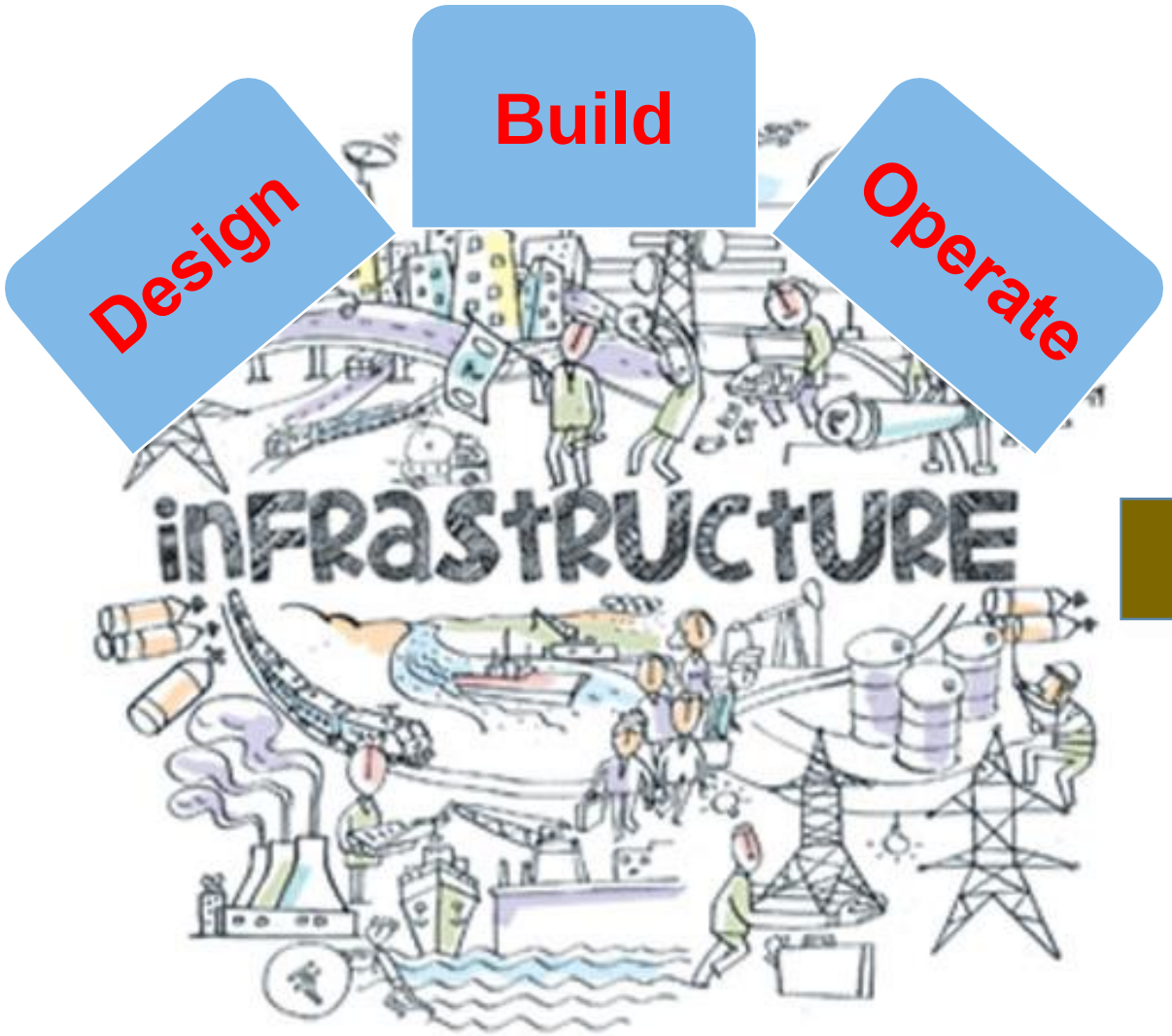
Sustainable Infrastructure:

Leveraging the Asset Management Framework Using GIS

CLARKNEXSEN

Sustainable Infrastructure ?



Social Responsibility

Environmental Stewardship

Economic Prosperity

What is Asset Management

What is Enterprise Asset Management System (EAM)

Software ?

System ?

Process ?

