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A Computer-Assisted Collaborative Social Support Framework for Urban Solitary Elderly Care: A Hangzhou Case Study

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SUMMARY: *With the continuous increase in China's age structure, an increasing number of elderly people live alone without family support and are thus more likely to be placed under the care system provided by the community. However, a six-month field study in Community S of Chaoming Street, Hangzhou, reveals four main problems in the current elderly care service system: high turnover rate of front-line service staff, delayed updating and low utilization of elderly profile databases, rigid standardised service models unable to meet individual needs, and unstable neighbour-assisted volunteer mechanisms lacking a systematic incentive system. To address the above deficiencies, this paper puts forward a computer-assisted collaborative social support system based on social support theory. The framework integrates a nine-dimensional hierarchical needs assessment model, a smart elderly care integrated platform, a dynamic "one-person-one-file" archival mechanism, and a multi-agent collaborative linkage mechanism for formal and informal support resources. Resident L in Hangzhou is a typical case of a solitary older person, and this study will use him as an example to show how digital technology can be applied to precise resource allocation, real-time information sharing, and sustainable service delivery for such vulnerable seniors. The above framework is an extended technology-based solution for improving the service model of community-based care for older adults in urban areas in China.*

KEYWORDS: *Solitary elderly; Community elderly care; Social support theory; Smart elderly care; Collaborative service framework; Case study; Computer-assisted system*

1 Introduction

China is changing rapidly due to an ageing population. By the end of 2024, the number of people aged 60 and over across the country had reached about 310.31 million and accounted for 22.0 per cent of the total population. Among the elderly, those living alone are the most socially vulnerable group and lack the family-care support systems available to other seniors. The social support system for these people is dominated by formal institutional support and suffers from a serious lack of informal social support. [1]

The above demographic information in this study is not presented as a general overview. The service area of the above framework is defined as the group of older adults whose daily lives require regular public service support due to limited family or neighbour care. Therefore, the service system will need to record the risk, deploy staff and update demand information on a shorter cycle than in traditional elderly care management. A late archive or an unreported change in living conditions may directly lead to a failure to trigger a home visit, emergency contact or other material support.

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The purpose of this division can also be seen. China has been building a basic elderly care service system focused on essential, bottom-line and accessible services for older adults with limited care resources. Therefore, the proposed computer-assisted framework considers digital tools to be supports for stabilizing basic services and does not replace community care work independently. Based on the service scenario for isolated older adults, this system design will create measurable indicators and task rules to track the handover process.

To explore the practical problems in care services for solitary older adults, this study used participatory observation and in-depth interviews to conduct a six-month field study in Community S, an older urban community in Hangzhou's Chaoming Street, and focused on the typical solitary elderly case of Resident L. The four main service bottlenecks are:

1. High turnover rate of service staff: Three social workers have taken over the case of Resident L in six months due to contract expiry, job transfer and grid adjustment, severely disrupting service continuity and trust.

2. Lagged and static elderly archives: There was no real-time update of health status, living conditions and service records, thus incurring a high re-adaptation cost for new service staff.

3. Rigid service supply: The standardized services (e.g., regular home visits, festival material distribution) did not meet the individual living needs for seasonal water supply and cold-proof supplies.

4. Unstable neighbor assistance: The "Silver Neighbor" volunteer pairing program collapsed after three months due to the physical limitations of the volunteers, and no effective incentive mechanism was established to continue the informal support.

These problems are the results of a discrepancy between the services provided in practice and the essential demands of social support theory, such as the stability of services, the accuracy of demand, and coordination among formal and informal support. Therefore, this paper builds a computer-assisted collaborative social support framework for urban solitary elderly care to address the research-practice gap. The system has built a nine-dimensional hierarchical needs assessment model (quantitative), a cloud-based smart elderly care integrated platform, a dynamic digital archive, and a multi-agent collaborative governance model.

The remaining contents of this paper are as follows: Section 2 presents related studies on social support theory and smart elderly care technologies, and outlines the existing research deficiencies. Section 3 introduces the case background, data collection methods and the main problem in Community S, Hangzhou. Section 4 introduces the architecture and main functional modules of the proposed computer-aided collaborative framework. Section 5: Simulation Evaluation Results, Practical Application Effects and Research Limitations. Section 6 is the conclusion and suggestions for future research in this study.

2 Related Work

2.1 Social Support Theory for Vulnerable Elderly Groups

House was the first to propose the social support theory, and later Xiao Shuiyuan systematically applied it in China; he divided social support into two types: formal social support (institutional and standardised support from governments, communities and social organisations) and informal social support (flexible, emotion-based support from relatives, neighbours and friends). For elderly individuals who are alone and lack a family support system, formal support serves as the first line of defence, and informal support from neighbours and volunteers is limited due to urban social atomisation and a lack of organisational mechanisms. Most of the existing research on the theoretical construction of social support systems has not yet applied these theories to the development of technical-driven service practices.

