



# Using a Practical Methodology of Enterprise IT Strategy for Digital Success

Juan Li<sup>1</sup>, Wei Xu<sup>2\*</sup>

<sup>1</sup>Beijing University of Technology, 100 Pingleyuan, Chaoyang District, Beijing, China

<sup>2</sup>Shandong Lucion Investment Holdings Group, Building 1, Yulan Plaza, No.8 Longao Bei Road, Jinan, China  
lijuan@bjut.edu.cn, xuwei@luxin.cn\*

Corresponding author: Wei Xu

## ABSTRACT

The success of enterprise digitalization requires the application of enterprise IT strategy methodology. Aiming at the deficiencies of traditional methodology, this paper proposes a practical methodology for enterprise IT strategy. This methodology emphasizes starting from enterprise strategy, focusing on high-level planning of enterprise business architecture and enterprise application architecture, and formulating roadmaps through IT program design and IT budgeting. This paper illustrates the application of this methodology through examples, hoping to provide a useful reference for enterprise digital practitioners.

**Keywords:** Enterprise IT Strategy, Business Architecture, Application Architecture

## 1. INTRODUCTION

Although many companies have already invested in digitalization, it is always very difficult to achieve success. Tony Saldanha pointed out that 70% of digital transformation projects fail. Hence, he proposes a five-stage approach to digital transformation. Among them, the first task is to formulate the strategic goals and plans for digital transformation, and ensure that the management of the enterprise effectively implements them [5]. Tencent Research Institute released a report on digital transformation of Chinese state-owned enterprises in June 2021. Through the research questions of more than 60 enterprises, it was found that the main challenge of digital transformation in various industries was not the lack of leadership support and financial support, but the difficulty in integrating digital technology and business scenarios, resulting in many enterprises not knowing where to start the digital transformation [4]. If we regard enterprise digitization as a great project of the enterprise, then the success of this project must be inseparable from project planning. The point of this paper is that the enterprise IT strategy methodology is the most important planning tool for the enterprise digitization project.

Because most traditional enterprise IT strategy methodologies are complex or not disclosed, for many enterprises, especially small and medium-sized

enterprises, these methodologies are either high-end or expensive, which cannot meet the needs of a wide range of enterprise digitization. Based on the practice of IT strategy projects of many enterprises, this paper summarizes and proposes a practical methodology to provide a useful reference for enterprises.

## 2. RELATED RESEARCH AND PRACTICE

Enterprise IT strategy is an important branch of enterprise strategy research, which belongs to the field of combining IT and management science [3]. Enterprise IT strategy can be regarded as an advanced software engineering methodology for the top-level design of the overall IT of the enterprise. Its goal is to help enterprise management review the consistency of enterprise business strategy and IT strategy, so as to formulate and make decisions on medium and long-term IT planning. At the same time, the formulation process of enterprise IT strategy is often complementary to the formulation of enterprise business strategy planning, and can even be an integral part of enterprise business strategy.

Enterprise IT strategy requires the close integration of IT, business management, and industry experience and knowledge. Methodology is a key tool for the success of an enterprise's IT strategy, which is a fusion application of management and IT. From this perspective, there are two main categories of research and practice in enterprise

IT strategy, namely open standards and IT consulting companies' practice.

## 2.1 Open Standards for IT Strategy

The open standards of IT strategy are based on Enterprise Architecture (EA). John Zachman proposed the Information Architecture Framework in 1987, which opened the door to EA. Zachman became the first reference model of EA [8]. In addition to Zachman, the mainstream standards also include TOGAF, FEA, DoDAF, etc. Recognized and promoted by international mainstream IT manufacturers, TOGAF has become the most widely used mainstream open standard of EA.

TOGAF was developed by the Open Group in 1993 and officially released in 1995. Its full name is The Open Group Architecture Framework. TOGAF is a set of open standard framework and methodology for EA planning, which is enterprise strategy oriented and business process driven. TOGAF released the latest version 9.2 in 2018, which can be downloaded from <https://www.opengroup.org/togaf>. As an open and mature enterprise architecture method guide, TOGAF has a clear and complete standard architecture.

