



# Update on the IEA 4E SSL Annex

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# LED Opportunities and Challenges

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- LEDs will be more energy efficient, allowing for a reduction in overall electricity use for lighting
- Much easier to integrate controls and systematic approaches

But: It will not happen automatically!

- New actors enter the market
- With new business models and new product configurations, the buyer and the consumer have difficulties making choices.
- Need to avoid the consumer dissatisfaction that occurred with the introduction of CFLs.

# IEA 4E SSL Annex - Background

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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
  - The Republic of Korea joined
- Other countries welcome

# Goals of SSL Annex (2010-2014)

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To provide governments with:

- Tools to assess the performance of SSL,
- Information assisting formation of energy-efficient lighting policies, and
- Provision for harmonized test procedures and laboratory accreditation

*in order to increase confidence in SSL in the marketplace.*

# 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: exercise to 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



Directional  
Lamps



Downlight  
Fixtures



LED Linear  
Fluorescent  
replacement  
lamps

- Street lighting (<http://ssl.iea-4e.org/task-1-quality-assurance/draft-performance-tier-review>) Draft to be finalised soon.

# Task 1: Quality Assurance

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- To serve as a *basis* for regulations for governments/regions
- Under Discussion:
  - New products categories (Panel luminaires?, non-retrofit linear products?) ;
  - How to deal with LED product with active thermal controls.
  - Timing for revisions of existing tiers;
  - Sharing / cooperation on market monitoring, verification and enforcement?

# Task 1: Life Cycle Assessment and Health Issues

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- Greatest impact of lamp technology is related to luminous efficacy of system (energy, CO<sub>2</sub>,...)
- LED non-directional lamps are not better than CFL lamps *today*, but expected to be significantly better than CFLs by 2017.
- Health aspects being investigated
- Main methodology is through literature studies



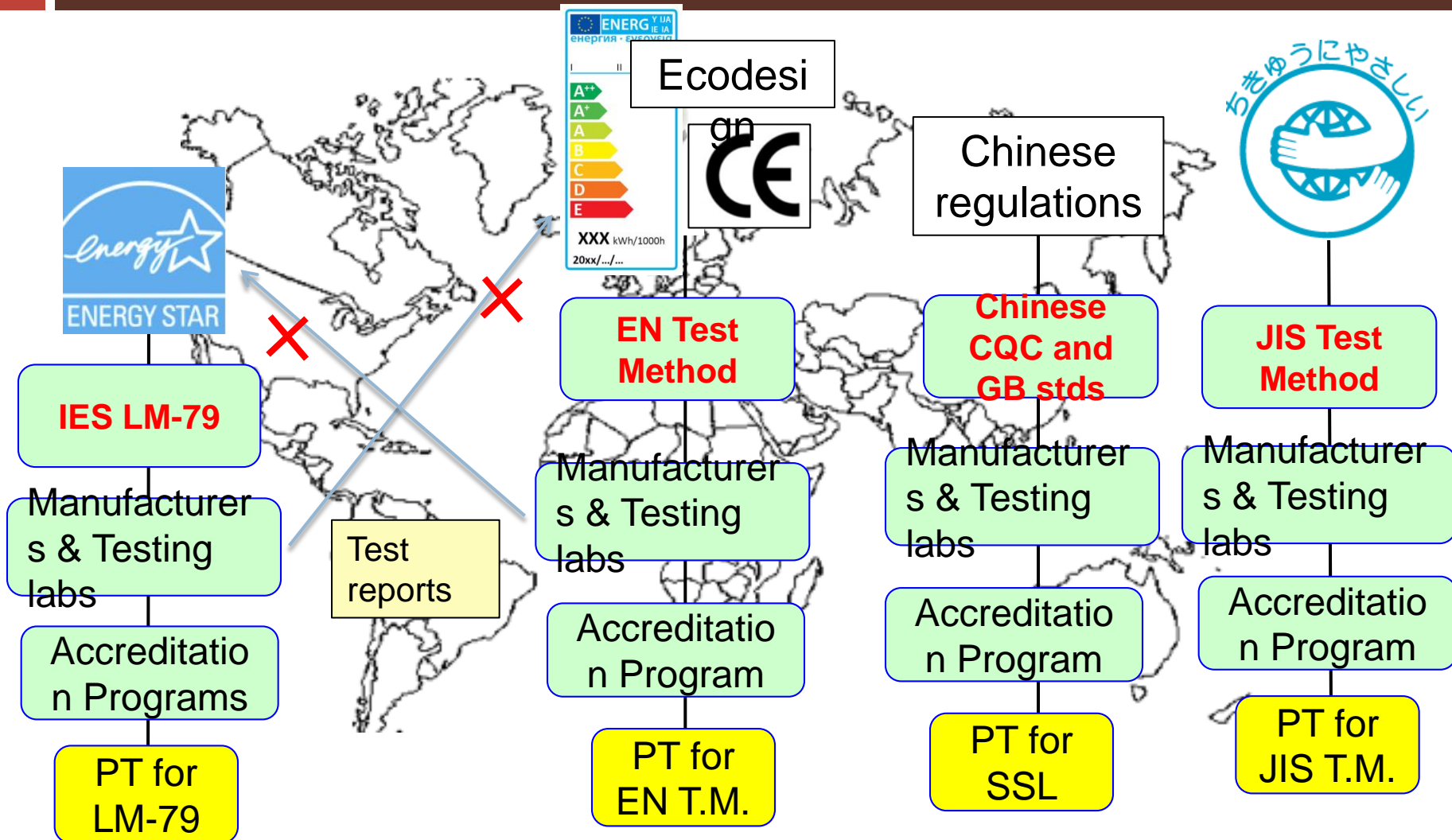
# Task 2: Nucleus Laboratories: Interlaboratory Comparison Testing

