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Large-scale international multidisciplinary cross-sector training (LST)

Daylighting / Renovation and remediation methods

František Vajkay

Outline

Renovation and remediation methods

- Water acting
- Water proofing of damp and wet structures
- Solutions for indoor spaces

Daylighting and insolation

- *Quantities*
- *Evaluation requirements*
- *What to look out for*

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Remediation in renovation

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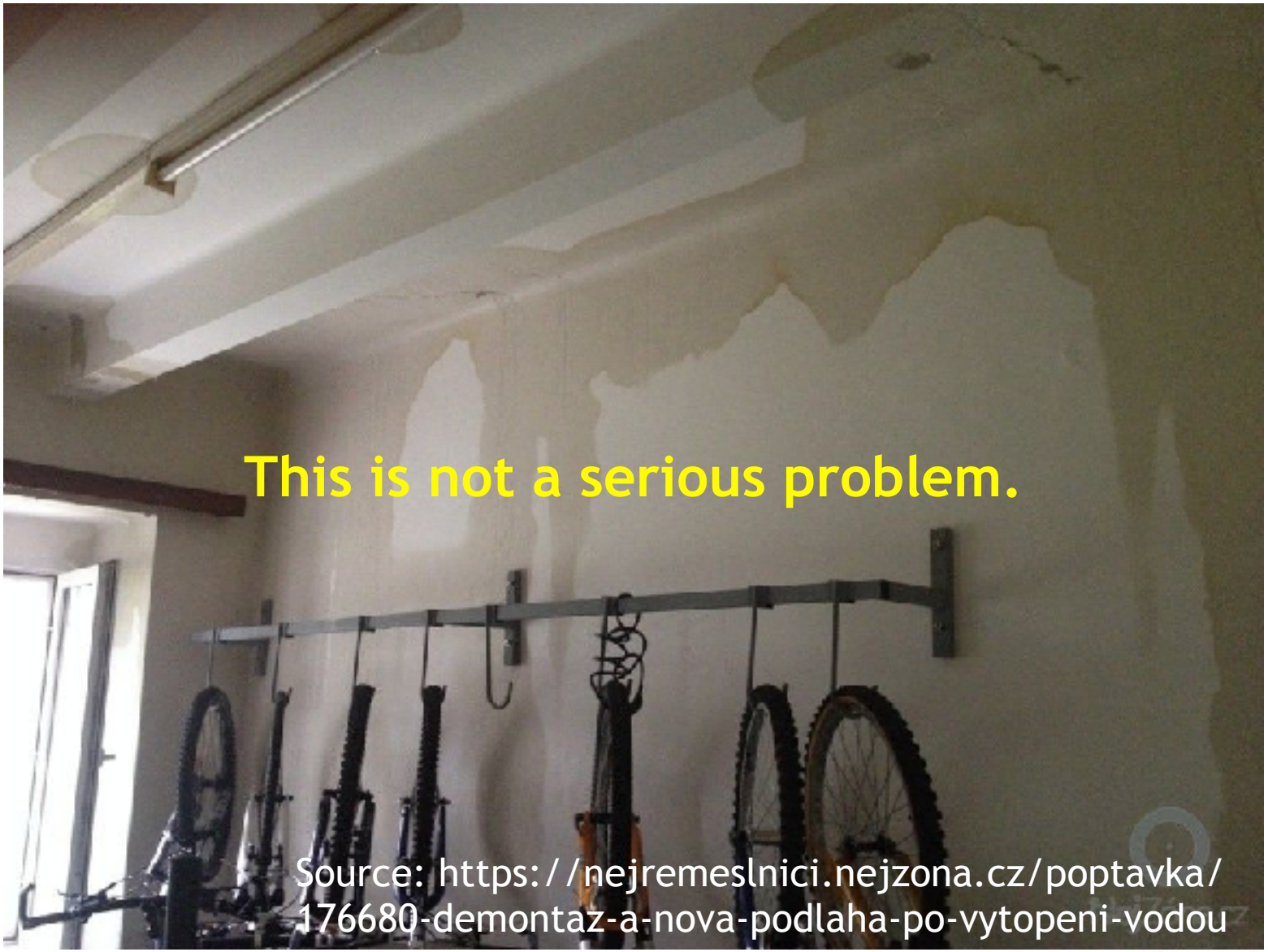

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https://stavba.tzb-info.cz/izolace-proti-vode-a-radonu/13061-sanujeme-vlhke-a-zasolene-zdivo

https://imaterialy.dumabyt.cz/rubriky/poruchy/pamatkova-obnova-katakomb-statniho-zamku-lednice-2-cast_42587.html

These however are serious problems.

