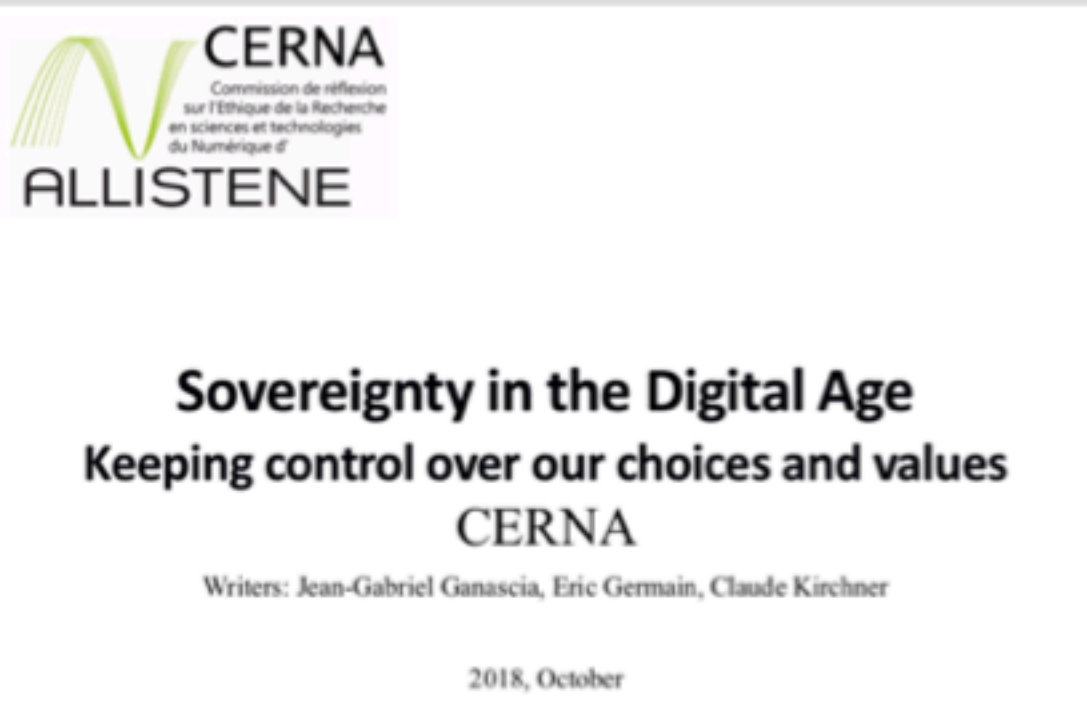# Ethics and SovereigntieS in our Digital Societies

Claude Kirchner
Joint work with
Jean-Gabriel Ganascia and Eric Germain
In the context of CERNA

Tokyo, October 31, 2018

CERNA

CERNA
Commission de réflexion
sur l'Ethique de la Recherche
en sciences et technologies
du Numérique d'
ALLISTENE

Sovereignty in the Digital Age
Keeping control over our choices and values
CERNA

Writers: Jean-Gabriel Ganascia, Eric Germain, Claude Kirchner

2018, October

Commission de réflexion sur l'**E**thique de la **R**echerche en sciences et technologies du **N**umérique d'**A**llistene

**Allistene's Committee on
Research Ethics
in Digital Science and Technology**

http://cerna-ethics-allistene.org/digitalAssets/55/55817_Sovereignty_CERNA_2018.pdf

Ethics and Sovereignty
The thesis

1. In the absence of sovereignty, the choices that arise from rational reflection and from the expression of free will cannot be implemented: **sovereignty is essential to applied ethics**

2. **Digital technology changes, but does not eradicate, the classical expression of the sovereignty of peoples**. The global age, despite its globalisation effects, erases neither the expression of cultural diversities nor the need and the rights of human communities to govern themselves and forge their own destiny around shared values, aesthetics and political choices.

