ZIGBEE TECHNOLOGY
INTRODUCTION

✓ Science and Technology sets up different trends and provides better facilities for the sake of convenient and easier human survival. In this, wireless technology is a part, proving the Excellency of human inventions.

✓ ZIGBEE is a wireless technology, which provides many facilities like automation of houses and industries, remotely operated electronic devices like TVs, refrigerators, washing machines etc.
✓ Even the dream of “DIGITAL HOME” is being accomplished by this ZIGBEE technology.

✓ It advances BLUETOOTH technology in certain aspects like lower power consumption, very high reliability and number of components that can be connected to this network.

✓ This paper describes the meaning, origin, necessity, characteristics and the applications of ZIGBEE technology to various needs in homes and in industries.
ORIGIN OF NAME

✓ Named for zig-zagging patterns of bees between flowers

✓ Symbolizes communication between nodes in a mesh network

✓ Network components analogous to queen bee, drones, worker bees
What is ZIGBEE?

✓ Technological Standard Created for Control and Sensor Networks

✓ Based on the IEEE 802.15.4 Standard

✓ Common standard for wireless networking of sensors and controllers.
NEED FOR ZIGBEE

ZigBee is the only wireless standards-based technology:

✓ that addresses the unique needs of remote monitoring & control, and sensory network applications.

✓ enables broad-based deployment of wireless networks with low cost, low power solutions.

✓ provides the ability to run for years on inexpensive primary batteries for a typical monitoring application.
How ZigBee Works?

- Topology
  - Star
  - Cluster Tree
  - Mesh

- Network coordinator, routers, end devices
ZigBee Mesh Networking
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TARGET MARKETS

✓ INDUSTRIAL MARKETS
✓ PC PHERIPARALS
✓ GAMES AND TOYS
✓ HOME AUTOMATION
ZIGBEE’S FUTURE

SIX WAYS ZIGBEE WILL CHANGE YOUR HOME
## Comparison of Zigbee and Other Wireless Technologies

<table>
<thead>
<tr>
<th>Market Name</th>
<th>Zigbee</th>
<th>GPRS</th>
<th>Wi-Fi</th>
<th>Bluetooth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Focus</td>
<td>Monitoring and Control</td>
<td>Wide Area Voice and Data</td>
<td>Web, Email, Video</td>
<td>Cable Replacement</td>
</tr>
<tr>
<td>Bandwidth (KB/s)</td>
<td>20-250</td>
<td>64-128+</td>
<td>1,000+</td>
<td>720</td>
</tr>
<tr>
<td>Battery (Days)</td>
<td>100-1000+</td>
<td>1-7</td>
<td>5-5</td>
<td>1-7</td>
</tr>
<tr>
<td>Success Metrics</td>
<td>Power, Cost</td>
<td>Reach, Quality</td>
<td>Speed, Flexibility</td>
<td>Cost, Convenience</td>
</tr>
</tbody>
</table>
APPLICATIONS

✓ Control of lights, switches.
✓ Medical sensing and monitoring
✓ Industrial and building automation
✓ Home security
✓ Environmental controls
Lights and Switches
ACADEMIC RESEARCH

Research in ZigBee is being conducted in different fields:

✓ Wireless and sensor networks
✓ Wireless communications
✓ Neuroengineering
RESEARCH PAPERS

✓ Time Synchronization for ZigBee Networks
✓ ZigBee: “Wireless Control That Simply Works”
✓ Journal of Neuroengineering and Rehabilitation
✓ Development of Ubiquitous Sensor Network
✓ Wireless Technologies for Data Acquisition Systems
CONCLUSION

✓ It is due to rising of wireless technologies, we can welcome the technologies like ZIGBEE since it has many advantages like low power consumption, high reliability, low cost and more life of batteries. Besides it has unlimited network size, considerable bandwidth.

✓ Revolution of ZIGBEE will bring us more amenities but still we have to wait for few more months to use completely this wireless technology.
THANK YOU