

Green IT Asset Management

What a CIO should know to manage enterprise desktop
carbon footprint?

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Overview

Environmental impacts to and of IT

Regulatory drivers, ethical considerations

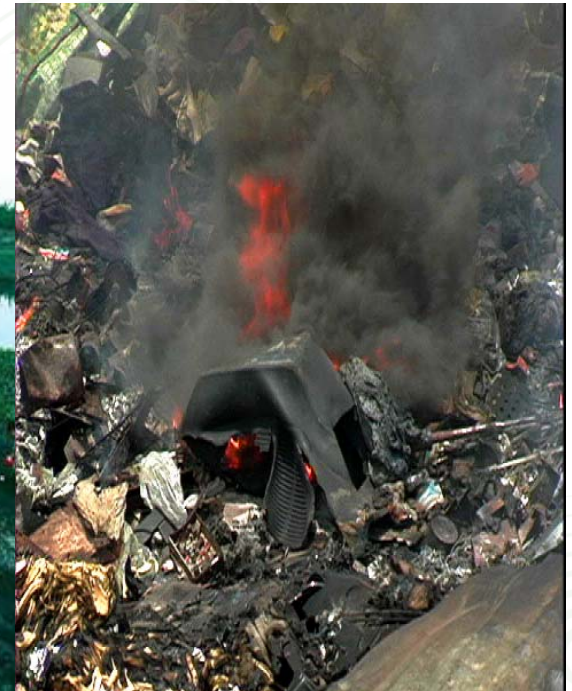
How does the state CIO navigate these constantly evolving issues and regulations?

What do standards such as EnergyStar, EPEAT and Climate Savers contribute to the process?

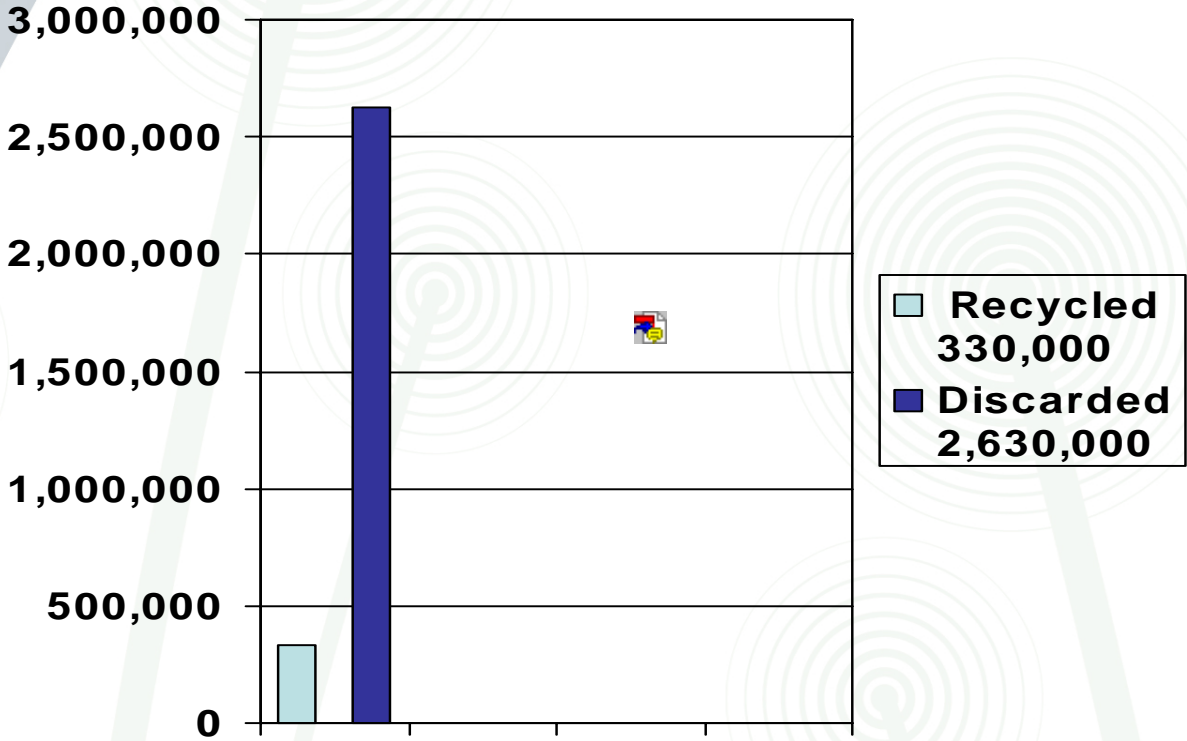
Guidance and best practices for managing IT assets in an environmentally responsible manner.