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# Ethics, moral, deontology, integrity, law

- **Ethics**: positioning on value hierarchies, along the way, based on experience as well as personal and collective reflection

- **Moral**: ~ethics, but also social or religious moral

- **Deontology**: the rules of the profession, eg Hippocrates' oath

- **Integrity**: absence of bad intention, honesty

- **Law**: eg civil code, national, international, subject to interpretation

Sovereignty

The classical concept of sovereignty refers to **the capacity of the sovereign to fully control the attributes over which it claims control:**

Territories (borders), army, police, currency, language, civil code, etc.
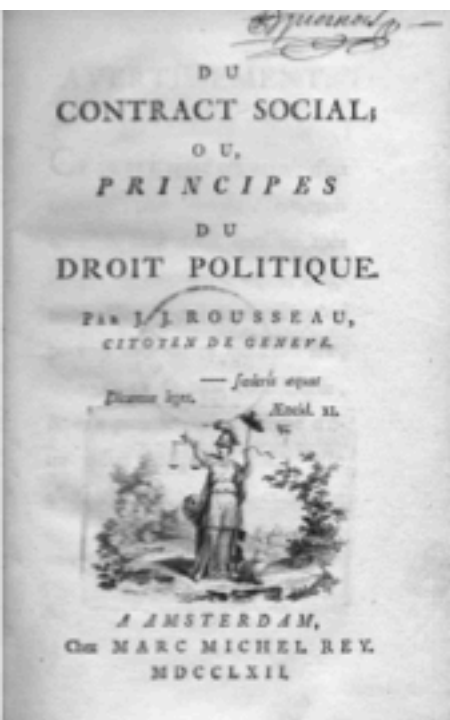
The initial thinkers

The idea of national sovereignty remains fundamentally attached to the old notion of political sovereignty theorised in particular by Locke, Voltaire and Rousseau

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Sovereignty contexts

Sovereignty only means something if its holder's capacities are commensurate with its holder's ambitions.

Sovereignty makes sense only when accompanied by the means to assume control

Border respect, collected taxes, used currency, implemented law, taught and spoken language, …

SovereigntieS?

What means

- Digital

- Individual

- Technological

- Scientific

Sovereignty?

Palantir Technologies

Airbus taps Silicon Valley expertise to speed production of A350

Aerospace group looks to make huge savings through deal with data mining company Palantir

An Airbus A350 XWB aircraft at the Farnborough air show in July © AFP

JANUARY 19, 2017 by: **Tim Bradshaw** in Davos and **Peggy Hollinger** in London

Airbus is tapping Silicon Valley data mining firm Palantir to help accelerate production of its new A350 aircraft, potentially saving the European aerospace group hundreds of millions of dollars over the coming years.

``… We may not have the power to create the world we want immediately, but we can all start working on the long term today.

In times like these, the most important thing we at Facebook can do is develop the social infrastructure to give people the power to build a global community that works for all of us. …''

in

Building Global Community

MARK ZUCKERBERG·THURSDAY, FEBRUARY 16, 2017

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SovereigntieS!

The **sovereignty of an Entity** over **certain attributes** refers to the entity's **ability to control the attributes it claims to control.**

The power to be able

The power to power

Le pouvoir de pouvoir

In practice what means to be sovereign?

One needs to get the right corpus of laws to found each constituant of this definition of sovereignty

- what is the precise définition précise of the entity?

- what attributes it claims control of?

- is this claim legitimate and on which legislation is it based?

- how is the entity's ability to assume this control exercised?

Examples

- National sovereignty

- Digital sovereignty

- Scientific sovereignty

- Food sovereignty

- economic sovereignty

- individual sovereignty

Digital sovereigties

Digital technology requires international standards, with a secure flow of information and allowing everyone to communicate freely and in compliance with the law.