The core of TOGAF is the Architecture Development Method (ADM). ADM provides a testable and repeatable architecture development process. ADM includes the establishment of architecture framework, development of architecture content, architecture transformation and governance of architecture. ADM is implemented through the continuous iterative process of architecture definition and implementation, so as to support the ability of enterprises to realize EA in a controllable way, facing business goals and opportunities.

## 2.2 ITSP Practices of IT Consulting Companies

Most of the practice of enterprise IT strategy comes from IT consulting companies, which is called ITSP (IT Strategy Planning) consulting services. Among the best IT strategy consulting companies in 2021 released by vault.com, the top five are Accenture, Deloitte, IBM, McKinsey and BCG. ITSP methodology is the knowledge asset of IT consulting companies, which is not disclosed to the industry. This paper introduces the practice of ITSP methodology only from the perspective of enterprise IT strategy projects.

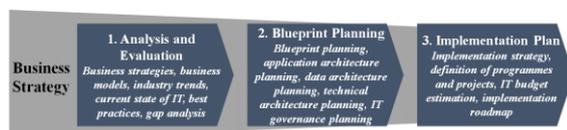


Figure 1: A typical ITSP project process.

No matter which IT consulting company's methodology, ITSP projects will start from the business

strategy. After the project is launched, the first step is analysis and evaluation. This requires in-depth analysis of the enterprise's business strategy, business model and core processes. It is also necessary to analyse and evaluate the current applications, IT infrastructure and IT team, and grasp the technical development direction of the industry to which the enterprise belongs. Meanwhile, by comparing the best practices of benchmarking enterprises, deficiencies can be found and gaps can be analysed. In fact, the work at this phase is the enterprise IT strategic needs analysis.

The second step is blueprint planning. IT consultants will build an enterprise IT blueprint by importing industry best practices and targeting enterprise pain points and expectations. The blueprint planning is the core work of the ITSP project. It is also the place where IT consultants give full play to their intelligence and professionalism.

The third step is the design of the implement plan. Its goal is to decompose the contents of the blueprint into different IT project portfolios, and usually a three to five-year medium-to-long-term implementation plan is formulated to complete the blueprint.

## 3. A PRACTICAL METHODOLOGY

For these open standards based on EA, because they require a lot of process and documentation work, in practice, only a few large enterprises have sufficient resources to implement them. John McDowall believes that EA should be transformed from a static, document-centric consumer of resources into an active, operational management tool [2]. The ITSP practice of an IT consulting company is its core knowledge asset, and each consulting company has its own areas of expertise. Therefore, for enterprises, the methodology of an IT consulting company is a good choice, but this is not something that every enterprise can afford. Moreover, IT consulting company are often only responsible for providing IT strategy reports, but not for the implementation of IT strategy. Enterprises still need to have their own IT strategy implementation capabilities and the ability to subsequently adjust the IT strategy according to changes of internal and external conditions.

On the basis of synthesizing and learning from the open standards and ITSP practices, with the original intention of being practice-oriented, we completed a practical methodology for enterprise IT strategy, which is also suitable for practitioners of enterprise digital transformation. As shown in Figure 2, the methodology will cover four areas of work, the results of which are combined to form an enterprise's IT strategy. In each area, relevant theory, practice and experience will be synthesized to provide operational working methods for IT strategy practitioners.



Figure 2: Four areas of enterprise IT strategy methodology.

### 3.1 Understanding and Analysis of Enterprise Strategy

Enterprise strategy is the starting point of enterprise IT strategy. Therefore, it is necessary for practitioners to master and understand the theory and knowledge of enterprise strategy. For example, practitioners should know that enterprise strategy can be divided into three different levels, namely corporate-level strategy, business unit-level strategy, and functional-level strategy.

