

Proposal of Meta-Engineering for Breakthrough Innovation

Committee on Technology Policy of the Engineering Academy of Japan

We propose a new creative concept of “meta-engineering” as a dynamic engineering approach that is considered most vital for breakthrough innovation beyond converging technologies (CTs) promoted today.

Japan, as a science and technology driven country, is expected to play a leading role in addressing increasingly more diversified global issues and solving them with maintaining harmony of sustainable growth of human society and preservation of environment in years to come. A key for performing such a role lies in innovation by continual orchestration of global issues, science and technology, and new social value.

Addressing only emerging issues with science and technology is insufficient for realizing breakthrough innovation. Our proposal maintains that the spiral process is a key driving force for innovation and solution of challenges that local economy, regional communities, whole countries, and the world are faced with. The processes includes “exploring invisible and potential/latent issues from bird's eye point of view”, “identifying and strengthening necessary science and technologies”, “converging these science and technologies” and “creating social value by implementation of them”. “Meta-engineering” that we propose is different from the engineering approach of today that focuses only on converging of technologies. “Meta-engineering” is to promote radical innovation going down to the root.

For further deepening and perfection of “meta-engineering,” more accelerated investigation and specific demonstration and implementation in parallel are indispensable. And such actions require well coordinated and intense academia-industry-government collaborations with close interactions with the general public, under the national science, technology and innovation policy.

We emphatically propose to put a high priority on the development of “meta-engineering” as a new Japanese approach for innovation and sustainability for generations to come.

Global issues



Explore Potential Issues

Identify & Enhance Required S&T

Create Social Value by Implementation

Converge S&Ts

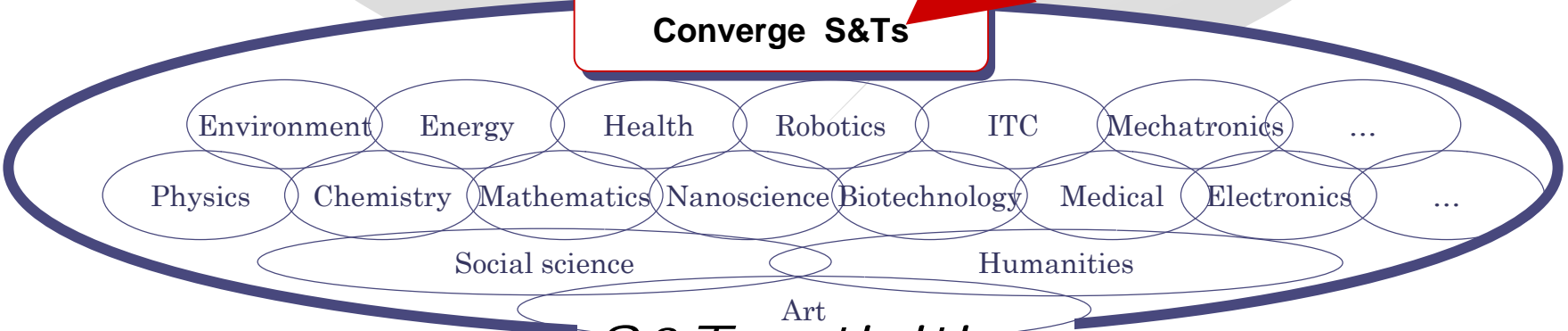
Meta Engineering
Process thru (a) to (d)

(b)

(c)

(a)

(d)



S&T activities