



IEA 4E Solid-State Lighting Annex update

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Light Naturally



SSL Annex funded by governments

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- IEA – International Energy Agency, the energy co-operation forum of OECD countries
- 4E – Efficient Electrical End-Use Equipment – so called Implementing Agreement: Multilateral research and deployment activities.
- 2011-2012: 9 Funding Countries
 - France, Australia, The Netherlands, United Kingdom, Sweden, Denmark, Japan, US, China (*expert status, not full member*)
- 2012-2013: 10 Funding countries
 - Korea joined
- Other countries welcome
 - Possibles: Russia, India (both attended Sep 2012 Beijing meeting)

SSL Annex: Three Main Tasks

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- Task 1: Develop SSL Quality Assurance
 - Create performance tiers, address equivalency claims
 - Collect data on Life Cycle Assessment, Health issues
- Task 2: SSL Testing and lab comparison
 - Provide for harmonized national and regional testing protocols (CIE, IEC, ANSI, etc.)
 - Interlaboratory Comparison: calibrate 4 Nucleus laboratories
 - Wide international Interlaboratory Comparison testing to calibrate participating laboratories
 - Propose proficiency testing procedure for accreditation
- Task 3: Provide for harmonized International Accreditation

Task 1: Quality Assurance

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- Minimum Performance requirements for 4 product categories



Non-directional Lamps

Complete



Directional Lamps

Complete



Downlight Fixtures

Complete



LED Linear Fluorescent replacement lamps

Almost complete

- Street lighting out for stakeholder review – **due 15th Oct**
 - <http://ssl.iea-4e.org/task-1-quality-assurance/draft-performance-tier-review>
- Additional products (?) – LED linear & LED panels

Sample – from <http://ssl.iea-4e.org/task-1-quality-assurance>

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Performance Tiers for Non-directional Lamps for Indoor Residential Applications

Tier	Tier 0	Tier 1		Tier 2		Tier 3	
Claimed equivalent wattage (W) and minimum initial light output (lumens)*	N/A: a large number of these products will be used in off grid applications where light has never been used before. Equivalency in these applications has no meaning.	20W	170 lm	20W	170 lm	20W	170 lm
		25W	250 lm	25W	250 lm	25W	250 lm
		30W	325 lm	30W	325 lm	30W	325 lm
		35W	395 lm	35W	395 lm	35W	395 lm
		40W	470 lm	40W	470 lm	40W	470 lm
		60W	800 lm	60W	800 lm	60W	800 lm
		75W	1055 lm	75W	1055 lm	75W	1055 lm
		100W	1520 lm	100W	1520 lm	100W	1520 lm
		125W	2000 lm	125W	2000 lm	125W	2000 lm
		150W	2452 lm	150W	2452 lm	150W	2452 lm
		200W	3452 lm	200W	3452 lm	200W	3452 lm
Minimum lamp luminous efficacy (lm/W)	50 lm/W	>50 lm/watt		>65 lm/watt		>80 lm/W	
CRI	N/A	≥70		≥80, R9> 0		≥80, R9> 0	
Lag start time	N/A	<0.5sec until continuous light output		<0.5sec until continuous light output		<0.5sec until continuous light output	
Lumen Maintenance (Minimum time to L ₇₀)	At 5,000h Lumen Maintenance >70% of initial	At 15,000h, Lumen Maintenance >70% of initial		At 25,000h, Lumen Maintenance >70% of initial		At 25,000h, Lumen Maintenance >70% of initial	
Minimum Rated Lamp lifetime (B ₅₀)	At 5,000h, 50% of population will be operative	At 15,000h, 50% of population will be operative.		At 25,000h, 50% of population will be operative.		At 25,000h, 50% of population will be operative.	

