APPROACHES, METHODS AND TOOLS enhancing solar

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IEA TASK 51 Solar Energy in Urban Planning

SHC
SOLAR HEATING & COOLING PROGRAMME
INTERNATIONAL ENERGY AGENCY

the potentials of

... minimizing energy need by conservation and daylight harvesting

… minimizing energy by enhancing or avoiding solar gains

… generating energy (PV an ST)

Illustration: by White of NCC Startboxen

The aims are to…

... inform and support decision-making in urban planning

... orientate on existing approaches, methods, and tools..

… present new or further developed approaches, methods, and tools

for active and passive (daylight) solar measures.

What do we mean by

Approaches: means of incorporating solar methods and tools

Methods: planned procedures to assess and evaluate solar in relation to other aspects in urban planning (including landscape planning).

Tools: a rule of thumb, a calculation or a modelling software giving geometrical or numerical results; e.g. solar maps, solar potential software, GIS software, etc.

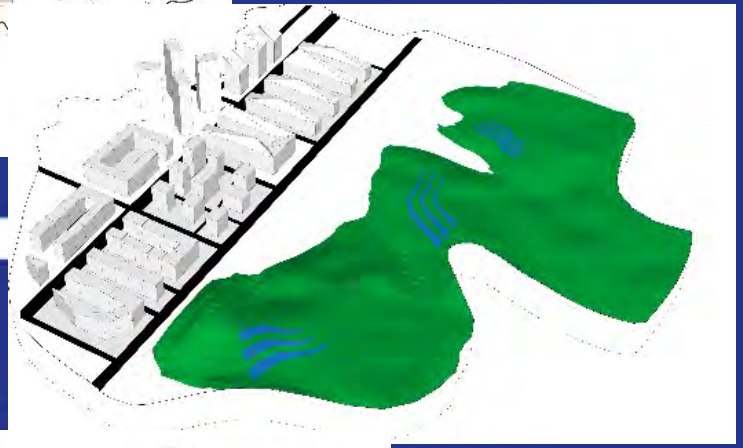
2 REGULATORY, POLICY AND GOVERNANCE APPROACHES

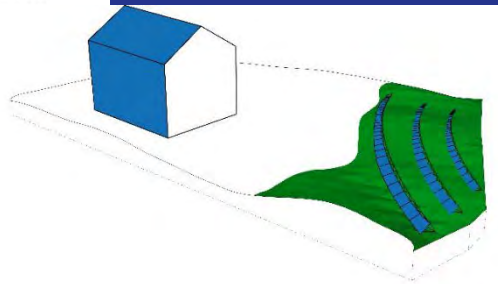
3 INTEGRATED URBAN DESIGN AND PLANNING SUPPORT