It can be seen that enterprise strategy itself is a complex subject. As an IT strategy practitioner, although it is difficult to gain insight into all aspects of enterprise strategy, it can start from the acquisition of IT strategic elements and establish an enterprise strategy understanding framework to ensure that IT strategy can meet enterprise strategy. In this regard, we propose an understanding framework of enterprise strategy as shown in Figure 3.

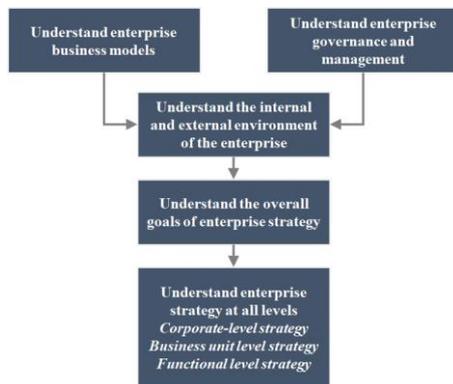


Figure 3: An understanding framework of enterprise strategy.

It should be emphasized that the understanding of enterprise strategy is inseparable from effective communication with enterprise management. Therefore, it is necessary to introduce practitioners to the methods of communicating with the management of enterprises, and this knowledge can come from the relevant content of the MBA course “Management Communication”. Finally, the understanding of enterprise strategy needs to form a baseline document, which serves as a basic reference for subsequent IT strategy planning work.

Another important outcome of work in this area is the identification of key stakeholders for IT strategy projects. Typically, these key stakeholders will include the company CEO and other CXO executives, IT leaders and their key team members, leaders of the company's core business teams, and leaders of key functional departments. The assessment and identification of key stakeholders can be carried out from multiple dimensions. As shown in Table 1 below, different scoring levels can be established in each dimension. 3, 2, and 1 represent dimension weights from high to low, and key stakeholders are identified through multi-dimensional scoring.

Table 1: The key stakeholder identification method for IT Strategy Projects.

Evaluation dimension	Stakeholder1	Stakeholder2	Stakeholder3
Decision Influence	3	2	1
Duties and Powers	3	1	2
Professional Contribution	2	3	3
Benefit	3	2	1
Degree of Participation	1	3	1
Ability to Influence Change	3	1	2
Total	15	12	10
Kel Level	High	Medium	Low

### 3.2 Analysis and Planning of Enterprise Business Architecture

Business architecture is the set of structures and stories that underpin “the business of the business”. The structures might include higher-level concerns such as business models, organizational structures, brand architectures, and financial structures [6]. In practice, enterprise business architecture plays an important role in closely linking enterprise strategy with enterprise IT architecture. Based on the theory, knowledge and industry practice of enterprise business architecture, we propose a practice-oriented approach to enterprise business architecture as shown in Figure 4.

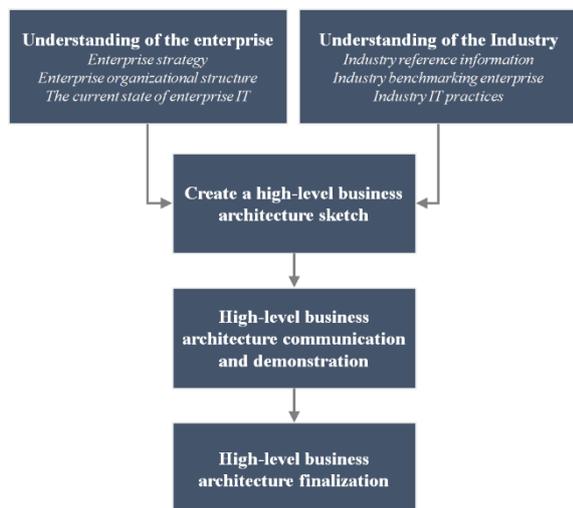


Figure 4: A practice-oriented approach to enterprise business architecture.

