

Socio-economic Impacts of CERN

The Value of Training



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The Impact of Fundamental Science

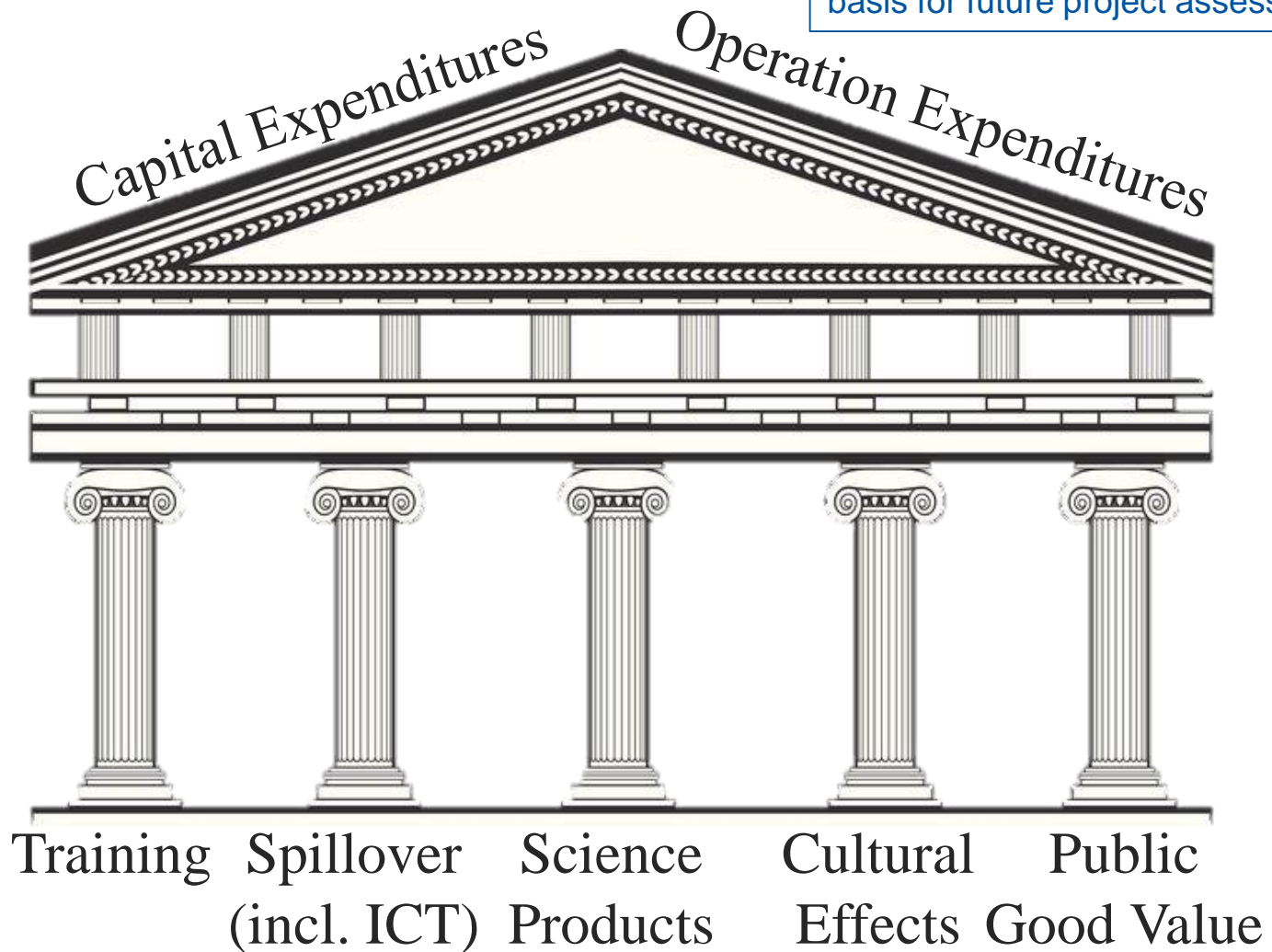
The increase of **knowledge** through performing fundamental science at Research Infrastructures is invaluable. Its impact on the society **cannot be assigned a specific monetary value.**

