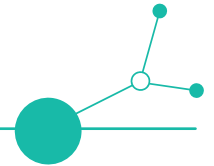


A3.2 - Innovation plan for long-term care facilities for older people

PP1 - DIT



Version 1
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Regional Innovation plan Bad Kötzing

1) Define and describe purpose for the innovation

Define a systematic innovation approach aligned with strategic goals and long-term success. Clearly outline the plan's intent to guide decisions, resource allocation, and stakeholder engagement. Please, consider the motivation for innovation and two frames of the innovation - ideal and realistic solution.

Purpose:

This innovation plan serves as a strategic management tool for future digitalization measures in the senior residence and care facility in Bad Kötzing. Furthermore, it can also act as orientation and an impulse generator for other facilities.

It takes into account the entire ecosystem of the facility—nursing, care, housekeeping, administration, kitchen, and management—since “care” is understood comprehensively: not only as physical provision but as an interplay of medical, social, organizational, and infrastructural processes.

In light of the increasing shortage of skilled workers and staff, which affects all areas, there is a strong demand for technological support and relief. This shortage is exacerbated by demographic change: the number of people in need of care is continuously rising, while fewer workers are available. At the political and societal level, the necessity of innovative digital solutions in care is therefore emphasized—not merely as an option, but as a central prerequisite for ensuring care quality and future viability.

The goal is thus to create added value for all stakeholders through the introduction and further development of digital tools.

The innovation plan builds on the facility’s prior implementation experience:

- Introduction of care documentation software (2017)
- Pilot project with the health mirror “Hello Mirrors” within DigiCare4CE (2024/2025), which the facility wishes to continue using, though its permanence is not yet secured.

The following technologies have been identified as currently and prospectively relevant for the facility:

- Facility-wide Wi-Fi coverage (must-have; short term)
- Smart cleaning robots (scrubber-drier robots) to relieve housekeeping staff (must-have; short term)
- Care documentation software with telematics infrastructure connection, mobile input devices, and speech recognition (must-have; medium term)
- Sensor and assistance systems for fall prevention, vital monitoring, and movement analysis (long term)
- Smart robots for food and laundry transport to reduce walking distances and relieve staff of repetitive tasks (long term)

These defined measures and goals provide a framework for future-oriented, sustainable, and benefit-oriented digitalization in long-term care.

Motivation:

The central motivation is to address the existing and emerging shortage of personnel and skilled workers by:

- Saving time through automation (e.g., vital signs, digital documentation)
- Providing relief through technical support in everyday tasks
- Increasing workplace attractiveness with modern tools and fewer burdensome routine activities

At the same time, the aim is to promote the quality of life and self-efficacy of residents:

- Maintaining mental and physical abilities for as long as possible
- Supporting active participation in daily life, which positively affects mental well-being
- Strengthening independence, which reduces care needs in the medium and long term

Relatives and external stakeholders in health and care also benefit from improved communication, transparency, and data use.

Ideal Solution:

All intended technologies are implemented systematically and on schedule. The introduction is process-oriented, supported by training, change management measures, and continuous evaluation. New technologies are integrated into existing structures and work interoperably to avoid isolated solutions and ensure seamless information flows. They measurably contribute to improving care quality and relieving staff.

Realistic Solution:

Due to budgetary and structural limitations, the facility will initially focus on three priority measures on the short- and medium-term horizon. Processes will need to be adapted situationally. Even if delays or resource conflicts arise, it is essential to stay on course. Digital transformation is a dynamic process that, through these stages, gains substance and sustainability, leading to tangible relief and quality improvement in the long term.

2) Considered factors before an Innovation plan design

Review and integrate regional (and, if relevant, national) digital transformation policies, strategies, and guidelines. Focus on identifying regional priorities for LTC digital transformation, evaluating investment levels in care innovation, and recognizing the key elements for digital transformation as defined by policymakers. Evaluate impact on ecosystem, consider legal regulations and the need of processes transformation. Also identified bottlenecks and challenges.

Ecosystem Impact:

The introduction of digital solutions—whether activation tools like Hello Mirror, digital documentation systems, robotics, sensors, or smart assistance systems—changes workflows in a care facility on multiple levels:

- Care and support staff gain time for more interpersonal care through automated routines and digital assistance.
- Residents experience more independence, participation, and activation in everyday life.
- Relatives benefit from improved transparency, digital communication, and better involvement in care processes.

- Administration is relieved through digital processes (e.g., automated billing, digital staff planning).
- Facility and nursing management benefit from automated data processing and evaluations.
- Housekeeping is relieved by cleaning robots.
- General practitioners and pharmacies gain quicker access to information through interfaces.
- IT service providers and health insurance funds are increasingly integrated into the ecosystem.