This practice-oriented approach to business architecture is a high-level business architecture. The core of this approach is to discover and summarize the business components that represent the capabilities of different domains in the enterprise, and to complete the blueprint of the enterprise business architecture through a layered diagram approach. In order to facilitate practitioners to work, we propose a simple three-tier business architecture method, which can be used as the starting point.

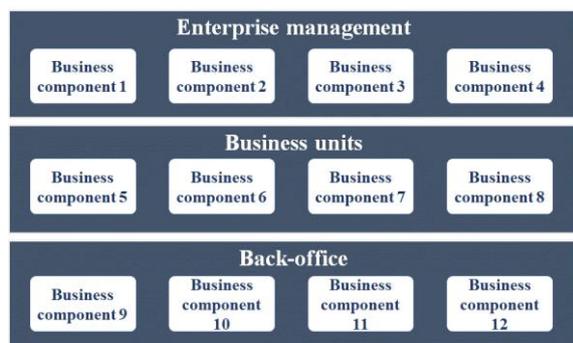


Figure 5: An example of the three-tier business architecture.

As shown in Figure 5, any enterprise can be divided into three tiers to build a high-level business architecture. First, the enterprise management, which is often the business component that needs attention for the overall governance, management and operation of the enterprise, such as strategy management and investment management. The second is the business units. The business units of enterprises in a single industry are usually divided according to the business chain or industrial chain. The business units of cross industry enterprises often become one unit in one industry. The third is the back-office, which includes typical backstage functions of enterprises such as administration, finance and human resource, and may also include backstage support capabilities such as operation, risk and compliance in line with industry characteristics.

In order to illustrate the enterprise business architecture planning, this paper uses a case of a typical Chinese securities company. Figure 6 is enterprise business architecture of this case. In terms of strategy and governance, senior managers will focus on enterprise strategy, M&A strategy, capital management, governance mechanisms, management analysis and change management. In terms of business units, the business of a typical securities company generally includes investment banking, retail brokerage, institutional brokerage, proprietary trading, asset management, and investment research. Each business unit will be composed of corresponding business components according to its business attributes.