Social Support Theory can be applied to this study because it differentiates between the source of support and the function of support. The institution offers some indirect support, such as opening a policy window or arranging a home visit and providing necessary materials. Neighbors and volunteers provide low-threshold companionship more frequently, conduct early discovery of abnormal situations, and issue informal reminders [2-4]. For a single elderly person, neither of the above sources is adequate on its own. Formal support is generally stable in authority but lacks daily closeness, and informal support is close to daily life but unstable in terms of continuity. The system needs to maintain the channels and specify the communication method of these channels.

Based on the buffer theory, we will also add non-physical disabilities to the scope of demand. Social isolation is the absence of interaction with other people, a fear of unfamiliar people, irregular daily life, etc., all of which increase daily stress. A relatively small seasonal demand, such as water delivery or cold-proof goods, may be a safety risk if the resident cannot arrange for family help. Therefore, the assessment model in Section 4 has added family interaction, social participation, psychological state and risk behaviour to the previously listed age, economic status and self-care ability.

2.2 Smart Elderly Care Technologies and Applications

In recent years, digital technology has been widely used in elderly care services to build an all-around technical system, as shown in [5].

Research in recent years has shown that smart home and digital health technologies can improve the level of monitoring, communication and timely response for older adults under care; however, their actual effect depends on factors such as user-friendliness, privacy protection, cost and compatibility with care work. Therefore, the proposed platform does not require elderly living alone to use a difficult application independently. The elderly-oriented interface is designed to only support voice input, simplified demand submission and passive sensing, and social workers or community managers are responsible for the main tasks of data entry, verification and task coordination [6].

Digital literacy is added to the design at the same time. Resident L in Community S displayed prominent interpersonal distrust and irregular routines; therefore, although the app would work technically, it would not be suitable for this group either. Therefore, the system will directly connect with people or have others inform social workers about this. This hybrid interaction mode is necessary because the framework must reach the least able to use digital tools, not only those who are already skilled in using them. [7]

IoT-based real-time health monitoring of older adults' vital signs and living environments.

Big Data Analysis of Demand Prediction, Resource Scheduling and Risk Early Warning.

Cloud-based Information Platforms for Cross-Departmental Data Sharing and Business Cooperation.

Mobile Applications and Mini-Programs for Service Demand Submission and Volunteer Coordination.

However, most smart elderly care systems are designed for the general aging population and lack targeted design for solitary elderly groups with characteristics such as low digital literacy, interpersonal distrust and irregular living habits. At the same time, few studies have applied social support theory to the technical structure of smart care systems, and a disconnection exists between the technological tools and social service logic.

2.3 Research Gap

At present, research has failed to develop a unified, theory-driven and technology-supported solution for the four main problems in solitary elderly care: staff turnover, archival lag, rigid services and unstable neighbor assistance. There has been no empirical research in China on the application of computer-aided technology and community-based cooperative support in urban areas. This paper addresses the above deficiencies through a typical case study and framework construction. [8]

As a result, there are deficiencies in both methods and applications. Most existing smart-care studies report on platform functions, and many social-service studies describe care dilemmas but do not turn them into computable service rules. Establish a set of specific risk scores, service priorities, response times, archive latencies and volunteer retention rates to connect the two sides in this paper. The purpose is not to argue that a small-scale simulation can replace large-scale verification; rather, it intends to provide a case study that can be expanded into an audit-friendly framework for audits and reproductions, etc.

3 Case Studies and Problem Analysis

3.1 Case Introduction

Community S is a typical old urban area in Hangzhou with more than 70% elderly residents who are aged 60 or older, live alone, or are disabled. Resident L is a 78-year-old single elderly person who lives alone in a 50-square-meter unrenovated apartment on the 7th floor and does not have an elevator. Resident L does not have contact with family, shows a strong distrust of strangers, lives irregularly, and is thus a typical high-risk case of isolated elderly individuals.

3.2 Data Collection

A combined-methods approach was used in the course of the above-mentioned time period (December 2024 - June 2025) for this study, including:

Participatory observation: Weekly home visits to observe life and service requirements.

Semi-structured interviews: Three consecutive conversations with social workers and two neighboring residents.

Archive Review: Sorting out community elderly profiles and service record documents.

The three sets of field materials are as follows. First, each observation note was divided into event units, such as home-visit contact, health-status change, material demand, neighbour report and staff handover. Second, each event was linked to one of the four service dilemmas in the study, and thus the qualitative evidence could be traced back to particular operational failures. Third, the coded events were converted into computable indicators such as archive update delay, demand-response time, handover adaptation time and volunteer participation continuity. The above code process can be used to validate the later simulation against the original case data instead of relying on an abstract service-flow description.

3.3 Core Service Dilemma

Table 1 is placed directly after the case evidence, and the following four frameworks are organised based on them. The first two are problems of service and information discontinuity; the third is a problem of demand accuracy; the fourth is a problem of the stability of informal support. That is to say, it is not the case that services were lacking. It shows where the service chain is broken and whether computer support can make a measurable improvement [9].

