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# RE-RECOGNIZE BIM FROM A FM PERSPECTIVE: OBSERVATIONS ABOUT MISUNDERSTANDINGS OF BIM-FM IN CHINA

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## ABSTRACT

Both the theoretical research and the practical application of BIM have developed rapidly in both domestic and international AEC industry in the past few years. BIM is a shared knowledge resource for information of a facility during its life-cycle, thus demands of operational management of facilities is the primitive and purpose of BIM. However, there are quite a lot of misunderstandings of BIM-FM in China, which seriously hinder the development of BIM and the integration of BIM and FM.

The cognitive misunderstandings caused by the difference between operation management and project management, and that between facility management and Wuye management, as well as cognitive misunderstandings of BIM and FM in pre-design phase in China are discussed in this article with an aim to give people some enlightenment when developing BIM-FM solution.

**Keywords:** facility management, misunderstanding, BIM-FM solution

There are a lot of misunderstandings about facilities management (FM) in China and three typical cognitive misunderstandings are discussed in this paper.

## 1. COGNITIVE MISUNDERSTANDING CAUSED BY DIFFERENCE BETWEEN OPERATING AND PROJECT MANAGEMENT

Apparently, operating (Operation & Maintenance, hereafter O&M) is the stage after the project is completed, often referred as post-construction stage, or “operation after completion” in China. FM is the practice of coordinating the physical workplace with the people and the work of the organization; integrating the principles of business administration, architecture and the behavioral and engineering sciences [1]. However, there is no presence of FM in China with barely any university offering such courses about FM. Starting from the 1990s, hundreds of universities started the project management (hereafter PrjM or PM) course, churning out thousands of graduates every year. Extreme imbalanced education between these two fields leads to very little awareness of FM, while the understanding of PM has been common sense. There is even a recognition that operating also belongs to the engineering project management.

A more general understanding is that: Since both fields are facing the building and facility, then shifting from engineering business to (or adding) operating business is a natural thing to go and should not be difficult. This is very common in the field of BIM (Building Information Modeling, BIM for short) application in China, directly making a large number of AEC (Architecture, Engineering, Construction) industry people take it for granted that

they can study FM and BIM-FM solutions just by virtue of imagination and search for information online with some BIM teams even claiming to have developed solutions and applications for FM.

As a one-time business, PM is essentially different from a long-term continuous operating as FM.

They fall into two different industries, which means the difference is much bigger than the difference between architect and engineer as professionals. PM is intended for a specific engineering project and ends when it completes, which means once the project is in the state of operating, all tasks along with the engineering project are over. However, FM is intended for a specific corporation/organization. Since all corporations wish their operation to last forever, FM is assumed that it will continuously operate to the end. During operating, building and facilities will be updated or rehabilitated from time to time, and the owner and contractor can be different from the one when the building is originally built as it is rare when the building belongs to a specific owner. Buildings are only part of management objects in FM to help corporation organization to achieve its strategic objectives, while the whole aim of PM. Therefore, when discussing FM from a PM perspective, it's hard to find the right BIM-FM solution if the whole context turns to be wrong.

## **2. COGNITIVE MISUNDERSTANDING CAUSED BY DIFFERENCE BETWEEN FACILITIES MANAGEMENT (FM) AND WUYE MANAGEMENT**

The Chinese term “Wuye management” is referred to property management in English; however in China the practice of Wuye management is far from the property management used abroad. Too different to call it property management in English, therefore we call it Wuye management by its Chinese pronunciation. Wuye management is a Chinese style profession about facility maintenance, including mostly Sanbao services (3 main services including security, cleaning and repairing). This is very typical of Chinese practice, due to the limitation of China’s unique land system, property system and other regulations combined with drawing on the experience of other countries.

When many BIM teams attempt to understand FM with the background of PM (PrjM), the direct research object is common public Wuye management in China instead of real FM in multinational companies. Because urban residential buildings are mostly in residential block, public Wuye management is necessary, so are office buildings, shopping malls and other commercial buildings. Public Wuye management usually contains security, cleaning and repairing in public area, often called "Sanbao Wuye" in China. A lot of services are needed in public Wuye management, but they lack of professional support. The philosophy of Wuye firms limit themselves to providing Sanbao services. The staff of Wuye firms don't go to their clients' offices to perform onsite facility services, let alone to get themselves familiar with the FM needs of a corporation. Some leading Wuye firms providing indoor services will regard them as "extension business" (extending from previous outdoor public Wuye services) and totally business innovation. It is the current situation of Wuye management in China. Few firms are exploring a FM transition, because the biggest obstacle they encounter is the change of the way of thinking.

When BIM teams in China see FM from the public Wuye management perspective, they will see:



Figure 1: A sanitation worker water the flowers in the rain

This picture represents the level of Sanbao service. They are only responsible for buildings, facilities, equipment, trees, etc. They are all physical objects, instead of the people which FM cares most.

Moreover, employees in Sanbao services are mostly low-income workers and 80% of Wuye firms are below financial break-even point. It is a labor-intensive industry with barely no consumption of information, so it is almost impossible for an information-intensive technology like BIM to be linked to Wuye management. In other words, the combination of BIM & Wuye will not exist.

