

Comprehensive Approach to Regulation of the Problems, Caused by **Artificial Lighting** ~~ANI~~

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References and Competencies

- Detailed overview on situation in Slovenia and parts of other countries
- Experience with rationalisation of problematic projects at the local level, including raising awareness of local authorities and the general public
- Head of municipal commission for the audit of public lighting
- Head of the Committee for Limiting the Negative Effects of Lighting at the Slovenian Lighting Society
- Member of the working group for amending the Decree on limiting values of light pollution at the Ministry of the Environment and Spatial Planning of the Republic of Slovenia
- Active participant at international discussions and events in the last few years
- *Main area of interest: road and street lighting in non-urban areas*

GOALS AND MEASURES TO ACHIEVE THEM

1. Complete: Comprehensive control of side effects of outdoor lighting

- a. Limit light pollution and its negative impacts
- b. Preserve space; landscape, character of settlements, experience of space ...
- c. Minimise energy consumption
- d. Optimise financial expenditures

2. Narrow: Limit light pollution and its negative impacts

- a. Prevent impacts on the living world and ecosystems
- b. Prevent disturbances to humans (intrusive light, glare ...)
- c. Minimise sky glow
- d. Avoid changing the natural night where not necessary (any artificial light is a pollution!)

Negative aspects of outdoor lighting

- ,Practical' aspects

- Impacts on live nature, including humans; energy consumption
- Impacts on human activities, e.g. astronomy

- Environmental ethics

- Preservation of natural environment; are we allowed to completely anthropize the Earth?
- Are we allowed to light up every village, side-street, connection road, crossroad, highway junction ...?

- Aesthetics of space

- Landscape and cultural environment preservation
- Aesthetic solutions

Where are the limits?

Will we behave as
ABSOLUTE MASTERS of the Earth
or will we take ONLY WHAT WE REALLY NEED?

We live in a technical (sometimes even totalitarian!)
civilisation



Prevlada razsvetljave nad svetom in svetim!
Dominance of lighting over the world and the sacred!



Who/what rules the world?



Where are we in problem solving?

We are making progress, but even
the basic starting points are not
sufficiently clarified

a single case: a beautiful hotel



more cases: a trend



even more cases: a general trend



evolved trend: an ecological and a spatial problem



similar cases (privat b.): an extended trend/problem



an entire subfield – decoration + practical use l.: one of the biggest threats for further rise of light pollution











Where are the limits of decoration lighting?

,light' road lighting



,heavy' road lighting















HOTEL
G DESIGN HOTEL
GOSTILNA 50m ↑
GORJANC
← 50m



*„Everything is done correctly, but at the same time nothing is done correctly!“
(I. Zorko)*

*Everything is done according to
unidimensional rules, but it's not
harmonic and doesn't suite into this
space*



Is lighting needed/recommended here?



Until 2000: <10 lights;
1st stage: SECURITY and partly comfort;
main 3 crossroads and centrum



Y. 2024: 130 lights;
2nd stage: COMFORT and partly security, where this makes sense; mainly pavements and parking on the main axis; exaggerated projects



Y. 2050: 500 lights;
3rd stage: EXTREME COMFORT, which turns into its
opposite; total illumination of all streets in all villages,
negligible needs

Croatian news portal: "An unusual light appeared above Ljubljana, it is known what it is"





AA/ABACA / Abaca Press / Profimedia

What is acceptable here?



What does the system impose?



A similar case



First section already done!



Ex.: Side valley in the countryside

- Side valley in the countryside, 1 km long route, formally most outside the settlement, actually a scattered settl. along 3rd order regional road
- DRSI designed the lighting according to the EN 13201 standard, and the project is very rational compared to other projects
 - Pavement only, 5m lamps, below lamps only 11lx, P6, CCT 3000K
 - It is still a serious degradation of the space, the line of 37 lamps with a spacing of 27 m does not belong in this space
 - The same number of lamps are still sold!
 - DRSI rejected the comments, even from the landscape architect, that the project was not landscape-appropriate, with the opinion that, in their opinion, it was adequate!?
 - DRSI is not ready to install orientation lighting because this would mean a deviation from the standard
- Possibilities of influence: ban on lighting outside settlements, spatial planning recommendations, DRSI recommendations on road design, change of standard ALAN mitigation alone is not enough!

a heavily revised project, but still not enough
(project by EN 13201: 14 lamps, implemented: 5 lamps)

