InfoDay

EIC Pro-active Management SUSTAINABLE ELECTRONICS

Isabel Obieta

Programme Manager

April 4th 2025

Portfolio Management

1. Selection of a portfolio of projects

Synergies in research and innovation objectives

2. Strategic Plan

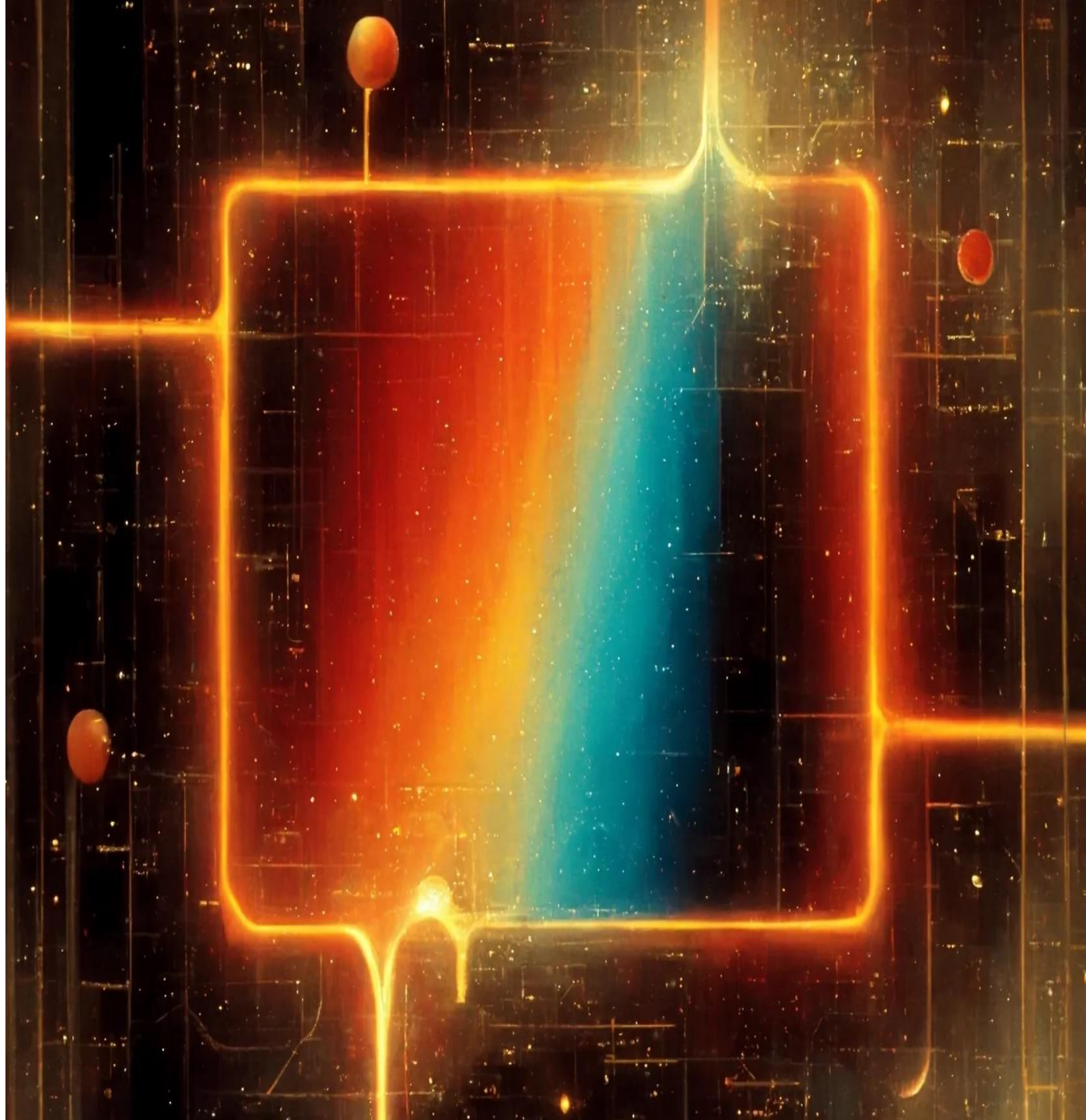
Strategic plan to accelerate the research to market transition

3. Implementation

Governance

Joint activities of a portfolio of projects

Context of my portfolio “**Sustainable Electronics**”



Sustainable Electronics looks at the entire lifecycle of the electronic device, focusing on design, usage, and disposal

The European Chips Act

The Chips Act entered into force on 21 September 2023.

It aims to ensure that the EU strengthens its semiconductors ecosystem, increases its resilience, as well as guarantees supply and reduces external dependencies.