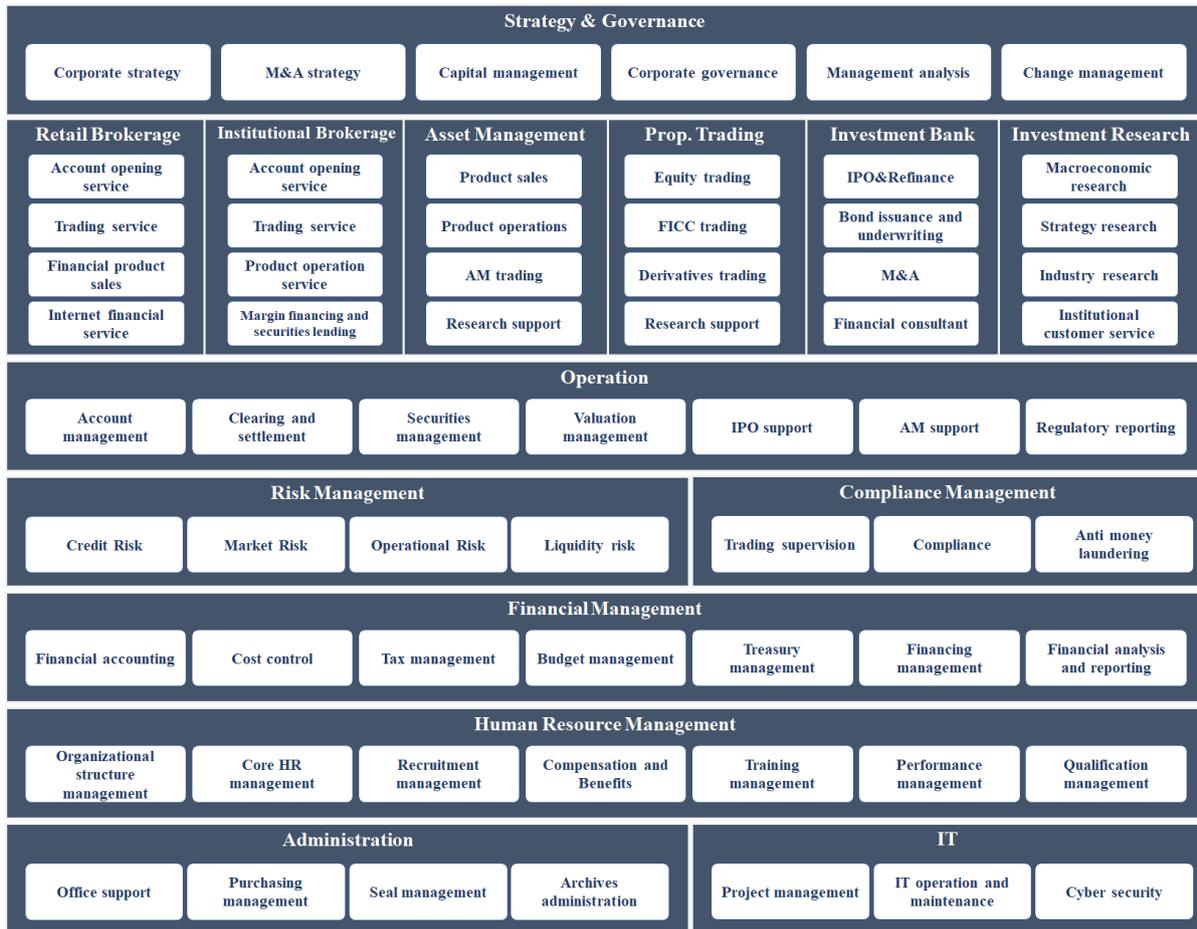


Figure 6: A case of enterprise business architecture of a typical Chinese securities company.

Usually, securities companies will build a centralized operation support department for each business segment and provide operation support services, including account management, clearing and settlement, securities management, valuation management, IPO support, AM support, and regulatory reporting. Risk management and compliance management have become key middle-office functions of securities companies. Risk management includes credit risk, market risk, operational risk and liquidity risk; compliance management covers trading supervision, compliance management, and anti-money laundering. Financial management, human resource management, administration and IT management are all important support functions and are usually incorporated as a supporting part of the business architecture.

### 3.3 Analysis and Planning of Enterprise Application Architecture

The application architecture provides a blueprint for the individual applications to be deployed, their interactions, and their relationships to the core business processes of the organization [7]. Enterprise application architecture is the core content of enterprise IT strategy, which determines the scope, complexity and investment scale of enterprise IT strategy. At the same time, it should be noted that, different from the traditional EA

methodology, this paper believes that the enterprise application architecture for IT strategy should be a high-level architecture that emphasizes the overall perspective of the enterprise, rather than falling into specific functions and requirements. Therefore, we propose a high-level planning approach for enterprise application architecture, as shown in Figure 7.

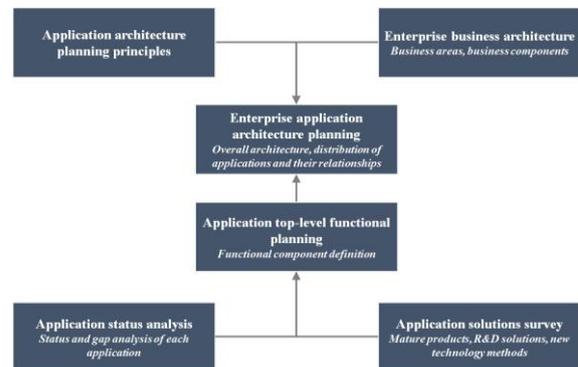


Figure 7: A high-level planning approach for enterprise application architecture.