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- Need for international Harmonization in SSL Testing and Accreditation
- Task 2 looks at testing methods and laboratory comparison
- Good test methods are required for regulation and enforcement.

# Needs for International harmonization

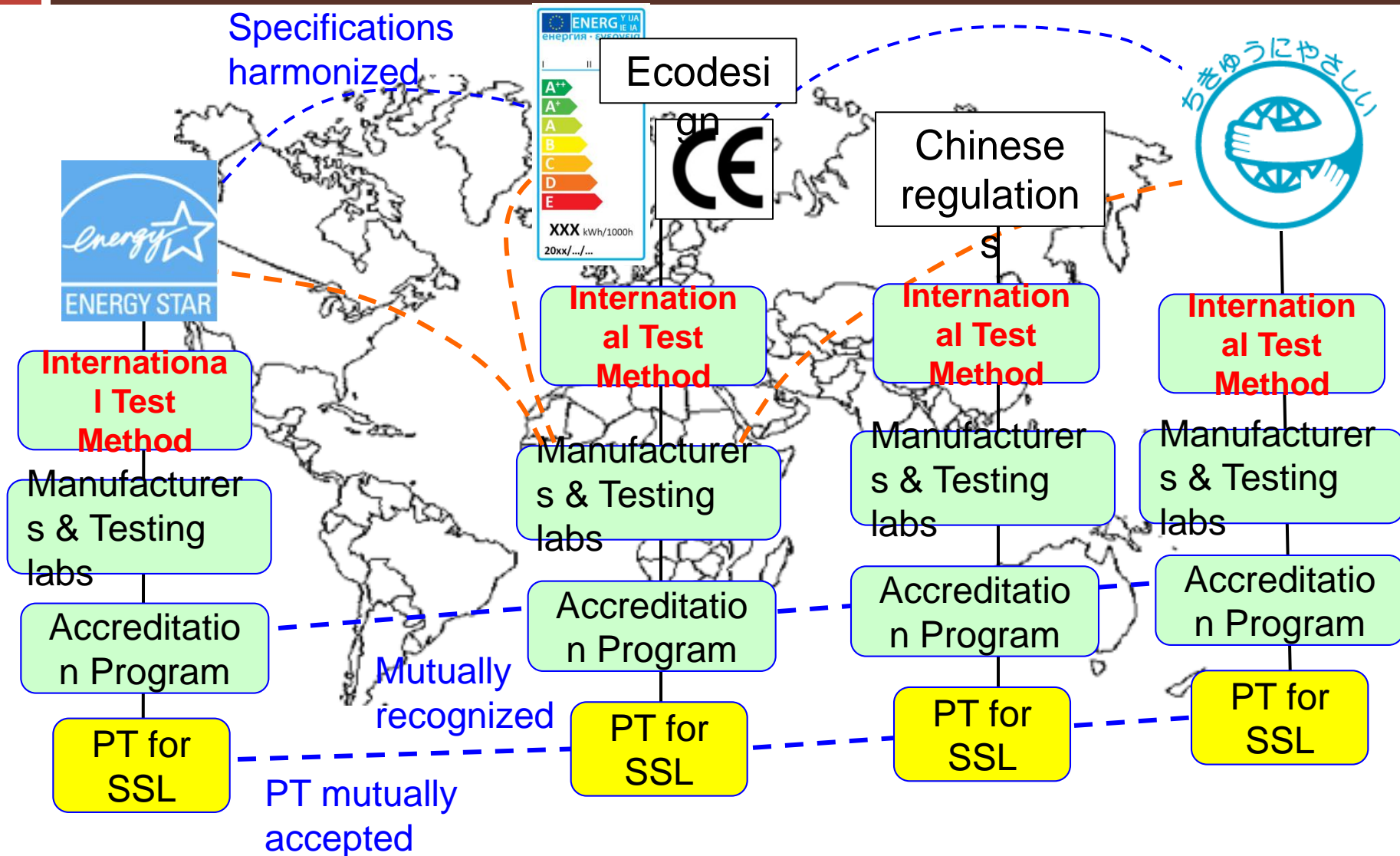
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Different Test methods, different APs, different PTs

