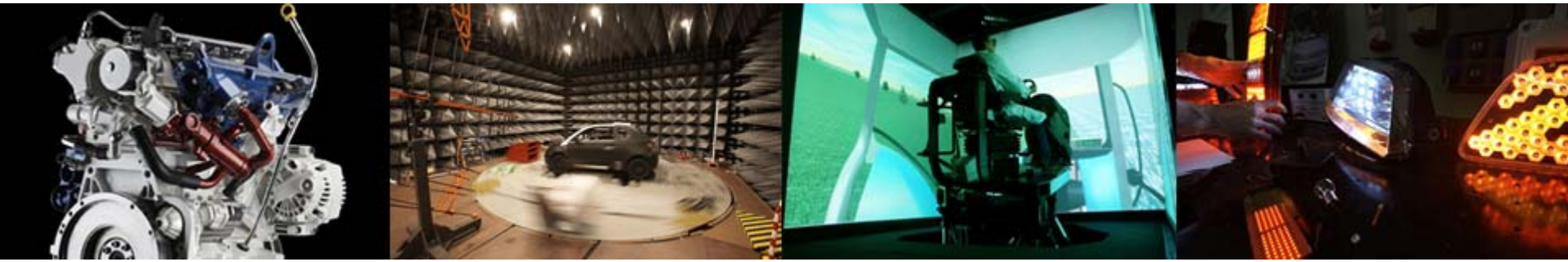


MATRI Project

CRF case study

Paolo DONDO
Project Portfolio Development
Centro Ricerche Fiat & ELASIS

Topics

- Presentation of CRF and ELASIS
- The Network
- Functional safety impact

Fiat Group research system

CENTRO RICERCHE FIAT

FIAT GROUP RESEARCH IN FIGURES

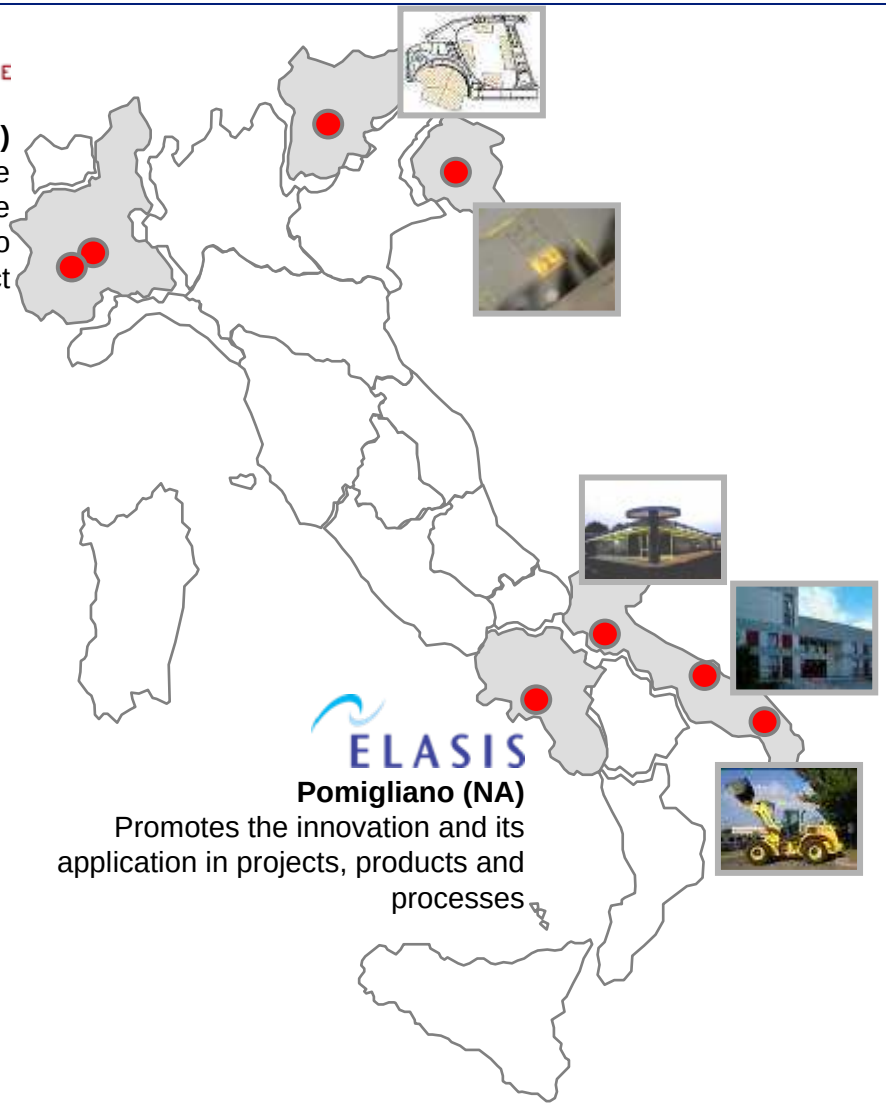
12.900 people in 114 centres

1,7 Billions € (3% of industrial revenues)

