

Introduction to Science and Technology

*Learning Content for Week 2
Science, Technology and Society
BS in Electromechanical Technology
1st semester, SY 2020-21*

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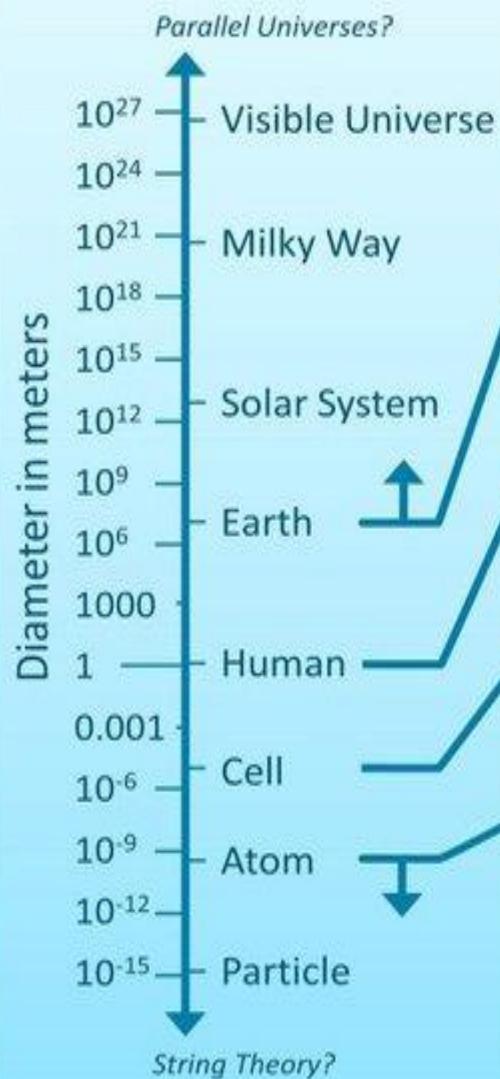
What is Science?

- Learning new facts or discoveries
- Fact is something that has actual existence
- Discovery means an act of detecting something new, or something previously unrecognized as meaningful.



Source: <https://cdn.vox-cdn.com>

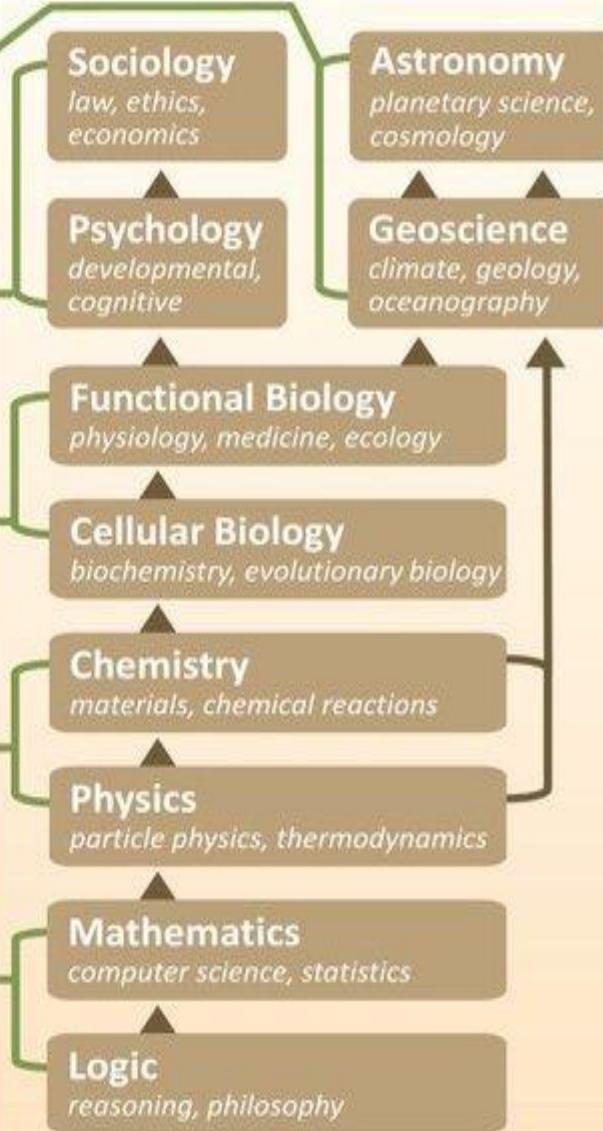
Scale of the Universe



Branches of Science



Hierarchy of Science



Source: Ihueze, Christopher Chukwutoo & Okpala, Charles & Okafor, Christian & Okonkwo, Ugochukwu. (2015).

