Efficient Lighting MVE capacity building

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Identifying Needs to Build MVE Capacity

Delivery of training and knowledge will require different activities

- Face to face
- Web-based
- Documentary

Need to identify knowledge gaps, specific country needs and determine most efficient delivery mechanism based on resources/time available.

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Training, knowledge delivery

Program till June 2015

- MVE infrastructure assessment report
- Training curriculum and delivery plan (based on identified gaps)
- 4 Guidelines on Best Practice MVE
- 6 Webinars and training sessions
- 4 MVE policy awareness and capacity building presentations at lites.asia

(Focussed on ASEAN and SPC countries but resources available to all countries)

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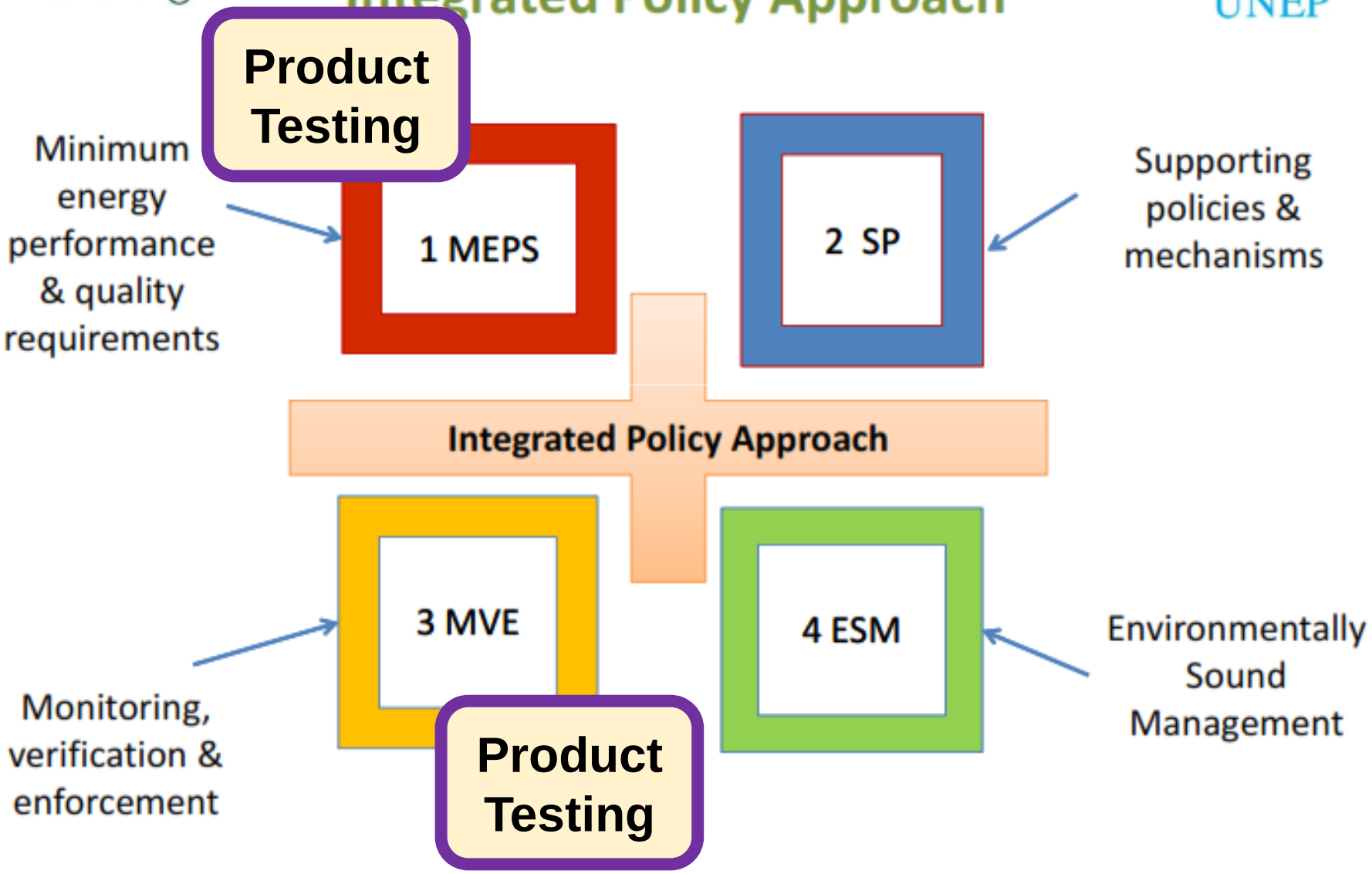
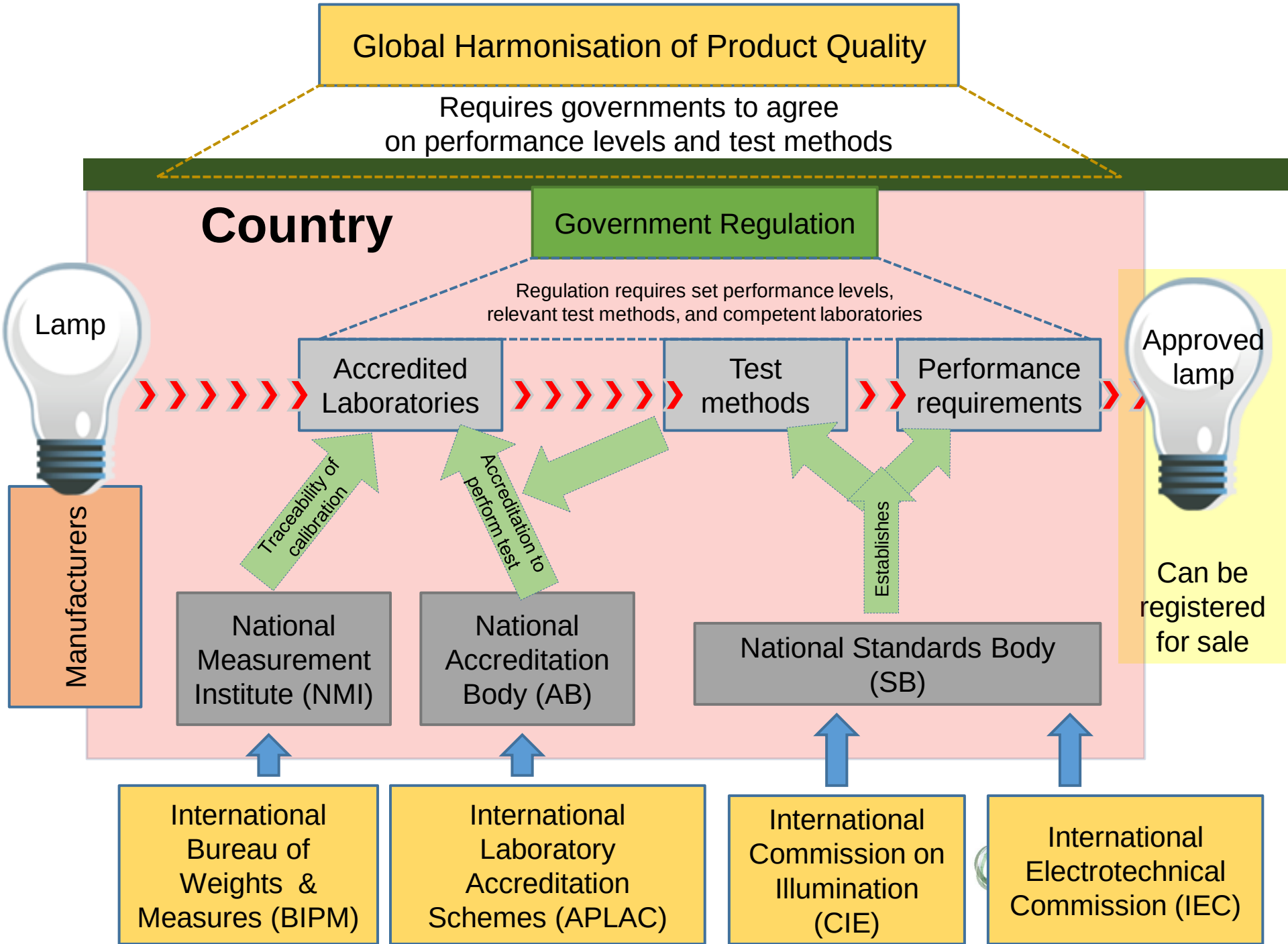
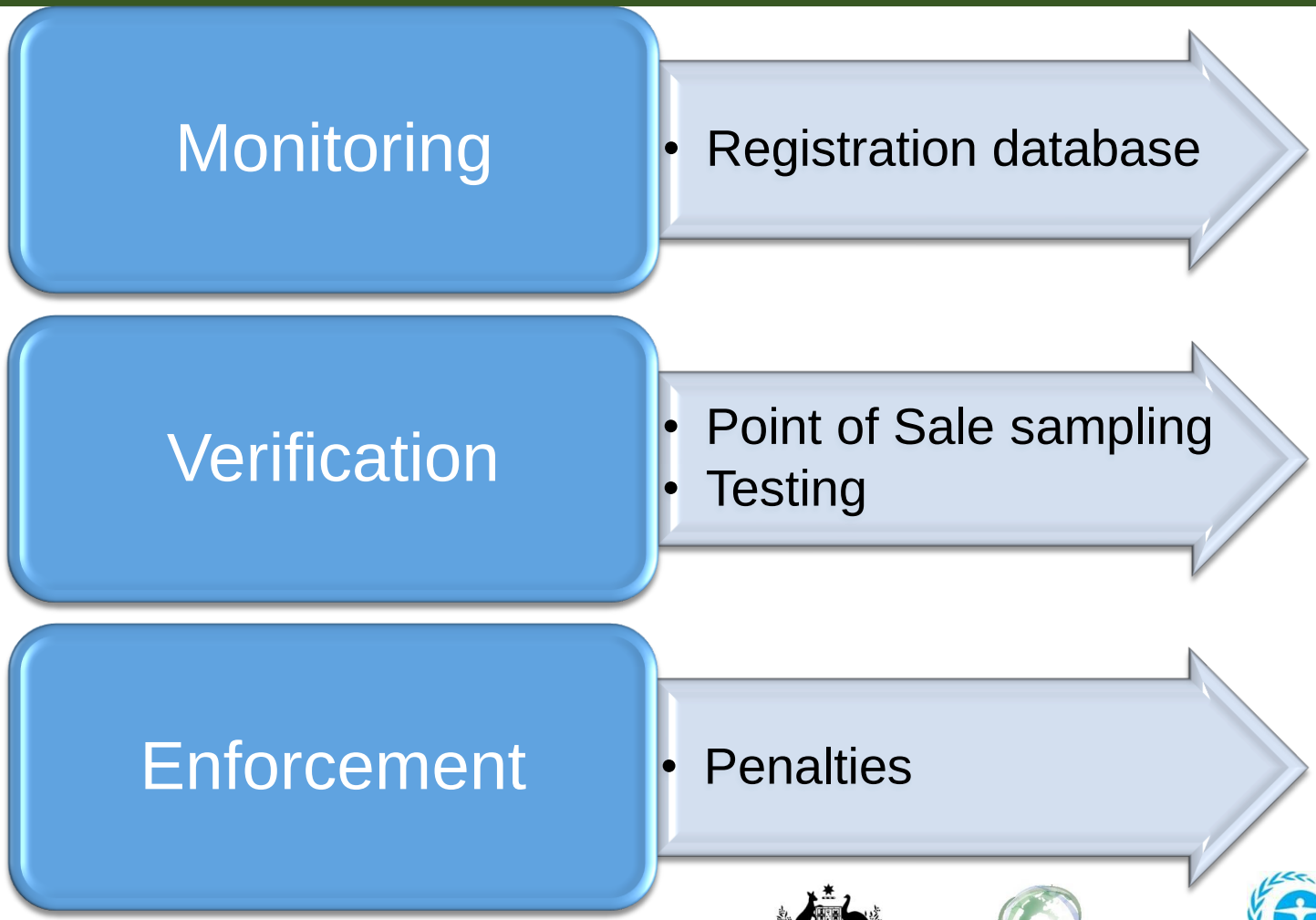
Integrated Policy Approach




