

# WorkflowAPI

a workflow api for the "vvt en de kansen van AI" project

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# Technology Impact Cycle Tool

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## Impact on society

What impact is expected from your technology?

### What is exactly the problem? Is it really a problem? Are you sure?

The purpose of the VVT AI-based Fall Prevention Project is to address a significant challenge in elderly care: the high risk of falls among elderly patients, which can result in serious injuries and increased medical care needs. As the aging population grows, healthcare systems face increased demands, coupled with staff shortages and rising costs, making it difficult for caregivers to provide consistent monitoring and timely intervention.

This project aims to alleviate the "pain" experienced by both caregivers and patients. Currently, caregivers rely on limited, static assessment data, recorded manually at intervals, to monitor patient risk. This sporadic data is insufficient for accurate fall prediction and prevention, limiting caregivers' ability to take proactive measures. The project intends to solve this by leveraging AI to predict fall risks based on continuously updated data from Electronic Client Records (ECD) and other devices, providing caregivers with actionable insights on a real-time dashboard.

By reducing falls, the project can significantly improve quality of life for elderly patients, potentially lowering healthcare costs and relieving caregiver burden. The project aligns with societal needs and adds value by improving safety in elder care environments, which can enhance well-being and safety for patients, caregivers, and the healthcare system at large.

### Are you sure that this technology is solving the RIGHT problem?

The VVT AI-based Fall Prevention Project addresses a critical issue: reducing falls among elderly patients in care. However, it's essential to recognize that technology alone cannot tackle the complex causes of falls, which often involve physical, environmental, and psychological factors.

Through a five whys analysis, we find that falls result from interconnected issues, such as:

Why are elderly patients falling? Due to physical vulnerabilities like poor balance and muscle weakness.

Why are these vulnerabilities not mitigated? Limited staffing and resources hinder continuous monitoring.

Why is continuous monitoring challenging? Current systems lack integration with predictive AI for real-time insights.

Why hasn't predictive AI been integrated into elder care? Privacy and real-time data processing challenges have been barriers.

Why is this approach necessary? AI-based prediction enhances traditional

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care by alerting caregivers to risks they might not notice in time. While this project does not replace human oversight, it enhances it by providing timely alerts to caregivers. It risks addressing only symptoms if it relies solely on AI predictions without considering broader factors like caregiver education and environmental adjustments for safety. Thus, the technology is not a complete solution but rather a crucial layer of preventative care that supports caregivers in making timely interventions, filling a significant gap in current systems.

## How is this technology going to solve the problem?

The VVT AI-based Fall Prevention Project aims to predict fall risks for elderly patients by analyzing health data from Electronic Client Records (ECDs) and other devices. This AI-driven solution identifies patterns in historical and real-time data related to fall risks, such as mobility limitations, medication side effects, and recent physical changes, and alerts caregivers to these risks, enabling timely preventive measures.

Key characteristics of this approach include:

**Data-Driven Insights:** Continuous data input provides a comprehensive view of each patient's health, helping the system detect subtle changes that may signal increased fall risk.

**Real-Time Processing:** Immediate analysis of data allows caregivers to intervene quickly, which is critical in preventing falls.

**Personalized Risk Assessment:** The AI model tailors predictions based on individual health profiles, enhancing accuracy and reliability.

Grounded in machine learning theory and practice, this solution leverages existing research that supports AI's potential in predictive healthcare, particularly for fall prevention.

To ensure effectiveness, we will test the model using historical data, refine it with real-time data, and conduct iterative evaluations with caregiver feedback. Regular monitoring and adjustments will enhance the models performance, aligning it with caregiver needs and improving patient safety outcomes.

## What negative effects do you expect from this technology?

The VVT AI-based Fall Prevention Project aims to enhance patient safety but also presents potential negative effects related to user behavior and reliance on technology. Key concerns include:

**Over-reliance on AI Predictions:** Caregivers may become too dependent on

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AI forecasts, neglecting their own assessments and intuition, which can lead to complacency in recognizing fall risks.

**False Positives or Negatives:** The AI model may inaccurately predict fall risks, leading to unnecessary interventions (false positives) or missed prevention opportunities (false negatives). While we will refine the model through feedback and testing, occasional errors are expected.

**Privacy Concerns:** Despite pseudonymization and security measures, there remains a risk of exposing sensitive patient information, which could undermine trust. We will implement strict security protocols to mitigate this risk.

**Decreased Human Interaction:** An emphasis on predictive technology might reduce face-to-face monitoring, potentially isolating patients. Human interaction is crucial for mental well-being, especially in elder care.

**Unintended Emotional Stress for Caregivers:** Frequent alerts about fall risks may lead to caregiver frustration and stress, particularly if they cannot address every alert in a timely manner.

We recognize that while these risks can be managed, they cannot be completely eliminated. To address these concerns, we will emphasize caregiver training to reinforce that the AI is a supportive tool rather than a replacement for their expertise. Continuous feedback and adjustments will also help minimize unintended effects, ensuring a balance that enhances patient care without fostering dependency or isolation.