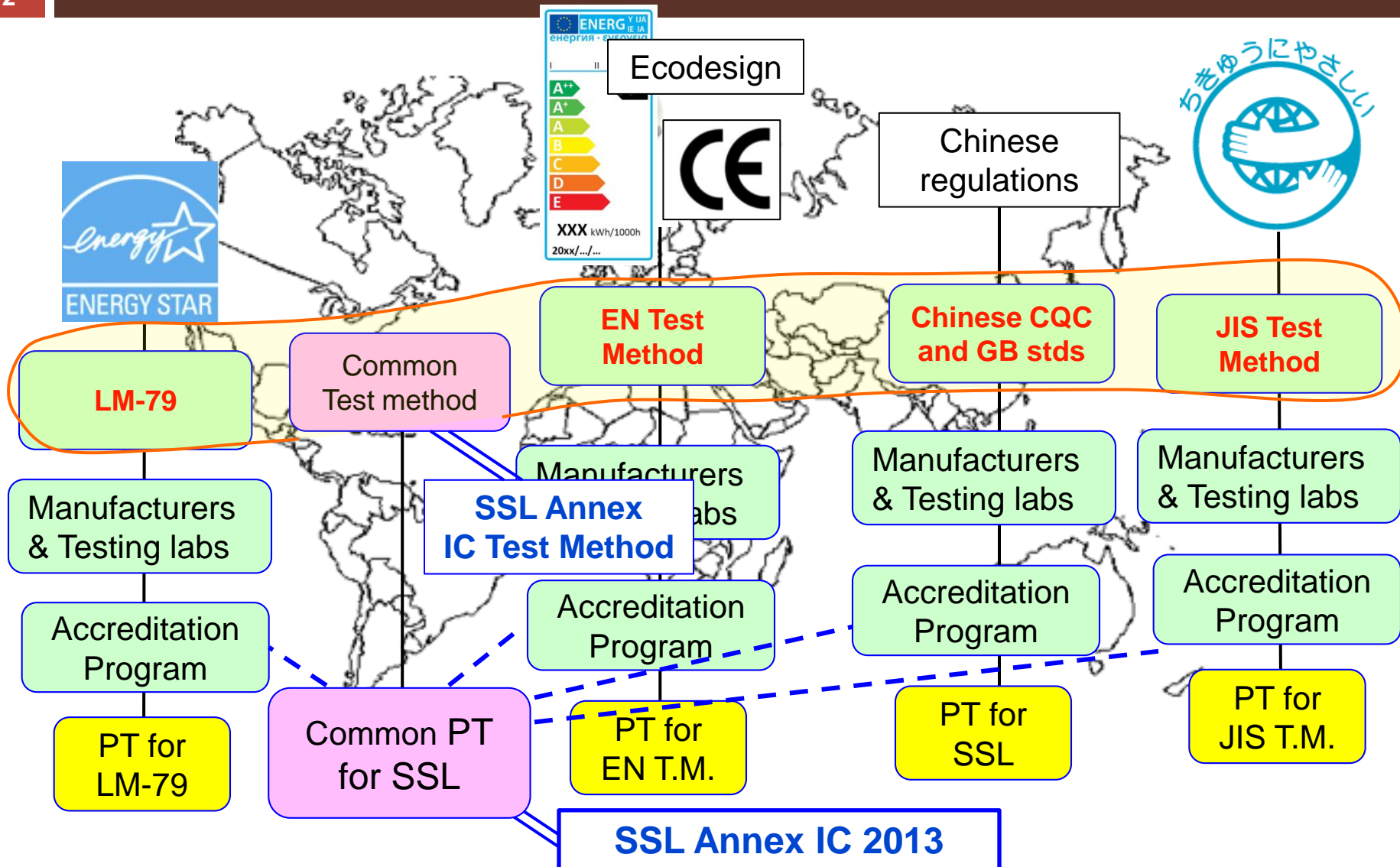
# Ideal scheme – global harmonisation

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