

A pair of hands is shown holding a glowing green globe of the Earth. The globe is the central focus, with the continents of North and South America visible. The hands are positioned around the globe, with fingers gently gripping it. The background is dark and out of focus.

Workshop 2011 of the Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes

Nov 29, 2011

Sustainability in Operations

Francis Cheong

Senior Sustainability Manager, APAC

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NOKIA
Connecting People

Criteria on Selection of ESM Facilities

Nokia Process



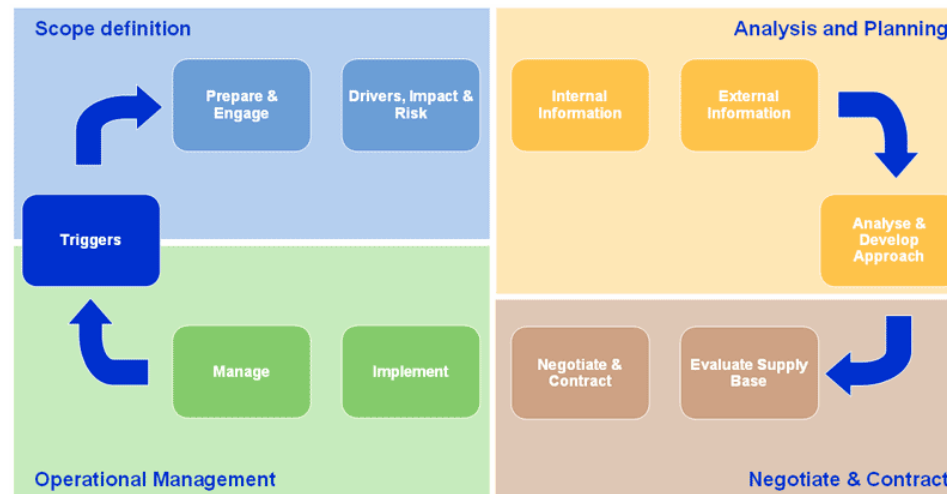
Selection of E-Waste Recycling Companies

- **Nokia operates according to internal sourcing process to manage e-waste recycling companies**

- This ensures that Nokia selects, assesses and makes contracts with recycling companies that fulfil Nokia's requirements, comply with relevant legislation and operate according to requirements in international standards (ex. ISO14001)

- **Main steps in sourcing process**

- Scope definition (geographical area and local needs, logistics, covered materials)
- Analysis and planning (benchmark, technology, current/new sustainability requirements, stakeholder requirements, market dynamics)
- Negotiation & contract (evaluations, cost breakdown, contracts)
- Operational management (working meetings, reviews, self-assessments, site visits, reporting)



Evaluation and site-visits by multi skilled team

• Commercial/financial evaluation

- *by Nokia Sourcing Specialist*
- Turnover, financial rating, country risk rating, financial performance ratios
- SOX perspective
- Insurances
- Local legal consultancy (compliance to local environmental legislation / permits and licenses)

• Operations evaluation

- *by Nokia Environmental Specialist*
- Processes (end-to-end understanding)
- Subcontractors; length of downstream supply chain
- Environmental impacts and improvement programs
- Scope / coverage
- in case of multi-site supplier, cover majority of sites
- Reporting capability; Liaison Officer / Account Mgr role

• Security evaluation

- *by Nokia Security*
- Camera surveillance
- Closed areas
- People management

• External evaluation

- *by external company*
- Environmental and social performance
- Sparring of the Nokia evaluation process



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Reporting and Operational Management

- **Site visits**
 - Nokia templates
 - Meeting reports
 - Development needs
- **Running Reports for each pick-up**
 - Mass balance
 - Invoice
 - Certificate of destruction
- **Quarterly reporting to central reporting system**
 - Consolidate data
 - Allows internal analysis of global data



