

Research and Exploration on the Pathway of Digital-Intelligent Empowerment for Party Building in Universities: A Case Study of China University of Geosciences (Beijing)

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Abstract

With the deepening of the national strategy for Digital China and the comprehensive implementation of the digital education initiative, Party building in higher education institutions is confronting both historic opportunities and practical challenges in its digital and intelligent transformation. Taking China University of Geosciences (Beijing) as a research sample, this paper systematically reviews the current characteristics and prominent issues of informatization in university Party building. It proposes systematic pathways for the digital and intelligent transformation of university Party building from multiple dimensions, including institutional process reengineering, platform function optimization, system interconnectivity, data integration and sharing, and intelligent technology application. Furthermore, it constructs a functional framework for an integrated smart Party building management and service platform, aiming to provide theoretical reference and practical guidance for the digital and intelligent transformation of Party building in industry-featured universities and across the national higher education sector.

Keywords

University Party Building, Digital and Intelligent Empowerment, Digital Transformation, Artificial Intelligence

1. Strategic Background of the Digital and Intelligent Transformation of Party Building in Chinese Universities

1.1. Objective Driving Force of Technological Innovation in the Digital and Intelligent Era

Human society is transitioning from the information age and digital age to the digital and intelligent age. A new generation of information technologies, represented by large models, big data, cloud computing, the Internet of Things, artificial intelligence, and blockchain, is profoundly reshaping social production methods and organizational operation models. This wave of technological change is not confined to a single domain but is permeating the entire economic and social landscape with an irreversible momentum, exerting a profound impact on the educational philosophies, governance models, and service methods of the higher education sector.

First, the leap in technological supply capacity has laid a solid foundation for the digital and intelligent transformation of Party building. Big data technology makes it possible to collect, store, process, and analyze massive organizational and Party member behavioral data, providing data support for precise Party building decision-making. The rapid development of artificial intelligence technology, particularly large language models, endows Party affairs management with capabilities such as intelligent text generation, semantic understanding, and knowledge-based question answering, greatly expanding the intelligent application scenarios of Party building. The popularization of low-code development platforms and cloud-native architectures has significantly lowered the threshold for developing and iterating business systems, enabling universities to advance the digital coverage of Party affairs at a lower cost and faster speed.

Second, technological change has given rise to profound shifts in the behavioral patterns of those to whom Party building work is directed. Currently, the majority of faculty and student Party members in universities are “digital natives” who have grown up with the Internet. Their habits in information acquisition, communication, and organizational participation have become fully online and mobile. The traditional operational modes of Party building—such as offline centralized learning, paper-based material submission, and manual ledger management—are increasingly at odds with the cognitive habits and participation preferences of the new generation of Party members. This growing tension objectively requires Party building to proactively adapt to the digital ecosystem, and to carry out Party member education, management, and services in a more contemporary and engaging manner.

Third, digital transformation has become an important benchmark for measuring the modern governance capacity of organizations. The degree of integration between information technology and business operations directly affects organizational efficiency and governance effectiveness. Against the backdrop of universities accelerating their overall digital transformation in education, if Party building fails to keep pace with the digital wave, it will not only struggle to integrate

into the broader smart campus ecosystem but may also create “information silos” and “digital dead ends” in terms of data interconnection, business collaboration, and decision support, thereby constraining the overall improvement of Party building quality in universities.

Finally, the new landscape of cybersecurity and data governance also imposes higher requirements on the informatization of Party building. With the successive promulgation of laws and regulations such as the Data Security Law and the Personal Information Protection Law, the collection, storage, transmission, and use of sensitive data involved in Party building—including Party members’ personal information, organizational resolutions, and cadre evaluation materials—must be incorporated into a standardized and institutionalized technical framework, ensuring the security and compliance of Party building data through information technology.

1.2. Policy Guidance at the National and Ministry of Education Levels

The *Overall Layout Plan for Digital China Construction* points out that building a Digital China is a crucial engine for advancing Chinese modernization in the digital era and a powerful support for building new national competitive advantages. Accelerating the construction of Digital China is of great significance and far-reaching impact for comprehensively building a modern socialist country and realizing the great rejuvenation of the Chinese nation. The Plan explicitly proposes to incorporate the progress of Digital China construction into the performance evaluation of relevant Party and government leading cadres, to enhance the digital thinking, digital awareness, and digital skills of leading cadres and civil servants, and to promote the joint participation of higher education institutions, research institutes, and enterprises in the construction of Digital China¹.

The 2022 National Education Work Conference formally proposed the implementation of the national digital strategy for education, which was subsequently included in the *Key Work Points of the Ministry of Education for 2022*. The report of the 20th National Congress of the Communist Party of China included, for the first time, “advancing digital education” and elevated it to a national strategy, marking the rise of educational digitalization to the overall height of the Party and national development.

