



LUXINNOVATION

#MakingInnovationHappen

SUPERCOMPUTING

**Catch up with competition:
opportunities enabled by
supercomputing**

MARKET TRENDS

Your hosts today

Moderator



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Agenda

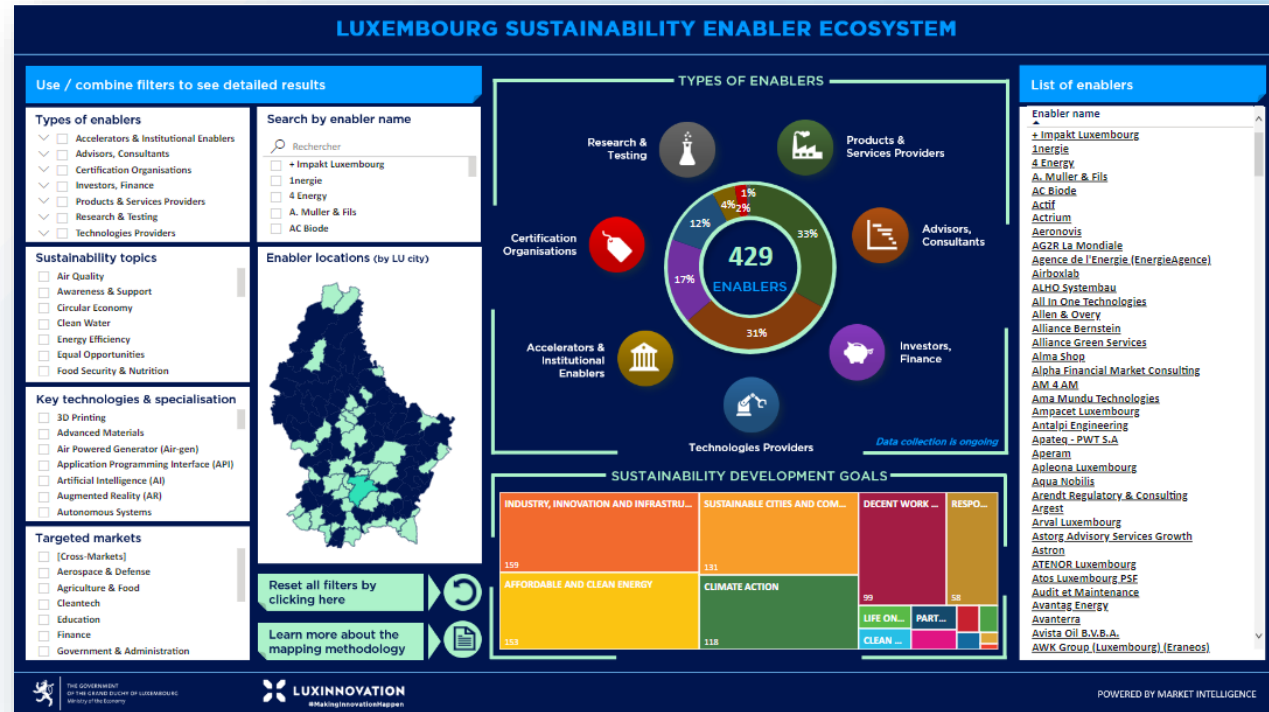
- 1 INTRODUCTION**
- 2 SUPERCOMPUTING MARKET FORECAST**
- 3 SECTORIAL APPLICATIONS & USE CASES**
- 4 BARRIERS TO SUPERCOMPUTING EXPANSION**
- 5 CONCLUSION – KEY TAKEAWAYS**

INTRODUCTION

LUXINNOVATION MARKET INTELLIGENCE DEPARTMENT

Department Activities Overview

- + Acts as a knowledge provider for LXI Collaborators and Partners
- + Provide in depth Intelligence on Luxembourg Ecosystem of companies
- + Provide in depth knowledge of foreign markets and innovation trends