End-of-Life impacts

50 – 80% of US product 'recycled' is shipped overseas



US Tons Recycling vs. Disposal



87.5% of US e-waste landfilled or incinerated – only 12.5% recycled (US EPA 2005)

Hazardous Waste Creation

- Thousands of chemicals used in production and in the products themselves
- ~ 70% of the heavy metals (lead, mercury, cadmium) in US landfills comes from e-waste (US EPA)
- Heavy metals in landfills or dumpsites can leach into ground water

What is the IT user buying?

- Production and End of life impacts are unintentional – and sometimes invisible -- for purchaser
- Goal – to purchase information access, productivity management, communication tool
- Reality – purchasing a box of toxics, with immense impacts on the world throughout its lifecycle

Resource Extraction - Mining

- 7 to 10% of world energy consumption
- Vast amounts of capital, energy, water, human resources
- #1 industry sector in US for toxics released

Resource-Intensive Manufacturing

Manufacture of a desktop PC and monitor uses

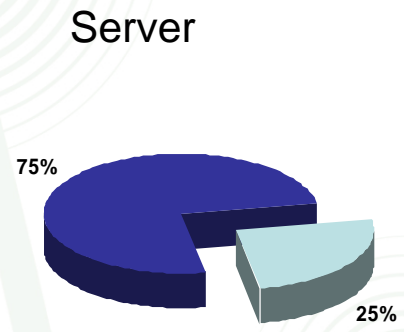
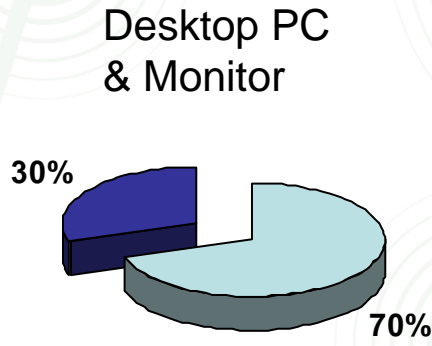
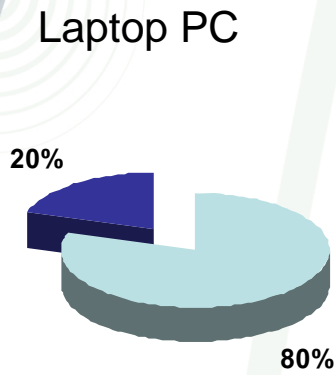
- 1.8 tons of raw materials
- 530 lbs of fossil fuels
- 1.5 tons of water and
- 48 lbs of chemicals

Resource Intensive - Manufacturing

- 70-80% of product's lifecycle carbon emissions
- Intense resource consumption – metals, petroleum, water
- Massive energy use
- Potential releases from manufacturing plants
 - Occupational health exposures
 - Hazardous byproducts and wastes

An estimated 70 – 80% of CO2 emitted over an electronic product's lifecycle is emitted during the production phase

Embodied energy



Embodied (light blue) In-use (dark blue)

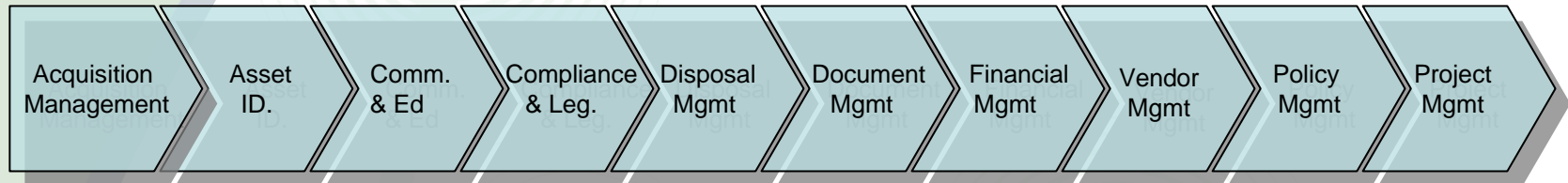
Embodied energy approximations courtesy of Martin Reynolds Gartner "Scalability and Sustainability, August 2008

Why Does Green IT Matter?