To achieve these aims the Chips Act consists of **three pillars:**

Chips for Europe initiative

- Enhancing and developing design tools and pilot lines for the prototyping, testing and experimentation of cutting-edge chips – including quantum chips
- Support for innovative start-ups, scale-ups and SMEs in accessing equity finance through the **Chips Fund**
- Fostering skills, talent and innovation in microelectronics

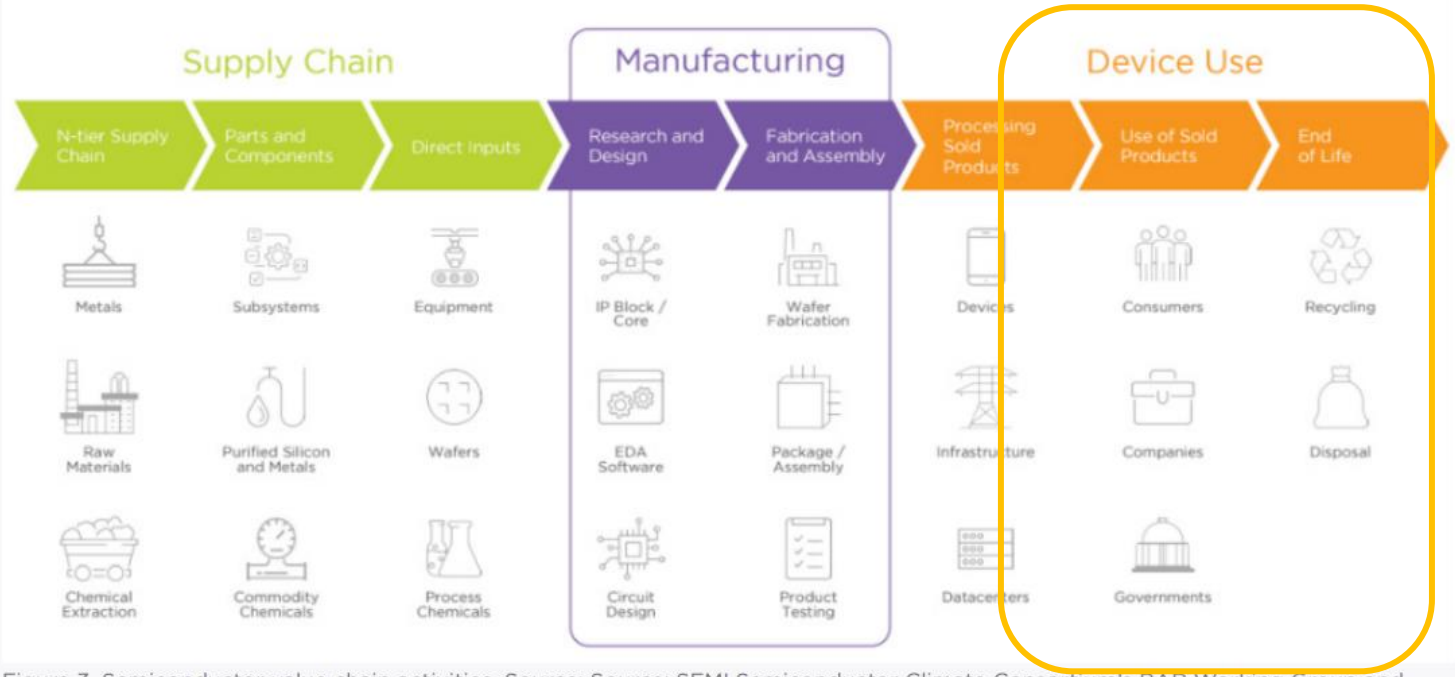


Figure 3. Semiconductor value chain activities. Source: Source: SEMI Semiconductor Climate Consortium's BAR Working Group and BCG. (2023). "A White Paper on Transparency, Ambition, and Collaboration."