In January 2025, the Central Committee of the Communist Party of China and the State Council issued the *Outline of the Plan for Building a Leading Country in Education* (2024 - 2035), which proposed opening up new tracks and shaping new advantages for development through educational digitalization, implementing the national digital strategy for education, promoting integration, intelligence, and internationalization, and facilitating the transformation of education through artificial intelligence². The Outline positions educational digitalization as a key pillar for building a leading country in education.

¹https://www.gov.cn/xinwen/2023-02/27/content_5743484.htm

²https://www.gov.cn/gongbao/2025/issue_11846/202502/content_7002799.html

In April 2025, the Ministry of Education and eight other departments issued the *Opinions on Accelerating the Digitalization of Education*, which clearly proposed accelerating the construction of artificial intelligence education large models, exploring new paradigms for “artificial intelligence + education” application scenarios, promoting the deep integration of large models with education and teaching, and incorporating artificial intelligence technology into all elements and processes of education and teaching³.

In April 2026, the Ministry of Education and four other departments issued the *“Artificial Intelligence + Education” Action Plan*, which explicitly calls for in-depth implementation of the national digital strategy for education, adhering to principles of education-oriented, competency-first, application-driven, and AI-for-good, fully leveraging the engine role of artificial intelligence in empowering educational transformation, promoting the integration of intelligent technology with all elements of education, the interconnection of all processes, and the coverage of all scenarios, and clearly proposing the use of artificial intelligence to empower educational governance⁴.

The digitalization of Party building in higher education is an integral part of the digitalization of university education. The above policy documents constitute the upper-level policy basis and strategic guidance for the digital and intelligent transformation of Party building in universities.

At the level of intra-Party regulations and institutional frameworks, the *Regulations on the Education, Management, and Supervision of Party Members* devotes a special chapter (Chapter 8) to systematically elaborating on the informatization of Party member education and management, requiring the full use of Internet technology and information-based means to improve Party member education and management, promoting the deep integration of the traditional strengths of primary-level Party building with information technology, and continuously raising the modernization level of Party member education and management⁵. The National Plan for Party Member Education and Training (2024 - 2028) further emphasizes the need to “build, utilize, and manage Party member education and training information platforms at all levels effectively,” and proposes using big data technology to conduct dynamic analysis of Party members’ training participation to improve the precision of education and training⁶.

The above institutional arrangements provide clear institutional compliance and action guidelines for the informatization and intelligent construction of Party building in universities.

2. Current Status of Informatization in University Party Building

Drawing upon a systematic review of scholarly literature pertaining to party-

³https://www.gov.cn/zhengce/zhengceku/202504/content_7019045.htm

⁴https://www.gov.cn/zhengce/zhengceku/202604/content_7065138.htm

⁵<https://dwzzb.caztc.edu.cn/info/1016/1233.htm>

⁶https://www.gov.cn/zhengce/202502/content_7007481.htm

building informatization and digital-intelligent transformation, first-hand observations from annual symposia on higher education digitalization, and investigative visits to a range of representative institutions—namely Peking University, Shanghai Jiao Tong University, University of Science and Technology Beijing, China University of Geosciences (Wuhan), and Wuhan University of Technology—this study identifies several prevailing characteristics in the current informatization of party building within Chinese universities.

2.1. Insufficient Depth of Information Technology Application in Party Building

Compared with university business areas such as teaching, scientific research, human resources, and finance, the application of information technology in Party building is generally weaker. Most universities have already developed relatively mature information systems for teaching, research collaboration, personnel management, and financial digitalization, whereas the construction of Party-building-related information systems started relatively late and has a lower degree of integration with other business systems. A Party building informatization ecosystem that matches the overall development of the smart campus has not yet been formed.

2.2. Three Patterns in the Construction Modes of Party Building Informatization Platforms

Most universities have deployed some form of Party building informatization platform to support basic Party affairs work, including organization information management, Party member information management, Party member development process management, “Three Meetings and One Lesson” record-keeping, thematic Party Day activity management, and Party member education management. However, there are significant differences among universities in terms of the breadth of system functions and the depth of application. Depending on the construction entity and technical architecture, the basic Party building informatization application platforms in universities can be divided into the following three categories:

The first category involves the use of public Party building informatization platforms officially led by provincial/municipal Organization Departments, such as Beijing’s “Party Member E-Pioneer,” Shandong’s “Lighthouse—Party Building Online,” (Liang, 2021) and Liaoning’s “Liaoshen Smart Party Building Cloud Platform.” The advantage of such platforms lies in their natural alignment with data reporting requirements of higher-level organization departments and unified data standards. However, functional iteration is constrained by unified higher-level deployment, making it difficult to fully meet the personalized management needs of individual universities.