Table 1: Core Service Dilemmas Identified in the Resident L Case.

Service Dilemma	Empirical Evidence
Frequent staff turnover	Three social workers took charge of Resident L within six months due to volunteer contract expiration, job adjustment and grid division adjustment
Lagged archival updating	New service personnel could not access real-time information on Resident L's personality traits, communication preferences and health changes
Inflexible standardized services	Only regular home visits and festival material distribution were provided, with no customized seasonal living support
Unstable neighbor volunteer mechanism	The "Silver Neighbor" pairing lasted less than three months; adjacent residents were willing to help but lacked systematic incentives

The Hangzhou case also shows that in community-based care, the reason for an unmet need is not necessarily a lack of services, but rather an incompatibility between the timing and content of the services and the actual circumstances of the vulnerable group. Resident L has received the regular visits and festival materials, but these services have not addressed the specific risks associated with living alone on a high floor without an elevator, a lack of trust in strangers, and no stable family contact. Therefore, the proposed framework uses the case as a stress test for demand matching rather than a simple descriptive example [10].

The above problems can be summarized as the following three basic contradictions: a supply-demand mismatch of care resources, information silos among service subjects, and insufficient synergy between formal and informal support systems.

4 Proposed Computer-Aided Collaborative Framework

4.1 General Architecture

The four layers of the proposed framework are shown below, and they form a closed-loop management system for data collection, platform integration, service deployment and application interaction.

Data Perception Layer: Gathers multi-source real-time data from IoT sensors, social worker mobile terminals and resident mini-programs on health status, living behaviour and service demands;

Cloud Platform Layer: Builds a unified smart elderly care integrated cloud platform for data storage, cleaning, analysis and cross-sectoral sharing.

Core Service Layer: Implements nine-dimensional needs assessment, dynamic digital archiving and multi-agent collaborative scheduling, etc.

Application Interaction Layer: Provides differentiated human-computer interfaces for older people, social workers, volunteers and community managers.

Figure 1 is the proposed architecture shown in the layered mechanism diagram. The figure still has the four original layers and adds a feedback channel that connects the evaluation of the outcome back to archive updates and resource adjustments.