Many definitions

- A systematic way of deciding
  - what work we do and when we do;
- A transparent way of showing to the community
  - how decisions are made as to whether work will be undertaken or not
- A consistent, repeatable process for decision making;
- A way of benchmarking how well we are delivering a service
- A way of providing a sustainable level of service to the community both now and into the future.

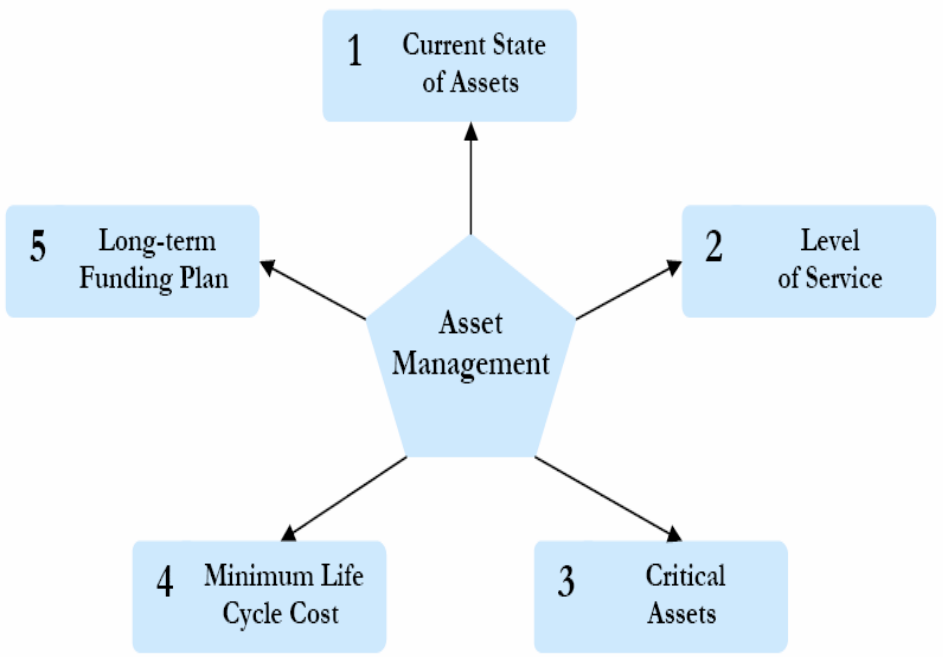
What is Asset Management System

What we do

Why have an Asset Management System

- To plan and schedule work based on condition and performance of asset (Operations &Maintenance)
- To optimize use of human and material resources by shifting maintenance activities from “reactive” → “proactive” (Management)
- To produce quantitative data for Performance measures / indicators (Management)

Components of an EAM program



CORE QUESTIONS

Core Question #1

- What do I own?
- Where is it?
- What is their condition?

(Asset Inventory)

All data has a spatial attribute

- What and Why important
- WHERE (Location) becomes critically important

Core Question #2

- Users and their demand for usage of the asset?
- Regulatory compliance?
- What is the current performance level ?

(Levels of Service)

Core Question #3

- Sustained Performance-
  - What is critical

- Likelihood & consequences of asset failure

  (Business risk drives O&M, CIP)

(Criticality & Sustainability)

Core Question #4

- O&M costs
- Repair vs. Rehabilitate vs. Replace
- R3 - What CIP projects should be done? And *when*?
  - Right project
  - Right time
  - Right reason

(Life Cycle Costs)

Core Question #5

- Funding to maintain assets for required levels of service?

(Funding Strategy)

Thread 2

What is GIS

Everything happens somewhere

- Specific addresses, coordinates
- Landmarks, Directions

Our Physical Environment – A Mix

- Real property
- Associated physical assets
- Supporting Infrastructure

The new power -- Data is King

- Data outputs *will need interpretation to create information* for decision makers