4 ASSESSMENT METHODS AND TOOLS

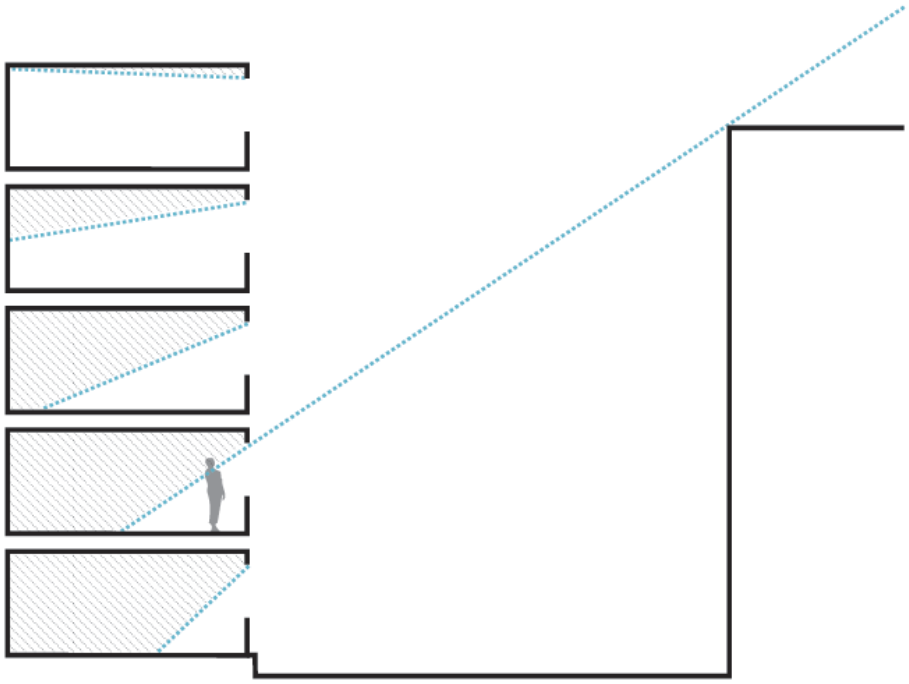
5 AWARENESS AND CONSULTATION METHODS IN URBAN PLANNING

6 LANDSCAPE





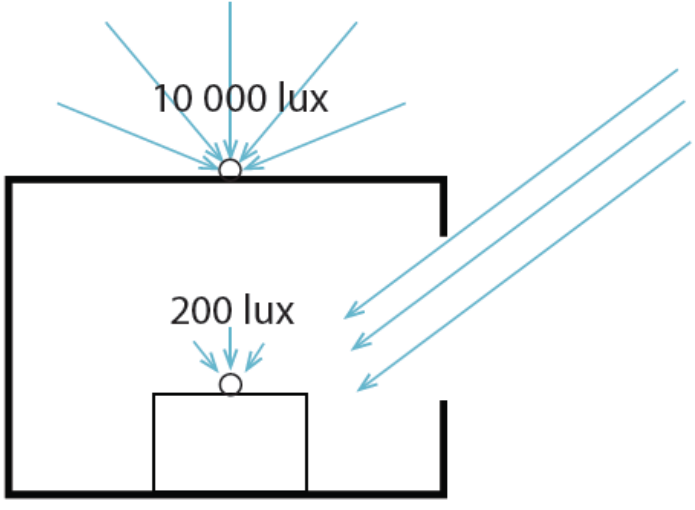
A circular loop is needed were advanced knowledge can be presented as thumb rules.



No Sky-line, rules of thumb
Illustration Malin Alenius, White

THUMB RULES

Picture of a physical model with different window design and illustration by Malin Alenius, White.

