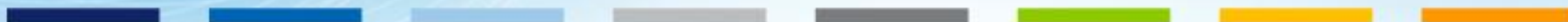




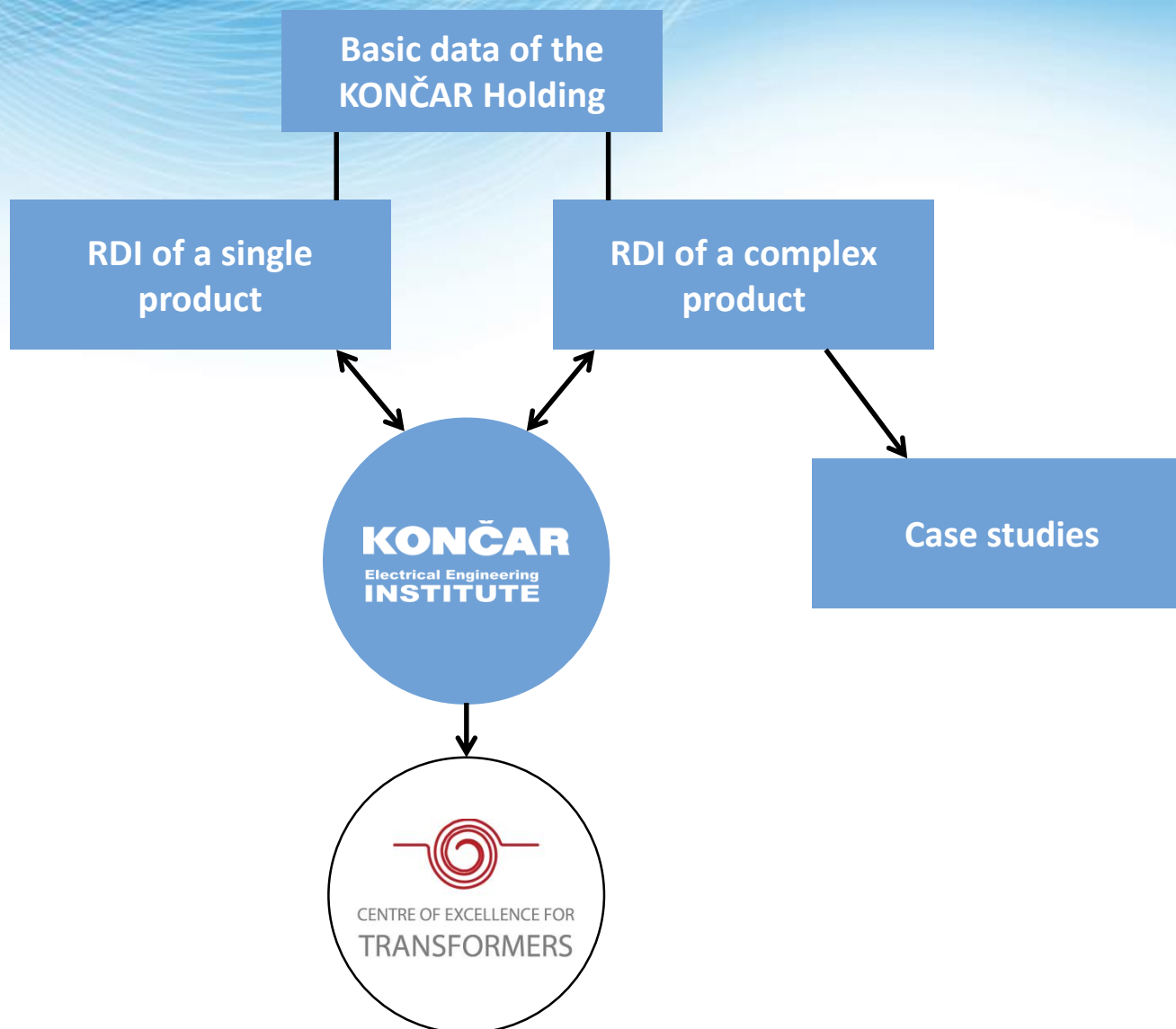
Model of R&D and inovation in the holding company

Miroslav Poljak, Ph.D.
Member of the Managing Board

9 May 2016



Content



Basic data of the KONČAR Holding

- 1921 – Founded as ELEKTRA Inc. Zagreb
- since 1991 – **KONČAR – ELECTRICAL INDUSTRY Inc.**

Today:

- Holding of 18 companies and one affiliated company
- **PRODUCTION PROGRAM**
 - Energy – power generation, transmission and distribution equipment and plants
 - Transport – electrical locomotive, tram and commuter train
 - Industry – electrical equipment and systems in industrial plants
- 4000 employees



Corporate values

- Own research and development
- Skilful employees with University degrees
- Customer individual approach
- Excellence
- Tradition
- Social responsibility



