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SMA

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SMA, Segnalamento Marittimo ed Aereo (Marine and Aeronautical Signalling) S.p.A. was founded in 1943 to operate in the field of port and airport optical signalling. By 1948, it began developing the first Italian radar equipment for the Italian Armed Forces.

This gave rise to a technical and technological cooperation that is still the backbone of SMA's industrial activity. Through an ever increasing commitment to research, SMA has grown steadily to reach its present size and configuration as an industrial holding concern with participation or controlling interest in over fifteen sister companies.

In keeping with the strategic role of innovation, SMA focused on the development of its technical and technological capabilities and pursued the achievement of the highest level of knowhow in the micro and millimetric wave sectors.

In this manner, SMA was able to exploit its acquired design and manufacturing capabilities towards diversifying military production into a gamut of civilian applications.

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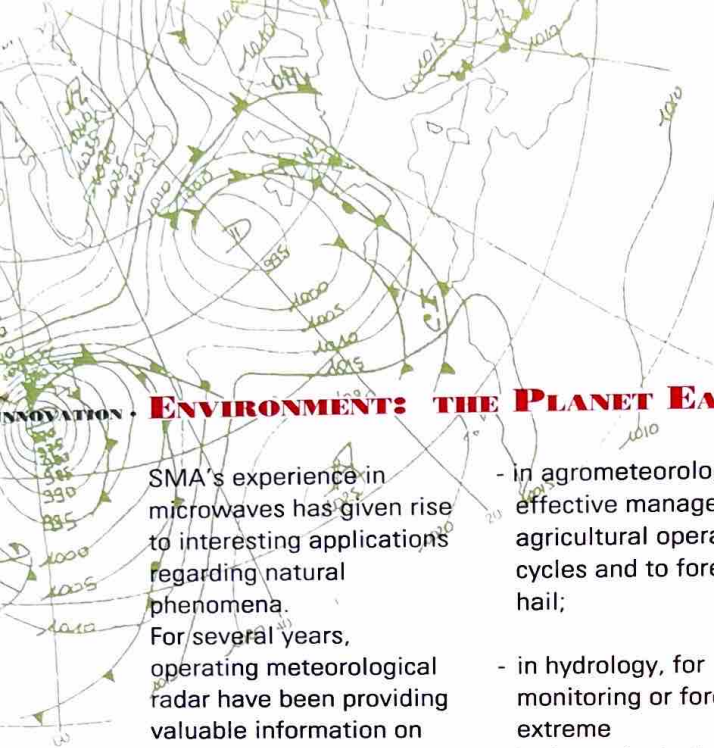
The SMA group currently operates in the high-tech and electronic market, designing, developing, and supporting systems in the field of micro and millimetric waves as well as that of data and signal processing.

In these areas the group's activities include, besides complete systems, subsystems, components and supercomponents.

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SMA presently employs approximately 600 people, 50% of whom hold college and advanced degrees. All its personnel is armed with a strong commitment to research and development.

The corporate headquarters, located near Florence, which comprise the engineering and prototype production departments, cover an area of approximately 10,000 m². Manufacturing facilities, located in Tuscany's industrial zone, cover approximately 13,000 m².



INNOVATION • ENVIRONMENT: THE PLANET EARTH • A CULTURE FOR INNOVATION • A CULTURE FOR INNOVATION • A CULTURE FOR INNOVATION

SMA's experience in microwaves has given rise to interesting applications regarding natural phenomena.

For several years, operating meteorological radar have been providing valuable information on meteorological monitoring and forecasts. In modern meteorological systems, radar is considered fundamental for many specific applications:

- in agrometeorology, as an effective manager of the agricultural operation cycles and to forecast hail;
- in hydrology, for monitoring or forecasting extreme hydrogeological phenomena, and managing flood alarms;
- in meteorology, on the regional and national

scale, for monitoring and forecasting weather.

SMA's experience in these sectors, matured through advanced sensor applications, enabled the development of notable system capabilities.

