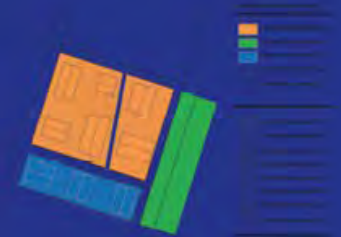
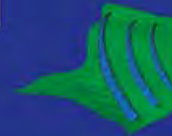


APPROACHES, METHODS AND TOOLS enhancing solar



Marja Lundgren

IEA TASK 51 Solar Energy in Urban Planning

the potentials of

- ... minimizing energy need by conservation and daylight harvesting
- ... minimizing energy by enhancing or avoiding solar gains
- ... generating energy (PV and 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.

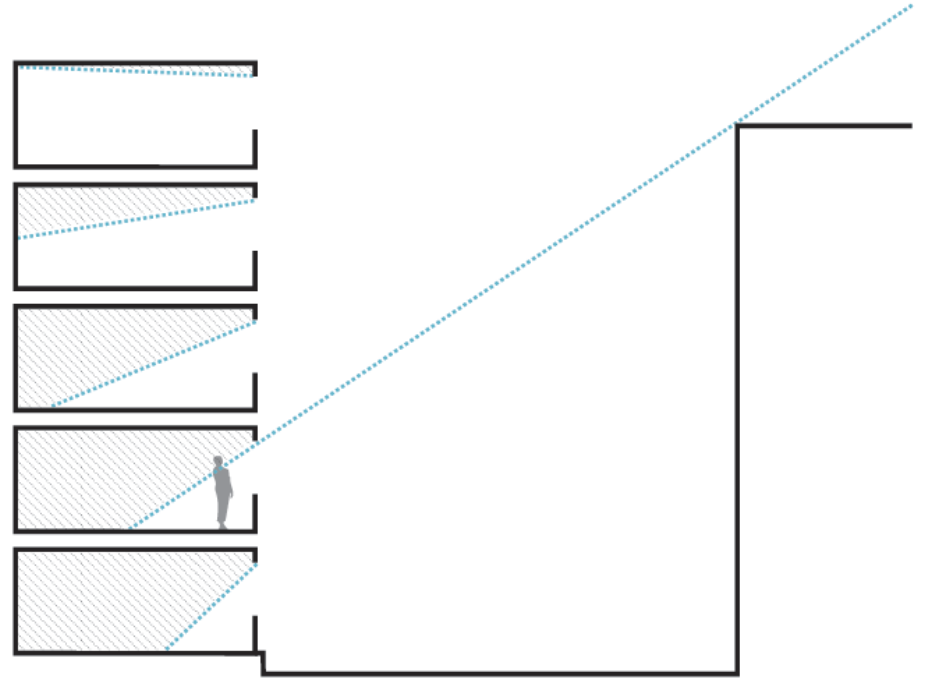
What do we mean by

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.

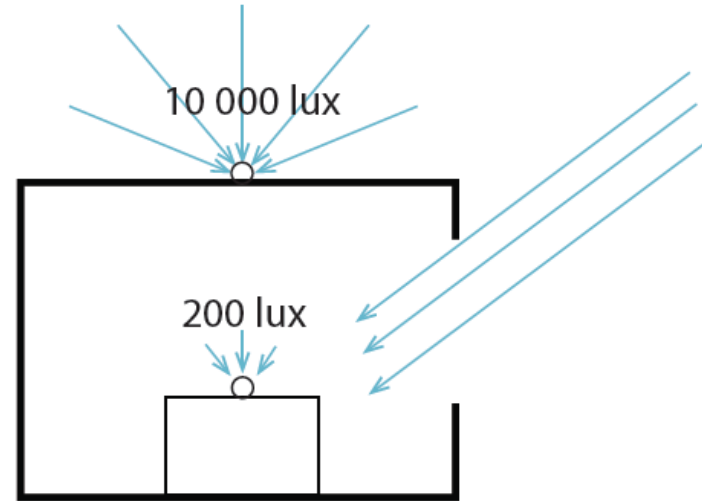
A circular loop is needed were advanced knowledge can be presented as thumb rules.