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Efflorescence

Efflorescence means:

- That active water acting was detected:
  - External source,
  - Internal source,
  - Underground source.
- Especially with water being aggressive:
  - *Chemical composition can be determined from salts:*
    - *Acidic,*
    - *Base.*

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Methods to determine moisture cont.

Destructive methods:

- Gravimetric (laboratory determination)
- Calcium carbide approach

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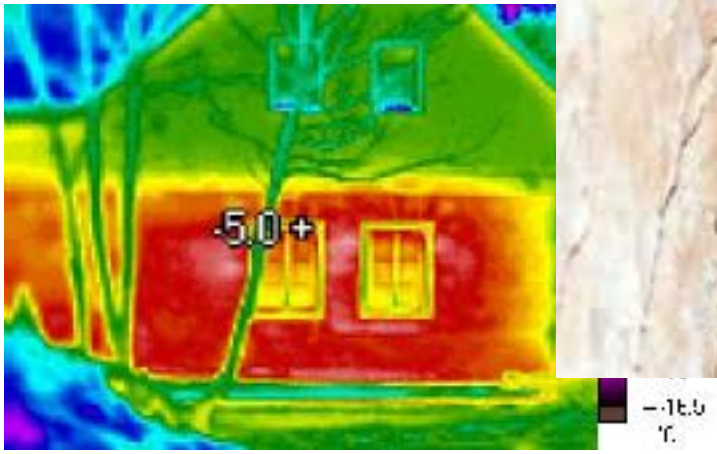
Non-destructive methods:

- Resistance method
- Capacitance method
- Thermal imaging
- Neutron scattering method
- Method utilising absorptive mat.



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Methods to remove moisture

In case of buildings without basement:

- Brick replacement method and underpinning;
- Saw slot method;
- V-cut method;
- Massari method;
- Chromium steel sheets method.

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When the building has got a basement:

- Chemical rehabilitation,
- Electro osmosis,
- Ventilation by cavities.

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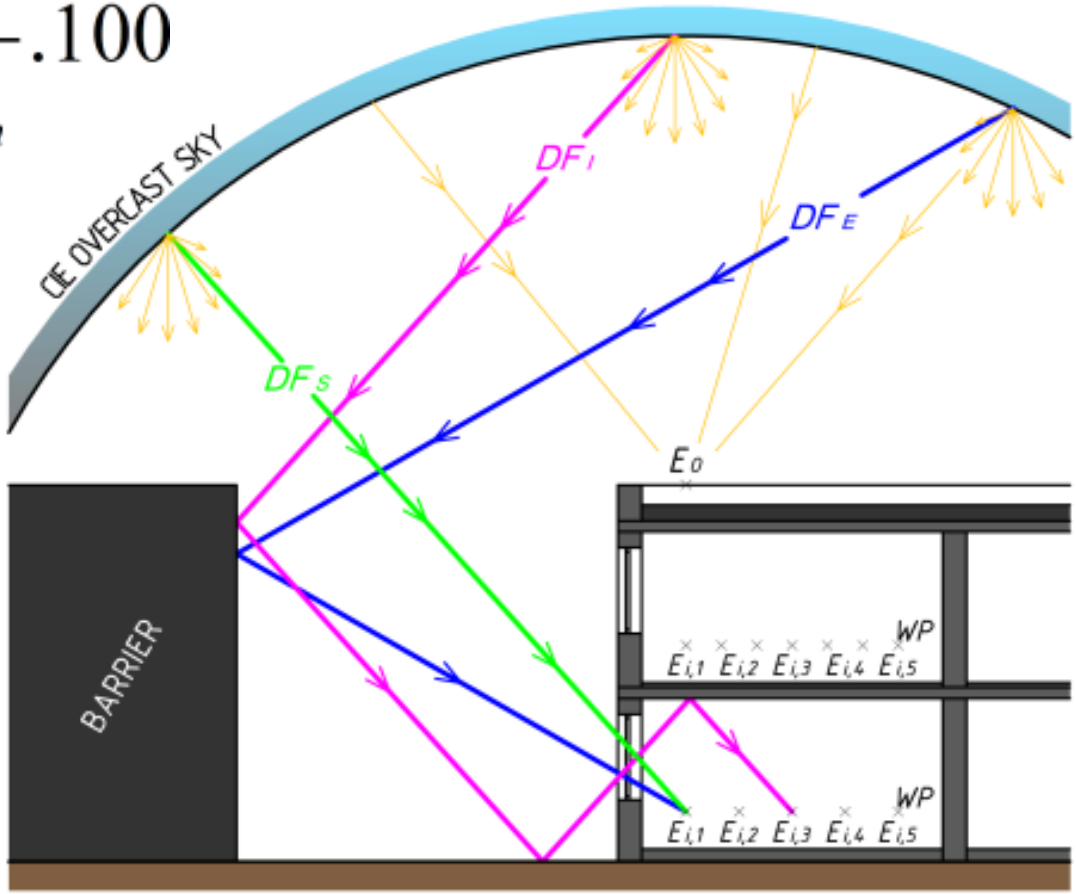
Daylighting

$$D = \frac{E}{E_h}.100$$



DF S - SKY COMPONENT, DF E/DF I - EXT./INT. REFLECTED COMP.
WP - WORKING PLANE, E i,1~E i,5 & E 0 - ILLUMINANCE SENSORS

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Different countries, different requirements:

