



# VERMIS

INNOVATION ADVANCE CATEGORY

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SAS INNOVATION TEAM 1 presents  
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## Sustainable Development Goal 9

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation



- 9.1 Better infrastructure to support economic growth and human well being with a focus on affordable and equitable access for all.
- 9.4 Upgrade infrastructure to become more sustainable, resource-use efficient and greener.
- 9.C Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries

## Problem Statement

### Resource Intensity:

Excessive manpower and resource requirements drive up costs.

### Lack of Automation:

Manual processes cause delays and errors, hindering efficiency.

### Rural

### Inaccessibility:

Specialized equipment makes rural expansion difficult.

### Environmental and

### Social Impact:

Heavy equipment disrupts surroundings, posing environmental and social challenges.



## Proposed Solution

Vermis transforms underground fiber-optic cable installation with a fully automated, non-disruptive system, eliminating surface excavation.

### Key Features:

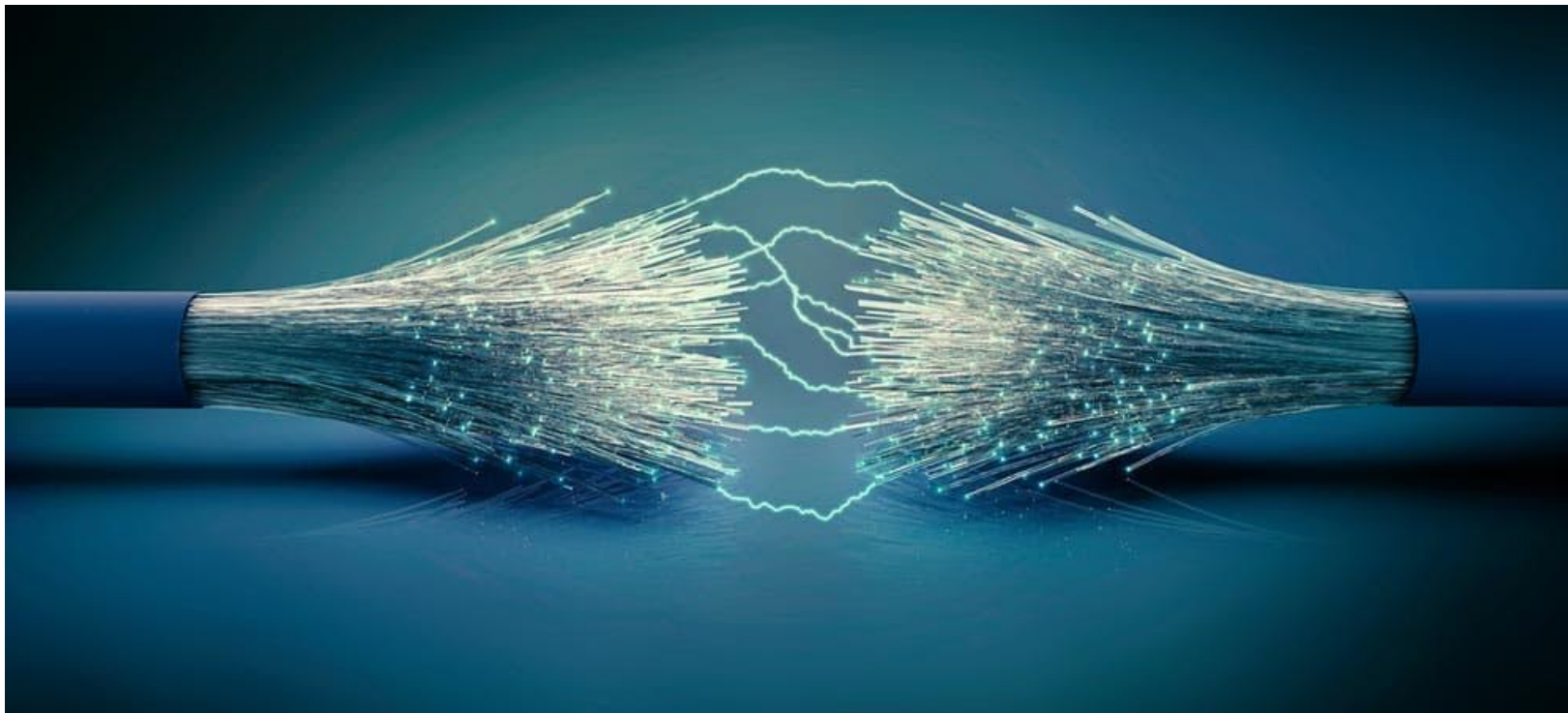
- Mole-Like Robotic Installation: Our robotic system tunnels and threads fiber-optic cables, reducing surface disruption.
- Operator-Friendly Interface: Operators set paths via an intuitive interface, eliminating manual digging.
- Autonomous Obstacle Detection: The system autonomously identifies drillable objects, ensuring safe and efficient cable placement.
- Synchronized Systems: Multiple components work in harmony, boosting efficiency and accuracy.
  - Real-Time Data Transmission: The system sends progress updates to an app for remote monitoring.