Overall, the entire ecosystem is becoming more digital, data-driven, and interconnected. This creates new synergies, but also requires new skills in data management, continuous monitoring, and close coordination between all stakeholders.

Legal Regulations:

In Bavaria, national regulations (e.g., DVPMG, SGB XI) apply, complemented by state initiatives such as the 'Funding Program for Digitalization in Residential Care Facilities.' The Bavarian Care and Residential Quality Act (PfleWoqG) as well as the state building ordinance must be considered when introducing new technologies, particularly regarding safety, data protection (BayDSG, GDPR), and accessibility.

Relevant legal frameworks at the federal level include the Nursing Development Act, the Digital Care and Nursing Modernization Act (DVPMG), and regional nursing laws. Data protection regulations (GDPR), the Medical Device Regulation (MDR), and accessibility requirements must be strictly adhered to when introducing digital health technologies. Recognition under Sections 5 and 8 of Book XI of the Social Code (SGB XI) is also important for promoting digital nursing assistance.

Existing Technology Infrastructure:

The facility already has a wired internet connection, ensuring basic digital connectivity. Due to the structural conditions, the comprehensive expansion of Wi-Fi is challenging and requires targeted planning and additional investment to ensure reliable coverage in all residential and common areas.

The power supply and the existing PC and hardware equipment are generally sufficient, allowing the existing systems to be operated and gradually expanded.

The digital foundation is nursing documentation software that has been in use for several years. This software meets the basic documentation requirements but is not yet connected to the telematics infrastructure (TI). Therefore, there is a clear need for action and development for future processes - particularly with regard to more efficient communication with external stakeholders such as physicians and hospitals, electronic prescriptions, and discharge management.

Budgetary Constraints:

Financial resources for digital innovations in long-term care are often limited. Funding programs such as "Digital Care" or investment cost subsidies at the state level should be used effectively. EU funding (INTERREG, Horizon Europe, ERDF) can be considered for model projects. Sustainable long-term financing should be ensured through providers or integrated care models.

Resident Needs and Preferences & Staff Experience

Residents value intuitive, low-threshold solutions promoting social interaction, movement, and mental activity. Care staff appreciate digital tools if their benefits are clear and if they can be

smoothly integrated into everyday routines without excessive training. Acceptance increases when staff are involved early and supported through training.

Process Transformation:

Digitalization requires rethinking daily workflows: analog routines are being replaced by digital ones. This especially affects internal communication and empowerment of staff. Clear responsibilities, interdisciplinary collaboration, and continuous monitoring are necessary.

Identified Bottlenecks and Challenges:

Digital maturity: There are differences between facilities in terms of IT maturity and digitalization strategy. Each facility has its own digital specific starting point, which differs from other facilities.

Staff and skilled labor shortages: Limited human resources complicate the implementation and maintenance of digital systems.

Technology acceptance: Older people and non-tech-savvy employees require targeted support over an extended period.

Regulatory uncertainties: Confused funding requirements and a lack of standards complicate scaling.

Interoperability: The lack of interfaces to the nursing documentation system and the call system hinders the effective integration of different technologies.

3) Explore various levels of digitization, determine level of digitalization

Select the appropriate digital maturity level for your innovation—from Basic Digitization to Full Digital Transformation—and indicate the corresponding EU Technology Readiness Level (TRL). Describe your choice in terms of:

- *Technology Adoption: Implementation of digital tools across the organization.*
- *Process Integration: How digital technologies are embedded in core workflows.*
- *Data Utilization: Use of data for decision-making and operational improvement.*
- *Innovation Capability: The organization's ability to drive digital innovation.*
- *Cultural Shift: The extent to which digital skills and mindsets are integrated into the culture.*

1. Wi-Fi Coverage

Technology adoption: Expansion of the existing infrastructure to the entire facility; a prerequisite for the use of mobile devices and digital applications.

Process integration: Basis for almost all digital processes (care documentation, telemedicine, communication, cleaning robots). Without reliable Wi-Fi, many solutions cannot be used permanently.

Data Utilization: Enables the collection, processing, and secure transmission of data; Wi-Fi itself does not provide any content data but is an enabling technology.

Innovation Capability: Expansion lays the foundation for all further digital innovations; an investment in future viability.

Cultural Shift: Increases the naturalness of digital working methods; promotes the use of mobile devices by employees and residents.

Digitalization level / TRL: 8 - Technology is established and available, adaptation to structural conditions required.

2. New nursing documentation software with IT integration

Technology adoption: Introduction of a software generation that is compatible with the telematics infrastructure (TI), has interfaces to, for example, a digital voice assistant, and integrates mobile devices.