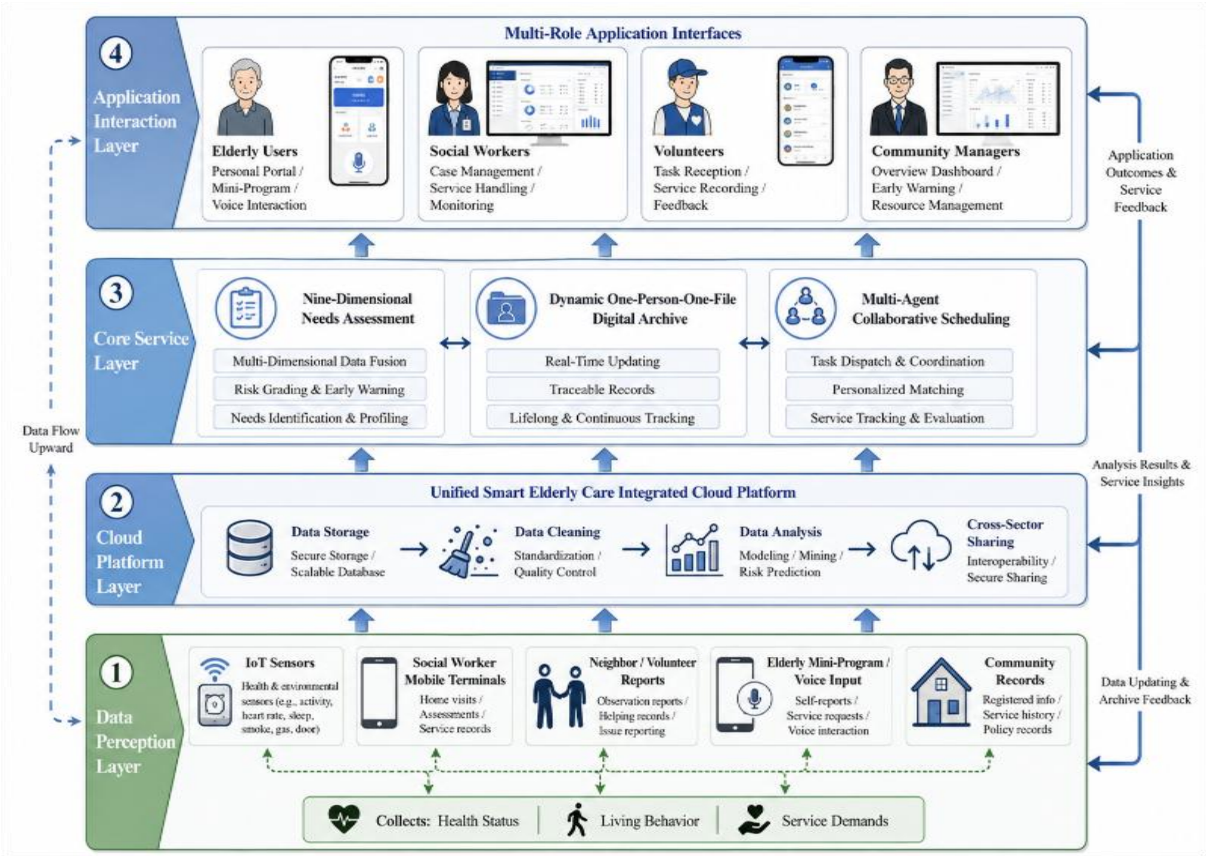

Figure 1: Four-Layer Architecture of the Computer-Assisted Collaborative Support Framework.

As shown in Figure 1, the structure is not a single-direction information platform. Data are acquired by the sensor, the mobile visit record and neighbor report; these are standardized at the cloud layer, the assessment, archiving and dispatch decisions are made by the core service layer, and finally, tasks are returned to the actors who can take action. A feedback loop is needed so that after providing services, a person's data will change, and the next service call will be different. This design is in line with integrated-care logic, and the assessment, coordination and follow-up should be linked rather than treated as separate administrative processes [11].

4.2 Nine-Dimensional Hierarchical Needs Assessment Model

A localised elderly care assessment system in Guangdong Province has developed a nine-dimensional hierarchical needs assessment model for solitary older persons to support data-driven and precise resource allocation. The scoring criteria and total score classifications of the model are as follows:

Table 2: Nine-Dimensional Hierarchical Needs Assessment Criteria for Solitary Elderly Residents.

Assessment Dimension	Scoring Criteria	Maximum Score
Solitary identity	10 (solitary) / 7 (living alone) / 4 (empty-nest) / 1 (cohabiting)	10
Age	10 (≥90) / 7 (80–89) / 4 (70–79) / 1 (55–69)	10
Self-care ability	10 (fully dependent) / 7 (semi-dependent) / 4 (chronic diseases) / 1 (mild discomfort) / 0 (healthy)	10
Home safety	10 (≥3 potential hazards) / 5 (1–2 hazards) / 0 (hazard-free)	10
Economic status	10 (<1900 RMB/month) / 7 (1900–2999 RMB/month) / 4 (3000–3999 RMB/month) / 1 (≥4000 RMB/month)	10
Family interaction	10 (≤1 time/month) / 7 (2–3 times/month) / 4 (1–2 times/week) / 1 (≥3 times/week)	10
Social participation	10 (≤1 time/month) / 7 (2–3 times/month) / 4 (1–2 times/week) / 1 (≥3 times/week)	10
Psychological state	10 (persistent negative emotion >2 weeks) / 5 (occasional negative emotion 1–2 weeks) / 0 (normal)	10
Risk behavior	20 (suicide tendency/violence) / 0 (no risk)	20

Table 2 is the qualitative case profile in a bounded score form. The maximum score is still 100, but the model gives a relatively high weight to explicit risk behaviour because a high risk of suicide, violence, or severe self-neglect requires prompt attention even if other factors are at moderate levels. The assessment is for community screening and case prioritisation; it needs to be updated whenever there is a change in the evidence base from a home visit, medical report or neighbour warning [12].

The total risk score of resident i is given by Eq. (1):

$$S_i = \sum_{k=1}^{9} s_{ik}, \quad 0 \le S_i \le 100 \tag{1}$$

where s_{ik} denotes the score of resident i on dimension k. The resulting score is mapped to a three-level service label by Eq. (2):

$$\text{Level}_i = \begin{cases} \text{Red}, S_i \ge 80, \\ \text{Yellow}, 40 \le S_i < 80, \\ \text{Green}, S_i < 40. \end{cases} \tag{2}$$

When multiple service requests are pending, the system calculates the dispatch priority of task j for resident i by Eq. (3):

$$P_{ij} = 0.40\left(\frac{S_i}{100}\right) + 0.25U_j + 0.20M_{ij} + 0.15E_j \tag{3}$$

In Eq. (3), U_j is request urgency, M_{ij} is the match between the task and the available service worker or volunteer, and E_j is the expected escalation cost if the task is delayed. All three variables are normalized to the interval [0, 1]. This makes the rule auditable: changing the weight of any component will directly change the ranked dispatch list.

Figure 2 shows the service-trigger logic generated by Eqs. (1) and (2). The matrix can show how risk strata and response urgency are correlated.