On these principles, major industrial players claim to assume sovereign functions
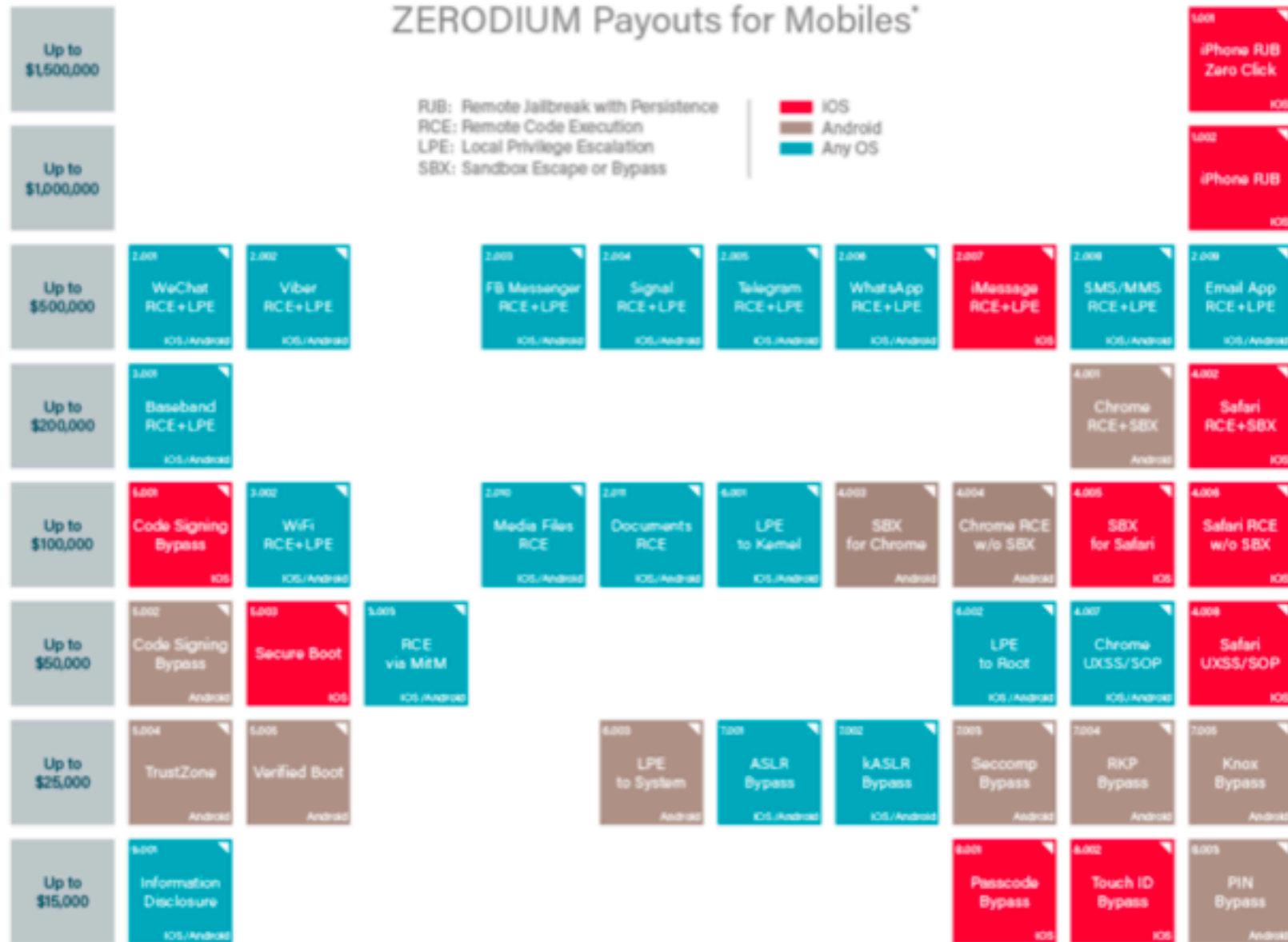
Examples

- **Authenticating individuals**: social media provide authentication services that can certify an individual's identity. At one stage, for example, the United Kingdom considered using people's "Facebook identity" as a national ID. Other Internet companies also provide this type of identity checking and certification service (cf. https://www.civic.com).