- *Data –rich* to *Insight driven*

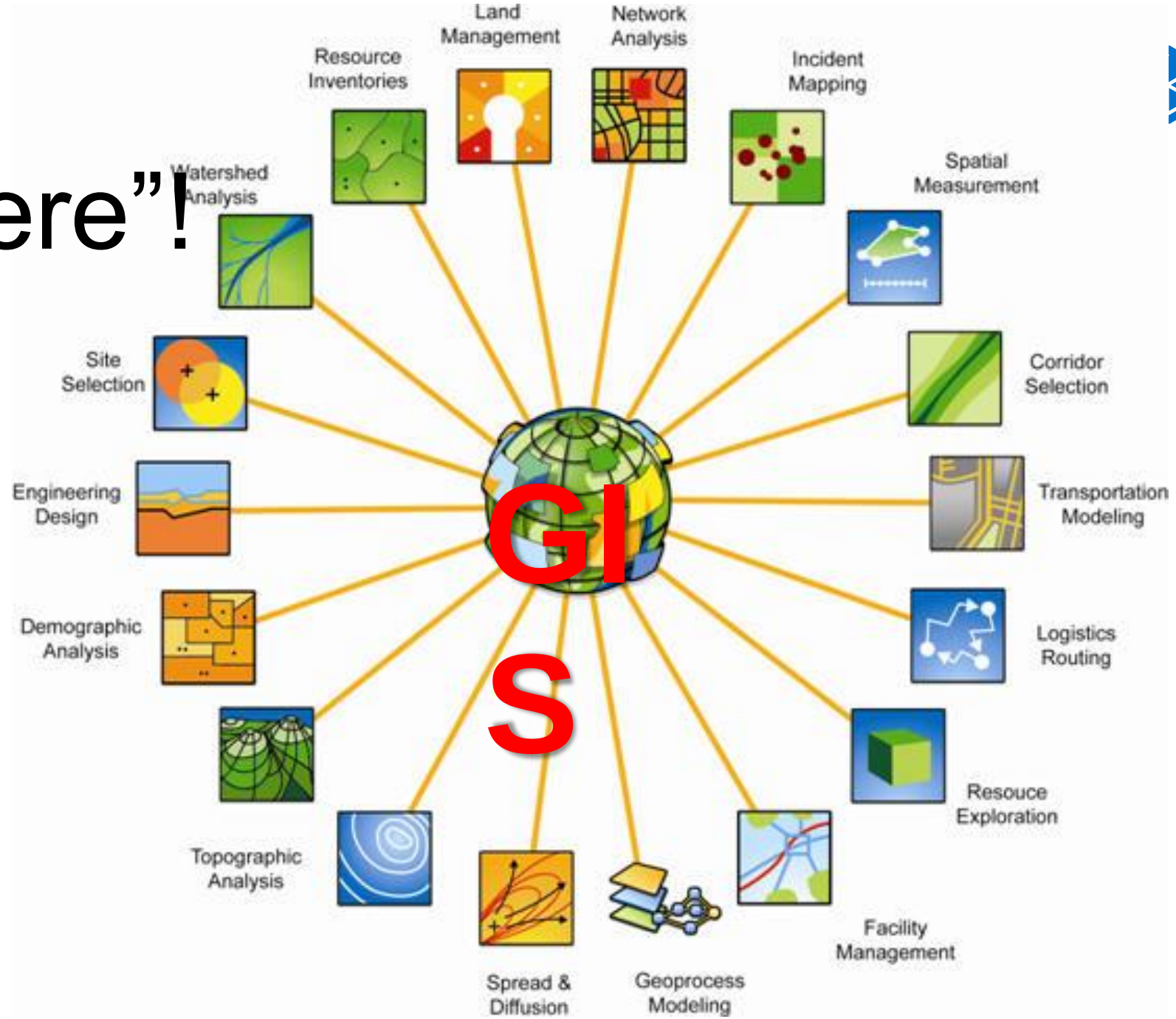
What does GIS stand for ?

- **Geographic-** the physical Earth
- **Information** – tied to the physical Earth
- **System-** the technology and methods used to analyze and display the information tied to the physical Earth.

What is GIS

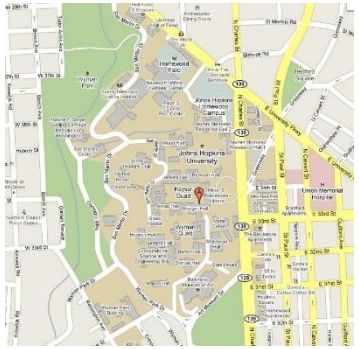
- Technological tool for comprehending geography and making decisions through *visualizations* and *analysis*

GIS is every“ where”!



GIS –Your Visual At All Scales

AREA



A PARTICULAR FACILITY

INTERIORS

A PARTICULAR ASSET

Thread 3

Asset Management
GIS
Ports

General Functions of Facilities

Property Management

- What do I own?
- Where is it located?
- What is the condition?