## **In what way is this technology contributing to a world you want to live in?**

The VVT AI-based Fall Prevention Project positively impacts elderly care with both short- and long-term benefits.

**Short-Term Impact:** Real-time alerts empower caregivers to identify high-risk patients and take preventive actions, reducing their emotional and physical strain while enhancing patient safety.

**Long-Term Impact:** The project fosters a proactive care model that can lower healthcare costs and improve long-term health outcomes. However, there is a risk that reliance on technology may undermine the importance of human interaction in care.

**Broader Societal Impact:** It encourages technology-enhanced caregiving while raising ethical concerns about data privacy and patient autonomy.

**Alignment with Values:** The technology aligns with my professional

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commitment to advancing healthcare and supporting vulnerable populations through data-driven tools that ensure safety and respect privacy, complying with GDPR and industry standards.

Ethical Compliance: We adhere to ethical standards regarding patient safety and care quality. Continuous evaluation will ensure the technology supports compassionate care. Overall, this project represents a step forward in enhancing healthcare while maintaining ethical integrity and respect for the vulnerable.

**Now that you have thought hard about the impact of this technology on society (by filling out the questions above), what improvements would you like to make to the technology? List them below.**

Here are key improvements for the VVT AI-based Fall Prevention Project:

## 1. Technology Improvements

Enhanced Explainability: Provide insights into AI predictions to build caregiver trust.

Adaptive Learning: Allow the model to refine predictions based on real-world outcomes.

Feedback Mechanism: Enable caregivers to confirm or refute predictions for continuous learning.

## 2. Context Improvements

Educational Initiatives: Offer training to help caregivers balance AI insights with personal assessments.

Privacy Safeguards: Strengthen data protection and involve users in privacy discussions.

## 3. Usage Improvements

Limit Alert Frequency: Reduce caregiver fatigue by grouping low-priority notifications or using tiered alerts.

Focus on Human Interaction: Include prompts for caregivers to engage with patients regularly.

User Feedback: Regularly gather input from caregivers and patients for ongoing adjustments.

## Summary

These improvements enhance transparency, support caregiver confidence, and uphold ethical standards, ensuring the technology aligns with compassionate care values while fostering human

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## Hateful and criminal actors

What can bad actors do with your technology?

### In which way can the technology be used to break the law or avoid the consequences of breaking the law?

The VVT AI-based Fall Prevention Project presents potential risks for misuse that could violate privacy standards or legal regulations. Sensitive patient data could be targeted for unauthorized access, leading to privacy violations through surveillance or identity theft if security measures are insufficient. Additionally, there is a risk of exploitation, where predictive insights could be misused by insurance companies to discriminate against vulnerable patients or used to manipulate them or their families through coercion. Over-reliance on AI predictions may also result in accusations of neglect if caregivers fail to make personal evaluations.

To mitigate these risks, the project must implement strict security protocols, such as encrypted data storage, role-based access controls, and regular audits. Ethical training for users and clear guidelines for appropriate technology use are essential to uphold patient privacy and ensure compliance with legal standards. Continuous monitoring will be necessary to prevent the system from being misused and to protect the vulnerable populations it aims to serve.

### Can fakers, thieves or scammers abuse the technology?

While the VVT AI-based Fall Prevention Project aims to enhance elderly care, it also poses risks of misuse that could violate personal and societal boundaries. Unauthorized access to sensitive patient data could lead to harassment or intimidation of patients and families, creating stress and fear, particularly among vulnerable individuals. Additionally, predictive insights could result in stigmatization, with high-risk patients being treated as frail or burdensome, potentially leading to social isolation and reinforcing ageism. Misuse of data in legal disputes could create distrust among caregivers, while manipulation of risk data for personal gain could distort care decisions.

To mitigate these risks, implementing strict access controls, data anonymization, and comprehensive education on ethical data use is crucial. Caregivers and administrators must be trained on responsible usage boundaries, supported by usage monitoring and stringent privacy policies. Designing the system with transparency and safeguards against unauthorized access will help maintain the technology's focus on patient safety, ensuring it serves as a supportive tool rather than a vehicle for harassment or harm.

### Can the technology be used against certain (ethnic) groups or (social)

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## classes?

The VVT AI-based Fall Prevention Project could unintentionally exclude or discriminate against certain groups in these ways:

**Socioeconomic Discrimination:** High costs may limit access for lower-income communities, reinforcing healthcare inequalities.

**Technology Proficiency Exclusion:** Caregivers lacking digital skills may struggle to use the system effectively.

**Language and Cultural Barriers:** A lack of multilingual and culturally sensitive interfaces could hinder usability for diverse populations.

**Age Bias:** Predictive models may overlook higher-risk older patients due to reliance on historical data favoring younger demographics.

**Physical Ability Bias:** The technology might be less effective for patients with advanced disabilities, leading to inadequate care.