Latest MI Mapping Published – Luxinnovation



Deliverables produced by MI

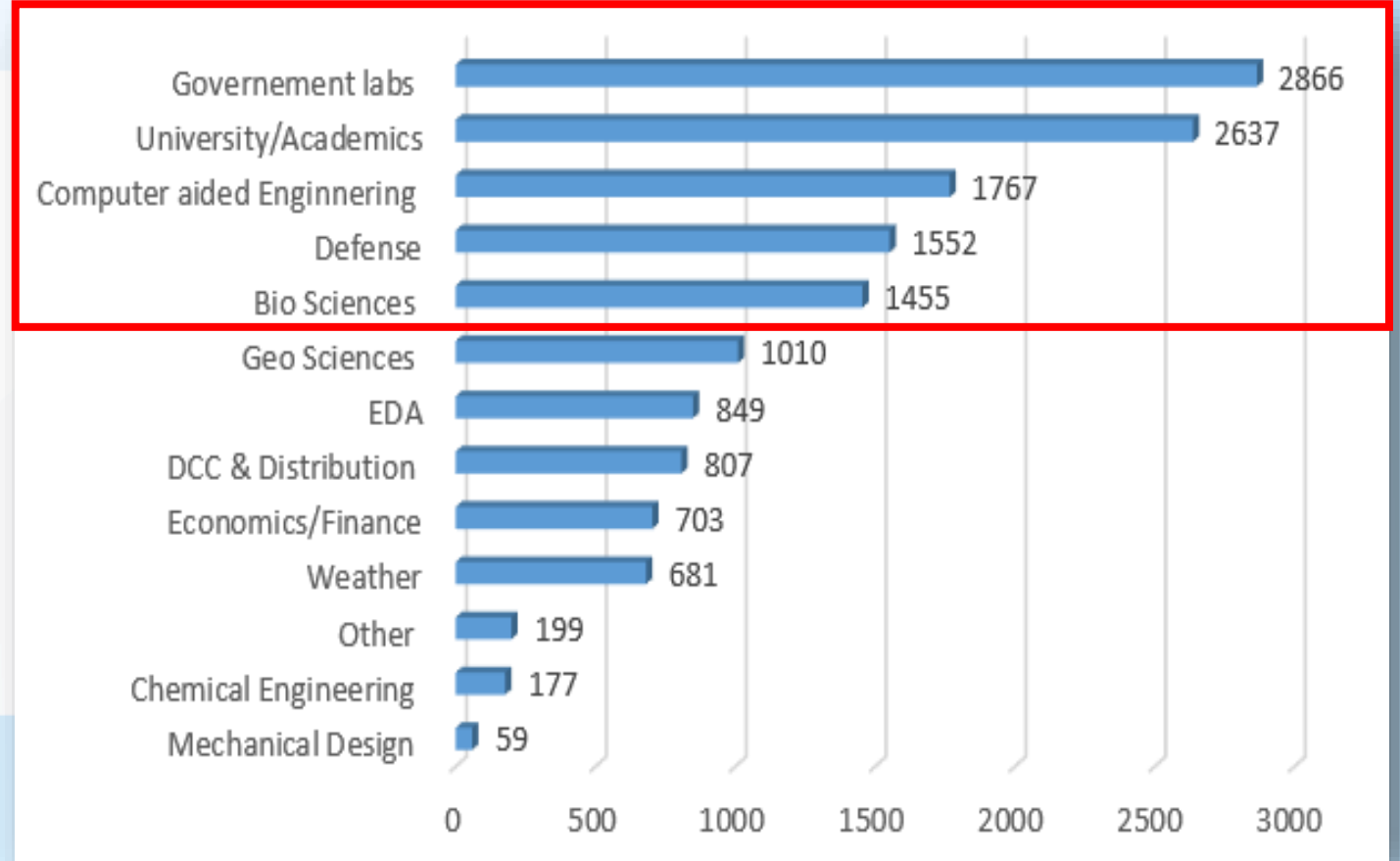
- Ecosystem Mappings
- Market Watch Reports
- Market Trends Studies
- Key Insight Reports
- Company Investigative Reports

INTRODUCTION

SUPERCOMPUTING MARKET OVERVIEW

Key Figures

- +The Market reached a total **34,8 Bn USD** in 2021.
- +It is predicted to grow at a CAGR of roughly **6.3% until 2028**.
- +The market is led by **US** and **Chinese** based technology providers
- +**Government labs** the first application sector by revenue in 2021.