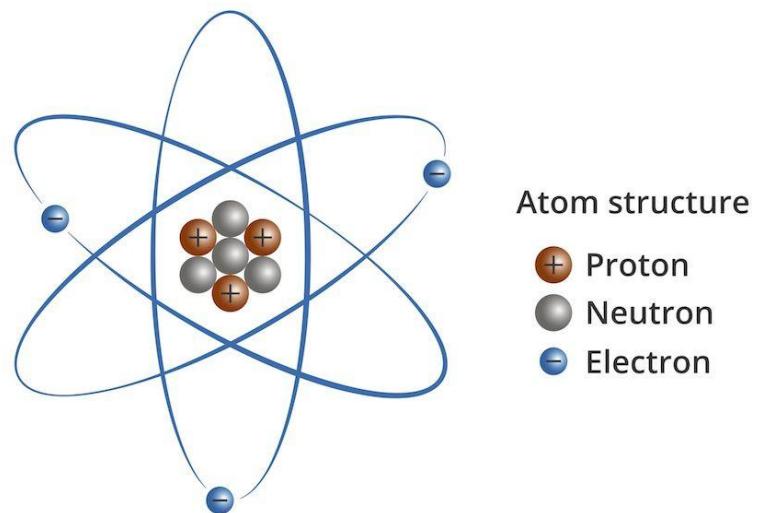
- Intellectual and practical **activity**
- Encompass the **systematic study** of the structure and behavior of the physical and natural world
- Done through **observation and experiment**



Source: <https://d37ll6xzdf8mc.cloudfront.net>

What is science?

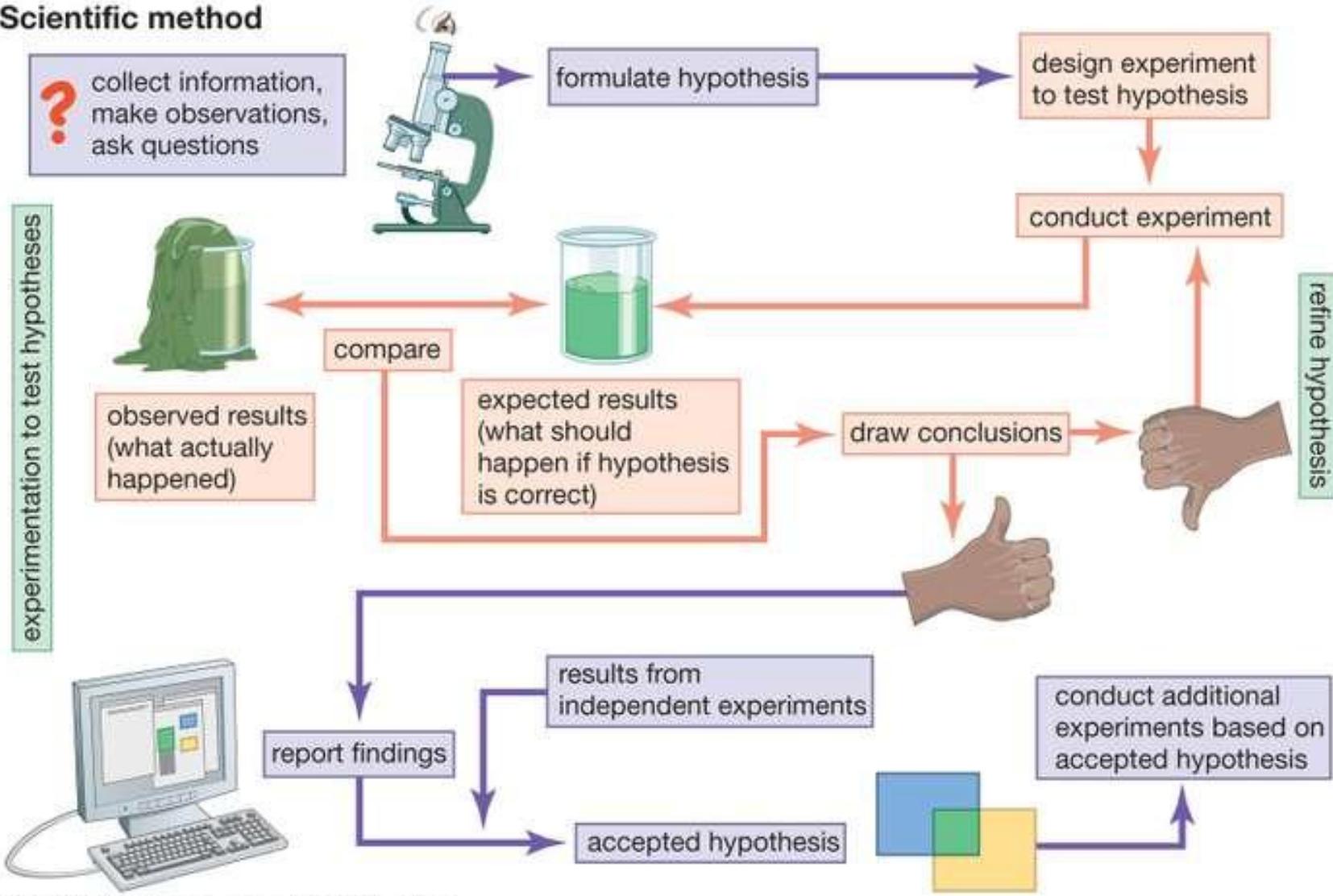
- Solving problems using a scientific method
- Scientific method is a process for experimentation that is used to explore observations and answer questions



Source: <https://cdn.mos.cms.futurecdn.net/>

Steps in Scientific Method

Scientific method



What is Technology?