Global Harmonisation of Product Quality
Requires governments to agree
on performance levels and test methods
Country
Government Regulation
Regulation requires set performance levels,
relevant test methods, and competent laboratories
Lamp
Manufacturers
Accredited Laboratories
Test methods
Performance requirements
Approved lamp
Can be registered for sale
Traceability of calibration
Accreditation to perform test
Establishes
National Measurement Institute (NMI)
National Accreditation Body (AB)
National Standards Body (SB)
International Bureau of Weights & Measures (BIPM)
International Laboratory Accreditation Schemes (APLAC)
International Commission on Illumination (CIE)
International Electrotechnical Commission (IEC)

Compliance program requires



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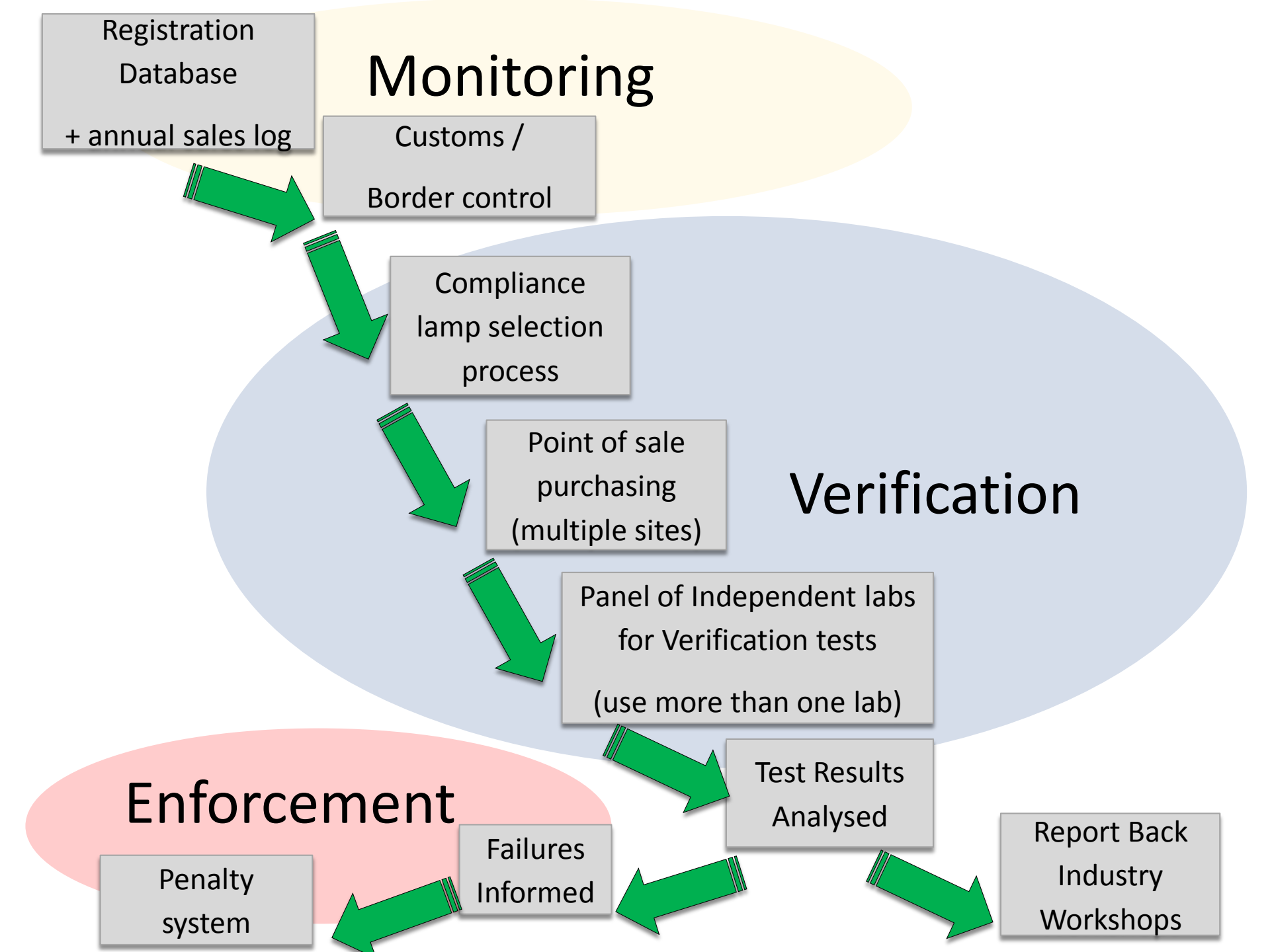
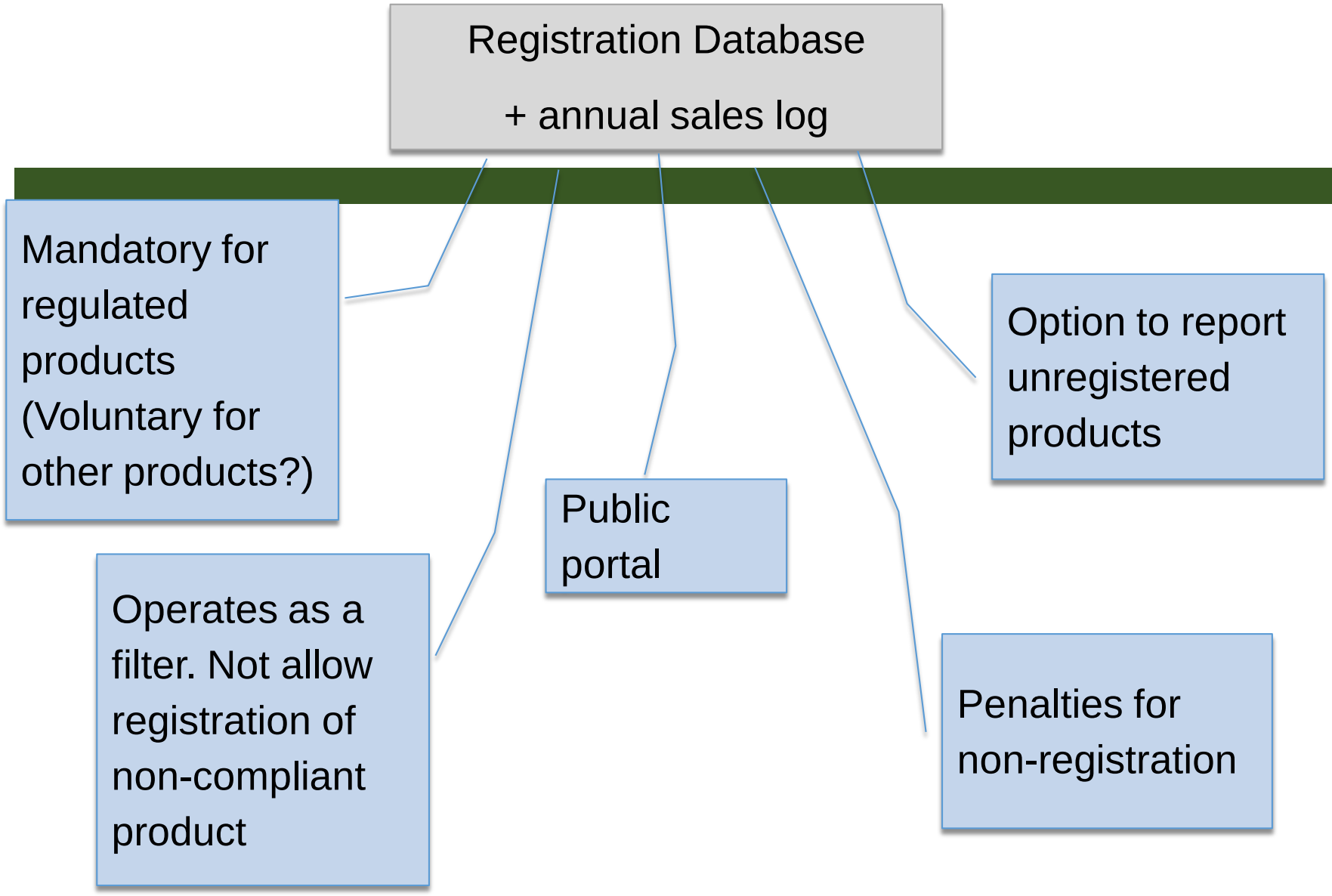

Registration Database
+ annual sales log
Monitoring
Customs / Border control
Compliance lamp selection process
Point of sale purchasing (multiple sites)
Verification
Panel of Independent labs for Verification tests
(use more than one lab)
Test Results Analysed
Report Back Industry Workshops
Enforcement
Failures Informed
Penalty system