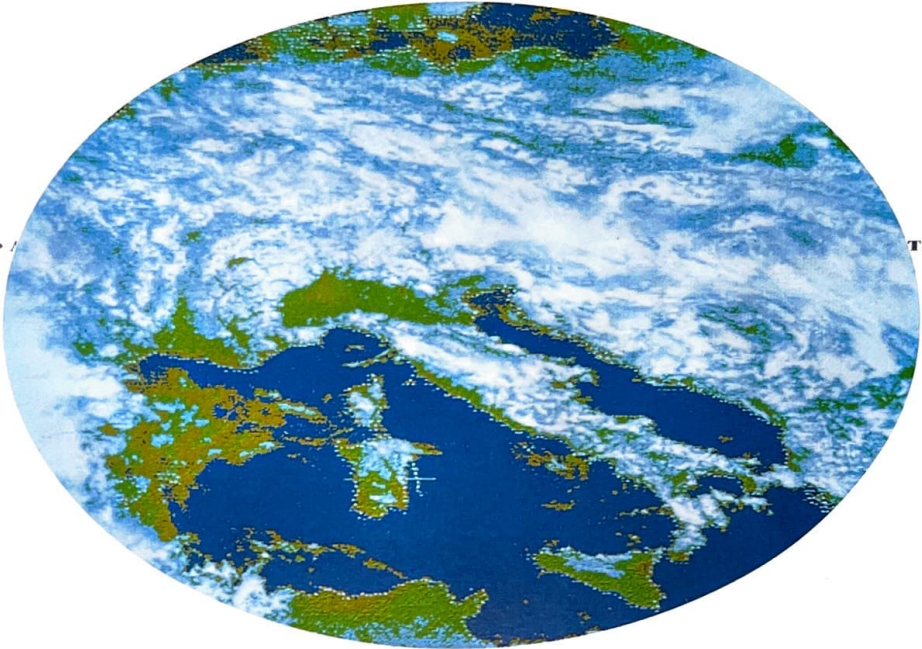
Today, SMA operates successfully in the field of meteorological systems and is able to integrate advanced instrumentation

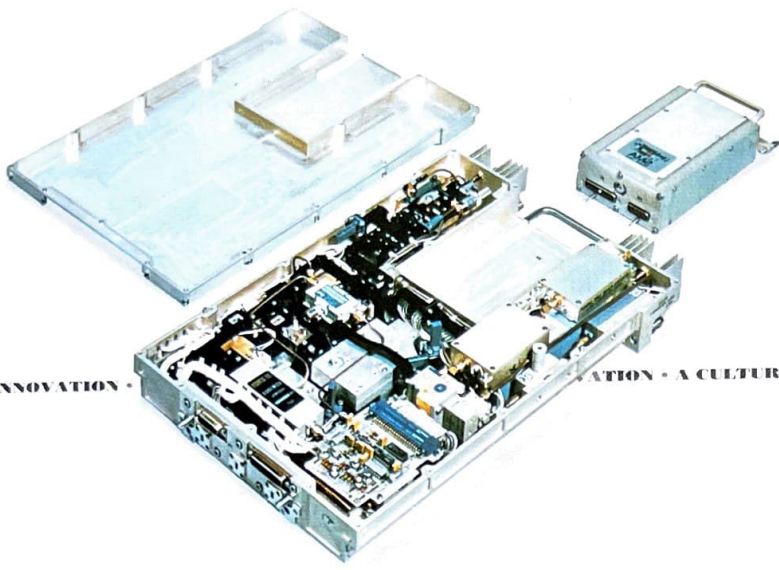
with conventional sensors. It also supplies all the necessary software and hardware that is needed to manage this meteorological information.

Special attention is continually being dedicated to the research and development of new environmental monitoring tools and techniques such as microwave meteorological radar,