- UK: Living oriented spaces
  - Kitchen – D_m>2.0%,
  - Living rooms – D_m>1.5%.
- Slovakia:
  - Living spaces – $D_{m,1,2}$>0.9%; $D_{min,1,2}$>0.7%,
  - Working spaces – 7 classes altogether. 3rd and 4th are the most commonly used:
    - 4th class – D_{min}>1.5%, D_m>5%, r>0.2-.
- Others are classified on the basis of properties of visual contact.

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Insolation

Are only 3 requirements:

- Residential buildings 1/3 of living area - 90min ins. time,
- Family houses 1/2 of living area - 90min ins. time.
- Plots and fields for recreation of inhabitants - 180min ins. time.

Evaluation requirements:

- Point position: 300mm above parapet, 1200mm above floor.
- You can use tools like Insolation Lite from FCE BUT.

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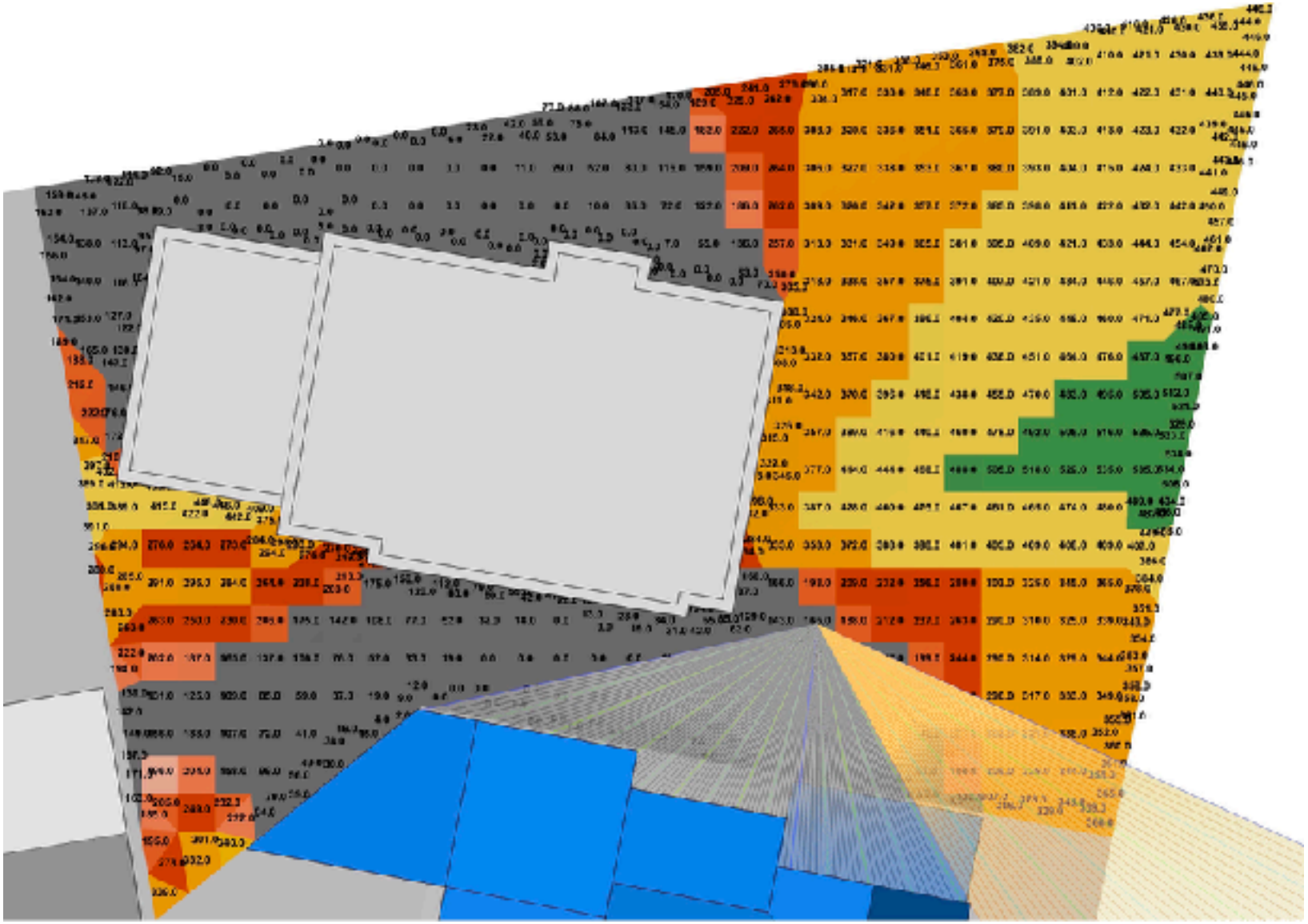