The enterprise application architecture work needs to analyse the current applications of the enterprise firstly, identify the improvement points, and identify the coverage and support of the current applications to the key business processes in the enterprise business value

chain. Meanwhile, it is necessary to investigate the solutions of each application in the enterprise application architecture, which can not only ensure the feasibility of the architecture, but also improve the architecture planning through the reference of industry solutions. On the basis of these two works, the enterprise application architecture can be constructed by determining the principles of the application architecture, such as reducing the application coupling.

Application top-level function planning is to define the top-level components of each application, which can be defined by corresponding methods through different application types. Generally speaking, an enterprise's applications are divided into the following five types, and the definition method of each type of application components is described below.

- General purpose applications

The most common general-purpose applications in enterprises are financial management, capital management, human resource management and other applications. Taking financial management as an example, it basically includes general ledger management, budget management, expense reimbursement management, tax management, financial reporting, accounting files and other business functions. These are the top-level components of the financial management application.

- Industry-standard business applications

For many mature industries, there are usually industry-standard applications to choose from. Like manufacturing enterprises, ERP (Enterprise Resource Planning) is generally used as the core business application of production, supply and marketing. ERP will include business functions such as production planning, material management, sales management, quality management, and equipment management. These are typical components of ERP, all or part of which will be adopted depending on the enterprise application scenario.

- Industry innovation business applications

In the scenario of emerging industries or traditional industry transformation, industry innovation business applications will become the focus of enterprise digitalization. For the planning of this type of application,

top-down analysis and the experience of benchmarking companies are the most important planning basis. To define the application components of industry innovation business, we should grasp the business model and operation mode of industry innovation business. Of course, if there is sufficient experience of benchmarking enterprises for reference, the abstraction and definition of application components can be completed more efficiently.

- Data applications

Combined with application scenarios, data applications can be incorporated into the overall enterprise application architecture. There are usually three different architectural arrangements. First, as an independent enterprise-level data application, such as an enterprise big data platform or data warehouse, it is mainly for the middle and senior managers and business analysts of the enterprise, and involves scenarios including strategic analysis reports, business management reports, etc. Second, it exists as a data subsystem for business or management applications, such as the financial report for financial management application, the sales report and production report for ERP. The third is to embed it into business or management processes as specialized data tools, such as the customer credit limit calculation for credit business application.

- Legacy applications

In the Enterprise application architecture planning, appropriate arrangements should be made for enterprise legacy applications. There are three common situations, namely, upgrading or replacing legacy applications, retaining and integrating legacy applications, and abandoning legacy applications.

After the above work is completed, the final enterprise application architecture planning can be started. This architecture planning is based on the analysis of key requirements, design application components that meet the requirements of each business field, and form corresponding applications through the combination of application components. Referring to the enterprise business architecture, the enterprise application architecture can further group applications on a layered basis, and group applications of the same business field and high correlation into a group.