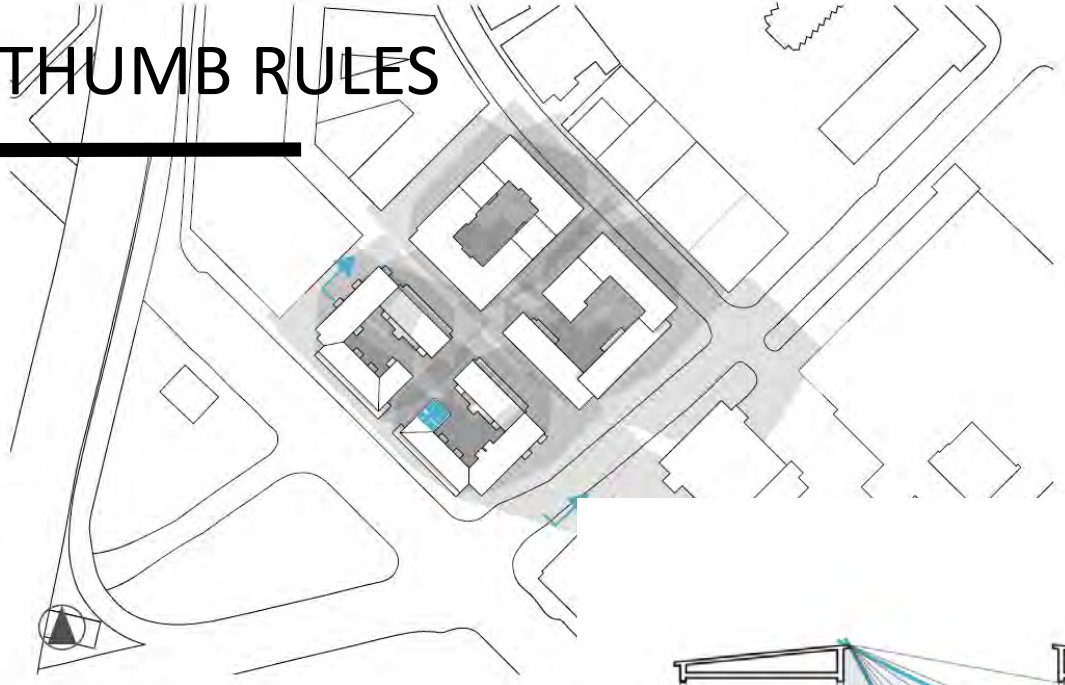


$$DF = \frac{200}{10\,000} \times 100 = 2\%$$

Daylight factor, minimum demand in a lot of countries

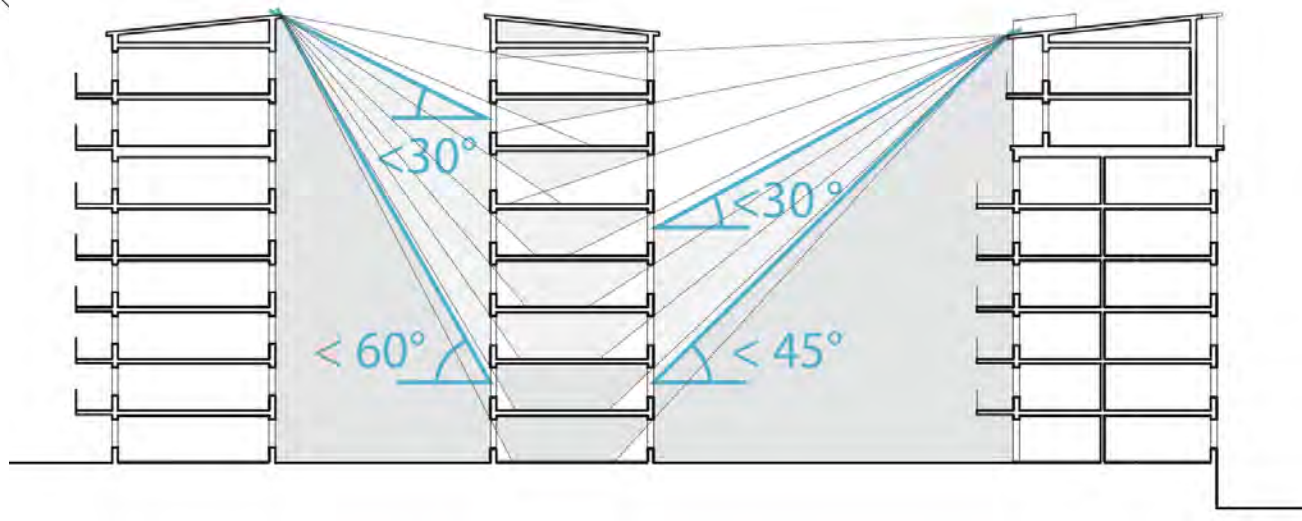
THUMB RULES

Malin Alenius, Marja Lundgren, Dan Engberg, Hugo Kooymans, White – drawing based on building designed by ÅWL, Lars Werner.