Our solution streamlines installation, reduces costs, and minimizes disruption.

## Vision

Enabling accessible and sustainable internet through fiber optics.

"Building Connections, One Cable At A Time"



## Mission

### Accessibility

Make internet and communication accessible to everyone.

### Sustainability

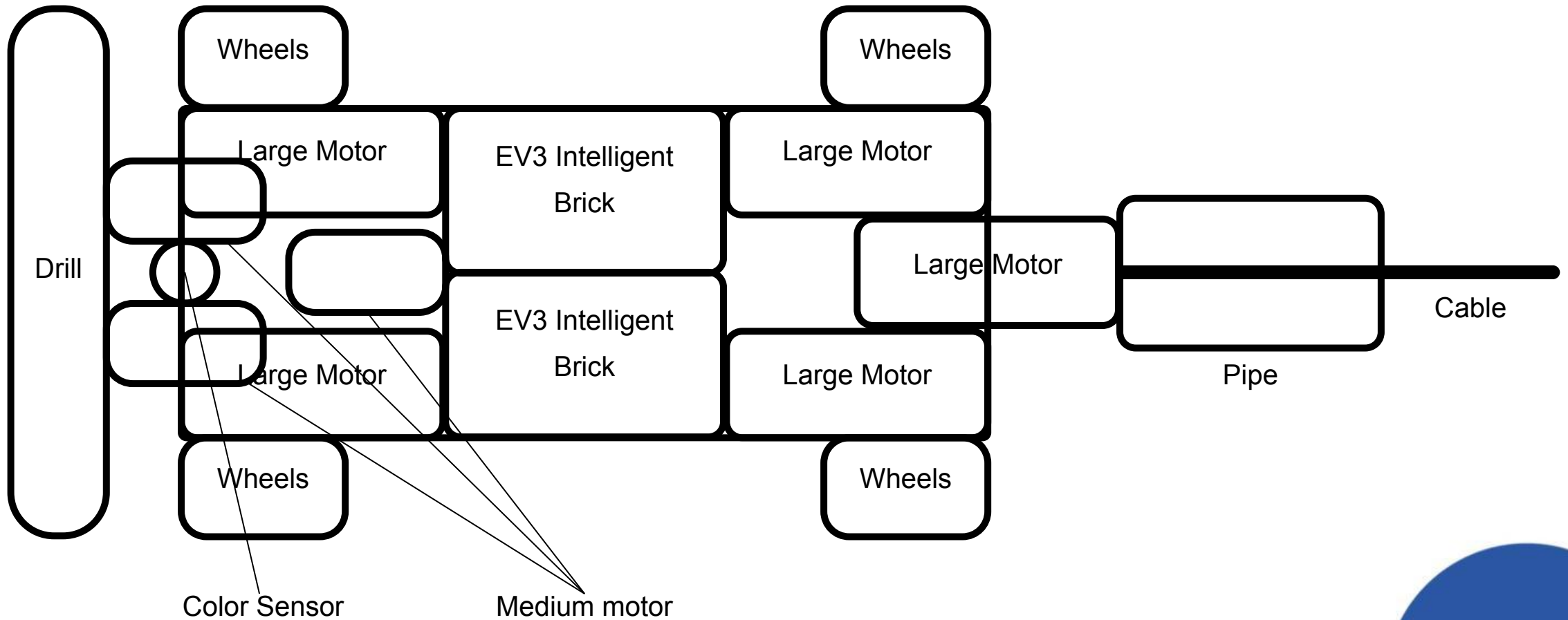
Establish a sustainable communication infrastructure.