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.

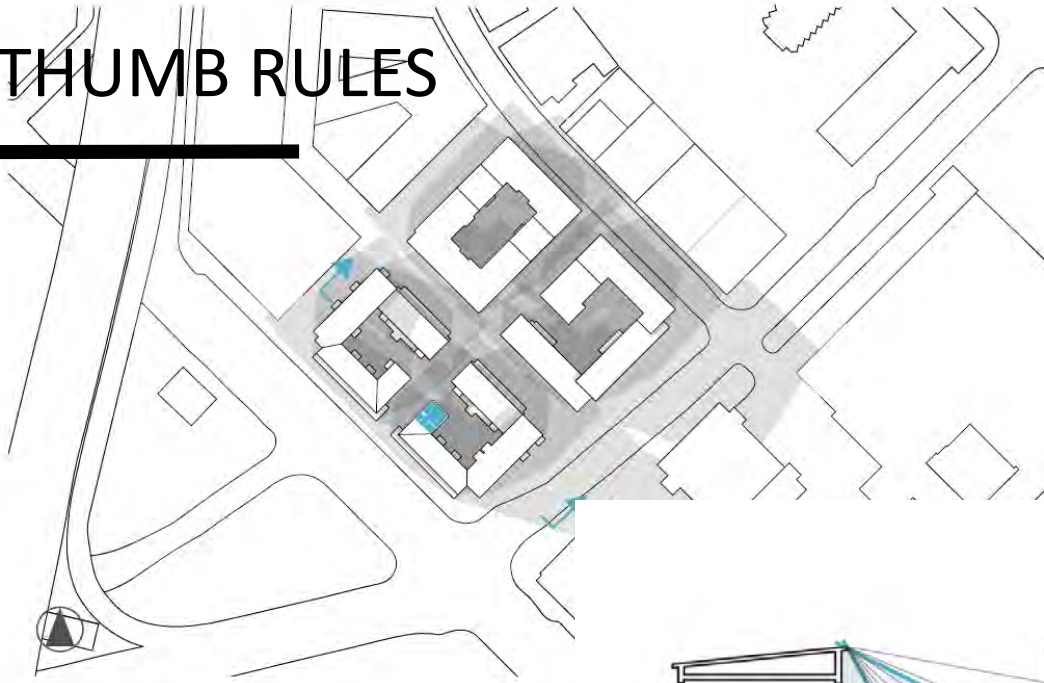


$$DF = \frac{200}{10\,000} \times 100 = 2\%$$

Daylight factor, minimum demand in a lot of countries

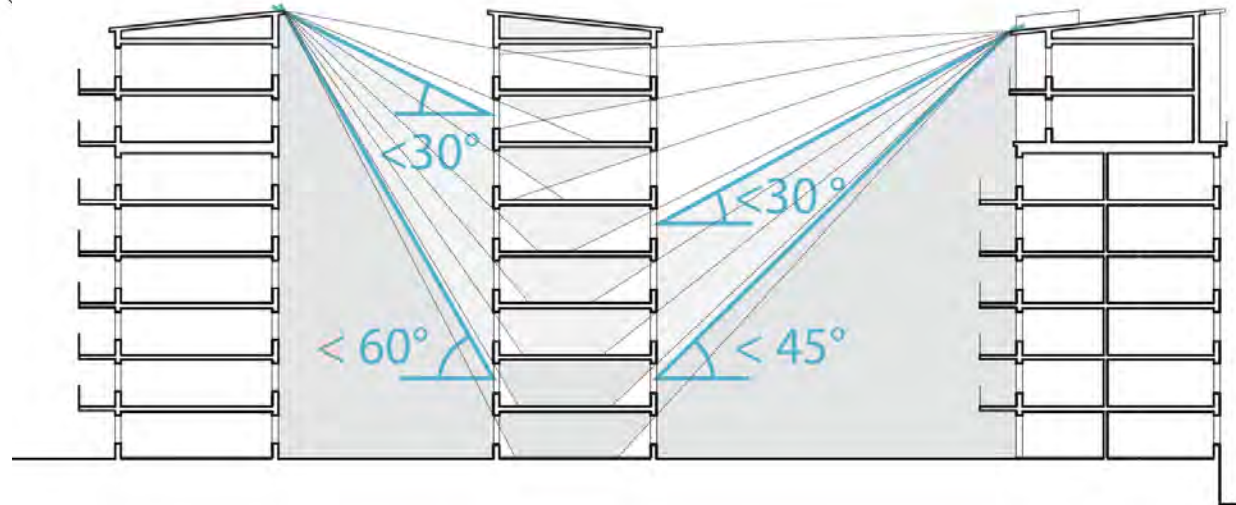
