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Bundesministerium
für Familie, Senioren, Frauen
und Jugend

Digital Transformation in Child and Youth Welfare: A Concept for Implementing a Web-based Counseling Assistant

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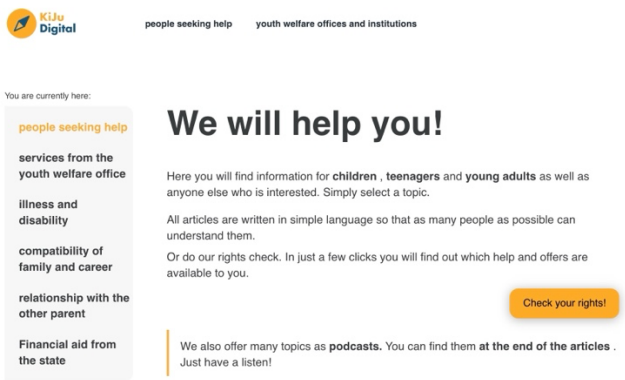
IReSA gGmbH

Abstract

Due to limited personnel resources and the existing shortage of professional staff, employees in youth welfare offices are confronted with high caseloads and complex administrative processes, which leads to delays in supporting affected young people and families. The project aims to provide young people in need of support and their families with low-threshold digital access to legal entitlements in order to promote equal participation. This goal is achieved through rule-based expert systems that provide those seeking help with qualified and consistent counseling recommendations regarding possible rights and the possibilities of enforcing those rights. The expert system can - in addition to providing advice on concrete claims and the possibilities of legal enforcement - also be used as a system for asserting and enforcing legal claims, for example by automatically generating applications, letters of objection, or lawsuit documents to the appropriate authority or court. The expert system is connected to a comprehensive information platform in simple language and technical language. On these platforms, clients can obtain comprehensive information about their rights.



A. Institutional Framework and Application

The IReSA gGmbH from Osnabrück (Germany), a private non-profit research institute focusing on social work law and digitalization in the public sector, has submitted a comprehensive project proposal for the digital transformation of counseling processes in child and youth welfare under the direction of Prof. Dr. Florian Gerlach. Through several preliminary projects, the institute has extensive expertise in developing legal expert systems and digital support for administrative processes.

B. Initial Situation and Identified Needs for Action

The current situation in German youth welfare offices is characterized by multiple challenges. A central problem is the increasing discrepancy between available personnel resources and rising case numbers. This development is further exacerbated by the growing complexity of administrative processes and the need for increased interdisciplinary cooperation.

The overload situation has direct impacts on the quality of assistance for young people and their families. Current studies show that participation opportunities are significantly impaired by delayed or denied assistance as well as by the non-utilization of existing legal entitlements. This affects both monetary and person-related services, as various scientific studies show.

A significant factor is the perception of law and administration by those entitled to benefits. These are often perceived as complex, threatening, and dismissive, leading to reduced utilization. The situation is exacerbated by the fact that youth welfare offices are often unable to provide adequate support and intervention due to their workload.

C. Objectives and Innovation

The project, funded by the German Federal Government (Federal Ministry for Family Affairs, Senior Citizens, Women and Youth), pursues a dual approach to improving the situation. On one hand, employees in youth welfare offices should be relieved of redundant administrative tasks through the use of digital tools. Rule-based expert systems and optimized processes should create more room for the core tasks of child and youth welfare.