### Efficiency

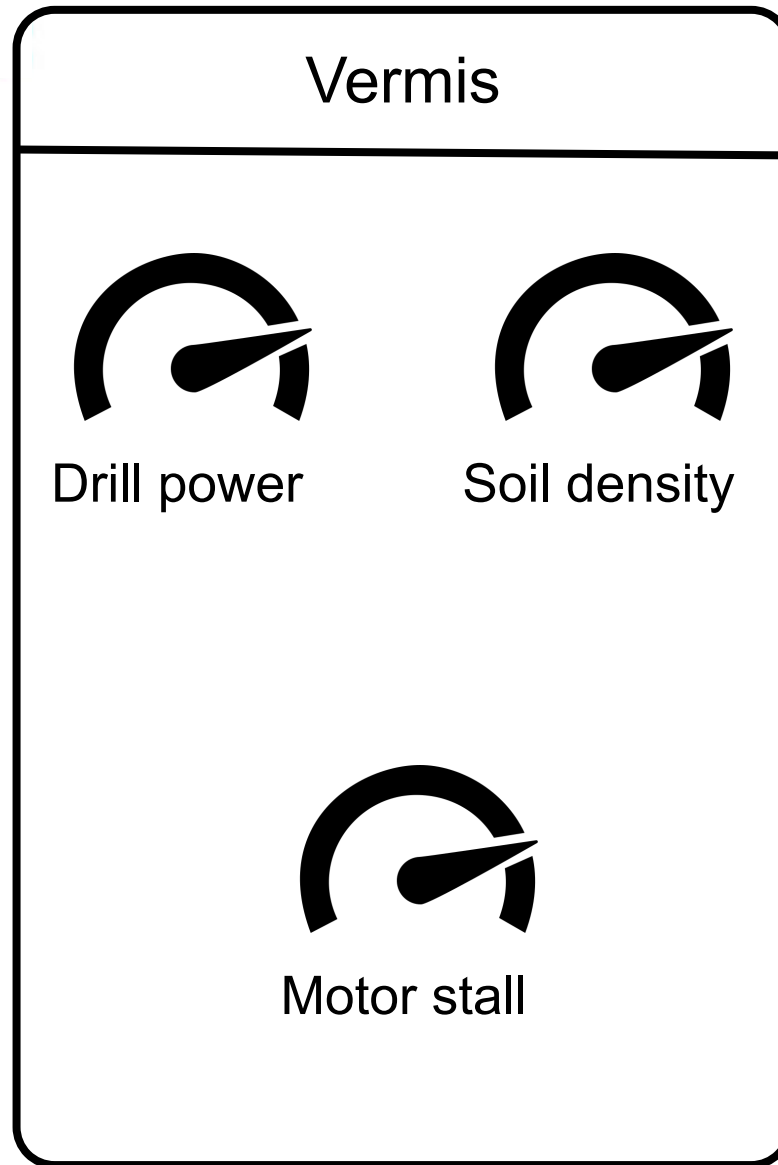
Reduce the cost, manpower, and equipment needed for communication infrastructure, making it more sustainable.



