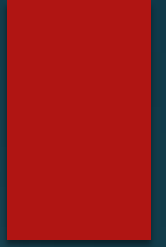


3D Printing in Automotive Industry



Student Name:	Student ID:	Element:
1. Catalina – Georgiana Dinu	2123037	Background of the organization
2. Roxana-Georgiana Costache	2119439	Challenges before the Modern Technology Introduced
3. Carmen-Mariana Cheta	2123761	Insights of the Modern Technology Introduced
3. Andrada-Elena Stoica	2119163	Impacts of Modern Technology
5. Claudiu-Marian Chirila	2120456	Lessons drawn from the case study

University Name: University Of Wales Trinity Saint-David
(London)

Module Name: Digital Skills and research methods

Module code: BMSW4003

Lecturer Name: Amitave Banik

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Introduction

- ▶ 3D printing, also known as additive manufacturing, is the process of producing three dimensional objects from a digital file using a printing machine. (MarketWatch, 2022)
- ▶ Designed and created by Chuck Hull in 1984. (3dsourced, 2020)
- ▶ The first 3D-printed vehicle, which included a hybrid motor, three wheels, and could carry up to 1,200 pounds, was created in 2013.(Editor, 2019)
- ▶ The market value of 3D printing in the automobile industry is expected to expand rapidly, reaching \$2.5 billion by 2023 (Naramore, 2019)

(3dsourced,2020)



(Gajitz, 2010)

Background of the Organization

CATALINA-GEORGIANA DINU (2123037)

Background of BMW

- ▶ Brief details:
- ▶ Bayerische Motoren Werke AG, a.k.a. BMW
- ▶ German manufacturer of luxury vehicles and motorcycles in Germany (Wikipedia Contributors, 2019).
- ▶ Started in 1916 as a manufacturer of aircraft engine (Wikipedia Contributors, 2019).
- ▶ Founded by Franz Josef Popp, Gustavo Otto and Karl Rapp (Wikipedia Contributors, 2019)

(Staticflickr.com, 2022)



Blogspot.com, 2022



(Staticflickr, 2022)



(Blogspot.com, 2022)

Aim Objectives of BMW

(Slideshare.net)

To produce environmentally friendly automobiles (UKEssays.com, 2012).

To maintain a competitive advantage (UKEssays.com, 2012).

To help the society by being responsible (UKEssays.com, 2012).

To increase the sales all over the world (UKEssays.com,"2012)



Missions and Visions of BMW

- ▶ “to become the world’s leading provider of premium products and premium services for individual mobility.” (BMW Statement)
- ▶ Improving lives
- ▶ Improving communities
- ▶ Global reach (missions-statement.com, n.d.)
- ▶ Premium manufacturer (missions-statement.com, n.d.)



3D Printing For BMW

- ▶ BMW Group started employing additive manufacturing in 2010 for the production of small batches of components (i-Scoop, n.d.).
- ▶ BMW was the first carmaker to use 3D printing to mass-produce tens of thousands of metal parts. (Sher, 2020)
- ▶ BMW announced in 2018 that it had printed over 1 million parts over the past decade (Sher, 2020).