## Mitigating Measures

To counteract these issues, the project should:

**Offer Subsidized Pricing:** Collaborate with providers to ensure affordability for underfunded facilities.

**Provide Training:** Implement sessions to enhance digital literacy among caregivers.

**Ensure Language Adaptation:** Develop multilingual, culturally sensitive interfaces.

**Conduct Regular Bias Audits:** Update AI models to include diverse patient profiles.

These steps will enhance inclusivity and ensure the technology benefits a broad range of societal groups without discrimination.

## **In which way can bad actors use this technology to pit certain groups against each other? These groups can be, but are not constrained to, ethnic, social, political or religious groups.**

The VVT AI-based Fall Prevention Project could be misused by bad actors to exacerbate societal divides, including:

**Data Discrimination:** Biased AI training data may flag specific demographics as high-risk, leading to unequal resource allocation and neglect of others.

**Privacy Exploitation:** Sensitive data misuse could stigmatize groups, reinforcing negative stereotypes and marginalizing individuals.

**Political Polarization:** Organizations might exploit the technology to frame certain demographics as burdens on healthcare, fostering resentment.

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**Inequitable Access:** If only wealthier communities access the technology, marginalized groups may remain at greater risk, increasing class distrust.

**Fake Outputs:** Misleading AI results could spread panic or stigma about specific neighborhoods.

**Targeted Marketing:** Companies might exploit data to market costly fall prevention products to vulnerable populations, worsening inequalities.

**Community Division:** Outputs may foster an "us vs. them" mentality, weakening social cohesion.

To combat these risks, stakeholders must implement safeguards, ethical guidelines, and bias reduction strategies.

## **How could bad actors use this technology to subvert or attack the truth?**

The VVT AI-based Fall Prevention Project is vulnerable to manipulations similar to misinformation tactics, such as:

**Misleading Risk Assessments:** Altered data could exaggerate fall risks for certain groups, causing panic and stigmatization.

**Fabricated Testimonials:** AI-generated endorsements may misrepresent the technology's effectiveness, promoting false claims.

**Manipulated Emergency Alerts:** False alerts about falls could incite fear in targeted communities.

**Selective Data Presentation:** The AI might emphasize negative outcomes for specific demographics, fostering a false narrative.

**Fake Research Studies:** Fabricated studies could undermine public trust and influence policy against the technology.

**Hiding Positive Outcomes:** Suppressing data on successful interventions could create a misleading impression of ineffectiveness.

To combat these risks, stakeholders should implement robust measures for information verification, enhance transparency, and ensure ethical technology use.

## **Now that you have thought hard about how bad actors can impact this technology, what improvements would you like to make? List them below.**

To mitigate risks in the VVT AI-based Fall Prevention Project, consider these improvements:

**Technological Enhancements:**

**Data Governance:** Enforce strict data integrity policies and audits.



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Explainable AI: Utilize transparent models to detect biases.

Security Protocols: Implement strong security measures, including multi-factor authentication and encryption.

Anomaly Detection: Use algorithms to identify unusual data patterns.

Reporting Mechanisms: Establish user-friendly channels for reporting inaccuracies.

Contextual Enhancements:

Stakeholder Engagement: Involve diverse groups in the design process.

Ethical Guidelines: Create standards emphasizing fairness and accountability.

Usage Enhancements:

Usage Policies: Clearly define acceptable uses and consequences for misuse.

Oversight Committees: Form committees to monitor ethical use.

Training Programs: Offer training on effective and ethical technology use.

Regular Reviews: Conduct periodic assessments to address biases.

These improvements can enhance trust, ensure equitable access, and prevent misuse while promoting safety and well-being.

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## Privacy

Are you considering the privacy & personal data of the users of your technology?

### Does the technology register personal data? If yes, what personal data?

In the VVT AI-based Fall Prevention Project, key considerations for personal data collection under GDPR include:

#### Key Considerations

Definition of Personal Data: GDPR defines personal data as information related to identifiable individuals, encompassing both direct identifiers (e.g., names) and sensitive data (e.g., health information).

#### Data Types:

Direct Personal Data: Identifiable information from users and relatives.

Sensitive Personal Data: Health-related data, fall histories, and demographics.

Behavioral Data: Indirect data revealing personal information through usage patterns.

#### GDPR Compliance

Informed Consent: Users must understand the data collection and usage, especially for sensitive data.

Data Minimization: Collect only necessary data for the technology's purpose.

User Rights: Users should be able to access and request deletion of their data.

Data Security: Implement robust security measures, such as encryption.

Transparency: Maintain clear documentation of data processing activities.

#### Ethical Considerations

Respect Privacy: Uphold user privacy, autonomy, and dignity, particularly regarding sensitive information.

Third-Party Compliance: Ensure data sharing adheres to GDPR with clear agreements.

By prioritizing these measures, the VVT project can enhance user trust and ensure compliance with relevant legislation.