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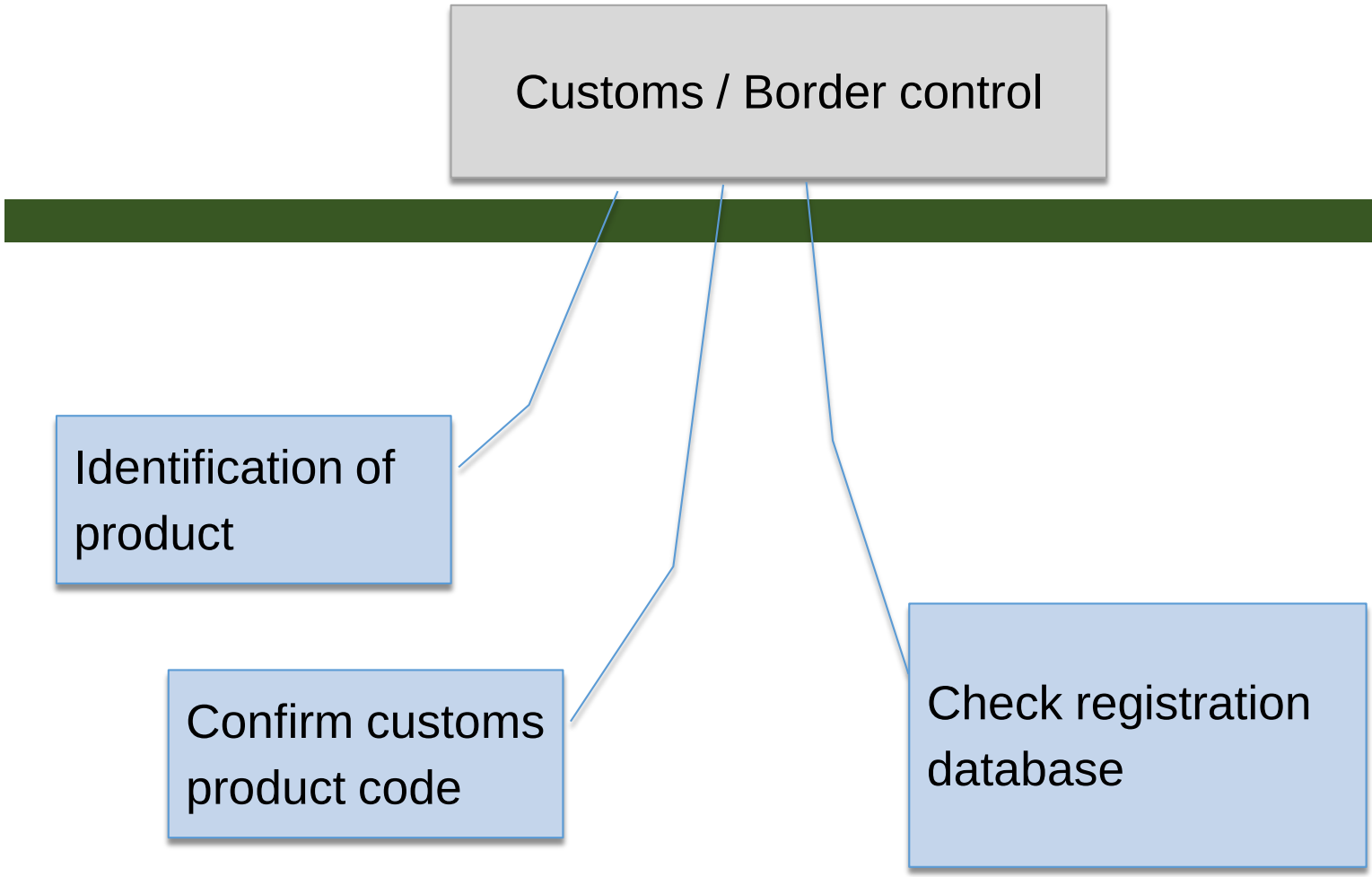
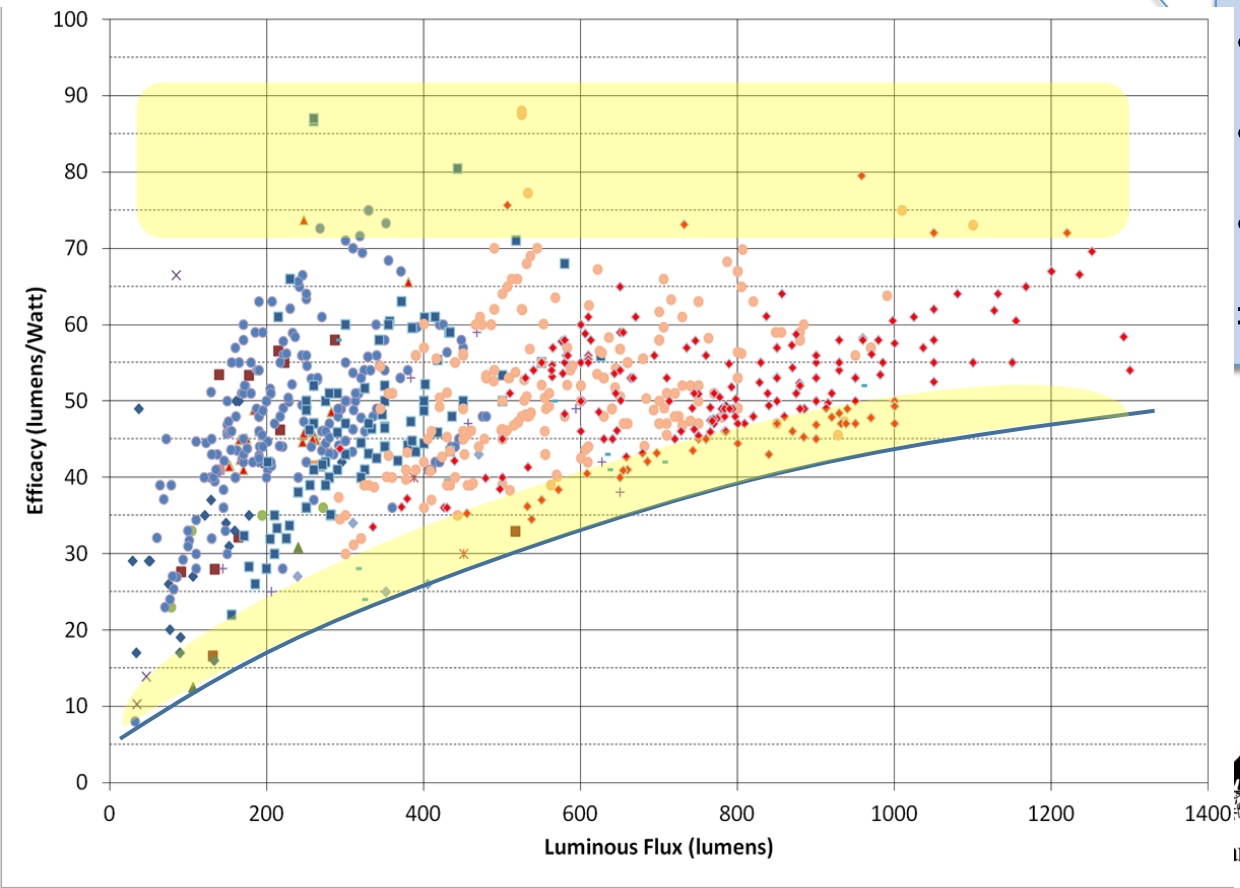


Compliance lamp selection process

- % highest claims
- % random
- % borderline
- % new entries
- % previous offenders

= 100%



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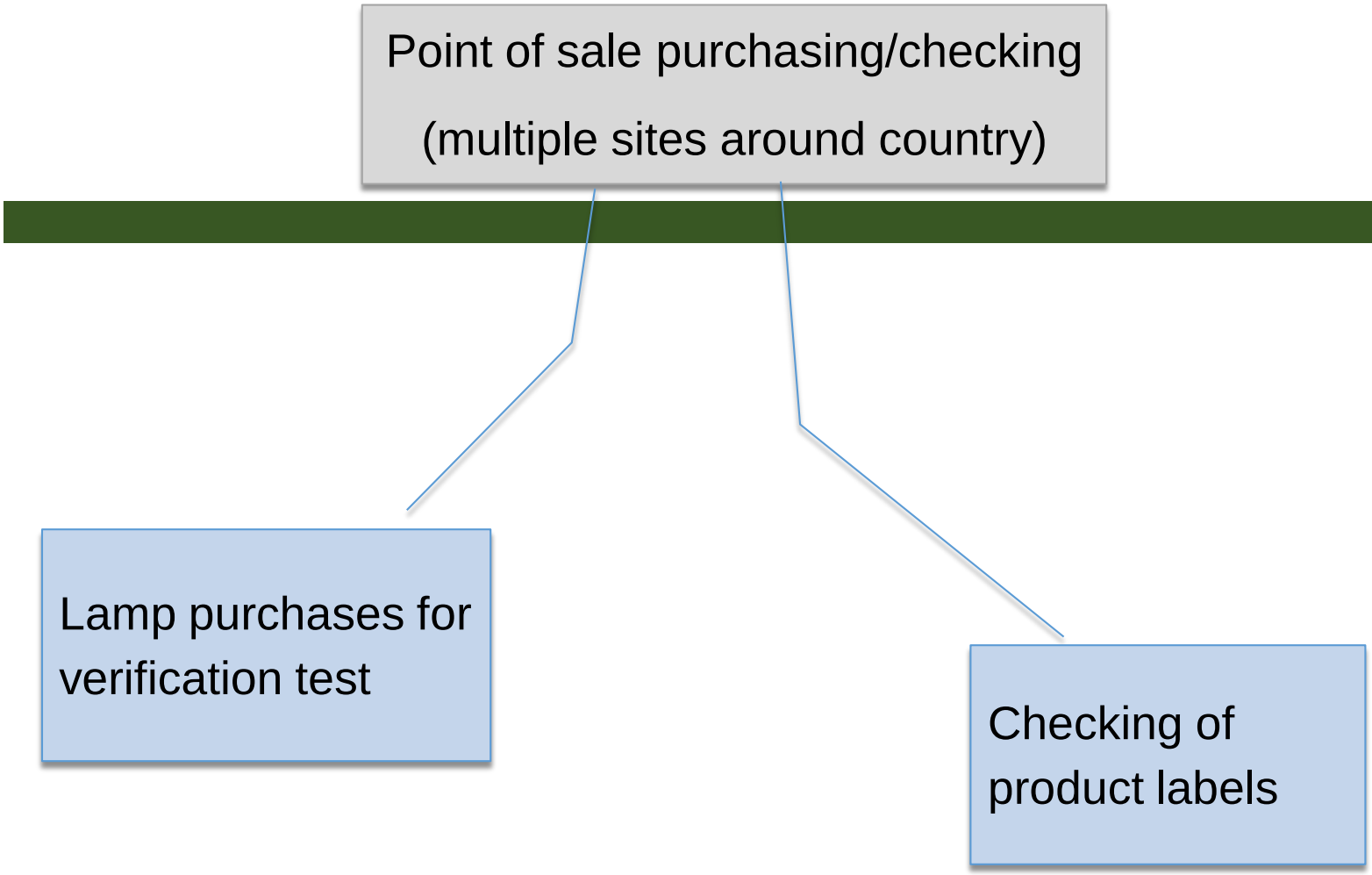

