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BIM and An Augmented Reality based Maintenance System for Residential Buildings

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OUTLINE



Introduction

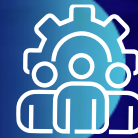


Problem statement and objectives



Methodology and Implementation

Process map - Implementation
- WiFi Localization - BIM model preparation - AR mobile APP



Result and Conclusion

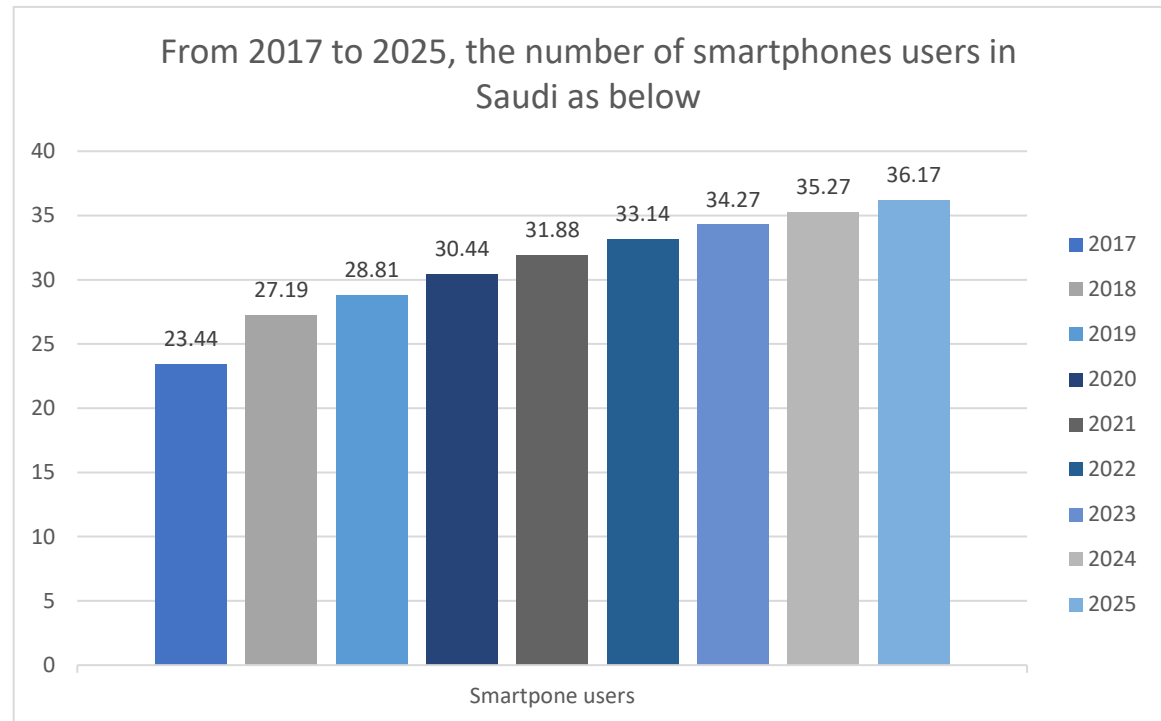


INTRODUCTION

Residential Culture in Saudi Arabia

Large segments of the population, particularly small families and young people, to own apartments and small units

