Advanced façade solutions
Towards energy efficient building skins
A third skin that protects and provides comfort
A third skin that shows cultural and aesthetic values
A third skin that needs technologies and strategies
Advanced façades can have different appearances
Advanced façades can have different meanings
Features and challenges of future façades

1. multifunctional
2. dynamic
3. active
4. integrating/ed
5. solar
1. Multifunctional
2. Dynamic
3. Active
4. Integrating/integrated
5. Solar
Where are we now? Where are we going?
Double skin façades
Double skin façades
New concepts/systems and technologies/materials
A flavour of innovative solutions: systems

“Liquid” solar windows
A flavour of innovative solutions: systems

“Active” PV-TE windows
A flavour of innovative solutions: systems

Decentralized ventilation (and HVAC) units
A flavour of innovative solutions: systems

Integrated PV-T shading
A flavour of innovative solutions: materials

Thin and (semi)transparent PV systems
A flavour of innovative solutions: materials

Phase Change Materials (in opaque and transparent components)
A flavour of innovative solutions: materials

Aerogel and Vacuum Insulation Panels
A flavour of innovative solutions: materials

Smart windows: electrochromic and thermotropic glass panes
Integrations of components: façade modules

Wicona – TEmotion
Towards complexity: is it the right way?
Managing complexity: functionality vs. usability technologies
Thanks for your attention

francesco.goia@ntnu.no
francesco.goia@polito.it