Single products

GENERATORS AND MOTORS

HIGH VOLTAGE SWITCHGEAR

MEDIUM VOLTAGE APPARATUS

DISTRIBUTION AND SPECIAL
TRANSFORMERS

INSTRUMENT TRANSFORMERS

ELECTRONICS AND
INFORMATICS

METAL STRUCTURES

SMALL ELECTRICAL MACHINES

LOW VOLTAGE SWITCHGEAR &
CIRCUIT BREAKERS

POWER TRANSFORMERS



Complex products, plants and services

POWER PLANT & EL. TRACTION
ENGINEERING

SWITCHGEAR

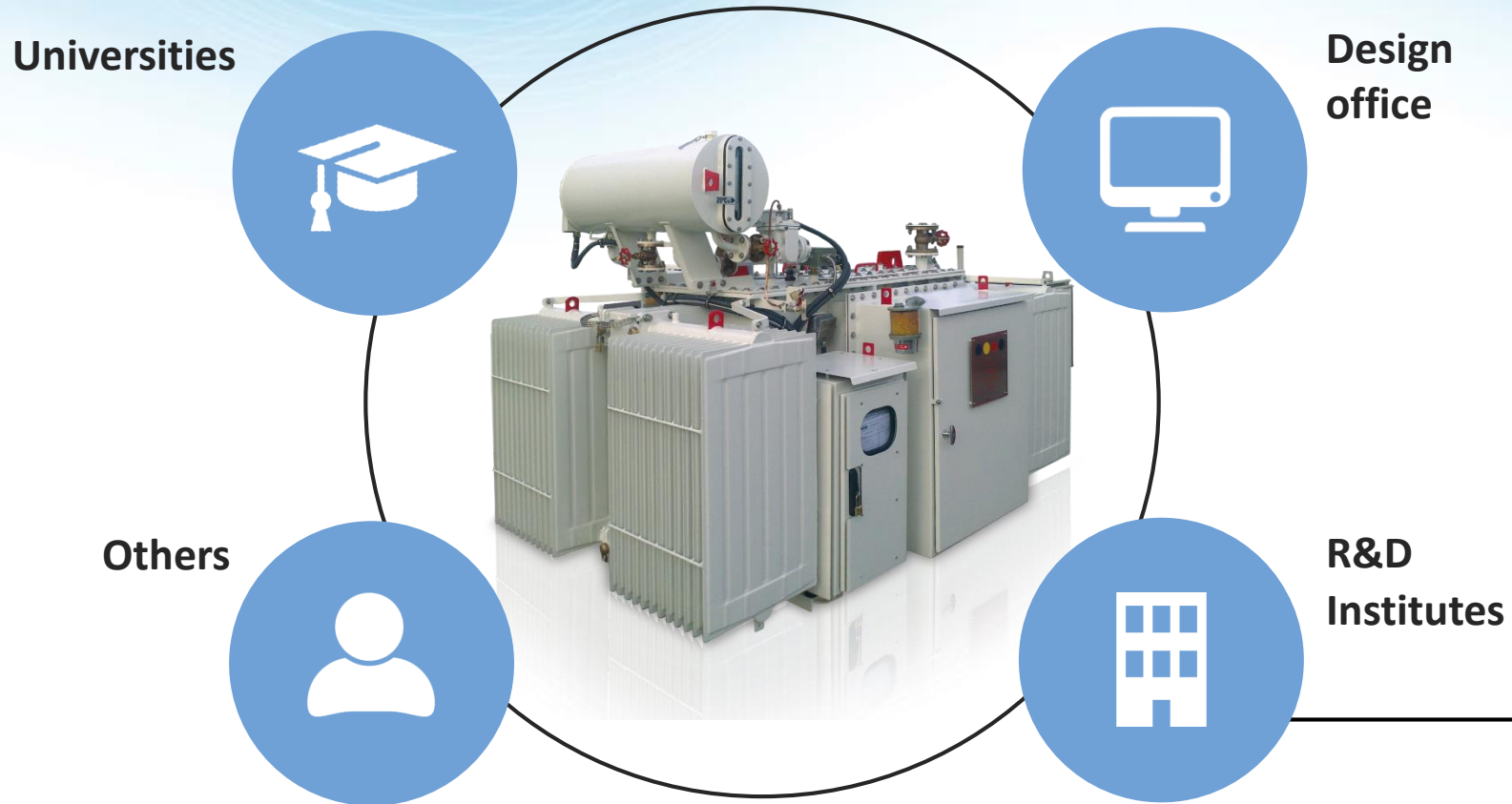
ELECTRIC VEHICLES

ENG. FOR PLANT INSTALLATION
& COMMISSIONING