- Creating or inventing things
- Through the application of scientific knowledge to the practical purpose of human life or to the change and manipulate human environment.



Source: <https://cdn.mos.cms.futurecdn.net/>

- Things that fulfill our needs and desires or perform certain functions
 - **Application of understanding of natural laws to the solution of practical problems**



Source: <https://www.nextbigfuture.com>

Source: Brooks, 1994

How are science and technology related?

- Science contributes to technology in at least 6 ways:



Source: <https://4.bp.blogspot.com/>

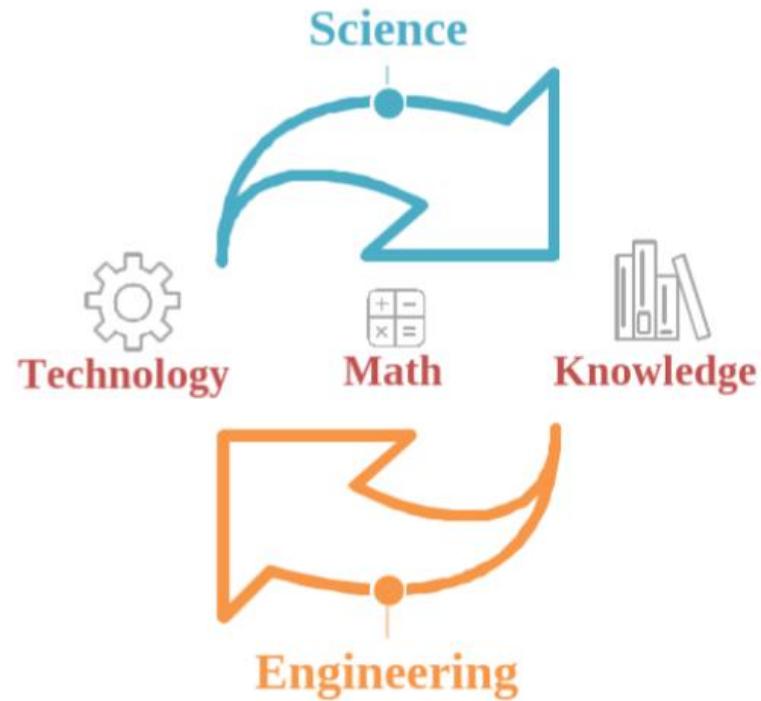
**1. New knowledge
which serves as a
direct source of
ideas for new
technological
possibilities**



Source: <https://miro.medium.com>

2. Source of tools and techniques

for more efficient engineering design and a knowledge base for evaluation of feasibility of designs



Source: <https://www.knowatom.com/>

3. Research instrumentation, laboratory techniques, and analytical methods used in research that eventually find their way into design and industrial practices



Source: <https://www.cavaninstitute.ie/>

4. Practice of research as a source for development and assimilation of new human skills and capabilities eventually useful for technology