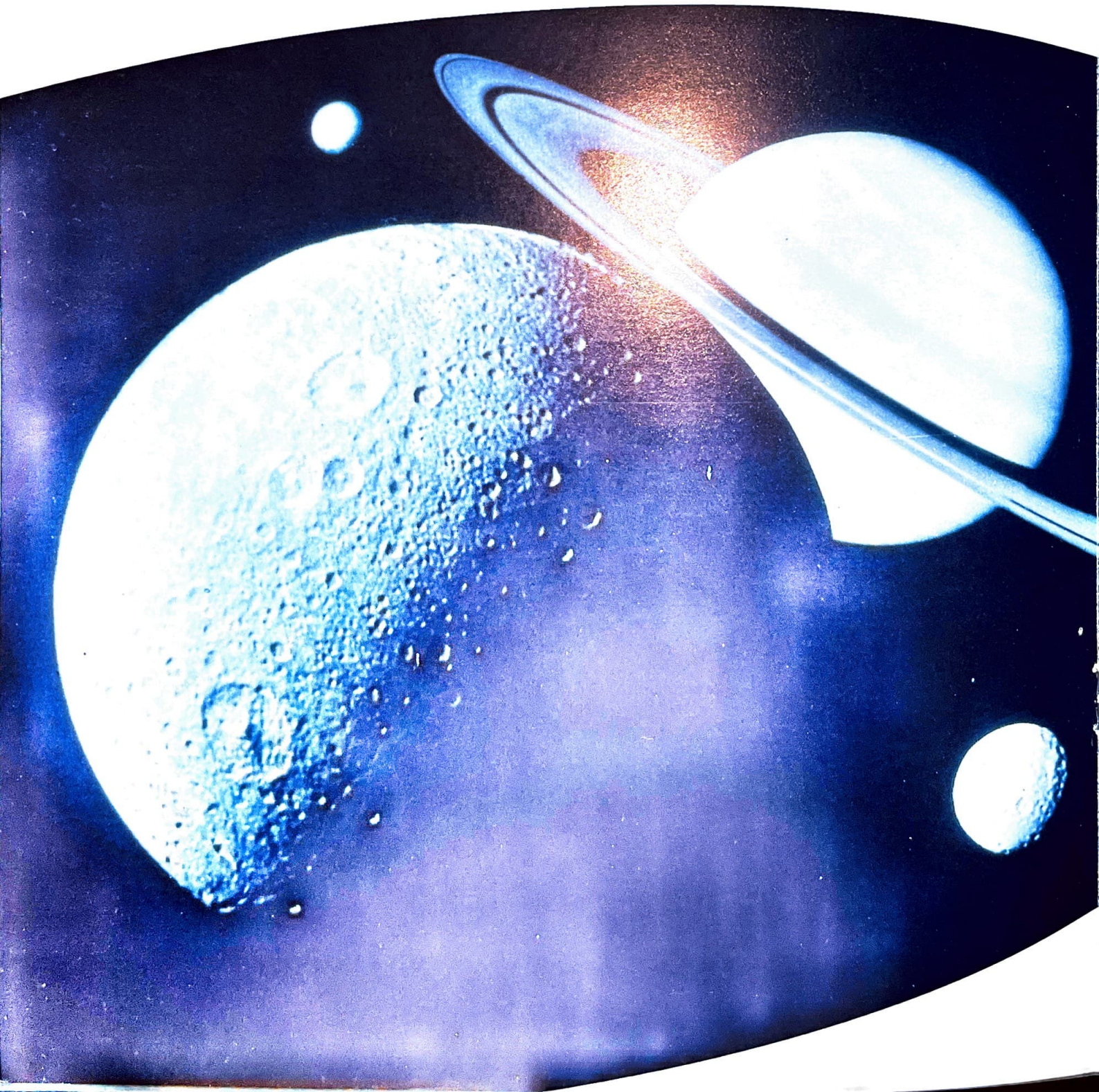
oceanography radar, and radiometry destined to determine meteorological and environmental parameters.





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SMA possess the knowhow and technology which are applicable to most advanced space programs. The capabilities that SMA has time and again proven in millimetric wave applications and the very existence of several joint ventures facilitate the transfer to Italy of further development and application knowhow.

This will surely contribute to future autonomous design and

production of single-element and hybrid components.

SMA's objectives in space comprise:

design, development, and manufacture of:

- systems, subsystems, and components for onboard and ground equipment intrinsic to operating micro and millimetric wave programs;
- data and signal processing systems.

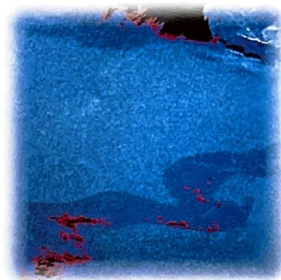
Applications

One of SMA's main objectives is the transfer of the knowhow and culture base that derive from its design and manufacture of related equipment. Examples of these are ground and avionics applications comprising various technological aspects such as design of antennas, receivers and transmitters, control units and digital data processors. The range of applications in SMA's space objectives is earth observation, scientific missions, and telecommunications.

Earth observations

In this sector, SMA is committed to programs regarding monitoring of the earth's surface and atmosphere for both scientific and environmental protection purposes.

SMA is working on the definition and development of passive radiometric sensors and interferometric systems. Other programs concern the development of high-



frequency and high-resolution radar sensors for space applications.

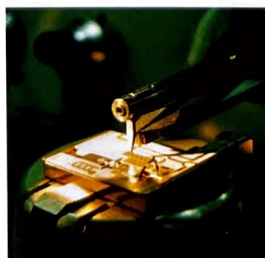
Scientific Missions

SMA's experience in radioastronomy and joint ventures with research institutes supplied the basis which enabled it to offer conceptual and technological feasibility studies.

Among the programs currently under way or of forthcoming implementation are the exploration of the Solar System (planets and comets) and the cosmological observation of sources outside the Galaxy.