- Expanding number of e-products, customers
- Massive volume of e-waste generated
 - 400 Million units scrapped yearly in the US alone (Intl Assoc.of Electronics Recyclers)
 - Between 2004 and 2005, e-waste grew 8%, more than any other source (US EPA)

IT Asset Management

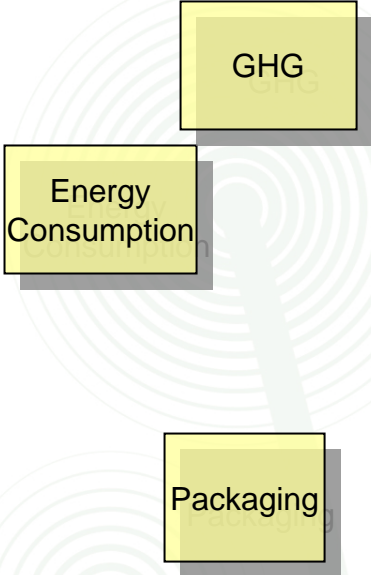
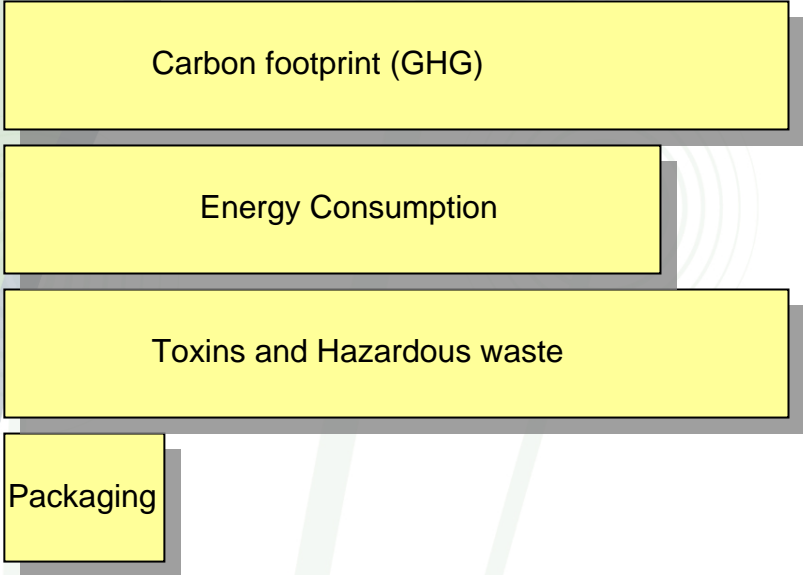
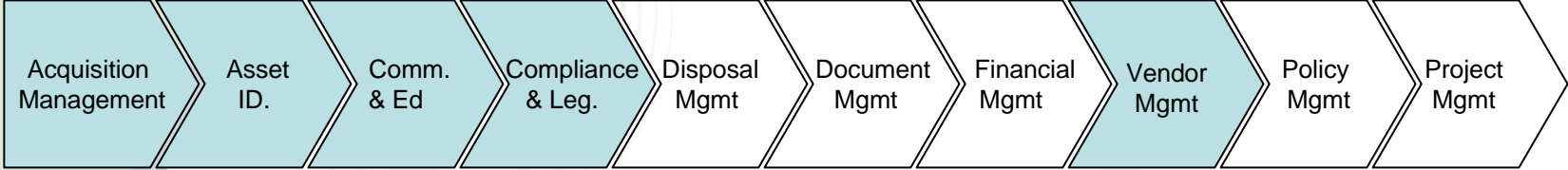
Key Process Areas