RENEWABLE SOURCES



RDI process for a single products



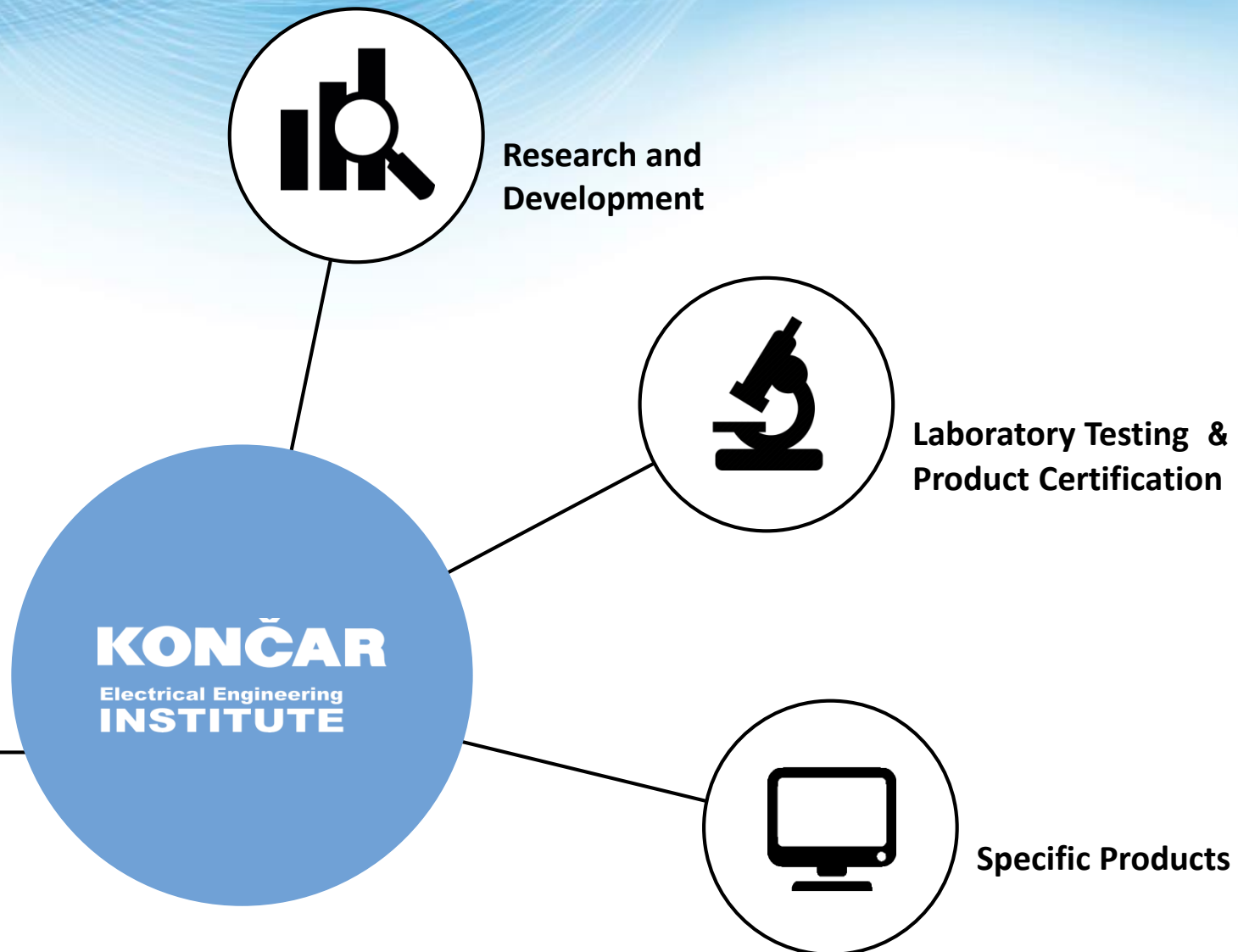
Research & Development Institutes

- In-house research and development institute



KONČAR
Electrical Engineering
INSTITUTE

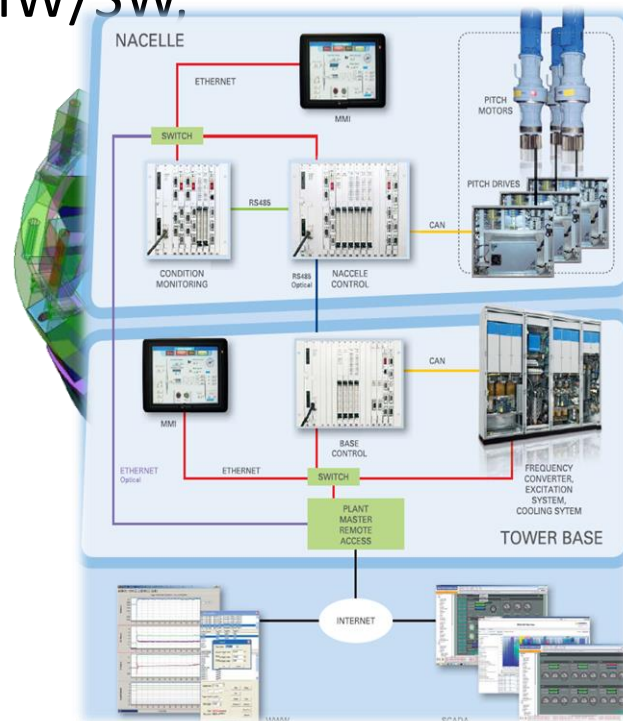
Key business activities of the Insitute



Research & Developement

- Applied research: transformers, rotating machines, HV and MV switchgear, power converters, wind turbines, components of rail vehicles, HW/SW, ICT