NOKIA Please send the report to recyclingreports@nokia.com

Settlement Report

Vendor Name

Reporting period

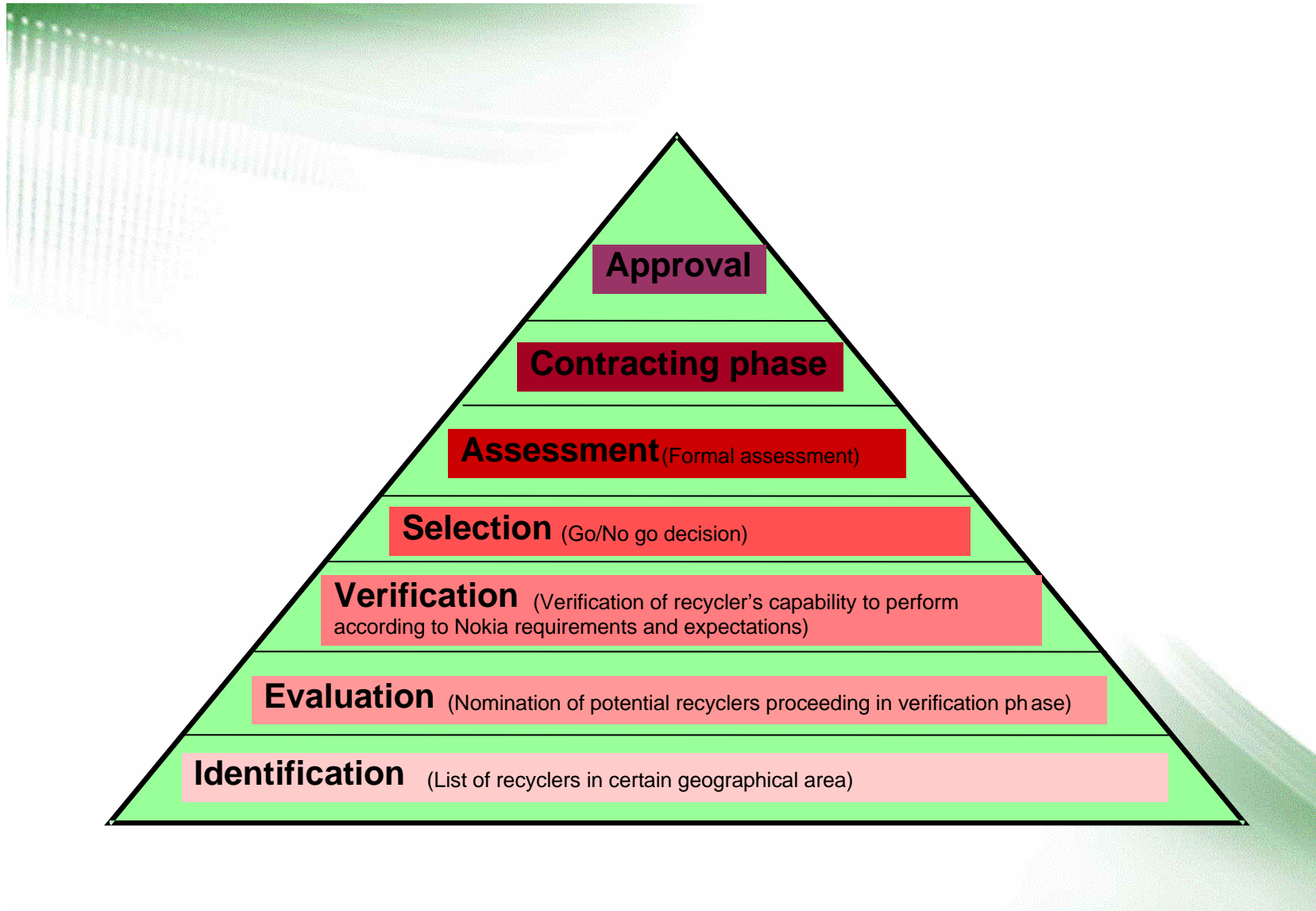
Filled by

Vendor Information Source

Received Material Report

Nokia Source	IO-Number	Handsets	Batteries	Accessories	Other

7 Steps to New Approved Nokia E-Waste Recycler



Step 1 Identification

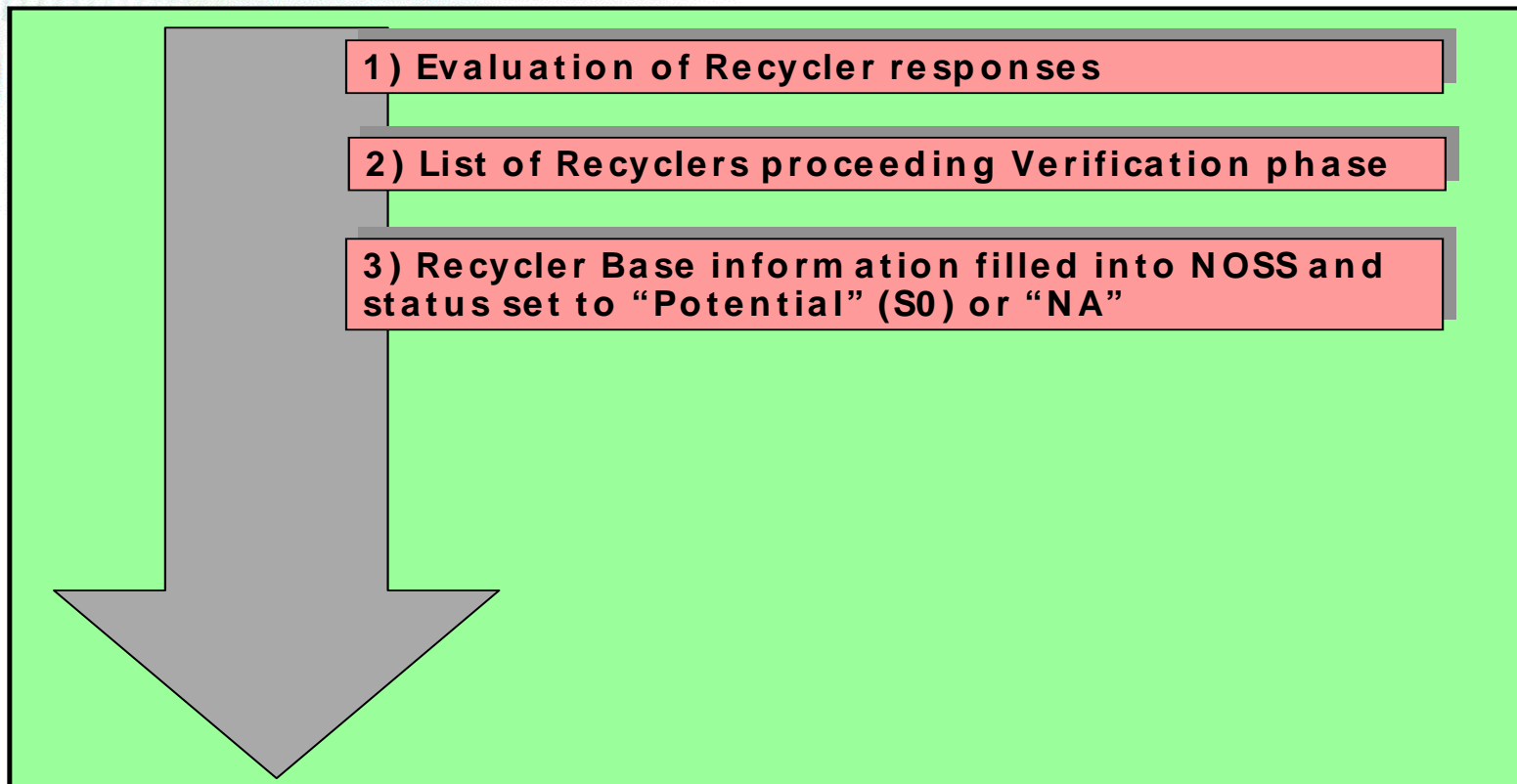
- Identification phase output:
 1. Service Supplier Manager and Team nominated
 2. List of potential recyclers
 3. Recycler pre-questionnaire sent