THUMB RULES

*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

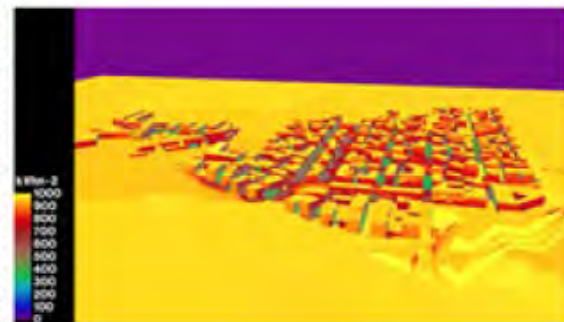
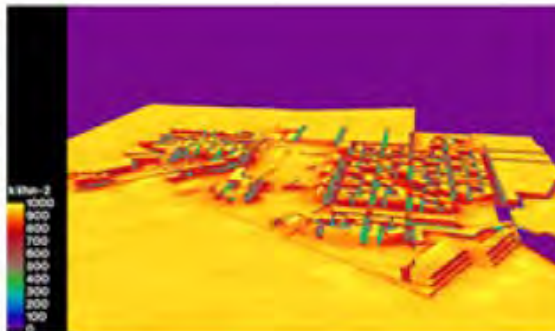
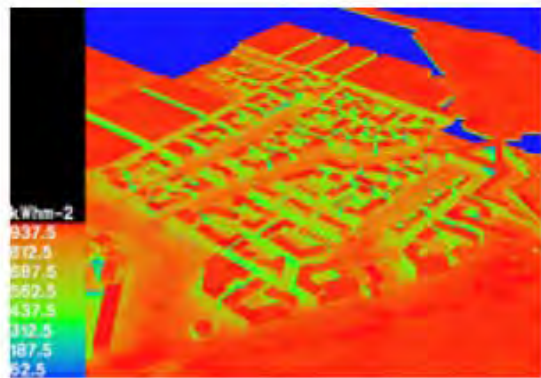
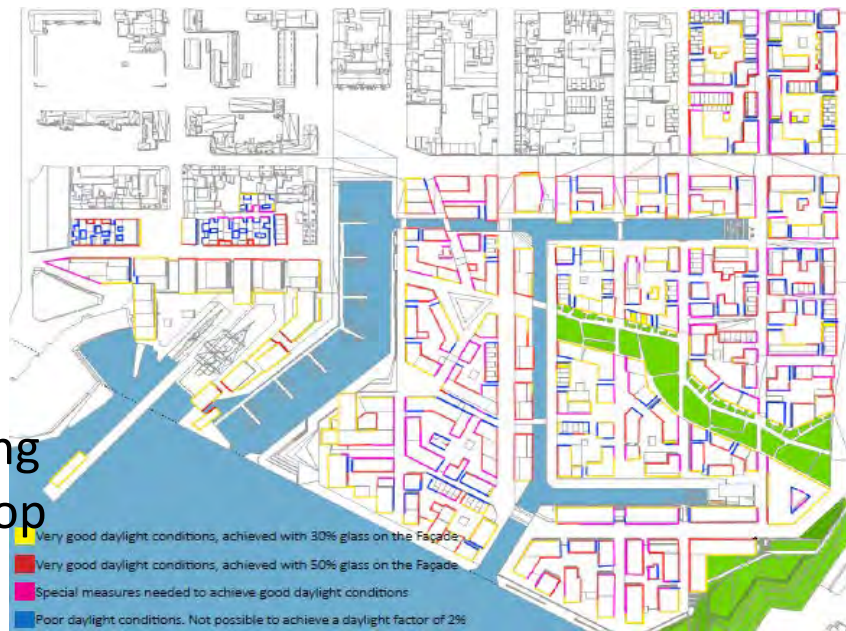