The second category involves the use of self-developed Party building management information systems built by universities themselves. Such platforms can be custom-developed to closely match the university’s actual management processes

and organizational structure, offering strong flexibility and scalability, but they require higher levels of in-house informatization construction capacity and financial investment.

The third category adopts a dual-track model that combines the use of officially built public Party building information platforms and university-developed systems, with the two complementing each other. This model accommodates both the standardization of data reporting and the flexibility of institution-based management, but it also brings practical challenges such as duplicate data entry across systems and maintenance of information consistency.

2.3. Structural Gaps in the Business Domain Coverage of Party Affairs Informatization

The scope of Party affairs work in universities is extensive, primarily encompassing Party member development, Party member education and management, cadre appraisal, cadre supervision, talent work, publicity and ideological work, united front work, disciplinary inspection and patrol work, and mass work (including trade unions, the Communist Youth League, and other mass organizations). In terms of the actual coverage of informatization in university Party building, information system development has been relatively concentrated in the areas of Party member development management, Party member education and management, and cadre administration. In contrast, areas such as united front work, disciplinary inspection and patrol, talent work, and mass organization affairs are notably underdeveloped—most still rely on traditional offline methods and have yet to establish effective information technology support systems. This has given rise to a pronounced structural contradiction: while the institutional design and business management of Party affairs have achieved “full-domain coverage,” the actual support provided by information systems is concentrated only in selected areas, leaving conspicuous construction gaps and coverage fractures.

2.4. Digital and Intelligent Transformation of Party Building Has Been Preliminarily Incorporated into University Educational Digitalization Plans

Driven by the strong impetus of the digital and intelligent era and guided by the national policy system, universities generally attach great importance to educational digital and intelligent transformation and have successively formulated smart campus development plans and digital transformation implementation schemes. As an important component of university governance modernization, the informatization and intelligent construction of Party building has gradually been incorporated into the overall planning of various universities. Some pioneering universities have already begun or initiated preliminary work such as needs analysis, scheme design, and project approval for the digital and intelligent construction of Party building, showing an overall accelerating momentum.

3. Major Problems in the Informatization of University Party Building

3.1. Uneven Development of Informatization across Different Party Building Business Areas

Within the scope of Party building business, there exists a marked disparity in the level of informatization across different functional areas. Core business areas—particularly Party member education, Party member development, and cadre management—have benefited from sustained investment and have consequently established relatively robust platforms and well-developed system functionalities. In contrast, other critical yet lower-priority areas such as united front work and disciplinary inspection and patrol lag significantly behind in informatization and have yet to be integrated into the digital ecosystem. This uneven progress not only results in inconsistent paces of digital transformation across various Party building domains but also impedes the holistic and coordinated advancement of Party building toward a comprehensive digital and intelligent governance model.

3.2. Poor Information Sharing between Unified Construction Platforms and Self-Developed Systems

Provincial/municipal Party organization unified platforms have significant advantages in ensuring unified data standards and enabling direct data reporting to higher-level organizations. However, their technical architectures and data management policies are relatively closed, often failing to fully meet universities' personalized needs for refined Party building management. The self-developed Party building information platforms that universities build to compensate for functional gaps in unified platforms face prominent technical barriers and institutional obstacles in terms of interconnection and information sharing with the official unified platforms, due to inconsistent data interface standards and limited data-sharing permissions.

3.3. The Problem of Data Silos Still Exists among Internal University Systems

Within universities, there are widespread problems of poor interconnection and insufficient information sharing both among Party building information systems and between Party building information systems and other business area information systems (such as human resource management systems, student affairs management systems, and collaborative office systems). For example, the lack of data connectivity among cadre management systems, personnel systems, and collaborative office systems means that changes in cadre positions and ranks cannot be updated in a timely manner across personnel systems and office automation systems. This not only affects data accuracy and consistency but also reduces management efficiency. This problem reflects the lack of top-level planning in system construction, and the phenomenon of “each system operating in isolation” is equally prominent in the Party building domain.

3.4. Some Party Affairs Work Remains outside Digital Management

Currently, a certain amount of Party affairs work is still conducted offline and has not yet completed digital transformation. For example, basic tasks such as grassroots Party branch activity records, democratic appraisals, Party organization relationship transfers, and Party dues collection and management still rely on traditional manual ledgers and paper-based workflows. Without business digitalization, it is impossible to achieve accompanying data accumulation, making it difficult to later leverage data value or provide the basic data sources for big-data-based precision Party building decision-making and intelligent Party building services.

