



Future trends and main concepts of adaptive facades systems

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ABSTRACT

The façade industry faces numerous challenges including the digitalization and personalization. The market of adaptive façades is growing and therefore the aim of this study is to help to identify future trends and concepts for adaptive facades design and operation. Data are collected from 27 facades experts through in-depth interviews. The interviews are analyzed based on the framework method using the coding software Atlas.Ti. A conceptual framework and key quotations are presented as part of the results. The findings highlight the importance of technology robustness to magnify the potential of adaptive façades. The risks, cost and maintenance remain as important issues. The only way to tackle those challenges is to adopt an integrative and service oriented approach by the construction industry.

KEYWORDS

Experts, In-depth interview, Insights, Smart facades, Envelope, Framework

PROBLEM

Industrials have to face multiple challenges at European scale: this industry is conservative and fragmented and there is a serious competition with Asian companies.

The sector needs to re-organize and prepare the facades industry for a future market transformation in order to realize its full potential.

OBJECTIVES

Aim: Identify mains concepts of adaptive facades and future trends that will structure the industry.

Objectives:

- Interview a representative sample of experts in Europe
- Create a report which document their ideas and opinions.
- Analyze experts opinions and create framework that address the main concept of adaptive façade and future trend
- Develop a set of recommendation for the industrials

AUDIENCE

Facades consultants, facades engineer, facades architect, facades owner, façade manufacturer, facility manager.

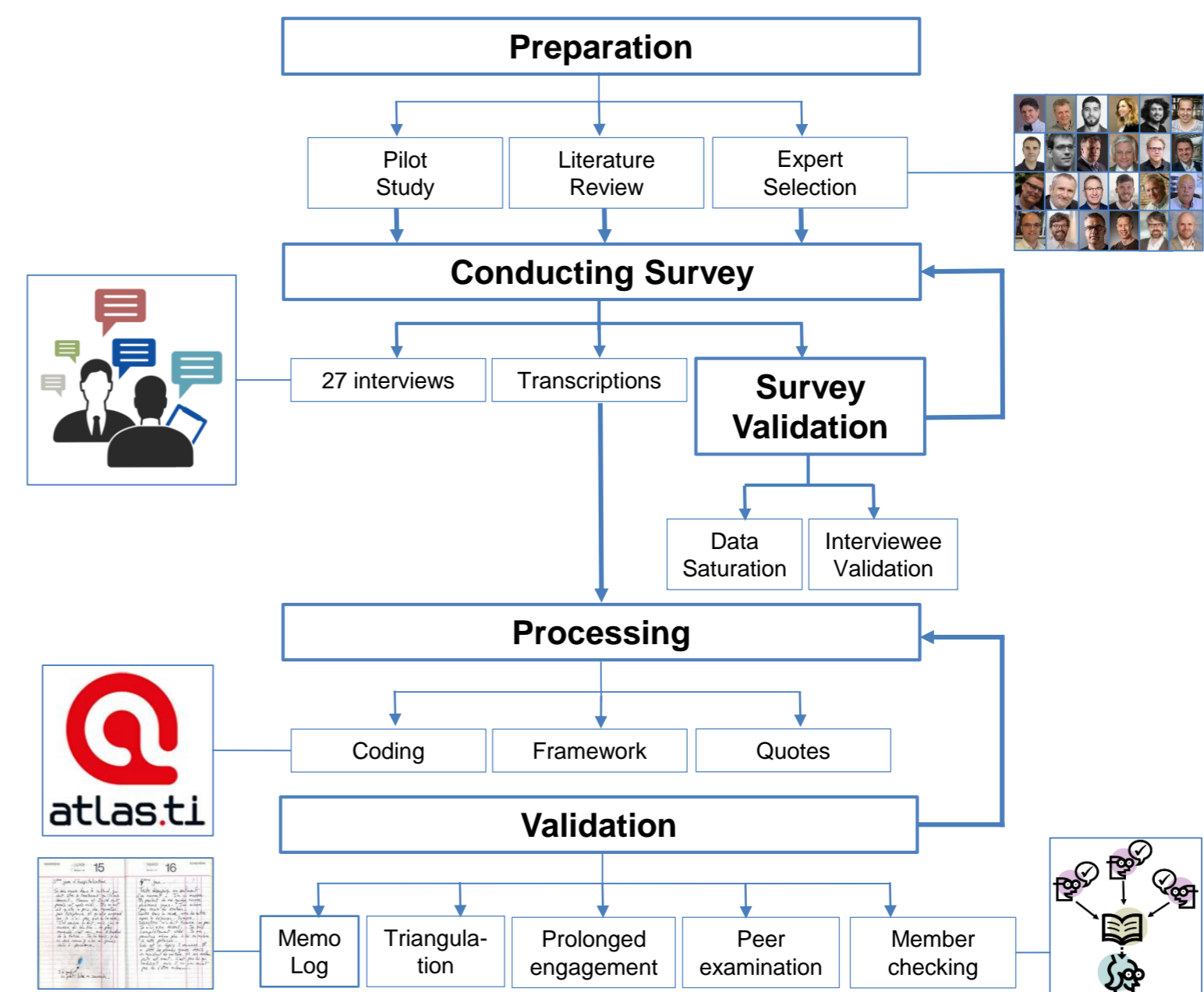
RESEARCH QUESTION

How can the façade industry provide consistent and robust façade systems in Europe ?