Identification Phase



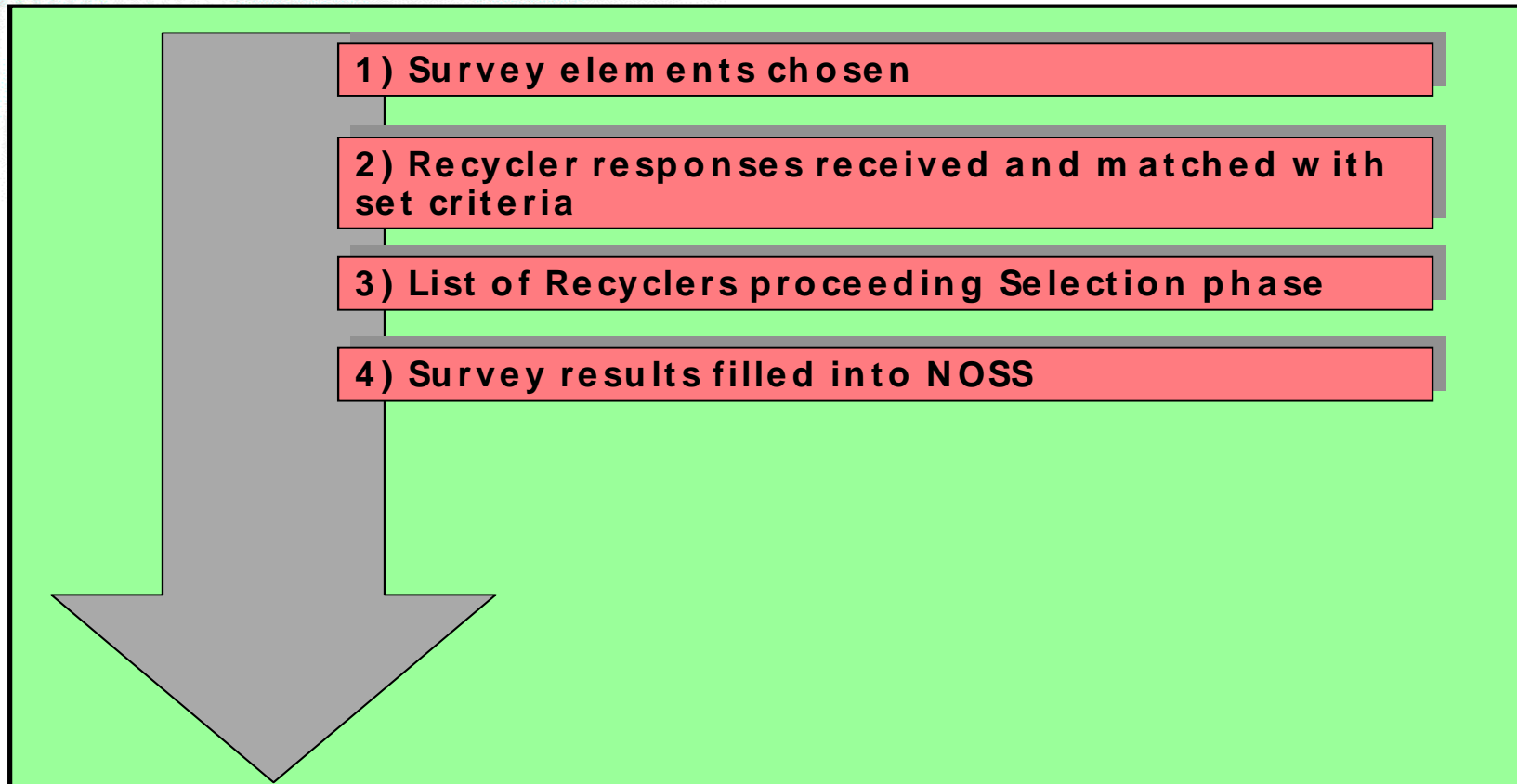
Step 2 Evaluation

Evaluation Phase



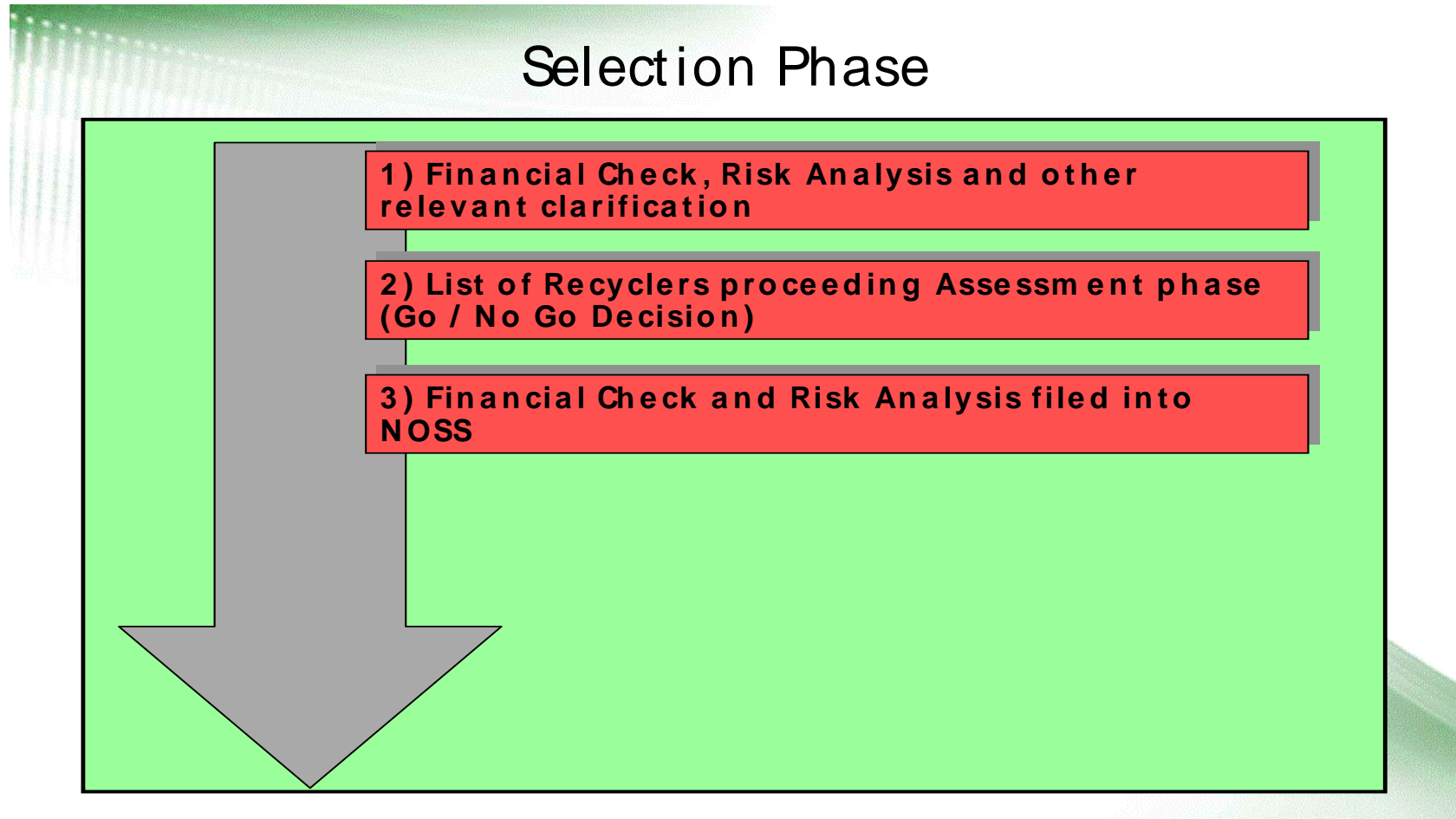
Step 3 Verification

Verification Phase



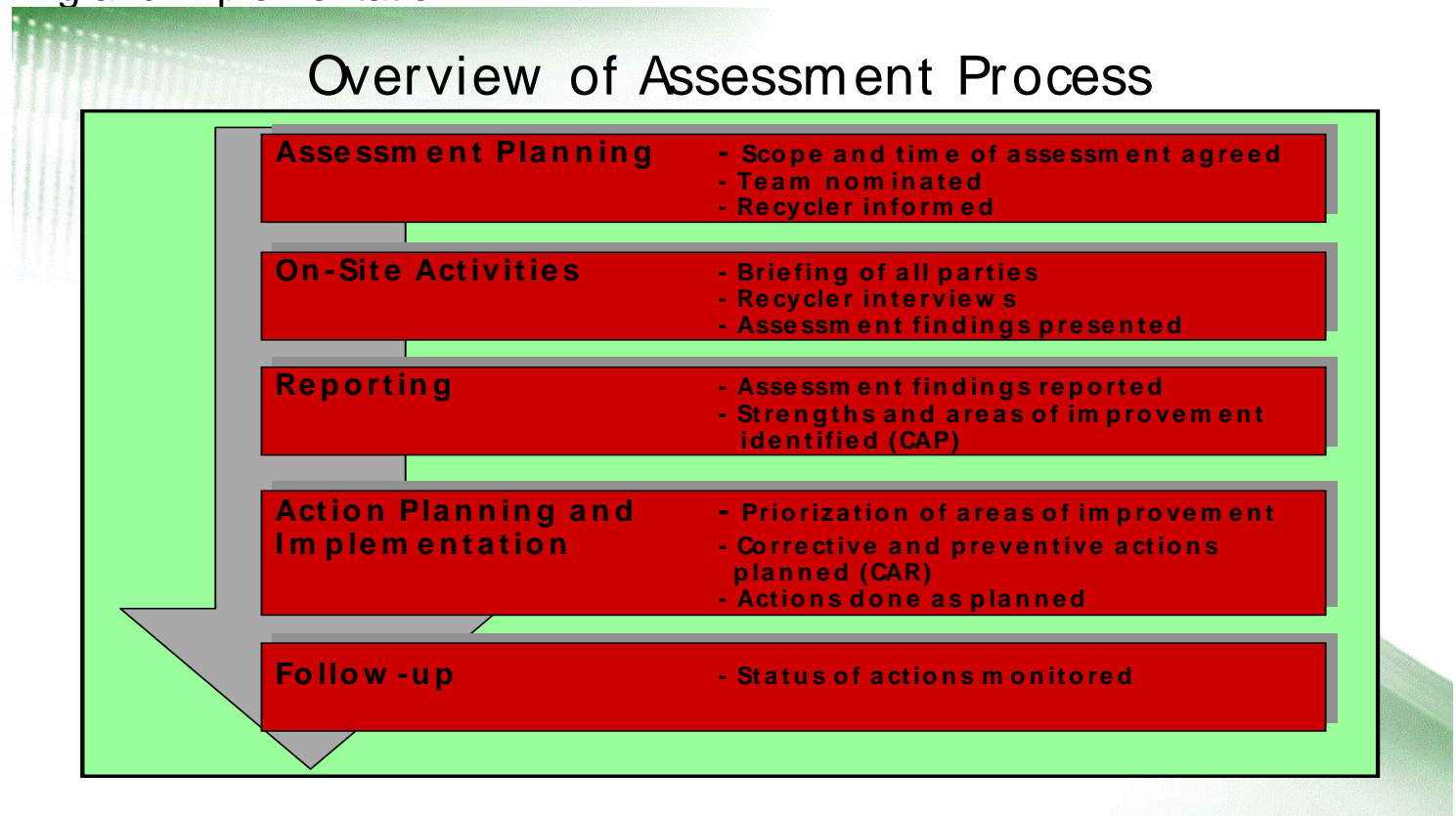
Step 4 Selection

- Selection Phase output:
 1. Financial Check and Risk Analysis done and other relevant clarifications completed
 2. List of recyclers proceeding to Assessment phase (Go/No-go decision)
 3. Financial Check and Risk Analysis filed into NOSS