CERN creates added value for the society

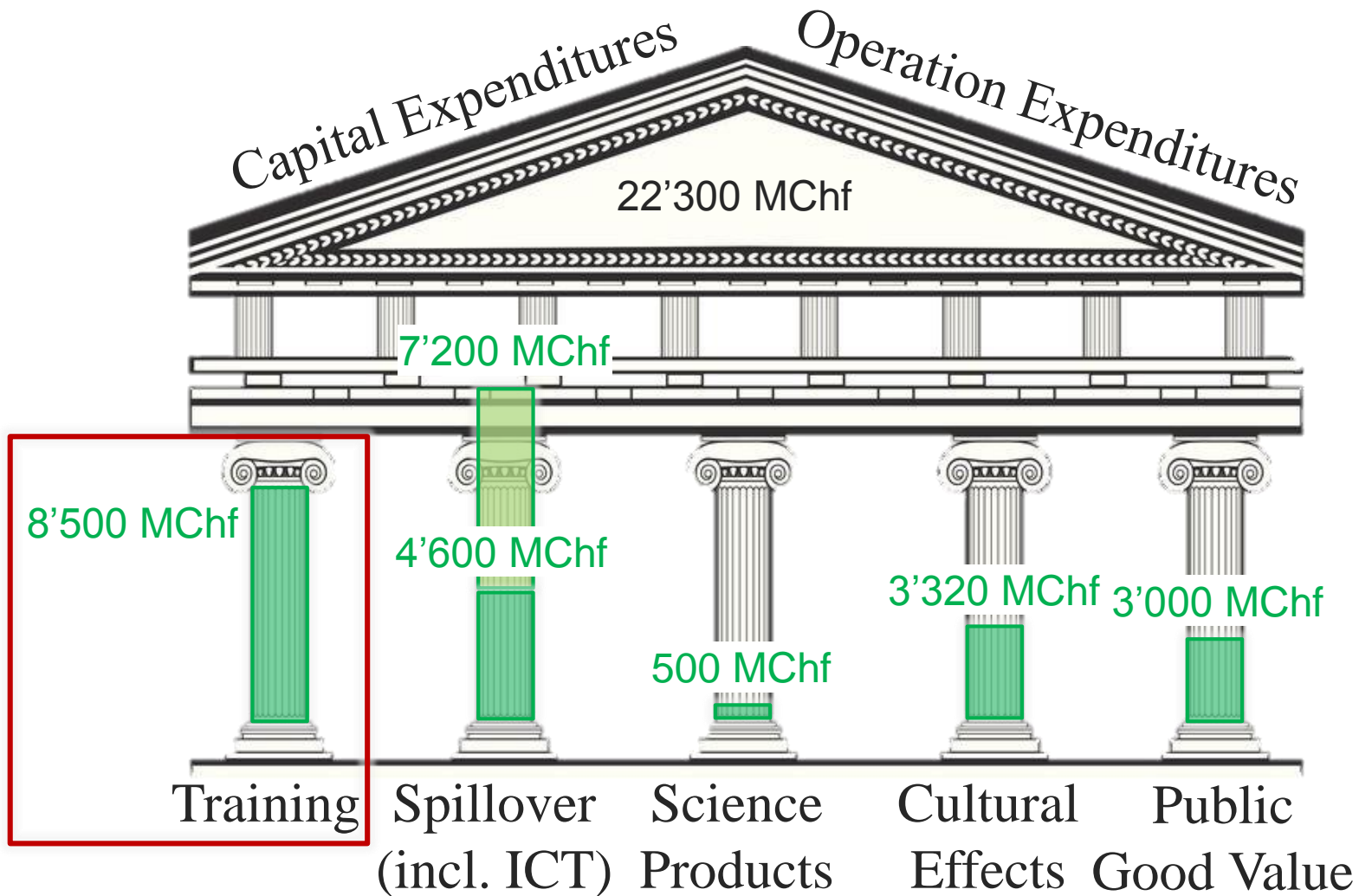
This value can be quantified

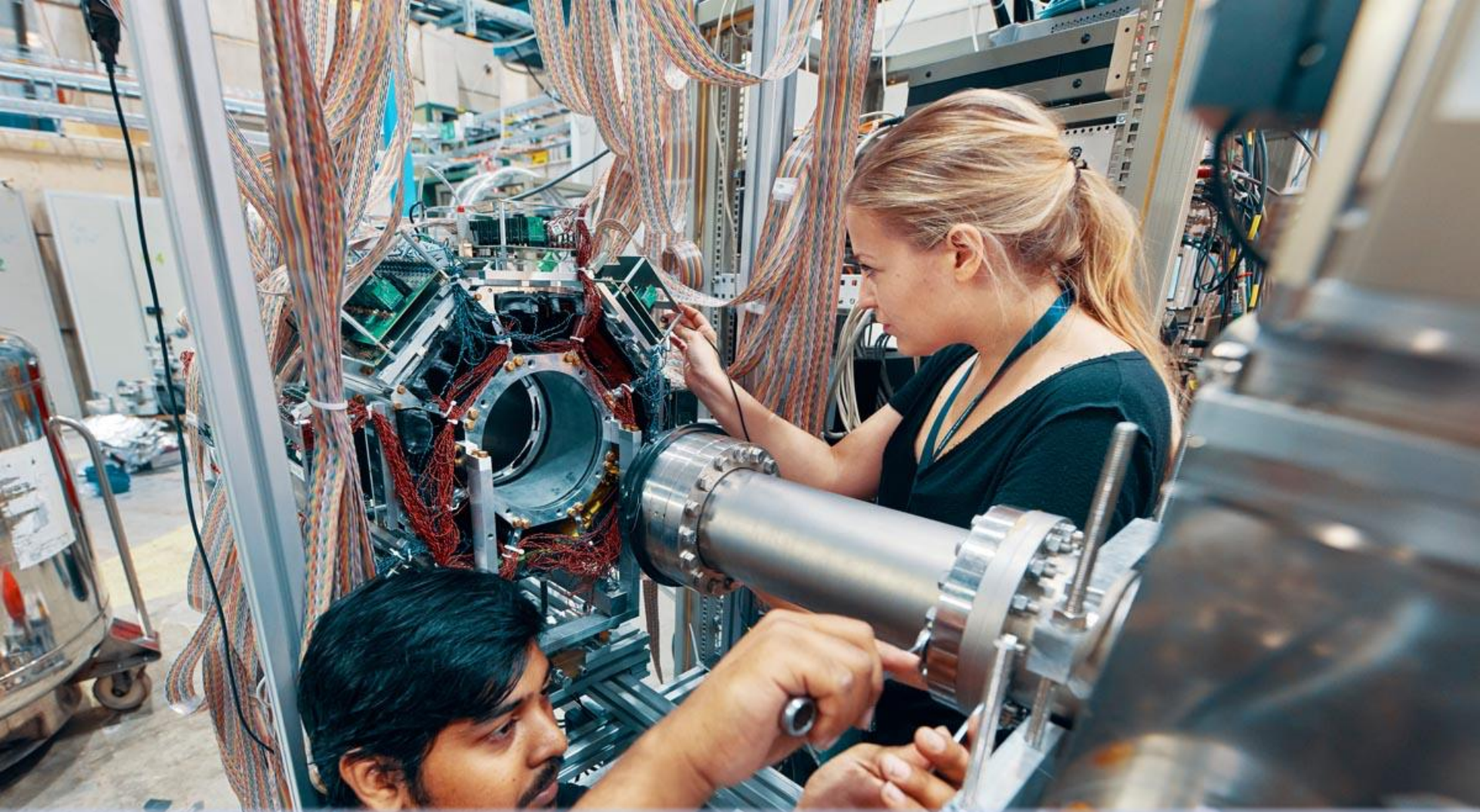
Impact Architecture

Launched by Future Circular Collider (FCC) study. Independent study by University of Milano (Italy) and Center for Industrial Studies for HL-LHC project as basis for future project assessments.



HL-LHC Impact Estimates





Training is the single largest economic impact generator of CERN research and technology projects

Training Benefits for ...

Apprentices

BSc and MSc level students

Doctoral students

Post-doctoral and project associates

Highly Qualified Personnel

Findings of LHC/HL-LHC Programme Analysis

- Analysis of the economic impact and the benefits for the 36,800 early career researchers participating between 1993 and 2025 (forecast)
- Technical students, doctoral students, fellows and users under 30 years old
 - Full summary report at <https://cds.cern.ch/record/2635864> (CERN-ACC-2018-0025)
- **Finding**
 - Significant statistical evidence for an **life-time salary premium** in addition to Dr. degree at a university obtained without project exposure through involvement in a technology research project at CERN compared to peers

Salary Premium Effect

Conservative mapping to monetary value including 3% yearly discounting until the end of the active period indicates > 150,000 Euro per person (economic value generated by a person is a factor higher than the salary)

