nitel

Consorzio Nazionale
Interuniversitario
per i Trasporti
e la Logistica

Il NITEL – Consorzio Nazionale Interuniversitario per i Trasporti e la Logistica is a no profit organization founded in 2003 an under supervision of Ministry of University and Research.

19 Italian universities are members of NITEL. They operate in the field of transportation and logistics and also in correlated fields such as computer science, safety, security, telecommunications, plants, electronics, mechanics, environment, chemistry.

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| Università degli Studi di Roma La Sapienza | | Università Campus Bio-Medico di Roma | |
| Università degli Studi Roma Tre | | Università degli Studi di Roma Tor Vergata | |
| Università degli Studi di Cassino e del Lazio Meridionale | | Università degli Studi di Genova | |
| Politecnico di Bari | | Politecnico di Milano | |
| Università degli Studi dell'Aquila | | Università di Pisa | |
| Università degli Studi di Palermo | | Università degli Studi di Napoli Federico II | |
| Università degli Studi del Sannio | | Università degli Studi di Urbino Carlo Bo | |
| Università degli Studi di Trieste | | Alma Mater Studiorum Università di Bologna | |
| Università IUAV di Venezia | | Università degli Studi Mediterranea | |
| Università degli Studi di Cagliari | | | |

The Universities of the Consortium represent highly expert entities that take advantage of existing expertise and that encourage the research and the innovation.

NITEL takes advantage of the support of different Ministries and of major Italian industries such as, for example, RFI, ANAS, Telespazio, Poste Italiane, members of the scientific committee, to exchange know how with the real word transferring the results of the university research.

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Key factors are the skilled and motivated academic team cooperation with experts from different technologies fields, research institutions (included other inter-university Consortia), valued companies which care innovation in technologies.

NITEL supports companies developing research activities on topics in line with their industrial goals, implementing technology transfer of know-how, proposing innovative solutions, leveraging on the expertise of the research groups working in the consortium, and provides support to the design, prototyping and development of technologies and services.

## Topics

### Transportations

- Autonomous driving systems
- Smart and automatic systems to track people and goods
- Tools and systems to manage, control and development of Smart Roads

### Telecommunications

- 5G
- Satellite-terrestrial integrated networks
- Satellite systems for multimedia wideband services both fixed and mobile
- Network protocols and sensor networks

### Robotics

- Analysis of security systems and identification of incorrect behaviour of autonomous robot systems (including flying vehicles – UAV and autonomous driving cars)

### Cyber Security

- computer science security and networks security.
- design and development of end-to-end solutions for fulfilment, management and practice of security procedures;

### Geomatics

- Analysis and processing of GNSS data (Global Navigation Satellite System) for the positioning and the real-time standalone navigation for the self-driving and railway security;
- high Resolution SAR and Optical Satellite Imagery processing (orthophotos and Digital Surface Models generation).

### Environment and Energy

- Sustainable transportation systems with hydrogen vehicles and energetic cycle at no emission, electric system, storage system in smart-grid, electric system;
- study of noise and atmospheric pollution from vehicular traffic;
- CA – Life Cycle Assessment of systems for electric cars;
- energetic efficiency.

### Law

- International, European and national regulations in road, maritime and railway transportations, international conventions for road transportations;
- regulations on logistics supply chain responsibilities for many road violations connected to the transportation (respect to driving times and rest periods, surplus weight, speed limits, etc.).

### Computer Science

- AI and machine learning
- cloud computing and Big data
- design and development of health systems
- Development of smart transportation systems
- Software engineering
- Distributed simulation systems
- Cloud platforms for Smart Waste Management

## Logistics

- Dimensioning and management of industrial storehouses;
- Optimization of input and output materials flows;
- Identification and dimensioning of internal systems;
- Identification of optimum paths for transportations means.

## Chemistry

- Chemical-physical sensors
  - Design and synthesis of artificial receptors Nanostructures
  - Optical, impedance and mass transducers, ChemFETs
  - Hybrid materials: porphyrins, carbon nanotubes, graphene
  - Kelvin probe, scan microscope optical methods

## Industrial plants

- Analysis and dimensioning of plants for plastic recycle;
- Optimization of input and output materials flows;
- Safety of plants;
- Chemical physical analysis of the final products

- Electronic nose
- Electronic tongue
- Molecular Films
  - Functional surfaces
  - Kelvin Probe, AFM, Optical Anisotropy
- Sensor Matrix development for:
  - Environmental control,
  - Industrial processes,
  - Quality control