3.5. Practice of Big Data and Artificial Intelligence Empowerment in Party Building Is Still in Its Infancy

Overall, there are relatively few explorations of the application of new-generation information technologies such as big data analytics and artificial intelligence in university Party building. The systems currently deployed are mainly limited to basic information recording and process management levels. Mature application scenarios for data-driven decision-making, intelligent-assisted management, and personalized precision services have not yet been developed. In particular, there is a relative scarcity of practical experience and replicable mature cases in areas such as using natural language processing technology to assist Party affairs text generation, using knowledge graphs to build Party member learning profiles, and using big data analytics to support Party building research and decision-making.

3.6. Uneven Digital and Intelligent Literacy among Party Affairs Work Teams

The digital and intelligent transformation of Party building depends not only on the construction of technical systems but also on the digital literacy and intelligent technology application capabilities of the users. Surveys have found that there are considerable differences in the digital and intelligent literacy among relevant Party building departments and Party affairs workers at all levels. Some older Party affairs workers are not highly proficient in operating information systems and have relatively limited cognitive and application capabilities regarding big data and artificial intelligence technologies. Some grassroots Party branch secretaries juggle multiple responsibilities in teaching, research, and Party affairs, lacking the time and opportunities for systematic digital and intelligent training. Overall, there is a gap between the digital and intelligent literacy of the Party building workforce and the requirements of digital and intelligent transformation, requiring systematic training and improvement (Ma & Qiu, 2026; Tian & Gou, 2022; Yin & Zhou, 2026; Zhang, 2026).

3.7. Relatively Insufficient Financial Investment in Party Building Informatization

Given the overall limited educational funding of universities, informatization investment tends to prioritize teaching, research, and basic support business areas. Special budget allocations for Party building informatization are relatively con-

strained. The insufficiency of financial investment directly affects the construction, upgrading, and maintenance quality of Party building information systems. It also restricts the introduction and application exploration of new technologies such as big data and artificial intelligence, leaving the digital and intelligent transformation of Party building without a stable and sustained resource guarantee (Zhang, 2026).

4. Key Aspects of the Digital and Intelligent Transformation of Party Building in Universities

4.1. Consolidating the Foundation: Comprehensively Promoting Full Digital Coverage of Party Building Business Processes

Informatization and digitalization are the prerequisites and foundational base for intelligentization, and the premise of informatization and digitalization lies in institutionalization and process standardization. The primary task of the digital and intelligent transformation of Party building in universities is to vigorously advance the three-step strategy of “institutionalizing management, proceduralizing institutions, and informatizing procedures,” so as to fundamentally build a comprehensive digital foundation for Party building operations.

Specifically, efforts should first be made to comprehensively identify and review the gaps in Party building work that have not yet been covered by informatization, clearly define the institutional norms and management standards for various Party building operations, and conduct standardized review and optimization of existing offline business processes. On this basis, priority should be given to supplementing key blank areas, including a digital Party school management system, an informatized united front management platform, a disciplinary inspection and supervision work system, and informatized management systems for mass organizations (trade unions and the Communist Youth League), ensuring that major Party building operations are “fully online and available throughout the entire process.” Only by achieving comprehensive business digitalization can full, accurate, and usable Party building data assets be accumulated as a byproduct, laying a solid foundation for subsequent data analysis and intelligent applications.

4.2. Optimization and Upgrading: Expanding the Functions of the Party Building Information Platform through Multiple Measures

On the basis of the existing Party building information management platform, universities should fully integrate and utilize available public platform resources (such as collaborative office systems and online service halls) to promote the digital transformation of major Party building operations in a low-cost and efficient manner. The specific implementation pathways can be pursued in parallel from the following two dimensions:

First, rapid launch of lightweight services.* For offline Party building operations with relatively independent processes and clear business logic, digitalization can be directly achieved by leveraging the university’s existing online service hall

or low-code development platforms. The advantages of this approach include cost control, short implementation cycles, and quick results, enabling rapid filling of digital gaps. Functional tasks such as Party member learning registration, organizational life reporting, and Party dues payment reminders can all be implemented through this pathway.

Second, in-depth upgrading of core business systems.* For complex operations that have strong interconnections and coupling with the existing Party building information platform—such as full-lifecycle management of Party member development, Party organization relationship transfers, and democratic appraisal processes—consideration should be given to expanding the functions and upgrading the architecture of the existing Party building information platform, enhancing its business-carrying capacity and data processing capabilities, and achieving the transition from “usable” to “user-friendly.”

4.3. Interconnection and Sharing: Striking an Appropriate Balance between Institutionally Self-Developed Platforms and Mandated Unified Platforms from Superior Authorities

In advancing the digital and intelligent construction of Party building, universities need to carefully manage the relationship between self-built Party building information platforms and the unified platforms constructed by higher-level Party organizations. The fundamental principle should always be to facilitate users (faculty and students) and to improve work efficiency as the basic goal, while avoiding redundant construction and striving to achieve interconnection, sharing, and functional complementarity between the two levels of platforms.