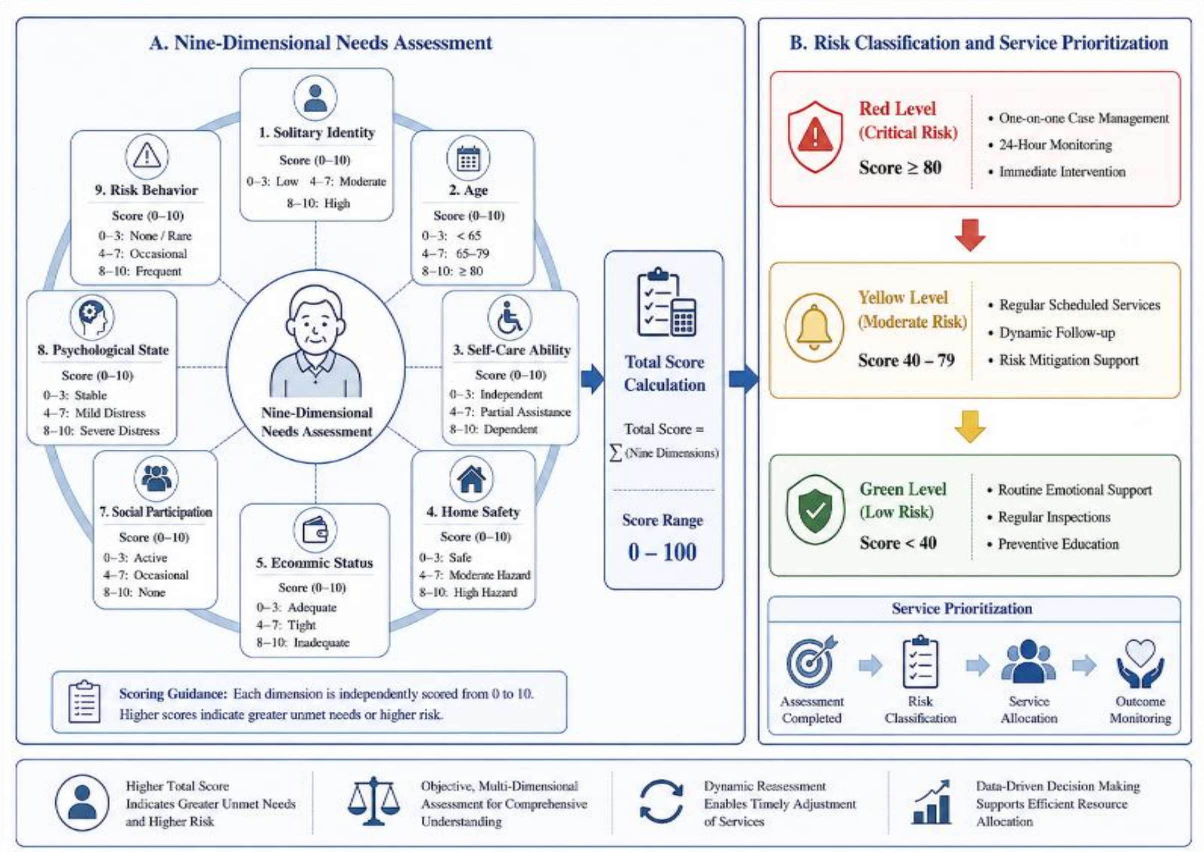

Figure 2: Risk-Grading Matrix Linking Assessment Score to Service Response Urgency.

As shown in Figure 2, a red-level resident will not only be given "more" services in quantity. The different types of response are: routine inspections are now same-day visits, emergencies have been added to the escalation list, and continuous monitoring will be implemented for more serious cases. It is not a fixed-schedule, single-tier service package that ignores the rising risks of aging and disease in society.

Total Score Range: 0-100 Risk Classification:

Red Level (≥80): Severe risk; one-on-one case management and 24-hour risk monitoring are required.

Yellow Level (40-79): Moderate risk; needs to be serviced regularly and dynamically monitored.

Green Level (<40): Low risk, only needs occasional emotional support and inspections.

The model will automatically and quantitatively classify demand to meet the requirement of "precision resource matching" for social assistance.

4.3 Dynamic "one-person-one-file" Digital Archive System

To address the problem of lagged archives and service discontinuity due to staff turnover, a version-controlled, time-stamped dynamic archival mechanism has been developed:

Handover needs to be done properly, and otherwise, it will lead to an increase in staff turnover and information-risk. With the high turnover of front-line staff, the informal rules of communication and trust, as well as previous failed interventions, have been lost. Therefore, the digital archive will record how often people have been served and when that service took place. The Design addresses the continuity risk caused by staff turnover in elder care work directly [13, 14].

Mandatory real-time updates: Social workers submit service records, health changes and demand feedback through mobile terminals after each home visit.

Traceable archive management: Record the time of archiving and the operator's ID automatically to build an unbroken chain of service history.

Intelligent Handover Reminder: New service staff will be notified by the system to check completed archives before their first visit.

Structured handover report: The system automatically generates a concise handover document after a staff transfer to reduce adaptation costs.

4.4 Smart Elderly Care Integrated Platform

The cloud-based integrated platform can collect data from multiple sources and intelligently arrange services by combining data in community management systems, medical institutions, social worker terminals and volunteer mini-programs. The first is:

Intelligent demand release: Support voice and text input for the elderly and their neighbors to submit living service requests.