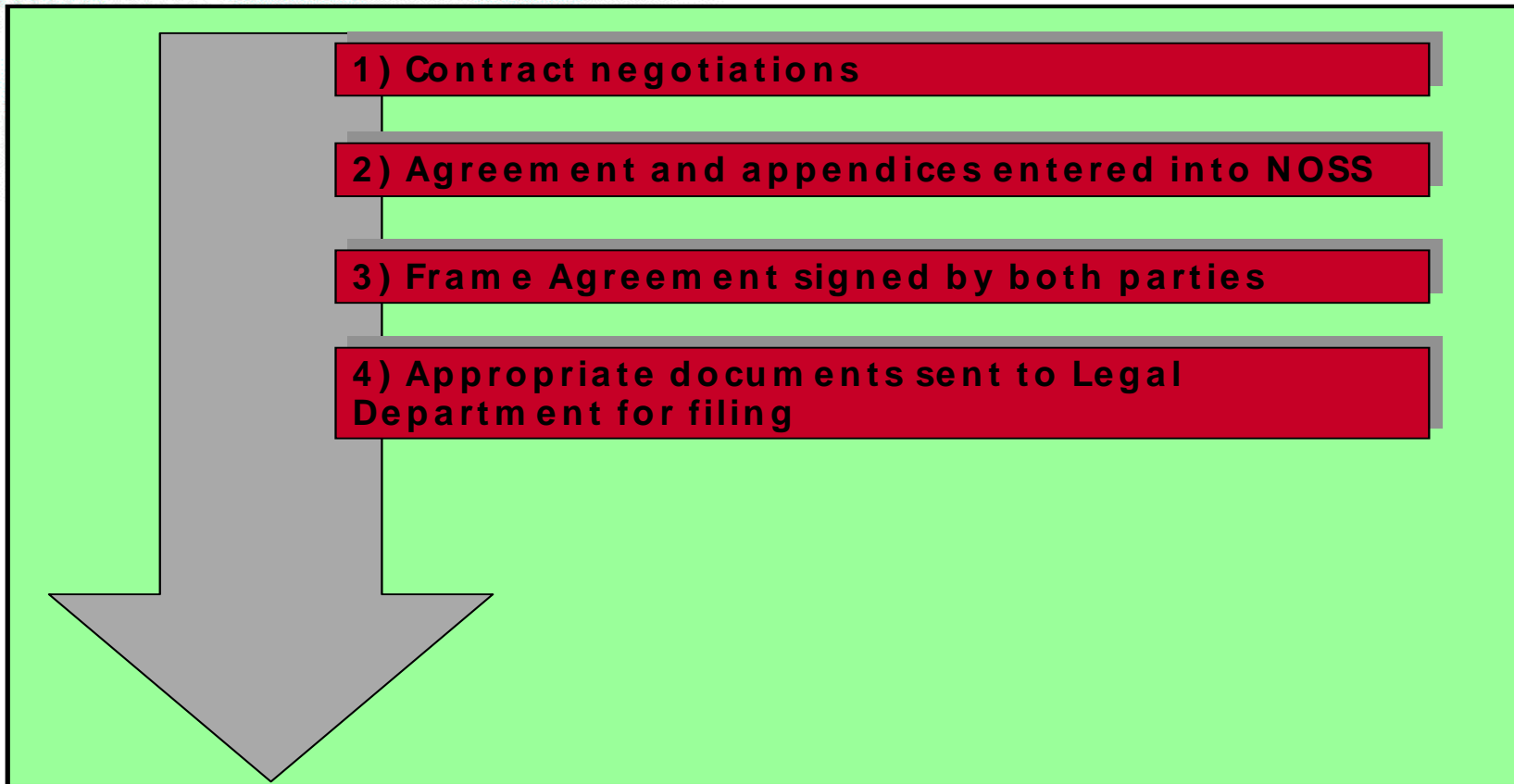
Step 5 Assessment

- The assessment process includes following phases:
 - Assessment planning
 - On-site activities
 - Reporting
 - Action planning and implementation
 - Follow-up