- **Minting money**: with cryptocurrencies like Bitcoin, but also with local currencies restricted to a community of interest or a geographical community, national currencies are losing their exclusivity.

- **Land registry**: Google, for example, can help with the collection of land tax in certain countries, such as Greece or a number of African nations, where there is no land registry. Establishing internationally used maps, not necessarily recognised by the UN or the countries concerned, can significantly encroach on the national sovereignty of states in situations of territorial conflict

Examples

- **Establishing and preserving legal deeds**: systems based on blockchain technology provide OTC (Over-the-counter) contracts which are currently considered unfalsifiable and could ultimately replace certain legal deeds

- **Maintaining internal security**: facial recognition requires access to a large number of photographs that, for legal and technical reasons, most states do not have. On the other hand, social networks can easily undertake this function

- **Attacking and defending**: companies like Zerodium acquire and sell "zero-day exploits"– potential software vulnerabilities that are unknown and consequently not detected by existing countermeasures to clients potentially exposed to these risks. Others provide digital defence services for IT sites

ZERODIUM Payouts for Mobiles*

RJB: Remote Jailbreak with Persistence
RCE: Remote Code Execution
LPE: Local Privilege Escalation
SBX: Sandbox Escape or Bypass

- 🟥 iOS
- 🟫 Android
- 🟦 Any OS

Up to $1,500,000
- 1.001 iPhone RJB Zero Click — iOS

Up to $1,000,000
- 1.002 iPhone RJB — iOS

Up to $500,000
- 2.001 WeChat RCE+LPE — iOS/Android
- 2.002 Viber RCE+LPE — iOS/Android
- 2.003 FB Messenger RCE+LPE — iOS/Android
- 2.004 Signal RCE+LPE — iOS/Android
- 2.005 Telegram RCE+LPE — iOS/Android
- 2.006 WhatsApp RCE+LPE — iOS/Android
- 2.007 iMessage RCE+LPE — iOS
- 2.008 SMS/MMS RCE+LPE — iOS/Android
- 2.009 Email App RCE+LPE — iOS/Android

Up to $200,000
- 3.001 Baseband RCE+LPE — iOS/Android
- 4.001 Chrome RCE+SBX — Android
- 4.002 Safari RCE+SBX — iOS

Up to $100,000
- 5.001 Code Signing Bypass — iOS
- 3.002 WiFi RCE+LPE — iOS/Android
- 2.010 Media Files RCE — iOS/Android
- 2.011 Documents RCE — iOS/Android
- 6.001 LPE to Kernel — iOS/Android
- 4.003 SBX for Chrome — Android
- 4.004 Chrome RCE w/o SBX — Android
- 4.005 SBX for Safari — iOS
- 4.006 Safari RCE w/o SBX — iOS

Up to $50,000
- 5.002 Code Signing Bypass — Android
- 5.003 Secure Boot — iOS
- 5.005 RCE via MitM — iOS/Android
- 4.002 LPE to Root — iOS/Android
- 4.007 Chrome UXSS/SOP — iOS/Android
- 4.008 Safari UXSS/SOP — iOS

Up to $25,000
- 5.004 TrustZone — Android
- 5.005 Verified Boot — Android
- 6.003 LPE to System — Android
- 7.001 ASLR Bypass — iOS/Android
- 7.002 kASLR Bypass — iOS/Android
- 7.003 Seccomp Bypass — Android
- 7.004 RKP Bypass — Android
- 7.005 Knox Bypass — Android

Up to $15,000
- 6.001 Information Disclosure — iOS/Android
- 8.001 Passcode Bypass — iOS
- 8.002 Touch ID Bypass — iOS
- 8.003 PIN Bypass — Android

Multiples instances of digital sovereignty

- The digital sovereignty of nations allows countries to ensure the defense and security missions

- The digital sovereignty of individuals allows them to control their data and personal communications, including health and pedagogical data, their pictures, their usage data issues from shopping sites, their softwares, …

- The digital sovereignty of a company or of an economic sector or of a geographic or geopolitics sector allows them to control their data and communications

These instances are interdependent

Scientific sovereignty

The ability of a scientific community to develop its research at the highest international level

- Knowledge management

- Data control

- Protocol control

Scientific sovereignty

- Why did the university made the choice to switch to Google ?