Automated Task Dispatching: Route demands to nearby social workers or volunteers based on location, skill matching and service load.

Accurate Service Matching: Based on the nine-dimensional assessment scores, recommend tailored service packages.

Performance supervision and analysis: Track service response time, completion rate and elderly satisfaction to improve the efficiency of formal support.

The two operating indicators of the platform for service efficiency are: Demand-response time is given by Equation (4):

$$DRT_j = t_{\text{accept},j} - t_{\text{submit},j} \tag{4}$$

where $t_{\text{submit},j}$ is the time when a demand is submitted or detected, and $t_{\text{accept},j}$ is the time when a social worker or volunteer accepts the task. For indicators where a smaller value indicates better performance, the improvement rate is calculated by Eq. (5):

$$IR_m = \frac{B_m - A_m}{B_m} \times 100\% \tag{5}$$

where B_m is the baseline value of metric m before implementation and A_m is the value after simulation. Volunteer retention is calculated by Eq. (6):

$$VR = \frac{V_3}{V_0} \times 100\% \tag{6}$$

In Eq. (6), V_0 is the number of volunteers initially paired with solitary elderly residents, and V_3 is the number still participating after three months. These equations allow the evaluation section to report comparable indicators instead of relying on general claims of service improvement.

4.5 Multi-Agent Collaborative Support Mechanism

A multi-agent collaborative mechanism will be built to activate informal social support and work in conjunction with formal support.

Optimised "Silver Neighbor" Pairing: Prefer nearby or same-floor residents to enhance proximity and response speed.

Points-based Incentive System: Volunteers are awarded points upon completing service tasks, which can be used for community services or other goods and services.

Professional Liaison Protocol: Social workers organise volunteer training and demand communication and monthly coordination among volunteers and older adults.

Emergency Escalation Mechanism: Abnormal circumstances reported by neighbours will be promptly notified to community managers and social workers.

Figure 3 shows the progress of a single case in the collaborative pathway. The path starts with the identification of a need and ends in an outcome evaluation; at this time, it returns to the archive and resource-adjustment module.

