APPENDIX A.

This appendix shows the invitation letter and the interview guide we used to perform the interviews.

Invitation Letter

Dear industrial colleague,

The Software Engineering for Information Systems research Group (GESSI) from the Technical University of Catalunya and the Software Engineering Research Group from the Universitat Oberta de Catalunya (UOC), are jointly participating in a research project aimed to investigate the industrial practice of software architecture design. Our ultimate goal is to contribute to fill in the gap among academic research and real industrial practices related to software architecture.

As part of this project, we plan to perform several interviews in IT companies in order to know their practices and needs related to architectural design. Our main interest is to inquiry how architectural design is performed, which roles are involved, and which information and knowledge are required for this labour, as well as to investigate which factors influence design decisions and technologies to be used.

In this context, we are kindly asking for your participation. We need the participation of one or more professionals in charge of software architecture design tasks in any project from your company.

In this request, we attach an electronic version of the interview guide. The interview will last 1 hour approximately and will focus on a single project where the respondent has been in charge of architectural design tasks.

All provided information will be treated **strictly confidential**. A summary of the results will be returned to the respondents as well as the resulting publications and related works.

The main responsible of the interview are doctors Claudia Ayala, Jordi Cabot and Xavier Franch.

Thank you for your attention.

We are looking forward your participation.

Best Regards,

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INTERVIEW GUIDE

STUDY OF ARCHITECTURAL PRACTICES IN RELATION TO NON-FUNCTIONAL REQUIREMENTS

The interview will be based on a single project. So, before starting the interview please select any project where you played the role of software architect.

Section 1- About the Respondent
*** *To be answered before the interview (if possible)* ***

This section contains questions related to the respondent and the respondent's company.

> (*i*)   All provided information will be treated **strictly confidential**.

Personal information
Name and surname:
Contact e-mail:

Related Studies
Principal degree:
Related studies:

Professional experience in the company
Position:
Years in this position:
Years in the company:

About the company
Name of the company:
Number of employees:
Principal production:

About the project
Name of the project:
Domain of the project:
Number of participants:
Project duration:
End date:
Economic costs:

Section 2- Questions about the project
*** *Questions to be answered during the interview* ***

> (i) The projects we want to investigate in this interview are **typical completed software development projects** you were involved in as software architect. If you have experience with several such projects, please **select the project** that you are **most familiar with,** and **base your answers on the system developed in that project**.

Introductory Questions

I1	Could you please provide a general description of the company?
I2	Could you please provide a general description of the project you will base your answers on?

Methodological Aspects

In this subsection we will inquiry about your understanding of the main concepts in relation to software architecture as well as methodological aspects related to the project.

Q1	What do you understand by "software architecture"?
Q2	Do you consider that the role of "software architect" exists in your company? What are the responsibilities of this role?
Q3	Could you please describe the methodology followed for the design of the architecture and the selection of technologies?
Q4	Did you generate documentation related to architectural issues? What kind of documents? Did you use any formalisms, models or languages?
Q5	Did you document any architectural view? Why?
Q6	Did you have limited freedom to make architectural decisions?
Q7	Which type of decisions were you able to make?

Architectural design

This subsection is aimed to inquire about the high-level architectural decisions that you made as well as decisions related to technology. Examples of architectural decisions could be the separation of the functionalities in modules, the type of communication

between them, or the selection of the architectural style. Examples of technology selection could be the technology chosen for every component, the communication protocols, the DBMS, or the selection of the technological platform (e.g. .NET).

Q8	Did you follow any order to make architectural and technology decisions? (e.g., First architectural decisions and after the selection of technologies, reverse order, at the same time, in an independent way). Do you consider it as an iterative process?
Q9	Which role played NFR during architectural and technological decision making?
Q10	Which NFRs were considered during architectural and technological decision making?
Q11	Which NFRs had a *major* influence on your decisions? Why?
Q12	Which NFRs had a *minor* influence on your decisions? Why? In particular, do you consider that there was any type of NFR that was not considered at all? Why?
Q13	Dou you consider that you would made the same decisions if you didn't consider NFRs? Why?
Q14	Which other factors do you consider that played an important role architectural or technological decision making processes? How do they influenced the decisions?
Q15	Do you consider that the NFRs considered in the project were complete? Did you add some NFRs from your experience? Did you modify or remove some of the initial NFRs? In any of these cases, did you make the decision on your own? Did you document any changes in the NFRs?
Q16	Did you consider that architectural and technological decision making processes could have been improved and/or make it easier with some tool support? (E.g. modeling tool, simulation tool, etc.)
Q17	Did you consider that the architectural decisions and the selected technologies were able to fulfill the required NFRs?