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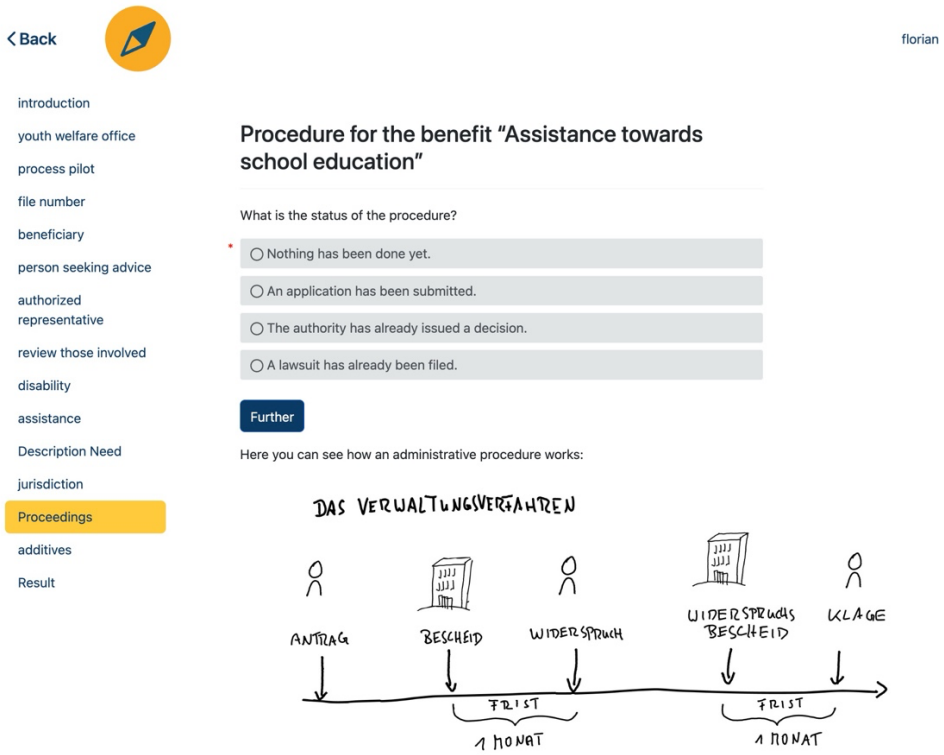

On the other hand, the project aims to strengthen the perception of rights by those entitled to benefits. Equal participation of all young people and their families should be promoted through low-threshold digital instruments and targeted education about rights. A special focus is on developing attitudes in terms of empowerment that encourage confident and objective handling of claims to social participation.

The innovation potential of the project lies in the unique combination of digital process optimization and participatory empowerment approach. Web-based counseling systems of this kind are not yet available in the field of youth welfare.

D. Technical Architecture and Implementation

1. Software Architecture and Core Components

1.1 Docassemble as Technical Basis

The project is based on the open-source software Docassemble, a web application for creating "intelligent interviews". The software is characterized by several innovative features that make it particularly suitable for use in youth welfare.

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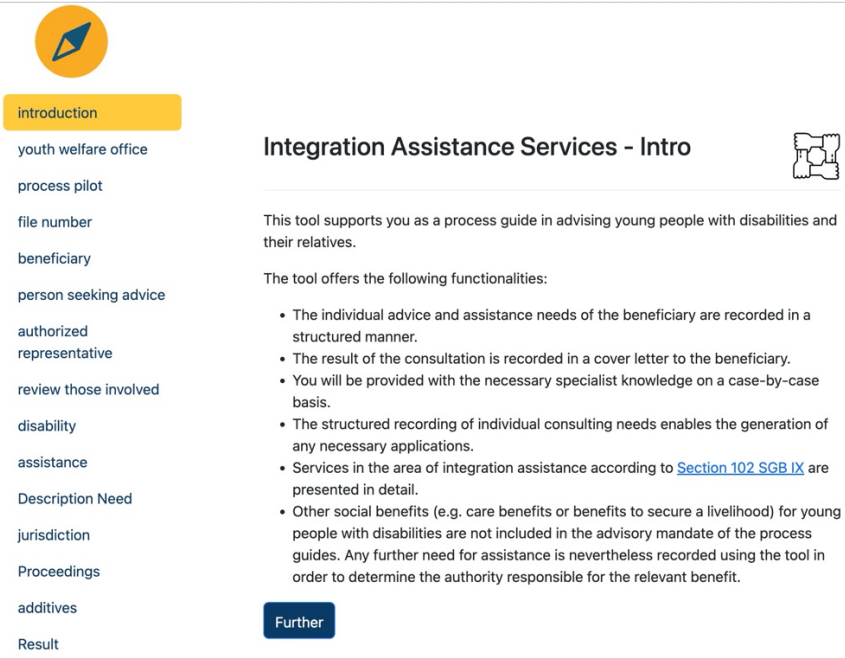


A central feature is the system's adaptive question logic. Unlike conventional questionnaire systems, questions are not asked linearly but developed in dynamic dependence on each other. Technically, this is realized by capturing each question in its own data block as YAML, where the captured data is stored and processed as variables. The software intelligently controls the interview process based on the information necessary for the respective result.