Taking Beijing’s “Party Member E-Pioneer” platform as an example—a Party affairs information management platform commonly required for use by Beijing universities—it has the advantage of unified construction in Party organization information management and Party member information management. However, due to data security considerations, the platform does not provide full data export functionality or open data interface services, making it difficult for the university’s digital campus public data platform and other business systems to share and utilize its data resources. At the same time, the functional iteration pace of “Party Member E-Pioneer” follows the city-wide unified planning, which does not always align with the smart campus development pace and personalized management needs of individual universities based on their own development realities.

In response to the above issues, the following collaborative approach is recommended: the university should build or optimize and upgrade its self-built Party building information management platform on the existing foundation to meet the institution-specific needs of daily Party building management; the two basic modules of “Party Organization Information Management” and “Party Member Information Management” should continue to use “Party Member E-Pioneer” to ensure a unified data source; these two basic modules should be embedded into the interface of the university’s self-built platform through technical integration, enabling seamless inte-

gration and display of foundational data, so that Party affairs workers do not need to switch frequently between the two platforms; business data from the self-built platform—such as Party member development management, organizational life management, and Party dues payment management—should be regularly pushed to the “Party Member E-Pioneer” platform through standardized data interfaces to meet higher-level organizations’ data aggregation and statistical requirements.

4.4. Integration and Coordination: Strengthening Data Sharing and Business Collaboration Both within and outside the Party Building System

Universities should pay overall attention to and vigorously strengthen data integration and business collaboration at two levels:

First, vertical integration, i.e., interconnection within the Party building system itself. This ensures data consistency and process coherence among various sub-systems—including Party organization management, Party member management, developmental Party member record-keeping, organizational life management, Party dues management, and publicity and education—thereby breaking down information barriers among internal Party building modules and forming a complete Party building data chain.

Second, horizontal collaboration, i.e., integration and sharing between the Party building information system and the university’s public information platform and other business information systems. This promotes synchronization of organizational structure data, consistency verification of personnel information, and cross-system business process connectivity between the Party building system and human resource management systems, student affairs management systems, collaborative office systems, scientific research management systems, etc., eliminating “information silos” and fostering an organically integrated smart campus development ecosystem. For example, when cadre position information in the cadre management system changes, it should automatically trigger a series of linked operations, including corresponding permission adjustments in the collaborative office system and position information updates in the personnel system, achieving “one-entry, campus-wide sharing.”

4.5. Intelligent Driving: Deepening Exploratory Practices of Empowering Party Building through Big Data and Artificial Intelligence

4.5.1. Intelligent Assistance for Party Affairs Work

Supplement the information gaps in the training process and training links, realize the information management and service of the whole process of postgraduate education, optimize and standardize the management service process, and improve the level of fine management. Through the accompanying data collection, the whole process business data of postgraduate education and training is accumulated, which provides basic data support for upper data mining, data analysis, monitoring and early warning, and prediction and decision-making.

4.5.2. Party Building Data Dashboard and Leadership Cockpit

A dedicated Party building data dashboard—i.e., a Party building leadership cockpit—should be established within the university to enable dynamic visualization of core Party building indicators. The digital cockpit can display in real time the digital map of the university's Party organizations, dynamically track key indicators such as organizational activity levels of each second-level Party organization, frequency of “Three Meetings and One Lesson” activities, coverage rate of thematic Party Day activities, Party member learning compliance rate, and progress of Party member development across all second-level organizations. It supports multi-dimensional drill-down analysis, providing instant and intuitive data support for the university Party committee to assess the operational status of grassroots Party building, identify weak links in a timely manner, and formulate targeted improvement measures.

4.5.3. Precision Profiling and Intelligent Assessment

A “Digital Profile of Party Members” system and a “Digital Profile of Party Organizations” system at all levels should be constructed. Through comprehensive analysis of multi-dimensional data—including Party members' participation in organizational life, completion of learning tasks, fulfillment of Party member obligations, and receipt of commendations and awards—visualized individual and group profiles of Party members can be generated, enabling precise identification of exemplary models and of those requiring focused attention and support [8]. At the end of the year, work operation reports for each second-level Party organization can be automatically generated, systematically presenting the annual Party building achievements, highlights, and shortcomings.

In the area of cadre management, a multi-dimensional and comprehensive cadre database should be built to generate “Digital Profiles of Cadres.” Visualization tools such as radar charts can be used to intuitively display each cadre's comprehensive performance across dimensions including political quality, professional competence, work performance, public evaluation, and integrity and self-discipline. On this basis, a data- and evidence-based cadre evaluation system can be established, providing objective and quantifiable decision-making support for the university Party committee to accurately identify, select, and appoint cadres.