Process integration: Core system for nursing processes - documentation, billing, communication with physicians and health insurance providers, audits and reviews (MD (medical service), facility supervision).

Data Utilization: Opening up new possibilities for systematic data analysis (care effort, quality of care, staff scheduling). Data can be used organization-wide for management decisions.

Innovation Capability: IT integration is a prerequisite for future digital nursing and healthcare applications (e.g., e-prescriptions, DiPAs (digital care applications)).

Cultural Shift: Switching from an established nursing documentation software to a new, more feature-rich system represents a targeted modernization process. Employees must adapt to a new structure and appearance and adopt new working practices, particularly with regards to mobile documentation, interfaces to the telematics infrastructure, and expanded data usage. Updates, adjustments, and further developments are part of the process. This creates a culture that confidently handles change and understands innovation as a continuous part of nursing practice.

Digitalization level / TRL: 8-9 - Software solutions available, adaptation to facility and training processes necessary.

3. Cleaning robots

Technology adoption: Initial pilot projects in nursing facilities are underway, and use in routine environments is becoming increasingly widespread

Process integration: Taking over routine tasks (floor cleaning in hallways and common areas) relieves the burden on housekeeping; must be organizationally integrated into shift and cleaning schedules; resources for cleaning and maintenance must be planned.

Data Utilization: Real-time data and reports on cleaning activities ensure compliance with hygiene standards. Operational and performance data can be used to optimize cleaning cycles; potentially combined with digital hygiene tests.

Innovation Capability: Adaptation to care environments is still in the development and learning process. Providers are increasingly responding to the specific requirements of nursing facilities.

Cultural Shift: Supports the acceptance of digital assistance systems even outside of direct care; staff experience relief, and residents and visitors observe digital solutions in everyday life.

Digitalization level / TRL: 7-8 - Technology is ready for use, but not yet fully established in the care context.

4) Define and describe objectives (with dependencies and indicators) for the innovation (related to the purpose)

Set clear, SMART (specific, measurable, achievable, relevant, and time-bound—that) goals targeting outcomes like enhanced product features, improved client satisfaction, or cost reduction. Include defined KPIs and success criteria to track progress and resolve any conflicting aims early.

Objective 1: WLAN Coverage:

- Goal: By the end of Q2/2026, the entire facility is equipped with stable, facility-wide Wi-Fi.
- Indicators: 100% coverage in residential and communal areas; availability $\geq 99\%$.
- Priority: Must-have, short-term (2026).
- Risk: Structural hurdles (thick concrete walls, winding building structure).
- Mitigation: Use of repeaters, involvement of specialized IT service providers.

Objective 2: New Care Documentation Software with TI Connection:

- Goal: Introduction of new software and migration from old to new software by the end of Q2/2027 including mobile devices.
- Indicators: Reduction of media disruptions (fax, telephone) by $\geq 50\%$ within 6 months; 80% of employees with user profiles have already switched to the new documentation; 100% TI connection.
- Priority: Must-have, medium-term (2027).
- Risk: Acceptance issues among employees; high training effort.
- Mitigation: Practice-oriented training concepts, pilot groups, continuous support structures internally and by the vendor.

Objective 3: Cleaning Robots

- Goal: Piloting by Q4/2026 in communal areas; scale-up if successful.
- Indicators: Time savings $\geq 15\%$; positive assessment by housekeeping $\geq 80\%$; positive cost-benefit after 12 months.
- Priority: Should-have, medium-term (2026).

- Risk: Devices not adapted to the care environment (e.g., structural features such as handrails on walls obstructing movement).
- Mitigation: Test run in limited areas; adjustment of cleaning plans; close exchange with the vendor.

5) Define and describe development requirements and processes for the innovation

Describe the process for planning, designing, and deploying the innovation. Define clear milestones and scope, ensuring that digital innovations are smoothly integrated into existing workflows. Evaluate technology needs, assign key roles with specific responsibilities, and incorporate diverse stakeholder perspectives to preempt challenges. Define how the innovation will be realized, whether you want to use in-house development or you plan to use external developers.

General description:

The innovation process comprises the introduction of three prioritized digitalization measures:

- Facility-wide Wi-Fi coverage as the infrastructural basis.
- New care documentation software with TI connection and mobile devices.
- Cleaning robots in housekeeping.

Implementation takes place step by step, with close involvement of nursing and care staff, housekeeping, management, and IT service providers. The aim is smooth integration into existing workflows without jeopardizing continuity of care.