Source: Brooks, 1994

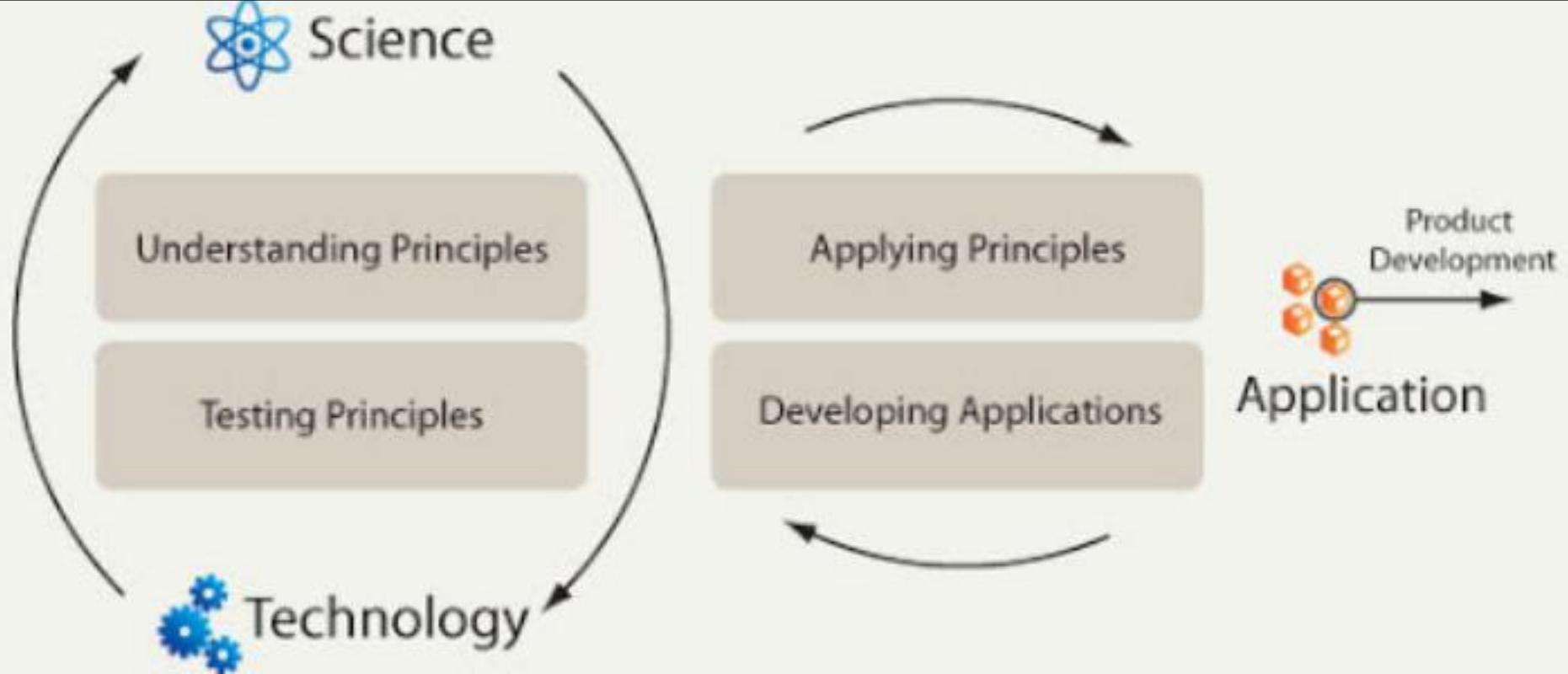


Source: <https://www.linkedin.com/>

5. Creation of a knowledge base that becomes increasingly important in the **assessment of technology** in terms of its wider social and environmental impacts



Source: <https://www.theguardian.com/>



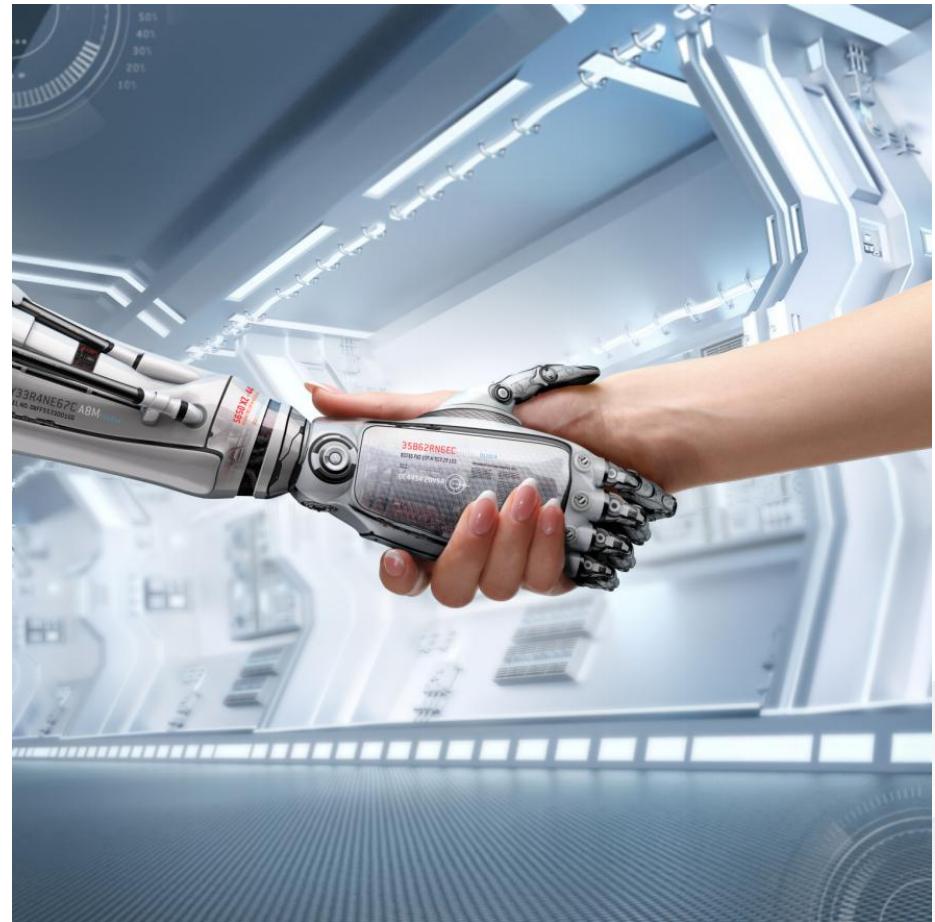
Source: Driver *et al.*, 2011, <http://www.ijdesign.org/>

