PEARCODE

DATA ALIVE FOR ETERNITY

16/03/2023

UNIVERSITÉ CÔTE D'AZUR

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Analysis

FACTS

Explosion of data flows
Sovereignty challenged
Expansion of the number of DCs.
Unchecked carbon emissions
Energy costs and expenses rising sharply.

NUMBERS

The annual global data production is 150 Zb and doubles every 2.5 years.

The cost of data storage today is US$ 400 billion but it is also 400 million tons of CO2 produced and 400 TWh consumed

OPPORTUNITIES

70% of data volume is cold data
The world produces more than 150 Zb/year

Cold storage optimises data management by reducing the need for high performance primary storage, and by limiting the risk of data loss.

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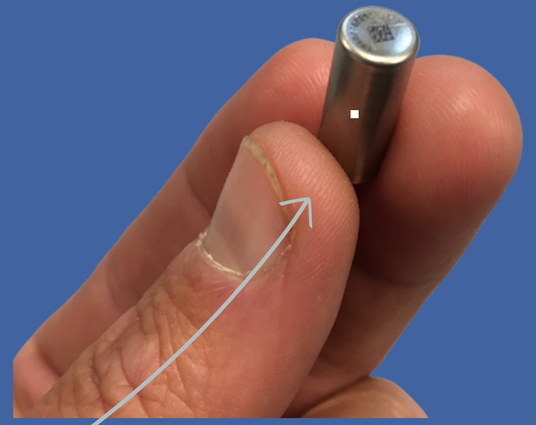
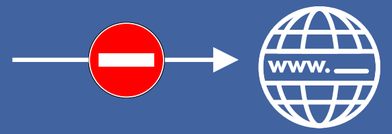
BENEFITS

Technology

One gram
of DNA





DNA storage is a major technological breakthrough in the field of information storage.

01 Information density
215 petabytes / gram
1 million times higher

02 Cybersecurity

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BENEFITS

Technology

03 Lifespan

>1000 years

04 Zero carbon footprint
Zero energy consumption

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BENEFITS

Technology

05 Reduction of storage costs

06 Duplicable and easily industrialised

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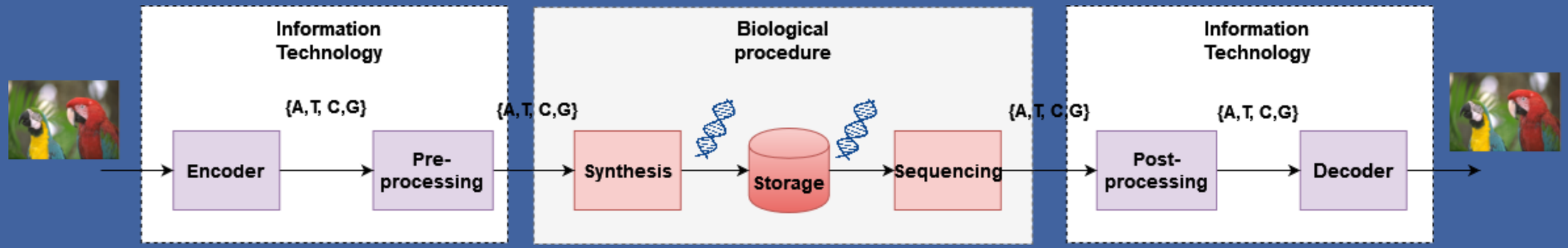
technology

