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European Association of National Metrology Institutes

EURAMET TC-PR

The Span of Key Challenges for Next 5 Years Period

-

.. how do they concern everyday life of ordinary EU citizen

G08.09.03

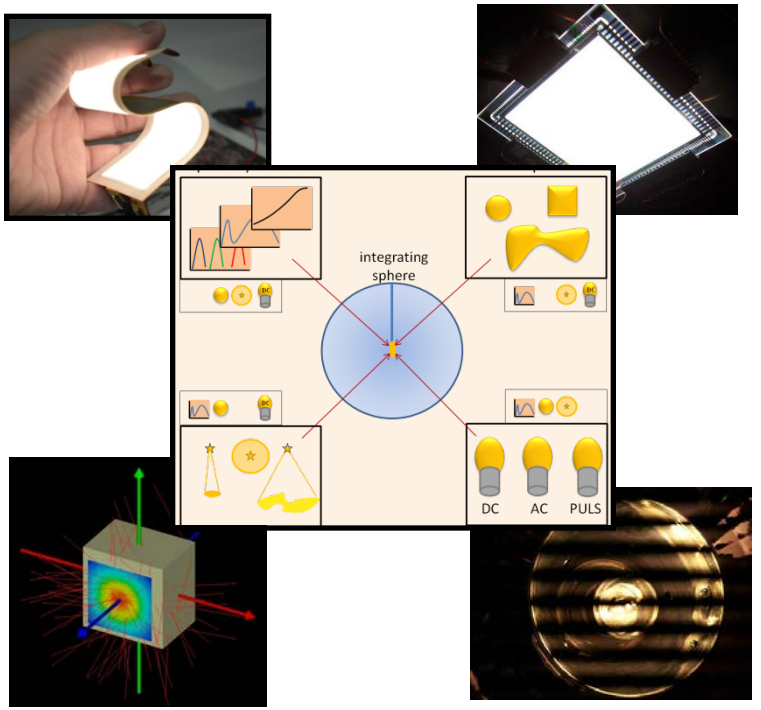
Marek Šmíd, TC-PR Chair

ČMI, Czech Republic

METROLOGY FOR EFFICIENT AND SAFE INNOVATIVE LIGHTING

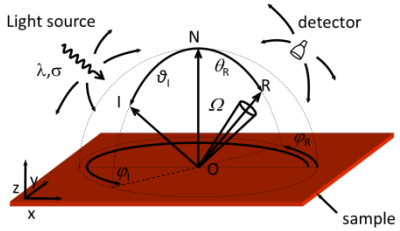
Deliver an advanced metrological framework for novel SSL (LEDs and OLEDs)

- transfer standards **applicable at NMI and test laboratory level**
- measurement solutions for **large area & pulsed SSL**
- metrics and equipment accounting for **safety & comfort aspects** of novel SSL
- **assure longer lifetime** by providing traceability.



Multidimensional Reflectometry for Industry

- Improvement of metrology and primary measurements capabilities for multi-dimensionnal reflectometry (BRDF)
- Understanding of correlation between the visual appearance and the BRDF
- Development of models and data handling for BRDF measurement
- Developing standard procedures and transfer artefacts in order to develop applied metrology for visual appearance attributes (like color, gloss, sparkle and graininess)



JRP – IND 52
xDReflect

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Stakeholders

Materials

ceram
SAINT-GOBAIN

Pigment & coatings

BASF
The Chemical Company
CTC
PPG Industries
nubiola
inorganic pigments
idd printing science technology

Instrumentation

ELSCOLAB N.V.
TechnoTeam Bildverarbeitung GmbH
BYK Additives & Instruments
KONICA MINOLTA
x-rite right on color
ELDIM
EFS
RHOPOINT INSTRUMENTS

Paper

Munksjö
UPM The Biofore Company
fogra

cosmetics

LVMH MOËT HENNESSY • LOUIS VUITTON
M. MAYMÓ HOUSE OF COLOUR

automotive

ŠKODA
WITTE AUTOMOTIVE
GRUPO ANTOLIN
Audi

Color management

2c
GONIO-VISION

Normalization and network

CEDEX CENTRO DE ESTUDIOS Y EXPERIMENTACIÓN DE OBRAS PÚBLICAS
POLE ora Optique Rhône-Alpes
dfwg www.dfwg.de