■ Opportunity to use as regulatory standards

■ eg Australian Standards committee on Road Lighting

Sixth *lites.asia* workshop – Delhi, India, 2-3 October 2012

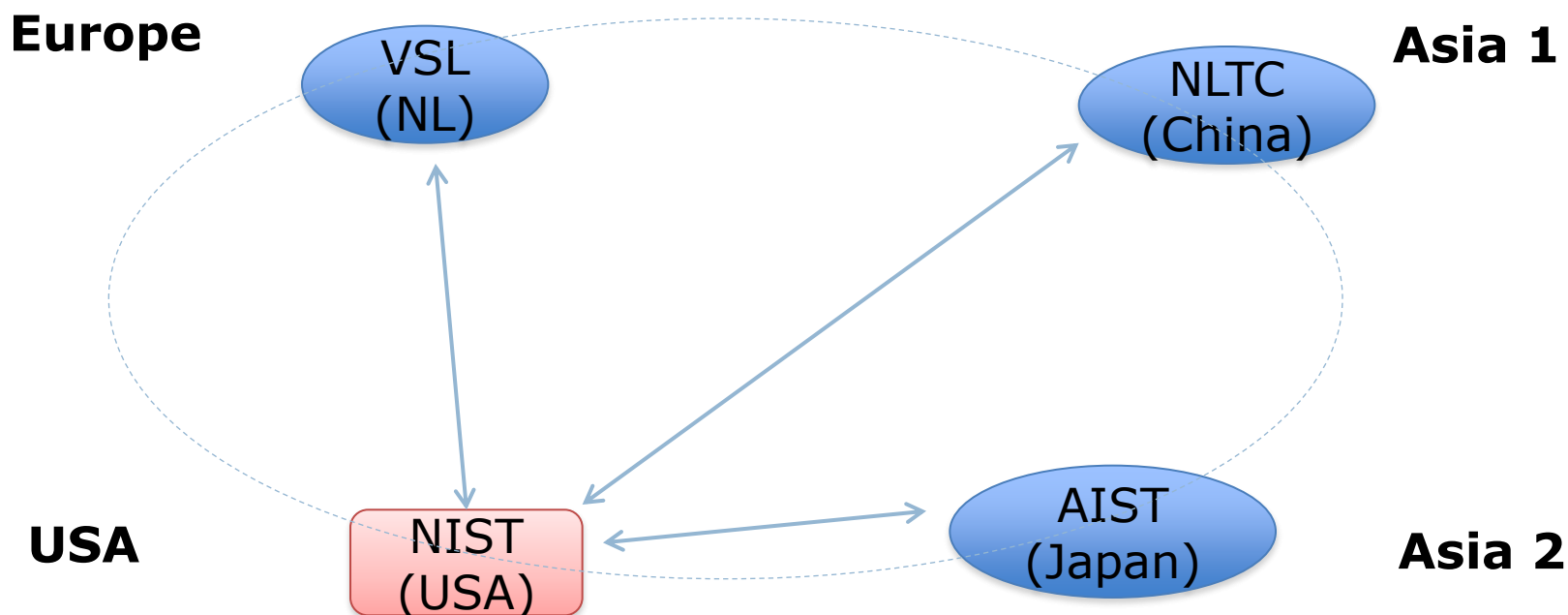
Questions for *lites.asia* members

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- Any comments or questions?
- Do you think these performance tiers might be useful to your country?
- For what additional products might it be useful to have performance tiers?