Spread and Ease to use smartphones





PROBLEM STATEMENT & OBJECTIVES

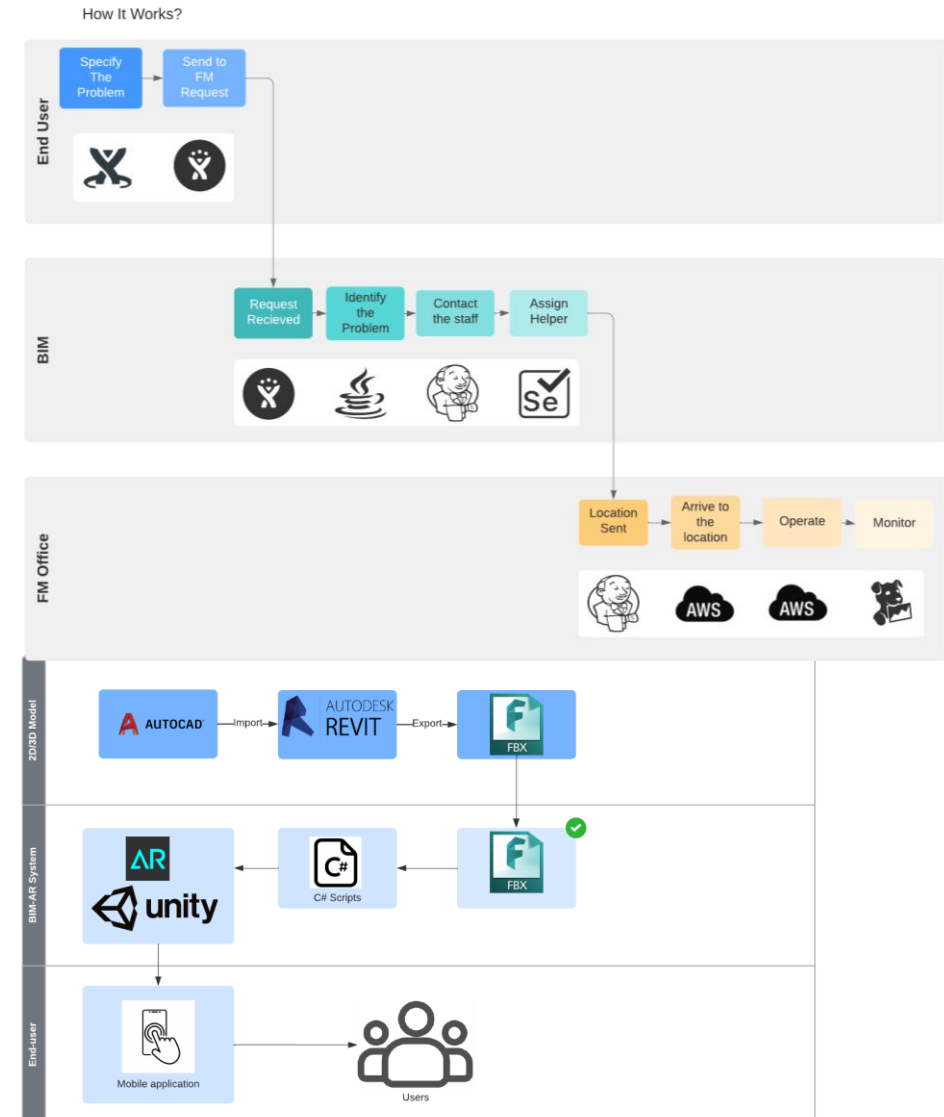
• PROBLEM STATEMENT

- Lack of Maintenance management practice in Saudi Arabia.
- Owners and building managers are unfamiliar with BIM
- Problem with data collection and recording

• OBJECTIVES

- To examine an automated technique for capturing and recording task-related data by merging BIM and AR.
- To investigating the feasibility of utilizing AR, BIM and mobile application for FM jobs order by giving enhanced visualization and perception.
- Creating an efficient way for interactive visual cooperation in FM field work by using smartphone application.