### Do you think the technology invades the privacy of the stakeholders? If yes, in what way?

In the VVT AI-based Fall Prevention Project, it's essential to adhere to key privacy and data protection principles:

Lawfulness, Fairness, and Transparency: Data processing must be legal and fair, with clear communication about its use.

Purpose Limitation: Collect data only for specific, legitimate purposes.

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Data Minimization: Gather only the data necessary for the intended purpose.  
Accuracy: Ensure personal data is accurate and up-to-date.  
Storage Limitation: Do not retain personal data longer than necessary.  
Integrity and Confidentiality: Protect data from unauthorized access and loss.  
Accountability: Organizations must demonstrate compliance with these principles.  
Invasion of Privacy: Users may feel their privacy is violated if data collection is not transparent.

Proportionality and Subsidiarity: Data collection should be necessary for addressing risks, and handled at the most local level possible.

Considerations for Deceased Individuals:

Lack of Consent: Ethical concerns arise when using data without consent from deceased individuals.  
Protection of Personal Data: Legal restrictions may apply to avoid misrepresentation.  
Evolving Representations: AI systems could create inaccurate portrayals of the deceased.  
In summary, technology should enhance safety while respecting privacy principles and individuals' rights, fostering trust and dignity for all involved.

## **Is the technology is compliant with prevailing privacy and data protection law? Can you indicate why?**

To assess GDPR compliance for the VVT AI-based Fall Prevention Project, consider the following factors:

### GDPR Compliance Assessment

Data Collection and Processing: Obtain explicit user consent for data collection, especially for sensitive health information, and ensure clarity in data usage explanations.

Purpose Specification and Limitation: Collect data only for specific, legitimate purposes, clearly communicating these reasons.

Data Minimization: Limit data collection to what is necessary for the technology's functionality.

Data Quality and Accuracy: Implement mechanisms to maintain data accuracy and conduct regular audits.

Security Measures: Use robust security protocols, including encryption and secure storage, to protect personal data.

Accountability and Documentation: Keep records of data processing activities to demonstrate GDPR compliance.

Transparency and User Rights: Inform users of their rights (access, rectification, erasure) and provide mechanisms to exercise these rights.

### Privacy Considerations

Proportionality: Ensure data collection is necessary and appropriate for its purpose.

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Subsidiarity: Employ the least invasive methods for data collection.

Conclusion

Achieving GDPR compliance in the VVT project is crucial, but it must also respect privacy as a fundamental human right. By integrating these principles into the design, the technology can protect individual rights and foster user trust while adapting to evolving legal and societal expectations. Regular evaluations will help maintain compliance.

## **Does the technology mitigate privacy and data protection risks/ concerns (privacy by design)? Please indicate how.**

In the VVT AI-based Fall Prevention Project, implementing privacy by design is essential for minimizing privacy risks while providing effective fall prevention solutions. Key principles include:

**Data Minimization:** Collect only essential data needed for functionality, focusing on relevant health and activity metrics (e.g., movement patterns) to reduce privacy concerns and ensure compliance with data protection regulations.

**Purpose Specification:** Clearly define the technology's goal: to enhance safety by monitoring health and providing alerts when falls are detected. Data should not be used for unrelated purposes.

**Security Measures:** Implement strong security protocols, including encryption, access controls, and regular audits, to protect sensitive health data.

**Pseudonymization and Anonymization:** Where feasible, anonymize or pseudonymize identifiable data for analysis or research, maintaining individual privacy while allowing for data utility.

**User Access and Control:** Enable users and caregivers to control their data, including access, correction, and deletion, in line with transparency and user rights under data protection legislation.

**Continuous Improvement:** Establish mechanisms for ongoing assessment and enhancement of privacy practices based on user feedback, technological advances, and legal changes to maintain compliance and respect user privacy.

By adhering to these principles, the VVT project can effectively support elderly individuals' safety while protecting their privacy rights.

## **In which way can you imagine a future impact of the collection of personal data?**

In the context of the VVT AI-based Fall Prevention Project, the technology's

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data collection can significantly impact users' long-term reputations and opportunities.

## Long-term Impact of Data

**Health Data Sensitivity:** The project generates sensitive health information that could negatively affect individuals if disclosed without consent, revealing vulnerabilities related to aging or health conditions.

**Reputation Management:** Accumulated data on falls or health issues may shape perceptions among caregivers, insurers, and employers, leading to assumptions about an individual's capability and potentially limiting employment or insurance options.

**Long-term Monitoring:** Continuous data generation can create a persistent profile that fails to reflect improvements in health or activity levels, perpetuating a negative reputation based on outdated information.

**Algorithmic Decision-Making:** Evolving self-learning algorithms may make inaccurate assessments about a person's health or behavior, resulting in decisions that affect care without considering the full context.

## Conclusion

While the VVT technology aims to enhance safety for the elderly, careful attention must be given to data privacy, handling practices, and user control. Implementing robust privacy protections and transparency will help mitigate negative impacts and ensure fair treatment based on current circumstances rather than outdated data.