Task 2: Nucleus Laboratories: Interlaboratory Comparison Testing

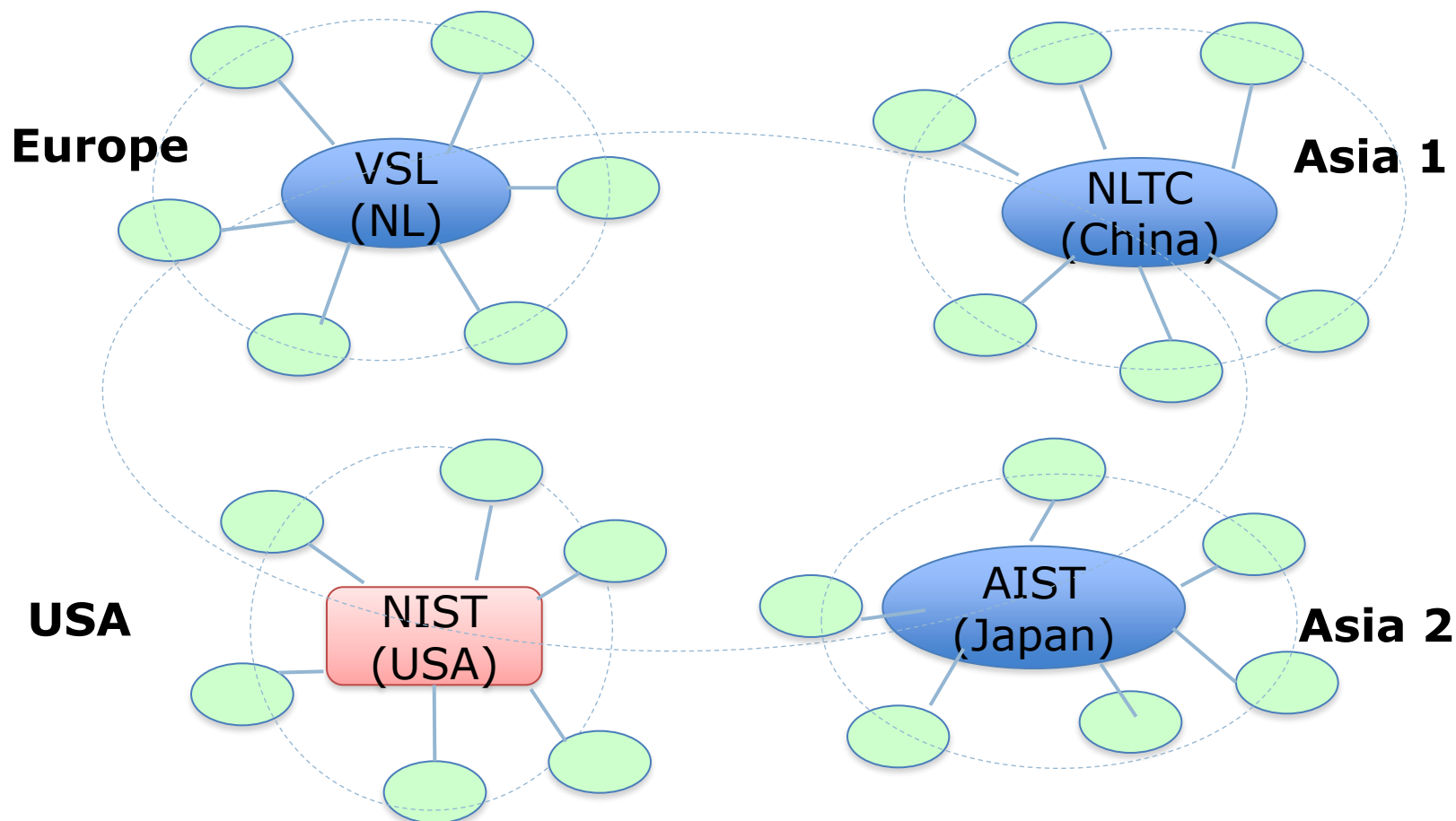
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Task 2: SSL Annex 2013

Interlaboratory Comparison Testing

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Task 2: Measurement Quantities for Interlaboratory Comparison

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- The following measurement quantities will be measured and compared in the SSL Annex 2013 Interlaboratory Comparison.
 - Total luminous flux (lm)
 - RMS Voltage (V) and Current (A)
 - Electrical true power (W)
 - Luminous efficacy (lm/W)
 - Chromaticity coordinates x, y
 - Correlated Color Temperature (K)
 - Color Rendering Index (CRI) Ra
 - If other quantities are determined to be important for the region, other quantities may be added as optional quantities

Task 2: 2013 Interlaboratory Comparison Testing Timeline and Cost

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- Nucleus labs are preparing artefact samples for testing
 - Complete by mid Nov 2012
- Announcement of interlaboratory comparison testing
 - early to mid Oct 2012
- Fees:
 - €2650 member countries,
 - add €750 for non-members
 - Excludes freight and taxes
- Testing - Oct 2012 – June 2013
- Interim reports – expected Aug 2013
- Final Report – expected Nov 2013