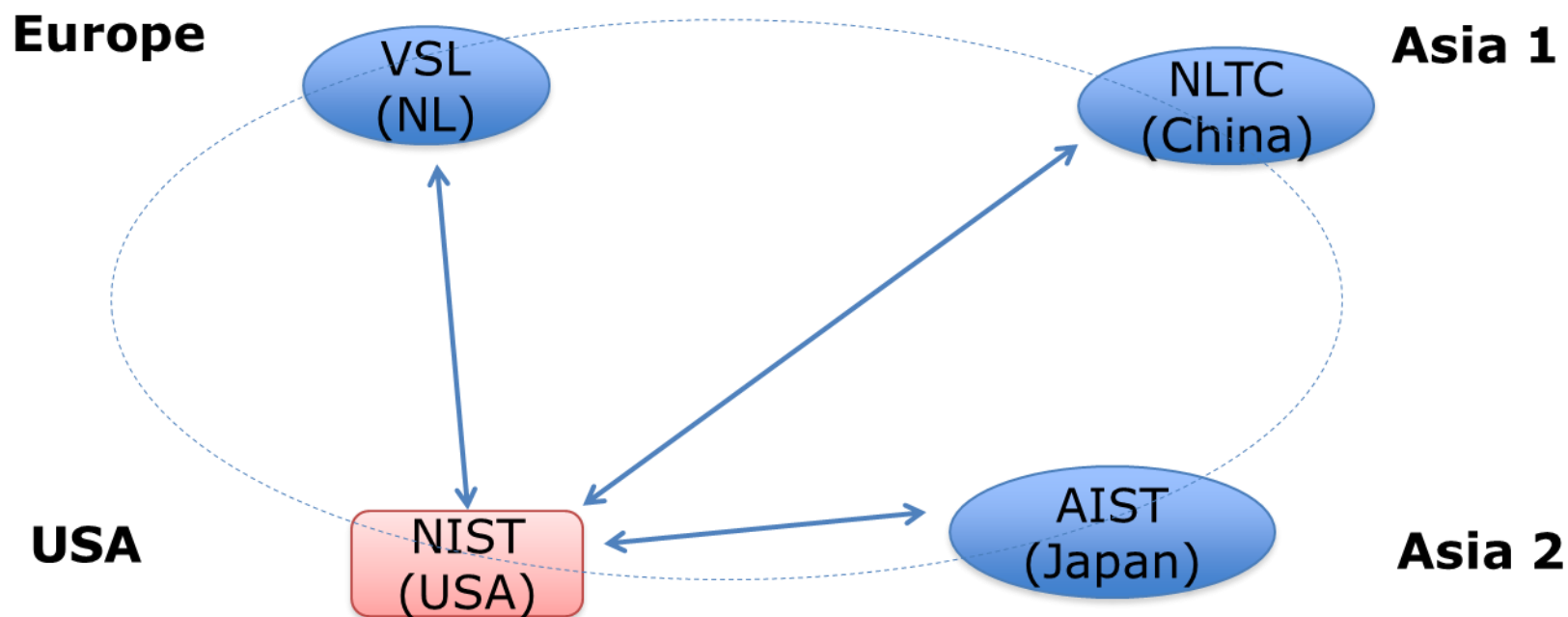
# Short-term solution: Common PT (SSL Annex IC 2013) using IC Test Method