6. Knowledge base that enables **more efficient strategies** of applied research, development, and refinement of new technologies

Source: Brooks, 1994

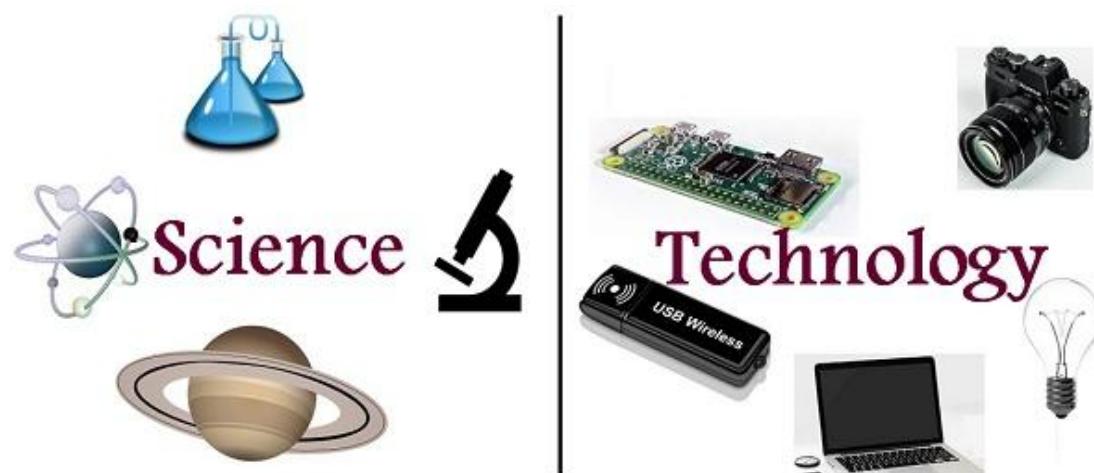
How are science and technology related?

- Technology contributes to science in at least 2 ways:



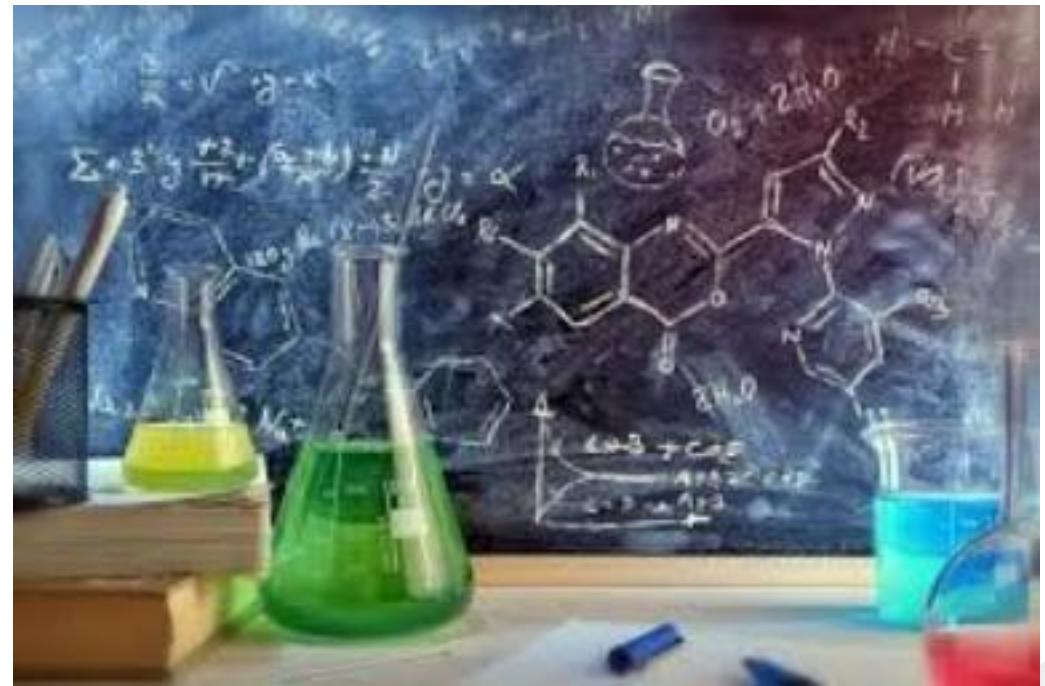
Source: <https://www.oecd.org>

1. Providing a **fertile source of novel scientific questions** and thereby also helping to justify the allocation of resources needed to address these questions in an efficient and timely manner, extending the agenda of science