Planning, Design and Construction

- What, Where?
- Suitability?
- Impacts?

Space Management

- Space use by type
- Zones
- Drop Off & Pick up

Transportation, Parking

- Access
- Existing capacity and condition?
- Future demands?

Sustainability & Environment

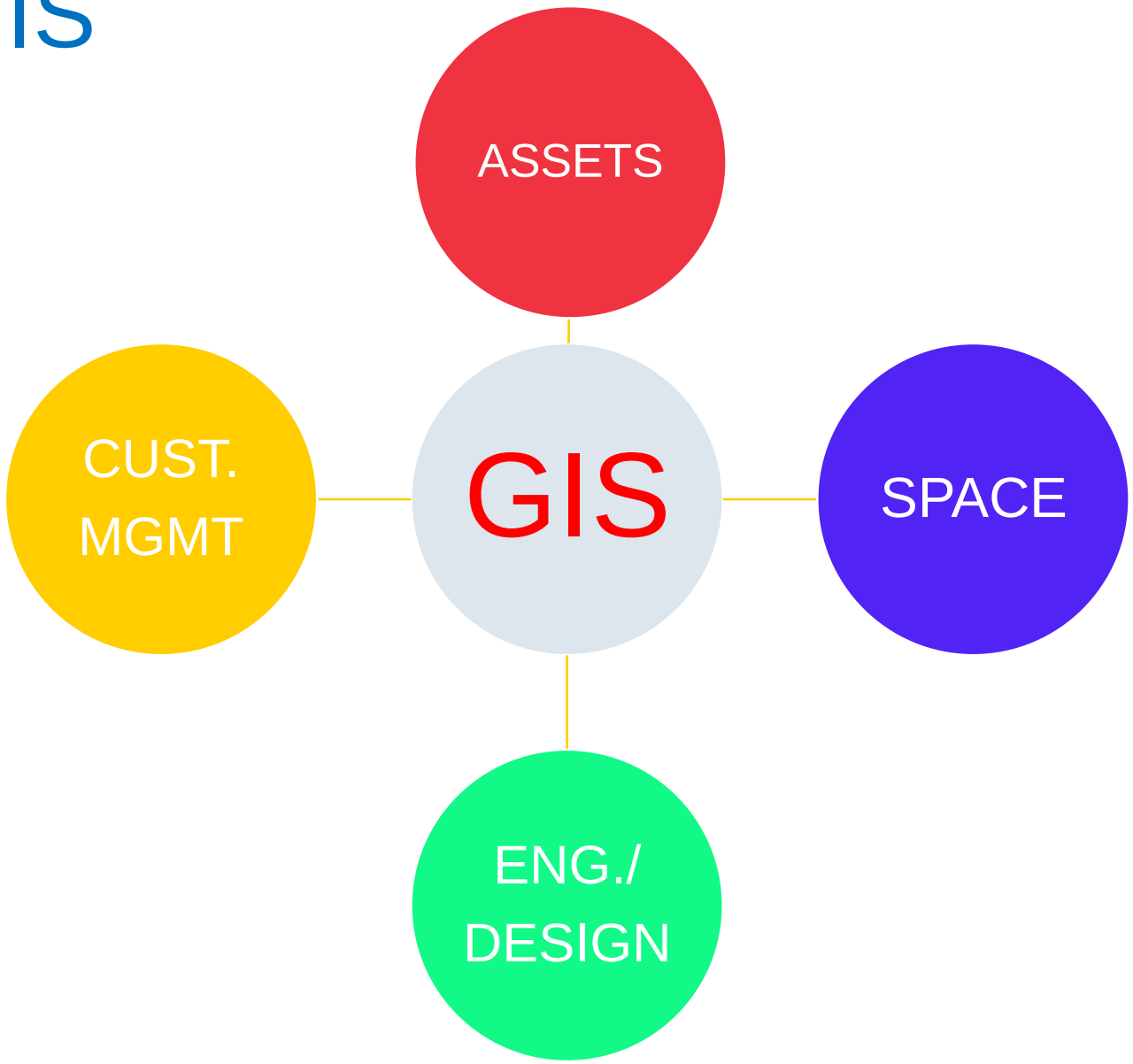
- Infrastructure
- Energy
- Transit & Mobility

Operations & Maintenance

- Service Request location?
- How much work is completed (# of requests, costs, etc.)?
- Backlog quantity?
- Resource gap?