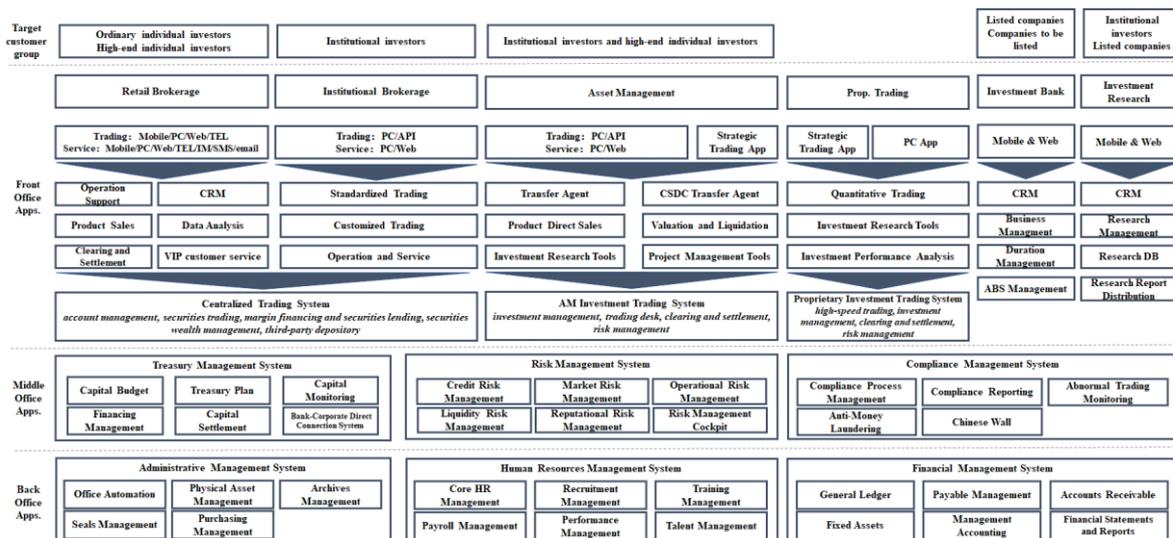


Figure 8: A case of enterprise application architecture of a typical Chinese securities company.

Corresponding to the case in Section 3.2, we also use the application architecture of a typical Chinese securities company, as shown in Figure 8. In this case, each business unit has its front office business applications. The middle office applications cover treasury management, risk management and compliance management, while the back-office applications include financial management, human resource management and administrative management. This high-level enterprise application architecture is easy to be understood by the enterprise management because it corresponds one-to-one with the enterprise business architecture.

### 3.4 Implementation Plan and Budget

#### 3.4.1 Enterprise IT Project and Program Implementation Plan

The implementation plan of enterprise IT strategy is usually defined by a group of programs. According to PMI (Project Management Institute), a program is a set of related projects, subprograms, and program activities that are managed in a collaborative manner [1]. The benefits of such collaborative management cannot be obtained by managing them independently. In units of projects and programs, enterprise IT blueprints can be translated into concrete implementation plans.

Around implementation planning, we recommend two practical methods, including project prioritization and complexity analysis. For example, the

implementation difficulty analysis in the complexity analysis can be carried out using the scoring method, as shown in the Table 2, the higher the score, the greater the difficulty. Based on the scoring results, it is clear that projects with lower implementation difficulty should be prioritized for inclusion in the plan. For projects that are very difficult to implement, it is necessary to carefully evaluate whether the project has the conditions for implementation.

Table 2: Project difficulty score table example.

Project	Implementation difficulty score of different dimensions				Total
	Business	Management	Technology	Data	
Project A	2	2	1	2	7
Project B	3	3	2	2	10
Project C	1	3	1	1	5

#### 3.4.2 Budgeting for Enterprise IT Strategy

In the preparation of enterprise IT strategy budget, it is necessary to master basic financial knowledge first, for example, the difference between CAPEX (Capital Expenditure) and Expense. On this basis, according to the differences between different programs and projects in the implementation plan, the appropriate method can be selected from the two methods of zero-based budgeting and incremental budgeting to prepare the budget. Practitioners can master the IT budgeting method through examples, such as the three-year IT budget example in Table 3.

Table 3: An example of a three-year IT budget.