KONČAR
Electrical Engineering
INSTITUTE

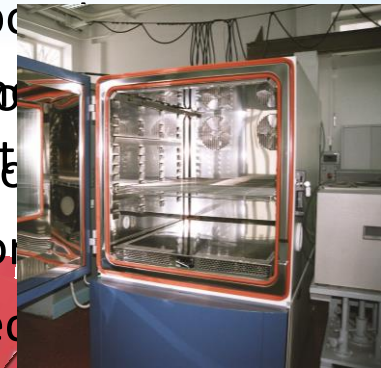


Laboratory Testing & Product Certification

KONČAR
Electrical Engineering
INSTITUTE



Laboratory

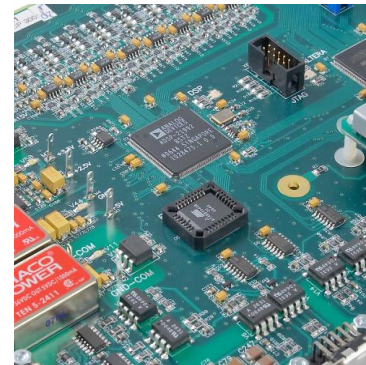
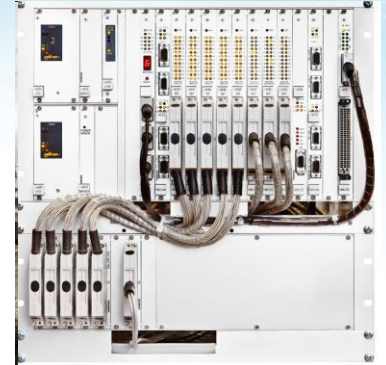


Testing



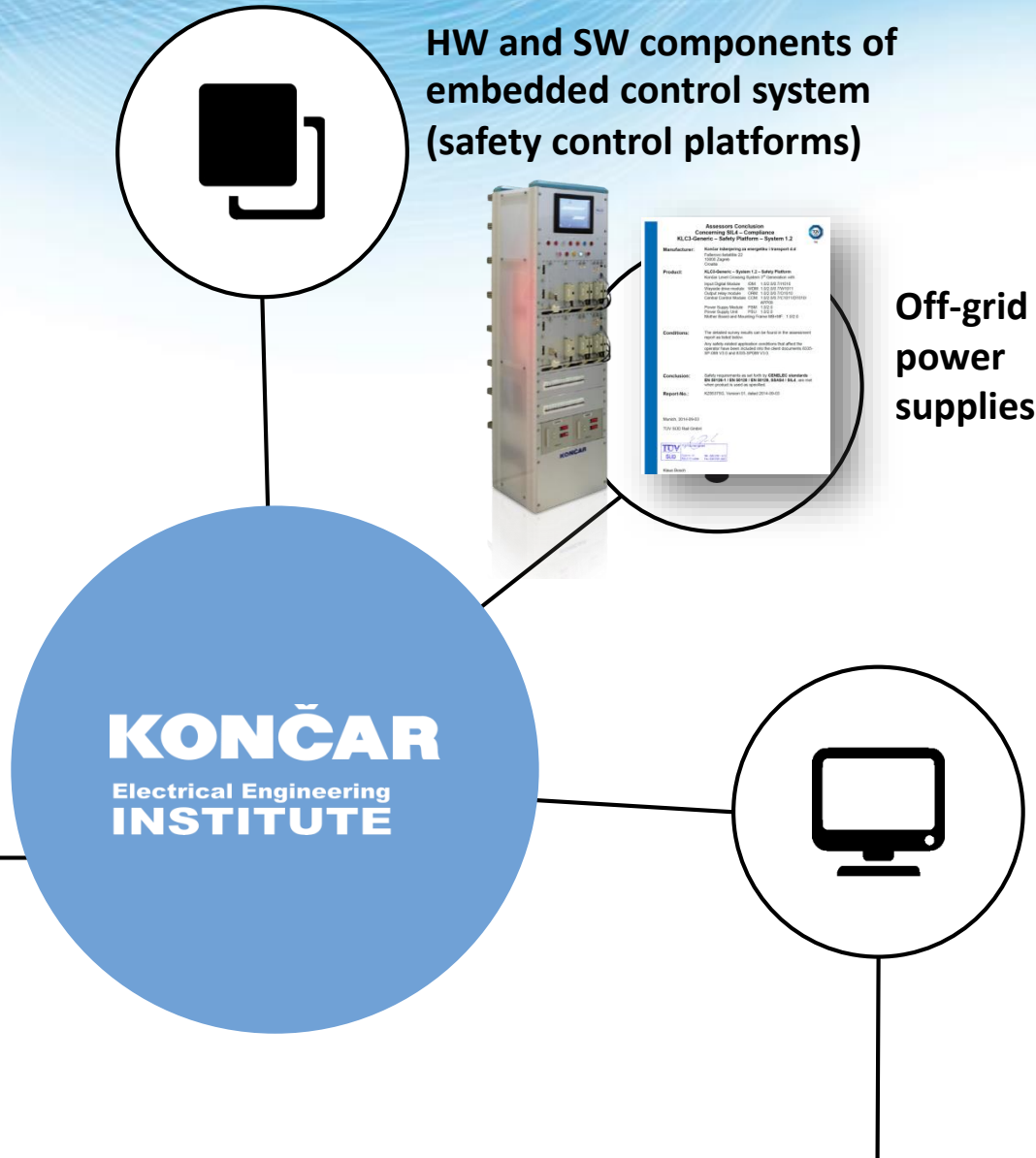
Specific products

- Products which are not in production program of other daughter companies
- Components for low-volume complex products