CRF ed Elasis – HEADQUARTERS and BRANCHES

Orbassano (TO)
Promotes, develops and transfers the innovative contents which give competitiveness and distinctiveness to the product

Elasis
Product & Process Development (TO)
Main tasks are product and process development for transportation means (cars, trucks and railways) and industrial integration.



Pomigliano (NA)
Promotes the innovation and its application in projects, products and processes

CRF Trento
Technical and technological solutions for special and low volumes vehicles;info-telematics for urban mobility and logistics

CRP- Amaro (UD)
Optics, plastics, micro and nanotechnologies

CRF Foggia
Diesels and methane engines

CRF Valenzano (BA)
Injection systems for internal combustion engines

ELASIS Lecce
Agricultural and building machines

MISSION

Centro Ricerche Fiat aims to use innovation as strategic lever to the business of Fiat Group and to give value to the results of its activities by the promotion, the development and the transfer of innovative contents which give competitiveness and distinctiveness to the product.

Date of establishment: 1976

Employees: 865

Average age: 38

Headquarters: Orbassano

Branches: Trento, Valenzano (BA) Foggia

Elasis: Ideas for people who believes in ideas

MISSION

ELASIS is a distinctive element of FIAT Group: it represents the partner for the development and the innovation of the product using original methodologies and technical solutions based on its K-H giving value to people and the relations with the research and local institutions.

Date of establishment:

1988

Employees: 1200

Average age: 38

Headquarters:

Pomigliano d'Arco (NA)

Branches: Lecce, Turin

Values

Value of people

Skills
Enthusiasm
Experience
Training

Respect for customers

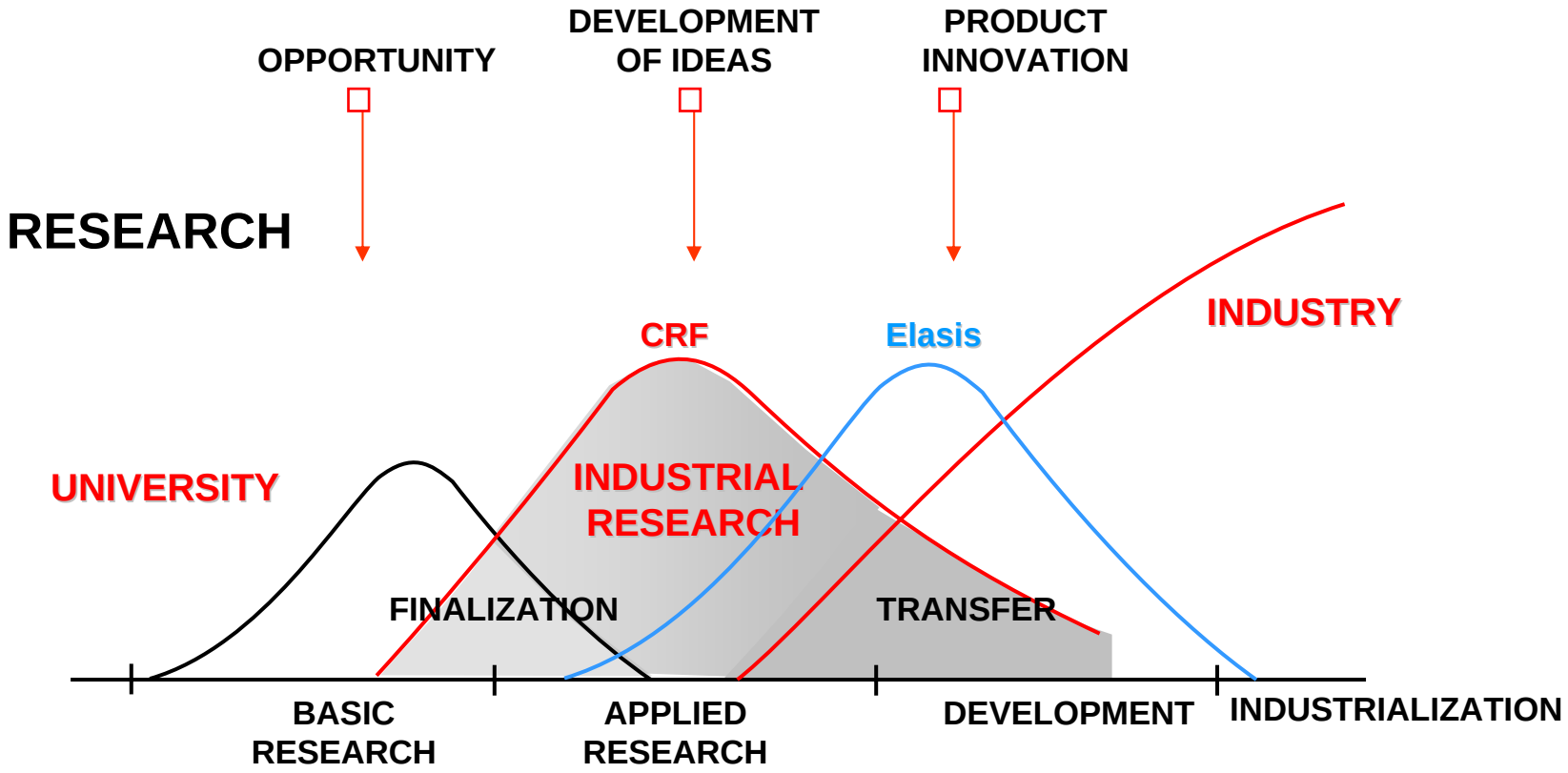
Confidence
Communication
Timing
Reliability
Smart solutions