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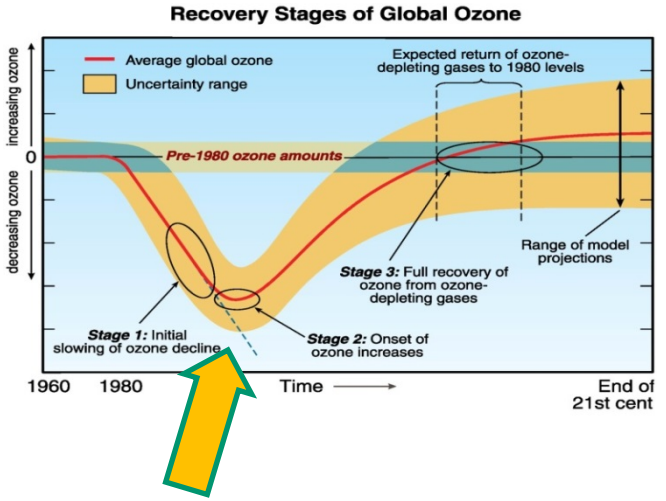
A traceable and harmonized Global Total Column Ozone Network

- Provide traceability of total column ozone to 1%,
- Radiometric characterisation of Dobson and Brewer spectrophotometers,
- Development of array-based solar UV spectroradiometers,
- Improved and consistent ozone absorption x-sections,
- Comprehensive uncertainty budget incorporating instrumental and atmospheric uncertainties



Present

MetEOC-2: Metrology for Earth Observation and Climate

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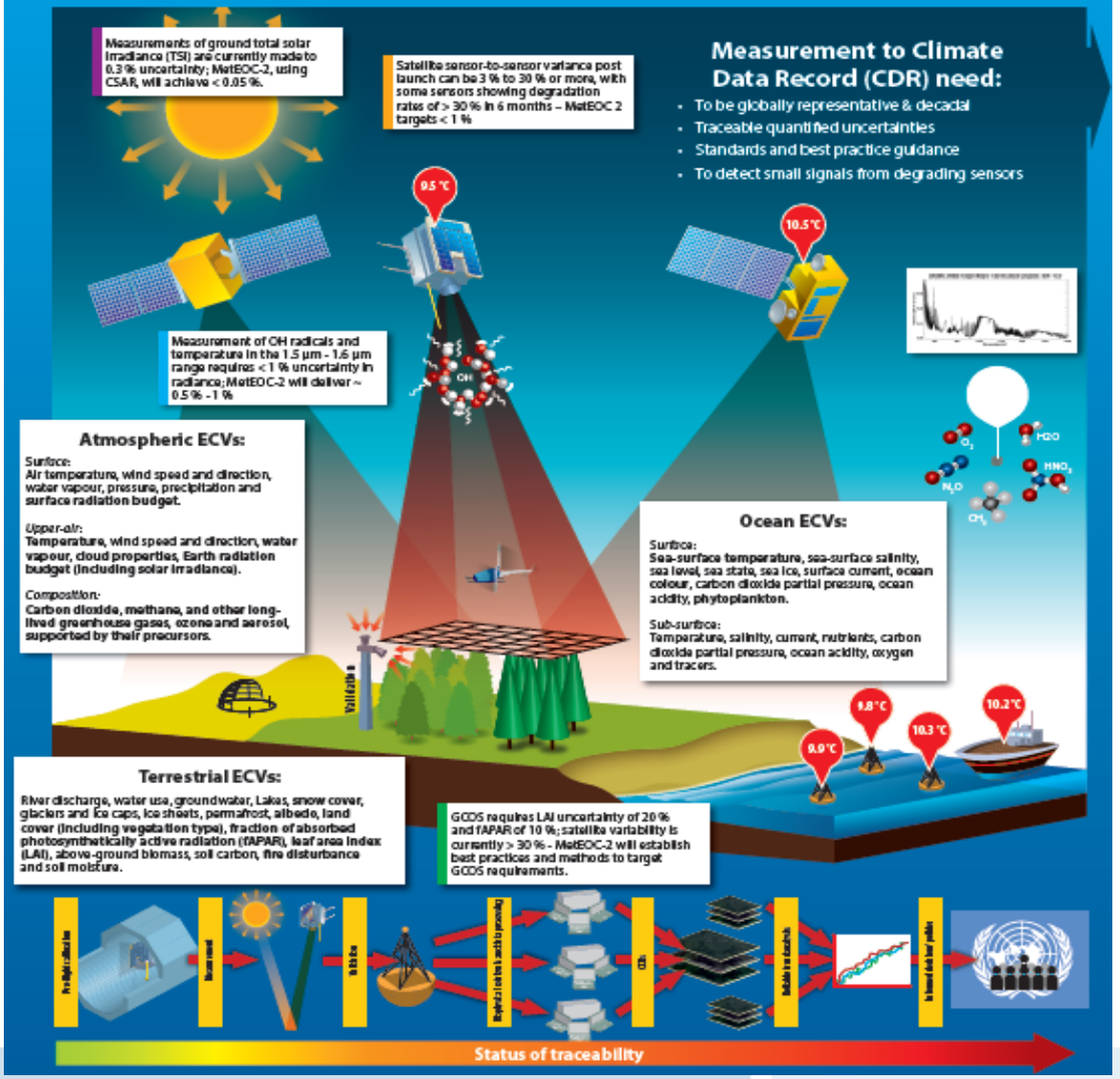
NMIs from, UK, F, D, Fi, I, NL, Cz, Sp, CH