KONČAR
Electrical Engineering
INSTITUTE

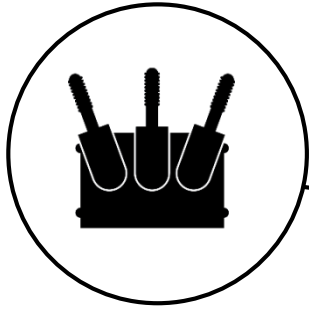
Specific products (examples)



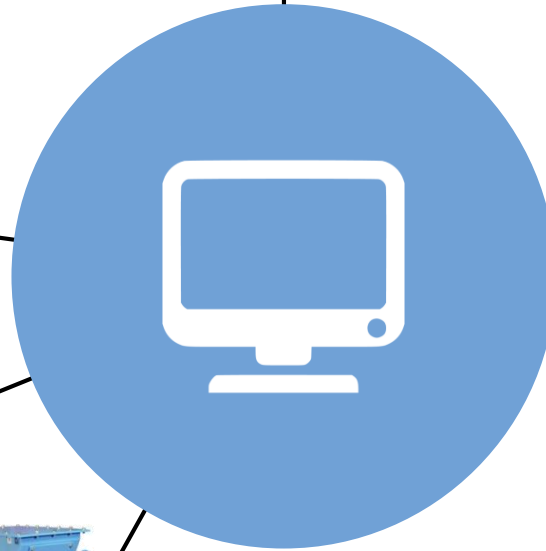
- Modular hybrid autonomous power supply integrating: solar energy, wind energy, fuel cell (hydrogen), battery bank, diesel gen-set
- Applications: telecom, gas, oil, rural areas



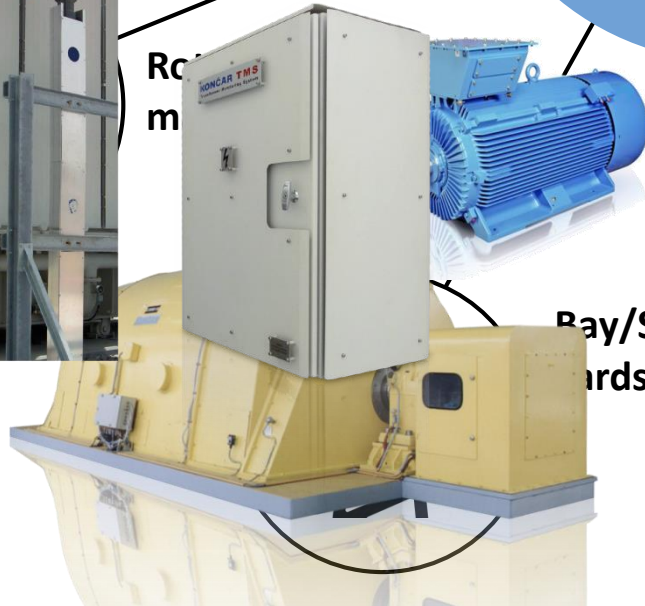
Monitoring systems



Transformers



Re
m



Bay/Switch
ards



RDI process for a complex products

The Management Board of KONČAR has set the following strategic areas of development:

- Transformer Stations
- Power Generation
- Renewables
- Smart Grids and Communication Technologies
- Traction Vehicles
- Information Technologies

Strategic RDI objectives

- To harmonize strategic RDI projects with objectives of the Holding
- To accelerate strategic RDI activities by rational use of resources
- To stimulate RDI of long-term projects and new research areas