Portfolio Management

1. Selection of a portfolio of projects

Synergies in research and innovation objectives

2. Strategic Plan

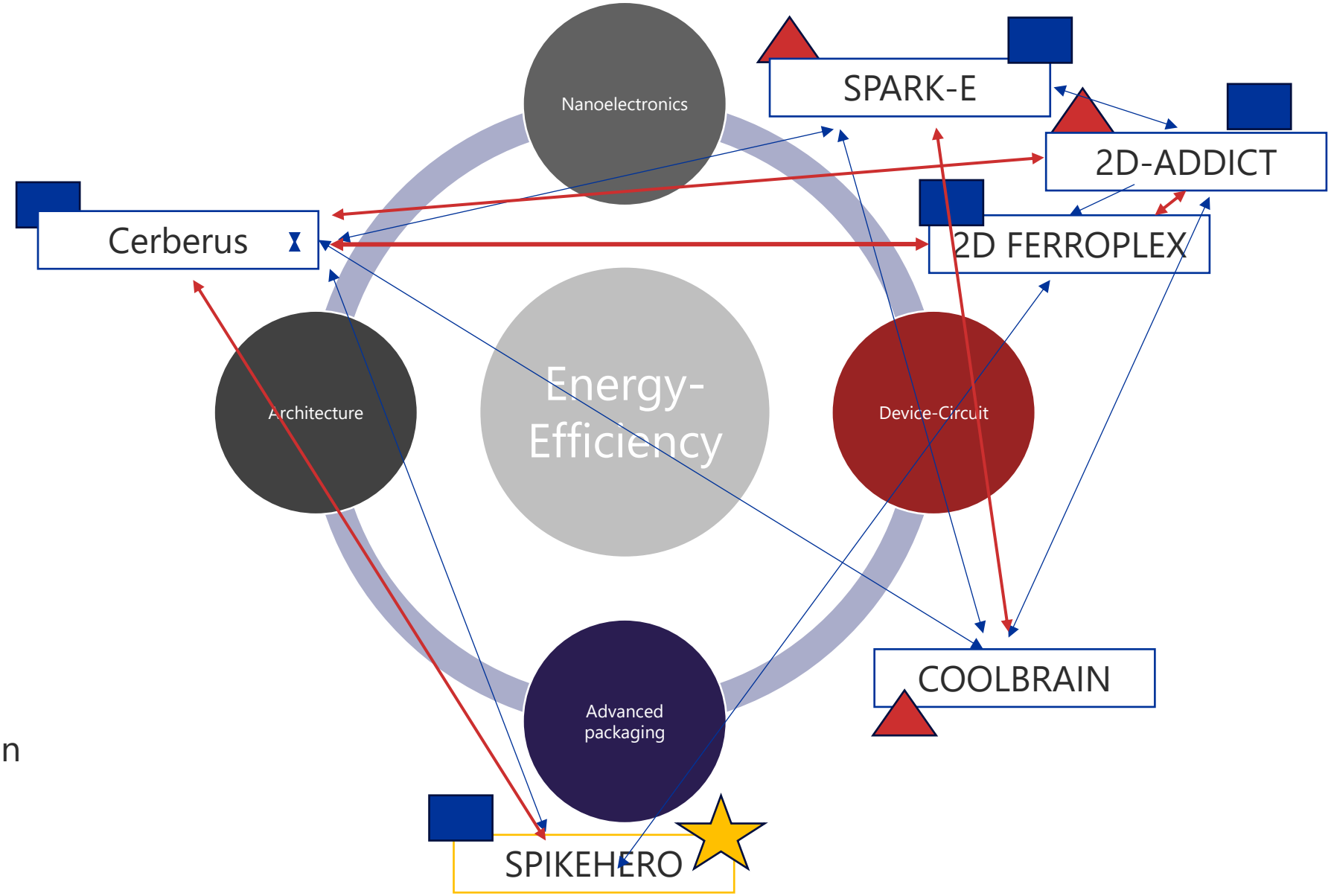
Strategic plan to accelerate the research to market transition