+ RAL, DLR, FGI, BUW, Ujul. UCL

- **Concentrates on Post-launch**
- **End to End Traceability & ECVs**
- **Seek to establish virtual centre of excellence**
- **Addresses ~15 ECVs in Land, Atmosphere, Ocean, Radiation**
- **Stakeholder support from industry , academia, international orgs**



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NEWSTAR

NEW primary STAndards & traceability for Radiometry

Scientific and technical objectives

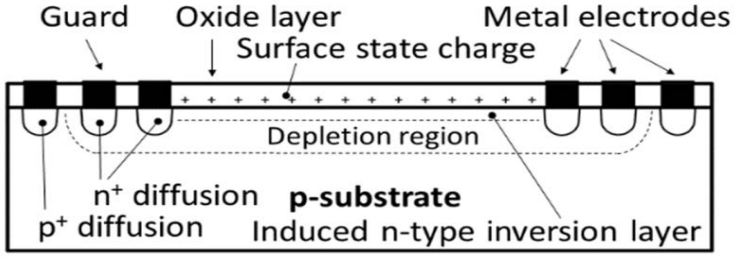
- **provision of highest level realisations of the basic and derived radiometric units**

combined with

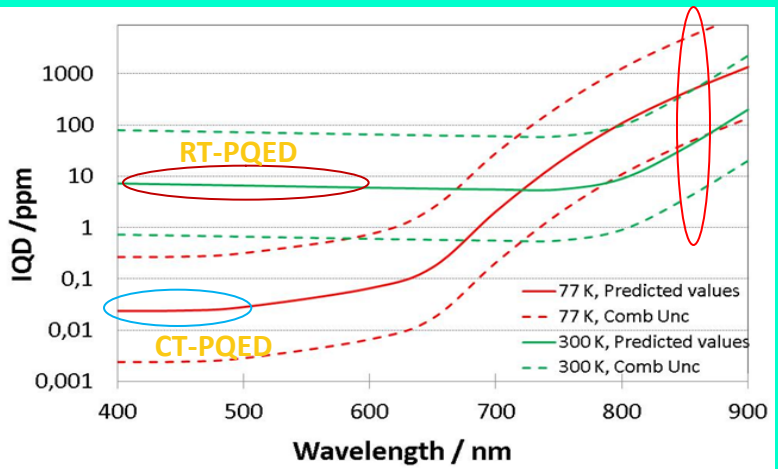
- **a rapid, low-cost dissemination by shorter calibration chains**

Predictable Quantum Efficient Detector (PQED)

PQED for absolute radiometry

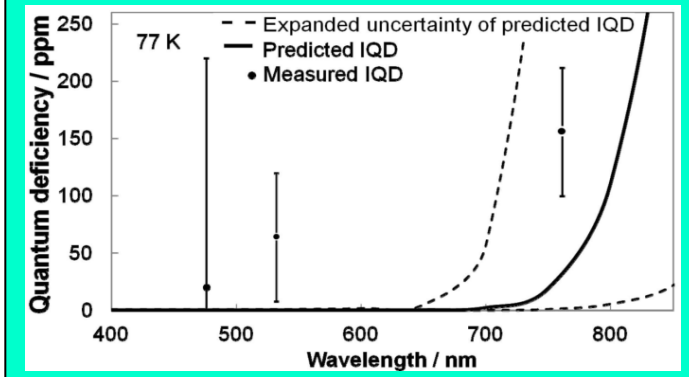


FO-PQED



CT-PQED @ 1 ppm

$$R(\lambda) = \frac{e}{h}\frac{\lambda}{c} * \left(1 - \rho(\lambda)\right) * \left(1 - \delta(\lambda)\right)$$



RT-PQED @ 100 ppm

User friendly and cost-effective primary standard

SIQUTE Single-photon sources for quantum technology

to develop deterministic, compact and efficient single-photon sources for needs of cutting edge quantum optical technologies such as

- **quantum communication,**
- **quantum computation**
- **quantum metrology.**