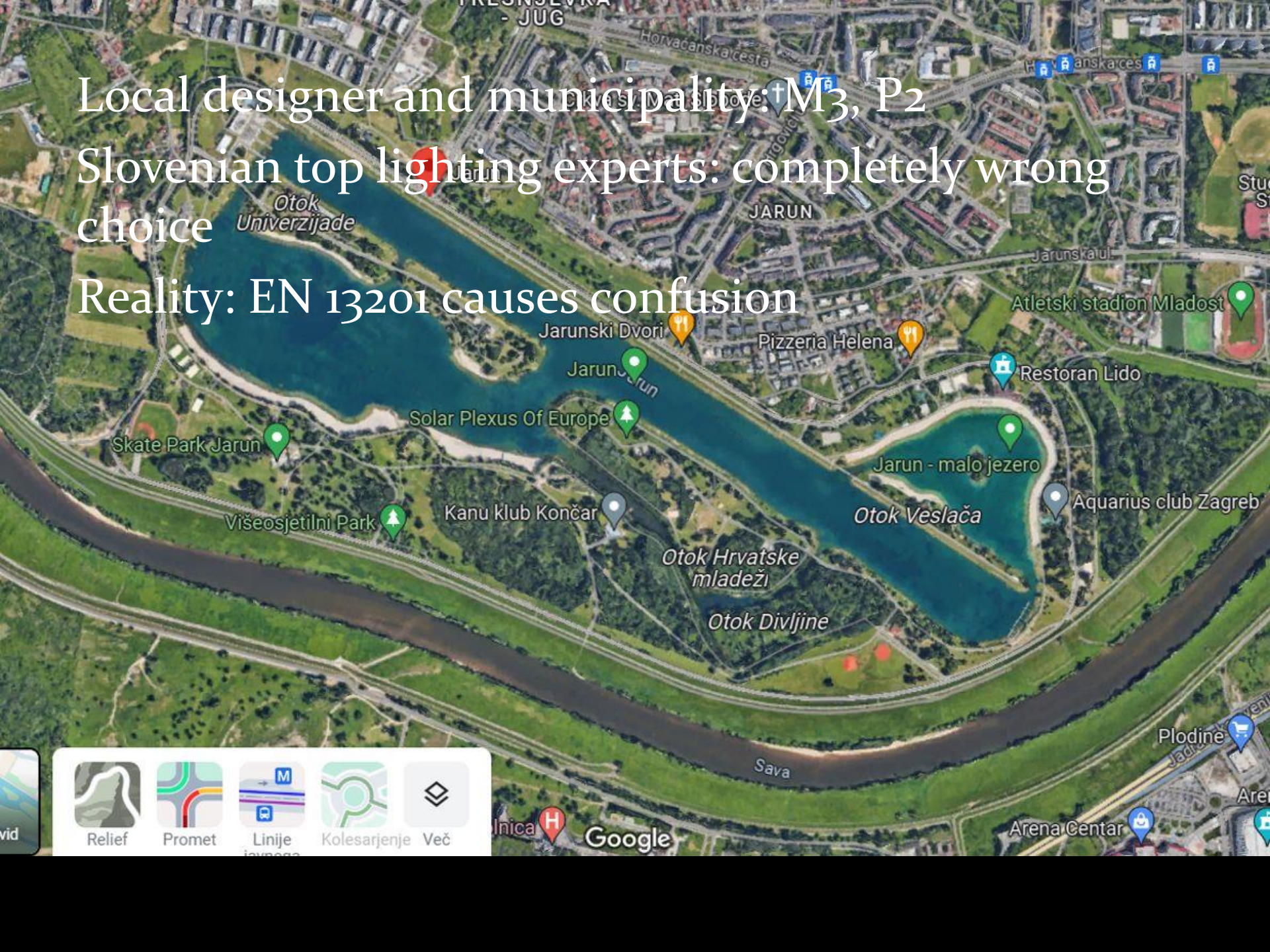




Local designer and municipality: M3, P2

Slovenian top lighting experts: completely wrong choice

Reality: EN 13201 causes confusion





Three in one: 1. Light pollution, 2. Visual degradation of space, 3. Informational pollution

In general, the practical knowledge on use of light in outdoor spaces is poor



WHAT EXACTLY IS THE PROBLEM?

Artificial Light at Night (ALAN)

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Artificial Lighting

Not only light pollution and not only during the night (e.g. lighting poles, aesthetics, urbanisation)

More comprehensive approach needed



Not only

light pollution,

but also

landscape and settlement visual
degradation

WHAT IS LIGHT POLLUTION?

Excessive or poor use of artificial outdoor light
Measurable negative impacts of artificial light on
starry sky, ecosystems, human health and
wellbeing, energy consumption,
visual degradation of natural and cultural
heritage ...