International association of Information Technology Asset Management

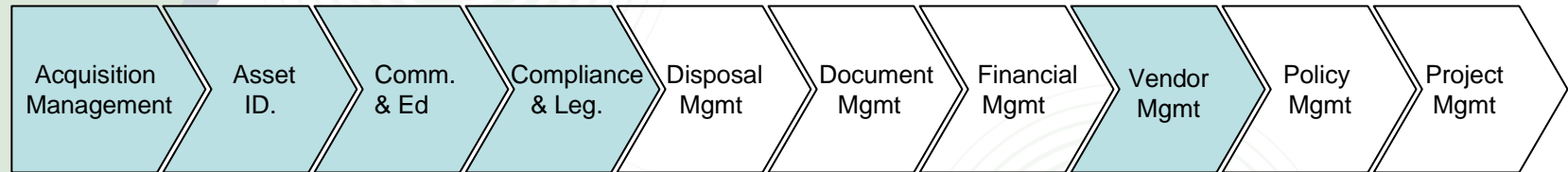
Definition - IT asset management (ITAM) is the set of business practices that join financial, contractual and inventory functions to support life cycle management and strategic decision making for the IT environment. Assets include all elements of software and hardware that are found in the business environment.

Green Activities within Key Processes



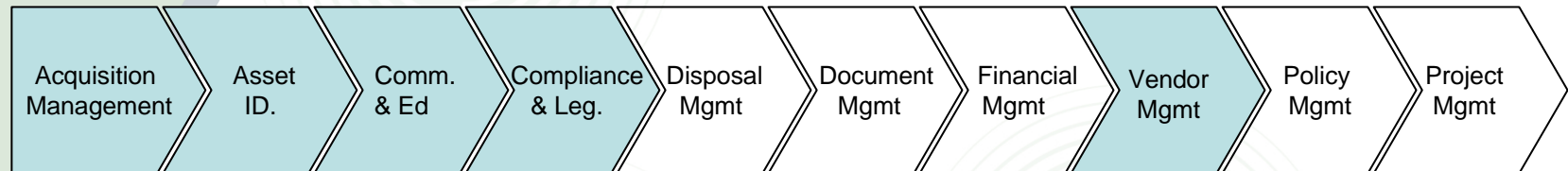
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Purchasing Strategy – Buy for eco-efficiency



- End of Life impacts begin with design
- Consistent purchaser demand drives market shifts
- RFPs/contracts can require documentation of:
 - Reduced toxic content
 - Post consumer recycled content
 - Lifecycle extension options
 - Greater ease of recycling
 - Take back program
 - EPEAT (Bronze, Silver, Gold)
 - Supply chain CO2 reduction goals/results