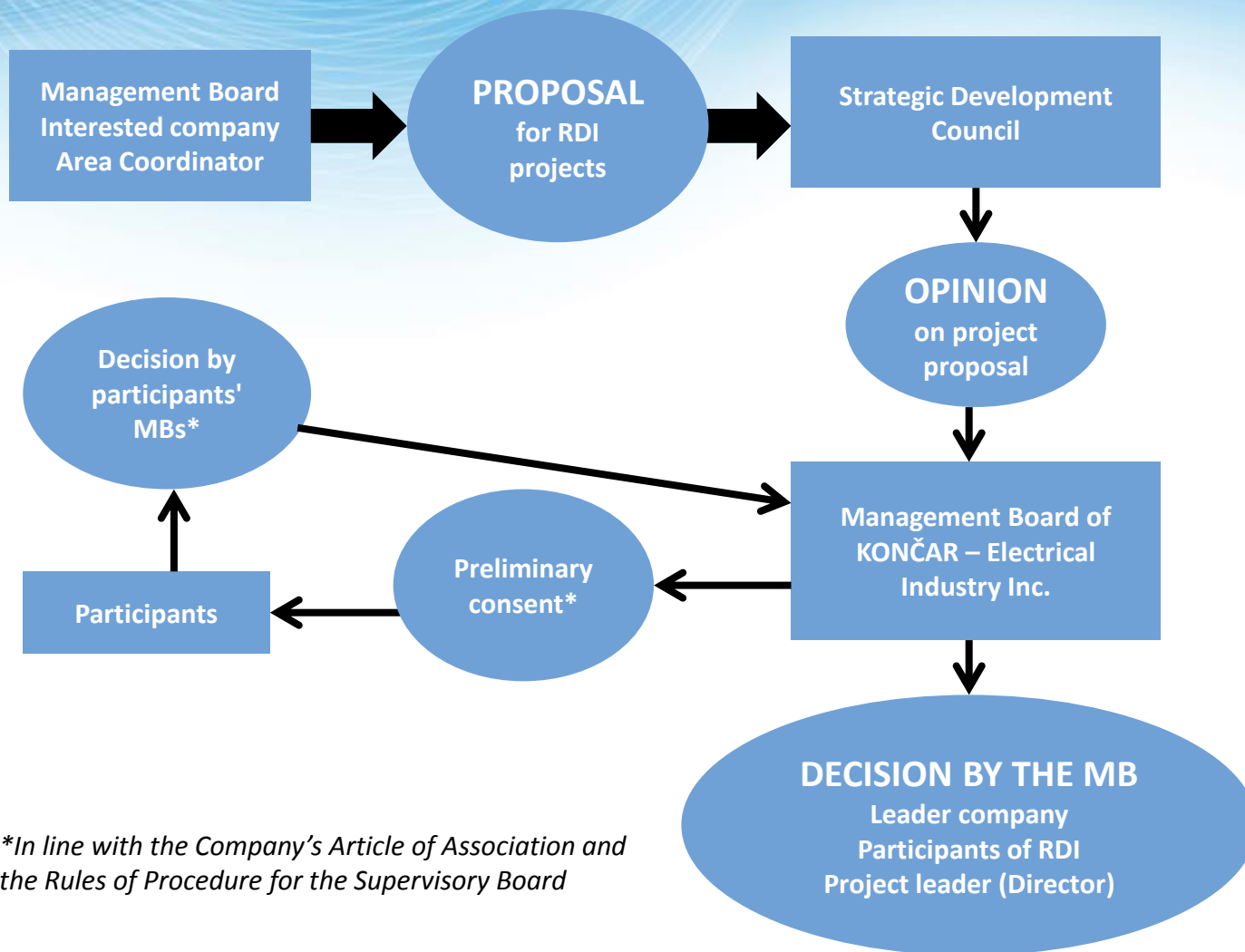
Strategic RDI activities - definitions

- **Coordination Leader Company** – a company appointed by the Management Board of KONČAR for the coordination of RDI within the strategic area
- **Area Coordinator** – a person appointed by the Management Board of KONČAR for coordination in the strategic area
- **Strategic Development Council** – advisory body of the Management Board of KONČAR for strategic and long-term development issues

Bylaws and agreements between companies

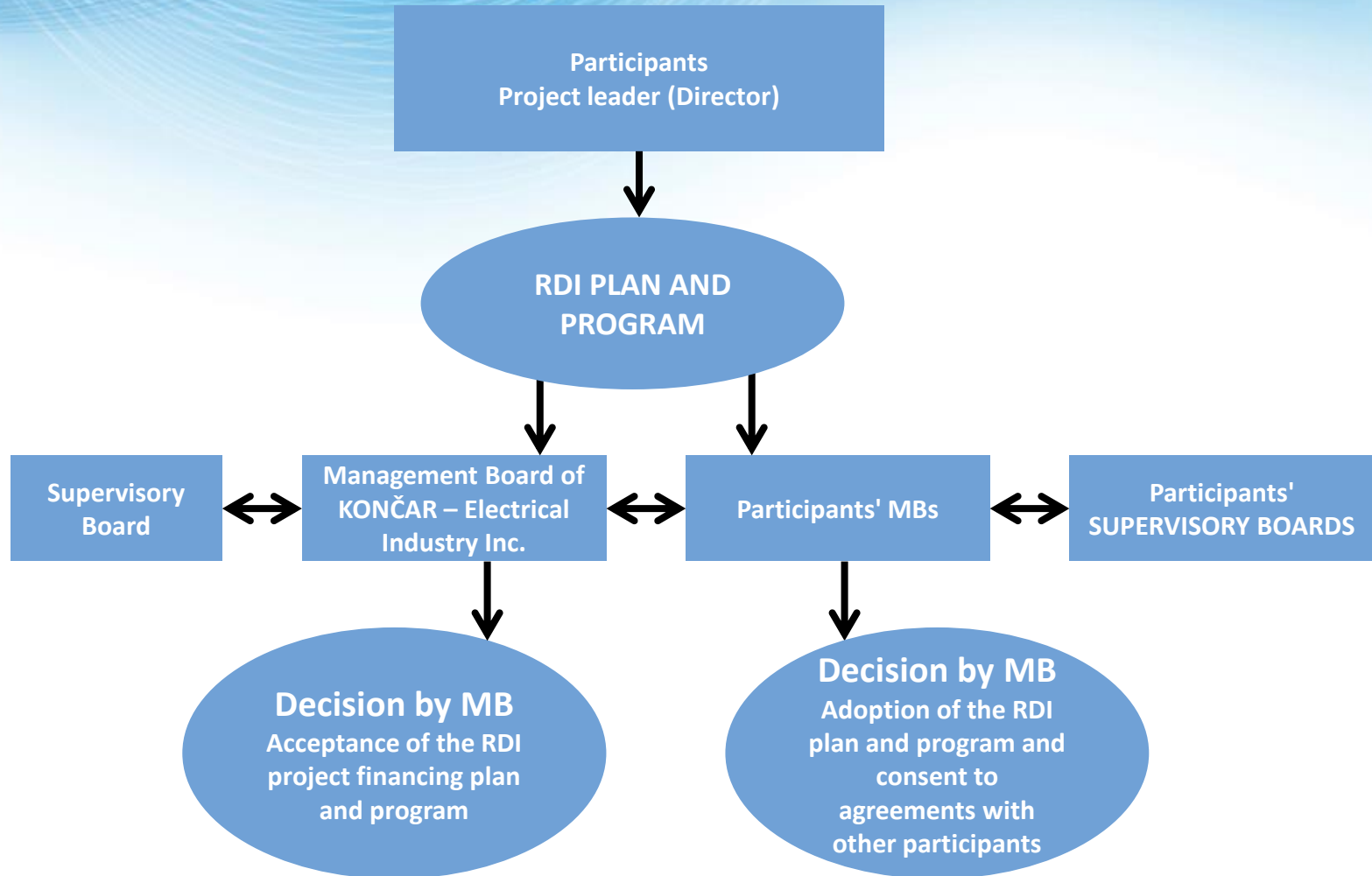
- Trade secret rulebook
- Agreement for managing research and development in KONČAR strategic areas
- Contract regulating research and development services in strategic area
- Agreement for mutual cooperation and exchange of business and technical data in strategic area