BMW 3D PARTS



2014
Ergonomics from
the 3D printer



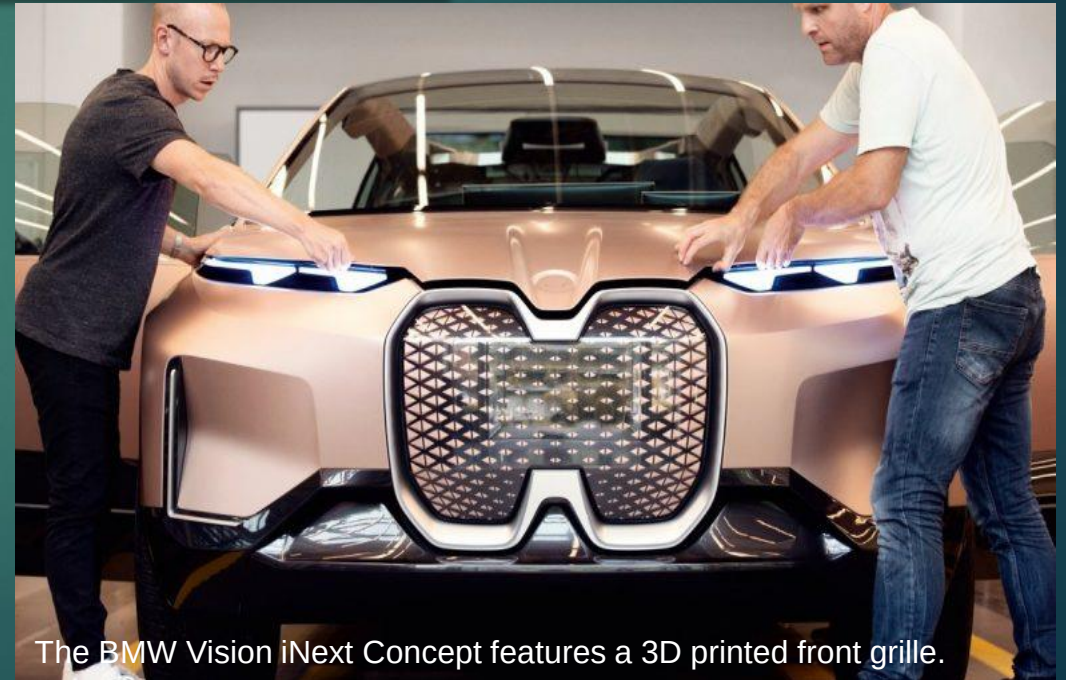
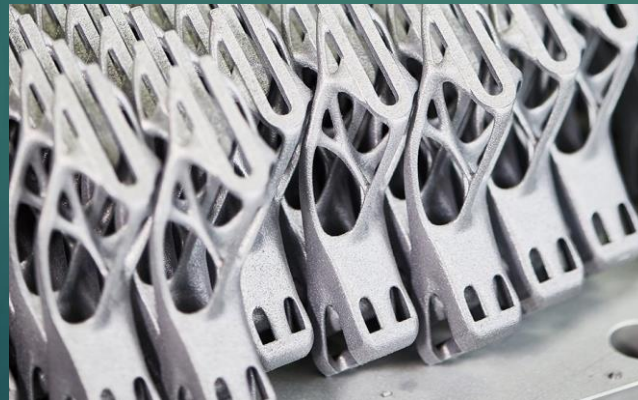
2012
Bespoke 3D-printed
seats for the British
Paralympics
Basketball team



BMW 507 – restoring
Elvis's heirloom



BMW
Logo



The BMW Vision iNext Concept features a 3D printed front grille.

Challenges Before Introducing Modern Technology

ROXANA-GEORGIANA COSTACHE (2119439)

Up front cost.

Long lead times.

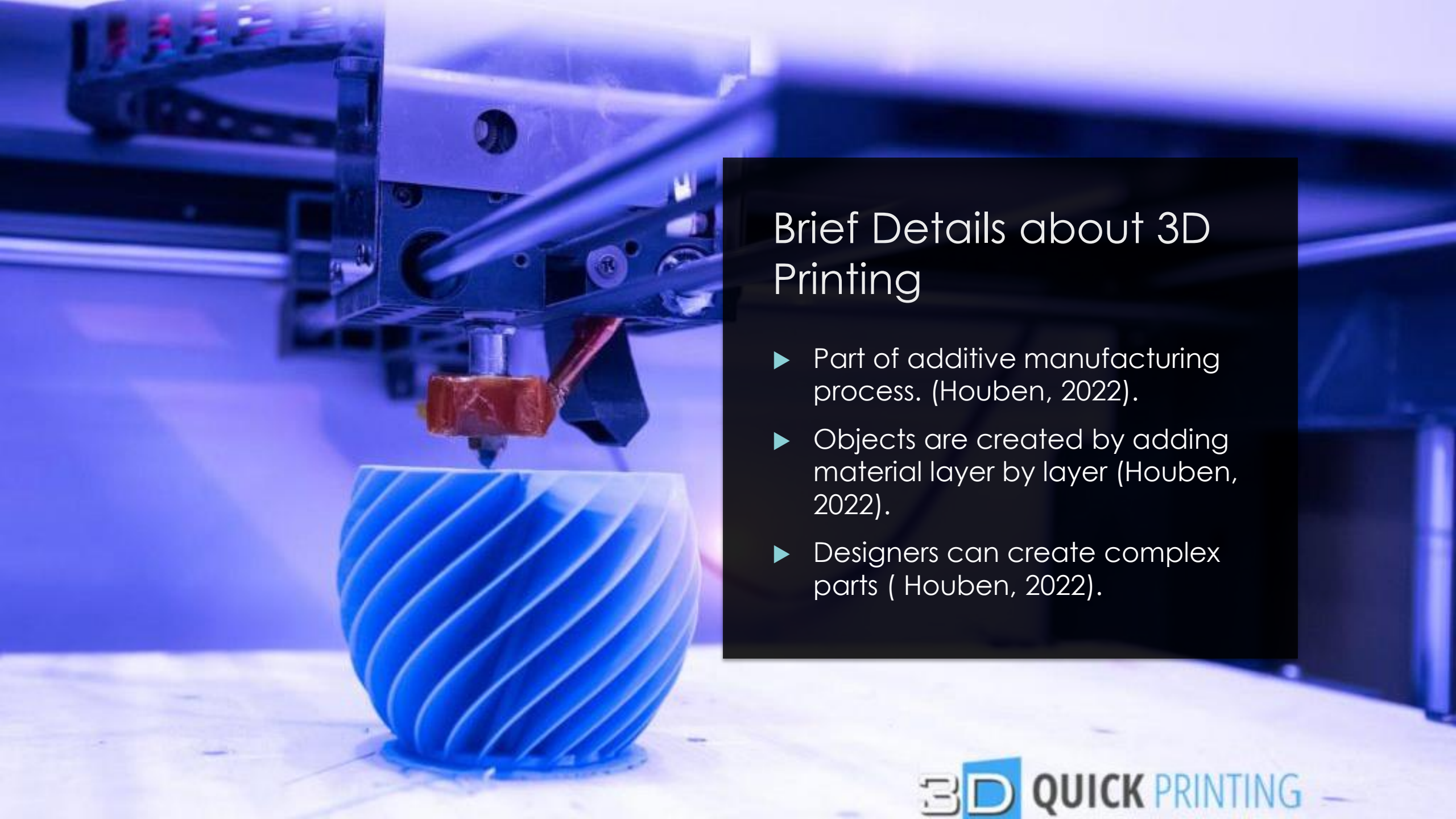
Minimum order quantity.