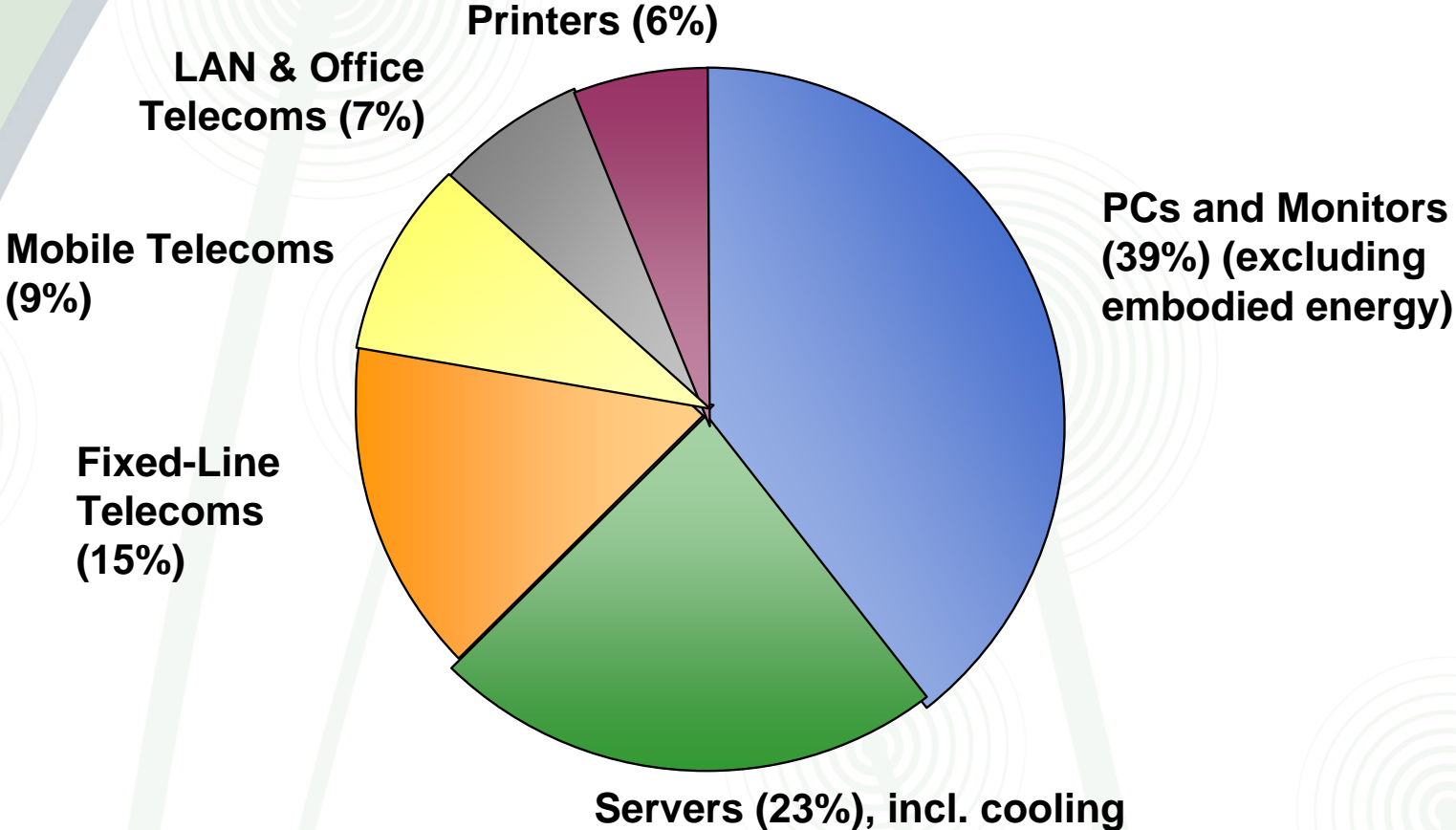
Purchasing Strategy – Buy for energy efficiency



Use phase energy consumption and CO2 have significant impact

- Conference with OEMs and chip manufacturers
- Standard desktop configurations
- ENERGY STAR ratings
- EPEAT (bronze, silver, gold)
- Climate Saver (PSU efficiency 80%,85%,88%,90%)

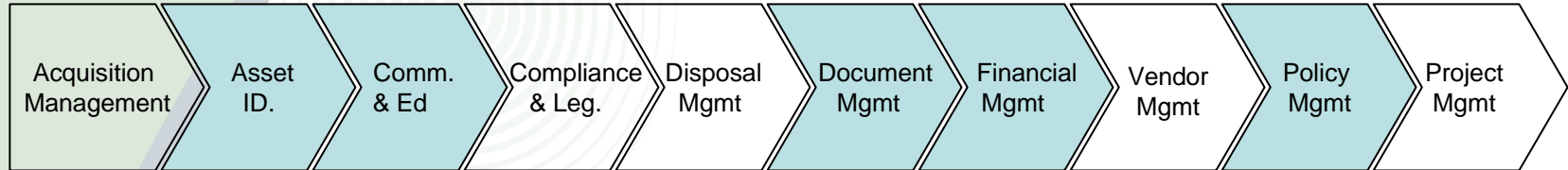
ICT's Global Carbon Dioxide Emissions



ICT approximately 2% of global CO2 emissions.

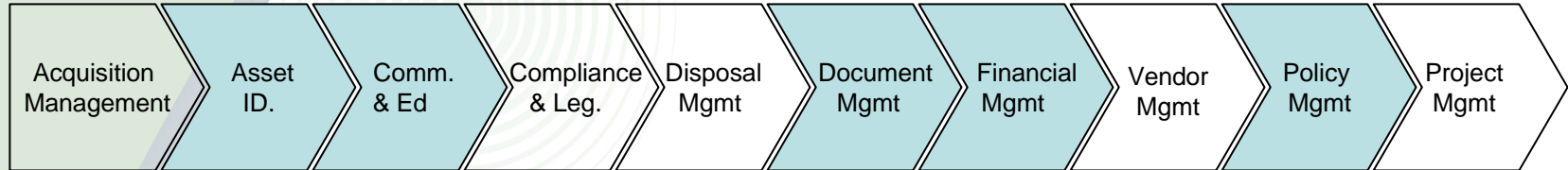
Research and graphic by Gartner, used by permission