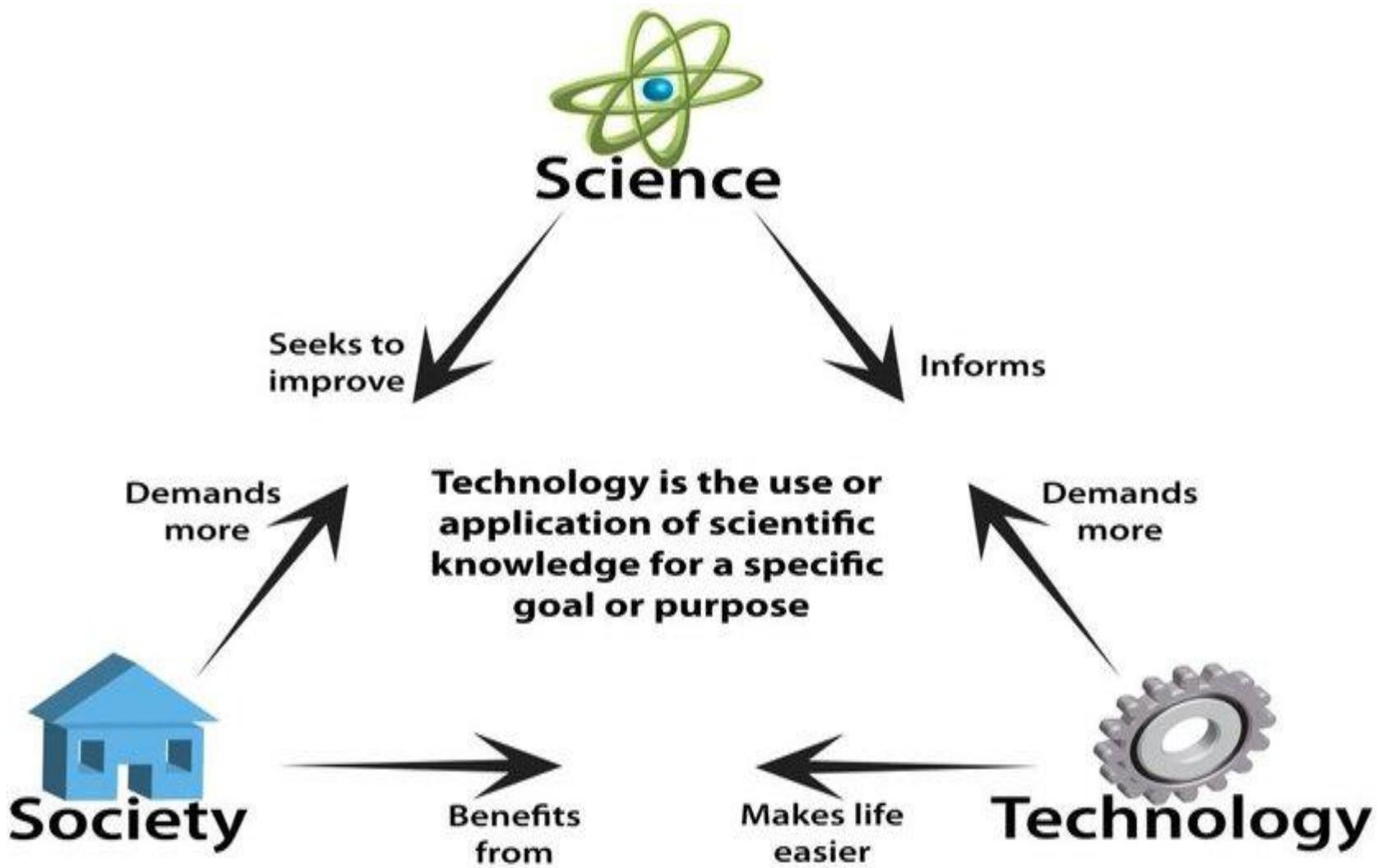
Source: <https://keydifferences.com/>

2. Source of otherwise unavailable instrumentation and techniques needed to address novel and more difficult scientific questions more efficiently



Source: <https://www.insidehighered.com/>

Relationship of S & T to Society



What is Society?

- refers to human society that is a group of people involved with each other through continual relations
- defined also as large social grouping sharing the same geographical or social territory subject to similar political authority and dominant cultural expectations.