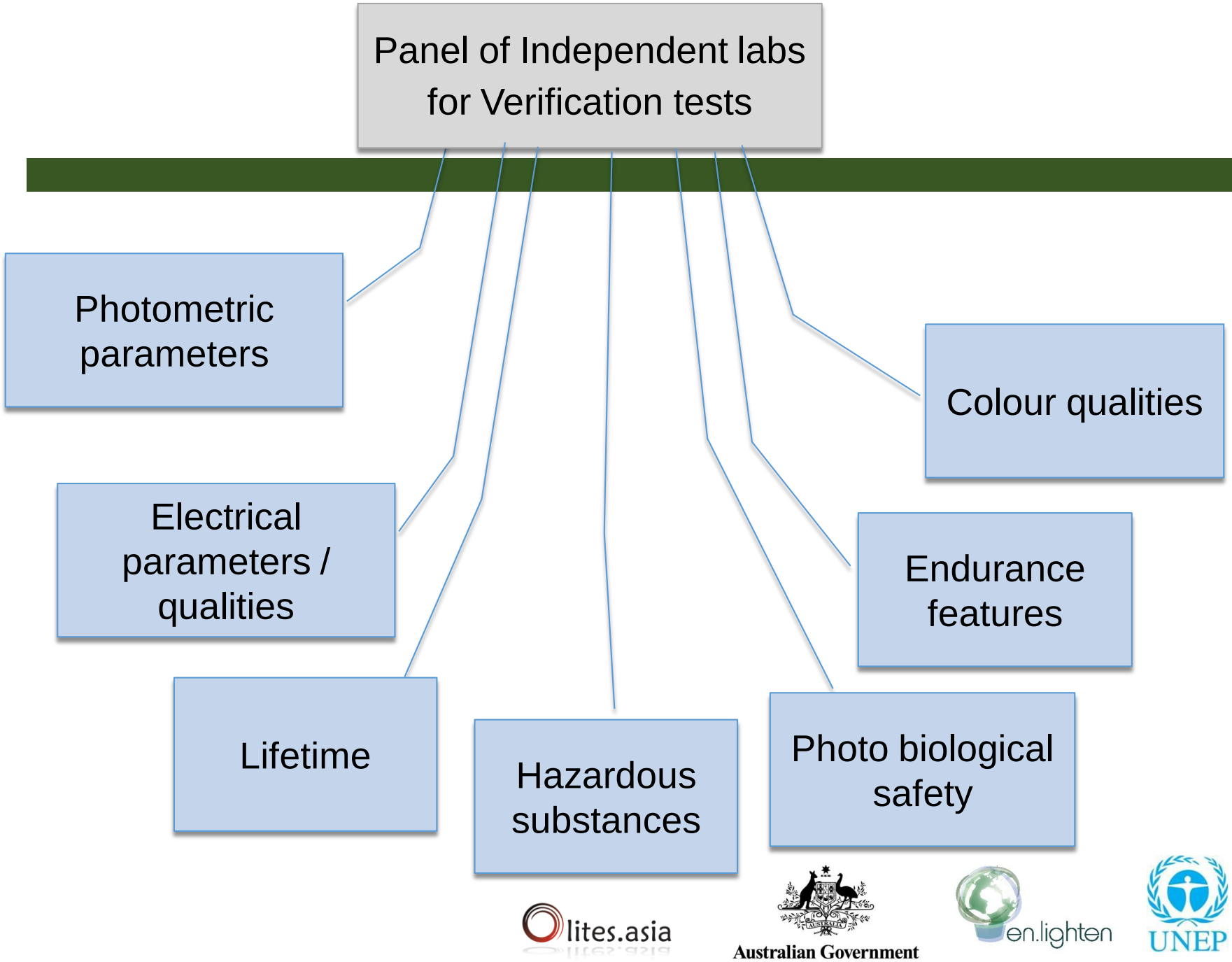
Panel of Independent labs for Verification tests
Photometric parameters
Electrical parameters / qualities
Lifetime
Hazardous substances
Photo biological safety
Endurance features
Colour qualities
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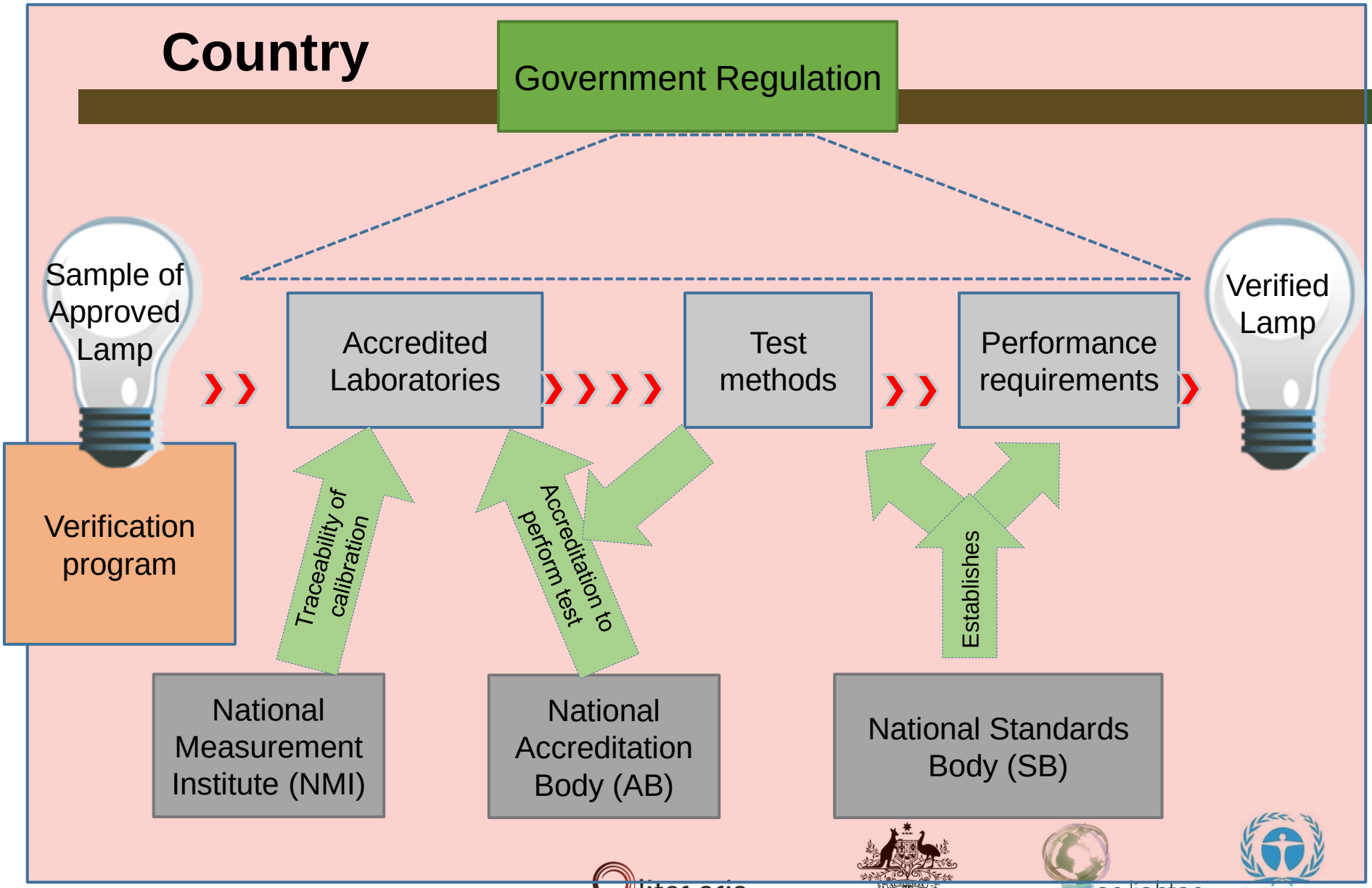

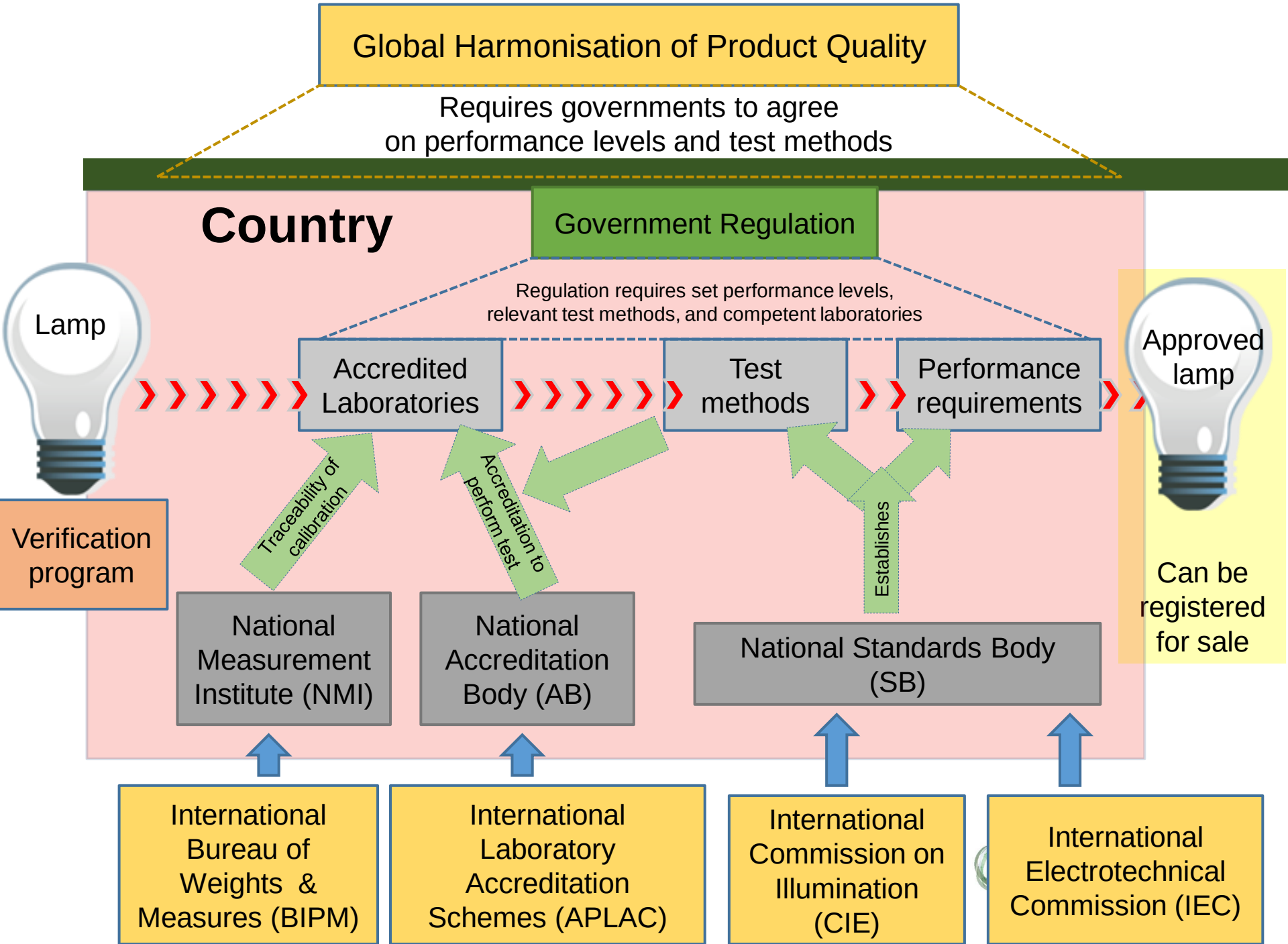
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Key Issues for Recognition of Laboratories

- Traceability of calibration

- Accreditation of labs to perform test procedures

Traceability

- Calibrations trace back to **the** Standard International Unit

  "The candela is the luminous intensity, in a given direction, of a source that emits monochromatic radiation of frequency 540×10^{12} hertz and that has a radiant intensity in that direction of 1/683 watt per steradian."