SuperComputing Systems Revenue by Application (Million USD)

Source: [Hyperion Research 2022](#)

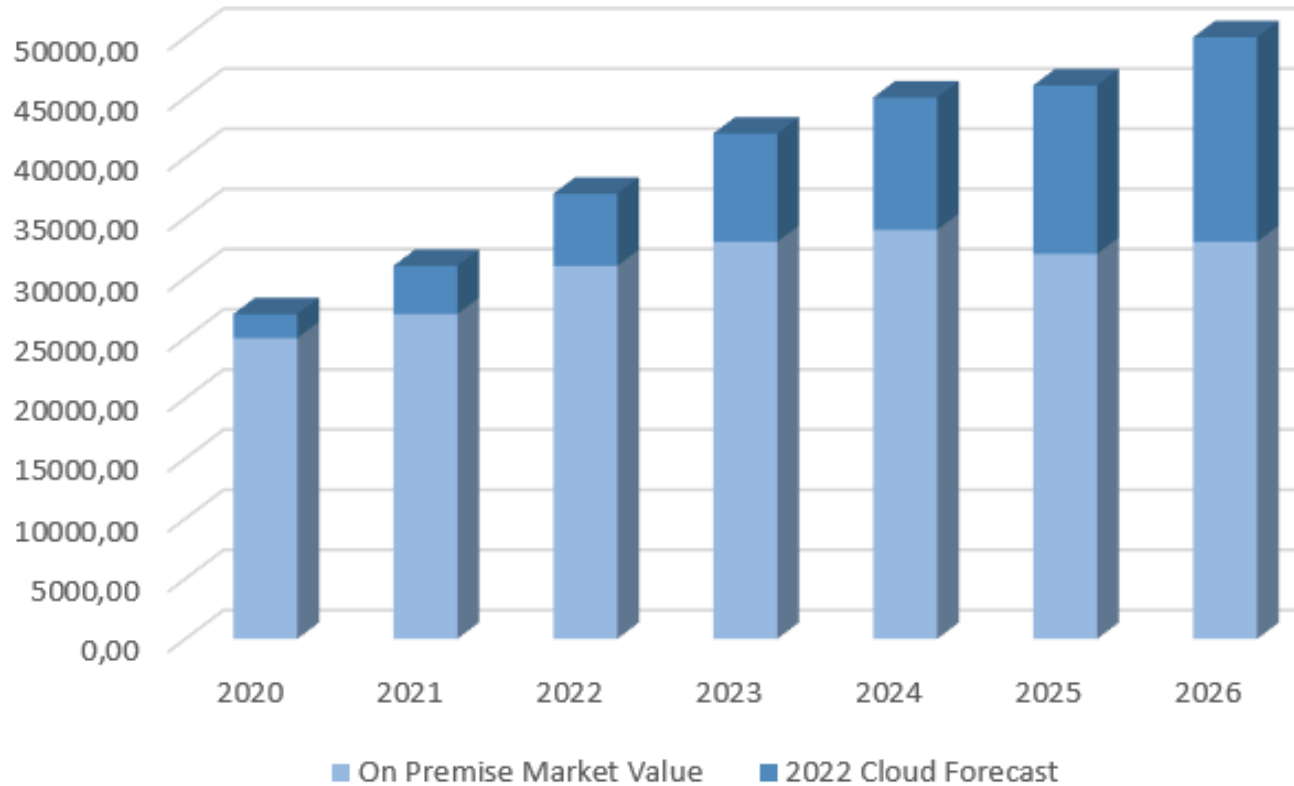
SUPERCOMPUTING MARKET FORECAST

GROWTH ANALYSIS BY
COMPONENTS, DEPLOYMENT &
VERTICALS



SUPERCOMPUTING MARKET FORECAST

MARKET ANALYSIS BY DEPLOYMENT SEGMENT



Towards a hybrid deployment model

- + Combination of **On Premise Infrastructure & Cloud Based applications**
- + Supercomputing in the Cloud is expected to grow by **17,6% in the next 5 years**
- + Supercomputing (HPC) as a Service Market is expected to reach **20.62 Bn USD by 2029**.