## **Now that you have thought hard about privacy and data protection, what improvements would you like to make? List them below.**

To enhance privacy and mitigate data protection risks in the VVT AI-based Fall Prevention Project, the following improvements can be made:

### Personalized Data Handling:

Design the system to establish a one-on-one relationship between the technology and users, limiting data exposure to necessary parties and addressing privacy concerns.

### User Control and Consent:

Empower users and caregivers by allowing them to review and manage their data. Implement opt-in mechanisms for explicit consent before collecting sensitive information.

### Data Minimization and Purpose Limitation:

Regularly assess data collection to ensure only essential information for fall prevention is gathered. Clearly define the purpose of data usage in user

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agreements to prevent unrelated data repurposing.

Enhanced Security Measures:

Implement robust security protocols, including encryption and access controls, to protect sensitive health data from unauthorized access and breaches.

Compliance and Continuous Improvement:

Establish ongoing GDPR compliance checks and monitor legislative changes. Regularly solicit user feedback to improve privacy practices and functionality.

Legacy Permissions:

Consider allowing users to set advance directives for their data management in the event they can no longer provide consent.

By adopting these measures, the VVT project can strengthen its privacy practices, ensure legal compliance, and build user trust while enhancing their overall experience.

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## Human values

How does the technology affect your human values?

### How is the identity of the (intended) users affected by the technology?

WorkflowAPI influences the identities of two main user groups: caregivers and patients.

For Caregivers: Using WorkflowAPI empowers caregivers to enhance their skills and decision-making. By providing timely data and predictive insights, caregivers can act more confidently and proactively in their roles. This capability helps them see themselves as competent professionals who deliver high-quality care, which reinforces their sense of identity as advocates for their patients well-being. However, if they rely too heavily on the technology, it could undermine their confidence in their judgment, making them feel less autonomous in their decision-making.

For Patients: The impact on patients is also significant. As caregivers use WorkflowAPI to monitor health risks and respond to needs, patients may feel more secure knowing they are being cared for with advanced tools. This could enhance their dignity and reinforce their identity as individuals deserving of thoughtful, informed care. However, if patients perceive that their care is overly controlled by technology, it might lead to feelings of dependency or being treated as mere data points rather than people with unique needs.

Ultimately, WorkflowAPI should aim to enrich the identities of both caregivers and patients, facilitating compassionate care while respecting individual autonomy and dignity. By doing so, it aligns with the core values of empathy and human connection that caregivers strive to embody in their daily work.

### How does the technology influence the users' autonomy?

WorkflowAPI is a technology that helps caregivers in healthcare but can also challenge their independence.

- Decision-Making Power and Dependency: WorkflowAPI assists caregivers by highlighting risks, like fall hazards, based on patient data. This support can help caregivers make better decisions. However, there's a chance they might become too reliant on the system, which could weaken their confidence in making choices without it. If caregivers always depend on the tool, they might lose some of their autonomy.

- Potential for Addictiveness: While WorkflowAPI isn't addictive like social media, caregivers might feel they can't function well without it. If they get used to its constant feedback, it could be tough to go without, especially if the system is down. To help with this, training can remind caregivers to trust their

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instincts and judgment.

- Empowering Better Decisions: A major benefit of WorkflowAPI is that it empowers caregivers to act quickly. With real-time patient data, they can spot problems before they get worse. This support helps them do their jobs better and maintains their professional independence.

- Appropriateness of Use: However, there are times when using WorkflowAPI alone might not be enough. For example, if a patient has complex issues that require a deep understanding of their situation, the system might miss important details. Caregivers should use WorkflowAPI as a helpful tool but not rely solely on it. They should make the final decisions based on a full understanding of the patient.

### **What is the effect of the technology on the health and/or well-being of users?**

WorkflowAPI is designed to improve the health and well-being of caregivers and patients in care settings, but it has both positive and negative effects.

#### Positive Effects:

WorkflowAPI helps caregivers by providing real-time health data, which can lead to better decisions and greater job satisfaction. This support can reduce stress and anxiety, as caregivers feel more prepared to handle patient needs.

#### Negative Effects:

On the downside, if caregivers become too reliant on technology, it might increase their stress levels, especially if they feel pressured by constant alerts or worry about missing important warnings. This could make them doubt their own instincts and experience.

#### Finding Balance:

To make sure WorkflowAPI helps rather than harms, it's important to implement it thoughtfully. Customizable alert settings could help caregivers manage stress and keep the focus on compassionate care.

### **Now that you have thought hard about the impact of your technology on human values, what improvements would you like to make to the technology? List them below.**

Improvements for WorkflowAPI

- Customizable Alerts: Allow caregivers to adjust notification settings so they can control how often and what type of alerts they receive. This will help reduce stress from constant notifications.

- User Feedback Options: Add a feature for caregivers to share their experiences with the app. This feedback can help improve the technology to better meet their needs.



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- Training Resources: Provide easy-to-follow guides or videos that teach caregivers how to use WorkflowAPI effectively. This will help boost their confidence in making decisions.