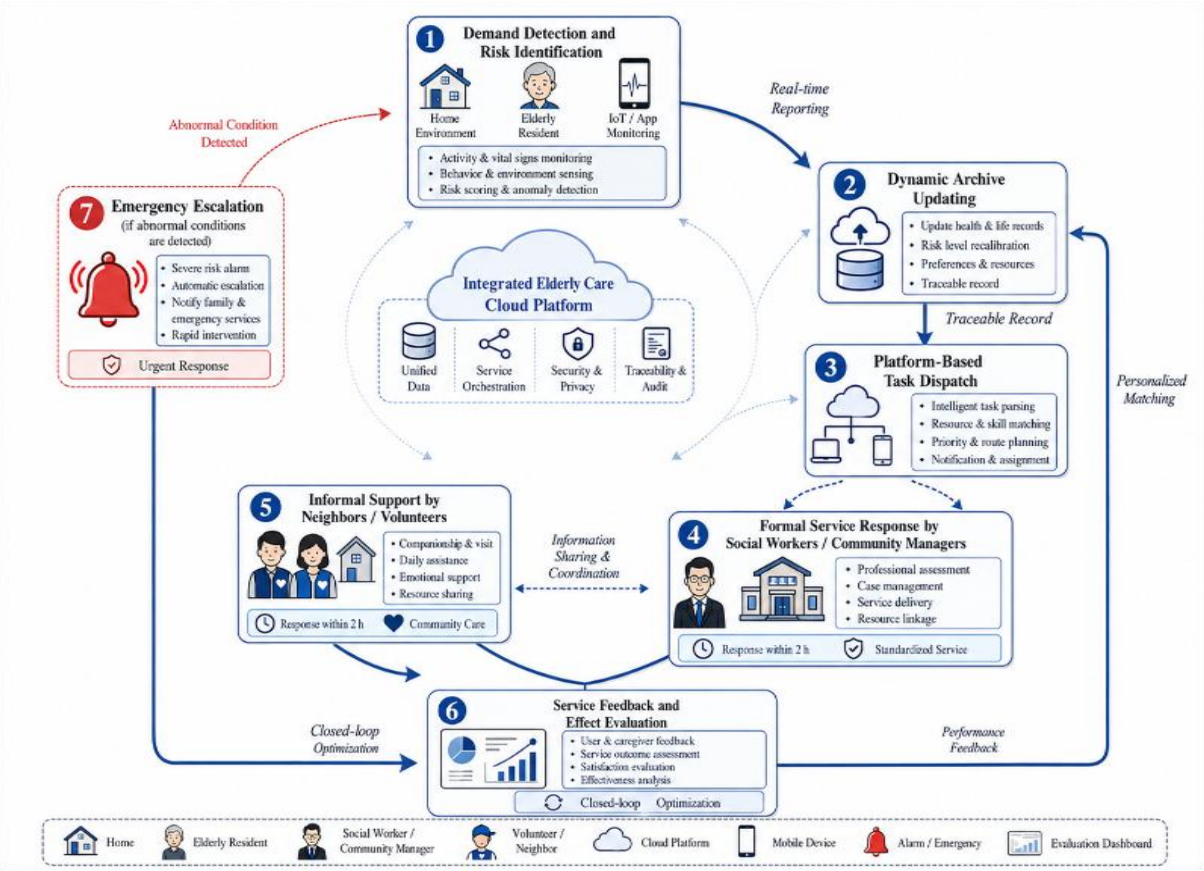

Figure 3: Closed-loop Task-Routing Pathway for Resident L and other high-risk solitary elderly cases.

Figure 3 shows that the neighbouring or volunteering party is not treated as an independent assistant. Informal support refers to a low-formality method of conducting professional evaluations, archive changes and escalations. This is because the problem of social isolation and loneliness among older adults is now well-known, but the impact of community-based intervention is still relatively weak due to poor coordination and feedback mechanisms in informal participation. Therefore, the above mechanism has provided neighbor support with a fixed reporting path and assigned the case to professional staff and community managers.

This way of working for informal neighbourly support is to turn it into regular, organised social support.

5 Evaluation and Discussion

5.1 Simulation Evaluation Results

Based on the actual data of Resident L and five other cases of solitary elderly persons in Community S, a simulation application of the proposed framework was carried out, and the key indicators were compared as follows:

Table 3: Simulation Comparison of Service-Efficiency Indicators Before and After Framework Application.

Evaluation Metric	Before Implementation	Post-Simulation Implementation	Improvement Rate
Archive update delay	7–30 days	Real-time (≤1 hour)	Over 95%
Service handover adaptation period	3–5 days	<30 minutes	Over 90%
Demand-response time	1–3 days (passive)	<2 hours (active dispatching)	Over 80%
3-month volunteer retention rate	40%	75% (estimated)	+87.5%

Table 3 shows comparison indexes instead of a basic count. Delay in archive update and handover adaptation period reflect a lack of information continuity; demand-response time shows the efficiency of task routing; and three-month volunteer retention indicates whether informal support has been stabilized. The rates of improvement are given by Eqs. (4)-(6). Given that only a few cases have been included in the simulation, these results should be regarded as only a framework validation and not as population-level causal evidence.

5.2 Resolution of Core Dilemmas

Table 4 links each empirical problem with an appropriate mechanism. This mapping will help to establish internal validity: the expected results of the platform are not based on general digitalization benefits, but rather on how well they address the four deficiencies identified in Community S. The archive mechanism has the problem of staff turnover and profile lag; the assessment model is too rigid; and the volunteer mechanism has a weakness in neighbourly help.

Table 4: Mapping of Identified Dilemmas, Technical Mechanisms and Expected Practical Effects.

Core Dilemma	Technical & Mechanism Solutions	Expected Practical Effect
Frequent staff turnover	Dynamic digital archive + intelligent handover	Full service continuity guaranteed
Lagged archival updating	Mandatory real-time mobile updating	Real-time, traceable profile information
Inflexible services	Nine-dimensional quantitative assessment + intelligent matching	Personalized, demand-oriented service supply
Unstable neighbor assistance	Optimized pairing + points incentive + liaison protocol	Sustainable, accountable informal support

5.3 Limitations and Future Work

1. Digital literacy barrier: Solitary older adults with low digital literacy may need proxy

operation; voice interaction and IoT passive sensing will be optimised in future research.

Therefore, digital inclusion will be measured at the pilot stage. A representative indicator is the proportion of service applications made by the resident directly, by proxy operation of a social worker, and by neighbourly report. If the majority of the requests are proxied, the platform may still be feasible, but it should not be presented as an "elderly-only" interface. Therefore, it should not be expected that applications will serve as social support tools for less trusting and less digitally literate people.

2. Privacy and Ethics: Real-time data acquisition requires an opt-in mode and encrypted storage of data to balance security with the right to privacy. [15]

The design of the ethics should also separate normal monitoring from urgent alarm. Continuous sensing may be justified for a red-level resident only when informed consent, minimal data collection, role-based access and a revocation mechanism are clearly specified. Safety of service cannot be used as a general reason for extended monitoring when the resident is already distrustful of people.

3. Scalability verification: Conduct a large-scale pilot study in multiple urban communities to verify whether the framework can be generalized. [16, 17]

Test technology acceptance among front-line staff and informal helpers. Social workers will be reluctant to use a platform with a high data-entry burden, and volunteers will leave if task feedback and rewards are not transparent. Therefore, in the future, pilots will need to consider whether residents are satisfied and how much work staff have to do.

4. System Integration: The platform will connect to municipal smart elderly care systems (e.g., Zhejiang Yanglao Platform) through open APIs to achieve inter-provincial data linkage.

