



**SECRETARIAT GÉNÉRAL DE LA DÉFENSE ET DE LA
SÉCURITÉ NATIONALE -
AFFAIRES INTERNATIONALES, STRATÉGIQUES ET
TECHNOLOGIQUES**

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**Dealing with the risks associated with emerging
technologies in an evolving environment**



Background – Why do emerging technologies matter ?

Emerging technologies provide a strategic advantage to those who master them. A few examples taken from history books :

- black powder : from its invention in China at the 7th century to the battle of Constantinople in 1453 ;
- cryptanalysis : Alan Turing and the Enigma machine.

What explains the on-going interest for the control of emerging technologies ? What answer does France bring to this challenge ?



The impact of globalization on innovation chains

- Innovation is mainly led by the civil sector.

R&D expenditures in the European Union in 2017 : 320 billion €, as compared to 8 billion € in the defense sector.

- Countries are becoming much interdependent from each other than they used to be.

During the academic year 2018-2019, France has welcomed 29 500 PhD students from abroad (42% of the PhD student population studying in the country).

An evolving strategic environment

- Tensions for international security and stability arise.

French Defense and National Security strategic review (2017, p. 17):

“The international balance of power is changing rapidly. (...) Competition, initially economic and technological, is increasingly extending to the military realm.”



France and the control of emerging technologies

- France promotes harmonized export controls through multilateral export control regimes (Wassenaar Arrangement, MTCR, Australia Group, Nuclear Suppliers' Group).

For instance : a proposal was submitted at the Wassenaar Arrangement in 2018 and introduced a new control on post-quantum cryptography.



Complementary tools developed by France

- The National Scientific and Technical Potential Protection Scheme (PPST), reformed in 2012.
- Control over foreign investments : introduction of a new decree (n°2018-1057 from the 29th of November 2018) that extends the control of foreign investments over R&D led on certain emerging technologies (such as AI or additive manufacturing) if they are likely to contribute to activities related to public or national security.

Conclusion

- Emerging technologies are not a new challenge but the world we are living has changed over the years (interdependence, tensions within our security environment).
- France focuses on what exists and works (multilateral export control regimes) and develops complementary tools as a way to prevent the misuse of emerging technologies while not impeding their development.
- The efficiency of our action will depend, above all, on our ability to mobilize the greatest possible number of stakeholders.