3. Implementation

Governance

Joint activities of a portfolio of projects

Example in selection of projects: synergies



Logic/Memory

Power

Sensing

Communication

Modelling/Simulation

Metrics

Portfolio Management

1. Selection of a portfolio of projects

Synergies in research and innovation objectives

2. Strategic Plan

Strategic plan to accelerate the research to market transition

3. Implementation

Governance

Joint activities of a portfolio of projects

Strategic Plan Implementation Proposal

EIC pathfinder portfolio - Publications Office of the EU

European Innovation Council

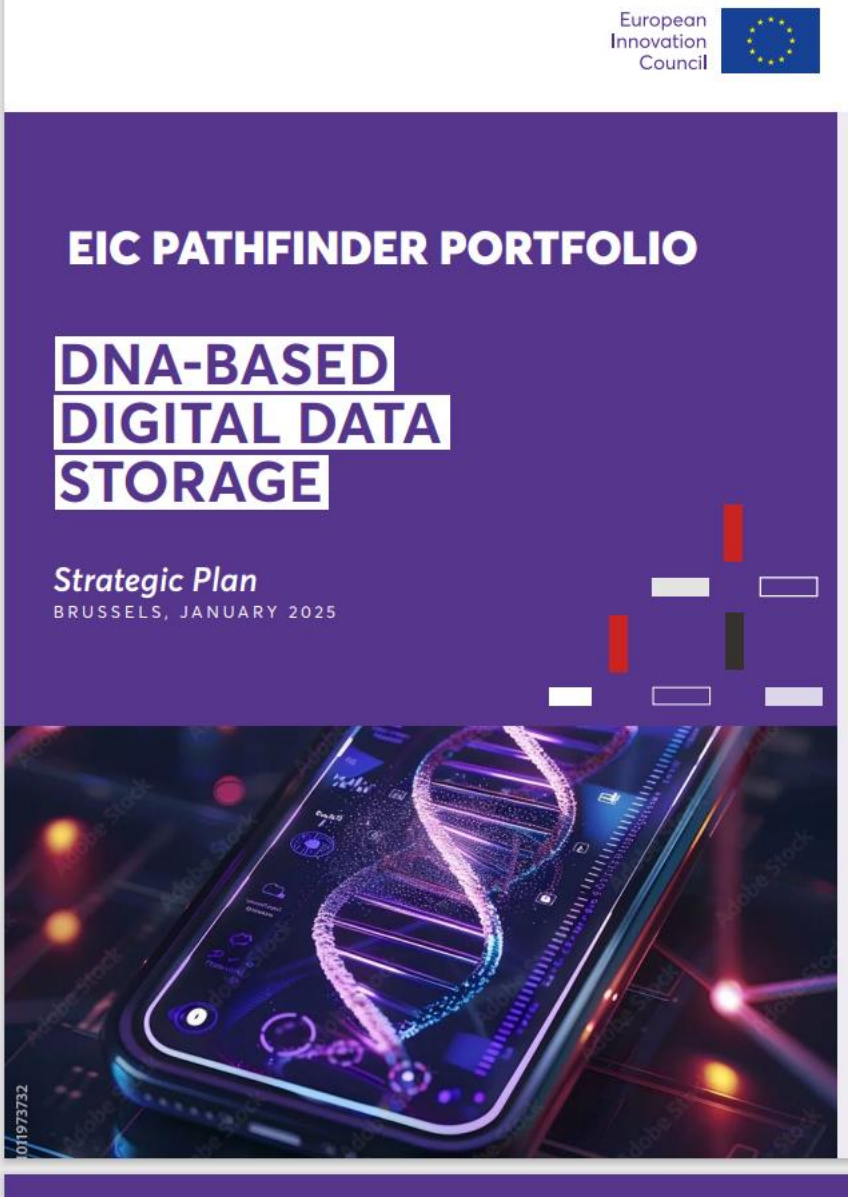


TABLE OF CONTENTS

1 INTRODUCTION

1.1. Background
1.2. Main drivers and challenges of data storage
1.3. Pathfinder challenge "DNA-based Digital Data Storage"
1.4. Portfolio strategy plan structure and content

2 SWOT ANALYSIS AND PORTFOLIO OBJECTIVES

2.1 SWOT Analysis
2.2 Portfolio mission, vision and objectives

3 IMPLEMENTATION

3.1 Governance
3.2 Bilateral meetings
3.3 First on-line portfolio meeting
3.4 Steering committee role
3.5 Meetings among the WGs
3.6 Annual in-person workshop

4 WORKING GROUPS ACTIVITIES AND OUTCOMES

4.1 WG1: Technical synergies
4.2 WG2: Outreach and public engagement
4.3 WG3: Metrics as a foundation for standards
4.4 WG4: Protection and exploitation

5 COLLABORATION FOR INNOVATIVE RESULTS

6 CONCLUSIONS

ANNEXES

List of the projects in the portfolio

ENDNOTES

SWOT Analysis

European Innovation Council

STRENGTHS

- **Wide range** over many **technologies**
- Potential impact on the **standards** being developed
- Wide coverage of **applications** and data storage contexts
- **Excellent research**, both applied and fundamental
- **Good contacts** with DNA Alliance
- Willingness to **collaborate**

WEAKNESSES

- **Maturity** of the technologies being developed
- **Long-term** developments
- Complex **IP landscape**
- Potential **lack of interoperability** between platforms.
- Risk of no inter-WG **communication** to understand the state of art of each WG?
- Different levels of **commitment** within WG

OPPORTUNITIES

- **Sustainability**: less resource intensive (↓ raw materials, ↓ storage facilities)
- **Durability**: thousand of years (at very low T or in absence of water/moisture) and even billions (in glass)
- Current data storage tech are E intensive and may not meet the exponentially increasing demand for data storage.
- **Interest** in DNA data storage of world leading companies (Microsoft, Intel, Dell, IBM..)
- Opportunity to share **best practices** (and **research expertise**) and optimize workflows and protocols
- **Projected growth** of DNA Data Storage market (to reach USD 3348 million by 2030)
- Potential emergence of **binding regulations**: force the storage industry for more sustainable solutions in the years to come
- To become the **main information resource** on the topic of DNA Storage in EU
- **European version** of DNA Data Storage Alliance?