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Any ALAN that propagates in an outside space is
a pollutant, regardless of its usefulness, source,
period of use or the energy expenditure
associated with the emission

Necessary measures by priorities & Status

1. **Avoid lighting**, if the level of needs is not high enough
Insufficient ethical starting points, missing theories & guidelines...
2. **'Soften' extent and intensity** of illumination where lighting makes sense
Critical lack of knowledge and action, lighting profession leads the game almost completely
3. **Improve technical parameters** of the lighting equipment
The only point, which is really more or less on the right way
4. **Improve visual appearance** of the lighting equipment and of the illumination itself
Usually more or less left out of discussion in ALAN circles

Do we understand the problem? Do we listen to each other?

Science, Light Pollution, special issue, M. Morgan-Taylor: "...
This report recommends dimming and selective switching off, subject to the EN13201 lighting standard. Primarily designed to save energy, these standards also serve to reduce all other negative effects of ALAN ..." ?!?

Note: In some countries and at the EU level, EN 13201 has entered the LP prevention legislation!?



Default choice should be NOT to
illuminate

rather than requiring that a reason
for non-use be provided

Don't illuminate, if the level of needs is not high enough!

A possible ethical starting point, which could (should!?) be supported by quantified criteria



Keep your light for yourself!

*A possible ethical starting point,
which can become a soft and even a
hard rule*

Quod licet Iovi, non licet bovi!

What is permitted to Jupiter, is not permitted to an ox!

Exceptions can be made for common use (e.g. illumination of churches), but should not be allowed for general use (e.g. facades of private buildings)

Who is able to define ethical limits?

In Slovenia, we have a problem, because it is not possible to find anyone. Maybe the Slovenian Academy of Sciences and Arts could be the right address

Levels of LP control

- **Spatial planning and nature protection policies**
 - Where lighting is needed/not recommended/not allowed (cost/benefit and needs-based; night as a value)
- **Cumulative limits:** red-lines, target values, top-down approach
 - E.g. kWh/capita/year or lumen/capita/year in Decree
- **Design rules** for different types of road objects
 - Extent of illumination (e.g. 25, 4 or 0 lights per roundabout)
 - Where high uniformity and where only orientational
 - Spatial distribution and height of luminaires
- **Optimisation of individual light sources**
 - Light colour, optics, shields ...; e.g. 4000 K is a past in Slovenia

Ex.: EU Nature Restoration Law

- Formulation not strong enough
 - *„When preparing their national restoration plans under this Regulation, Member States should be able to consider to stop, reduce or remediate light pollution in all ecosystems.“*

Ex.: SI Regulation on road design

- Old version

- *„Lighting must be installed on roads in settlements ...“*

- New version

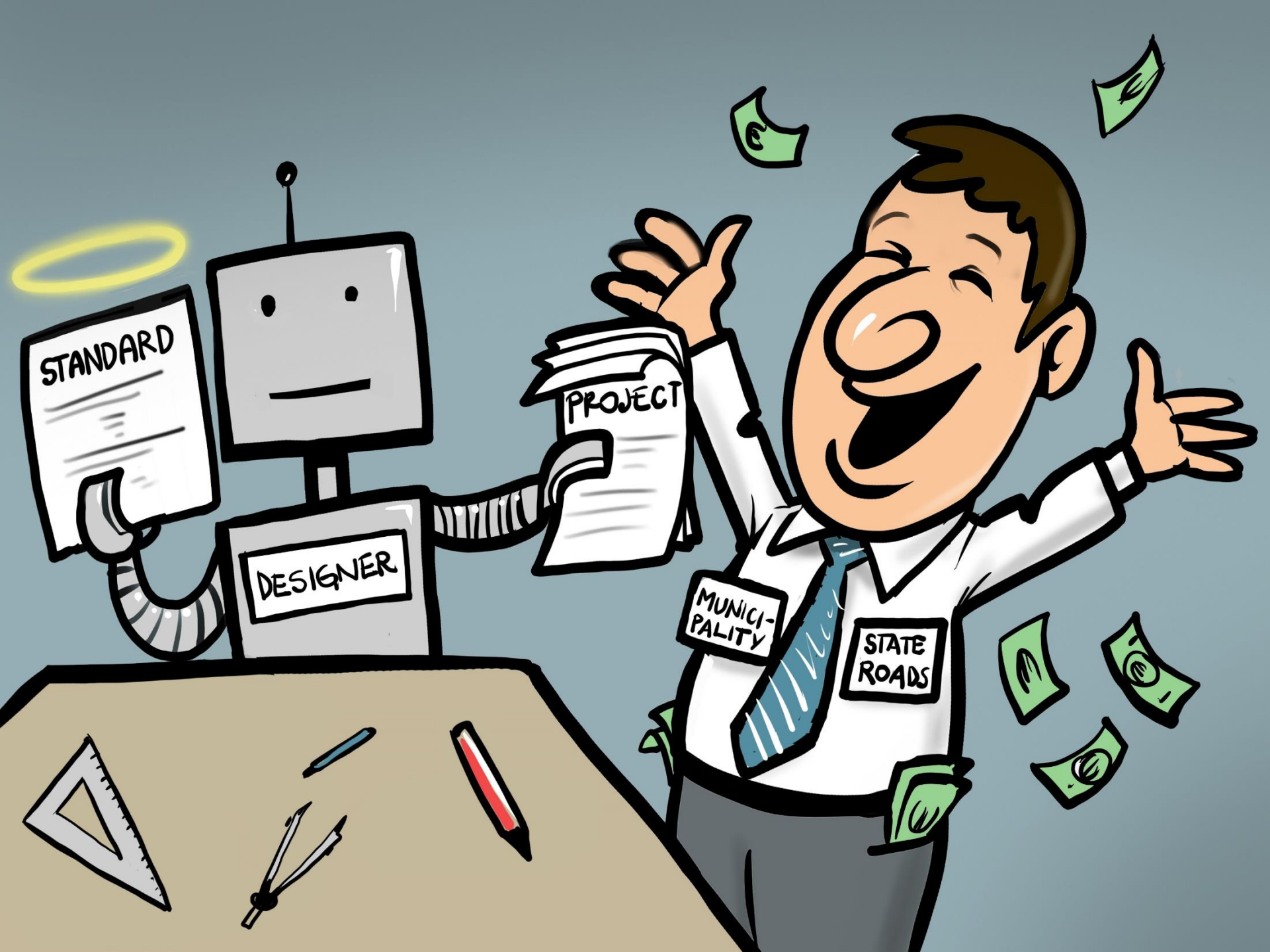
- *„Road lighting must be on the most heavily trafficked parts of roads in settlements, ...“*

