

Additive Manufacturing (AM):

3D Printing, also known as **Additive Manufacturing (AM)**, refers to processes used to create a [three-dimensional](#) object ^[1] in which layers of material are formed under [computer control](#) to create an object.

^[2]
Objects can be of almost any shape or geometry and typically are produced using digital model data from a

[3D model](#)
or another electronic data source such as an [Additive Manufacturing File](#) (AMF) file.

STereoLithography

(STL) is one of the most common file types that 3D printers can read. Thus, unlike material removed from a stock in the conventional machining process, 3D printing or AM builds a three-dimensional object from computer-aided design (CAD) model or AMF file by successively adding material layer by layer.

^[3]

The term "3D printing" originally referred to a process that deposits a [binder material](#) onto a powder bed with [inkjet printer](#)

heads layer by layer. More recently, the term is being used in popular vernacular to encompass a wider variety of additive manufacturing techniques. United States and global

[technical standards](#)
use the official term *additive manufacturing* for this broader sense.

ISO/ASTM52900-15 defines seven categories of Additive Manufacturing (AM) processes within its meaning:

1. [binder jetting](#)
2. [directed energy deposition](#)
3. [material extrusion](#)

4. [material jetting](#)
5. [powder bed fusion](#)
6. [sheet lamination](#)
7. [vat photopolymerization](#) ^[4]

Big Data:

is a term for [data sets](#) that are so large or complex that traditional [data processing](#) [applicatio](#)
[n software](#)

is inadequate to deal with them. Big data challenges include
[capturing data](#)

,
[data storage](#)

,
[data analysis](#)

, search,
[sharing](#)

,
[transfer](#)

,
[visualization](#)

,
[querying](#)

, updating and
[information privacy](#)

.

Lately, the term "big data" tends to refer to the use of [predictive analytics](#) , [user behavior](#)
[analytics](#) , or certain
other advanced data analytics methods that extract value from data, and seldom to a particular
size of data set. "There is little doubt that the quantities of data now available are indeed large,
but that's not the most relevant characteristic of this new data ecosystem."

Cyber Security:

Computer security, also known as **cyber security** or **IT security**, is the protection of [computer systems](#) from the theft and damage to their [hardware](#), [software](#) or [information](#), as well as from [disruption](#) or [misdirection](#) of the services they provide.
[\[1\]](#)

Cyber security includes [controlling physical access](#) to the hardware, as well as protecting against harm that may come via [network access](#), [data](#) and [code injection](#).
[\[2\]](#)

Also, due to [malpractice](#) by operators, whether [intentional](#), [accidental](#), [IT](#) security is susceptible to [being tricked](#) into deviating from secure procedures through various methods.
[\[3\]](#)

The field is of growing importance due to the increasing reliance on computer systems and the [Internet](#)

,
[\[4\]](#)

[wireless networks](#)

such as

[Bluetooth](#)

and

[Wi-Fi](#)

, and the growth of

["smart" devices](#)

, including

[smartphones](#)

,
[televisions](#)

[televisions](#)

and tiny devices as part of the

[Internet of Things](#)

.

Internet of things (IoT):

The **Internet of things (IoT)** is the network of physical devices, vehicles, and other items [emb](#)
[edded](#)

with

[electronics](#)

,
[software](#)

[software](#)

,
[sensors](#)

[sensors](#)

,
[actuators](#)

[actuators](#)

, and

[network connectivity](#)

which enable these objects to collect and exchange

[data](#)

.

[\[1\]](#)

[\[2\]](#)

[3]

Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing

[Internet](#)

infrastructure. Experts estimate that the IoT will consist of about 30 billion objects by 2020.

[4]

The IoT allows objects to be sensed or controlled remotely across existing network infrastructure, [5] creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human intervention. [6] [7] [8] [9]

When IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of

[cyber-physical systems](#)

, which also encompasses technologies such as

[smart grids](#)

,

[virtual power plants](#)

,

[smart homes](#)

,

[intelligent transportation](#)

and

[smart cities](#)

.

"Things", in the IoT sense, can refer to a wide variety of devices such as heart monitoring implants, [biochip](#) transponders on farm animals, cameras streaming live feeds of wild animals in coastal waters, [10] automobiles with built-in sensors, DNA analysis devices for environmental/food/pathogen monitoring, [11] or field operation devices that assist firefighters in

[search and rescue](#)

operations.

[12]

Legal scholars suggest regarding "things" as an "inextricable mixture of hardware, software, data and service".

[13]