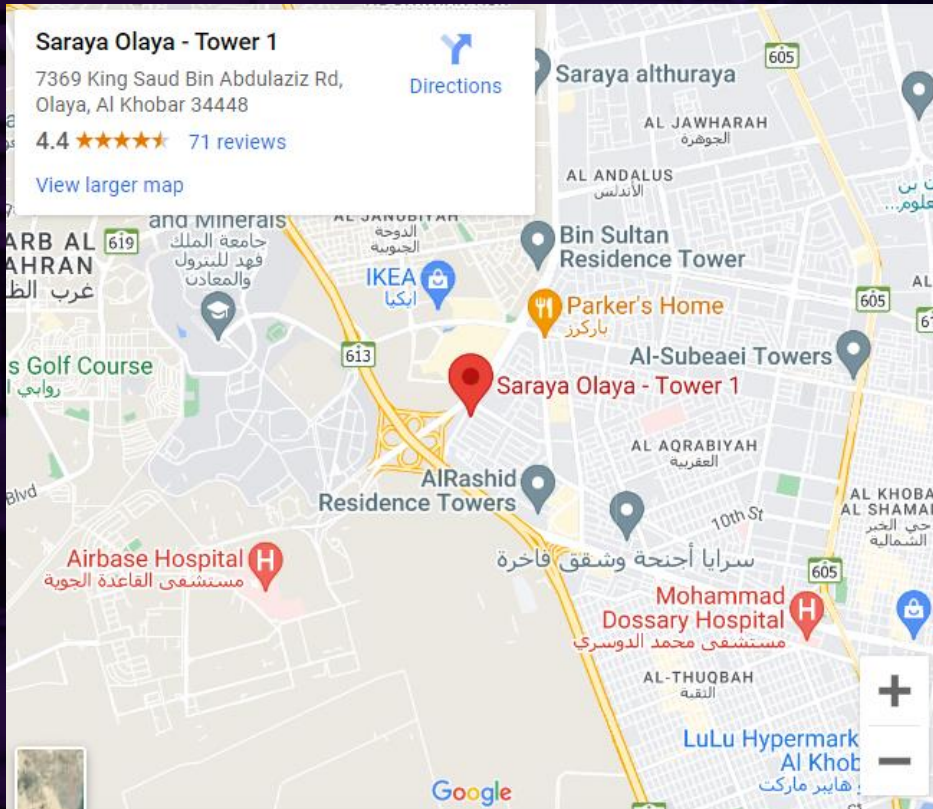
METHODOLOGY AND PROCESS MAP





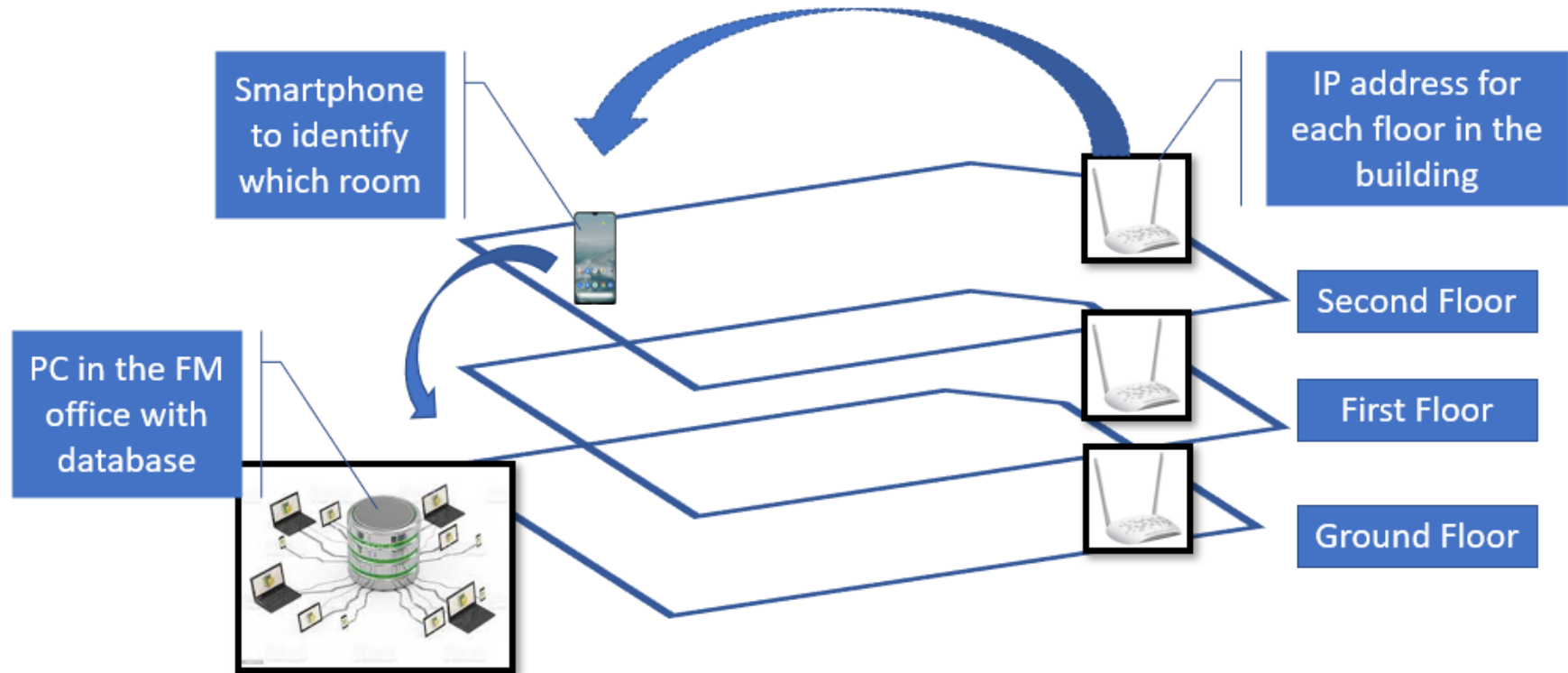
IMPLEMENTATION

- Saraya alolaya –AlKhubar – Saudi Arabia
- 3 residential buildings / 324 apartments