ORIGINALITY

- Approach/ methodology: link with experts and getting insights
- Identification of future trends
- We have a diverse sample of industrials and academia and from a broad variety of countries
- Topic: adaptability, smartness

METHODOLOGY



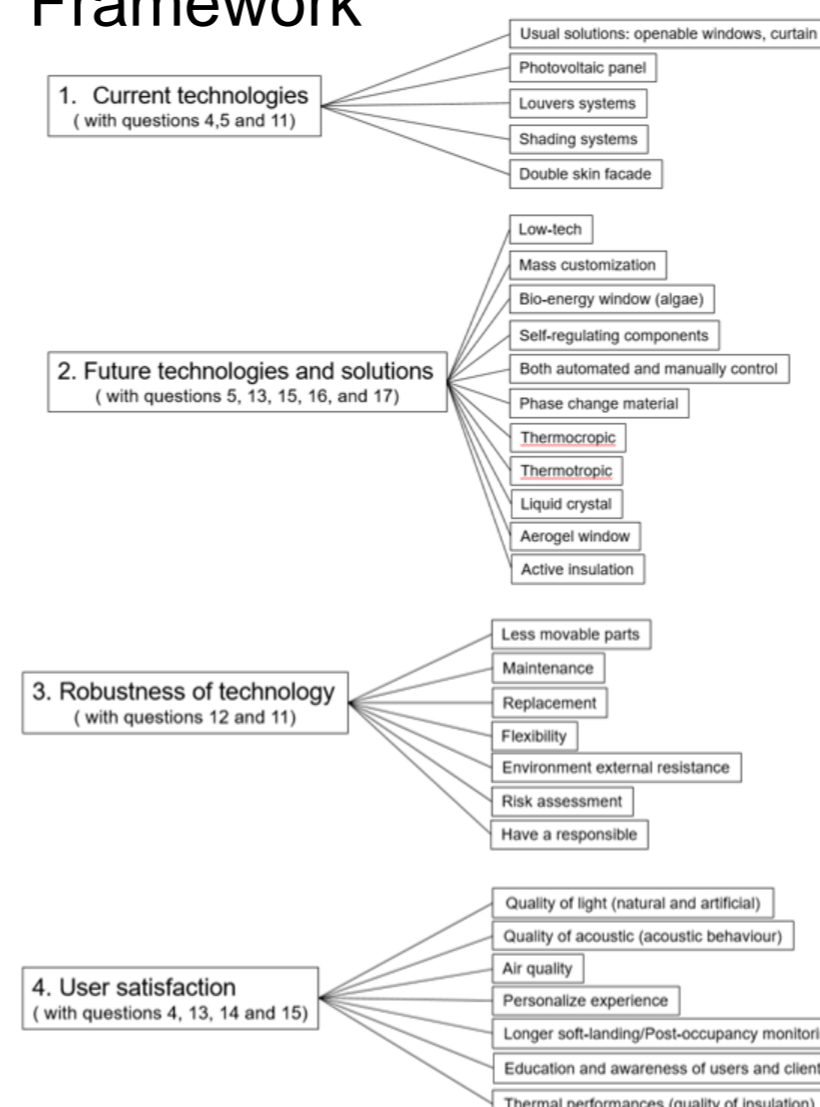
RESULTS

Codes

- Advantages
- Automation (and related technologies)
- Comfort
- Cost/risk
- Education
- Energy
- Environment
- Esthetics
- Future solutions
- Indicators
- Futures solutions
- Maintenance
- Simulation/Calculation
- Standards
- Weaknesses



Framework



Quotes

- Quote 9:**
Interview 6 : "PCM glazed system: [...] Actress Active Transparent: [...]"
- Quote 10:**
Interview 4 : "I think the way to make it working is that they are mass customized. "
- Quote 11:**
Interview 7 : "**Lumiduct**: A façade-integrated optical sun tracking device. [...] **Active insulation**: Dynamic insulation system that can be switched on or switched off. [...]"
- Quote 12:**
Interview 8 : "If you sell a façade to a client, you must give him a very clear document on how he should do the maintenance during the operation of the building."

CONCLUSION

All the interviewee agree that adaptive facades are key to a better user comfort by improvement of indoor quality and control. But, user and facades owners have to know how the facades have been designed and what is the more efficient management of it.

Numerous technologies are already mature but still do not penetrate the market because the risk and the cost of maintenance are too high. The use of mass customized façades and low-tech technologies will help these part of the market to grow.

RESOURCES

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