Task 3: International Harmonised Accreditation

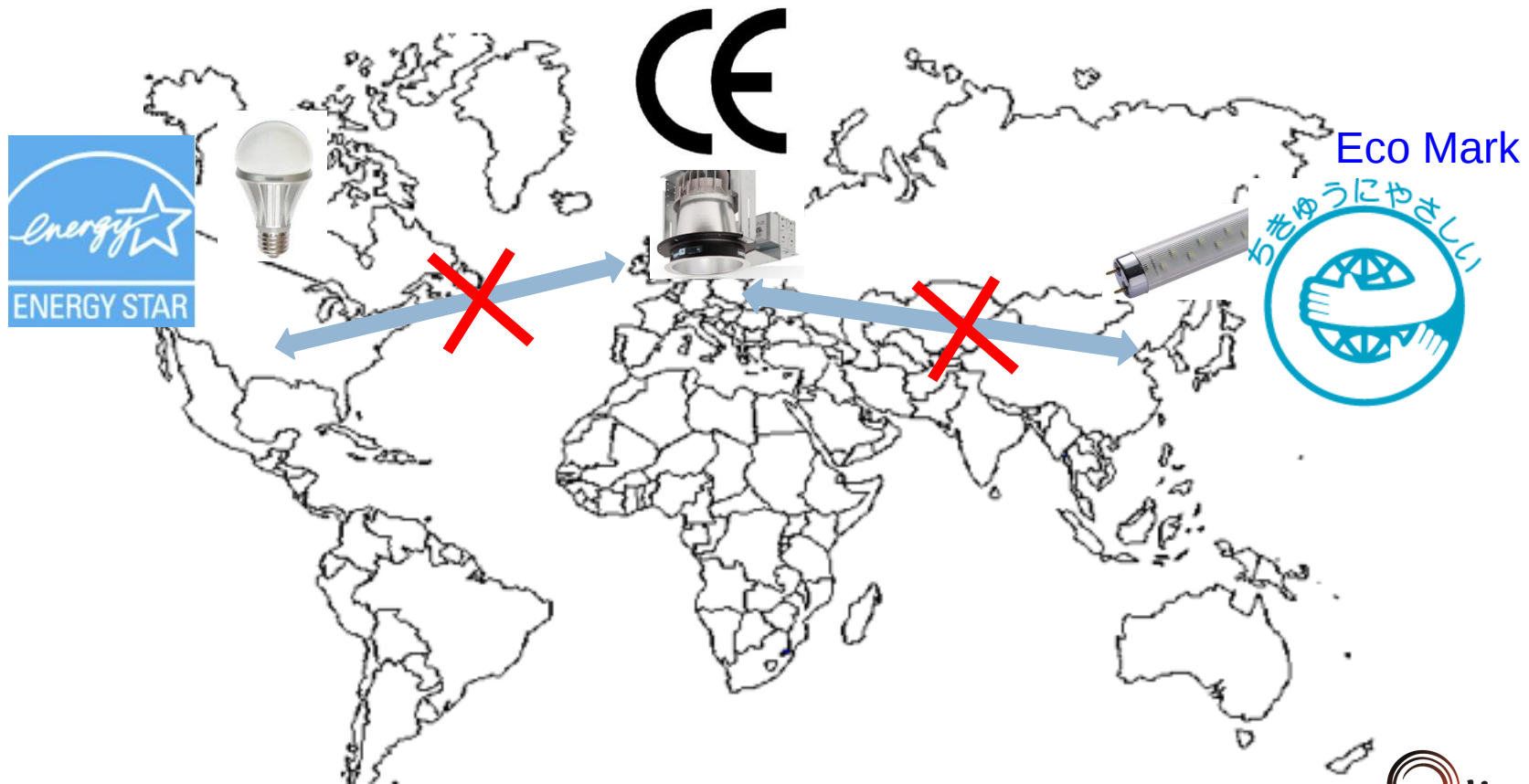
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- Review current systematic issues with Accreditation, Proficiency testing, Certification for SSL testing.
- Facilitate recognition of the IC as valid Proficiency Testing by global accreditation organizations.

