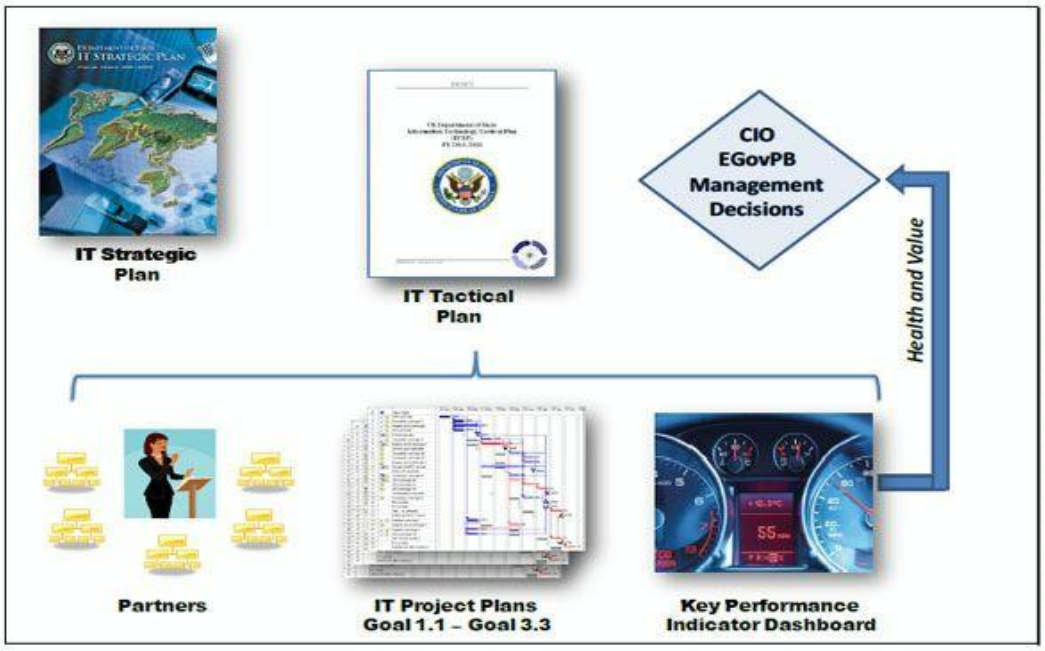


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Measure energy consumption

Abstract:

This study focuses on the measurement and analysis of energy consumption in various contexts. The research employs diverse methodologies to quantify energy usage in residential, commercial, and industrial settings. Utilizing advanced monitoring devices, data is collected to understand the patterns, peak demands, and efficiency levels in different environments.

The study explores the impact of technological advancements and behavioral interventions on energy consumption. It delves into the intricacies of smart grids, IoT-enabled devices, and energy-efficient practices to ascertain their effectiveness in reducing overall energy usage.

Furthermore, the research investigates the socio-economic factors influencing energy consumption patterns. This includes examining the role of income levels, education, and awareness in shaping individuals' and communities' energy behaviors.

The findings provide valuable insights for policymakers, energy providers, and consumers alike, offering a comprehensive understanding of the dynamics involved in energy consumption. Ultimately, this research aims to contribute to the development of sustainable practices, promoting a more efficient and environmentally conscious use of energy resources

Codeing

```
# energy_consumption_module.py
```

```
import random
                ●
def measure_energy_consumption(device_id):
    """
    Simulates measuring energy consumption for a given device.

    Parameters:
    - device_id (str): Identifier for the device.

    Returns:
    - float: Simulated energy consumption in kilowatt-hours.
    """
    # Simulate energy consumption data for demonstration purposes
    energy_consumption = round(random.uniform(1.0, 10.0), 2)

    print(f"Measured energy consumption for Device {device_id}: {energy_consumption} kWh")

    return energy_consumption

# Example Usage:
if __name__ == "__main__":
    device_id = "XYZ123"
    consumption_result = measure_energy_consumption(device_id)
```

In this example measure_energy_consumption is a function that takes a device identifier (device_id) as input and simulates measuring energy consumption for that device. It generates a random energy consumption value for demonstration purposes.

The module could be expanded by incorporating actual energy monitoring APIs or libraries depending on the devices you are working with.

The if __name__ == "__main__": block is included for a simple example of how you might use this module. In a real-world application, you would likely integrate this module into a larger system or script.

Remember to adapt this example based on the specific requirements of your project and the hardware or APIs you are interfacing with for actual energy consumption measurements.