4.5.4. Precision Delivery of Intelligent Educational Resources

Based on technologies such as big data analytics, AI recommendation algorithms, large language models, and knowledge graphs, personalized learning need profiles can be constructed according to Party members' and faculty members' characteristics (such as position type, rank, professional background), learning history, and behavioral preferences. This enables intelligent matching and precise delivery of learning and educational resources, promoting the transformation of Party member education from “flood irrigation” to “precision drip irrigation,” thereby enhancing the relevance and effectiveness of ideological and political education.

4.5.5. Intelligent Early-Warning Supervision for Disciplinary Inspection

Focusing on key areas and critical links—including financial management, bid-

ding and procurement, infrastructure projects, maintenance projects, logistics support, and enrollment and admissions—data from relevant business platforms should be integrated into the disciplinary inspection information system through technical interfaces to build “electronic supervision and monitoring” application scenarios. Scientific rules for supervision and monitoring, as well as risk early-warning thresholds, should be established to conduct in-depth analysis and intelligent assessment of underlying business data, enabling unobtrusive and routine supervision of operations across all units. The system can automatically identify abnormal patterns and emerging or latent issues, issuing timely warning signals, thereby transforming disciplinary inspection work from a “passive response” model of post-factum investigation to an “active early-warning” model of in-process intervention and preemptive prevention, effectively enhancing the timeliness and deterrent effect of supervision.

4.5.6. Intelligent Party Affairs Assistant and Ideological and Political Content Generation

Generative AI technology can be leveraged to create an intelligent generation tool for micro-lectures on ideological and political education. After Party affairs workers input the topic, keywords, and key points framework, the system can automatically generate well-structured and formally standardized micro-lecture courseware and lecture scripts based on a high-quality corpus. Combined with large language models, an intelligent Party affairs assistant can be developed to enable functions such as automatic drafting of branch activity minutes, intelligent generation of branch work summaries, and personalized formulation of learning plans. It can also automatically review Party member development materials (such as Party membership applications, ideological reports, and political vetting materials) for format standardization and content completeness, and support Party affairs workers in conveniently querying various Party building data and policy information through natural language question-and-answer interactions.

4.6. Top-Level Safeguards: Strengthening Overall Planning and Capacity Building

The digital and intelligent work of Party building should be designated as a key annual task of university Party building and an important component of the assessment system. A working mechanism should be established featuring unified leadership by the university Party committee, coordination by the Organization Department, technical support by the information technology department, and collaborative implementation by all grassroots Party organizations.

In terms of funding guarantees, expenditures for digital and intelligent Party building construction should be incorporated into the university’s annual budget for overall planning, forming a sustained and stable investment mechanism. In terms of team building, training on digital and intelligent literacy for the Party building workforce should be intensified, with tiered and categorized training programs on digital skills and intelligent application capabilities for Party com-

mittee members, organizational officers, branch secretaries, and general Party affairs workers, focusing on enhancing the overall ability of the Party building workforce to carry out Party building work using digital technologies and intelligent tools.

5. Functional Architecture of an Integrated Smart Party Building Management and Service Platform for Universities

Based on the above key aspects of digital and intelligent transformation, this paper proposes a system functional architecture for an integrated smart Party building management and service platform for universities. The architecture follows the design philosophy of “data-driven, intelligence-empowered, and service-oriented” and is organized in a three-tier structure of “bottom-level data integration—middle-level business collaboration—upper-level intelligent applications,” forming an overall pattern in which five major business clusters—Party affairs management, publicity and education, cadre management, disciplinary inspection and supervision, and mass organization work—collaborate and coordinate in an integrated manner. The functional structure of the platform is shown in Figure 1.