Need for International Harmonization in SSL regulations and testing

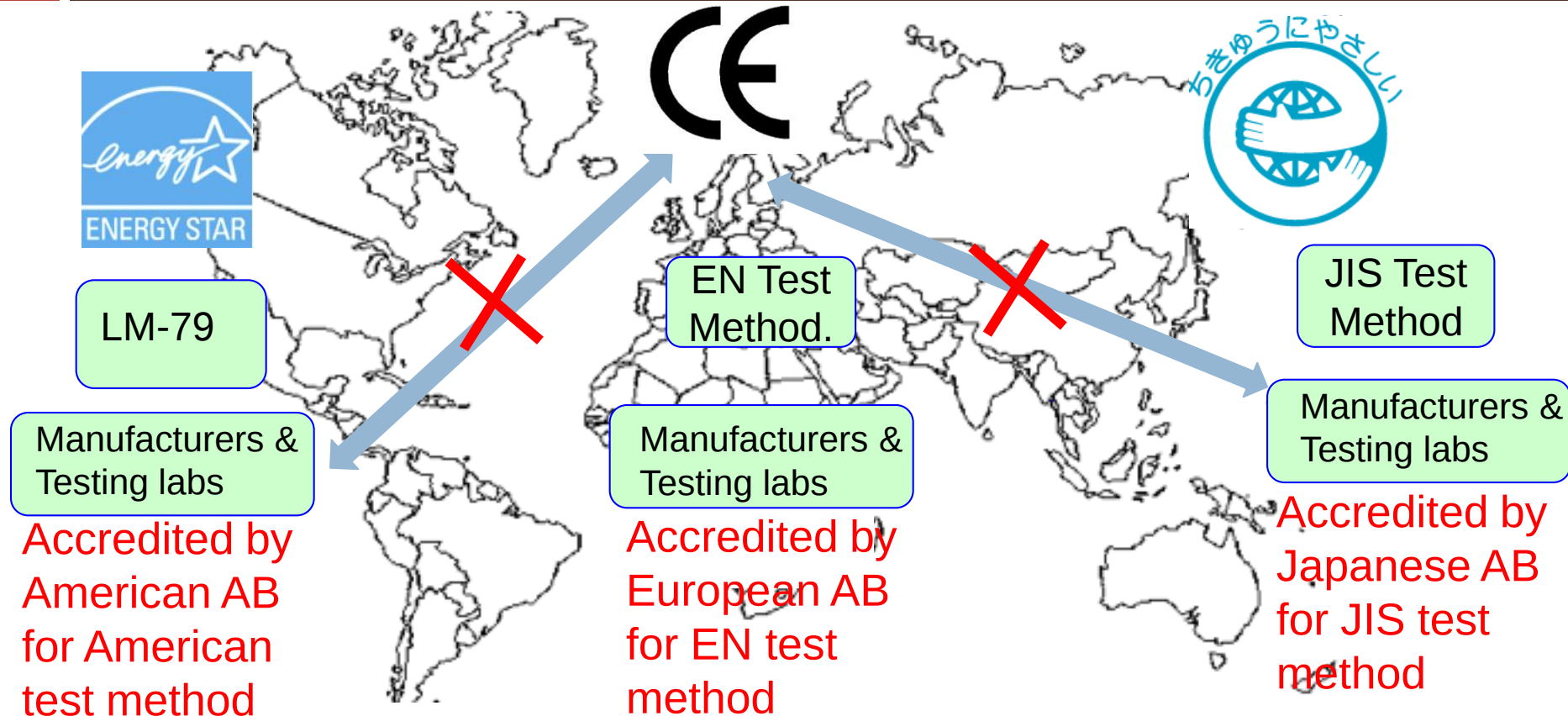
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Differences in performance criteria in regulations create **trade barriers**.