Roles and Responsibilities:

- **Management:**
 - Strategic steering, budget release, selection of funding programs
 - Communication with payers and authorities
 - Ensuring anchoring in the overall strategy of the facility
- **Care Staff:**
 - Participation in test phases and feedback loops
 - Assessment of everyday suitability of software and devices
 - Multiplier role in training (peer-to-peer approach).
- **IT Staff:**
 - Technical planning, setup, and maintenance of infrastructure
 - Interface management between software, TI, and existing systems
 - IT security concept and staff training.
- **Developers:**
 - Adaptation of software to processes
 - Support during integration and updates
 - Technical hotline and troubleshooting.

- **Project Coordination:**
 - Central contact for all stakeholder
 - Organization of milestone meetings, minutes, and controlling Ensuring schedule and scope are met.

Implementation Control Approach:

- Regular monthly status updates in which progress, issues encountered, and necessary adjustments are documented and discussed with all relevant participants to ensure ongoing alignment between goals and implementation.
- Pilot projects in selected residential areas and/or with selected employees, followed by gradual scaling.
- Internal quality loops involving nursing management, IT managers, and quality management, supplemented by digital monitoring tools created in Excel/Google Sheets as a “control logbook.” If necessary, a peer review is carried out with other facilities to ensure independent feedback.

Cooperation on innovation

- Interdisciplinary working groups with employees from various areas.
- Involvement of residents and relatives through feedback rounds.
- Cooperation with external partners (software vendors, hardware suppliers, physicians, pharmacies, health insurers).

Evaluation and Delivery Milestones:

Q1 2026: Needs assessment, clarification of financing, selection of vendors.

Q2 2026: Build-out of Wi-Fi infrastructure; start of cleaning-robot pilot.

Q3 2026: Introduction of new care software; evaluation of the cleaning-robot pilot and any adjustments.

Q4 2026: Scale-up of cleaning robots to the entire facility.

Q2 2027: Migration to the new care documentation software including mobile devices.

Implementation Evaluation and Testing:

- Standardized user surveys (employees, residents).
- Ongoing technical tests (stability, failure rates, compatibility).
- Measurement of success via defined KPIs (e.g., time savings, acceptance, error rate).

Allowable Rollback Criteria:

- Persistent technical instability (>10% outages).
- Acceptance <40% after 6 months despite training.
- Unsustainable follow-on costs (e.g., license costs exceeding budget).
- Data-protection violations that cannot be remedied.

Technology Selection and Flexibility:

- Preference for market-established systems with open interfaces (APIs).
- Scalable solutions that can be expanded in the future.
- Contract design with exit options (avoid vendor lock-in).

Reference Documents and Agreements:

- Funding notices (e.g., “Pflege Digital”).
- Framework agreements with vendors.
- Data protection impact assessment under GDPR.
- Works agreements (use of digital systems).
- Evaluation reports from projects such as DigiCare4CE.

6) Define and describe implementation requirements and plan for the innovation

Deploy the innovation in manageable phases—from testing and pilot projects with care teams to a full-scale launch and review. Define goals, timelines, and resource allocations for each phase, and track progress using metrics like time-to-implementation, staff adoption rates, and cost efficiency.

General description:

Implementation proceeds in stages, beginning with pilot projects in selected residential areas and/or with selected employees. The aim is to gain experience, involve staff, and minimize risks before rolling the innovation out across the entire facility. Progress is reviewed using metrics such as implementation time, staff acceptance, failure rates, and cost efficiency.

Implementation Branches**Branch 1: Wi-Fi Coverage**

- **Objective:** Build a comprehensive, stable, and secure Wi-Fi infrastructure as the basis for further digitalization measures.
 - **Milestone 1:** Needs assessment and structural analysis completed.
 - **Milestone 2:** Installation of access points completed.
 - **Milestone 3:** Test run and security test successful (no critical failures).

Branch 2: Care Documentation Software

- **Objective:** Introduction of a new software solution with mobile use and TI connection to relieve care staff and improve documentation quality.
 - **Milestone 4:** Vendor selected and contracts signed.
 - **Milestone 5:** Pilot operation started with selected employees.
 - **Milestone 6:** 80% of users have been trained and migrated.
 - **Milestone 7:** Evaluation of the pilot phase, then migration and end of use of the old software.

Branch 3: Cleaning Robots

- **Objective:** Support housekeeping with recurring cleaning tasks to relieve staff and comply with hygiene standards.
 - **Milestone 8:** Vendor selection and contracts completed.
 - **Milestone 9:** Test run in the entrance area and one corridor.
 - **Milestone 10:** Technical adaptation (e.g., navigation in corridors and communal areas on all floors).
 - **Milestone 11:** Staff acceptance survey.
 - **Milestone 12:** Rollout to the entire facility.