Ju tätare avstånden är mellan husen desto mindre direkt solljus når husets lägre våningar och det reflekterade ljuset

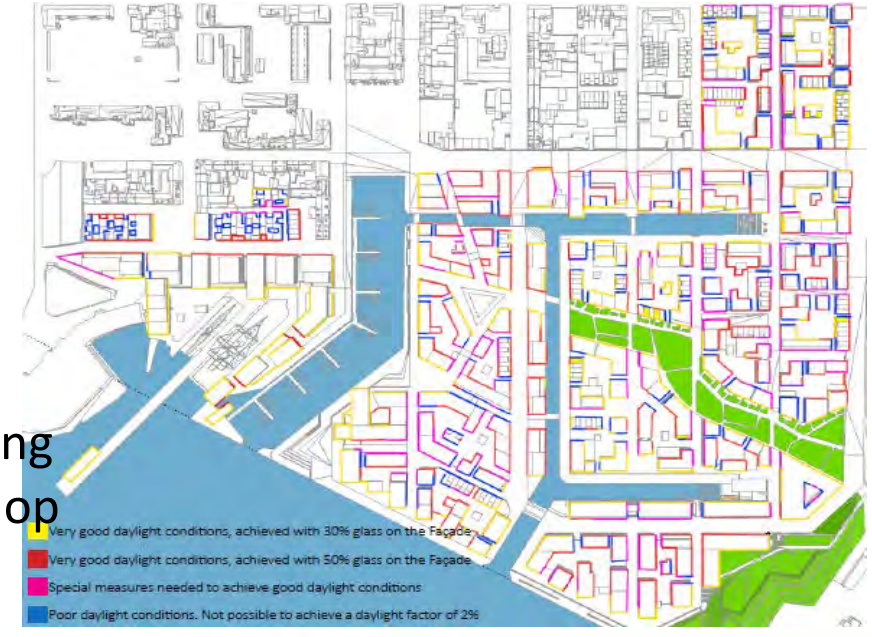
Closer distances between the buildings causes less direct sunlight on the facades meaning only indirect light will reach the

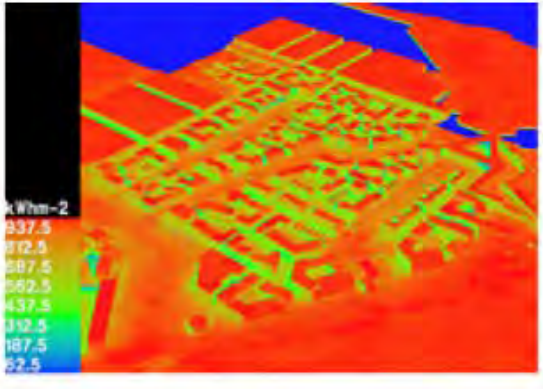


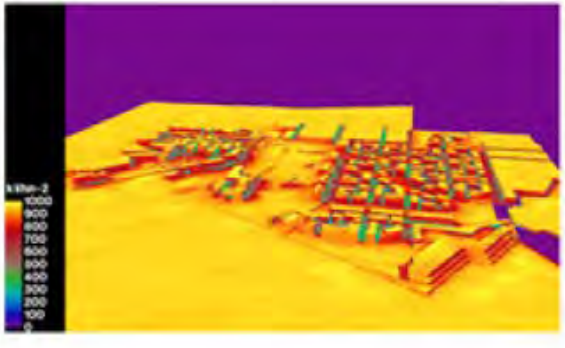
TOOLS FOR ITERATION

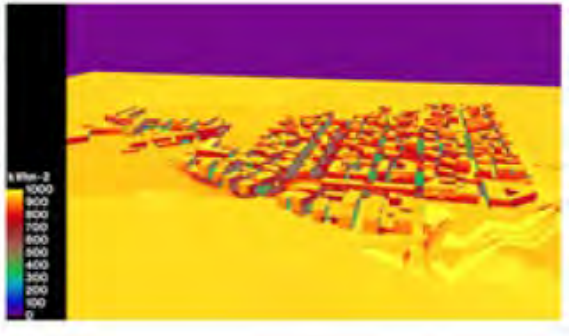
Olaf Bruun Jørgensen, DEM & Esbensen A/S

