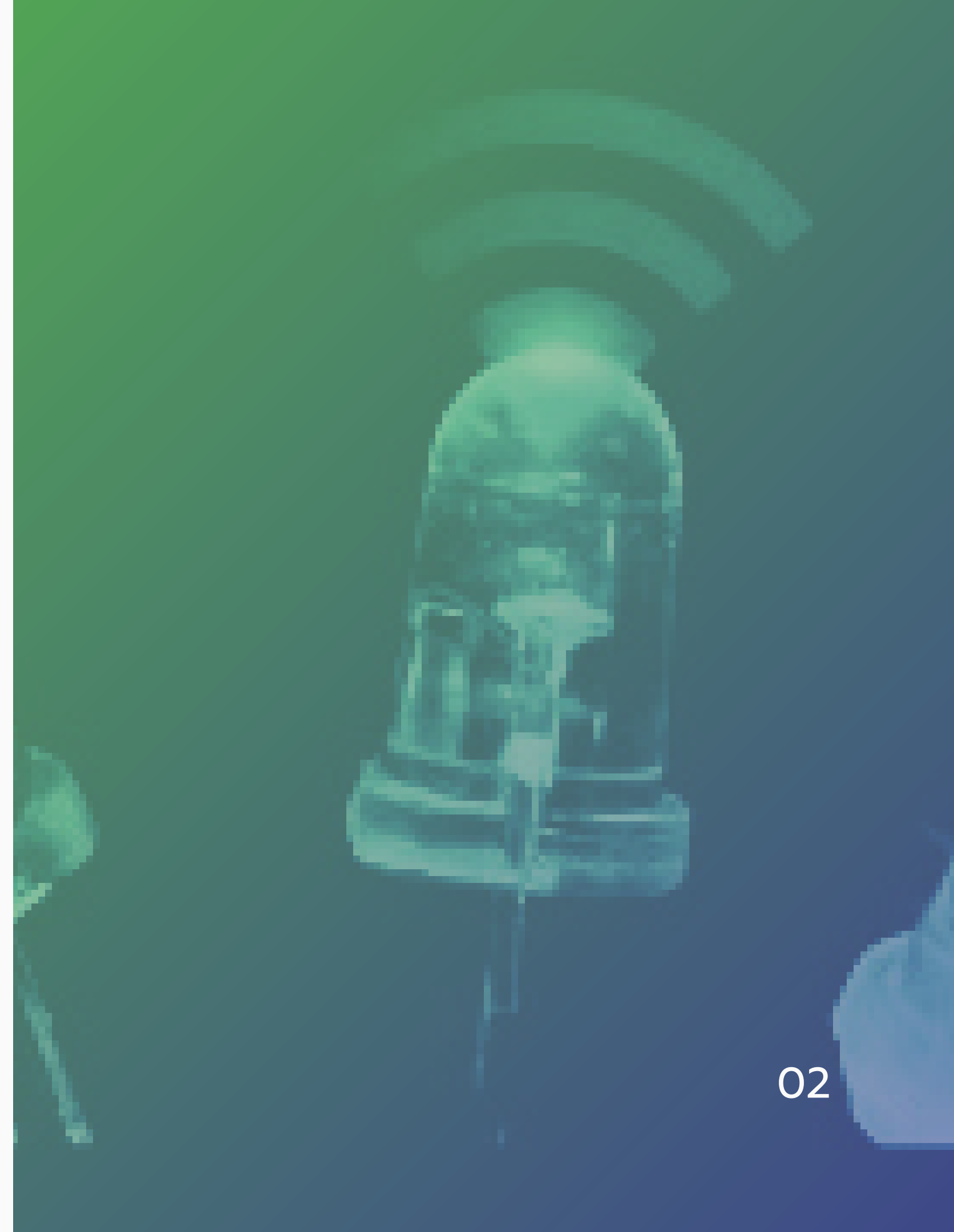


Li-Fi Technology

What is Li-Fi ?

- “LIGHT FIDELITY” is transmission of data through illumination.
- It is a light based Wi-Fi it uses light instead of radio waves to transmit information.
- i.e. sending data through a LED light bulb that varies in intensity faster than human eye can follow.