Use Phase – Manage power consumption



- Inventory assets to determine baseline (energy and GHG)
- Develop power management plan - include refresh cycle
- Set Energy and GHG reduction targets
- Monitor and report
- PC power management

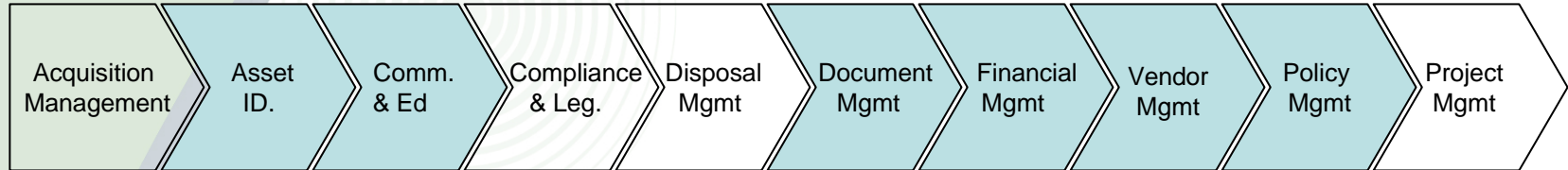
Use Phase – Manage power consumption



Passive Power Management

- Policy – guides behavior
- User education – powering off completely, no screensavers
- Activate PC power management settings – default time out after a period of inactivity
 - Switch off monitor (Energy Star 15 -30 min, Climate Savers 15 min)
 - Turn off hard drive (Climate Savers 15 min)
 - Put to sleep (Climate Savers 30 min)

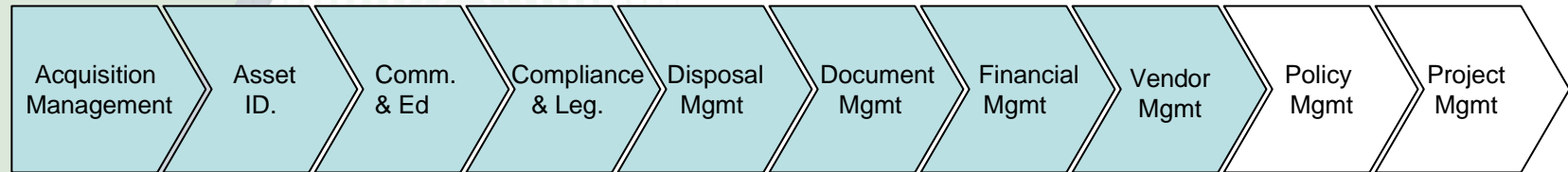
Use Phase – Manage power consumption



Active Power Management

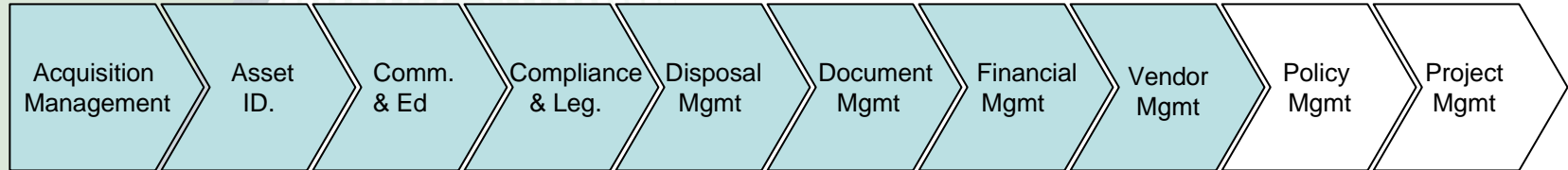
- Policy – establishes central management
- Current generation of chipsets and OS enable active asset management and controls
- Automated patching
- Consider virtual desktop
- Third party tools interact with chipset enabled consistent power management