The more complex the part, the more expensive.



Insights Of The Modern Technology

CARMEN-MARIANA CHETA (2123761)

A close-up photograph of a 3D printer's extruder head, which is a black metal assembly with a red nozzle, positioned directly above a partially completed blue 3D printed object. The object is a sphere with prominent vertical ridges or ribs. The printer is situated on a white surface, and the background is a blurred industrial setting with blue and grey tones.

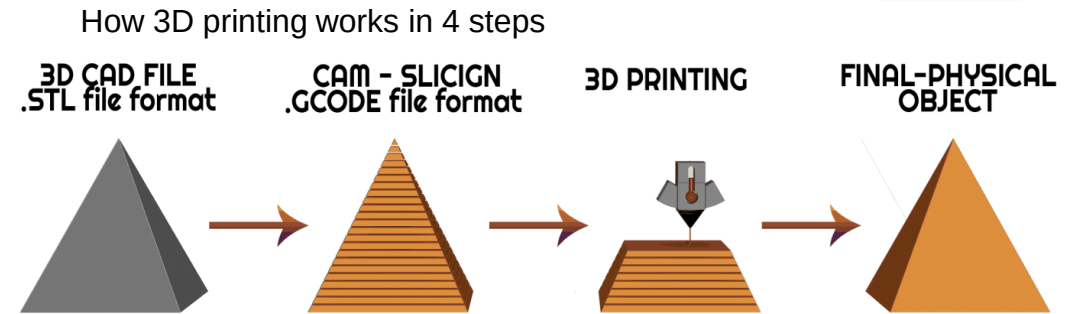
Brief Details about 3D Printing

- ▶ Part of additive manufacturing process. (Houben, 2022).
- ▶ Objects are created by adding material layer by layer (Houben, 2022).
- ▶ Designers can create complex parts (Houben, 2022).