Source: [Hyperion Research 2022](#)

SUPERCOMPUTING MARKET FORECAST

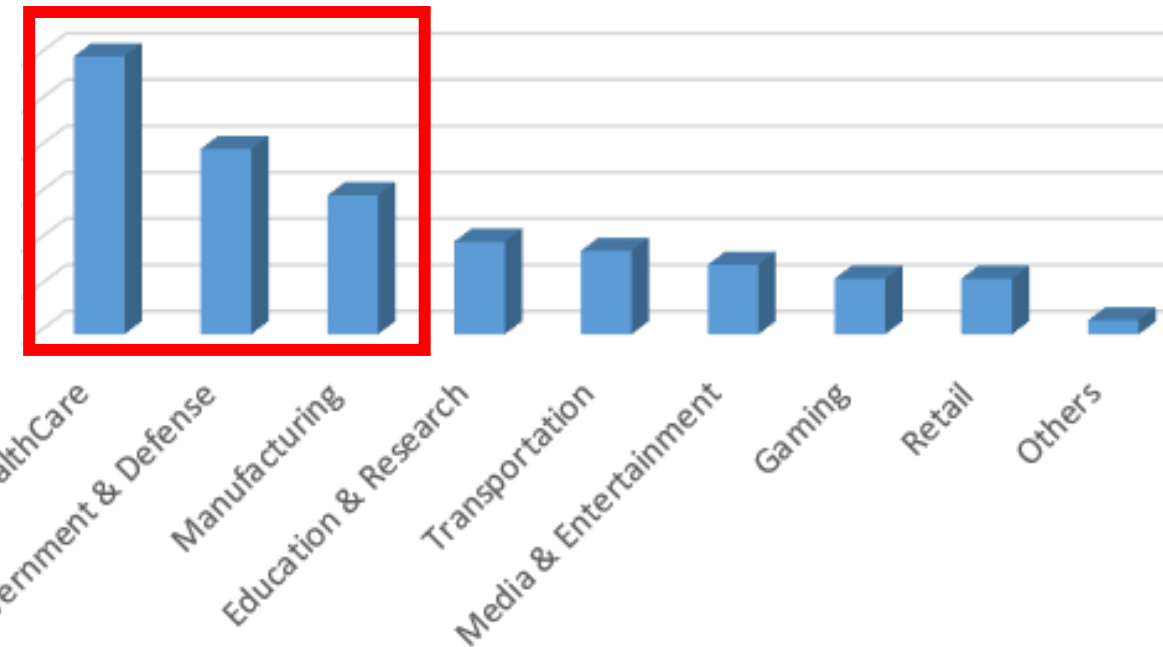
MARKET ANALYSIS BY APPLICATION DYNAMICS

Increasing use of Supercomputing AI powered applications

- + Incorporation of AI models within traditional workloads.
- + Supercomputers enabled AI servers expected to grow by 22,7% CAGR over the next 5 years.
- + Shift in system infrastructure with Extensive use of GPUs accelerated applications.

Healthcare, Government & Defense and Manufacturing top application sectors by 2030.

SuperComputing Market By Application Dynamics by 2030



(Source: [EmergingSearch.com](https://www.emergingsearch.com))