Keeping promises

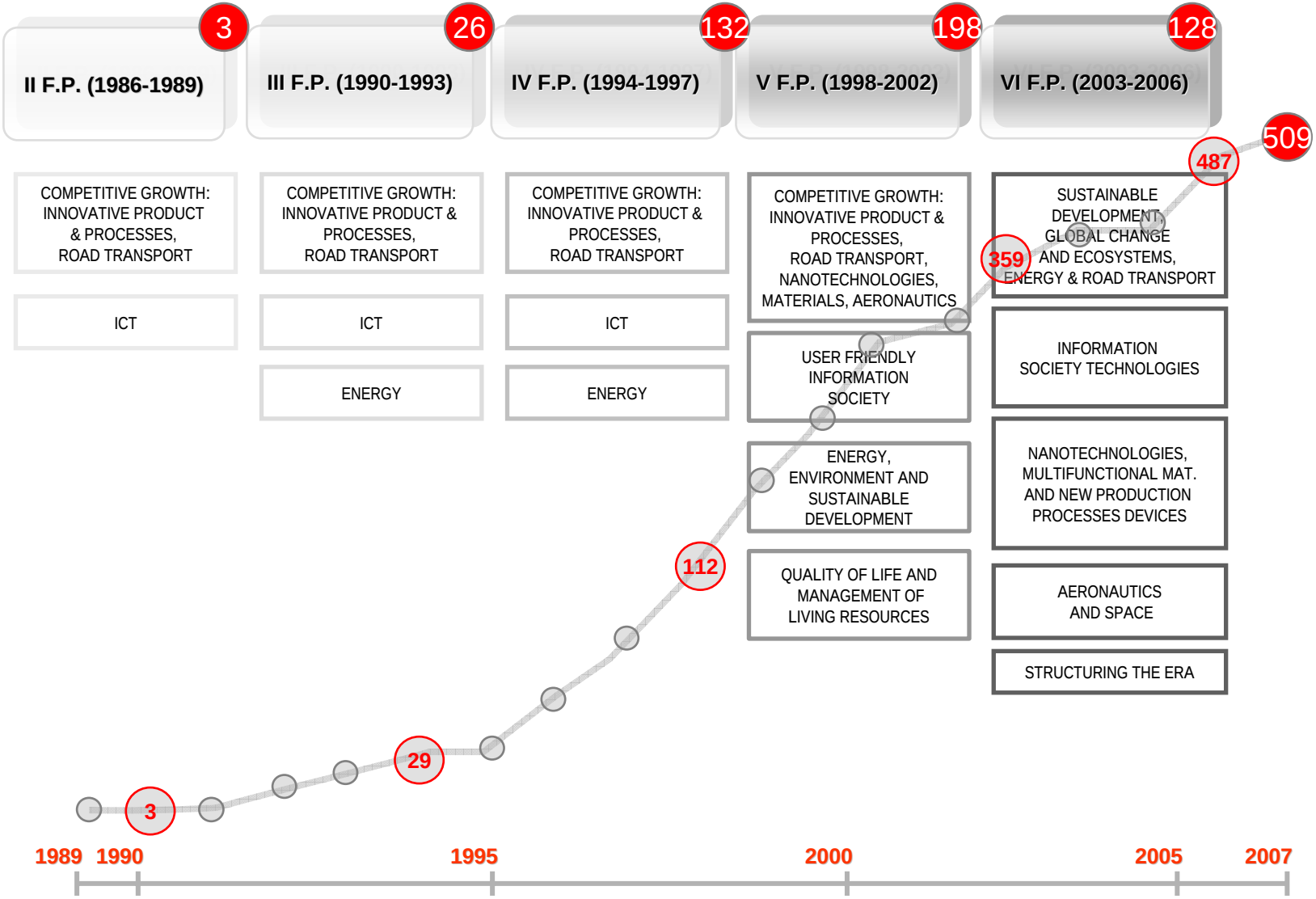
Quality
Support
Partnership
Cooperation
Transfer of knowledge