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## Stakeholders

Have you considered all stakeholders?

*This category is only partial filled.*

**Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by answering these questions.**

**Name of the stakeholder**

VVT en de kansen van AI

**How is this stakeholder affected?**

The VVT's are care instances in the Netherlands. These are involved so that we can make a system that can predict when an (elderly) person can fall so that the VVT's can possibly prevent this.

**Did you consult the stakeholder?**

Yes

**Are you going to take this stakeholder into account?**

Yes

**Name of the stakeholder**

Groenhuysen

**How is this stakeholder affected?**

This is one of the care instances that our direct stakeholders will be working with to test the entire project.

**Did you consult the stakeholder?**

No

**Are you going to take this stakeholder into account?**

Yes

**Did you consider all stakeholders, even the ones that might not be a user or target group, but still might be of interest?**

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**Now that you have thought hard about all stakeholders, what improvements would you like to make? List them below.**

The improvement will be that the VVT's have a system that can clearly output a prediction on an (elderly) person when it could possibly fall. For a

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sustainable future, structural solutions are being sought, including the use of artificial intelligence (AI) and interactive technologies. The goal of the project is to create a generic system for an automated AI workflow cycle with the help of dedicated APIs.

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## Data

Is data in your technology properly used?

### **Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into account in the technology?**

Yes we are aware of that. we take the following into account: Scalability and volume: As data grows, handling storage, processing, and retrieval can become challenging. Scalability considerations, like indexing and distributed storage solutions, are key. Privacy and security: Storing sensitive data requires strong protections to ensure user trust and regulatory compliance (like GDPR). Implementing encryption, access controls, and anonymization.

### **How does the technology organize continuous improvement when it comes to the use of data?**

Continuous improvement in data use is achieved through monitoring, regular model retraining, user feedback, data audits, and feedback loops in development. This keeps systems adaptive, relevant, and aligned with user needs.

### **How will the technology keep the insights that it identifies with data sustainable over time?**

Sustainable insights are maintained through regular model updates, data quality checks, historical context, transparent documentation, and scalable infrastructure, ensuring insights stay relevant over time.

### **In what way do you consider the fact that data is collected from the users?**

User data collection prioritizes privacy, transparency, minimal data use, anonymization, and security to ensure responsible and ethical practices.

### **Now that you have thought hard about the impact of data on this technology, what improvements would you like to make? List them below.**

Improvements for responsible data use include enhanced privacy controls, automated bias detection, real-time anonymization, dynamic consent options, expanded feedback mechanisms, increased transparency, and continuous improvement audits.

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## Inclusivity

Is your technology fair for everyone?

### Will everyone have access to the technology?

No. Only a select group inside the VVT's that will work with this system.

### Does this technology have a built-in bias?

No.

### Does this technology make automatic decisions and how do you account for them?

No.

### Is everyone benefitting from the technology or only a a small group?

#### Do you see this as a problem? Why/why not?

A lot of people. Not everyone. Since this technology is not for all people. The only ones who will benefit from this are the caregivers and (elderly) people that may fall.

### Does the team that creates the technology represent the diversity of our society?

Our team is very diverse. 5 people from 4 different cultures.

### Now that you have thought hard about the inclusivity of the technology, what improvements would you like to make? List them below.

Maybe look at the data-bias, since we had no idea about that. Other than that, this question is a bit open so, no idea.

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## Transparency

Are you transparent about how your technology works?

### **Is it explained to the users/stakeholders how the technology works and how the business model works?**

WorkflowAPI aims to be transparent about how it works and its business model, but there are areas for improvement.

- Understanding Technology: We provide a general overview of how WorkflowAPI functions, including the types of data it collects and how that data helps caregivers make informed decisions. Users can find this information on our website.
- Explaining Behavior: While we describe the technology's goals like improving caregiver autonomy and enhancing patient care, we don't go into detail about why it generates specific recommendations. This is partly because the AI processes information in complex ways that are not always clear, even to us.
- Business Model: We share basic information about our business model, such as how we support our technology and the importance of user data for improvements. However, we recognize the need to be clearer about how this data is used and the implications for users.
- Feedback and Recourse: Users can reach out to us with concerns or questions about their experience. We want to ensure there is a way for caregivers to address any issues they feel arise from the use of the technology.
- Overall, while we strive for transparency, we need to provide more clarity about our algorithms and how they influence decisions to build trust with our users.

### **If the technology makes an (algorithmic) decision, is it explained to the users/stakeholders how the decision was reached?**

WorkflowAPI uses algorithms to assist caregivers in making informed decisions, but we recognize that transparency is a key concern.

- Explaining Decision-Making: Currently, we do not fully explain how our algorithms arrive at specific recommendations. Users may want to know why certain data leads to particular outcomes, but we fall short in providing that clarity.
- Data Collection: We inform users about the types of data collected, including patient health metrics and caregiver interactions. However, we do

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not explicitly detail how this data is used in decision-making.