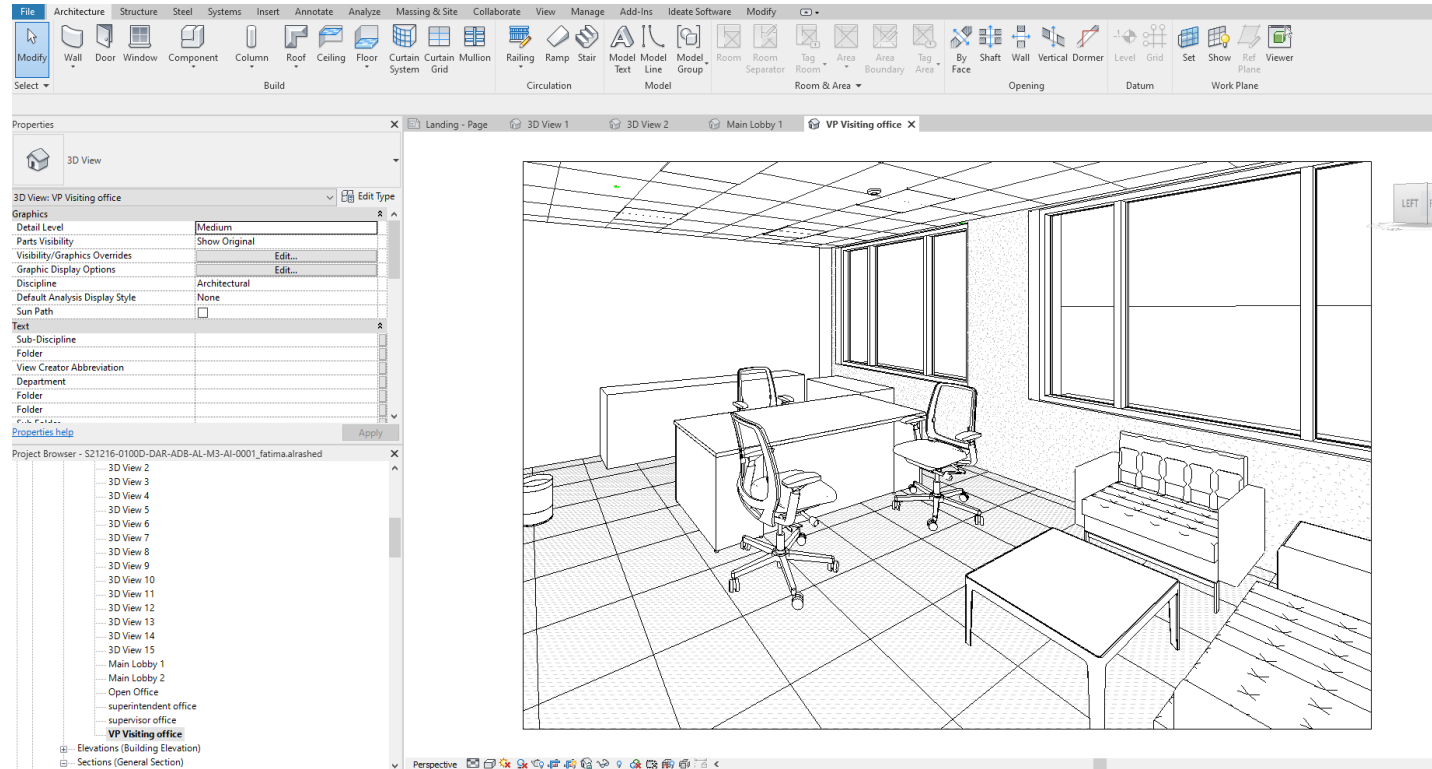


WIFI LOCALIZATION

- IP address
- Smartphone



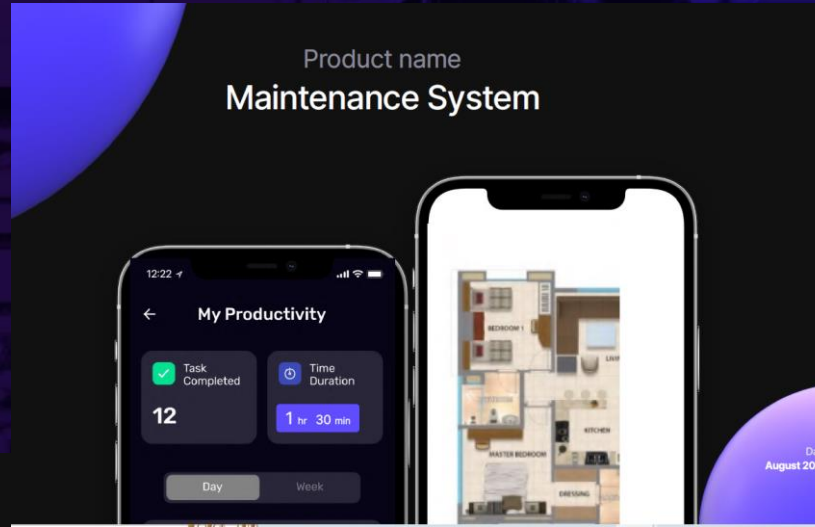
- Shared data in Revit



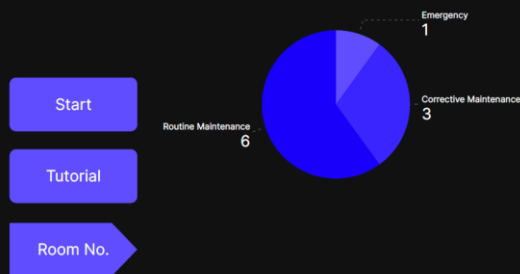
System information	<ul style="list-style-type: none"> • Heating type • Cooling type • Ventilation type
Room information	<ul style="list-style-type: none"> • Current room temperature • Current room humidity • Thermal satisfaction (indicated from the room user)