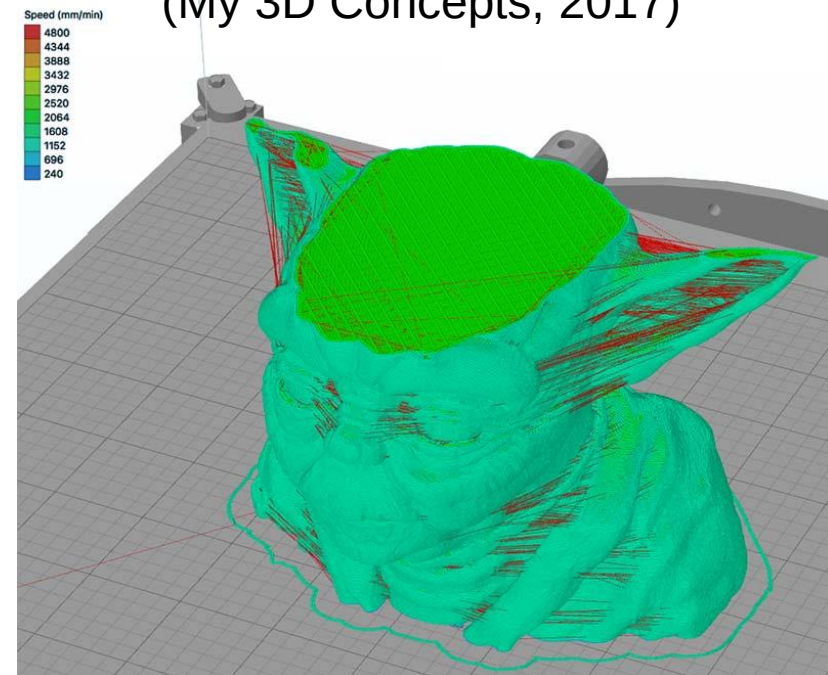
How does 3D printing work?

1. Creation- CAD Model
2. STL
3. Slicing
4. Printing

(My 3D Concepts, 2017)



(My 3D Concepts, 2017)



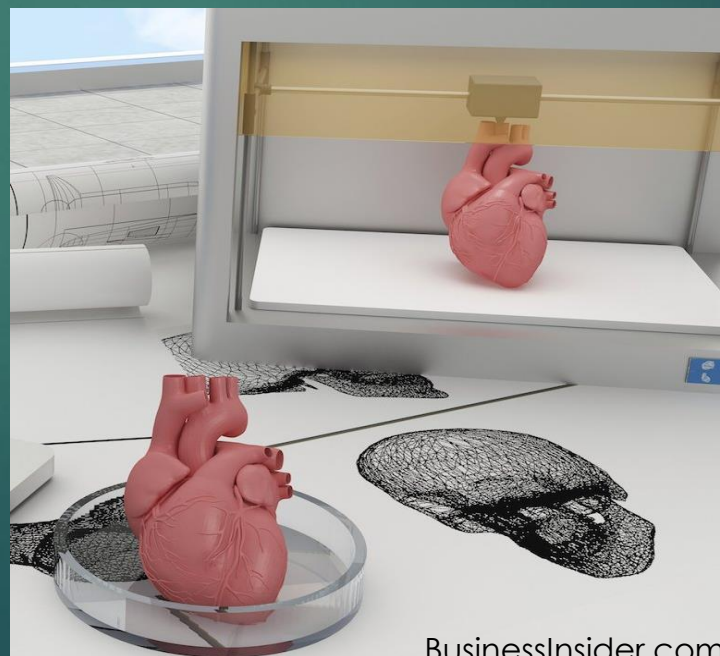
Materials used to print 3D objects:

- ▶ Plastic
- ▶ Powders
- ▶ Resins
- ▶ Metal
- ▶ Carbon fiber
- ▶ Graphite and graphene
- ▶ Nitinol
- ▶ Paper
- ▶ Ceramic

(Sharretts Plating Company, 2018)



Interesting Creations of 3D Printing



Impact of 3D printing

ANDRADA- ELENA STOICA (2119163)

POSITIVE IMPACTS OF 3D PRINTING

- ▶ Cost-effective creation of complex geometries.
- ▶ Start up cost are affordable
- ▶ Completely customizable
- ▶ Ideal for rapid prototyping
- ▶ Possible to create parts with specific properties.

(www.twi-global.com, n.d.)

- ▶ Greener environment (3D, 2021)
- ▶ Multiple ways of manufacturing (3D, 2021)
- ▶ Print on demand



NEGATIVE IMPACTS OF 3D PRINTING

- ▶ Restricted built size
- ▶ Large volumes
- ▶ Copyright issues
- ▶ Design inaccuracies
- ▶ Limited materials
- ▶ Reduction in manufacturing jobs

(TWI, 2020)



LESSONS DROWN FROM THE CASE STUDY:

CLAUDIU- MARIAN CHIRILA (2120456)

Difference between traditional and modern technology.

Traditional Technology was all about simple mechanisms and laws.

traditional technology was made from scratch.

Modern technology is more efficient in comparison with traditional Technology.

Modern technology needs to be less labour intensive.

Importance Of Modern Technology

Modern technology has made a way for innovative devices.

It helps the employees to work in a team as they can access all the documents and information with the help of technology.

It also helps the computers to work in a faster way.

Technology has made the life of people faster, easier, and better.

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THANK YOU!!!