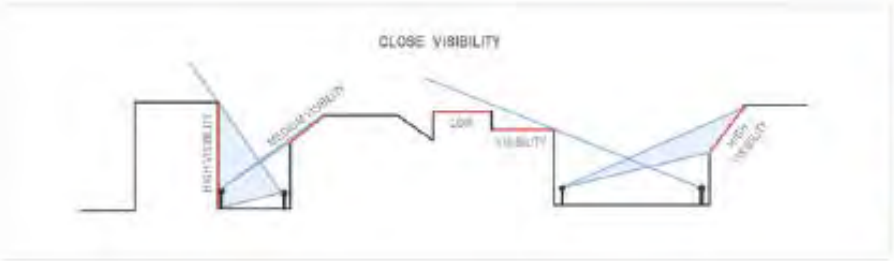
Procedures for planning using existing modelling tools help develop the design.

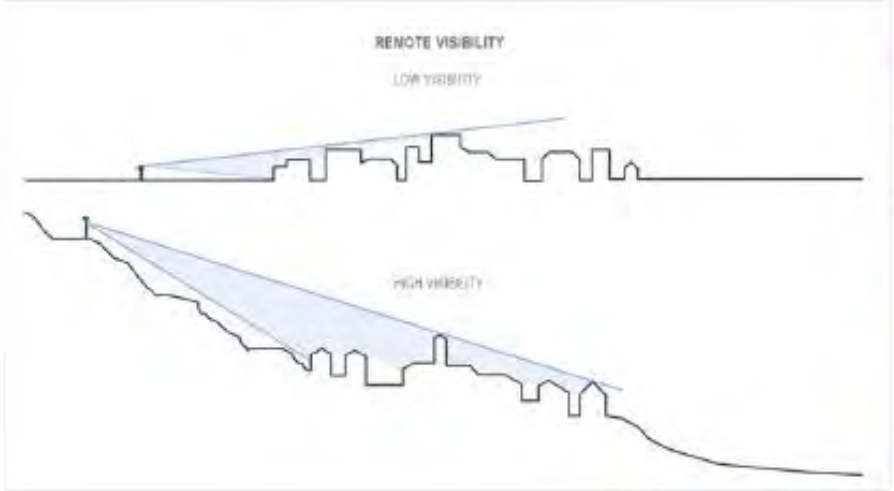








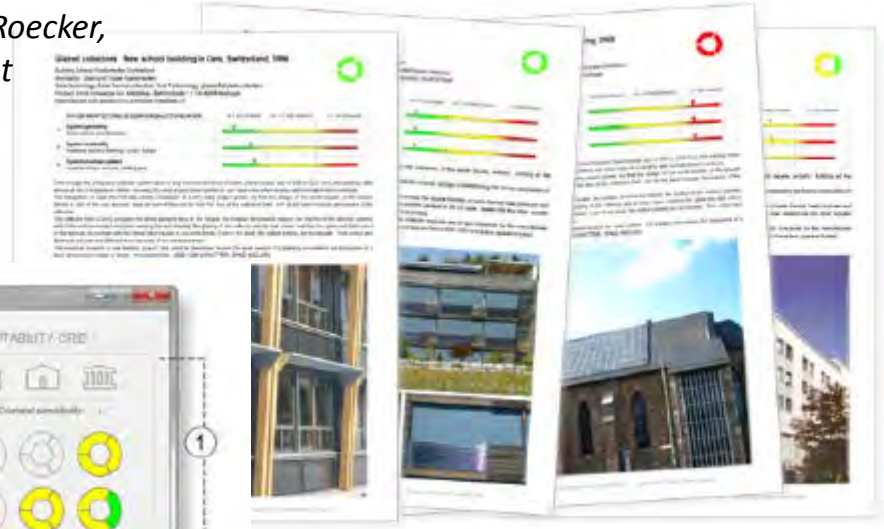


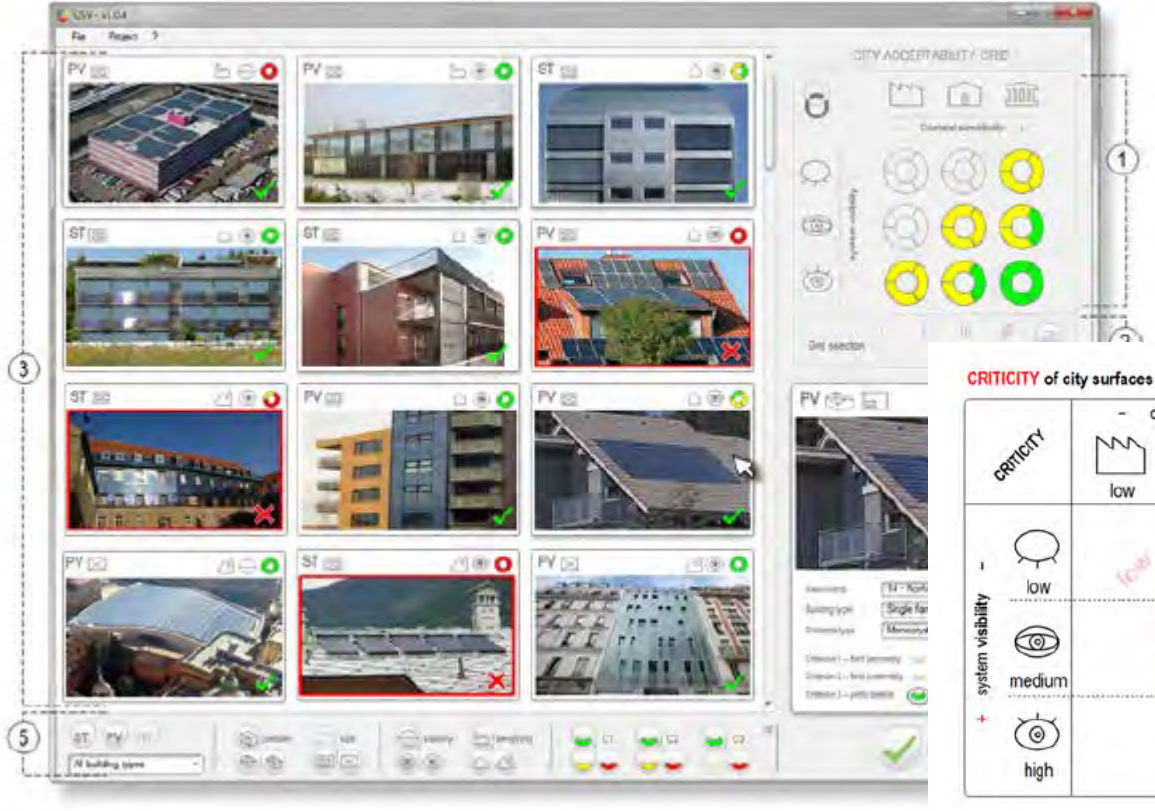


Leso-QSV method

LESO-QSV