AR mobile APP



Maintenance System BIM-AR



Maintenance System

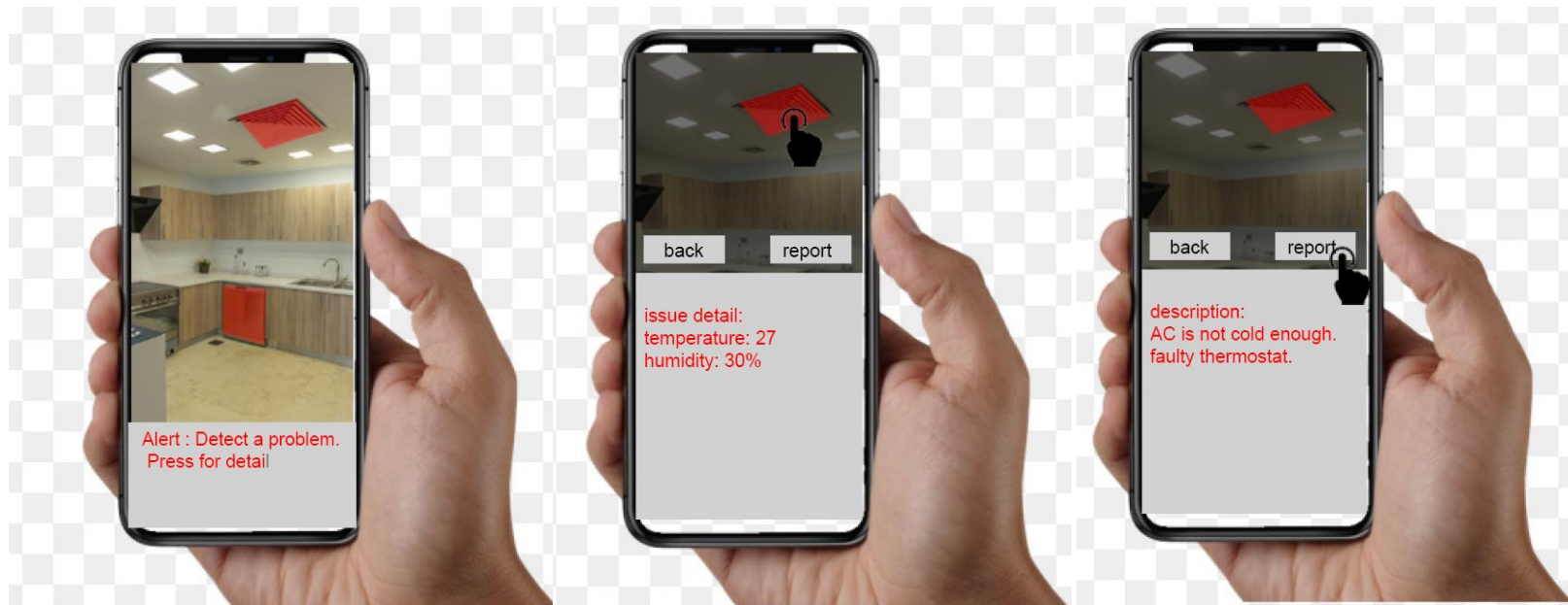
Room ID →

Define the problem →

History →

Info →

AR mobile APP



The system's interface was created using a clickable button function that is linked to each scene in Unity to transition between them.

there is a capability within the picture target that allows the viewer to view entire model or just a specified area. In addition, by just clicking on the model, the user may get object information.



RESULT AND DISCUSSION

- Communication improved between resident, FM and owner.
- Easy to report issues
- The App will also allow users to track the status of their complaints.
- FM personnel is then saved in database and it could be accessed by clicking on the “History” button of the AR app to help decision-making on FM operation