- Black Box Concerns: Since WorkflowAPI utilizes machine learning, some processes may operate in a "black box" manner. We acknowledge that this can make it hard for users to understand how conclusions are drawn.

## **Is it possible to file a complaint or ask questions/get answers about this technology?**

WorkflowAPI aims to support caregivers effectively, but we recognize that communication and feedback are essential.

- Company Accessibility: We strive to make WorkflowAPI easy to reach for users, but currently, we do not have dedicated channels for direct communication about the technology.

- Complaint Procedures: While we want to hear from our users, we lack formal procedures for filing complaints. Users can express their concerns through our general contact options, but a structured process is not yet in place.

- Asking Questions: Users can ask questions about WorkflowAPI, but responses may not be prompt or comprehensive due to limited resources.

- Availability of Support: Currently, there are no dedicated support staff specifically trained to address inquiries about how the technology works or its decision-making processes.

## **Is the technology (company) clear about possible negative consequences or shortcomings of the technology?**

WorkflowAPI aims to empower caregivers but recognizes the importance of transparency regarding potential drawbacks:

- Awareness of Shortcomings: We do not currently communicate the possible negative consequences or limitations of WorkflowAPI effectively. While the technology is designed to support decision-making, it may inadvertently lead to over-reliance on AI, impacting caregivers' confidence in their instincts.

- Real-World Implications: We acknowledge that while WorkflowAPI can improve care efficiency, its use might also lead to issues such as reduced face-to-face interactions or an over-dependence on technology. However, we have not explicitly communicated these concerns to our users.

- Communication Improvements: This is an area we need to work on. Moving forward, we aim to be more transparent about potential risks associated with using WorkflowAPI, ensuring users are informed about how these may affect their caregiving experience.

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**Now that you have thought hard about the transparency of this technology, what improvements would you like to make? List them below.**

- Detailed Transparency Section: Create a dedicated section on our website that clearly explains how WorkflowAPI works, including the data sources used and the overall business model. This should be straightforward and accessible, helping users understand the purpose and functionality of the technology.
- Clear Explanation of Decisions: Provide insights into how WorkflowAPI makes certain decisions, even if some processes are complex or operate as a "black box." This could include general guidelines on the algorithms used and the types of data considered for decision-making.
- Feedback and Complaint Procedures: Establish a robust procedure for users to voice their concerns or ask questions about WorkflowAPI. This could include a dedicated support email, a FAQ section, and possibly a community forum where users can discuss their experiences and seek help.
- Highlighting Potential Drawbacks: Clearly communicate potential negative consequences or limitations of using WorkflowAPI. This should include information on the risks of over-reliance on technology and the importance of maintaining personal judgment in caregiving.
- User Stories and Testimonials: Share user stories and testimonials to provide real-world context on how WorkflowAPI impacts caregivers. This will help others understand both the benefits and the challenges associated with the technology.



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## Sustainability

Is your technology environmentally sustainable?

### In what way is the direct and indirect energy use of this technology taken into account?

For WorkflowAPI, we recognize that our technology relies on cloud services, which contribute to energy consumption. To address this, we have implemented the following strategies:

**Eco-Friendly Hosting:** We partner with cloud service providers that prioritize sustainability and operate energy-efficient data centers. These facilities use renewable energy sources and implement advanced cooling systems to minimize their environmental impact.

**Optimizing Data Processing:** We continuously work on optimizing our algorithms to reduce the computational power required for data processing. By streamlining processes, we can lower the energy consumption associated with running WorkflowAPI.

**Local Processing:** Whenever possible, we aim to leverage local devices (like smartphones and tablets) for data processing to decrease reliance on cloud resources. This reduces the amount of data transmitted and processed in our data centers, lowering overall energy use.

**User Education:** We encourage users to utilize WorkflowAPI during off-peak hours when energy demand is lower. This not only helps balance energy loads but also promotes more sustainable usage patterns among our users.

### Do you think alternative materials could have been considered in the technology?

For WorkflowAPI, as a software-based product, we primarily deal with digital infrastructure rather than physical materials. However, it's essential to consider the broader context of the technology ecosystem, including the hardware and devices used by our users. Here are some points to consider:

**User Devices:** While our software itself does not utilize materials directly, the devices (smartphones, tablets, laptops) that run WorkflowAPI are constructed from various materials. Encouraging users to choose devices made from sustainable materials or those with eco-friendly certifications can help reduce environmental impact.

**Eco-Friendly Development:** In our development process, we can advocate for and collaborate with hardware manufacturers who prioritize sustainable materials, such as recycled plastics or metals, in their devices.

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**Partnerships:** We could explore partnerships with hardware companies that focus on sustainability to promote the use of our software in their eco-friendly devices, thus indirectly influencing material choices in the tech industry.

**Software Longevity:** By focusing on creating software that requires minimal updates and can run efficiently on older devices, we can extend the lifespan of existing technology and reduce the need for new hardware, thereby minimizing resource consumption.