- What are the benefits of the transition to Google ?

Scientific sovereignty

Elsevier is a world-leading provider of information solutions that help you make better decisions, deliver better care, and sometimes make groundbreaking discoveries in science, health, and technology.

We provide web-based, digital solutions — among them ScienceDirect, Scopus, Evolve ↗, Knovel, Reaxys and ClinicalKey ↗ — and publish over 2,500 journals and more than 33,000 book titles.

Le Monde, 10 mars 2014

Public announcement in Malta by researcher Ron Fouchier of Gain-of-Function (GOF) experiments on the H5N1 influenza virus: he and his team at the Erasmus Medical Centre in Rotterdam have made this virus airborne between ferrets

Scientific sovereignty

Le NSABB s'oppose à une publication intégrale des travaux

20 décembre 2011

NATIONAL SCIENCE ADVISORY BOARD for BIOSECURITY

Les autorités américaines, par le biais du **NSABB**, s'opposent à une publication *ad integrum* des travaux des deux équipes.

ISSUES IDENTIFIED BY CERNA

I-1 Digital sovereignty is not simply a political and economic issue, but carries within it questions that are eminently ethical;

I-2 This ethical issue notably concerns the right of every individual to privacy. The assumption made by some digital corporations that the alienation of this privacy is today tacitly accepted (on the principle that the user's silence signals acceptance of any subsequent use of the data collected) is unacceptable, both from an ethical point of view, and in terms of national or individual sovereignty;

I-3 The Privacy Shield mechanism or the entry into force, on 25 May 2018, of the General Data Protection Regulation, illustrate the difficult balance of power in particular with corporations established under US law (and the extra-territoriality associated with it). This may mean that the radical measure of requiring the data of European citizens to be stored exclusively on European Union territory should not be ruled out;

I-4 What is true on the individual scale is equally true on the collective scale; whether our vision of collective sovereignty focuses on the national or European scale, one cannot but worry about the threat that the digital sovereignty of the big Internet players may pose to the democratic functioning of our institutions or in terms of interference in society's choices;

I-5 Digital technology is profoundly changing the scientific approach and the scientific environment; the questions of scientific sovereignty that arise from this combine with ethical issues that are crucial in the development of all scientific disciplines;

I-6 The implications of these changes to the scientific framework have profound consequences for all societies across the world and for the future of humanity;

I-7 In our modern societies, digital sovereignty intersects with most, if not all, the other sovereignties. This makes it a significant source of conflict.

CERNAS' RECOMMENDATIONS

R-1 In addition to the training in scientific ethics and integrity provided in graduate schools, training programmes in scientific ethics and responsibility should be established for all scientists;

R-2 A mechanism of scientific sovereignty should be established in the academic sector in France and Europe with an open science perspective. In particular, the aim should be for all scientific output in which at least one author is affiliated to a French research structure to be deposited in HAL, and that a similar mechanism should be encouraged at European and international level;

R-3 Access should be provided to all the data necessary to the scientific activity of research institutions; in particular, access to Text and Data Mining (TDM) should be provided without restriction for scientific purposes, in all cases according to strict and audited norms of scientific ethics and integrity;

R-4 Specifications should be made for platforms that collect large masses of data (e.g. the GAFAMI and BATX companies) to give scientists access to those data for purposes of open science, according to strict and audited norms of scientific ethics and integrity;

R-5 In accordance with disciplinary specificities, an equitable, discipline-by-discipline open access policy on research data should be established, in concert with national institutions and the big Internet players;

R-6 The professional organisations of the different scientific disciplines should be invited to specify their contributions to the reinforcement of scientific sovereignty;

R-7 National, digital and scientific sovereignties depend on research in the field of cybersecurity, which should therefore be intensively developed;

R-8 With the sponsorship of the European Union and in collaboration with the professional scientific organisations, the Academy of Sciences and the Academy of Technologies, an international "ethics and scientific sovereignty" prize should be established.