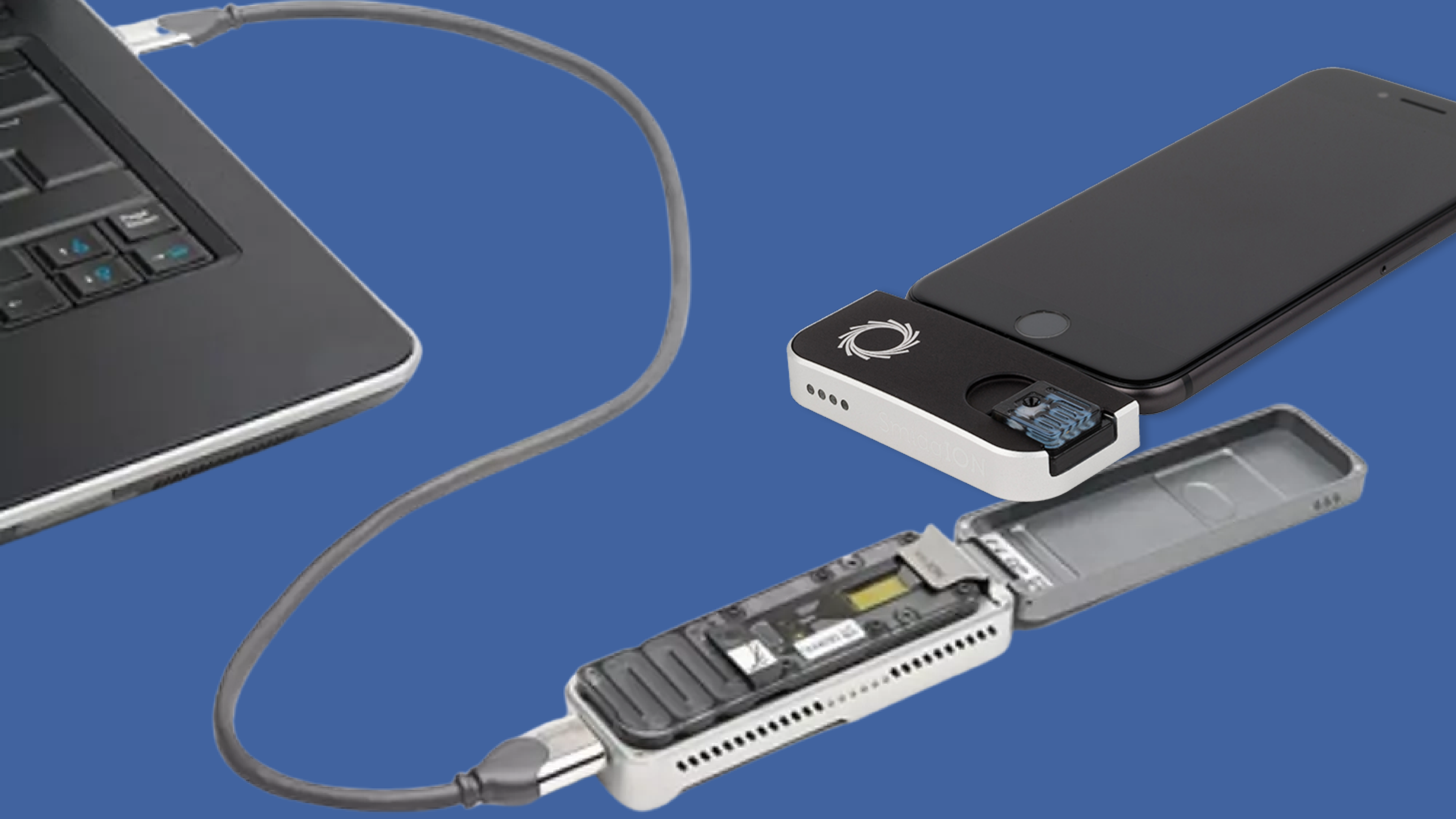
Technology

binary

ATT GTT GG AG ACA CC AGT
TG AC T GGA TAG AG AC CGG
GA CAC AG GA T CCG AGC CG
GG GCT AG GAC CA GA G GGT
ATG GA CA CCG AG AGA GA CC
A TTG GAG CG GA TTA GA CCA
GG AG A GGA TAT AT AC CAC
AA CCT GA TA C TGG ACA CA
CA GGG AT TTG GC AC C TGG
ACA CC AT TAT AT CCA TG GA
G TTG AGG AC CC AGG AT TGG
CC AC C ATT GGA CA CG GAT
TG GAC CC AG A TGG ACC AG
GA TTA GG ACC AG GA T TGG
GCC AC CA TTG AG AGA GA GG
G CCT AGG AT AG GCA CA GGG
GA TT G

quaternary





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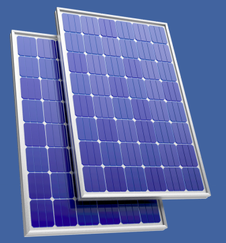
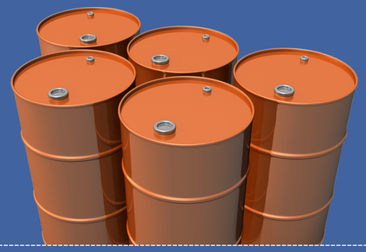
Applications