Phases Overview

The innovation will be implemented in 3 phases with clear Go/No-Go checkpoints:

- **Phase 1 (3 months):**
Milestones 1, 2, 4, and 8: needs assessment, vendor and technology selection, financing / funding applications.
Branches: management, IT, nursing management, housekeeping.
Indicator: Project plan in place, contracts signed, technology installed, pilot areas defined.
- **Phase 2 (6-9 months):**
Milestones 3, 5, 6, 9, 10, 11: pilot operation of care software and cleaning robots. Training conducted.
Branches: care staff, housekeeping, IT.
Indicator: Initial practical experience gathered, feedback loops running, technical stability tested.
- **Phase 3 (6 months):**
Milestones 7 and 12: scaling to the entire facility and evaluation.
Branches: all departments of the facility.
Indicator: Full integration, KPI monitoring, transition to routine operation.

Risk and Change Management Integration:

Risks:

- Technical instability (Wi-Fi outages, software incompatibility, robot malfunctions).
- Acceptance problems among employees or residents.
- Budget overruns.

Risk Mitigation:

- Stepwise introduction (piloting).
- Low-threshold training formats (workshops, peer learning).
- Alternative funding sources (grants, sponsorship).

Change Management:

- Regular feedback workshops.
- Adjustment of workflows by interdisciplinary project teams.
- Documentation of lessons learned for future innovation projects.

7) Define and describe reflection (testing, validation, verification) requirements and plan for the innovation

Regularly assess the process to address challenges such as technical issues, resistance, or resource limits. Schedule checkpoints to review progress and, based on clear criteria like unmet KPIs or negative feedback, decide when to adjust or revisit earlier steps.

Reflection - Testing, Validation, Verification:

Reflection follows a continuous improvement cycle (Plan-Do-Check-Act). The aim is to regularly review the introduction of digital innovations, identify challenges at an early stage, and adjust systematically.

Unit Testing:

- Wi-Fi: Check signal strength and stability in individual residential areas, including load testing with multiple devices.
- Care documentation software: Functionality of individual modules (e.g., medication plan, care planning, interfaces to TI).
- Cleaning robots: Navigation in corridors, battery performance, cleaning quality on different floor coverings, handling of movable and immovable obstacles.

Integration Testing:

- Ensure that the new care documentation software is seamlessly integrated into the existing infrastructure after replacing the legacy system (e.g., stable Wi-Fi connection, access via existing devices).
- Check interfaces to other systems in the facility (e.g., emergency call/DECT system, billing processes, quality management).
- Verify that all relevant user roles (care staff, administration, management) can access and use permissions appropriately.
- Test run of the cleaning robot to ensure cleaning schedules (e.g., times, rooms) can be aligned with care and support times.
- Verify that housekeeping staff can control, maintain, or clean the robot without major additional effort.
- Integration into existing hygiene controls (e.g., manual spot checks after robot use to ensure cleaning quality).
- Acceptance tests by care staff and housekeeping staff (e.g., usability in everyday life).

Continuous Integration with Implementation:

- Monthly feedback rounds with all stakeholders (care staff, housekeeping, IT, management).

- KPIs: error rate, system outages, user acceptance (e.g., >70% of employees rate the tool as useful).
- Iterative adjustments in the event of negative feedback or failure to achieve defined targets (e.g., if Wi-Fi does not cover 95% of the areas → readjust access points).

8) Define and describe delivery and sustainability requirements and plan for the innovation

Ensure the innovation is viable and scalable by planning for ongoing development, maintenance, and regular evaluations. Use both tangible outcomes (e.g., improved data use and reduced workload) and intangible benefits (e.g., increased client satisfaction) to guide future enhancements.

Delivery requirements and rules:

- Contractually secured delivery and service agreements with vendors (e.g., maintenance contracts for cleaning robots, updates to care software).
- Defined handover processes after the pilot phase (including training status, documentation, support hotline).
- Clear governance structure for responsibilities (e.g., IT for infrastructure, nursing management for software use, housekeeping management for robotics).

Sustainability requirements:

- Technical: Regular updates (security patches, feature updates), hardware maintenance cycles.
- Organizational: Ongoing training for new employees, establishment of “digital ambassadors” in each area.
- Economic: Use of funding programs (e.g., “Pflege Digital Bayern”), ensuring follow-up financing by health insurers or the operator.
- Ecological: Energy-efficient devices, longer service life through updates instead of replacement, sustainable disposal of old devices.
- Cultural: Anchoring digital innovations in quality circles, positive communication of digital successes within the team.