6 Conclusion

To address the obvious problems in community-based care services for urban solitary elderly in China, a six-month case study was conducted in Community S, Hangzhou, and four main pain points were identified: frequent changes in service staff, outdated elderly databases, inflexible service models and unstable neighbor assistance. Based on the social support theory, a computer-assisted collaborative social support framework is proposed that integrates a nine-dimensional hierarchical needs assessment model, a dynamic "one-person-one-file" archival mechanism, a smart elderly care integrated platform and a multi-agent collaborative mechanism.

According to the simulation results, the system has enhanced the timeliness of archive release, optimised the efficiency of service handover, improved the speed of demand response, and increased volunteer retention rates. It will transform isolated elderly care from a passive, fragmented and inflexible model into an active, integrated and personalised service system for urban vulnerable elderly care that can be scaled.

Future research will focus on large-scale practical deployment, privacy-preserving technical optimisation and cross-platform data integration to further promote the deep integration of digital technology and social support systems for solitary elderly care.

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References

[1] National Bureau of Statistics of China. (2025). Statistical Communiqué of the People's Republic of China on the 2024 National Economic and Social Development. Beijing: National Bureau of Statistics of China.

[2] State Council of the People's Republic of China. (2023). Opinions on Promoting the Construction of a Basic Eldercare Service System. Beijing: State Council of the People's Republic of China.

[3] House, J. S. (1981). Work Stress and Social Support. Reading: Addison-Wesley.

[4] Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. Psychological Bulletin, 98(2), 310-357.

[5] Tian, Y. J. A., Felber, N. A., Pageau, F., Roulet Schwab, D., & Wangmo, T. (2024). Benefits and barriers associated with the use of smart home health technologies in the care of older persons: A systematic review. BMC Geriatrics, 24, 152. https://doi.org/10.1186/s12877-024-04702-1

[6] Zou, C., Harvard, A., Qian, J., & Fox, B. I. (2023). A systematic review of digital health technologies for the care of older adults during COVID-19 pandemic. Digital Health, 9, 20552076231191050. https://doi.org/10.1177/20552076231191050

[7] Xia, X., & Zhu, M. (2025). The impact of digital literacy on older adults' utilization of community-based home care services: A cross-sectional study. BMC Health Services Research, 25, 1367. https://doi.org/10.1186/s12913-025-13427-9

[8] Huang, G., Li, X., Yao, L., Ren, T., & Wang, T. (2025). The effectiveness of social support interventions on loneliness among older people in the community: A meta-analysis of randomised controlled trials. Frontiers in Aging, 6, 1594513. https://doi.org/10.3389/fragi.2025.1594513

[9] Liu, Y., & Yang, S. (2025). The impact of community older adult care services on the quality of life of older adults in China: The mediating role of social adaptation. Frontiers in Public Health, 13, 1544575. https://doi.org/10.3389/fpubh.2025.1544575

[10] Kim, S., Woo, S., Cui, Y., Yon, D. K., & Choi, M. (2024). Unmet community care needs among older adults in China: An observational study on influencing factors. BMC Geriatrics, 24, 816. https://doi.org/10.1186/s12877-024-05318-1

[11] Jiang, B., Li, B., He, S., Chen, L., Yang, S., Liu, J., Lou, W., Hu, Y., Jin, X., & Liu, C. (2025). Development of planning of the integrated care for older people in China: A theory of change approach. BMC Geriatrics, 25, 324. https://doi.org/10.1186/s12877-025-05956-z

[12] World Health Organization. (2019). Integrated Care for Older People (ICOPE): Guidance for Person-Centred Assessment and Pathways in Primary Care. Geneva: World Health Organization.

[13] Wu, F., Chen, W., Wan, R., & Zhou, M. (2024). Perceived HRM and turnover intentions of elderly care workers: Perspective from person-job fit and institutional ownership. BMC Nursing, 23, 242. https://doi.org/10.1186/s12912-024-01926-9

[14] World Health Organization. (2025). Reducing social isolation and loneliness among older people. Geneva: World Health Organization.

[15] Felber, N. A., Tian, Y. J. A., Pageau, F., Elger, B. S., & Wangmo, T. (2023). Mapping ethical issues in the use of smart home health technologies to care for older persons: A systematic review. BMC Medical Ethics, 24, 24. https://doi.org/10.1186/s12910-023-00898-w

[16] Vrančić, A., Zadravec, H., & Orehovački, T. (2024). The role of smart homes in providing care for older adults: A systematic literature review from 2010 to 2023. Smart Cities, 7(4), 1502-1550. https://doi.org/10.3390/smartcities7040062

[17] Shang, X., Liu, Z., Gong, C., Hu, Z., Wu, Y., & Wang, C. (2024). Knowledge mapping and evolution of research on older adults' technology acceptance: A bibliometric study from 2013 to 2023. Humanities and Social Sciences Communications, 11, 1115. https://doi.org/10.1057/s41599-024-03658-2