Launch of strategic RDI projects



**In line with the Company's Article of Association and the Rules of Procedure for the Supervisory Board*

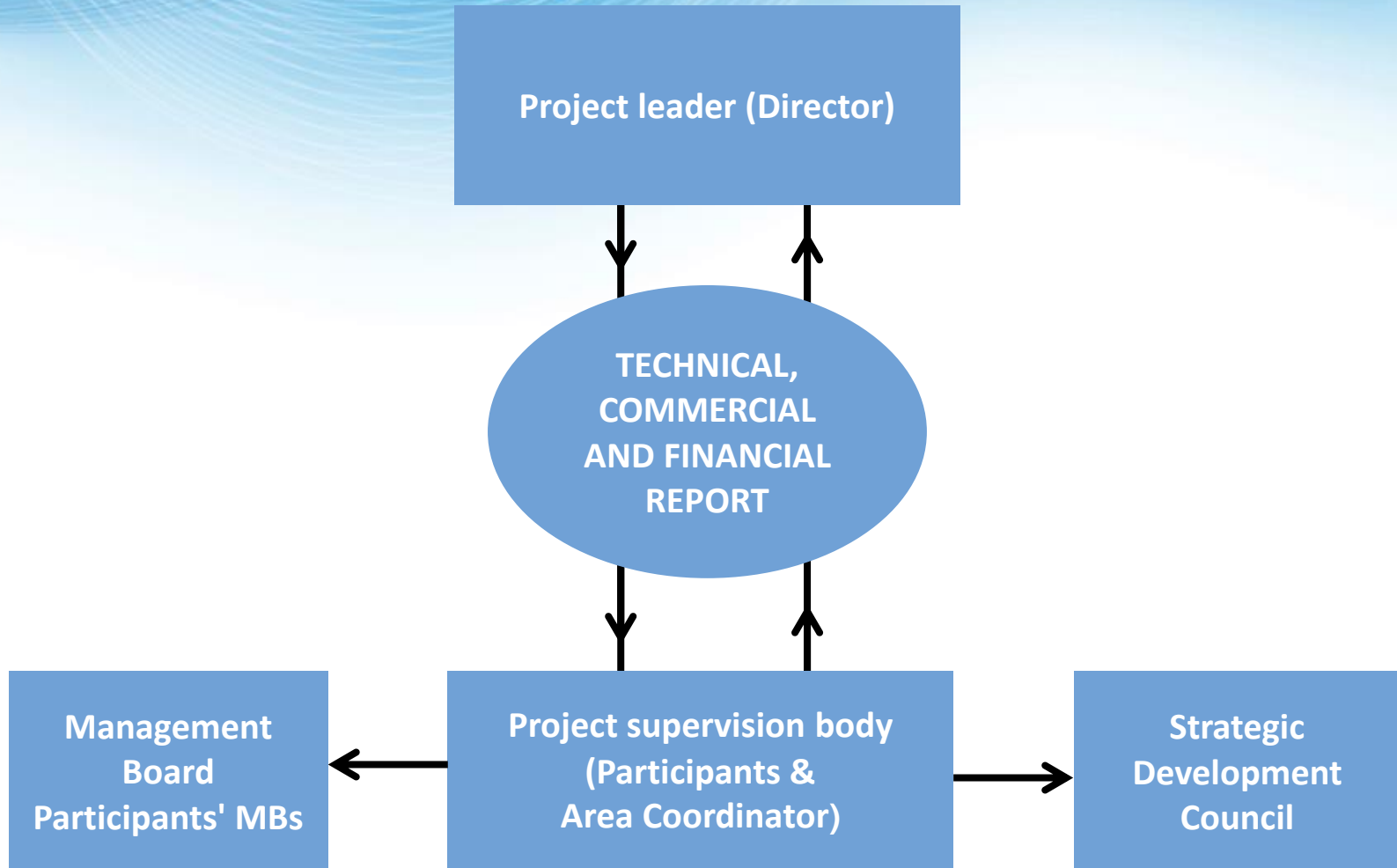
Project acceptance



Funding sources

- Daughter company's allocated resources for funding own activities (statutory and other reserves, free depreciation funds, from current operations)
- Daughter company's allocated resources for funding agreed activities with other Holding companies (agreements between two or more companies)
- Recapitalization
 - by cash
 - by tangible asset
 - by intangible asset
- Other specific purpose funds (national and EU funds)