Need for International Harmonization in SSL Testing and Accreditation

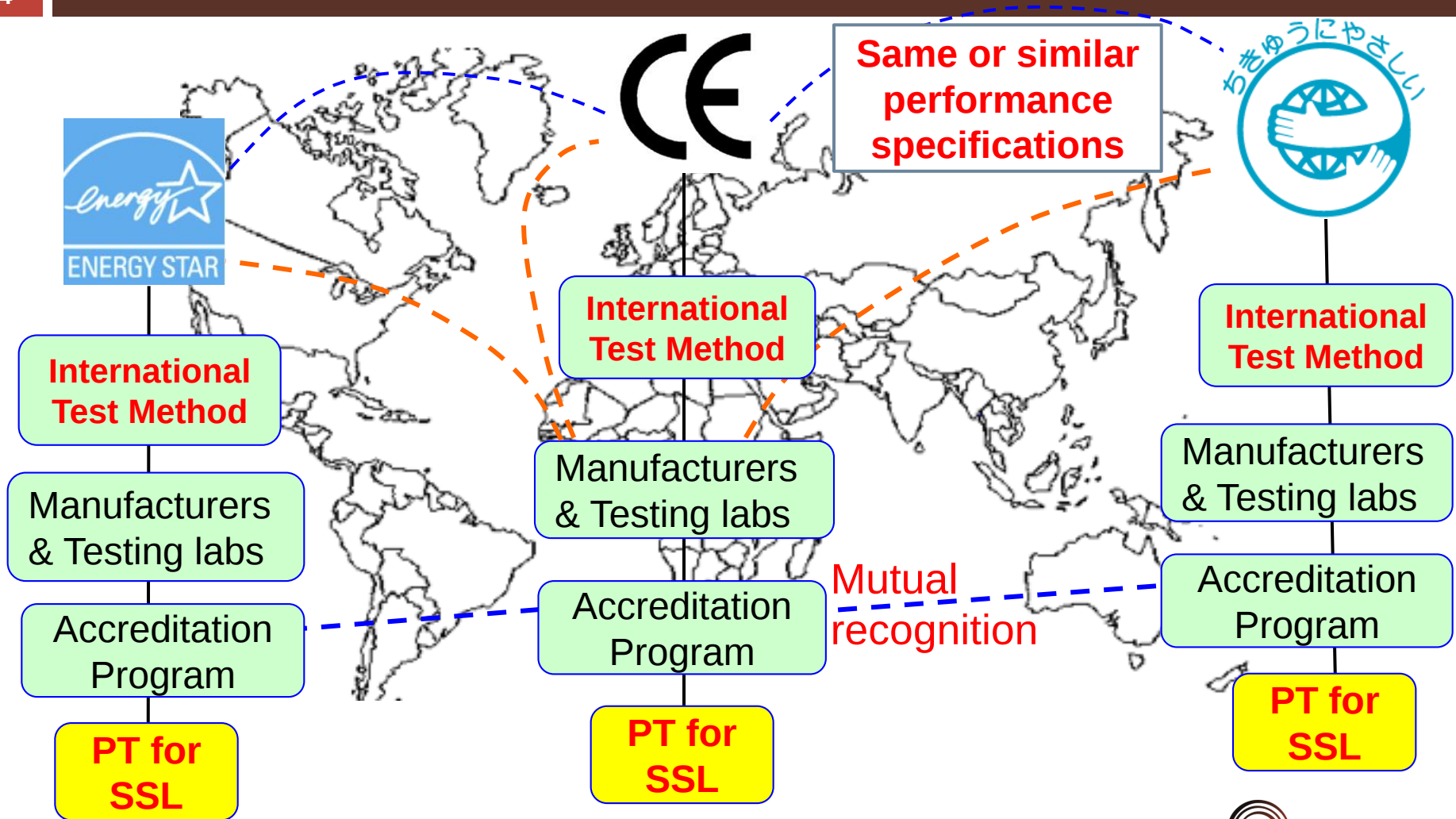
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Manufacturers need to obtain accreditation in each region for exporting products.