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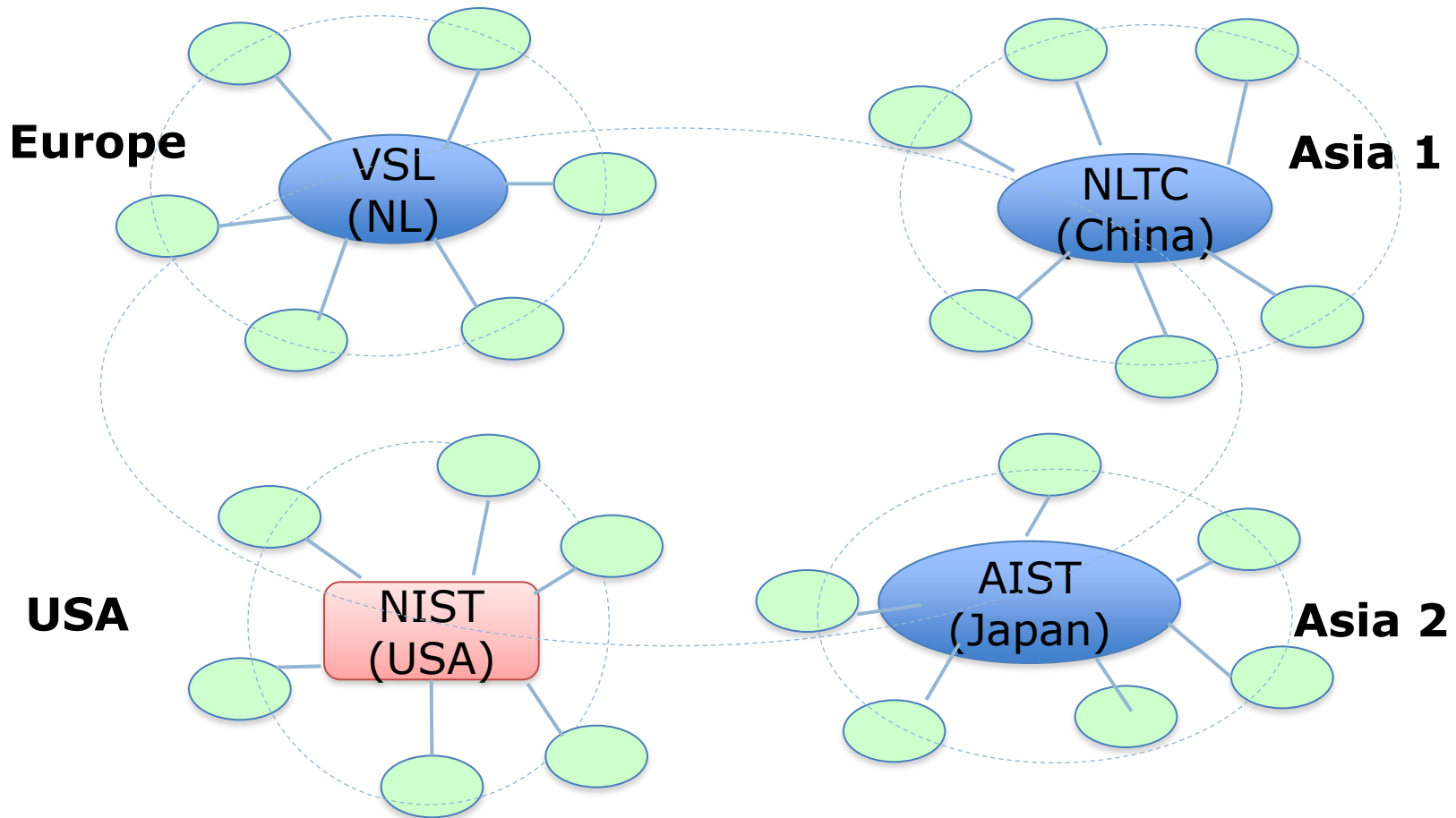
## Task 2: Nucleus Laboratories: Interlaboratory Comparison Testing

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# Interlaboratory Comparison Testing Stage 2 - 2013

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# Interlaboratory Comparison (IC 2013) launched

- **IC 2013** launched
- Designed to test methods
  - IES LM-79
  - CEN/CIE 127
  - IEC 62722
  - JIS 7801,
  - FGBHZ/CIE
- Prepared in response to requirement
- Open to laboratories of member countries
- **IC 2013** has been launched (communication)
- **APLAC PT**

## INTERNATIONAL STANDARD

**ISO/IEC  
17043**

First edition  
2010-02-01

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### **Conformity assessment — General requirements for proficiency testing**

*Évaluation de la conformité — Exigences générales concernant les  
essais d'aptitude*

e SSL

General

AS(?)