TOOLS FOR ITERATION

Olaf Bruun Jørgensen, DEM & Esbensen A/S

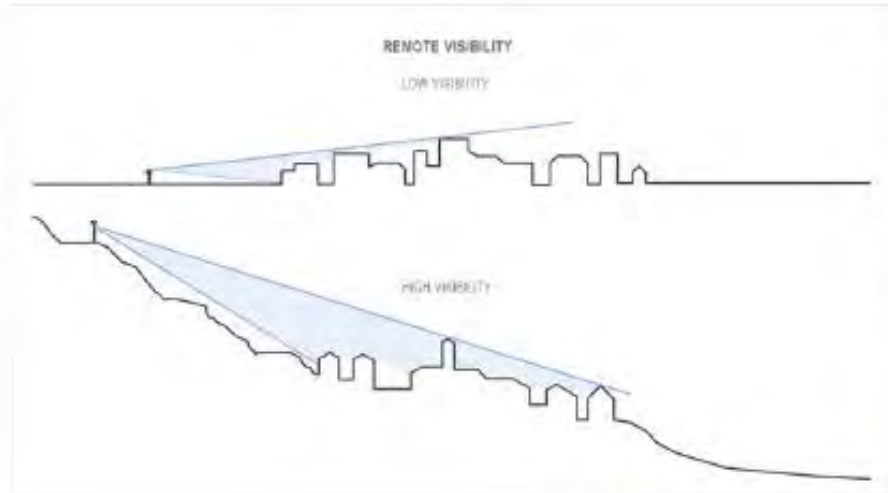


Procedures for planning using existing modelling tools help develop the design.