Project supervision

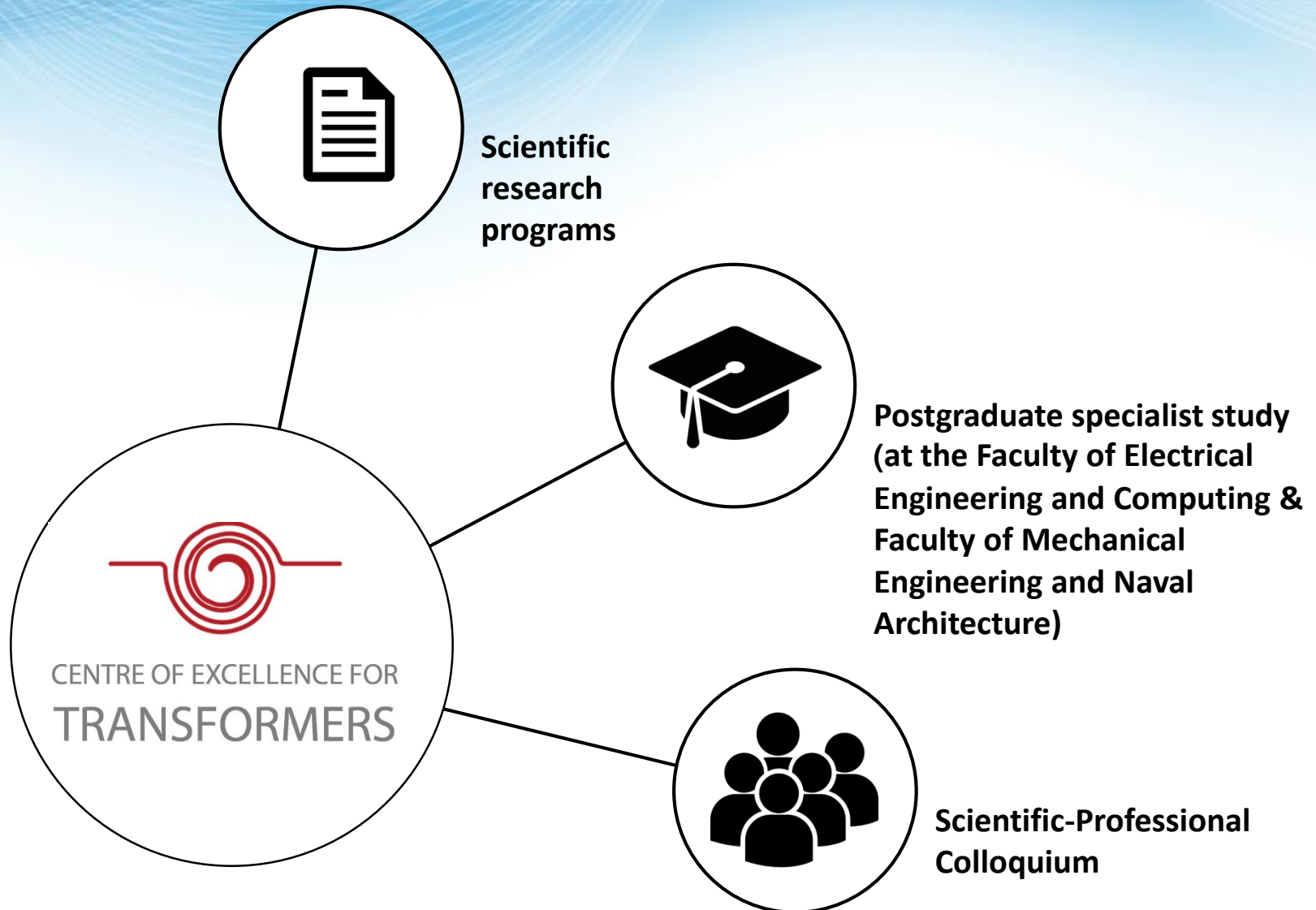


Case studies

Digital high-voltage insulated switchgear 145 kV



Centre of excellence for transformers



Scientific research program



- Dedicated scientific research projects from the area of power and instrument transformers
- In cooperation with the academic community
- Funded by the companies within KONČAR Holding
- Supported by Croatian and international funds



Postgraduate specialist study



- Postgraduate international interdisciplinary specialist study in transformers
- 3 university terms; 60 ECTS credits (European Credit Transfer System); lectures in English
- Total of 6 courses, 40 hours each
- Lectures are organized one week per month; 3 months per university term



Scientific professional Colloquium



International Colloquium „Transformer Research and Asset Management“

- Every 2,5 years
- Main topics:
 - Transformer Numerical Modeling
 - Materials, Components and New Technologies
 - Transformer Life Management



Contacts

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