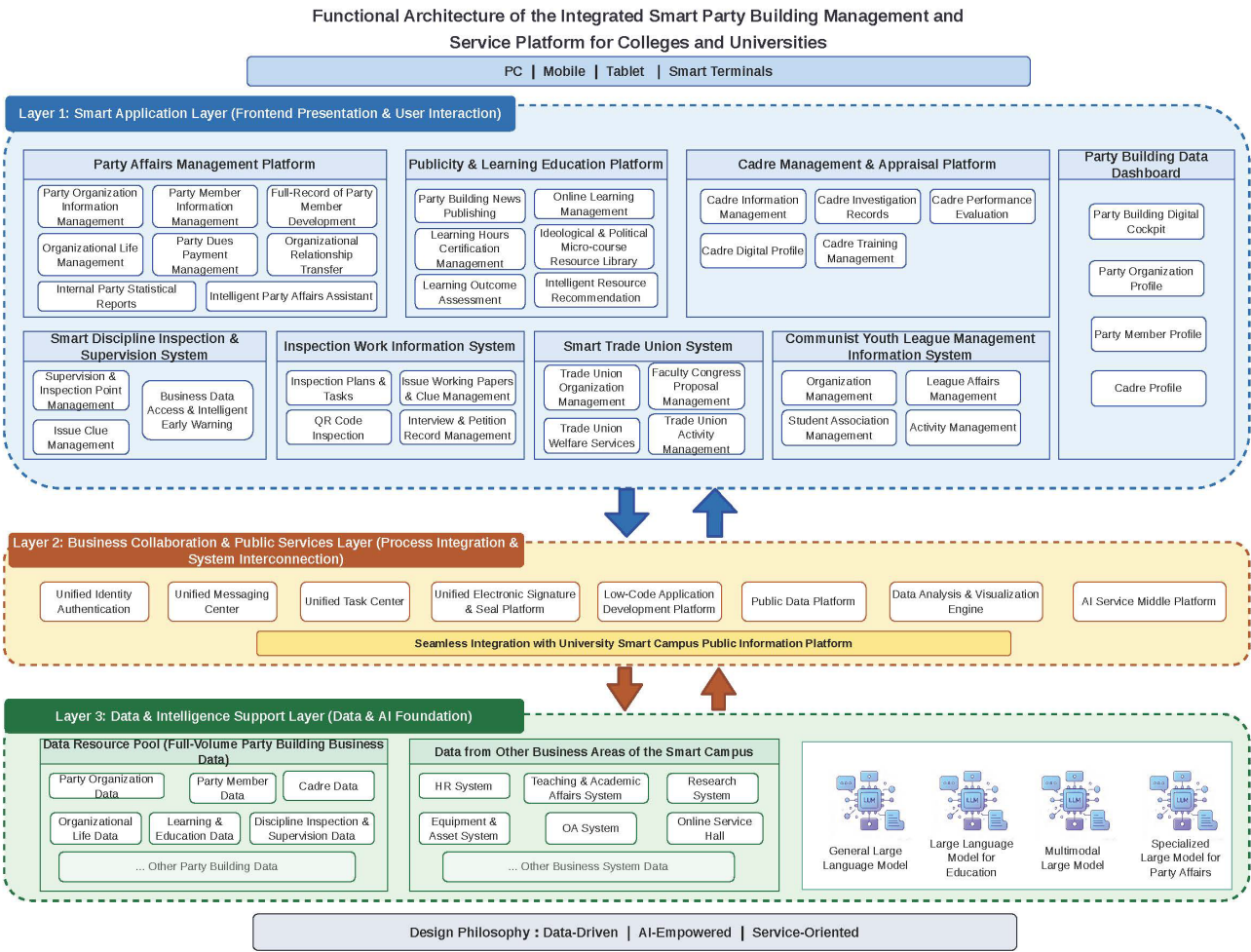


Figure 1. Functional architecture of the integrated smart party building management and service platform for colleges and universities.

5.1. Layer 1: Intelligent Application Layer (Front-End Presentation and User Interaction)

This layer provides a unified portal entrance and personalized workbenches for diverse user groups, including university Party committee leaders, Party affairs workers, grassroots Party branches, ordinary Party members, and Party membership applicants. It encompasses the following business clusters:

1) Party Affairs Management Platform: Includes core functional modules such as Party organization information management, Party member information management, full-journey documentary management of Party member development, organizational life management (“Three Meetings and One Lesson,” thematic Party Day activities, democratic appraisal of Party members, organizational life meetings), Party dues payment management, organizational relationship transfer management, and internal Party statistical reporting.

2) Publicity, Learning, and Education Platform: Covers functions including Party building news dissemination, online learning course management, digital Party school, learning progress tracking and credit hour certification, ideological and political micro-lecture resource library, and learning effectiveness assessment.

3) Thematic and Subject-Specific Education Activity Platform: Supports online creation, process documentation, achievement display, and effectiveness evaluation of various thematic education and subject-specific learning activities.

4) Cadre Management and Appraisal Platform: Includes cadre information management, cadre investigation documentation, cadre appraisal and evaluation, cadre digital profiling, and cadre training management.

5) Smart Disciplinary Inspection and Supervision System: Encompasses supervision and monitoring point management, issue clue management, business data integration, and risk early warning.

6) Patrol Work Information Platform: Includes patrol plan and task management, working draft and clue management, QR-code-based patrol reporting, interview and petition record management, patrol report and feedback, patrol rectification and follow-up supervision, and results application and statistical analysis.

7) Smart Trade Union System: Covers trade union organization management, faculty congress proposal management, trade union welfare services, and trade union activity management.