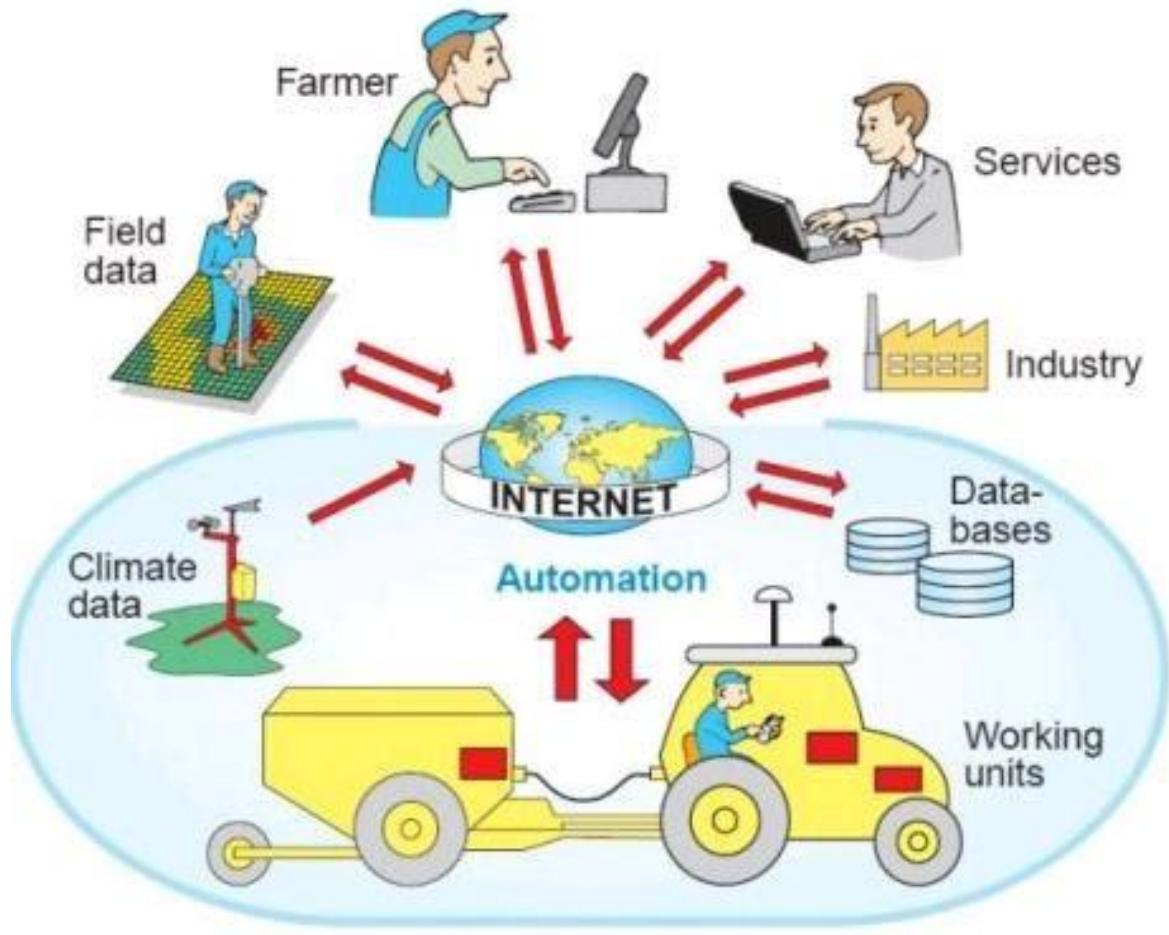


Source: <https://static.euronews.com>

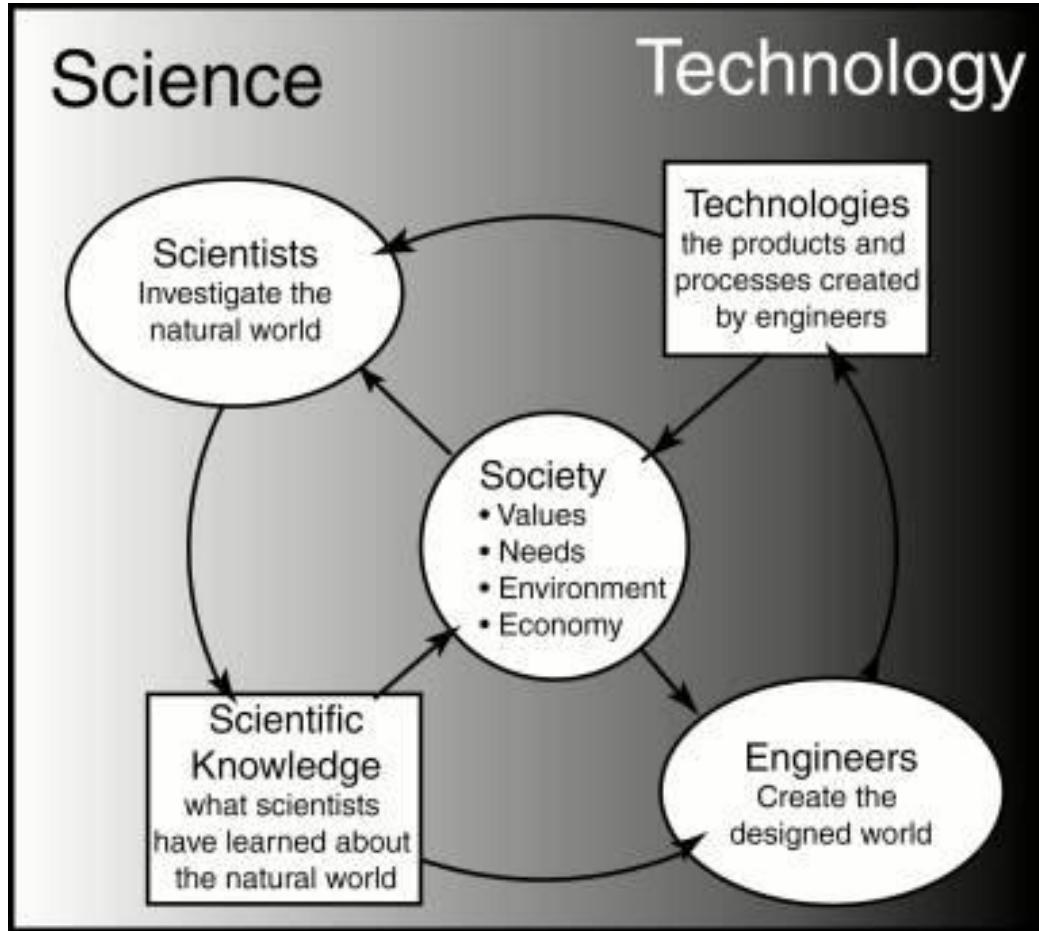
- society is characterized by patterns of social relationships between individuals who share a distinctive culture and institutions
- society may be described as the sum total of such relationships among its constituent members.