Disposal – End of Life Impacts



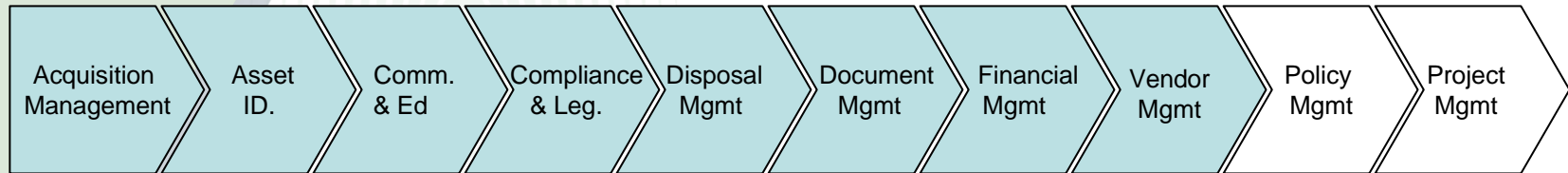
- Products disposed of before their useful life is through - based on perceived obsolescence, depreciation cycles
- Wasting the 70 – 80% embedded carbon invested in the product in production

Disposal – Concerns



- **Disposal to landfills or incineration – potential releases, legal issues**
- **Evidence of BFR, beryllium exposure to e-waste recycling workers**
- **Export of hazardous materials to developing nations**
 - **Poorly, or un- regulated recycling facilities**
 - **Occupational exposures, child labor**
 - **Severe contamination from improper treatment**

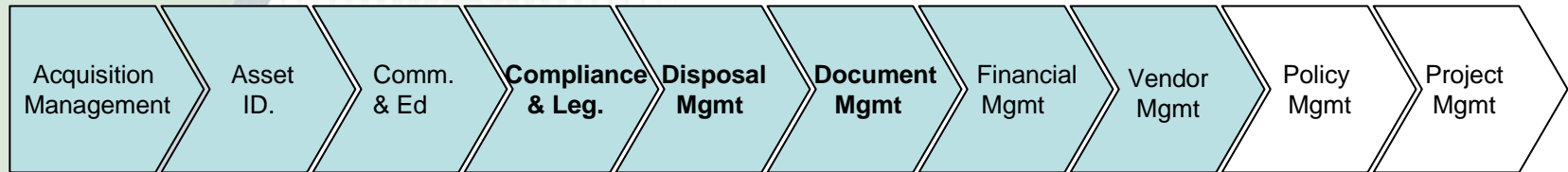
Disposal - Manage End of Life



Conserving Value (70 – 80% CO2)

- Optimize by redeploying within the organization
- Refurbish/resell with proper data storage destruction
- Donate – ensure data destruction and verify working status
- Third Party Asset Disposition (Service contract) may be the best approach

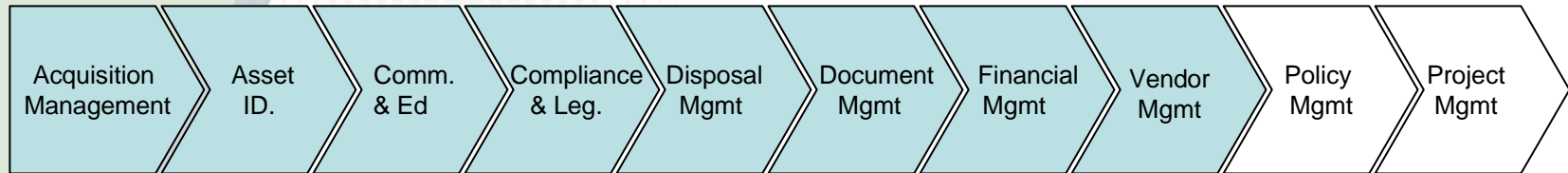
Disposal – Manage Recycling



Recycling

- **Due diligence regarding compliance**
- **Require certification of compliance**
- **Review of any export for legality, sound processing**
- **Notification of any changes in service subcontractors, product destinations**
- **Full asset tracking by tag down to component level**