Telecommunications

SMA's experience assures the use of the finest knowhow existent. This same knowledge is currently applied to onboard and ground telecommunications systems components utilized by the major Italian and European space programs.





In the late 70's, SMA inaugurated the process of knowhow transfer from defense to biomedical technologies through a series of explorative initiatives in the therapeutic and

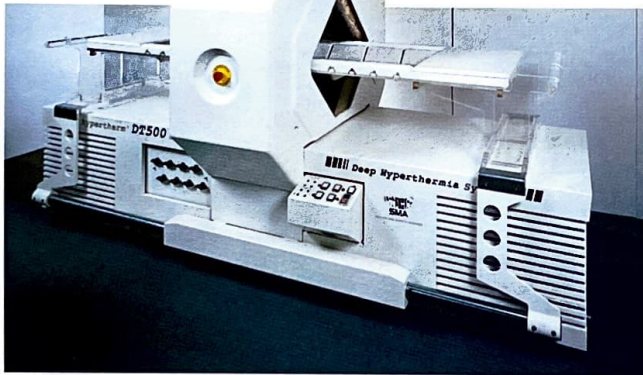
a key factor in various pathologies. It has, in fact, been shown that this technique is effective in orthopedic/traumatological and rheumatological therapies, in the treatment of

group of flexible products suitable for the realization of modular architectures of varying complexity.

The Hypervision line is completed by a series of CAMD (Computer Aided Medical Diagnosis) systems, whose objective is that of offering automated diagnostics in cardiology, radiology, gynecology, etc.

SMA is also active in the field of digital mammography and ultrasound diagnostic equipment.

Lastly, LEM Biomedica, a company belonging to the SMA group, has acquired over a decade of experience in implant electrostimulation and offers cardiological centers and coronary intensive care units a wide range of pacemakers: from traditional to highly advanced devices for rate responsive physiological stimulation.



diagnostic instrumentation sectors.

After carrying out initial research activities in conjunction with various clinical experimentation centers and with ENEA, SMA followed this up with the formation of a division dedicated to the development, manufacture, and sale of medical instrumentation.

In the therapeutic sector, SMA has developed an innovative product line for hyperthermy products designated "Hypertherm."

Hyperthermia consists of raising and maintaining a predetermined part of the body to a temperature exceeding the physiological for a certain period of time. The biological and physiological phenomena activated by the heat make hyperthermia

benign prostate growths, and, as an aid in radiotherapy and chemotherapy, in oncology.

In the field of diagnosis support instrumentation, SMA is currently focusing on the design of advanced systems based on personal computers and workstations for managing medical images.

These systems, termed PACS (Picture Archiving and Communication Systems), offer effective support to the radiology units, thereby allowing acquisition, processing, and storage on optical and magnetooptical supports of diagnostic images produced by modern digital equipment (TAC, magnetic resonance, nuclear medicine) and by other conventional radiology equipment. The product line, dubbed "Hypervision," includes a



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INNOVATION • **SAFETY: THE FRIENDLY APPLICATION** • A CULTURE FOR INNOVATION • A CULTURE FOR INNOVATION • A CULTURE FOR INNOVATION • A CULTURE FOR INNOVATION

SMA's activities in the field of vehicle safety originated in the late 80's, sparked by the international community's growing awareness on the risks deriving from increased traffic.

To SMA, safety essentially means surveillance, prevention, and

early warning regarding the risks to which vehicles and passengers are subjected. SMA's experience in micro and millimetric wave sensors has oriented its research and development toward devices capable of being installed onboard vehicles. These devices are designed to extend the driver's perceptive/receptive capacities.

SMA's commitment is mainly focused on anticollision radar but it has also recently been extended to other

projects aimed at creating parking aid sensors and other sensors that monitor vehicle parameters (speed/height) and road conditions (smoothness, water, ice).

Preliminary research activities, conducted through an in-depth study of the scenario and experimental testing at 35 GHz and 94 GHz, have been followed up by the recent inauguration of an industrial program. This program has made it possible to create an anticollision radar for vehicles operating at 38 GHz and a second-generation radar which operates at 76 GHz.