Program	Project	Category	2022		2023		2024	
			CAPEX	Expense	CAPEX	Expense	CAPEX	Expense
To B Business Application	ProjectA1	New	\$91,200	\$0	\$36,000	\$5,000	\$0	\$6,500
	ProjectA2	Upgrade	\$800,000	\$15,000	\$920,000	\$25,000	\$150,000	\$26,000
	ProjectA3	Upgrade	\$236,000	\$23,000	\$236,000	\$45,000	\$100,000	\$45,000
	<b>Subtotal</b>		<b>\$1,127,200</b>	<b>\$38,000</b>	<b>\$1,192,000</b>	<b>\$75,000</b>	<b>\$250,000</b>	<b>\$77,500</b>
To C Business Applications	ProjectB1	Upgrade	\$1,300,000	\$15,000	\$600,000	\$100,000	\$150,000	\$100,000
	ProjectB2	New	\$900,000	\$0	\$800,000	\$100,000	\$150,000	\$100,000
	ProjectB3	Upgrade	\$500,000	\$15,000	\$600,000	\$80,000	\$50,000	\$80,000
	ProjectB4	New	\$300,000	\$0	\$150,000	\$60,000	\$150,000	\$60,000
<b>Subtotal</b>		<b>\$3,000,000</b>	<b>\$30,000</b>	<b>\$2,150,000</b>	<b>\$340,000</b>	<b>\$500,000</b>	<b>\$340,000</b>	
Back Office Applications	ProjectC1	New	\$400,000	\$0	\$100,000	\$50,000	\$100,000	\$70,000
	ProjectC2	New	\$300,000	\$0	\$100,000	\$50,000	\$100,000	\$70,000
	<b>Subtotal</b>		<b>\$700,000</b>	<b>\$0</b>	<b>\$200,000</b>	<b>\$100,000</b>	<b>\$200,000</b>	<b>\$140,000</b>
IT Infrastructure	ProjectD1	Maintenance	\$0	\$200,000	\$0	\$200,000	\$0	\$200,000
	ProjectD2	Maintenance	\$0	\$100,000	\$0	\$150,000	\$0	\$150,000
	ProjectD3	Maintenance	\$0	\$300,000	\$0	\$300,000	\$0	\$350,000
	ProjectD4	Upgrade	\$500,000	\$50,000	\$500,000	\$50,000	\$500,000	\$50,000
	ProjectD5	Upgrade	\$100,000	\$50,000	\$100,000	\$50	\$100,000	\$50,000
<b>Subtotal</b>		<b>\$600,000</b>	<b>\$700,000</b>	<b>\$600,000</b>	<b>\$700,050</b>	<b>\$600,000</b>	<b>\$800,000</b>	
<b>Total</b>		<b>\$5,427,200</b>	<b>\$768,000</b>	<b>\$4,142,000</b>	<b>\$1,215,050</b>	<b>\$1,550,000</b>	<b>\$1,357,500</b>	

#### 4. CONCLUSIONS

More and more enterprises have invested in the wave of digitization, but due to the lack of support of enterprise IT strategy methodology, the digitization of enterprises is often difficult to succeed. Traditional IT strategy methodologies are either too complicated, like EA-based methodologies, or expensive, like purchasing from an IT consulting firm. Therefore, this paper proposes a practical methodology of enterprise IT strategy, which comes from the experience and practice of many IT strategy projects. This methodology emphasizes starting from enterprise strategy and provides a framework for understanding enterprise strategy. Enterprise business architecture and enterprise application architecture are the core content of this methodology, and this paper details these approaches with examples. Ultimately, these planning results are implemented through IT programs and budgets. The work of this paper is to provide enterprise digital practitioners with a methodology that is suitable for them to master and use.

#### REFERENCES

- [1] Didinsky, I., 2017. Practitioners guide to program management. Project Management Institute, Inc.
- [2] McDowall, J.D., 2019. Complex enterprise architecture: a new adaptive systems approach. Apress.
- [3] Merali, Y., Papadopoulos, T., Nadkarni, T., 2012. Information systems strategy: past, present, future?. *Journal of Strategic Systems*, 21(2):125-153.
- [4] Niu F.L., Chen W.X., Cheng X., 2021. The current process, challenges and ideas of digital transformation of state-owned enterprises. URL: <https://new.qq.com/omn/20210607/20210607A09OR500.html>.
- [5] Saldanha, T., 2019. Why digital transformations fail - the surprising disciplines of how to take off and stay ahead. Berrett-Koehler.
- [6] Simon, D., Schmidt, C., 2015. Business architecture management - architecting the business for consistency and alignment. Springer International Publishing.
- [7] The Open Group, 2018. The TOGAF® standard (version 9.2). URL: <https://www.opengroup.org/togaf>.
- [8] Zachman, J. A., 1987. A framework for information systems architecture. *IBM Systems Journal*, 26(3):276-292.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