4

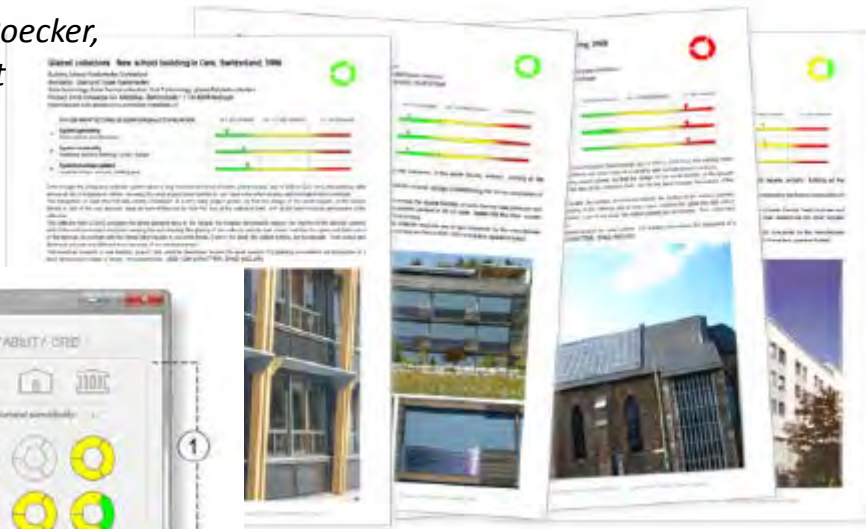
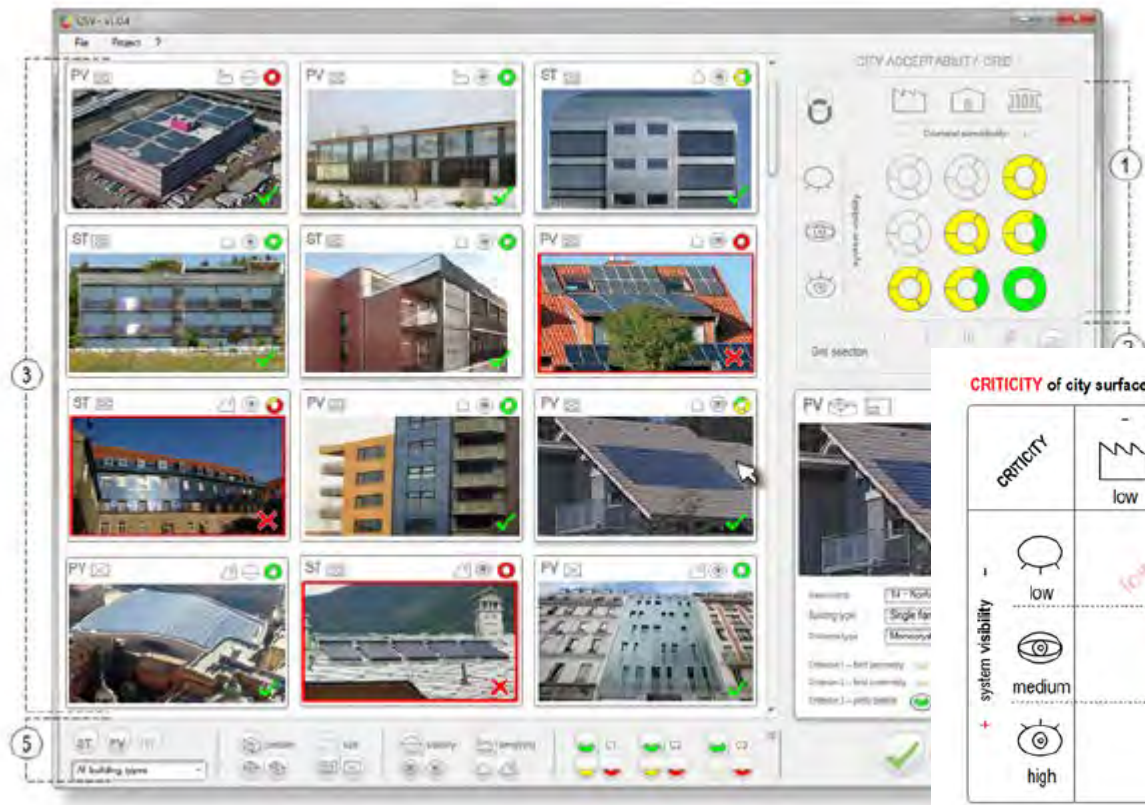
ASSESSMENT METHODS AND TOOLS



Leso-QSV method

LESO-QSV

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



Leso-QSV method

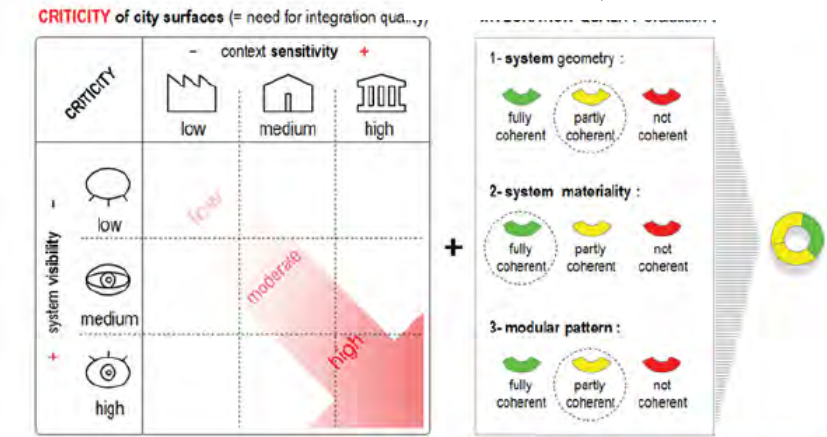


Fig. 8: left: architectural criticism; right: 3 steps integration quality evaluation method