An analytic framework is raised as follows:

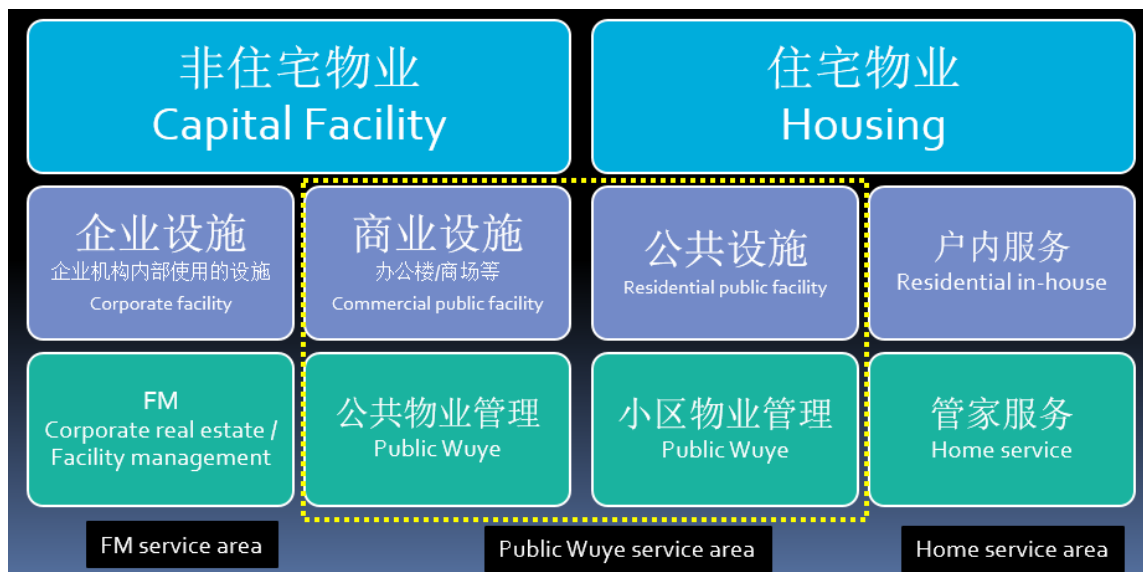


Figure 2: Scope of Wuye management and FM

To find the right BIM+FM solution, the scope of FM needs to be defined first. Space is the lingua franca of facility management (Cotts, 2009 [2]). Public Wuye management practice has never paid attention to the space issues, then they maybe can see the building equipment only.