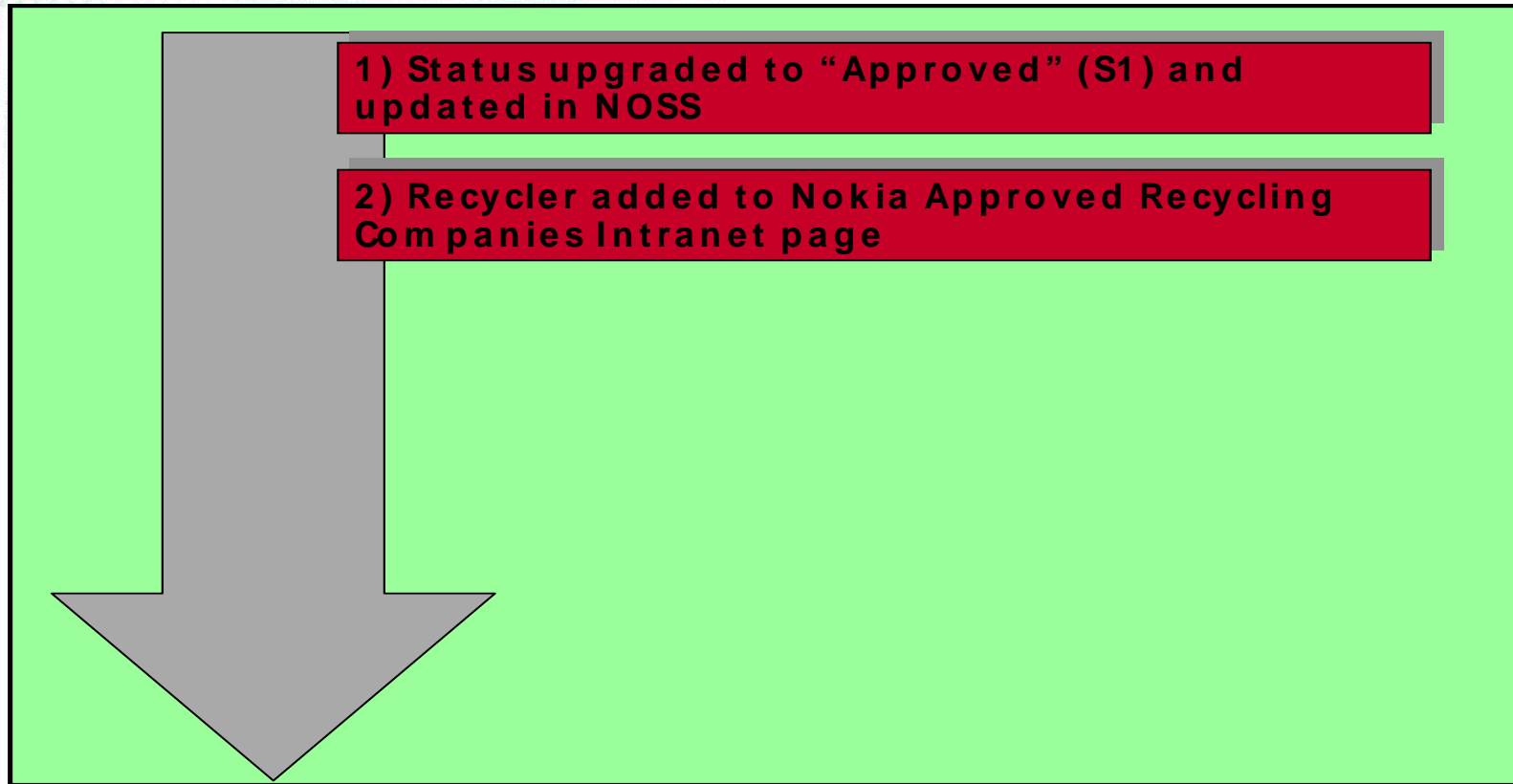
Step 6 Contracting

Contracting Phase



Step 7 Approval

Approval Phase

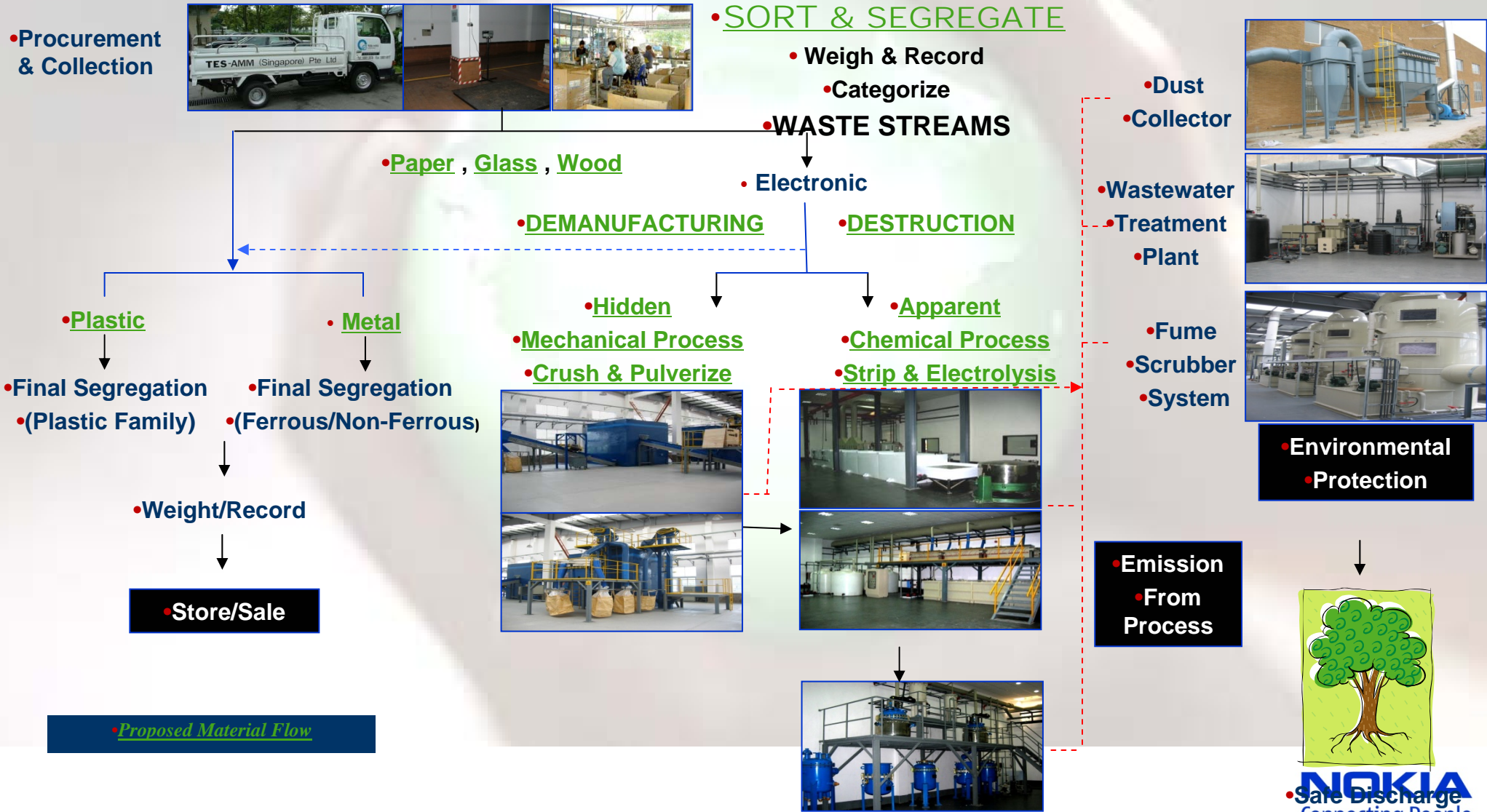


Type of ESM Facilities

There are basically two broad type of recycling processes available for e-wastes:

- Pyro-metallurgy - the use of heat for the treatment, includes smelting and roasting. It involves heating in a blast furnace at temperatures above 1500°C to convert waste to a form that can be refined.
- Hydro-metallurgy - sometimes called leaching, involves the selective dissolution of metals from their waste. It involves the use of aqueous chemicals and much lower temperatures to separate metal. Metal is recovered by electrolysis of the solution

Typical Process Flow Using Hydrometallurgy



Proposed Material Flow

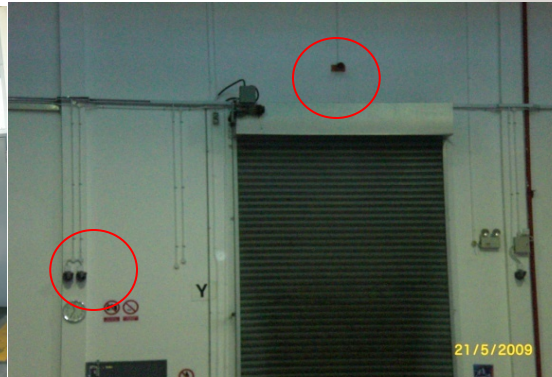
Key Criteria of ESM Facilities For Brand Owners

