Future trends: circular

Prof. Tullio Tolio

Il percorso che porta da nuove teorie e idee alle applicazioni industriali è molto più imprevedibile rispetto al passato e richiede nuovi approcci alla generazione del “nuovo”.

Nuova competizione basata sulla conoscenza

Objective driven research – Microsoft Kinect

Microsoft Kinect

basic research at the interface between different disciplines joins applied research to propose new solutions and new devices

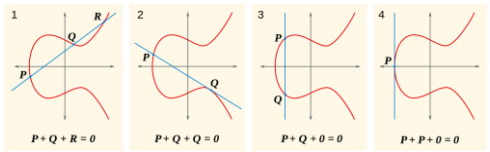
Technology driven research– Industrial fiber laser

Industrial Fiber Laser

new enabling technologies start to grow exponentially and attract basic research, applied research, capital, applications

Swimming upstream research– cybersecurity

Elliptic Curve Cryptology



applied research identifies the knowledge bottlenecks that hinder for future developments and joins effort with basic research to address the problematic areas

Nuova competizione basata sulla conoscenza

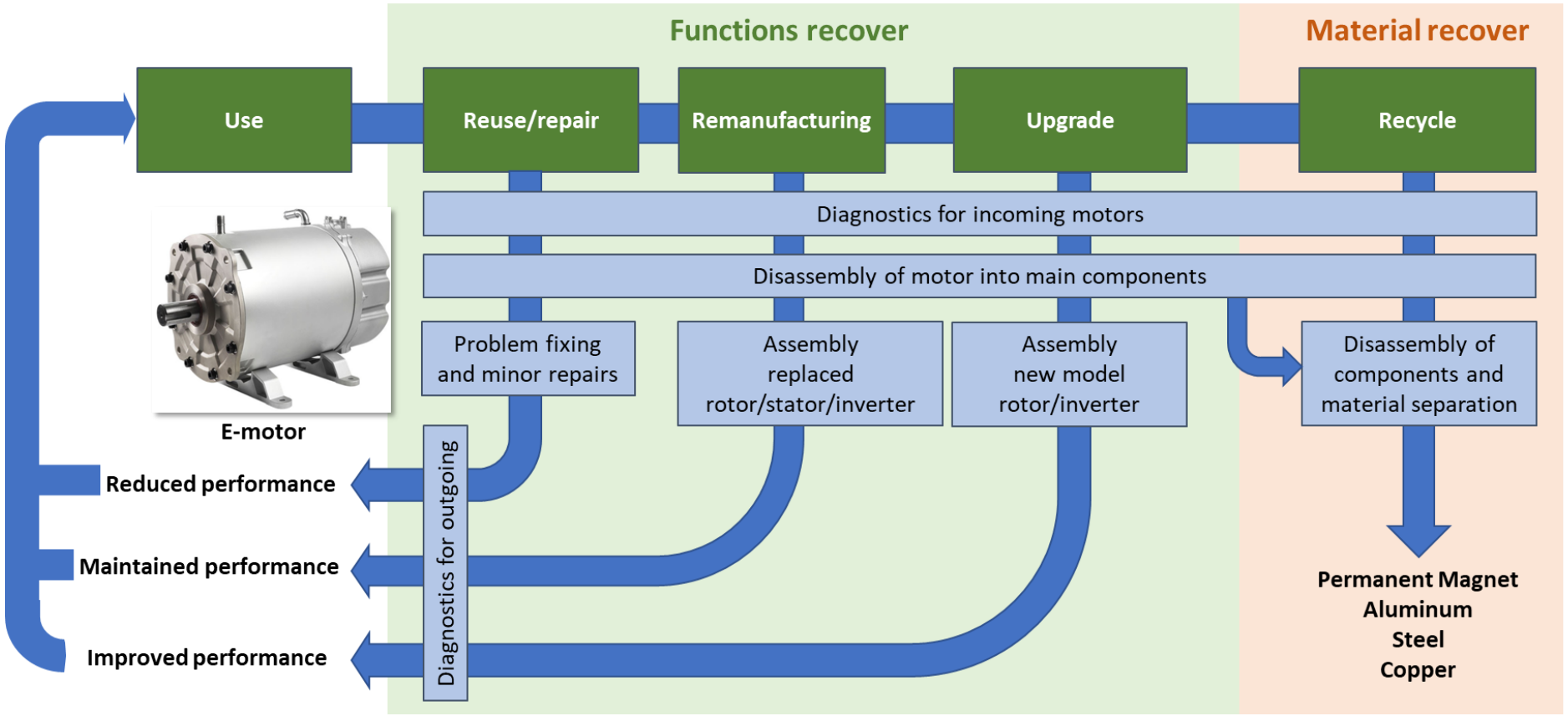
Biointelligent manufacturing. Biomanufacturing defines its positioning at the border between different scientific and technological areas, with the aim at putting together relevant advances working together on a multi/inter-disciplinary objective. Thus, the object-driven mechanism is the main one considered.

Circular Economy. Repair and/or recycling technologies relies on advances from different scientific areas (physics, chemistry, material science, etc.) exploited in an industrial context. Emerging technologies in this area grounds on the capability of identifying research results able to solve specific industrial requirements. Thus, the upstream-swimming mechanism is addressed.

AI in Industry. AI technologies have been rapidly evolving in the last decade but extensive application in industrial plants must cope with requirements not yet addressed by the state of the art (explainability, reliability, etc.). The snow-ball mechanism is considered aggregating basic and industrial scientists around a fast developing technology.

Swimming upstream research– circular economy

CIRCULAR ECONOMY of e-motors



Casi industriali: considerazioni

- L’economia circolare è già oggi un business profittevole in diversi settori
- Il remanufacturing non è in contrasto ma anzi è molto sinergica con la produzione
- L’incertezza sulle caratteristiche dei prodotti di ritorno
- L’informazione gioca un ruolo prioritario nelle decisioni sul de-remanufacturing
- progettazione del prodotto e la modularità
- riconsiderare la supply chain e il modello di business.

- Molti dubbi molte domande molti aspetti da risolvere

Circular economy swimming upstream

- Chi individua i problemi di demanufacturing?
- Come si collegano i problemi con chi potrebbe avere le risposte?
- Chi sviluppa le nuove soluzioni per il demanufacturing?
- Il ruolo dei territori innovativi

Circular economy - strategia

- Come impostare una strategia industriale basata sul remanufacturing?
- Prevarranno I remanufacturer indipendenti o gli OEM?
- Come impostare una strategia sulle materie prime seconde?
- Come diventare leader di produttori di beni strumentali per il remanufactruring?

Grazie per l’attenzione

Prof. Tullio Tolio

Competizione basata sulla conoscenza

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Mechanism	Description	Aim
objective-driven research	basic science at the interface between different disciplines joins applied research to propose new solutions and new devices.	joint development and/or cross fertilisation of existing technologies from different areas
upstream-swimming research	applied research identifies knowledge bottlenecks that hinder future developments and joins effort with basic science to address the problematic areas	identification of enabling technologies (emerging or belonging to another sector)
snow-ball research	new enabling technologies start to grow exponentially and attract basic science, applied research, capital, applications	take advantage of fast-growing technologies and their integration with sector-specific technologies