Maria Cristina Munari Probst, Christian Roecker, contributions from: Pietro Florio, Laurent Deschamps, Sébastien Hausammann





Leso-QSV method

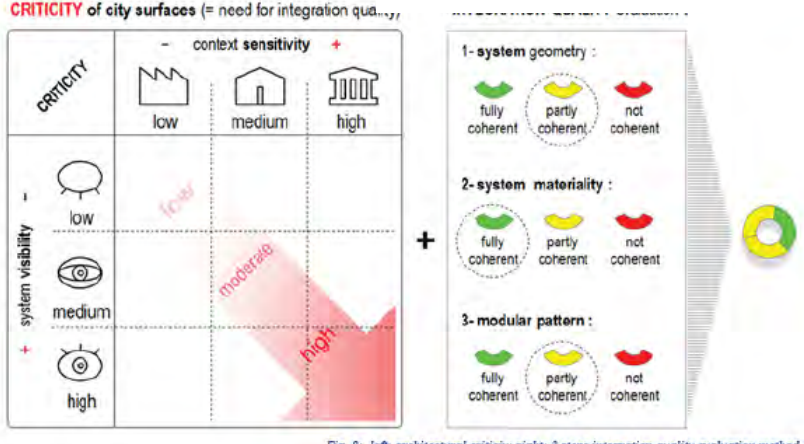


Fig. 8: left: architectural criticity; right: 3 steps integration quality evaluation method

