An automated system consists of several basic elements that work together to perform tasks with minimal human intervention. These elements typically include:

1. **Sensors**:

   o Sensors detect physical parameters such as temperature, pressure, position, speed, and force. They convert these parameters into electrical signals, providing data for the system to respond appropriately.

   o Examples: temperature sensors, proximity sensors, pressure sensors.

2. **Actuators**:

   o Actuators are devices that perform the physical work of the system by converting electrical signals into mechanical motion. They execute the actions based on control signals from the system.

   o Examples: motors, hydraulic cylinders, pneumatic actuators, solenoids.

3. **Controllers**:

   o The controller is the brain of the automated system. It processes the input from sensors, makes decisions based on pre-set logic, and sends commands to the actuators. It ensures that the system operates according to the desired set of instructions.

   o Examples: programmable logic controllers (PLC), microcontrollers, industrial computers.

4. **Human-Machine Interface (HMI)**:

   o The HMI provides a communication platform between the operator and the automated system. It allows human operators to monitor and control the system's performance, set parameters, and troubleshoot if necessary.

   o Examples: touch screens, control panels, computer interfaces.

5. **Power Supply**:

   o The power supply provides the necessary energy to operate the sensors, actuators, controllers, and other components of the automated system. This could be electrical, pneumatic, or hydraulic power, depending on the system's design.

   o Examples: electrical power units, compressors for pneumatic systems, pumps for hydraulic systems.

6. **Communication Systems**:

   o These systems allow data exchange between different elements of the automated system, such as sensors, controllers, and actuators. Communication networks ensure real-time monitoring and coordination of system components.

o   Examples: wired communication (Ethernet), wireless communication (Wi-Fi), fieldbus networks (Modbus, Profibus).

7. **Software**:

   o   The software element includes the programs and algorithms that control the automation system's operations. It provides the logic for decision-making, monitoring, and troubleshooting. The software can include both embedded software (inside controllers) and higher-level supervisory control software.

   o   Examples: SCADA (Supervisory Control and Data Acquisition) systems, PLC programming, automation software packages.

8. **Feedback Mechanism**:

   o   The feedback mechanism ensures that the system can self-regulate and adjust its operations based on real-time data. Feedback from sensors is processed by the controller to make corrective actions if deviations from desired outputs occur.

   o   Examples: closed-loop control systems, PID controllers.

Together, these elements enable an automated system to operate efficiently, with minimal human intervention, while ensuring high precision, accuracy, and repeatability in industrial or commercial applications.