82%

The Li-Fi market was projected to have a compound annual growth rate of 82% from 2013 to 2018.

More about Li-Fi

- >
 - Fundamentally, Li-Fi is based on Visible Light Communication (VLC) technology
 - It makes use of light as a medium of communication rather than
 - traditional cable wire communication.
 - The communication takes place through light medium. Data transmitted
 - is received at the receiver's side by a photodetector.
- >
 - Basic working principle of Li-Fi bifurcates into 2 things:
 - a. Transceiver
 - b. Light as a media transmission



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Difference between Li-Fi,
VLC and Wi-Fi

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Advantages and
Disadvantages

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Applications

History of Li-Fi

1. Term first coined in 2011
2. Introduced by Prof. Harald Hass during a 2011 TEDGlobal talk in 2011
3. Projected the idea of “wireless data from every light” among the world
4. Emphasis on idea of communication wirelessly using light to transmit data and position among devices
5. Developed by Prof. Harald Hass, Dr. Mostafa Afgani and Dr. Gordon Povey at University of Edinburgh
6. Fast and cheap version of wi-fi which based on concepts of visible light communication

Need of Li-Fi

01

- Due to increasing demand of wireless communication, radio spectrums below 10 GHz are now found to be insufficient.
- So, to overcome this challenge, industry looks towards it by considering options of using radio spectrums above 10 GHz frequency (mm-wave communication)

02

- Researchers and thinkers are finding a way in communication wirelessly
- through means of light. They sought to make light as a medium of communication.

More...

03

- To overcome the limited speed in Wi-Fi

04

- By making use of Li-Fi, users can have a blazing speed upto 14 Gbps

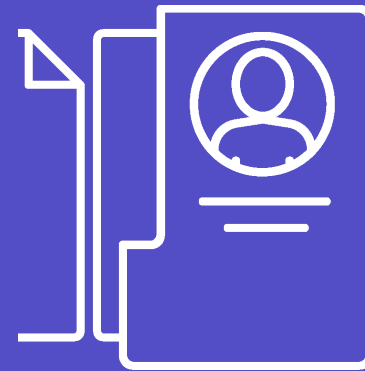
05

- Eliminating traditional cable wire communication as LED points, which are main medium of communication in this technique, are available everywhere.

Implementation of Li-Fi



Emitter



RF Driver



Power Supply



Advantages

● Larger
bandwidth

● High efficiency

● High security

● Green
information
Technology

● More Availability

● No license
needed



Disadvantages

- Need of light source

- Limited range

- not energy efficient

- other light sources can interrupt

- Limited Compatibility

- New infrastructure needed

Limitations

01

Doesn't work in the dark.

02

Can't pass through objects

03

High installation cost

Applications

01

Modern medical
Instruments

02

In aircrafts and Data
Transmission

03

Underwater
communications

and more...

Hospitals

for modern medical instruments

It is complicated to lay the optical fiber in hospitals. In the operation theatre Li-Fi can be used for modern medical instruments. As Li-Fi does not interfere with the devices using radio frequency, it can be used in many hospital applications.

Defense & security

Enhanced security

Existing technologies pose a great threat to security due to data leakage and hacking. Role of Li-Fi has been identified to be quite huge due to its ability to secure data.

Underwater communication

In the present situation, underwater communication is next to impossible because radio waves get absorbed in water very quickly.

On the other hand, light travels through water easily and can be used for communication between divers and also for military communication underwater.

LiFi can deliver multiple Gbps speeds in mobile devices. This next generation technology will drive wireless beyond any current capability, opening up unprecedented bandwidth.



**Speed
&
Bandwidth**

Smarter Power Plants

- Wi-Fi and other radiations are dangerous for some sensitive areas like power plants. But power plants need high speed data transfer system for monitoring different things.
- Li-Fi could offer safe connectivity for such sensitive areas.



Industry

Can be used in petroleum and chemical plants where other frequencies could be hazardous.

Li-Fi in Aviation

Electronic equipments can create electromagnetic interference with the devices using radio frequency on the flight.

With the use of Li-Fi, it is easy for the airline staff to communicate while eliminating data rates, extra wiring, and radio frequency interference.

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Thank You