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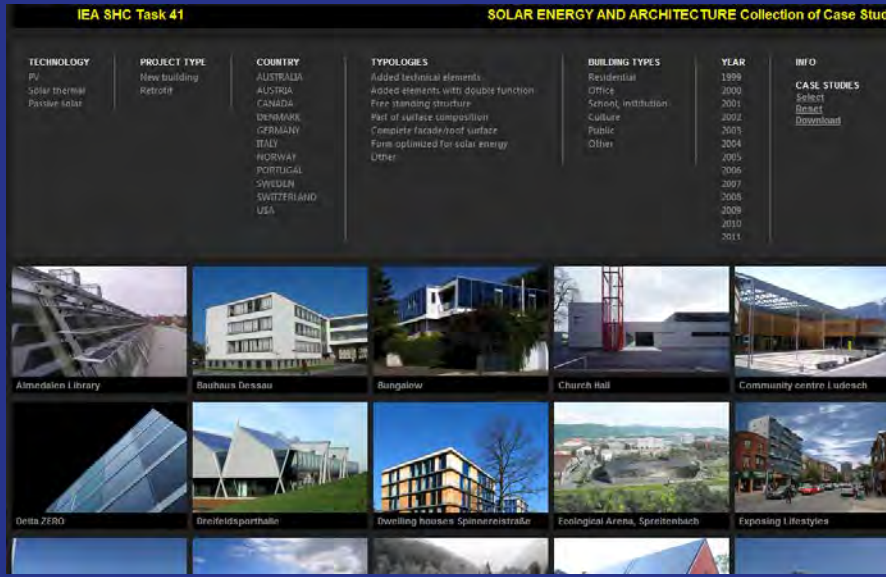
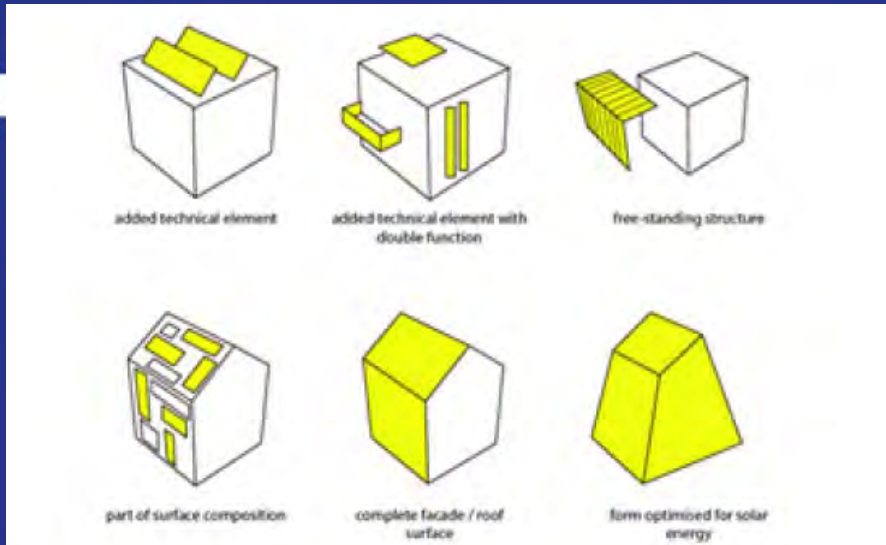
AWARENESS AND CONSULTATION METHODS IN URBAN PLANNING





What if?

Simone Giostra