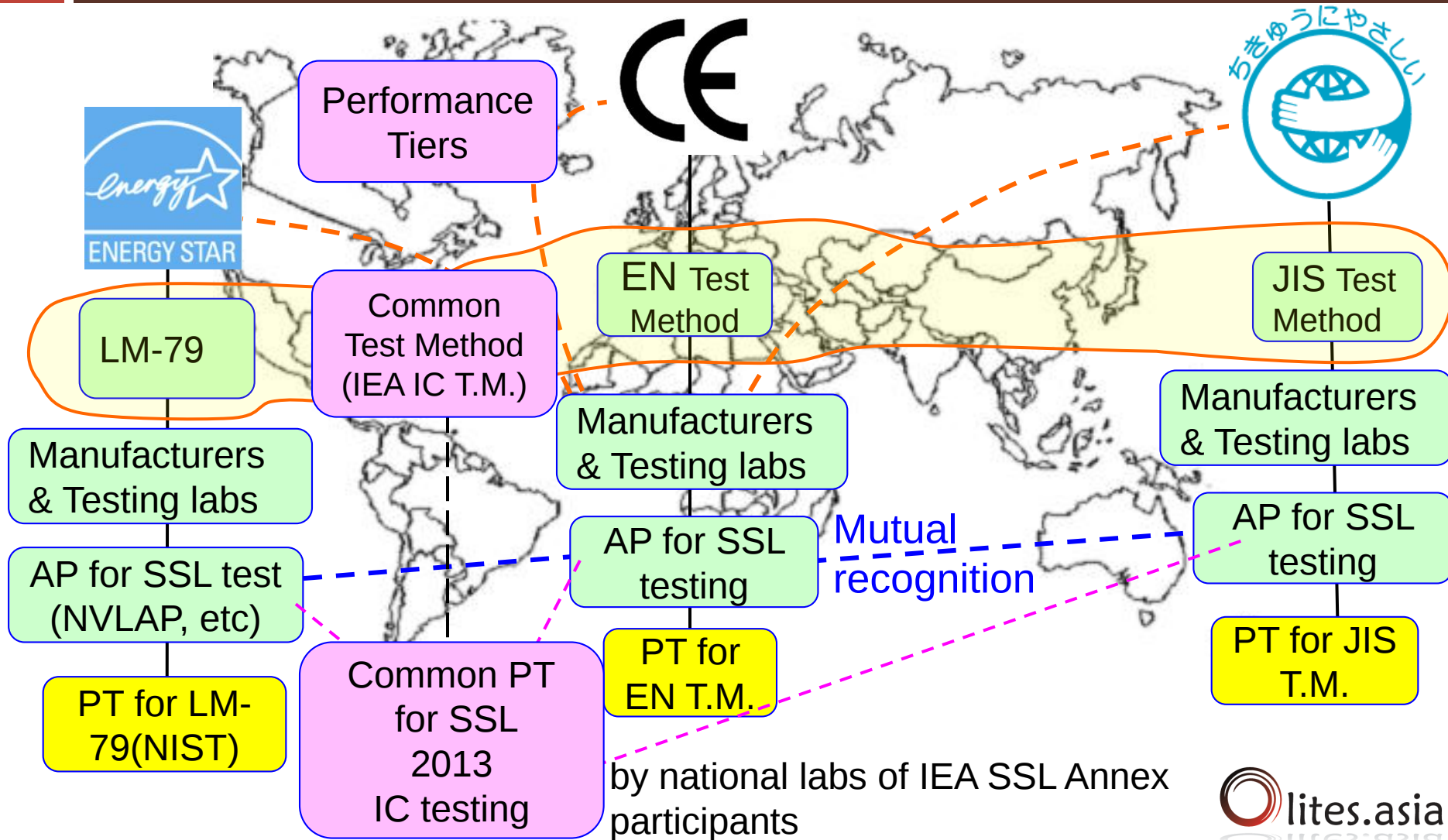
Ideal solution

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Interim solution

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Cooperation Matrix

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Industry Interest	IEA 4E SSL Annex	National/International Initiatives
GLF (5000 + mnfrs) Zhaga (100+ mnfrs) Performance Standards Orgs: IEC, ANSI, ISO, UL etc.	Task 1: Performance	National EE Programs SEAD/CLASP en.lighten (UNEP) lites.asia APEC
Manufacturer /Third Party Labs Measurement Standards Orgs: IES, CIE, ANSI/UL etc.	Task 2: Testing	National Metrology Labs National Market Surveillance Programs
Manufacturer /Third Party Labs Independent Accreditation Bodies	Task 3: Accreditation	National/International Accreditation Organizations National Market Surveillance Programs National Metrology Labs

Contacts

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- <http://ssl.iea-4e.org/>

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Questions for *lites.asia* members

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- Are you interested in an opportunity to take part in the SSL Annex 2013 Interlaboratory Comparison testing?
- Do you require any further information?
- Who should IEA 4E SSL contact in your country in relation to the Interlaboratory Comparison testing?



Thank you!