Connecting these functions – SPATIAL DATA /GIS

GIS -- integrative platform for management and analysis of all spatial things



Cost Sharing

Different stake holders can share the costs of the GIS investment

GIS- For Everyone

Goals of an EAM program

Align to Business Goals of the Organization

To provide the desired levels of service at the lowest life cycle costs

Key Strategies

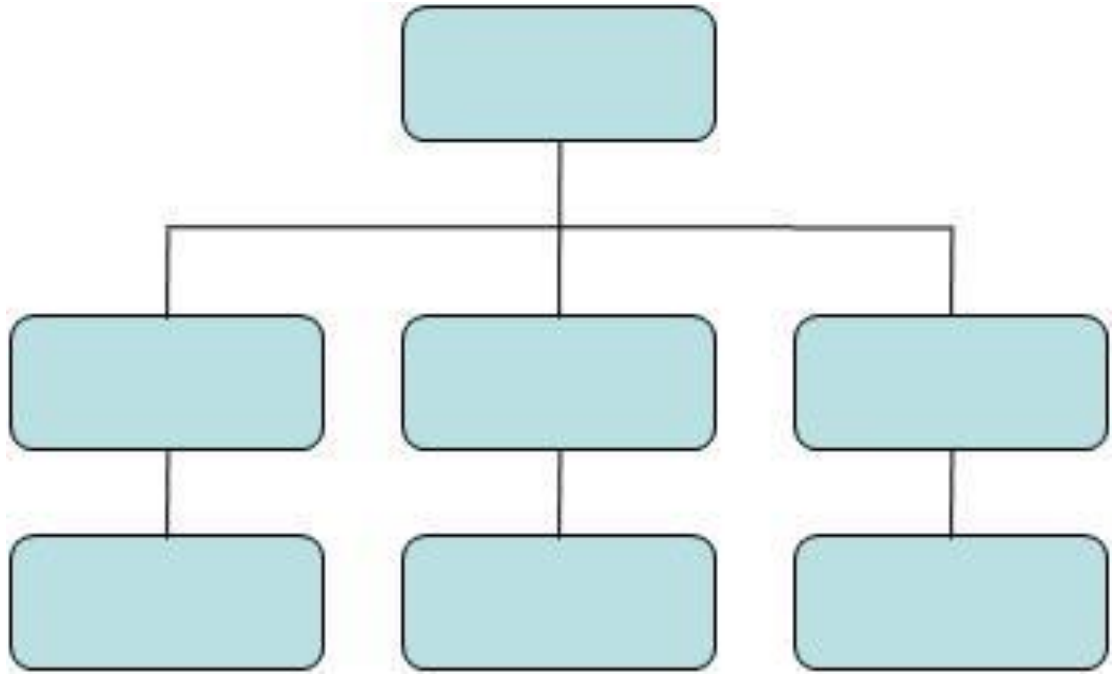
WHAT FITS THE ORGANIZATION NEEDS

The Way You Do Anything is the Way You Do Everything

Key Strategies

BUY-IN:

Upwards and Downwards



EVERY ACTIVITY . EVERY ACTION . EVERY DECISION

Key Strategies

PACE for implementation and adoption-

RESONATING WITH RESOURCES AND ORGANIZATION

Key Strategies

Capacity Building

Training

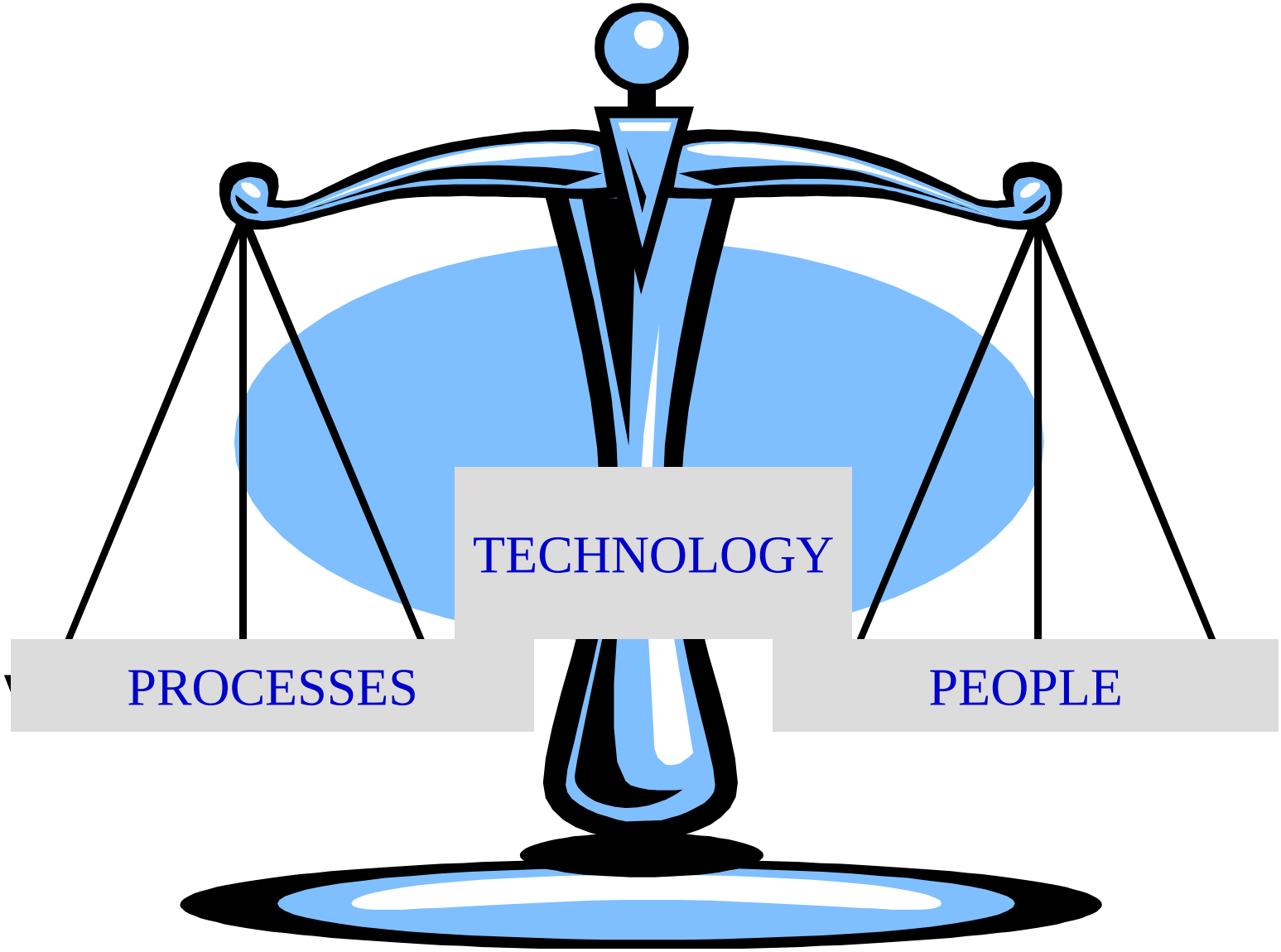
Mentoring

Key Drivers

- Compliance, Mandates
  - Financial Reporting and Health, GASB34, Audits
  - Environmental, NPDES,

- Standards
  - **WHAT TO DO** Not HOW TO DO
  - ISO 55000

The Balancing Act- Competing Needs & Interests



Successful OR Effective?