THREATS

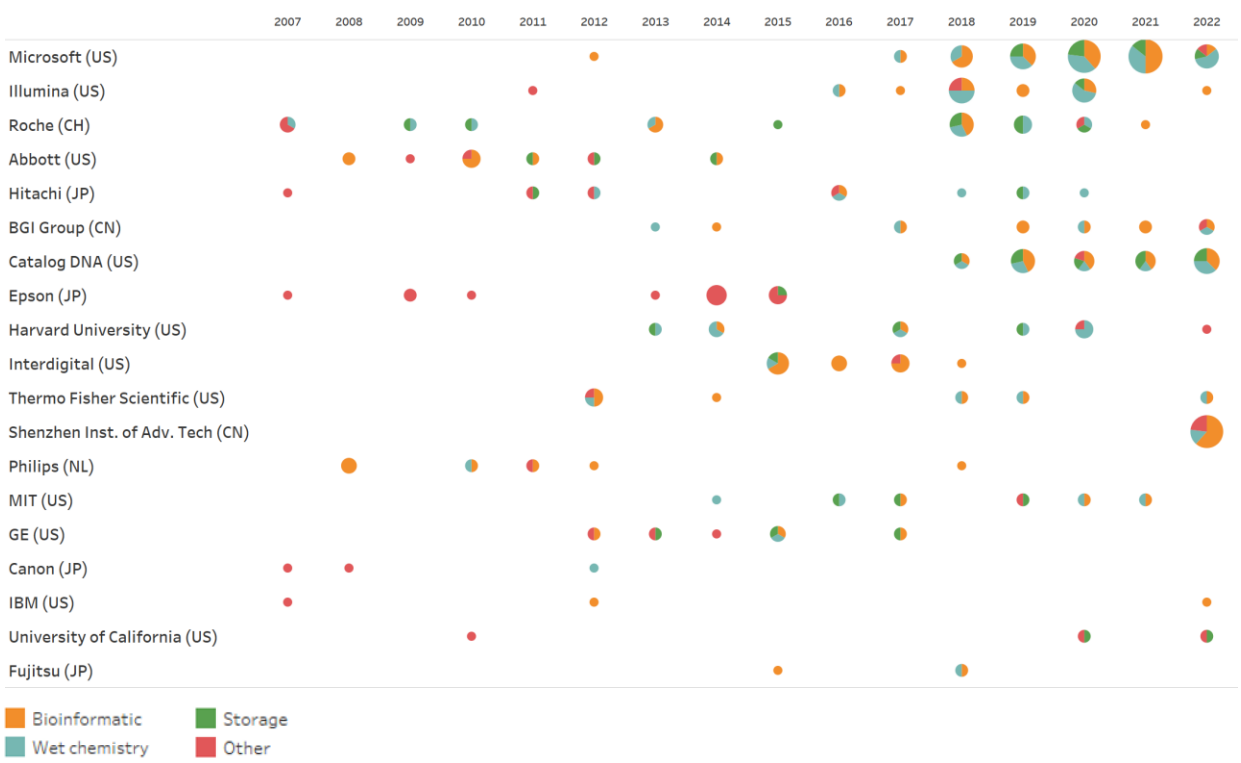
- Weakness of Europe in the **exploitation** of these technologies
- **Glass** and others require less development times
- High **costs**
- **Slow** writing **speed**
- Difficulty in establishing **common language** and **performance indicators**
- Potential **biosafety issues**
- **Public (mis)perception** of technologies and their potential applications
- Lack of **critical mass** in terms of European user base?
- Big company interested in product **ready to use only**?
- Potential **reluctance** of the involved projects to share technical-scientific information
- **Delay** in activities compared to the DNA Storage Alliance?
- **Less environmental/energy consumption benefits** than expected once the systems are setup and running