1 Marking

2 Traceability

3 data storage

Scale in bytes

2034 Zettabyte

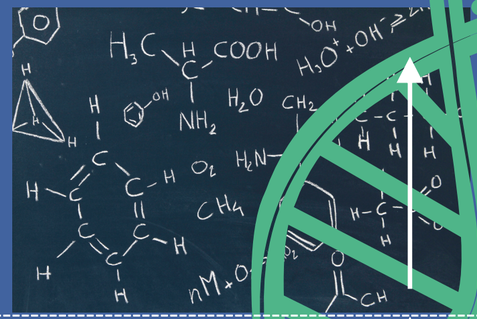
2032 Exabyte

2030 Petabyte

2028 Tb

2026 Gb

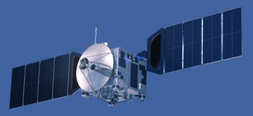
2024 Mb



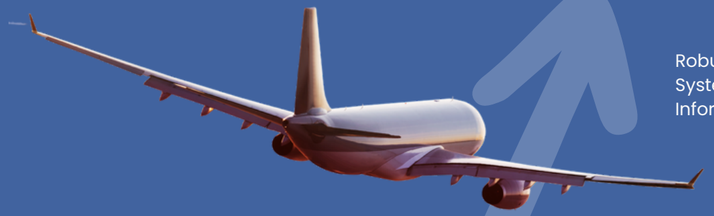
Area of use of Base N synthetic polymers

associated with quantum algorithms

Area of use of synthetic DNA Base 4



Gamma Resistant Embedded Systems

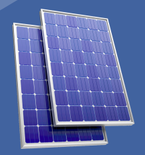


Robust Embedded Systems Sovereign Information Chain

Embedded systems disconnectable from networks. Embedded data centres.

Robotic writing and reading Decarbonisation of the digital industry

Products are coded with much more data as they move through the production lines.

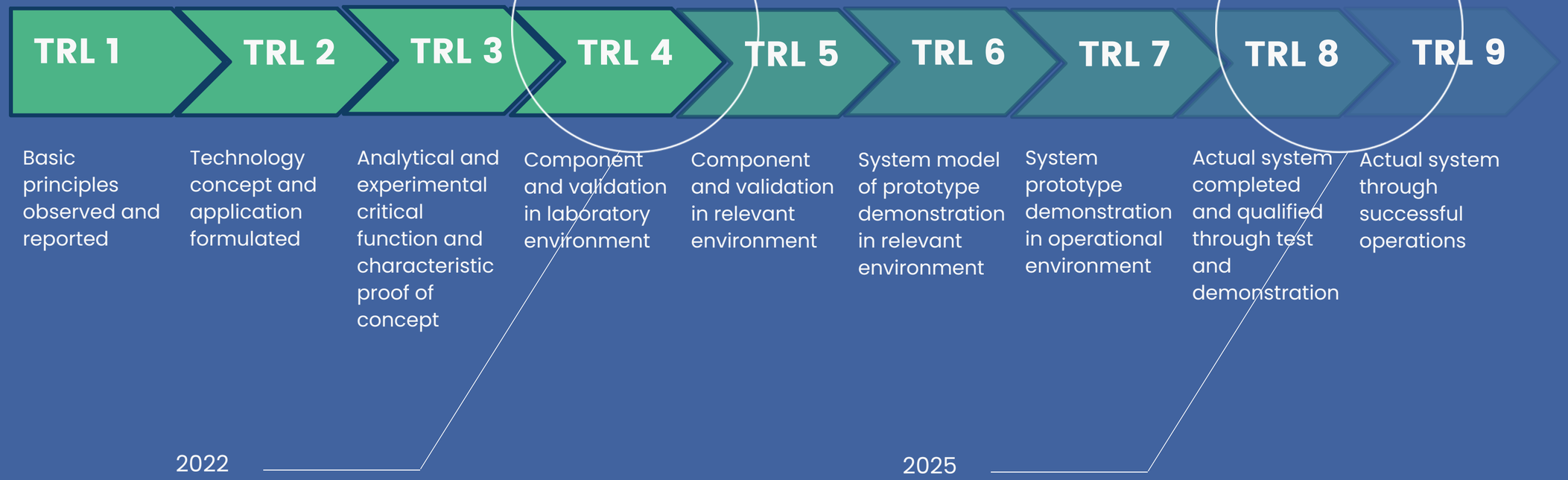


Incorporation of coded DNA into products. Solid or liquid products become their own information carriers

The FUTURE in construction

Timeline

Market Readiness (Technology Readiness Level)



Marc Antonini

CNRS research director

PearCode scientific advisor

Melpomeni Dimopoulou

PhD

CTO

Louis Delaittre

MBA

CEO

Professional Team