- **Security – Physical & IP Protections**
- **Pollution Control Systems**

Physical Security - CCTV Security Monitoring

High-End Security System

24/7 106 units CCTV Surveillance / Recording
Archive up to 90 days ; High Resolution Infra-Red Camera



•Employees/Visitors Flow

- Monitoring Traffic In and out of premises

•Incoming/Outgoing

- Materials
- Loading/Unloading
- Weighing

•Internal Storage/Segregation

- IP Sensitive Scrap
- Pending Segregation Process

•Mechanical Crushing

- Conveyor Feeding
- Crushed Materials
- Discharged

Security Checkpoints

Stationing of Security Personnel at entry / exit points



Main Gate



• Warehouse entrance



• Forklift entrance



• Segregation entrance



• Crushing entrance

Security Access Control

• Interior Access Control System

- Employee Identification cum Access Badge

- Serialized Unique Access Badge with programmed Access Rights



- Plus Secondary Key control for authorized personnel

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IP Security - Hard Disk Data Wiping

Continued from previous page



If Data Wipe was chosen, Data Wipe will run automatically.



The bar code scanner will be used to fill the data to the erasure and hardware asset report

Switch off the computer

www.blancco.com

The report is sent to the central database and computer will be shut down



Power off the CPU and disconnect the hard disk

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Hard Disk Data Wiping

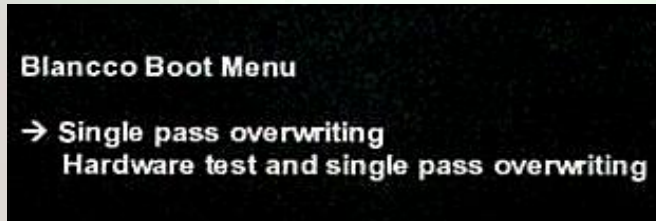
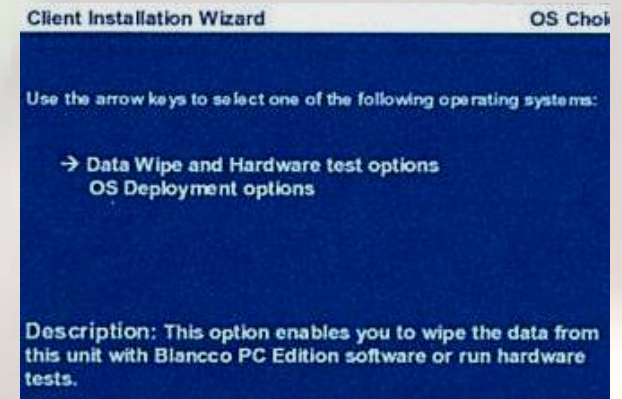
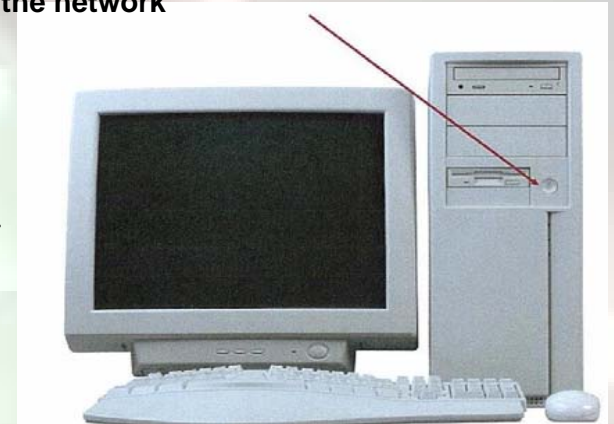
- Connect the target Hard Disk to the CPU



- Power up the CPU



- Computer is booted from the network



- The chosen software image will boot



- If Data Wipe/ HW is chosen, then choose which operation to perform

- Choose either Data wipe/ HW test or OS deployment options



Pollution Control System (Emission)



- Cyclone Dust Collector

Pollution Control System (Fume & Waste Water)



•Waste Water Treatment Plant



•Counter-Flow Wet Scrubber System

Mobile Phone Recycling



Nokia Corporation

Mobile Phone Recycling

- 9% reported to recycle at 2011 (global average)
- Lack of awareness on where and how to recycle and keeping the spare phone are the main obstacles for not recycling
- Nokia phones can be fully utilized in environmentally safe and efficient recycling process – nothing goes to landfill
- Nokia offers take back for obsolete phones in almost 100 countries



Nokia's Take back Programs

Permanent services for consumers

- Nokia Service Points
- Electronics waste producer associations in EU27 countries + Australia + Canada
- Customer cooperation China and LTA
- Free postage in China, Singapore, Australia, USA, Finland, Norway
- Take back bins at Nokia branded retail

