



GigaMesh Solution

For Prelims: GigaMesh, ARTPARK, Spectrum, Artificial Intelligence

For Mains: Rural Connectivity, Role of AI in Digital Inclusiveness, Challenges of Digital Inclusiveness in Rural India, Related Government Policies

Why in News?

Recently, Astrome has signed a contract with the Department of Telecommunication to start the pilot project called "GigaMesh Network Solution with 15 villages in India."

- GigaMesh, developed by Astrome, will address congestion issues in rural 4G infrastructure and provide high-tech and affordable internet connectivity.

What Do We Know about GigaMesh?

- The solution has been developed by **Astrome**.
 - The startup is supported by **AI & Robotics Technology Park (ARTPARK)**, the **Technology Innovation Hub (TIH)** at the **Indian Institute of Science (IISc)**.
- It's a **network solution** which will wirelessly provide **fibre-like** backhaul capacity and paves the road for **5G**.
- It is the **world's first multi-beam E-band Radio** that is able to communicate from one tower to multiple towers simultaneously while delivering multi GBPS throughput to each of these towers.
- A **single GigaMesh device can provide up to forty links with 2+ Gbps capacity**, communicating up to a range of ten kilometers.
- GigaMesh features multiple point-to-point communication in E-Band, lowering cost and is driven by software to make it easy to deploy, maintain and repair remotely.

What Do we Need to Know about ARTPARK?

- **About:**
 - ARTPARK is a not-for-profit foundation promoted by the Indian Institute of Science (IISc), Bengaluru to promote technology innovations in **artificial intelligence (AI)** & **Robotics**.
- **Initiatives:**
 - AI researchers at ARTPARK, in collaboration with HealthTech startup Niramai Health Analytix and the Indian Institute of Science (IISc), have also developed **XraySetu**.
 - XraySetu is a platform that can interpret chest X-rays with 98.86 % sensitivity toward **Covid-19** within few seconds.
 - ARTPARK also organized the **ARTPARK Innovation Summit** that brought industry, academia and the government under one roof to discuss important topics such as:
 - how to create next-generation connectivity in rural areas, **health AI** for Bharat, connecting Bharat with **Drones**, inclusive learning for the future and building AI and research ecosystem.
 - Apart from this, they participated in an unmanned ground vehicle (UGV) experiment of the

[Indian Army](#) and showcased India's only Legged Robotic Dog.

What are the Other Areas where AI can be Used?

- **Policing:**
 - With the help of AI, one can match [facial recognition](#) with the central database, predict the pattern of crime, analyse CCTV footage which are available across the country to identify suspects.
 - Government is digitising all the records, especially the crime records, putting it into one single place called [CCTNS](#) where all the data including the image, biometrics, or the criminal history of a convict or suspect is available.
- **Agriculture:**
 - **AI Helping Analyse Farm Data:**
 - Farmers can analyse factors like weather conditions, temperature, water usage or soil conditions collected from their farm to better inform their decisions.
 - **Precision in Agriculture:**
 - Precision agriculture uses AI technology to aid in detecting diseases in plants, pests, and poor plant nutrition on farms.
 - AI sensors can detect and target weeds and then decide which herbicides to apply within the right buffer zone.
- **Education:**
 - The Ministry of Electronics and Information Technology (MeitY) had launched a ["Responsible AI for Youth"](#) programme in April 2022, wherein more than 11,000 students from government schools completed the basic course in AI.
 - The Central Board of Secondary Education has integrated AI in the school curriculum to ensure that students passing out have the basic knowledge and skills of data science, machine learning and artificial intelligence.
- **Healthcare:**
 - **Machine Learning:**
 - Application of AI can be beneficial in precision medicine – predicting what treatment protocols are likely to succeed on a patient based on various patient attributes and the treatment context.
 - **Natural Language Processing:**
 - NLP involves the creation, understanding and classification of clinical documentation and published research.
 - NLP systems can analyse unstructured clinical notes on patients, prepare reports, transcribe patient interactions and conduct conversational AI.

What has the Government Done to Increase Rural Connectivity?

- **National Broadband Mission:**
 - [NMB](#) will facilitate universal and equitable access to broadband services across the country, especially in rural and remote areas.
 - The vision of the Mission is to fast-track growth of digital communications infrastructure, bridge the [digital divide](#), facilitate digital empowerment and inclusion, and provide affordable and universal access to broadband for all.
- **Ghar Tak Fibre Scheme:**
 - [GTFS](#) aims to connect all 45,945 villages of Bihar with high-speed optical fibre.
 - Under the scheme, Bihar has to provide at least five fibre-to-the-home (FTTH) connections per village and at least one WiFi hotspot per village.
 - The Scheme will lead digital services including [e-Education](#), [e-Agriculture](#), [Tele-Medicine](#), [Tele-law](#) and other social security schemes in Bihar ensuring easy access to all state natives.
 - It is also likely to boost the local employment generation with the implementation of Bharat Net initiative which will be done by recruiting local workers.

Way Forward

- The state should have a positive obligation to **create infrastructure for a minimum standard and quality of Internet access** as well as capacity-building measures which would allow all citizens to be digitally literate.
- The government should invest the resources saved by moving services online, to create a better Rural Digital infrastructure.
- Internet access and digital literacy are dependent on each other, and creation of digital infrastructure must go hand in hand with the creation of digital skills.
- Effective implementation and audit of the National Broadband Mission should be carried out.
 - National Broadband Mission aims at:
 - Providing broadband access to all villages by 2022.
 - Significantly improve quality of services for mobile and internet.

Source: PIB

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