## **Do you think the lifespan of the technology is realistic?**

Yes, the lifespan of WorkflowAPI is realistic, primarily due to its software design and ongoing support. Heres how we ensure longevity and sustainability:

**Regular Updates:** WorkflowAPI is continuously updated to incorporate user feedback and advancements in technology. These updates enhance functionality and keep the platform relevant as user needs and industry standards evolve.

**Modular Design:** The software is designed with a modular approach, allowing us to easily add or replace features as needed. This adaptability means we can respond to changing user requirements or technological developments without a complete overhaul of the system.

**Compatibility:** We prioritize compatibility with various devices and platforms, ensuring that WorkflowAPI can run on a wide range of hardware and software environments. This flexibility helps extend its lifespan, as users won't need to upgrade their devices to continue using the API.

**User Education:** We provide resources and documentation that educate users on how to effectively utilize and maintain WorkflowAPI. By empowering users with knowledge on best practices, we encourage longer-term engagement and optimal use of the platform.

**Scalability:** WorkflowAPI is built to scale with the needs of its users. Whether they are small startups or large enterprises, the architecture supports growth, which further extends its practical lifespan in various organizational contexts.

## **What is the hidden impact of the technology in the whole chain?**

The hidden impact of WorkflowAPI involves both upstream and downstream effects related to its development, use, and eventual obsolescence. Heres how we address these impacts:

**Upstream Impact:**

**Resource Utilization:** The development of WorkflowAPI requires various resources, including server infrastructure, data storage, and software tools.

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We prioritize using cloud providers that operate energy-efficient data centers powered by renewable energy sources, reducing our carbon footprint during the development phase.

Supplier Practices: We ensure that third-party services and libraries we integrate adhere to ethical and sustainable practices. This includes vetting suppliers for their environmental impact and ensuring they follow fair labor practices, thereby promoting sustainability in our supply chain.

Downstream Impact:

User Behavior: WorkflowAPI empowers users to streamline their operations and reduce resource waste through automation and efficient workflows. By optimizing processes, users can minimize the time and materials used in their workflows, indirectly leading to lower environmental impact.

End-of-Life Considerations: As a software-based product, the end-of-life for WorkflowAPI revolves around data management and software updates. We are committed to offering users guidance on data export and migration if they decide to discontinue use, ensuring that their data is handled responsibly and securely, and reducing the chances of information loss or waste.

Promoting Sustainable Practices:

Encouraging Efficient Workflows: By providing tools that help organizations streamline operations, WorkflowAPI can lead to significant reductions in energy consumption and waste. Users are encouraged to rethink their processes, which often results in a more sustainable approach to business practices.

Community Engagement: We aim to build a community around WorkflowAPI that shares best practices in sustainability. By fostering discussions on efficient resource use and environmental responsibility, we can amplify our positive impact on the environment.

**Now that you have thought hard about the sustainability of this technology, what improvements would you like to make? List them below.**

Energy Efficiency:

Optimize Server Usage: Improve server efficiency by dynamically scaling resources to reduce energy use during low-traffic periods.

Renewable Energy: Partner with cloud providers powered by renewable energy.

User Empowerment:

Sustainability Features: Integrate analytics to help users track and reduce their energy consumption.

Education: Provide resources on sustainable workflow management practices.

Modular Design:

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Upgrade Flexibility: Adopt a modular approach for easy upgrades, extending the lifespan of WorkflowAPI.

Compatibility: Ensure compatibility with new tools to reduce the need for replacements.

Responsible Data Management:

Data Retention: Implement clear data storage policies encouraging users to delete unnecessary data.

End-of-Life Solutions: Develop guidance for secure data migration and eco-friendly disposal when users transition away from the platform.

Regular Audits:

Sustainability Audits: Conduct routine audits to evaluate and improve the environmental impact of WorkflowAPI.

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## Future

Did you consider future impact?

### What could possibly happen with this technology in the future?

It could grow out to be the best used system in every care home, hospital or whatever in the Netherlands.

### Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one utopian scenario.

The system made by the people working on it has been used by multiple countries across Europe and has prevented 80% of the elderly people from falling. The system has a very good prevention rate, the workflow is very fast with low response times.

### Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one dystopian scenario.

The AI has trained so good that this system is used worldwide to help patients in every type of health instance.

### Would you like to live in one of this scenario's? Why? Why not?

Yes. Because this will release the pressure on the health care sector because they cramp with a shortage in personnel. And less (elderly) people will fall, so the quality of life will improve.

### What happens if the technology (which you have thought of as ethically well-considered) is bought or taken over by another party?

Eventually this software will be managed by a government party or the VN. So I don't think this system will be bought by another party. The government parties will be there first.

### Impact Improvement: Now that you have thought hard about the future impact of the technology, what improvements would you like to make? List them below.

To ensure the technology's positive impact, we can strengthen ethical guidelines, empower users with privacy controls, engage communities in development, maintain transparency about data use, and plan for resilience against ownership changes. These steps will foster trust and align the technology with user needs and ethical standards.