### FM相关的硬件与业务逻辑关系图 FM related hardware & business logic

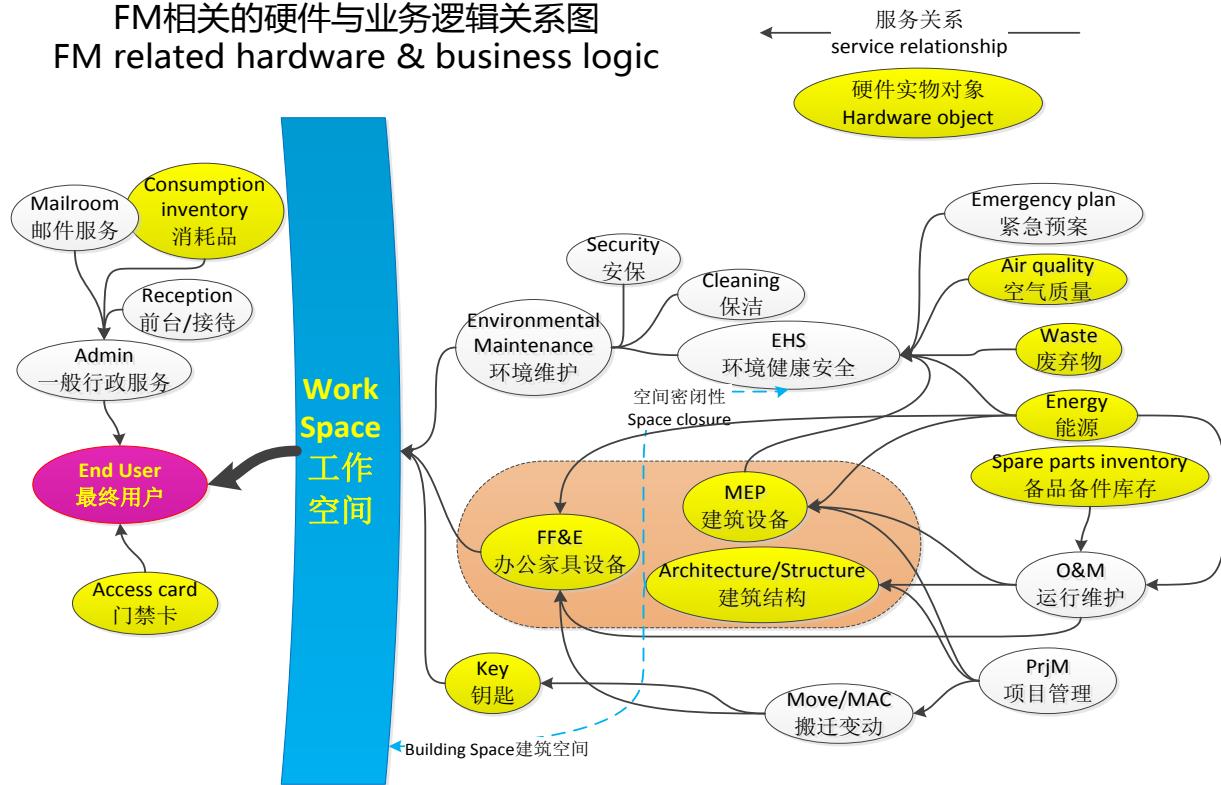


Figure3: hardware and business logic in FM

Physical objects (yellow part in Chart 3), mainly about FF&E (Furniture, Fixtures & Equipment)/MEP (mechanical electrical plumbing)/Building structure, is only part of management objects in FM, far from the whole part, even not the core part. The core of FM is providing the workplace for end user with many facilities and services, which Wuye can never understand outside of a corporation office door.

The limitation of a narrow perspective leads to difficulty of innovation, while BIM+FM solution must be highly innovative. Therefore, a conversion of perspective to examine the issue and a comprehensive cognition of the problem are very essential.

### 3. THE LOGIC OF BIM/FM IN PRE-DESIGN PHASE AND ARCHITECTURAL DESIGN

The people-oriented design concept is the nature of design, but projects in China, due to inadequate definition of "people" have never fully practiced this concept which remains only a widespread slogan on paper. It has something to do with the unpopularity of FM. Lack of support of FM systematic knowledge, the requirements of facility management of owner (or for end user) is very difficult to be delivered to the designers accurately. The direct consequence of this problem is the lack of programming work in pre-design phase.

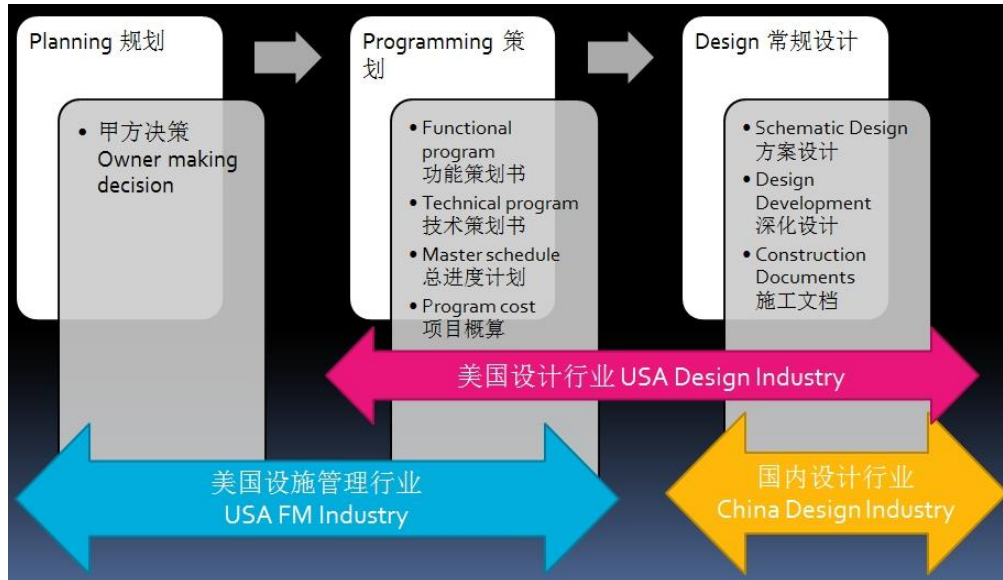


Figure4: comparison of pre-design in China and the U.S.A.[3]

Between the requirements of owner (who is unfamiliar with AEC) and the supply of designers in China, there is a huge gap, which is filled up by co-work of architects and facility managers in the U.S.A. This gap needs a high integration of experience and knowledge especially in programming, which is absent in many projects in China. This is exactly why integrated information technology such as BIM is so promising in China.

Finally, we come to this conclusion easily: the integration of FM and AEC is not only needed after the completion of the building, but also in the early design phase. There is a lot of projects under construction, such integrated applications will have a bright future, especially to some integrated professions themselves, such as architectural design, engineering consulting, EPC (engineering procurement construction), etc.

#### 4. SUMMARY

To propose a BIM solution covering the full life cycle will definitely need the help of FM. Therefore we need to grasp a very clear logic of FM. FM is a new thing in China, so is BIM. It is easy to cause a lot of misunderstandings, and some cognitive misunderstanding will become the obstacles of the development of BIM applications.

Based on the above analysis, it's easy to understand that FM is a systematic profession. We cannot observe FM only from a local perspective, but should do it from a global perspective as much as possible, which will help practitioners to find the appropriate BIM + FM solution.

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