Moving outside the primary framework of CERNA's role, which is to address the French scientific community, we formulate the following

CERNAS'
SUGGESTIONS

which are more political in nature and international in scope

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S-1 Launch of an international initiative with the aim of explicitly extending to the digital domain the principle laid down in Article 18 of the 1948 Universal Declaration of Human Rights under which "Everyone shall have the right to freedom of thought", reproduced in Article 9 of the 1950 European Convention on Human Rights Convention and by Article 10 of the Charter of Fundamental Rights of the European Union in 2000;

S-2 Launch of an European initiative, or more pragmatically a Franco-German initiative, in parallel with this international initiative, which – on the basis of increased research on cybersecurity and its applications – will provide the means to guarantee the integrity and confidentiality of digital data, in order to guarantee the expression of all sovereignties, whether national, digital, scientific or individual;

S-3 Encouragement for the online organisations operating in the political field of "citizen action" and "social influence" (e.g. organisations specialising in the launch of online petitions, such as Avaaz.org, Change.org, SumOfUs, etc.) to make the conditions for the use of personal data transparent easily accessible and intelligible and, in particular, to develop a single, uniform heading for this information (covering the different terms such as *data policy*, *privacy policy*, *confidentiality policy* and *information policy*);

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S-4 From primary school, then in secondary school, design a curriculum that raises awareness of the issues of cybersecurity and familiarises students with the tools needed to protect their privacy and to recognise the different forms of manipulation or indoctrination facilitated by digital media;

S-5 Within the framework of a future "universal national service", specify the societal issues of sovereignties in the digital age;

S-6 With the support of the media and the involvement of the scientific community, raise awareness in the whole population in order to reinforce the resilience of our citizens with regard to fake news and attempts at manipulation via digital media;

S-7 The creation of a national ethical consultative committee for digital sciences, technologies, practices and innovations;

S-8 The development of a doctrine and a strategy of French and European influence and of the resources to argue for them in all the relevant national and international organisations (EC, Unesco, WHO, standardisation bodies (ISO, AFNOR, IEEE,...)).
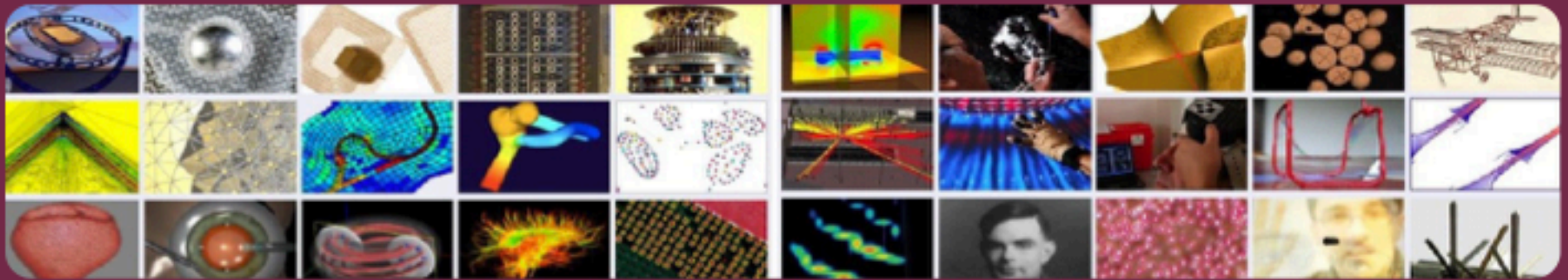
Merci

メルキ

Thank you

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