

# **SNS COLLEGE OF TECHNOLOGY**

**Coimbatore-35 An Autonomous Institution** 

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## **DEPARTMENT OF AEROSPACE ENGINEERING**

## **19ASZ301– ROBOTICS & AUTOMATION IN SPACE**

**III YEAR VI SEM** 

UNIT 4 – PLC, SCADA AND SENSORS IN AUTOMATION

**TOPIC - SUPERVISORY CONTROL AND DATA** ACQUISITION





## **INTRODUCTION TO SCADA IN SPACE AUTOMATION**

#### **Definition:**

SCADA (Supervisory Data Control and Acquisition) is a control system architecture that uses computers, networked data communications, and graphical user interfaces for high-level process supervisory management.

### **Key Features:**

- Real-time monitoring & control
- Remote access to operational data
- Alarm & event logging
- Data trend analysis

### **Relevance in Space:**

- Spacecraft systems monitoring
- Launch vehicle control
- Ground station automation
- Safety-critical environment supervision







## **ARCHITECTURE OF SCADA SYSTEM**

Component	Function
HMI (Human-Machine Interface)	Displays data and
SCADA Master Terminal Unit (MTU)	Central system th
Remote Terminal Units (RTUs)	Collect data from
PLCs (Programmable Logic Controllers)	Perform logic ope
Communication Infrastructure	Transmits data via

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enables operator interaction

at collects and processes data

sensors and transmit it to MTU

erations and direct control tasks

a LAN, satellite, or radio



## **APPLICATIONS OF SCADA IN SPACE ROBOTICS AND AUTOMATION**

- Spacecraft Environmental Control: Monitors life-support systems (temperature, pressure, oxygen levels).
- Satellite Ground Control: Automates telemetry data collection and satellite health checks.
- Launch Vehicle Monitoring: Supervises propulsion, trajectory data, and abort control systems.
- Planetary Rover Operation: Integrates with remote-control systems for rover navigation & data feedback.

Application	SCADA Role
Mars Rover Missions	Remote diagnostics & performance data
ISS Life Support System	Real-time environmental control
Satellite Telemetry	Data acquisition from space assets





Thank You

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