# Product Specification (Sketch)

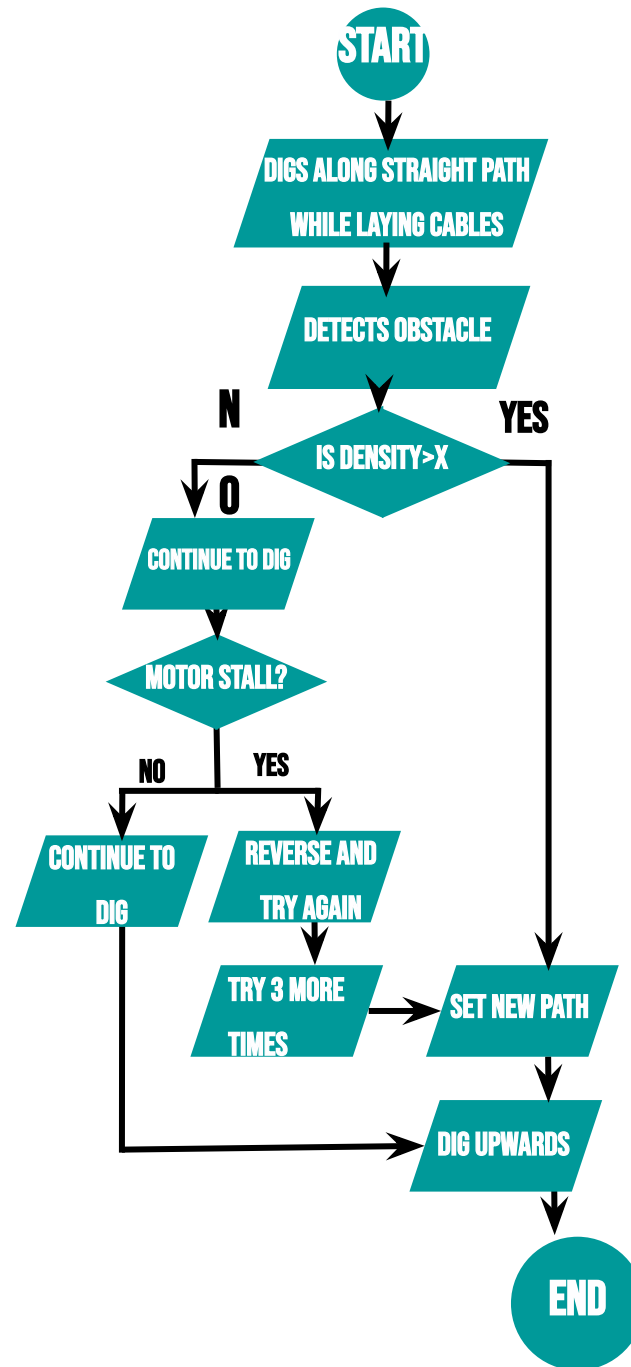


# App Design





# Flowchart



# Benefits To The Community

## Sustainable Internet Deployment

During crises like the Covid-19 pandemic and economic recessions, traditional fiber-optic cable laying can be hindered by labor and resource shortages. Our automated solution offers a more sustainable alternative.

## Broadened Internet Access

With 2.9 billion people lacking internet access due to cost, equipment, and physical barriers, our solution reduces expenses, equipment requirements, and utilizes underground installation to overcome these obstacles.

## Improved Public Safety and Convenience

Traditional fiber-optic projects often disrupt transportation with road closures and generate noise and air pollution. Our approach minimizes equipment use and eliminates road closures,

## Benefits To The Nation

### Cost-Efficient Infrastructure Expansion

With 40% of rural areas lacking internet access and 19% limited to 2G networks due to physical barriers, our solution minimizes resource and manpower needs, reducing infrastructure costs.

### Fueling Communication Sector Growth

In an unstable global economy, our solution offers a cost-effective means for companies to deploy fiber-optic cables, curbing escalating labor and resource costs, and promoting communication industry growth.

### Sustainable Communication Infrastructure

Amid crises like the Covid-19 pandemic and recessions, our solution ensures reliable internet access even when traditional projects stall. This safeguards businesses and jobs in areas with limited internet, fostering resilience in challenging times.

## Business Partners

### Targeted Customers:

#### Telecom Companies

Telecom companies that want to reduce labor, equipment, and regulatory compliance costs while cutting setup time.

#### Enterprises and Businesses

Businesses and companies, such as Petronas and Maybank, that want internet access at their branches.

#### Government and Public Sector

Government and public sectors that want to expand their infrastructure, allowing more people to access the internet.

## Business Partners

### Costs

The average cost of installing fiber optic cables ranges from \$60,000 to \$80,000 per mile. Approximately 60% of this cost is attributed to labor expenses. Vermis offers significant cost savings, potentially reducing up to 60% of the total installation cost.



## Business Partners

### Cost to build prototype

Components	Quantity	Cost per unit	Total
EV3 Intelligent Brick	2	600	1200
Large Motor	5	180	900
Medium Motor	3	120	360
Color sensor	1	120	120
Drill	1	50	50
Wheel	4	20	80

## Conclusion

Vermis contributes to achieving SDG 9 by ensuring a more sustainable communication infrastructure through the reduction of manpower and equipment required for setup. In alignment with SDG 9, Vermis aims to make the internet accessible to everyone, regardless of their location. This is achieved by leveraging IoT technology to control, monitor, and ensure the safety of the infrastructure and its surroundings.



# Thank You

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