



# **bSol : A straightforward approach to optimize building comfort and energy consumption in early design process**

**Status-Seminar 2012  
ETH Zürich**

**Pierre-André Seppey**

# Why bSol ?

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A few years ago



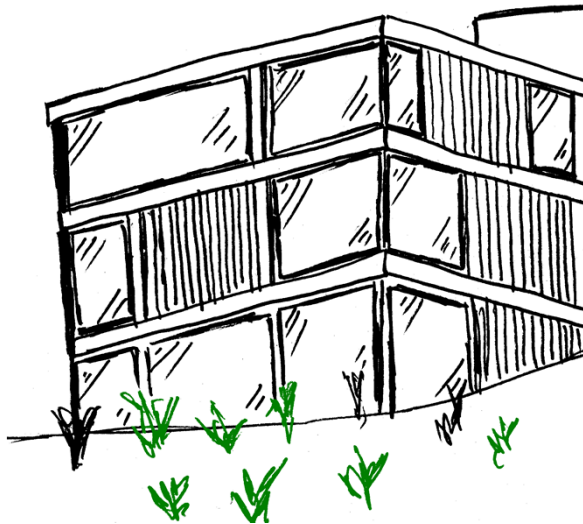


bsol

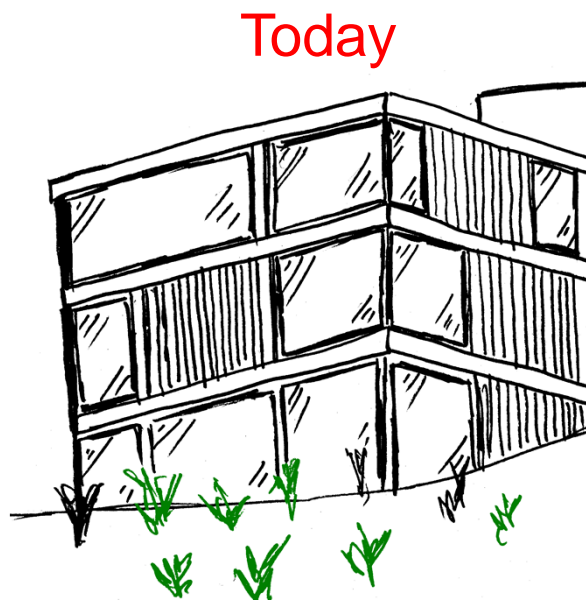
# Why bSol ?

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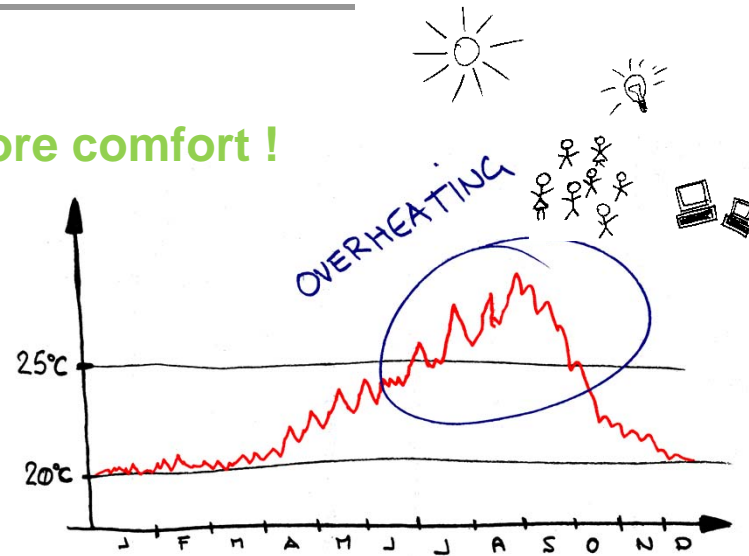
Today



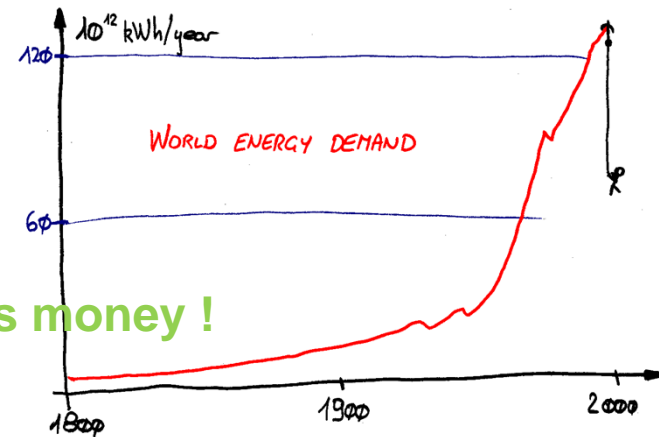
# Why bSol ?