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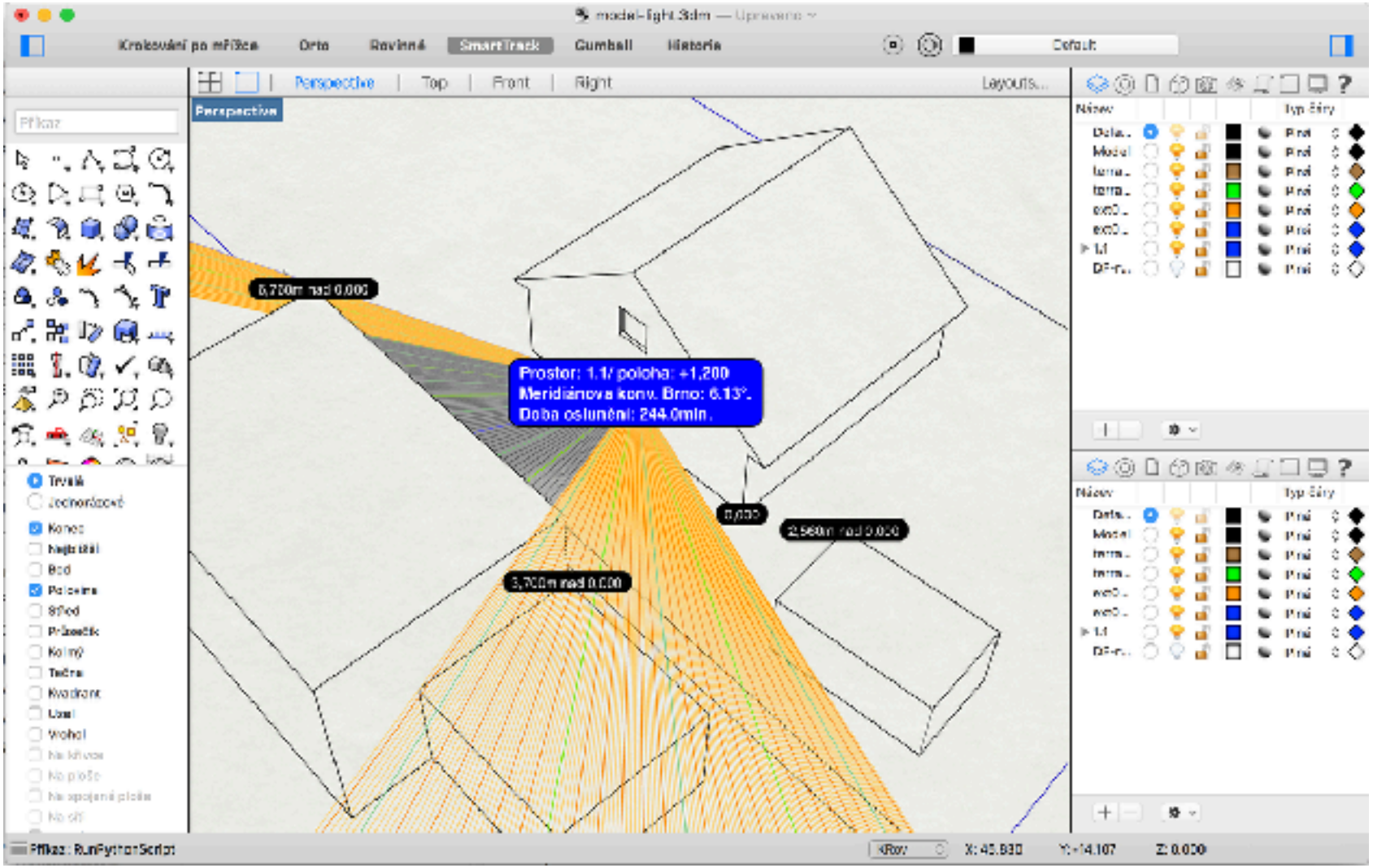

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THE END

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