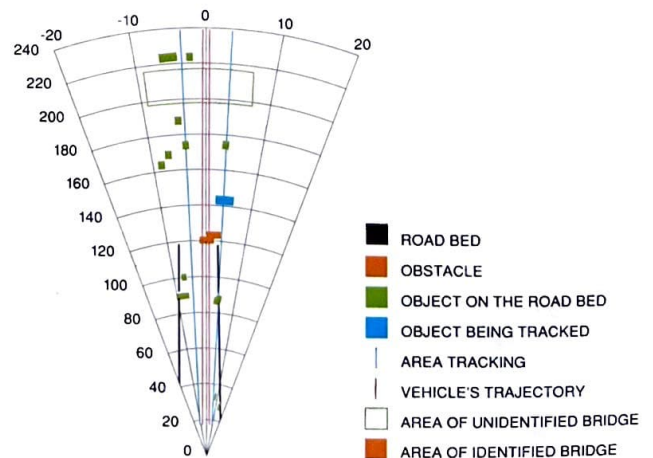
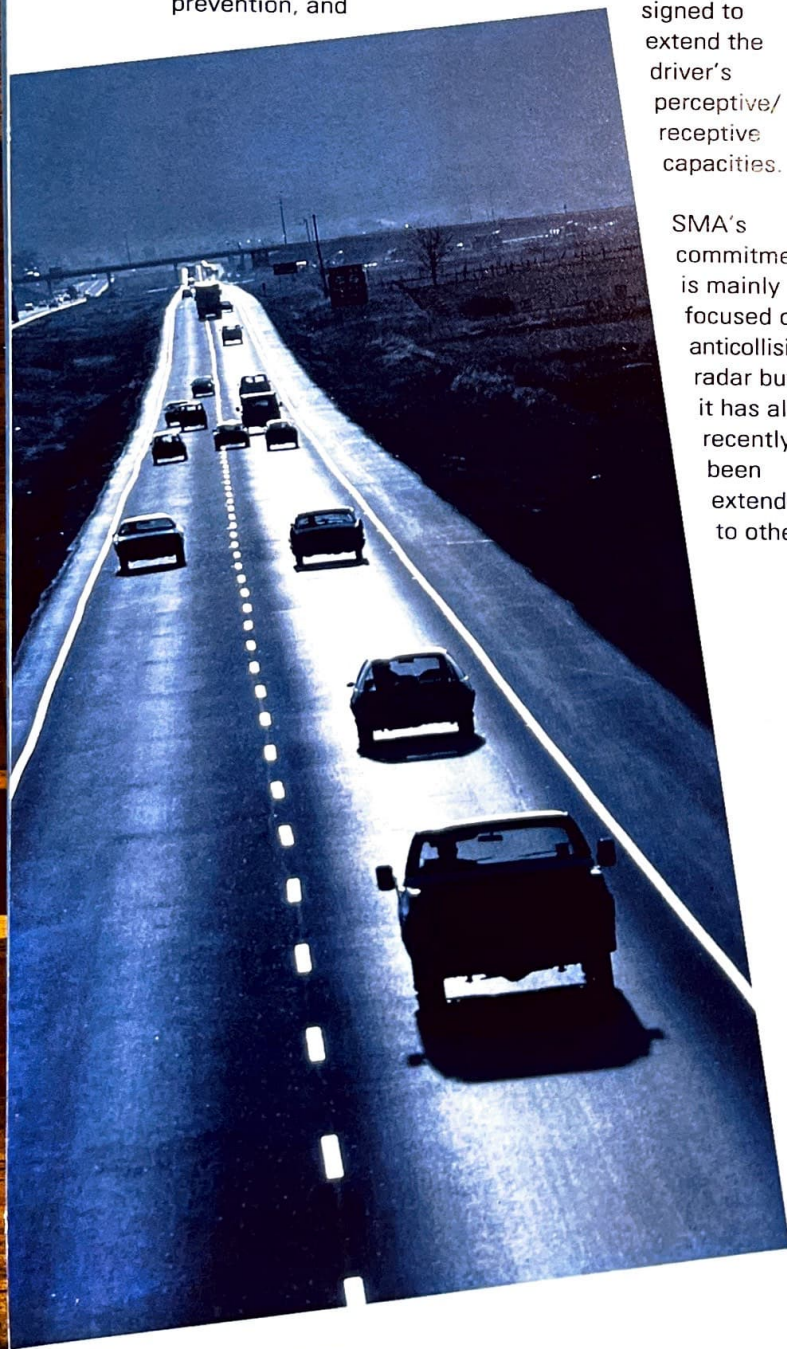
The SMA-conceived system is a scan radar able to reconstruct in detail both the roadside and the general scenario in front of the vehicle.

It is equipped with the capability of tracking targets whose range and relative speed can then be calculated with precision.

The sensor detects the collision-risk targets and warns the driver by means of a headup display or an acoustical warning signal.



The anticollision radar—albeit incapable of replacing the driver—is a device that, through its operating means and adaptability to the scenario, constitutes a vital support under adverse environmental conditions.



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