DNA DIGITAL STORAGE CARTOGRAPHY TOGETHER WITH EPO

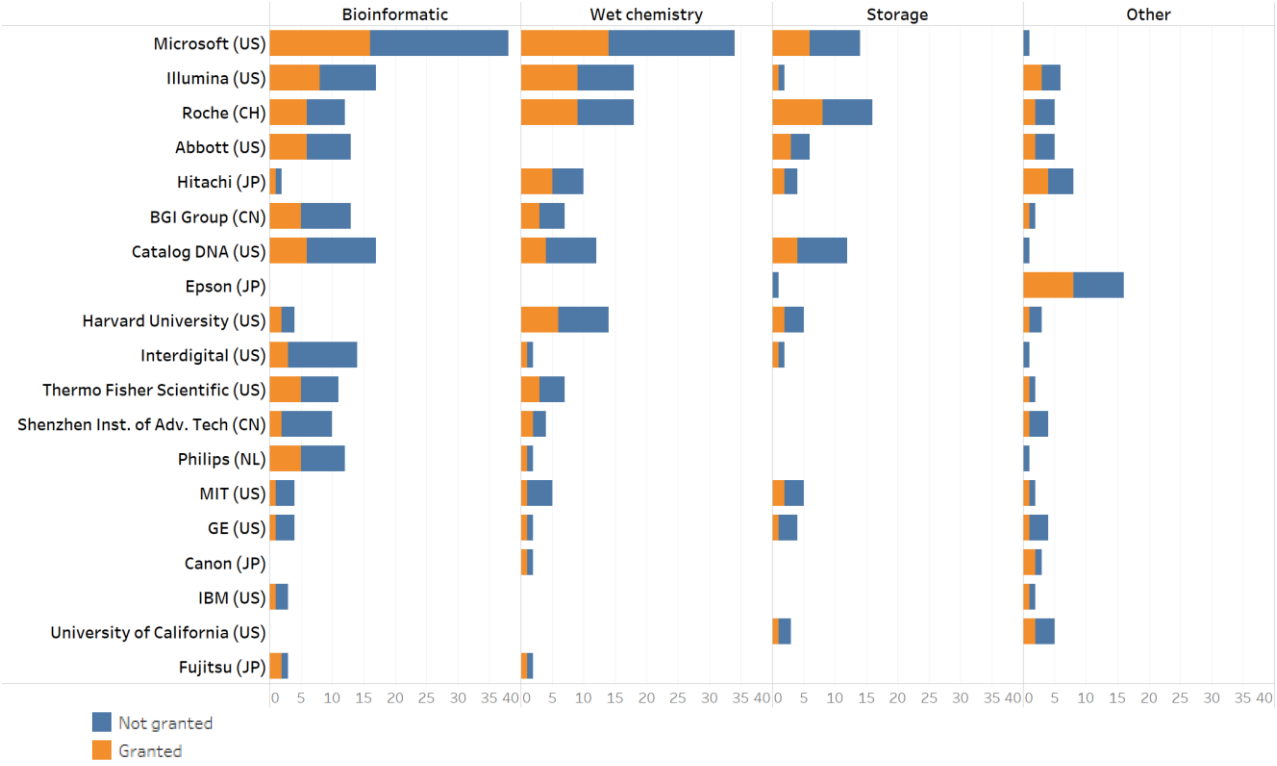
epo.org

- **US Microsoft, Illumina and Catalog DNA,** and to a lesser extent Chinese **BGI group** and **Shenzen IoAT, and Suisse Roche** have been leading IPF filings in recent years.
- The proportion of IPFs in the “Other” category has been declining among top applicants.
- About **half of the IPFs** already led to a grant

Top 20 applicants: IPFs trend (2007-2022)



Top 20 applicants by field (IPFs, 2007-2022)