- Each level of calibration incorporates the uncertainty of measurement from the levels above

http://www.pyrometro.com/calibration.html

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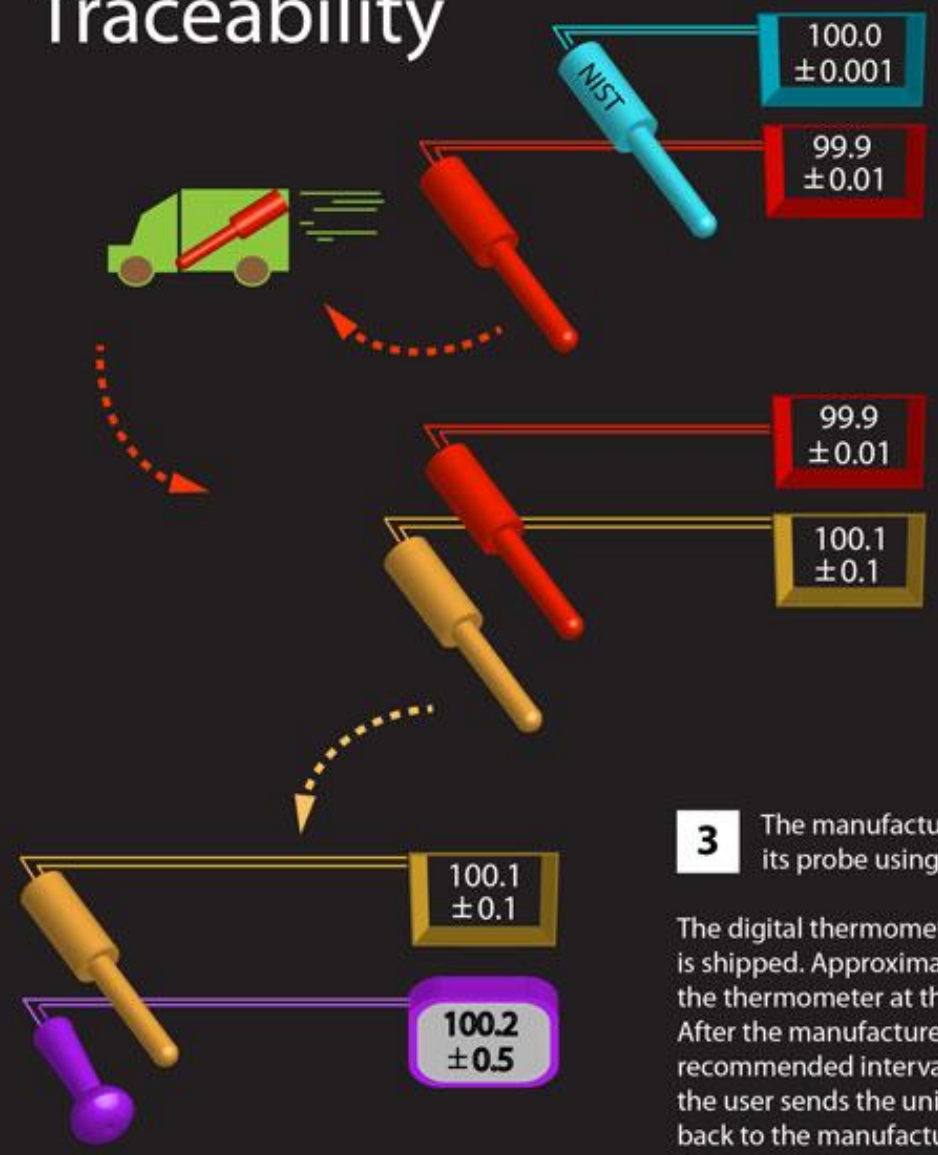
Traceability



1 A manufacturer sends a platinum resistance thermometer (PRT -- red) to NIST for calibration against a NIST Standard PRT (blue). The calibrated unit is then returned.

2 The manufacturer calibrates another PRT (gold) against the NIST-calibrated PRT (red). Careful records are kept of the measurements.

3 The manufacturer calibrates a digital thermometer and its probe using the second PRT as a reference.

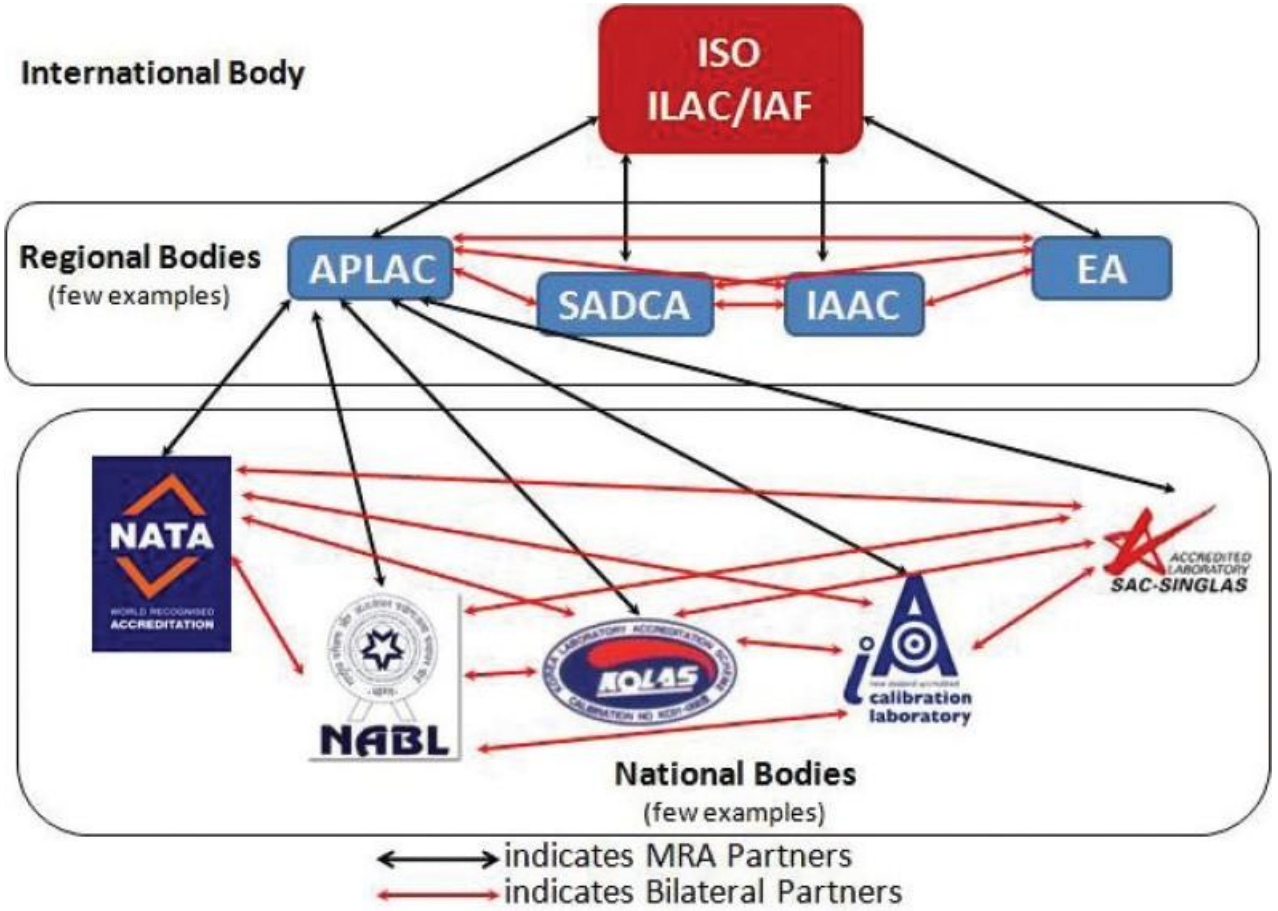
The digital thermometer, now traceable to NIST calibration, is shipped. Approximately every year, the user measures the thermometer at the ice point. After the manufacturer's recommended interval, the user sends the unit back to the manufacturer for re-calibration.

www.nist.gov

International Accreditation System

- International recognition of lighting testing and reports from laboratories within a country is achieved by having the national accreditation body accrediting these labs meet the requirements of a global, mutual recognition arrangement framework.
- The International Laboratory Accreditation Cooperation (ILAC)
- Asia Pacific Laboratory Accreditation Cooperation (APLAC) is a regional accreditation body (www.aplac.org). APLAC is recognized by the Asia Pacific Economic Cooperation (APEC) as one of five Specialist Regional Bodies (SRBs) that support the work of the APEC Sub-Committee on Standards and Conformance.AC) heads this arrangement framework (www.ilac.org).

International Accreditation System



International and Regional Accreditation Bodies Relationships. (Wadhwa V, Rai S, Thukral T, Chopra M. Laboratory quality management system: Road to accreditation and beyond. Indian J Med Microbiol 2012;30:131-40)

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Authenticity of Test Reports

- Confirm accreditation status
- If in doubt contact AB
- Check scope of lab

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 500041-0

Cree SSL Laboratory
Durham, NC

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

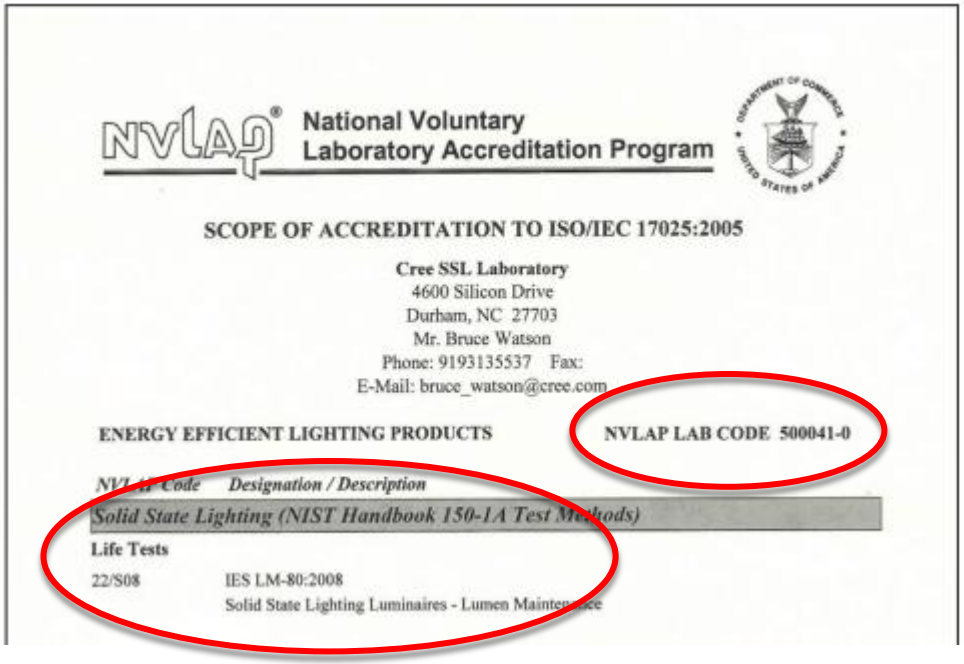
ENERGY EFFICIENT LIGHTING PRODUCTS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2011-02-07 through 2011-12-31
Effective dates

Sally S. Bruce
For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)



NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Cree SSL Laboratory
4600 Silicon Drive
Durham, NC 27703
Mr. Bruce Watson
Phone: 9193135537 Fax:
E-Mail: bruce_watson@cree.com

ENERGY EFFICIENT LIGHTING PRODUCTS

NVLAP LAB CODE 500041-0

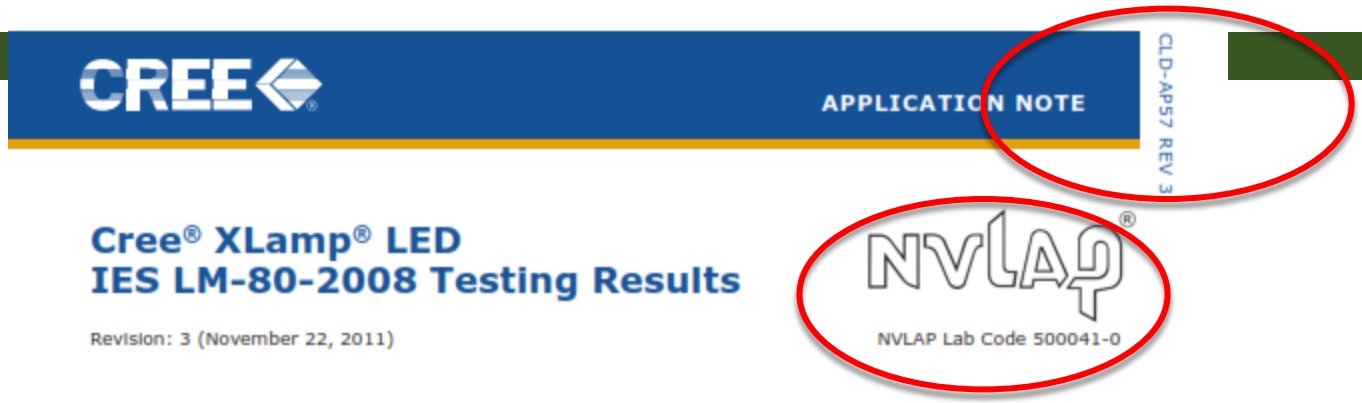
NVLAP Code *Designation / Description*

Solid State Lighting (NIST Handbook 150-1A Test Methods)