8) Communist Youth League Management Information System: Covers Youth League organization management, League affairs management, student association management, and volunteer service activity management.

5.2. Layer 2: Business Collaboration Layer (Process Integration and System Interconnection)

This layer undertakes process orchestration, data exchange, and service integration among various business systems. It mainly includes: unified identity authen-

tication, unified messaging center, unified task center, unified electronic signature and seal platform, low-code application development platform, unified data platform, data analysis and visualization engine (supporting data processing and visualization for the Party building digital cockpit, data dashboards, digital maps, various statistical reports, and profile analytics), and AI service middle platform (integrating AI capabilities such as large language model services, knowledge graph construction and management, intelligent recommendation engines, speech recognition and conversion, automatic text generation, and intelligent review). These public business middle-platform components provide services to front-end applications and enable collaborative coordination among various business systems in the front-end application layer.

5.3. Layer 3: Data and Intelligent Support Layer (Data and Intelligence Foundation)

This layer constitutes the platform's data foundation and intelligent capability core, including:

Data Resource Pool: Aggregates structured Party building business data—including Party organization data, Party member data, cadre data, organizational life data, learning and education data, and disciplinary inspection and supervision data—as well as unstructured resource data related to Party building, forming comprehensive Party building data assets.

AI Foundation: Integrates and provides unified management and scheduling for various large language models (general-purpose large language models, education-sector large models, multimodal large models, and Party-affairs-specialized large models).

Standardized API interfaces enable data exchange and service invocation between all layers, ensuring the platform's openness, scalability, and capacity for sustainable evolution.

6. Summary

The digital and intelligent transformation of Party building in universities is an important practical initiative in implementing the Digital China strategy and the digital education action plan. It is also an inevitable choice for improving the quality of Party building in higher education in the new era and for advancing the modernization of university governance systems and governance capacity. Taking China University of Geosciences (Beijing) as a research case, this paper systematically examines the current status and underlying problems of Party building informatization in universities, and on this basis, explores and proposes a systematic pathway for digital and intelligent transformation. Reviewing the full text, the following core understandings can be formed:

First, the digital and intelligent transformation of university Party building must be premised on business digitalization and grounded in institutional process standardization. Given that some Party building operations in certain universities

remain outside digital management, the primary task is to fill gaps and address shortcomings, achieve full digital coverage of major Party building operations, and build a complete and accurate Party building data foundation.

Second, system interconnection and data integration and sharing are key to unlocking the value of Party building data. The collaborative relationship between unified construction platforms and self-built platforms should be properly managed. Information barriers among internal modules of the Party building system, as well as between the Party building system and other university business systems, should be broken down to enable concomitant data accumulation, cross-system flow, and integrated utilization, forming a vertically and horizontally integrated Party building data governance landscape.

Third, the deep embedding of artificial intelligence and big data offers new possibilities for improving the quality and efficiency of Party building work. From intelligent assistance in Party affairs work and precision profiling of Party members and cadres, to intelligent delivery of learning resources and active early warning in disciplinary inspection and supervision, the application scenarios of AI technology are moving from isolated explorations toward systematic integration. In the future, the digital and intelligent construction of university Party building should actively promote the transformation of intelligent technologies from auxiliary tools to integrated capabilities, driving the shift of Party building work models from experience-driven to data-and-intelligence dual-driven.

Fourth, the integrated smart Party building management and service platform is the systematic carrier and ultimate implementation form of digital and intelligent transformation. This platform should use data as the link, intelligence as the driver, and service as the core, achieving business collaboration and data integration across Party affairs management, publicity and education, cadre management, disciplinary inspection and supervision, and mass organization work, thereby constructing a new smart Party building operational pattern characterized by “one platform, multiple scenarios, and full integration.”

Fifth, the digital and intelligent transformation of Party building is a systematic project encompassing multiple dimensions—technology, institutions, talent, and funding—requiring top-level coordination, multi-party collaboration, and sustained investment. Incorporating digital and intelligent Party building into the Party building performance assessment system, increasing funding guarantees, and strengthening digital and intelligent literacy training for the workforce are important safeguards for ensuring the effective implementation and tangible results of the transformation.

In summary, the digital and intelligent transformation of Party building in universities is both an urgent practical task and an ongoing dynamic process that cannot be accomplished overnight. Each university should, in close conjunction with its own educational characteristics, organizational structure, and informatization foundation, chart a path of digital and intelligent transformation that suits its actual circumstances and reflects its industry-specific features, driven by the

dual engines of technological iteration and institutional innovation. Through digital and intelligent empowerment, universities can comprehensively improve the quality of Party building and governance effectiveness, providing a strong political guarantee and organizational support for the high-quality development of higher education.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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