For Nokia Employees

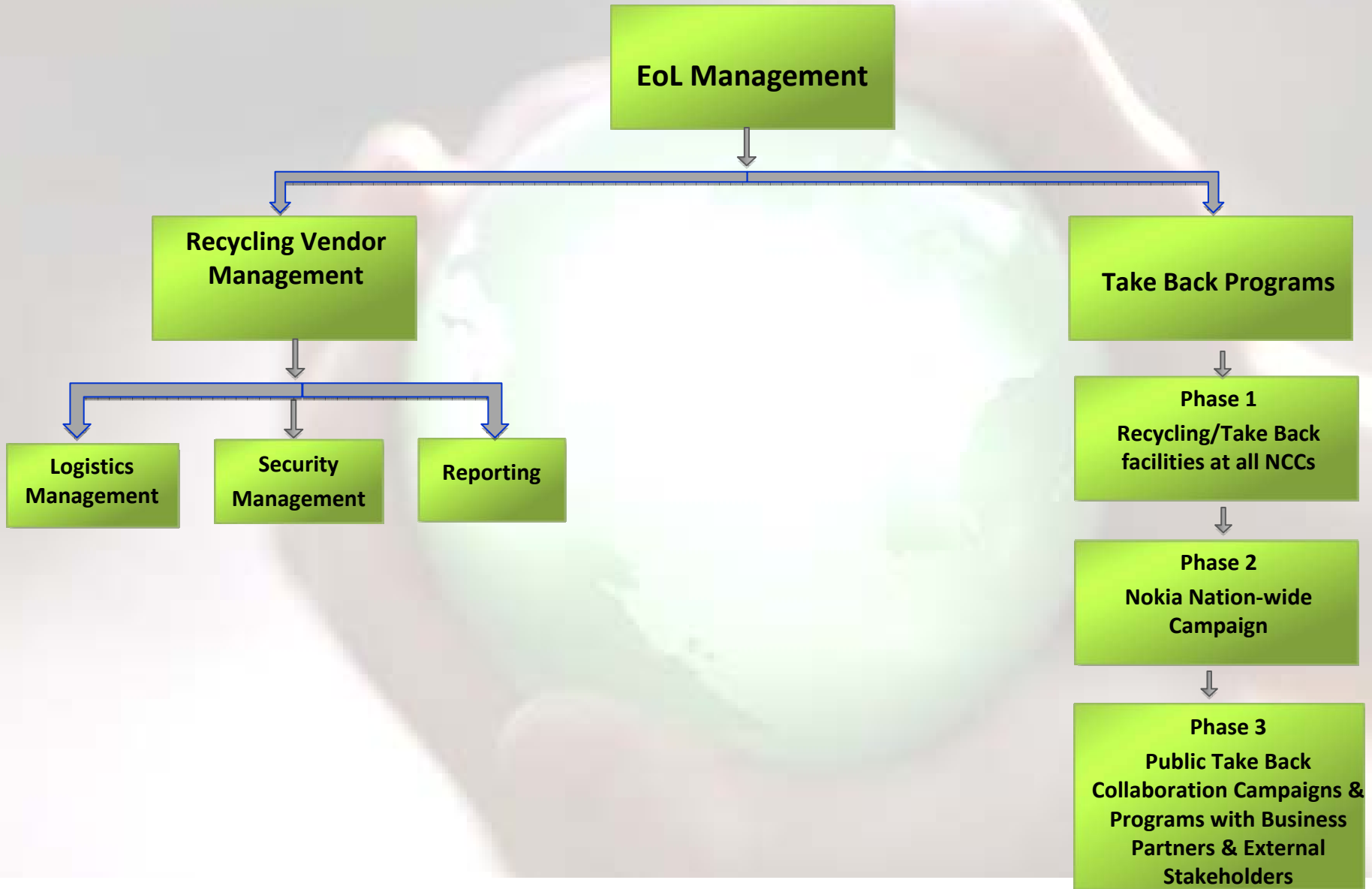
- Take back bins at large Nokia office lobbies

Take back campaigns

- Country campaigns: China, Vietnam, Thailand, Malaysia, Singapore, Indonesia, Philippines, Australia, Latvia, South Africa, UAE, India etc.
- Take back at Nokia events (Nokia World, AGM-annual meeting, MWC)
- Cooperation with schools& universities, NGO's, suppliers, customers and retail
- Social media (Twitter I # recycling, You Tube...)



Nokia EoL MANAGEMENT



A hand holding a globe with green grass in the foreground. The background is a soft, out-of-focus light green. The text is centered and reads:

**Summary of
Take-back and Recycling Campaigns and Events
planned, directed and managed
in Southeast Asia and Pacific
2009 – 2011**

SEAP Take-back & Recycling Campaigns and Events in 2011

Country with Nation-Wide Take-back & Recycling Campaign Launch:

- Singapore: **Postal Program** with Operator (SingTel) 11 shops
- Malaysia: **Recyclimpic** with Retailers and 7 major Malls in KL
Mobile Retail Road-shows at 11 States with 34 Nokia Dealers
Mobile Retail Road-shows II at 10 States with 32 Nokia Dealers
- Indonesia: **Give and Grow II** in 4 Cities, 50 Schools
- Philippines: **i-rEcover, i-rEcycle** with Operator (Globe Telecomm) 140 shops and 8 Ayala Malls
- Thailand: **PCD WEEE Can Do Project** with Future Park, Minebea & Chulalongkorn University

Country with Take-back & Recycling Events:

- Singapore: 10
- Malaysia: 8 Cleaner Greener Penang + 4 Other Events

Country with Take-back & Recycling Collaboration with External Stakeholders:

- Singapore: 10 Schools, Polytechnics and Universities
- Malaysia: TAR College and SMKDJ
- Thailand: Chulalongkorn University
- Australia: Mobile Muster collected 106 tones (790,000 handset and batteries) from July 2010 – June 2011



SEAP Take-back & Recycling Campaigns and Events in 2010

Country with Nation-Wide Campaign Closing:

- Indonesia
 - Vietnam
 - Philippines
 - Singapore and Malaysia Nokia Care Centers
- Recycle a Phone, Adopt a Tree Program

Number of Take -back & Recycling Events :

- Singapore: 11
- Malaysia: 5
- Thailand: 3 (Chulalongkorn University)
- Vietnam: 1 (Ho Chi Minh University)

Engaging Local Community in Environmental Conservation:

- Singapore: 7
- Temasek Polytechnic Planting Trip in Indonesia
Republic Polytechnic and St Hilda's visit to TES-AMM
DIW visit to TES-AMM
SEAP Media Recycling visit to TES-AMM
St Margaret's Secondary School Community Outreach
St Andres Junior College Community Outreach
Sengkang Family Day Out by NTU



SEAP Take-back & Recycling Campaigns and Events in 2009

Country with Nation-Wide Take-back and Recycling Campaign rolled-out:

- Thailand
- Philippines
- Vietnam
- Indonesia

Number of Take-back and Recycling Events :

- Singapore: 19
- Malaysia: 12
- Thailand: 4
- Bangladesh: 1

Number of Take-back and Recycling Partnerships with External Stakeholders (outside campaigns):

- Singapore: 9
- Malaysia: 4