Life Tests

22/S08 IES LM-80:2008
Solid State Lighting Luminaires - Lumen Maintenance

Authenticity of Test Reports



CREE

APPLICATION NOTE

CLD-AP57 REV 3

Cree® XLamp® LED IES LM-80-2008 Testing Results

Revision: 3 (November 22, 2011)

NVLAP®

NVLAP Lab Code 500041-0

INTRODUCTION

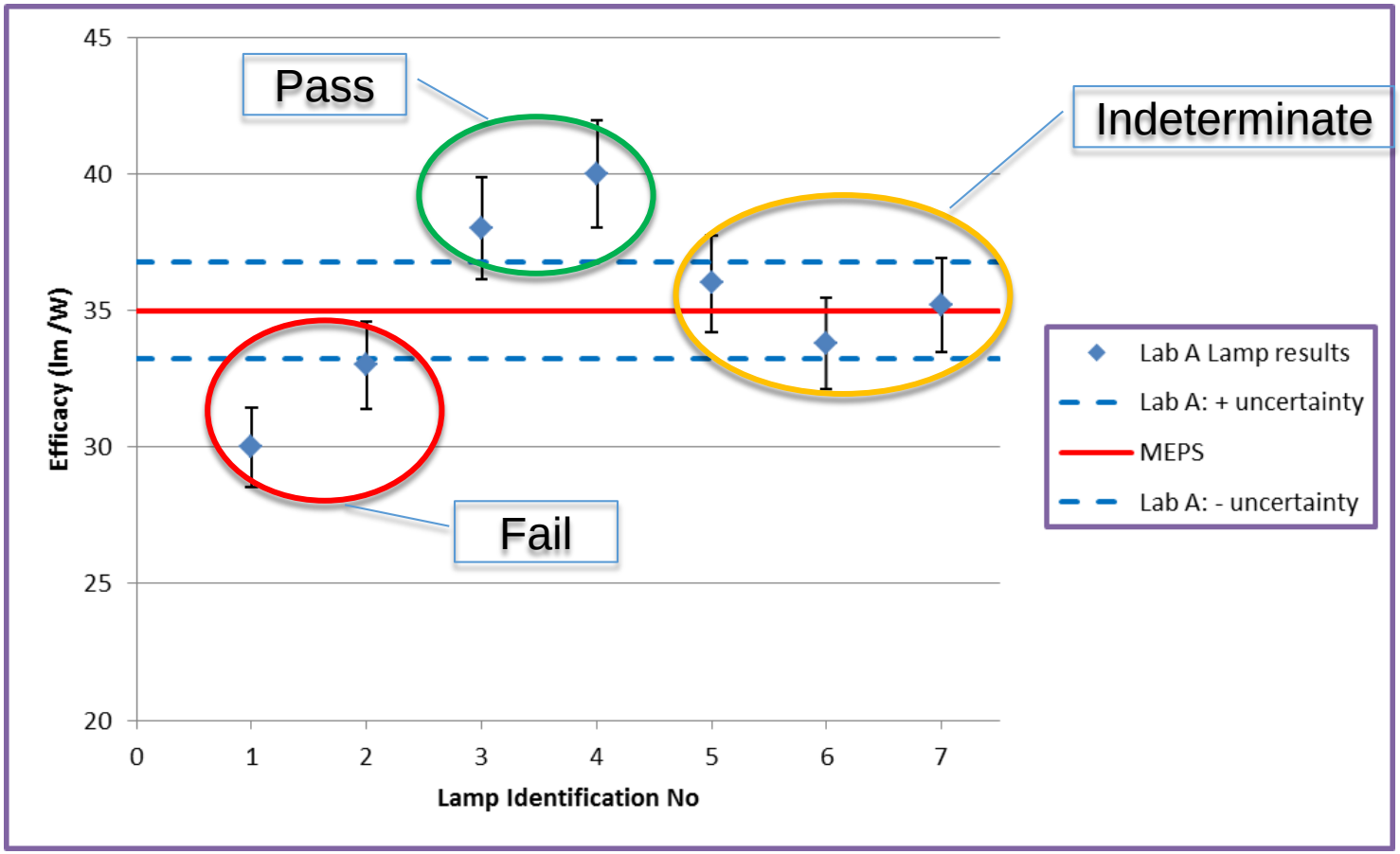
This document provides the results of Cree's IES LM-80-2008 ("LM-80") testing on XLamp LEDs. Cree is providing this data so that the public can verify the reliability of Cree LEDs as part of a complete LED lighting system.

Note that this document only provides the end results of the LM-80 tests. This is not a complete LM-80 report. Do not use this document to submit luminaires or lamps to an agency. Cree customers who need the full LM-80 reports should contact their Cree sales representative.

Cree's customers who wish to share LM-80 results with their customers have permission to link to this docu-

TABLE OF CONTENTS

Uncertainty of Measurement and Compliance



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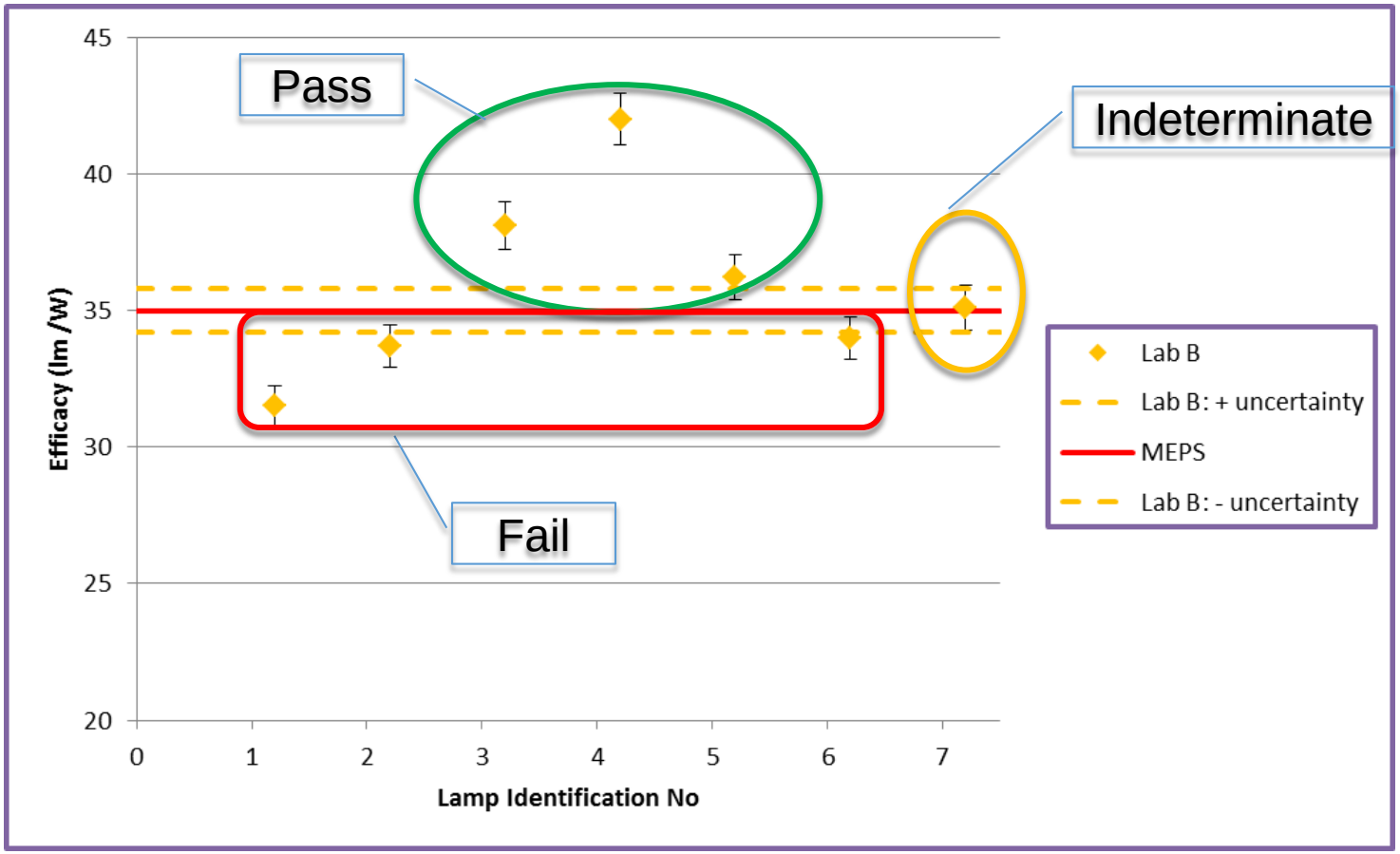