# SSL Annex IC 2013 Generic Protocol

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## Solid State Lighting Annex: Interlaboratory Comparison Generic Protocol

VERSION 1.0

Efficient Electrical End-Use Equipment (4E)  
International Energy Agency

SSL Annex Task 2

22 OCTOBER 2012



available at

[http://ssl.iea-4e.org/files/otherfiles/0000/0053/SSL\\_Annex\\_IC\\_Generic\\_Protocol.pdf](http://ssl.iea-4e.org/files/otherfiles/0000/0053/SSL_Annex_IC_Generic_Protocol.pdf)

**Written in compliance with ISO/IEC 17043.**

### **3. Description of the Comparison Artefacts**

- Type of products (required, optional)
- Electrical operating condition
- Operating orientation

### **4. Properties measured for Comparison**

- Total luminous flux (lm)
- Electrical power(W), voltage, current
- Luminous efficacy of source (lm/W)
- Chromaticity (x, y), CCT, CRI

### **5. Reference Values and Assigned Values**

### **6. Testing Period and Shipping Instructions**

### **8. Measurement Procedure**

SSL Annex IC Test Method

### **11. Evaluation of the Performance**

### **12. Reporting to the Participants**

### **14. Eligibility of Participation and Fee**



# Task 2: 2013 Interlaboratory Comparison Testing Goals

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- To have the testing recognized as a Proficiency Test (PT) in order to allow Accreditation Bodies to accredit laboratories per ISO 17025 for SSL testing.
- 4E SSL Annex will work with ABs and other stakeholders to recommend that successful test results be accepted as valid PTs for all of these test methods standards.
- Promotion of this will be the work of Task 3.

# Task 2: 2013 Interlaboratory Comparison Testing - Status

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- 55 labs have signed up for the interlaboratory comparison (IC2013).
- North American labs that have their own proficiency testing programs to be invited to provide their PT results from NVLAP and MAP for the IC2013 analysis.
- All labs expect to finish by June 2013.
- Interim (Nulceus lab) reports due end September 2013.
- APLAC PT interim report due end of November.
- Final IC2013 report due end of Feb 2014 (this would allow inclusion of APLAC PT results for those labs which wish for inclusion/recognition from IC2013).

## Task 2: Possible Future Activities

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- Test methods for lifetime and accelerated lifetime?
- LED light engines ?
- Promotion of international standards (eg CIE LED test method) to government regulators?
- Working towards the ideal scheme of worldwide harmonisation of SSL testing.
- Other suggestions:
  - colour (CRI/CQS)
  - dimming - performance/compatibility and quality aspects
  - PTs for luminaires
  - develop Transfer/shipping standards for transporting artefacts

## Task 3: Standards for Testing Reliability

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- Review current systematic issues with Accreditation, Proficiency testing, Certification for SSL testing.
- Propose proficiency test procedure, based on the procedure used in IEA-4E-SSL Annex
- Interlaboratory Comparison (IC) Testing (Nucleus lab)
- Approach global accreditation organizations to determine if they will recognize the IC as valid Proficiency Testing.

# Stakeholder Discussions

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- Representatives of IEA 4ESSL met with representatives of the Global Lighting Association and the CIE on 7-8 March 2013 to discuss the work of the Annex and solicit input from these groups to improve the effectiveness and impact of the Annex's work.
- The Annex LED performance tiers were discussed. While recognising the usefulness of harmonised performance requirements, the GLA representatives were not supportive of the Annex 5 tier approach, preferring a smaller number of tiers, and the way forward will require further consideration by the Annex Management Committee and discussion with the GLA.

# Stakeholder Discussions

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- The meeting was successful in clarifying the purpose of the 2013 Interlaboratory Comparison exercise and how it can be used as part of recognised proficiency testing in an accreditation program.
- The possibility of cooperative initiatives to promote and support increased enforcement activities in the different regions was also discussed.

# Contacts

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■ <http://ssl.iea-4e.org/>

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