Being EFFECTIVE

- Manage Risk / Safety
- Cost Efficiency
- Quality

Quick Numbers

- How much work done?
- Backlog?
- Resource Gap

Quick Numbers

- Cost of Service
- Overtime

  &

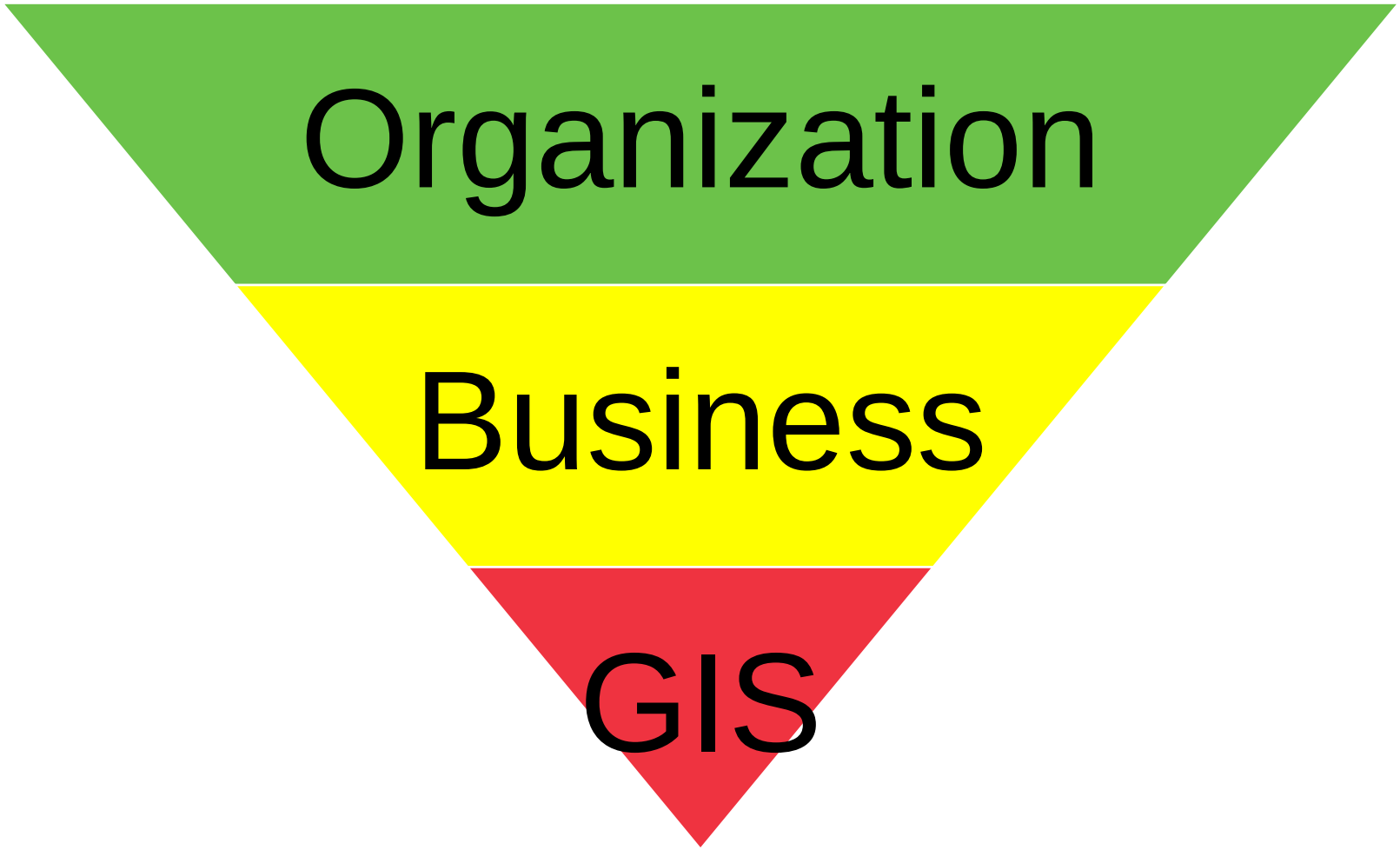
  Approved Budget

Measuring Progress - Generating KPIs

Metric	*Definition*	*Target*
Availability	The portion of time that a plant or major system is available for producing output of the required quality and quantity	99%
% Failure analysis	The portion of equipment downtime events that undergo a thorough analysis of failure modes, effects, and root causes	85 – 100%
% Planned work	The portion of corrective maintenance work hours that are planned and scheduled in advance (not unplanned breakdowns)	85 – 95%
% Overtime	The portion of maintenance work hours that are performed at an overtime rate	5 – 8%
Relative maintenance cost	Annual maintenance spending as a percentage of asset replacement value of the plant being maintained	1.5 – 2.5%
Technician productivity	The percent of work hours spent on productive activities versus nonproductive (rework, waiting for parts, etc)	70 – 85%
% Rework	The portion of maintenance work that has to be redone due to poor installation, shoddy workmanship or incorrect diagnosis	2 - 5%

Asset management is a continuous process

ROI - Path of Greater Organizational Value



Questions ?

THANK YOU

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