Portfolio Management

1. Selection of a portfolio of projects

Synergies in research and innovation objectives

2. Strategic Plan

Strategic plan to accelerate the research to market transition

3. Implementation

Governance

Joint activities of a portfolio of projects

WP2023- RESPONSIBLE ELECTRONICS- RETRONICS PORTFOLIO

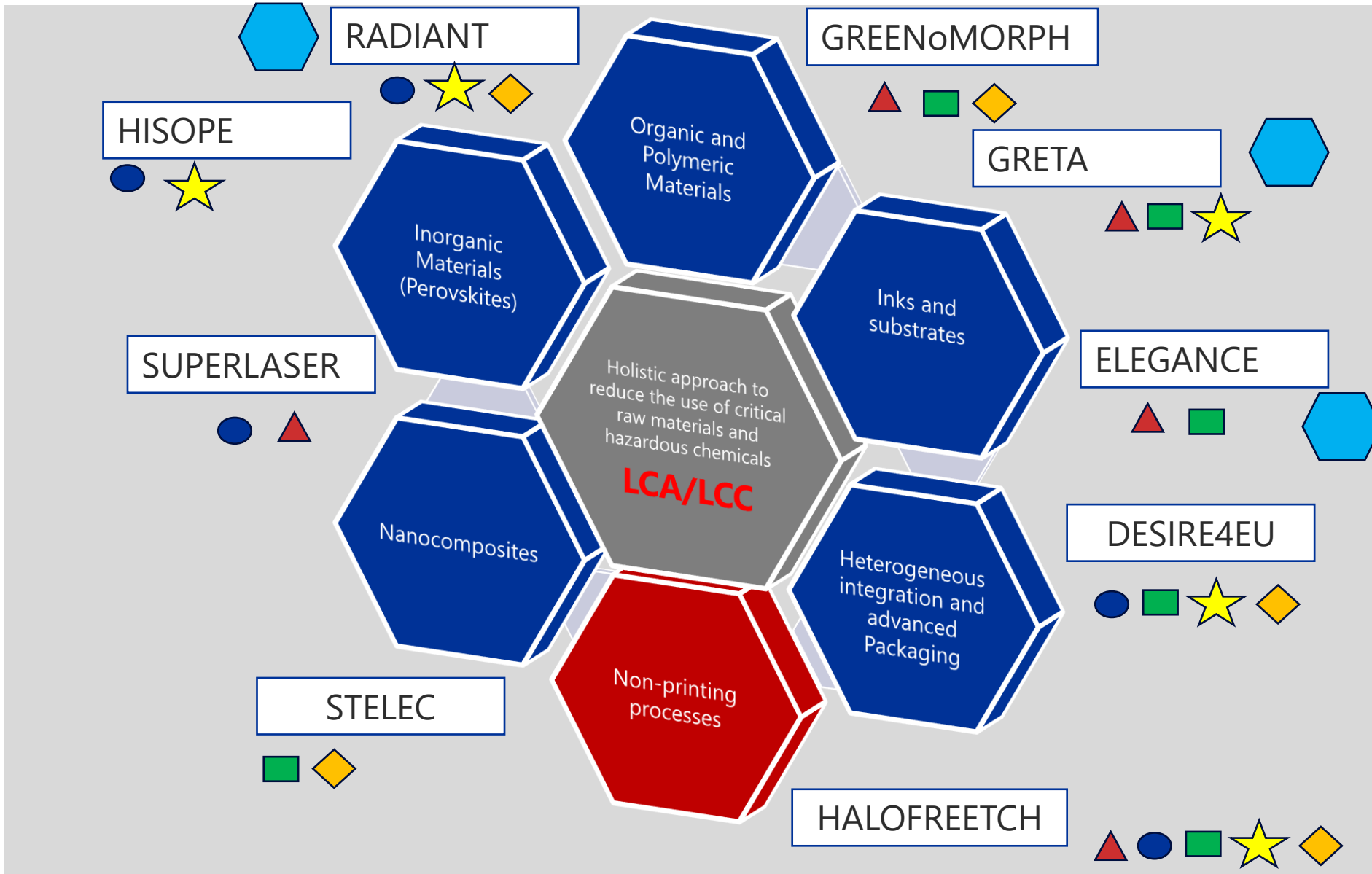
Interactions on Computer Modelling

Optoelectronics and Displays

Computing and Memories

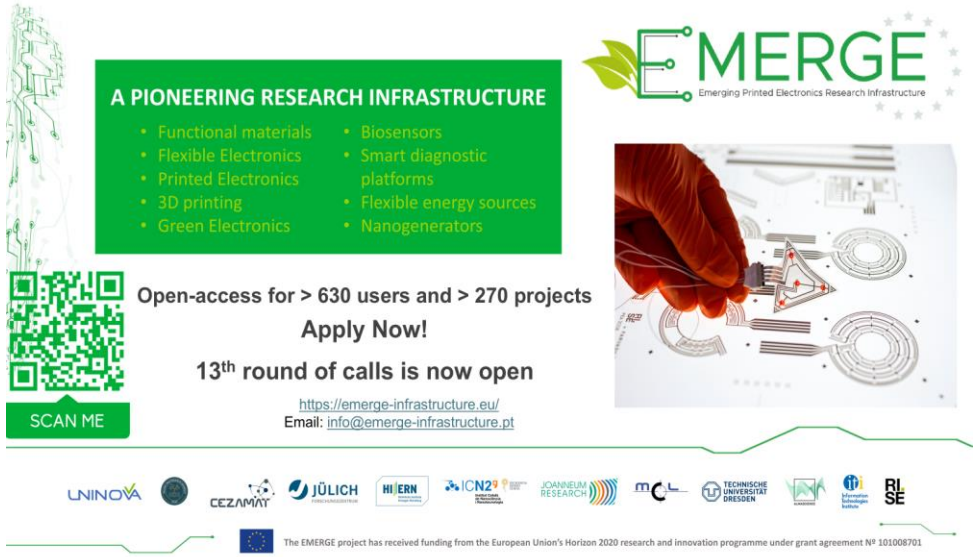
Communications

Sensors and Actuators



1st In-person meeting
Eindhoven February 2025

Activities in Retronics Portfolio



Objective	Initiative
Harmonize the sustainability assessment approach used amongst the different projects.	Sharing the methods/ key assessment indicators
	Strategy for prospective LCA and upscaling of lab processes
Knowledge sharing on inventories	To build a library of common materials used in the projects
Harmonizing Benchmarking with State of the art	Share knowledge about state of the art technologies

WG1. Technical synergies

WG2. Outreach and Public Engagement

WG3. LCA and metrics for sustainability

WG4. IP Protection and Exploitation

Other activities

DBDS25 1st Announcement

It is our great pleasure to invite you to the international conference "New Trends in DNA-Based Data Storage" which will take place in Prague from the 3rd to the 6th of June 2025. The meeting will gather together researchers, experts, and students from the field of DNA-based memory research and development as well as related fields of DNA nanotechnology, synthesis, sequencing, computing, and preservation.

