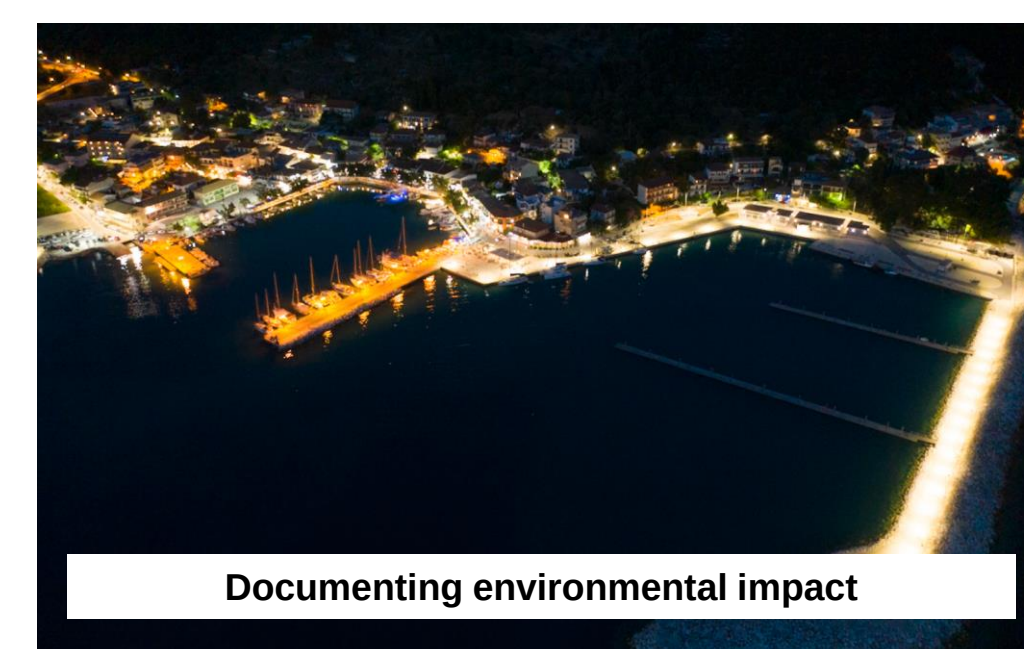


Addressing the need for high-dynamic-range imaging measurements

- **Measurement of luminance distributions** of High Dynamic Range (HDR) is required for applications like LED- or laser-based car headlights, obtrusive light, sky glow, road lighting, and glare evaluation).
- Both **imaging luminance measurement devices** (ILMDs) and **RGB sensor cameras** are often used for such assessments.
- **HDR** luminance images are achieved by **severe digital post-processing** of image sequences, which **lacks standardisation and uncertainty statements**.
- **HiDyn project develops procedures** for providing **SI-traceability** to HDR imaging measurement systems by standardising the **determination of the instrument performance**, including associated **uncertainties**, and by selecting an **HDR algorithm adequate for SI-traceable** luminance measurements.
- The need for **reliable evaluation, verification, and SI-traceability** of HDR imaging measurements and glare assessment is addressed, along with an awareness of the limitations, especially for **critical areas** of society such as **working place ergonomics, traffic safety** and **environmental impact** of obtrusive light.



Project's key deliverables

- Reference design for a high-contrast-luminance reference standard source of at least six decades
- Methodology for the characterization of HDR imaging measurement systems
- HDR algorithm for the generation of traceable luminance images including measurement uncertainty
- Good practice guide for uncertainty evaluation of traceable HDR imaging luminance measurements
- Trustable assessment of glare and obtrusive light

Relevant stakeholder groups

- National Metrology Institutes
- Manufacturers of imaging luminance measurement devices (ILMDs)
- ILMD operators evaluating glare and obtrusive light
- Scientific community addressing obtrusive light and glare
- Citizen/communities impacted by obtrusive light and glare scenes

