and supporting SMEs represents a vital part of the economic policy of Europe, especially in the framework of the critical economic climate we are presently living.

The approval of the Small Business Act (SBA) in 2008 by the EU reflects the EU Commission's political will to recognise the central role of SMEs in the EU economy and for the first time puts into place a comprehensive SME policy framework for the EU and its Member States.

ESA has also implemented a policy to support the role of SMEs within its programs and has established an SME office. However, various difficulties still limit the access of SMEs to ESA programs and to the space-related EU initiatives; while the process of enlargement of ESA to other EU countries and the increasing role of EU in Space activities make the issue of an efficient and easy access of European SMEs to these programs even more urgent. For this reason a European Association of Space SMEs, called SME4SPACE^{††}, has been created in 2007. SME4SPACE is an independent Association of European SMEs through an alliance of Associations from eleven EU member states, and aims at voicing the viewpoint of the SMEs in the space industry in an organised and coordinated way and to facilitate the access of SMEs to space activities in general and to ESA and EU programmes in particular.

Italy is one of the founding members of SME4SPACE (through AIPAS), together with UK, Belgium and Czech Republic.

In Italy the industrial economic base is mainly made up of SMEs and also the space sector reflects this situation. For this reason ASI is putting into place a specific policy for national space SMEs (see also ASI Strategic Vision 2010-2020) with the support of the three industrial Associations.

After one year and half of the agreement there are quantitative and qualitative results. The ASI DB offers a reliable image of the companies operating in this sector at national level, together with their most significant economic indicators.

The response rate of the first two ITTs issued by ASI has been relevant, and the adoption of

^{††} www.sme4space.org

simplifications in the rules of these contracts reduces the administrative burdens and the timing from the issue of the proposal to the signature of contracts. At the same time, a first analysis of the response rate, the territorial distribution and the nature of SMEs cluster in this proposals make it possible to do some useful assessments about the nature of competencies over the Italian territory.

The effort to enhance and rule in a more effective way the relationship between SMEs and LSIs is another issue where the ASI-Associations platform is strongly engaged. The definition of a well defined and commonly agreed procedure for subcontracts in Cosmo SkyMed Second Generation is a first fundamental step in this sense.

To conclude, the aim of the agreement between ASI and the Associations is to support the National Agency for an effective industrial policy able to support the development and growth of Italian SMEs. This is particularly evident in the field of applications and services, where even companies of small size are able to come out with value added products.

VI. REFERENCES

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