Maintenance System

Room ID



Define the problem



History

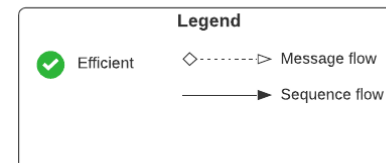
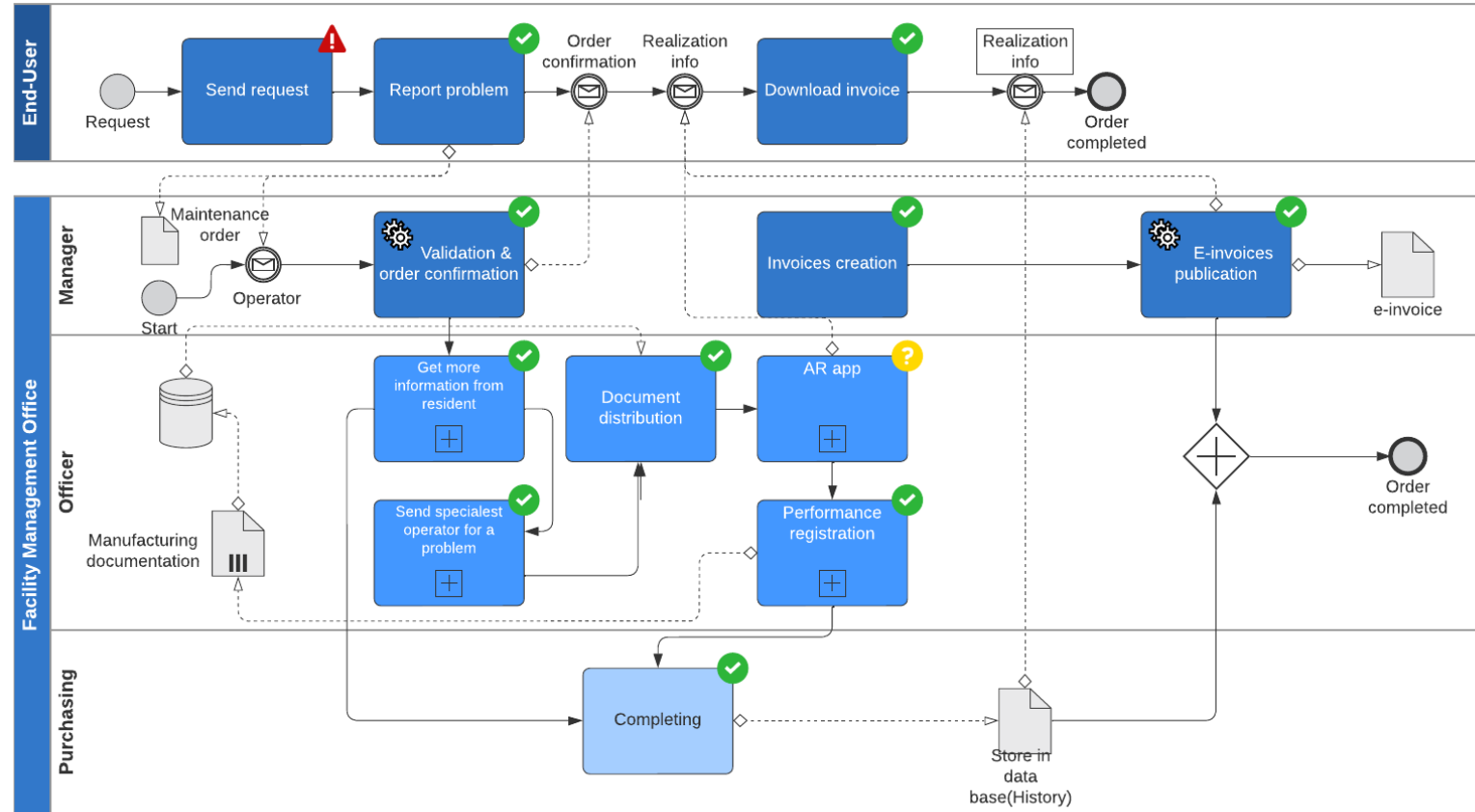


Info



CONCLUSION

Integration utilizing BIM-AR technologies is projected to save maintenance costs/time and enhance efficiency





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THANK
YOU ALL

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