**Dr. +
5-12 %**



**BSc and MSc
degrees**

+ 5 %



**Dr. degree
premium**



**CERN induced
additional premium**

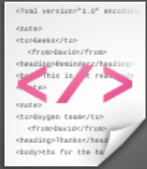
Conclusions

- The **program is sustainable**, the investments pay back
 - Cost per person 130,000 Euro
 - Benefit per person at least 150,000 Euro
- In addition, **research outputs** are generated
- **Knowledge is transferred** from scientific research to industry and society
- **Cultural goods** are created
- **Networks are built up**

What is the origin of the premium?

- **2 drivers** lead to increased professional opportunities
 - **Intersectoral** and **transferrable** technical **skills**
 - **Learning-by-practical experience**
- **Reasons** for lifetime-salary premium
 - Higher salary entry level due to **broader skill portfolio (versatility = higher value of the person for the employer)**
 - Positions with **more responsibilities and managerial activities at lower age**

Skills Acquisition



Programming



Data Analysis



International
Environment



Structured
thinking



Communication



Work under pressure



Adapt to constraints



Effectiveness and
persistence



Solving conflicts



Reaction to failure

Impact of Doctoral Programme



Effective training of Early Career Researchers at CERN

generates economic and societal benefits

by increasing the lifetime salary premium for individuals

and increasing the competitiveness of our people.