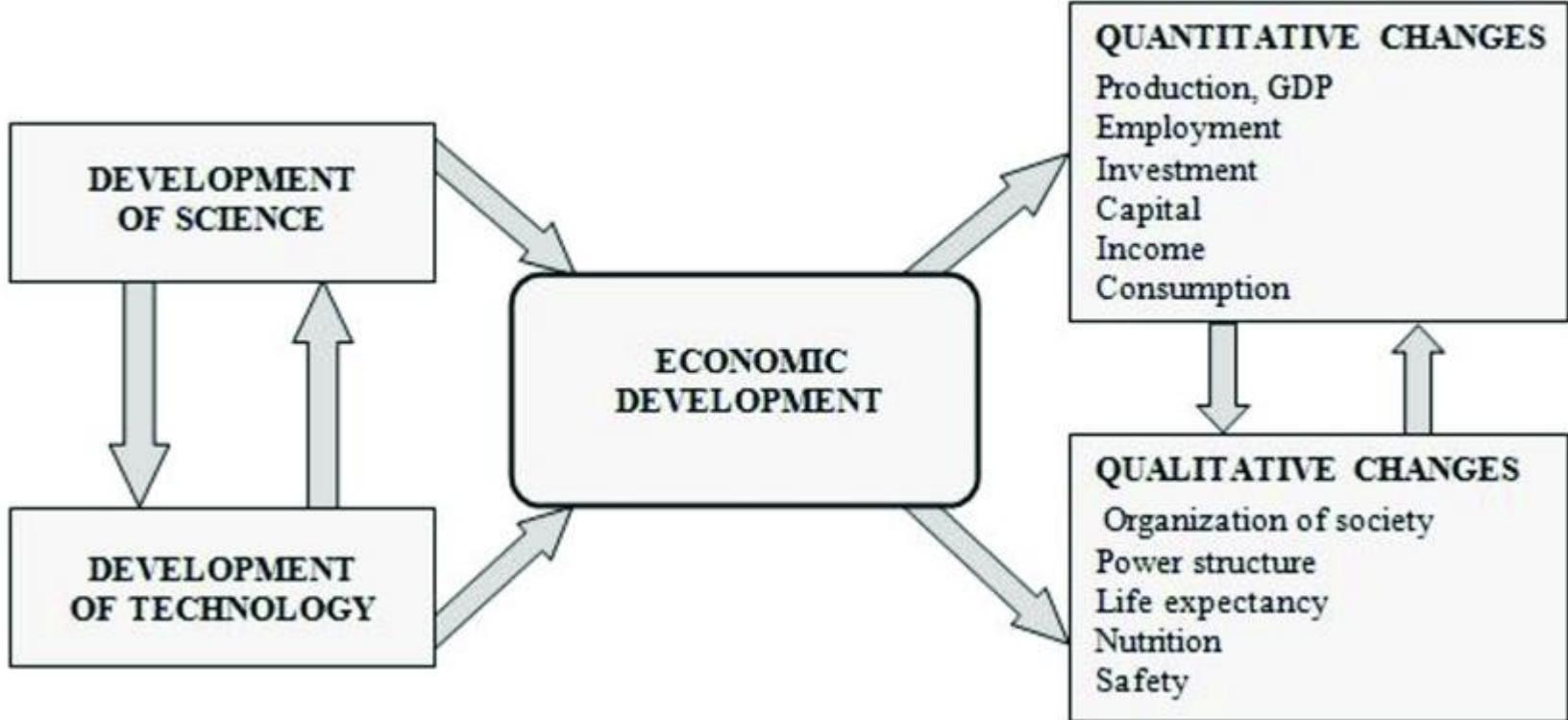
Source: <https://inford.org>



Source: <http://physicstutors.blogspot.com/>



Source: <https://www.eie.org/>



Source: Tytyk, Edwin & Mrugalska, Beata. (2018).

Thank you.

