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## Modeling and simulating a smart information-based real estate online platform

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### Abstract

We propose and study a novel O2O business model for real-estate purchases, called Information-based Real-Estate Platform (iREP in short). The new model leverages the power of Internet and mobile Apps for connecting directly the customers via a federation of human expert agents which work in a loosely coupled relation and on-demand basis. The unique features of this O2O model include: the use of mobile Apps in engaging customers together with selected agents, better resource sharing and allocation of the human agents, and relatively higher-speed of transactions by liberating the restrictions of agents. Unlike the traditional sales models where agents were dedicated to specific property agency companies, this one-stop model enables wider range of products to be marketed to all the potential buyers, leading to better matching between demands and supplies. iREP is modeled using BPR modeling tool for illustrating its model structure and the values that flow within the federation framework among the parties involved. Then the value model is subject to business process re-engineering simulation, for demonstrating how the dynamic processes are streamlined, thereby creating net values for both the developers and the end-consumers.

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*Keywords:* Real Estate; E-commerce; O2O; social media; collaborative economy; BPR software; competitive advantages

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## 1. Introduction

### 1.1. A brief history of Chinese real estate development urbanization

Phase 1 (before 1996): Government Control, inequality and non-transparent land allocation; reform started in the 1980s. Phase 2 (1996 – 1999): Large-scale real estate agencies co-existed alongside small-scale agencies with a tendency for the merger of these agencies via the mechanism of franchising to gain competitive advantages. Phase 3. 1999 – now: information age. Over time, online real estate agencies evolved to include more and more functions and services on their web sites. Each of these functions is designed to enhance the customer experience and make the overall home search process much more efficient, less costly in terms of search time. The user-friendliness of the GUI is enhanced with graphics and 3D virtual viewings using head-mounted display technology. In this paper we will focus on the Phase 3, the real estate development in the information age. There are two existing problems and gaps for the smart IT platform for solving two prime problems in real-estate business model: Firstly, the Asymmetric Information problem is solved - in some areas, new houses are over supplied, or they may be unsuitable for the local people to live due to environmental factors such as lack of infrastructures, transports, amenities, or poor town planning. Consequently, real estate developers might suffer from the ROI loss, the needs of the buyers cannot be met because home users do not favour living there. As a result, precious land resources are wasted. Secondly, developers would usually have to bear high transactional costs, especially in marketing and advertising. These costs in fact will be transferred to the end house buyers. Furthermore, due to many real estate agents that are in small scale with weak capital strength, it results in weak business operating capability, good and bad agents are intermingled. Therefore, house buyers suffer from paying high commission fees due to the market inefficiency.

### 1.2. Real estate e-commerce: iFang.com.cn case study

iFang was a conventional real estate agent firm established since 2012 with 10 employees. It's located in Foshan city of Guangdong Province, China. Now iFang applied an O2O online platform to sell houses online. It has become a digital real estate agent firm without a physical shop supported by a federation of 1500 virtual employees who accommodate customers 24/7 online. With the aid of this O2O model, its sales significantly rose up from 8,000,000 RMB to 30,000,000 RMB over two years. In this paper we apply Business Process Reengineering (BPR) as a software tool to investigate how the business processes are being improved with the O2O model, how the increase of sales (as observed in practice) was achieved in a scientific approach. The unique feature of this new O2O business model is: transforming a conventional real estate agent firm to a IT-driven company that enables real-time information update, instant communications (hence engagements) with customers and suppliers, and reaping the benefits of share economy. As a result, iFang becomes a collaborative e-commerce platform strategically grouping the geographically dispersed individual real estate firms together to achieve coordination, IT integration and network resources sharing. A flow chart in Figure 1 shows how iFang eliminates middle men in the business process. We would use the following indicators to measure the performance: cost, cycle time, quality and service satisfaction.

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