Ex.: SI Spatial development strategy

- **Lighting is a problem to be solved**
 - *„Special attention will be paid to ensuring quiet zones in settlements and reducing nighttime illumination of public areas and residential buildings.“*
 - *„The quality of life in settlements increases... .. by reducing night lighting, especially along roads outside compacted parts of settlements or in the immediate vicinity of residential buildings, hospitals, social institutions and in areas of landscape recognition, in exceptional landscapes and in wider protected areas and areas of cultural heritage;“*
 - *„.... ..The night lighting of the infrastructure is limited to the most necessary lighting in villages and rural settlements, or it is reduced or technologically and technically adjusted to the level of the minimum necessary lighting. The types and form of lighting devices are adapted to the spatial identity of settlements and the landscape.“*
 - *„The landscape character is negatively affected by... .., public lighting outside settlements (and in settlements) of inadequate dimensions and scope... ..“*

Ex.: SI EN 13201-1 (Road lighting classes)

- Slovenian country specific version in preparation
 - **Introduction of orientational lighting** instead of uniform lighting for low and medium traffic locations
 - Clearer questions and answers when choosing lighting classes + recommended choices for particular road types
 - Discussion on general lowering the illumination levels is a harder task
 - Softer use of the standard – does every cm² really have to meet the standard? (see also next slide)
- Be aware: EN 13201 doesn't define what and how wide to illuminate
 - In Slovenia, we work on revision of higher level recommendations



EU Council Presidency initiatives

- Czech and Spanish presidency ...
- Good potential for actions at/from the EU level
- There's a threat that the national bureaucrats will take over the initiative, without including national experts
 - In Slovenia, a single person (coming from lighting profession) responsible for light pollution at the Ministry, is attending European events, but is excluding the national experts, trying to play as non-disturbed as possible
 - In Czech Republic, the national experts are only partly included
- We need support from international ALAN community, not replacement and teaching from above
 - We have more specific knowledge on the situation in the country and we know our legislation
 - We have a lot of experience in the key topics
 - It's not hygienic to be taught from above

Ongoing and planned activities

- Define **spatial planning legislation** (national strategy already adopted) and spatial planning oriented recommendations + **ethical starting points** = ?
- Revise **Decree on limiting values of light pollution**
- Revise **Slovenian Lighting Society and Directorate of Infrastructure recommendations**
- Write national specific 1st part of **Standard EN 13201**
- Enforce already existing changes in **Rules on road design**
- Revise and extend **municipal lighting plans**
- Revise **Green public procurement regulation**
- Educate **professionals and general public**

The problem can be solved, but we need more comprehensive approaches, more practical knowledge and more decisive legislation!