Overcoming expectations

CRF positioning



European Projects from 1989 to 2007 – Main topics



CENTRO RICERCHE FIAT

National and European Network

CRF has a wide cooperation network of Research Centers, Institutions, Universities and Industrial Partners in all Italian Regions and European Countries.

At European level we cooperate with the competitors mainly within EUCAR, the European association of car manufacturers for research, carrying on joint precompetitive research and technology scouting.

CRF moreover is actively involved in the main European Technology Platforms related to the automotive sector.

Road Vehicles - Functional Safety Framework

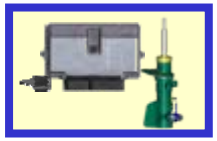
- EC has the target to **reduce** by **50 %** (vs. 2001) the **dead rate** due to **road accidents** before **2010** and by **75%** before **2020**.
- This important goal will be supported by **new passive, preventive and active safety systems** that decrease the probability of an accident to occur and mitigate the consequences of accidents on vehicle occupants and other road users.
- **Advanced Driver Assistance Systems** (ADAS) are seen to play a major role in road safety in Europe, starting to be available on the market.
- **New functionalities** for an **active safety** are starting to be available on the market to assist the driver in the task of ***controlling the vehicle*** to guarantee the **Maximum Vehicle Stability** and the **Automatic Recovery** in **Emergency Maneuvers**.
- **Proposals** for a type-approval **EC regulation** are in process to enhance the **safety of vehicles** by requiring the mandatory fitting of some advanced safety features, such as ESC, BAS, AEBS, LDWS, TPMS, starting from 2012.
- The automotive industry shares the view that in the next 10 years 90% of its expected innovations will be based on **Electrical Electronic systems** with a **huge emphasis on the Safety Systems**.

- Driving assistance functions are based on **Electric / Electronic Systems,** normally built by **integrating** electronic units from **different suppliers**: they become ***safety relevant*** when causing a high **hazard** level **in** presence of **malfunction or failure**.
- These functionalities become **potentially** ***safety critical*** when, in case of relevant faults, they could have an **impact on** the behavior of the system and consequently on the controllability of the vehicle.

We need

a sound **methodology** and new technologies for addressing all aspects concerning **safety**.

The methodology has to be unified, internationally recognized and specific for the automotive: ***ISO CD 26262 "Road vehicles - Functional safety"*** under development with the contribution of the main car & truck makers and tier 1 suppliers.



STEER BY-WIRE

BRAKE BY-WIRE

Active Systems for Vehicle

By Wire Systems

ADAS

Fault management for "Safety Critical" Functions
ISO 26262 application

Steering Wheel electrical lock

ISO CD 26262 “Road Vehicles - Functional Safety”

Basic concepts

This new standard ISO 26262 covers the **whole product lifecycle**, :

- concept phase,
- design phase,
- production,
- operation,
- maintenance,
- decommissioning

its adoption has organizational impacts in terms of:

- new **competences** required
- integration of **new tools, methods and workflows** in the **product development process** and related **supporting processes**.

Thanks for the attention

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ELASIS S.C.p.A