**SUMMARY**

In summary, we can define 4D as the process of printing miniature or life-size replica or model in 4 dimensional space.

We can list the uses of 4D printing

1. Used in aerodynamics (There is a rule in aerodynamics, that the lighter the mass of the body which in this case an air transportation means e.g planes, helicopter, drone etc. the longer and faster the body gets in air. From this theory we know that there are some areas in an airplane that are 4D/3D printed).
2. Used in Medical Places (During the making of a medical instruments like the ventilator there are parts that can be 4D printed, since there are some area in the machine that are plastic like material)
3. They also used to build houses, over the years as 3D printing was existing, people discovered better use for it by using it to print houses, it saves the use of eco unfriendly materials and the machine print the house with 0.001 accuracy.
4. It also reduces the plastic pollution in the world due to the fact that we can use plastic and the mixture of some chemicals as the material for printing thereby achieving recycling.

The process undergoing when its printing is what we know as sterolithography

**ADVANTAGES OF 4D PRINTING**

1. It can be used ti replicate anything.
2. It is used in various aspects of computer science
3. It reduces the plastic pollution in the world.

**DISADVANTAGES OF 4D PRINTING**

1. It is very expensive.
2. It takes time to print
3. It requires constant source of power.

**CONCLUSION**

In conclusion, 4D printing has not fully evolved to the expected level but 4D printing **provides benefits to medical practitioners especially in** the areas not covered by 3D printing technologies. 4D printing helps to create a 3D physical object by adding smart material layer by layer through computer-operated computer-aided design (CAD) data.

The most obvious advantage of 4D printing is that **through computational folding**, objects larger than printers can be printed as only one part. Since the 4D printed objects can change shape, can shrink and unfold, objects that are too large to fit a printer can be compressed for 3D printing into their secondary form.

As per market reports, the 4D printing sector would be worth **about USD 313.1 million by 2025**. The report attributes this exponential rise in the market to the high demand for 4D materials in the military, defense, aerospace and healthcare industries

4D printing is applied in **various sectors such as engineering, medicine, and others**. 4D printed proteins could be a great application. With this new dimension, 3D printed objects can change their shape by themselves over the influence of external stimuli, such as light, heat, electricity, magnetic field, etc.