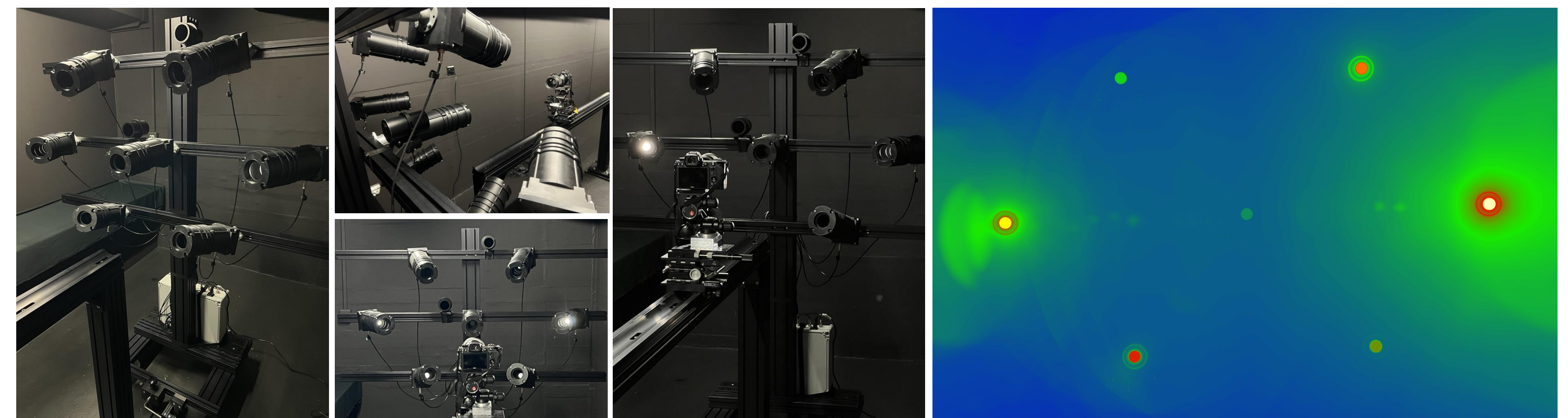
Project Partners



Project Stakeholders

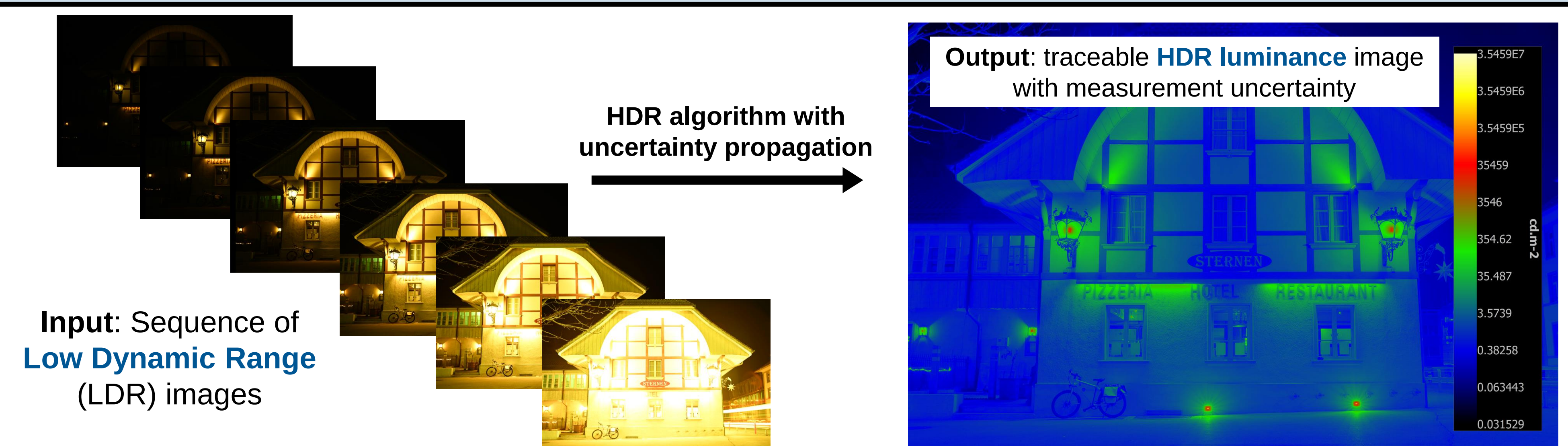


Key outcome 1 - High Luminance Contrast Reference Source – “HiDyNi”



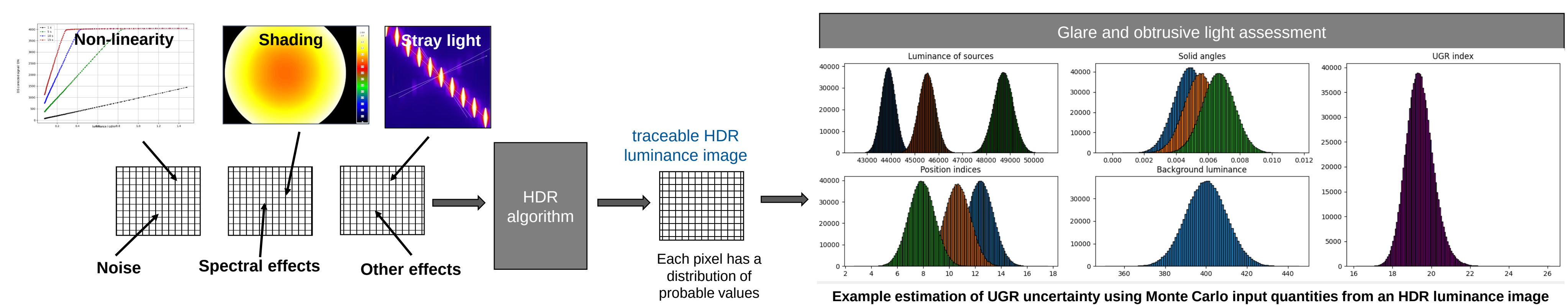
The developed “HiDyNi” source achieves 6 decades of luminance. A method for the characterization of HDR luminance measurement systems was developed and tested using various instruments during two laboratory workshops

Key outcome 2 – Traceable HDR Merging algorithms



Existing HDR algorithms were tested and the selected ones were used for traceable merging of the LDR luminance images. In this way, the measurement uncertainty can be associated to the produced HDR luminance images

Key outcome 3 – Estimation of measurement and glare assessment uncertainty



Models for the luminance measurement and HDR merging were developed. The measurement uncertainty from digital counts or luminance values can be propagated to glare metrics (e.g. UGR, GR, TI, etc.) via numerical (e.g., Monte Carlo) or linear propagation methods. This leads to a more trustable conformity assessment of glare and obtrusive light