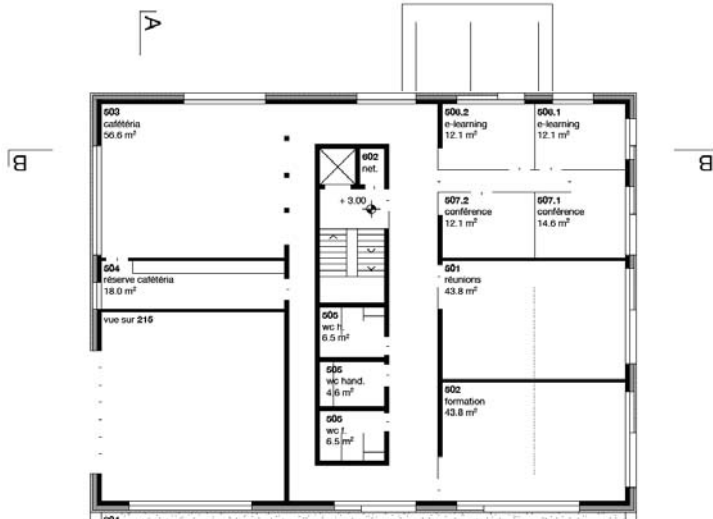
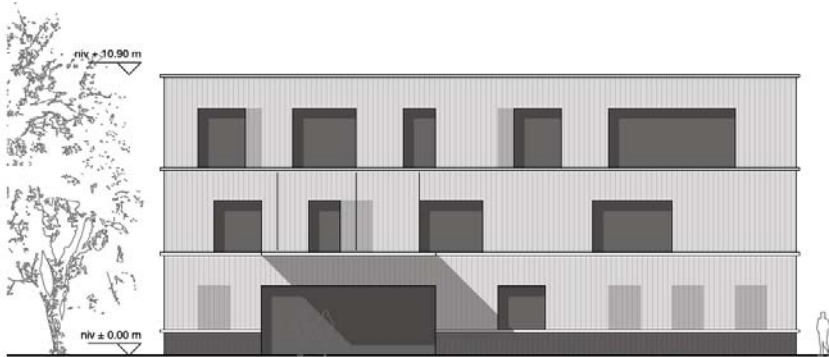
More comfort !



Less money !



# Early design process



~~$$Q_h = 771.27294 \dots \text{ MJ/m}^2$$~~

~~$$\Theta_i = 23.27589 \dots \text{ }^\circ\text{C}$$~~

~~$$H_e (\Theta_i(t) - \Theta_e(t)) + \sum_k H_{Gk} (\Theta_i(t) - \Theta_{Gk}(t)) + \sum_k H_{Dk} (\Theta_i(t) - \Theta_{Dk}(t)) + H_{iw} (\Theta_i(t) - \Theta_{in}(t)) = \sum_k \rho_{sw}(t) F_F y_k A_{wk} C_k(t) - C \frac{d\Theta_i(t)}{dt} + SRE (P_{ip}(t) + P_{ie}(t)) + SRE P_{He}(t)$$~~

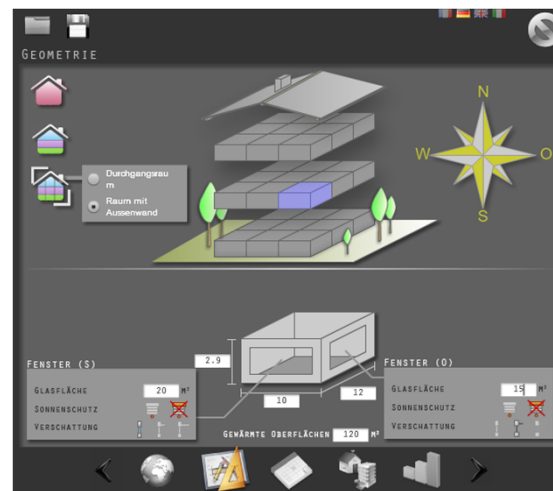
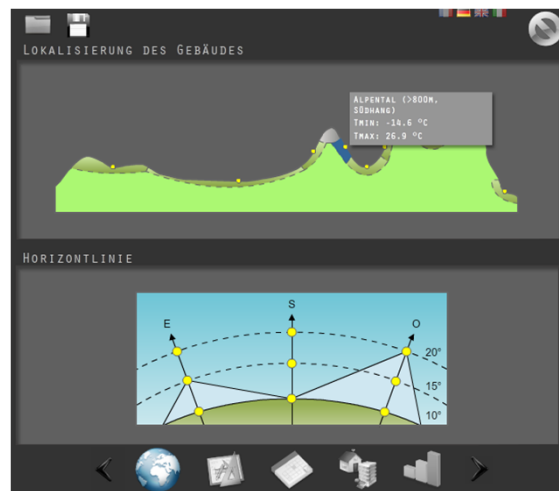
~~$$H_E = \left( \sum_{j \in K_e} A_j U_j + \sum_{j \in K_e} L_j \psi_j + \sum_{j \in K_e} x_j \right) \dot{\Theta}_i$$~~

~~$$\Theta_i(t) = \Theta_{oi} + \Delta \Theta_{cas} \left( \frac{2\pi t}{1 \text{ day}} + \phi \right)$$~~

~~$$H_{Gk} = \left( \sum_{j \in K_k} A_j U_j + \sum_{j \in K_k} L_j \psi_j + \sum_{j \in K_k} x_j \right)$$~~

## bSol - Build with the Sun

- ...determines the energetic needs (heating and cooling)
- ...offers optimization assistance
- ...gives an idea about thermal comfort in an hourly base
- ...can be used in EARLY design process



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[www.bsol.ch](http://www.bsol.ch)

