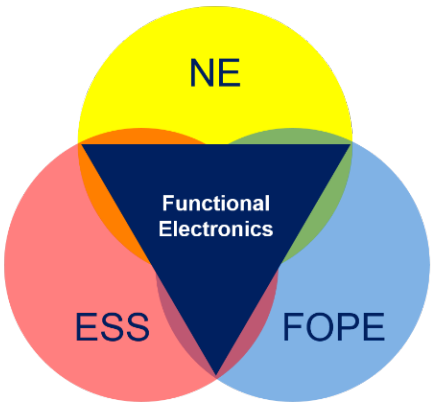
Functional Electronics

Terminology

A Joint Vision for 'Functional Electronics'

At the convergence of Unconventional Nanoelectronics (NE), Flexible, Organic & Printed Electronics (FOPE) and Electronic Smart Systems (ESS), the term '**Functional Electronics**' encompasses this ever-increasing capability to integrate key digital technologies with cognitive functions, shifting from purely physical integration to functional integration. Smarter (hybrid) electronic components and systems will become viable notably at high structural density on and in novel substrates (including, but not limited to, flexible, organic, printed) and structural systems (e.g. textiles, plastics, laminates, glass, steel).

Functional Electronics will generate additional value from their use that is presently not realisable by using any of the electronics forms independently, enabling new and efficient eco-design approaches at product, process and business model levels. They will have capability to capture & manage multi-physics data and contextual information in real time, with high sensitivity, selectivity and reliability as well as being networked, autonomous and complemented by bespoke software (incl. AI) solutions. Functional Electronics allow for their seamless integration in everyday objects and thereby enable the full realisation of their sustainability benefits in a broad spectrum of new applications.



This leads to an overall Joint Vision that such functional electronics will provide key solutions to global societal challenges, where several aspects are important:

1. There is an already impressive portfolio/library of available technology options across the functionalities benefitting from the inputs from the individual electronics areas. It is critical to keep on developing such technologies to continue expanding the range of capabilities that will enable/facilitate more diverse information gathering.

2. There is a need for standardised platform technologies that enable robust integration of these available functionality options through novel system level approaches. These need to provide a sufficient degree of reliability and yield in the production process to enable a credible alternative to more traditional integration approaches.

3. Next generation systems based on such platforms will enable smooth implementation towards new solutions in a wider range of application sectors.

4. Development of such systems should focus on addressing the Areas of Intervention.

This terminology is a result of the 5E project that reinforces collaboration and outreach of the electronics industry across Europe and supports its stakeholders in seizing opportunities.