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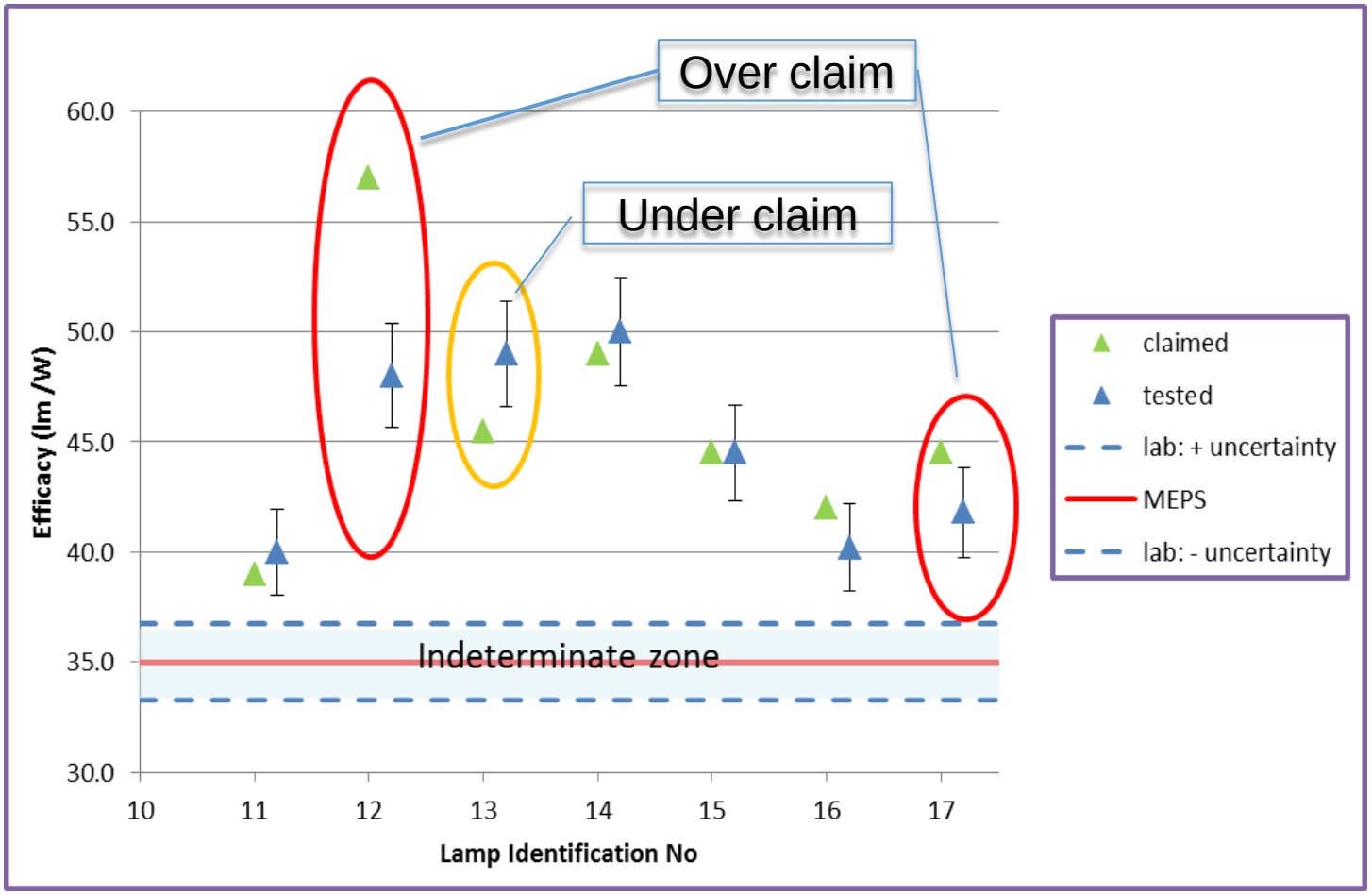
Truth in claim analysis



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Costs of a establishing a lab

Excludes:

- Land & building
- Utility costs (electricity)
- Management staff
- Equipment upgrades
- Repair & maintenance
- External training of staff

Note: major test equipment items vary significantly between manufacturers.

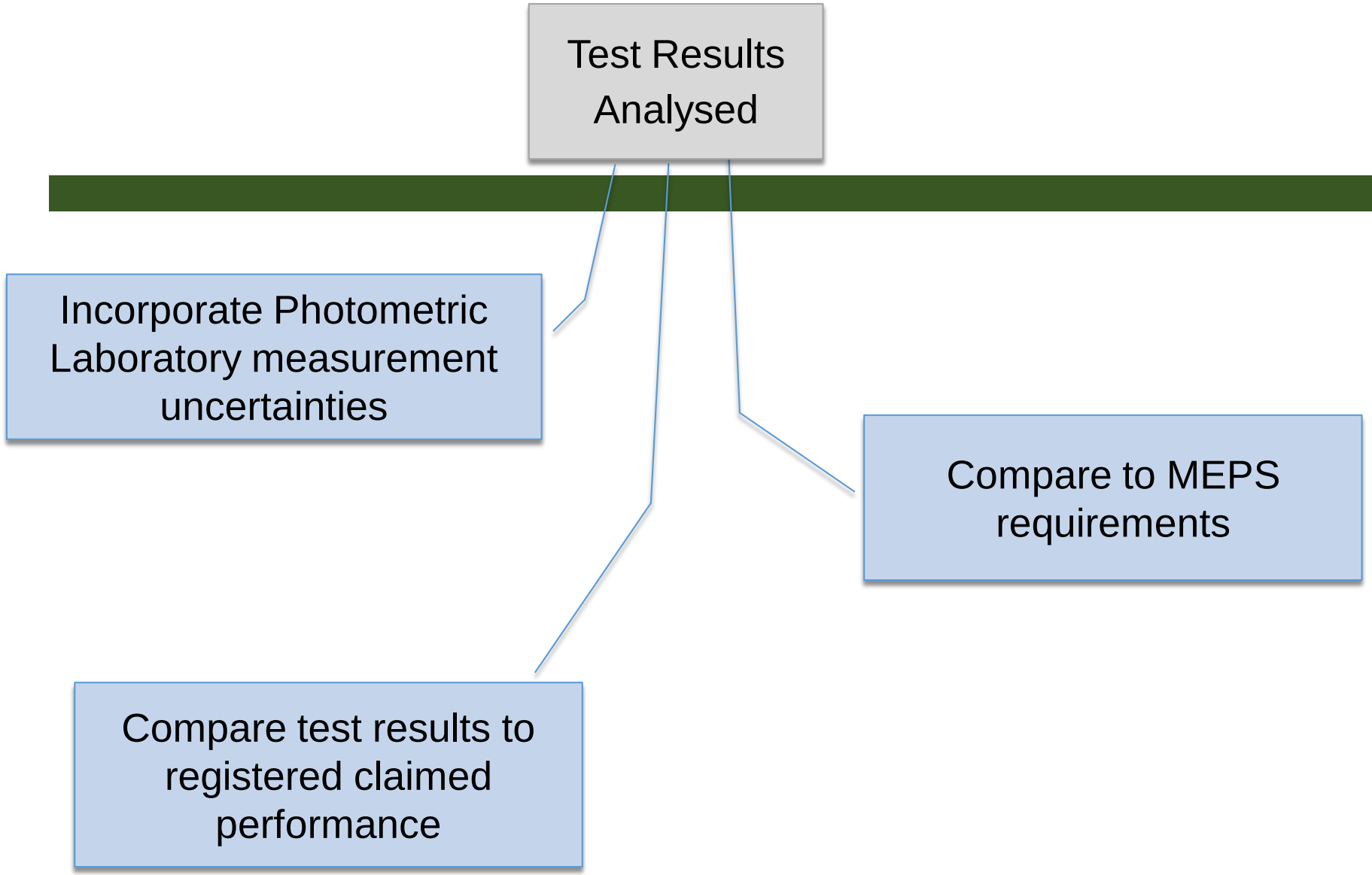
Items	National lab
A: Initial Setup costs	
Far field goniophotometer	$ 250,000.00
Near field goniophotometer	$ 25,000.00
Illuminance meter	$ 5,000.00
Integrating sphere (spectral)	$ 30,000.00
Luminance meter & Tile	$ 15,000.00
Power supplies	$ 30,000.00
Environment chamber (temperature & humidity)	$ 70,000.00
Salt chamber	$ 60,000.00
2 staff for 6 months setup	$??.00
External Calibrations	$ 10,000.00
Accreditation registration	$ 5,000.00
Initial Total	**$ 500,000.00 +**
B: Annual Maintaining of Accreditation Costs	
Accreditation registration	$ 5,000.00
External Calibrations	$ 10,000.00
Internal calibrations etc: 2 staff @ 20% of time	$??.00
Annual Total	**$ 15,000.00 +**