Disposal - Manage End of Life



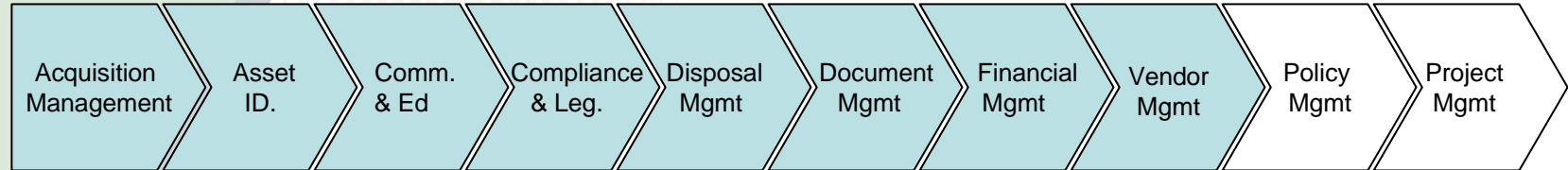
Takeback

Establish as part of purchase price for reliable TCO (buying and selling)

- Due diligence regarding compliance
- Require certification of compliance
- Recycling compliance as above
- Full asset tracking by tag down to component level

NOTE: State Takeback programs may not cover state governments

Disposal – Manage Data Security



Security

- Storage devices – cleaned or pressed?
- Standards - Security NIST Guidelines for Media Sanitization – Special Publication – 800-88
- Audit –process and storage device cleaning or destruction
- Certification of destruction
- Chain of custody

Barriers and Opportunities



Economics Encourage “WMPs”

- **Product redesign (if undertaken on a ‘custom’ or small-scale basis) costs money and can add to product price**
- **Regulatory and health protections cost money, reducing payment to, or requiring payment from, customers**
- **Recyclers shipping into the scrap market will often pay for e-waste**
- **Majority of brokered waste will be shipped to developing countries for lowest cost processing**
- **Informal recycling sector does not return clean materials for reuse (just extracts high value metals)**
- **States often have dispersed or unsupervised disposition at EOL – ebay, surplus property sales – to recapture value**

Purchasing - EOL Management Disconnect

- Lack of communication between Purchasing and Waste/Compliance staff
- Purchase contracts establish refresh rates based on depreciation cycle
- Minority of contracts include EOL takeback provisions
- Disposition contracts cover legal compliance but often do not require BMPs

Drivers for Change

Purchasing

- US Federal Government
- States – Massachusetts, California, Minnesota
- Cities – San Francisco, Denver, San Jose, Phoenix
- Health Care organizations – Kaiser Permanente, Premier
- Educational institutions – U. California,
- Enterprise – McKesson, major financial firms

Legislative/Regulatory

- EU – Reduction of Hazardous Substances, WEEE
- US state takeback, landfill bans, etc

Ongoing Design Changes

In response to legislation/policy/purchasing:

- Reduced toxicity (RoHS)
- Reduced energy usage (ENERGY STAR)
- Design for efficiency – modularity, reduced materials
- Increasing reuse of plastic resins
- Increasing lifespan
- Reducing size
- Reducing or reusing packaging

Key Standards/Measures

- ENERGY STAR www.energystar.gov
- Standards for desktops, laptops, monitors, printers
 - Draft standard for servers
- EPEAT www.epeat.net
 - Standard for desktops, laptops, monitors
 - Printing devices, Server standards under development
- E-Stewards Pledge www.ban.org/pledge1.html
 - Pledge for responsible recycling
 - Addresses worker safety, export, asset tracking
- Climate Savers www.climatesaverscomputing.org
- Manufactures and users
 - PSU efficiency for Desktop, laptops and servers

EPEAT

- One-stop-shop for purchasers
- 51 environmental performance criteria – 23 required, 28 mandatory
- Required include ENERGY STAR, RoHS, takeback and recycling
- Three tiers – Bronze, Silver, Gold – based on percentage of optional criteria met

EPEAT

- Developed in a stakeholder process supported by US EPA –
- Purchasers involved - Massachusetts, Minnesota, Oregon, Seattle, Feds
- ANSI accredited, IEEE 1680
- Sets a common environmental performance "yardstick" for products
- Designed to be updated regularly (2009)

Moving the Market

- Federal Acquisition Regulations EPEAT requirement
- Estimated \$60 billion+ in contracts
- 28 manufacturers, 800+ products (market models)
- Unified demand creates competition – 60% Silver, 15% Gold
- www.epeat.net

Contact

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