The main topics will be introduced by excellent Plenary Speakers:

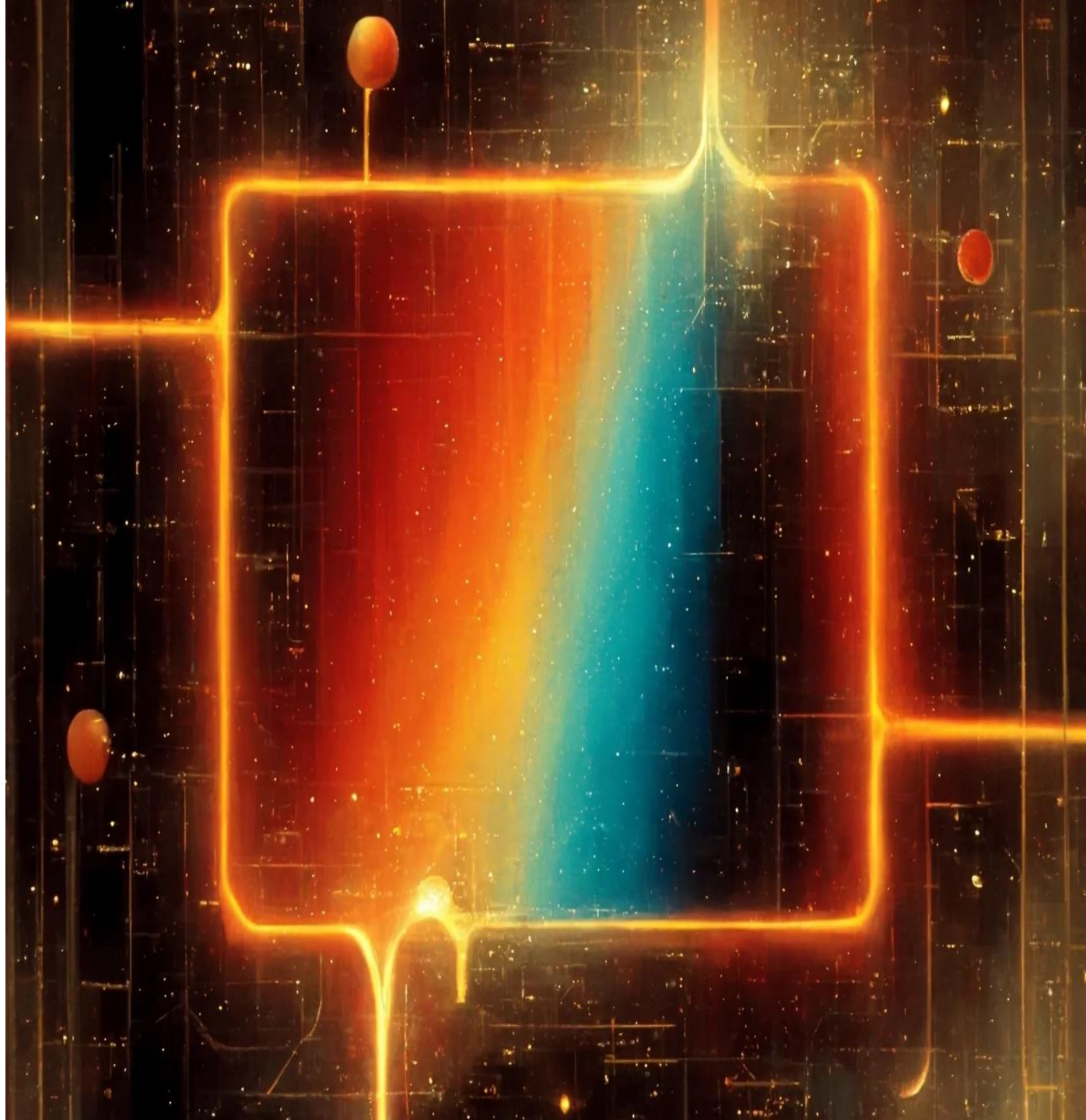
- Marc Antonini, Université Côte d'Azur/CNRS, FR
  Algorithms for DNA-based data storage
- Mark Bathe, MIT, USA
  DNA memory deployment
- Robert Grass, ETH Zürich, CH
  DNA stability and preservation
- Olgica Milenkovic, University of Illinois at Urbana-Champaign, USA
  Challenges in DNA-based data storage

- Liaison to DNA Data Storage Alliance

- Public Pre-procurement with Scientific Infrastructure, Banks, hospitals

- Analysis of competing technologies and links to other startups in the field

Others cross-cutting Pathfinder/Transition/Accelerator

EIC
Pro-active Management

Q&A