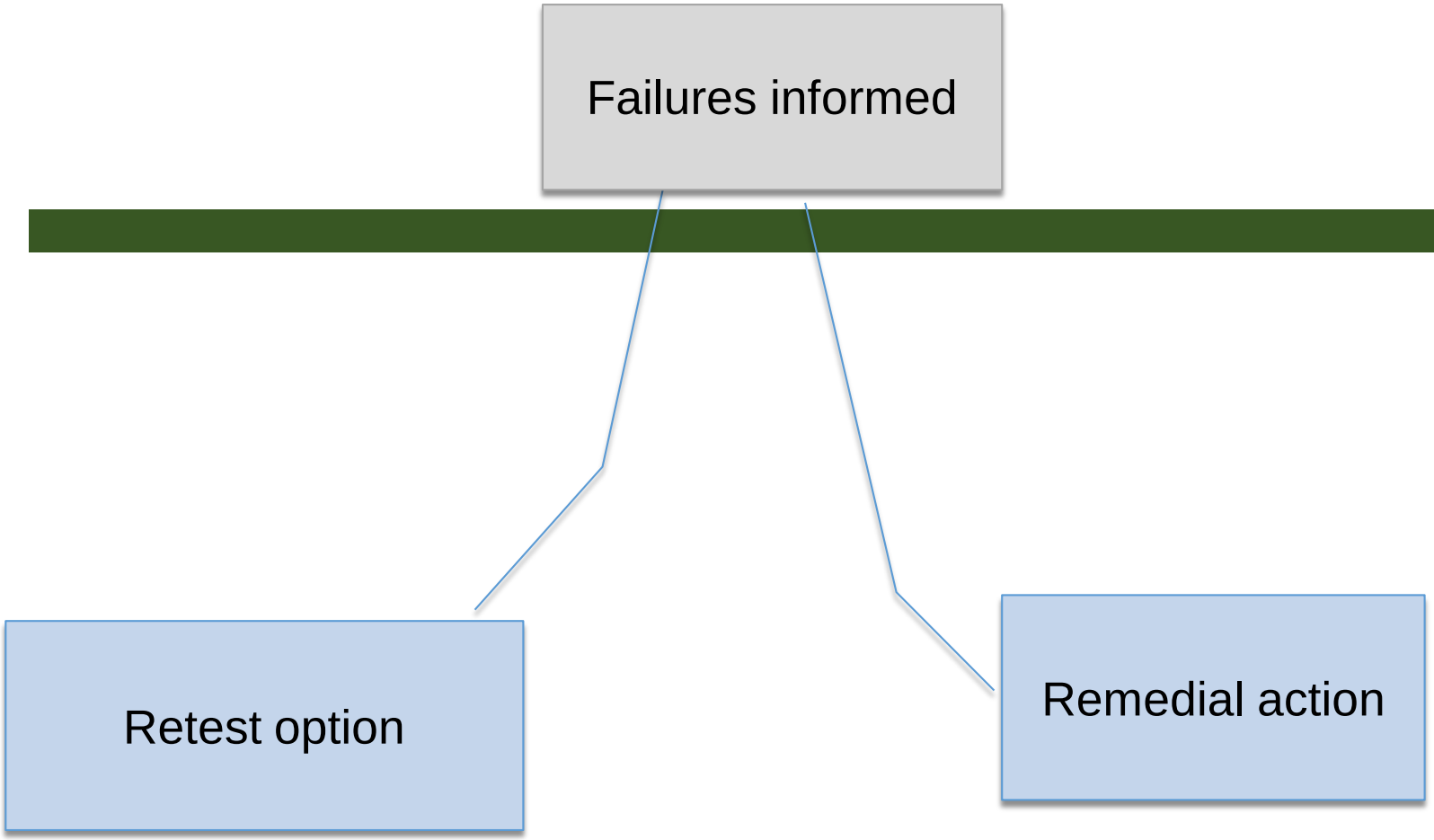
Test Lab Capacity for MVE

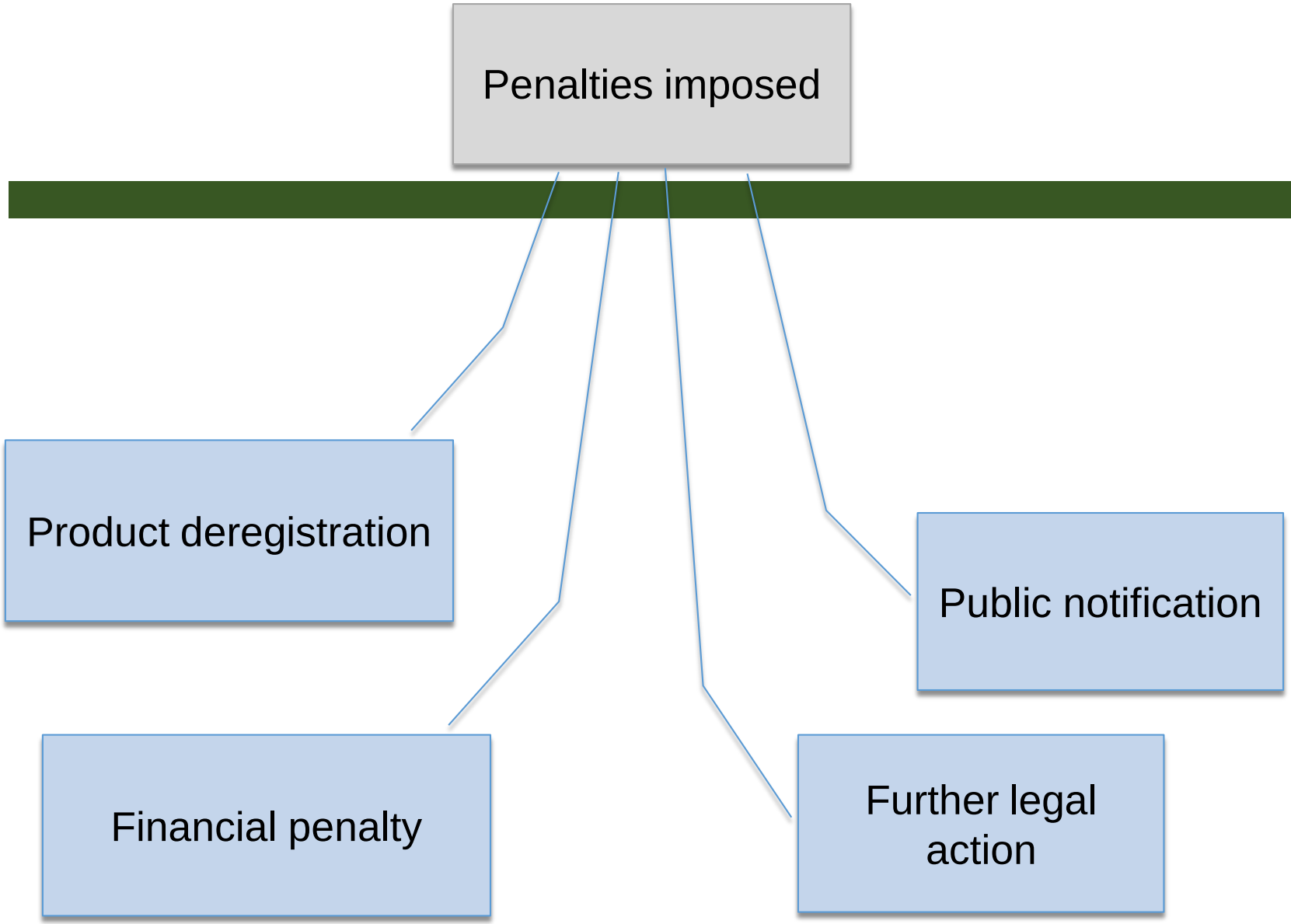
- **Making sure your test lab has the capacity**
  - **Maintaining a consistent compliance activity**

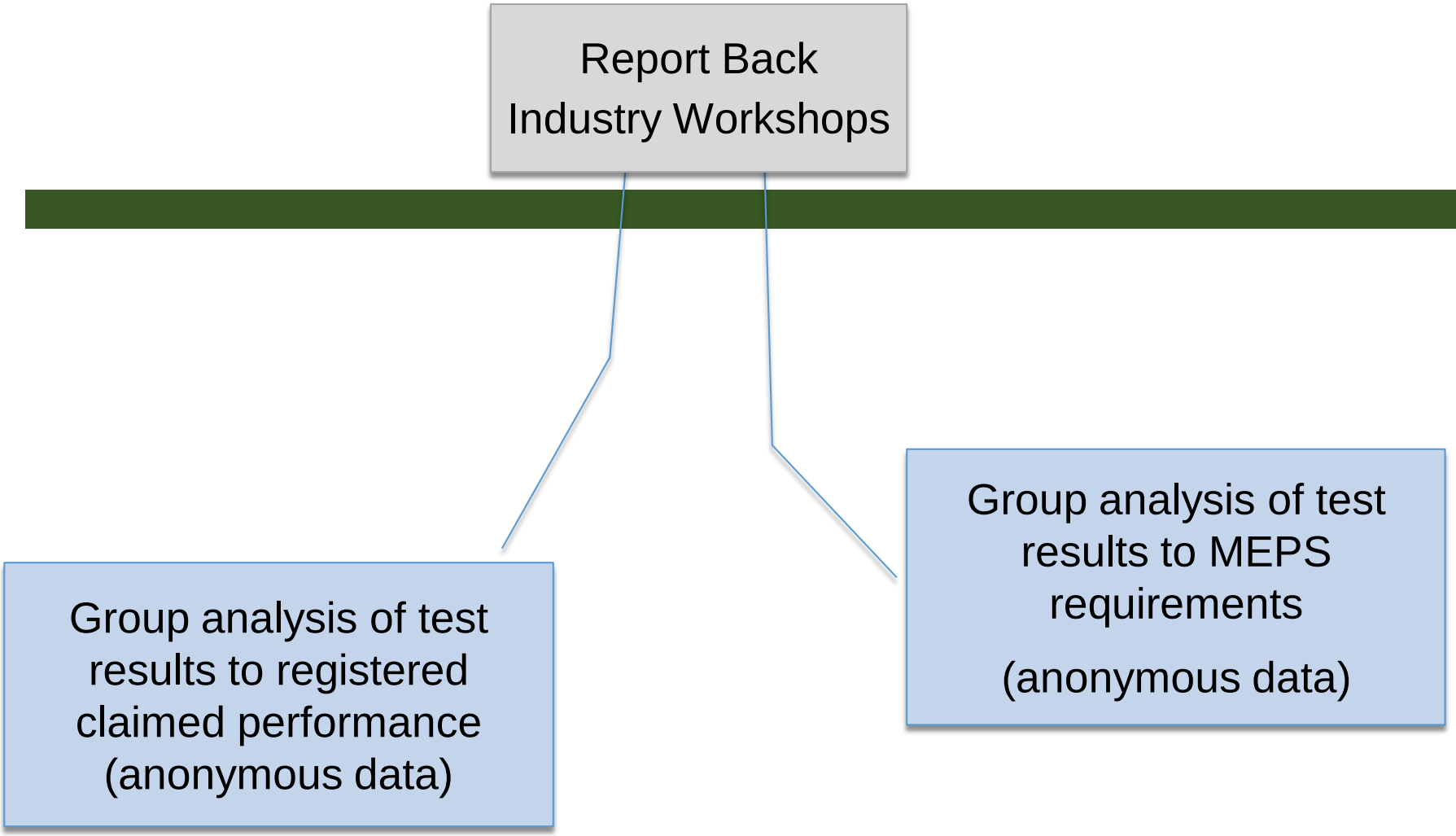
- **Use a panel of third party labs for testing**

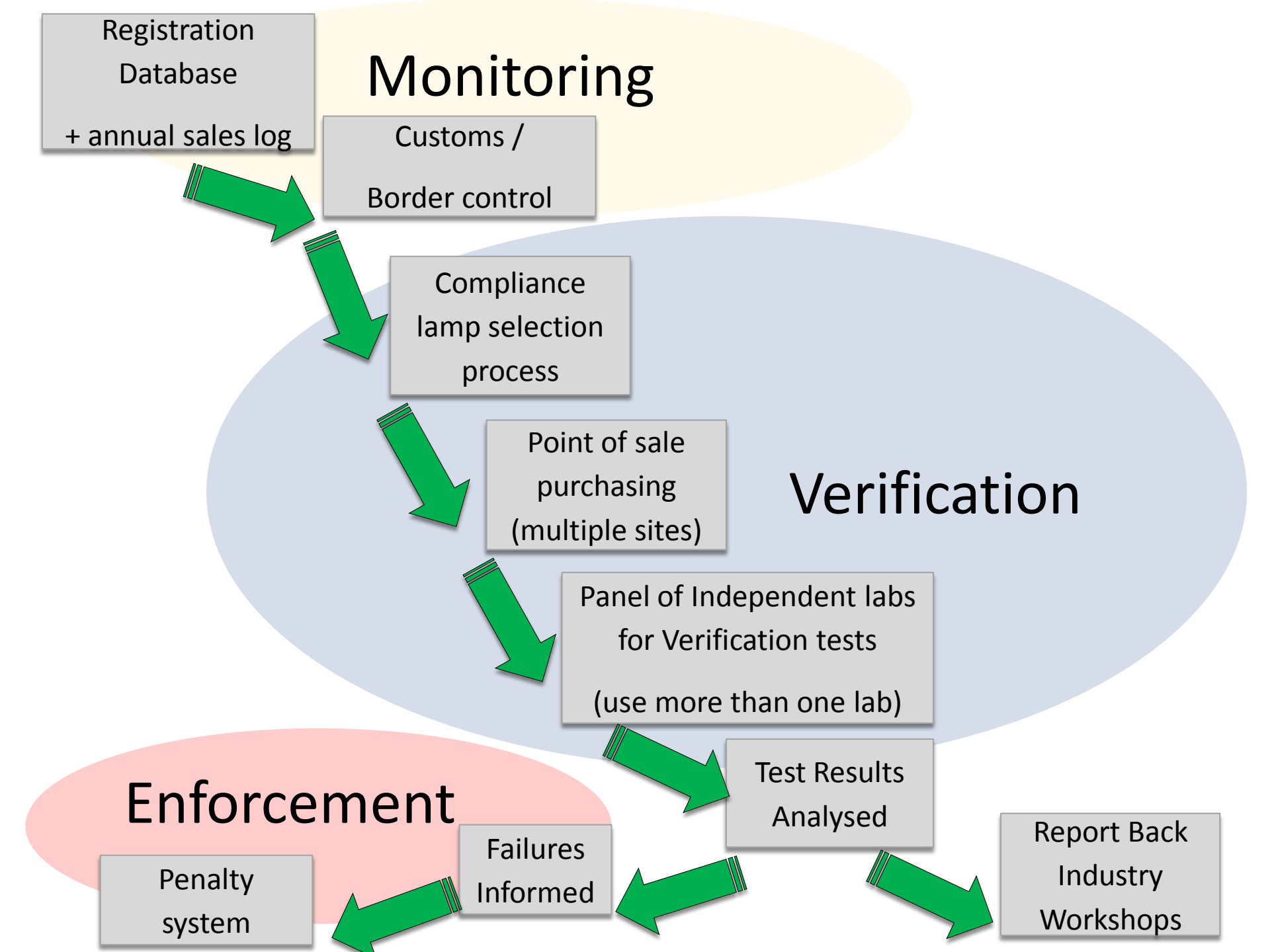
  Selection criteria to include
  - Recognised accreditation for test methods required
  - Capability to carry out the range of tests required with acceptable uncertainty of measurement
  - Capacity to conduct the work in timely manner
  - Price







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Discussion

Thank you