TECHNOLOGY	PROJECT TYPE	COUNTRY	TYPOLOGIES	BUILDING TYPES	YEAR	INFO
PV	New building	AUSTRALIA	Added technical elements	Residential	1998	CASE STUDIES Select Back Download
Solar thermal	Retrosit	AUSTRIA	Added elements with double function	Office	2000	
Passive solar		CANADA	Free-standing structure	School, institution	2001	
		DENMARK	Part of surface composition	Culture	2002	
		GERMANY	Complete facade/roof surface	Public	2003	
		ITALY	Form optimized for solar energy	Other	2004	
		NORWAY			2005	
		PORTUGAL			2006	
		SWEDEN			2007	
		SWITZERLAND			2008	
		USA			2009	
					2010	
					2011	



Almedalen Library



Bauhaus Dessau



Bungalow



Church Hall



Community centre Ludesch



Delta ZERO



Dreifeldsportal



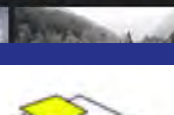
Dwelling houses Spinnereistrasse



Ecological Arena, Spreitenbach

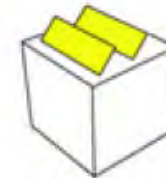


Exposing Lifestyles

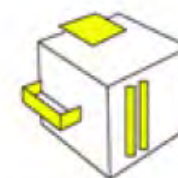


AWARENESS AND CONSULTATION METHODS IN URBAN PLANNING

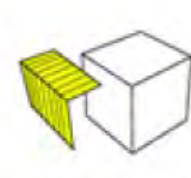
5



added technical element



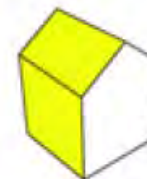
added technical element with double function



free-standing structure



part of surface composition



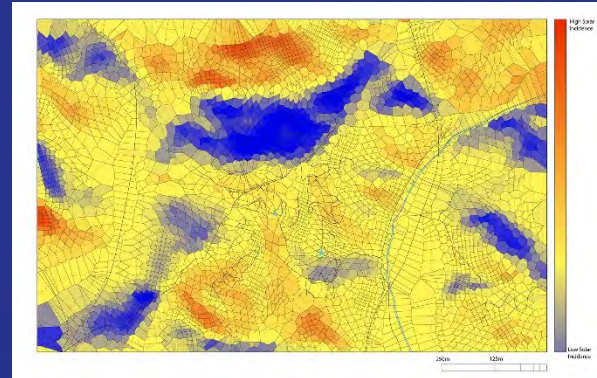
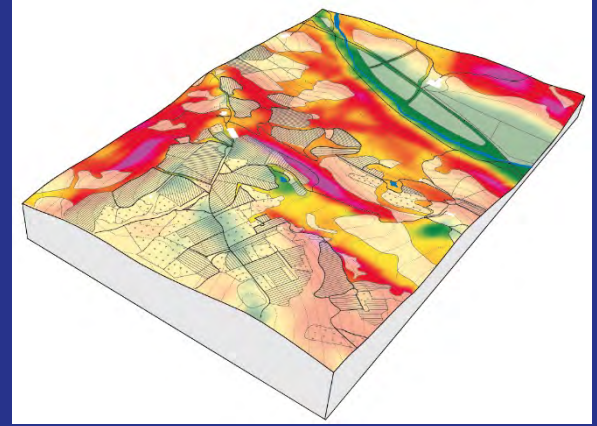
complete facade / roof surface



form optimised for solar energy

What if?

Simone Giostra



LANDSCAPE

6