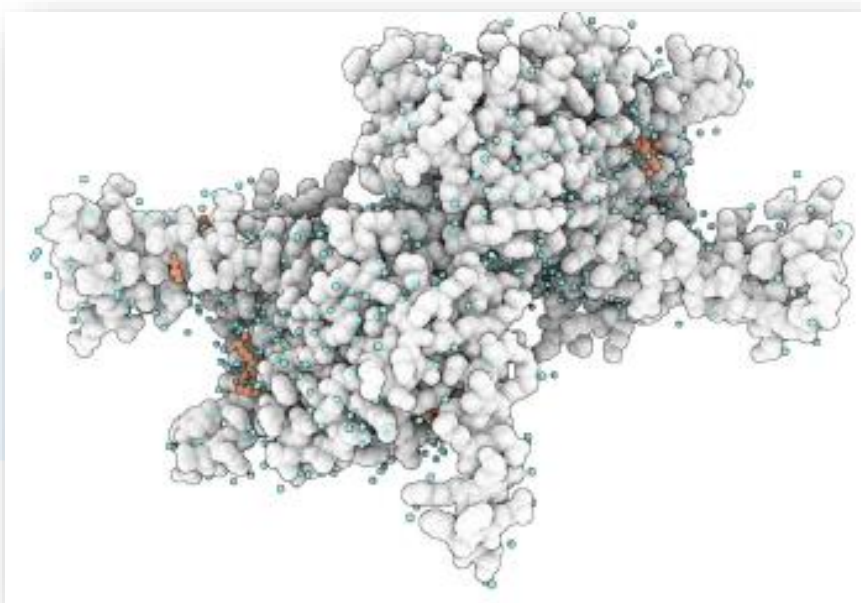
SECTORIAL APPLICATIONS & USE CASES

SAMPLE OF SUPERCOMPUTING
APPLICATIONS IN KEY ECONOMIC
SECTORS



SECTORIAL APPLICATION & USE CASES

SUPERCOMPUTING IN HEALTHCARE



Source: [F4FEuro HPC 2022](#)

Computer aided drug design with a combination of deep physics & AI

+ **End-User: Iktos**, French start-up SME specialising in AI applied to drug discovery.

+ **Technology Provider: Qubit**, generated an AI-assisted toolchain to shorten early stage drug discovery steps.

Benefits

+ Drug discovery time cut **by 25%**

+ Development cost reduced **by 20%**

SECTORIAL APPLICATION & USE CASES

SUPERCOMPUTING IN MANUFACTURING

Simulation of additive manufacturing processes for the production of metal components:

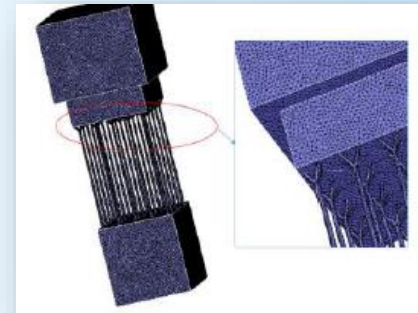
+ **End User:** HPE COXA, Italian based SME

+ **Technology employed:** Cloud based Supercomputing simulation (EXAMPLAR/CINECA) to better set AM parameters.

Benefits :

+ **Operational costs reduction up to 90 000€/year**

+ **Reduction of failures and Defective Parts.**



Source: [Fortissimo Success Stories - 2019](#)

SECTORIAL APPLICATION & USE CASES

SUPERCOMPUTING IN ENERGY



Source: [F4FEuro HPC 2022](#)

Robust Power System Maintenance Planning via Stochastic Optimization and Supercomputing:

- + **Beneficiary:** Artelys, French SME specializing in applying data science and mathematical modelling.
- + **Technology employed:** a supercomputing cluster with 1,280 cores to perform simulations and produce optimized maintenance plans (**INRIA-Aviz Team**)

Benefits:

- + Estimated additional sales of up to €4 million over the next 5 years.
- + Access to new Markets

BARRIERS TO SUPERCOMPUTING EXPANSION



BARRIERS TO SUPERCOMPUTING EXPANSION

Restraint 1: SC Systems do not work live

- + Systems **need to be pre-powered/loaded** with loads of **data** to run operations and calculations.

Restraint 2: Data Security Concerns

- + **Heterogeneity of Supercomputing systems** makes them potentially vulnerable to multiple threats.

Restraint 3: Lack awareness from SMEs

- + SMEs **not sufficiently aware of benefits** brought by Supercomputing (flexibility, cost savings, scalability etc....)

Restraint 4: Scarcity of Highly Skilled Personnel

- + Difficulty of replacing **aging** Supercomputing oriented **workforce**.

CONCLUSION

KEY TAKEAWAYS



CONCLUSION

KEY TAKEAWAYS

- +The Market reached a total **34,8 Bn USD** in **2021**.
- +Europe plans for the acquisition of **2 Exascale systems** by **2023**.
- +SC in the Cloud is expected to grow by **17,6%** in the **next 5 years**.
- +Increased use of **AI powered** and **accelerated applications**.
- +**Healthcare, Government & Defense and Manufacturing** are expected to be the top application sectors by 2030.
- +Major benefits of SC for SMEs lie in **time and cost savings**.
- +**Four main barriers** to SC expansion still remain.

MARKET TRENDS REPORT



LUXINNOVATION MARKET INTELLIGENCE

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