Modularity and extensibility represent another significant advantage. Through the integration of any Python modules, the entire Python ecosystem can be utilized. This enables the implementation of specific modules for legal applications and ensures flexible adaptation to new requirements. The system's multi-user functionality is particularly noteworthy. Interviews can be processed by different people, enabling seamless handover between clients and counselors. A differentiated system of access rights and role management ensures the necessary control.

1.2 Technical Infrastructure

The system's server architecture was designed considering the most modern standards. The Linux distribution Debian serves as the base system in its current stable version. This choice ensures long-term update support and follows a conservative security strategy essential for use in the public sector.

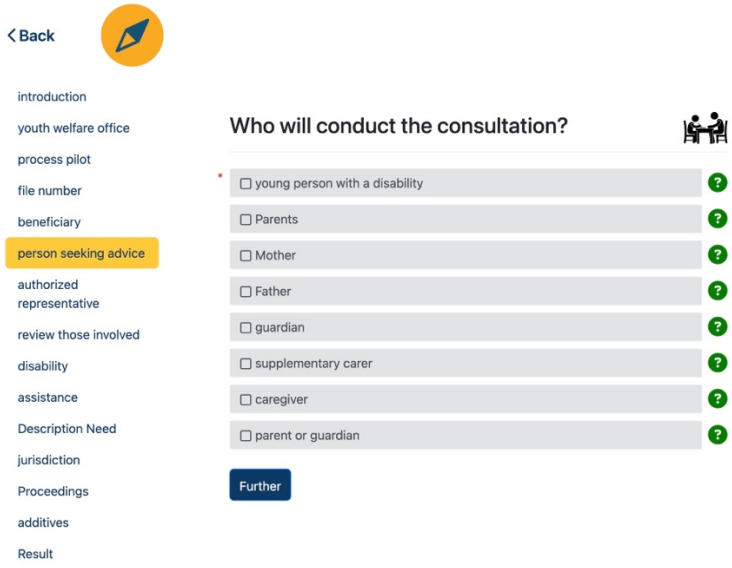
Containerization forms another cornerstone of the technical infrastructure. Through the use of Docker-based container solutions, separate instances for development and production are realized. This enables flexible scaling and load balancing.

Continuous Integration/Deployment is of particular importance. Version control is done using Git, documenting all changes traceably. Automated test processes ensure software quality. Gitlab is used for deployment, while Infrastructure as Code via Ansible ensures system configuration reproducibility.

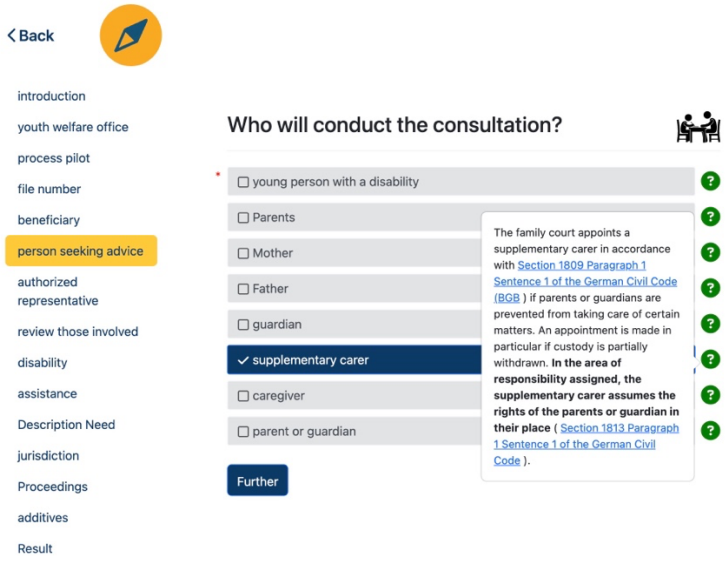
2. Functional Components and Features

2.1 Intelligent Interviews

The interviews as the core piece of the system combine various innovative functionalities. In the area of counseling functions, the system offers automated legal advice on specific services. Youth welfare offices can also quickly clarify jurisdiction questions based on interviews. Needs assessment and service identification are supported by intelligent algorithms that lead to individualized counseling results.

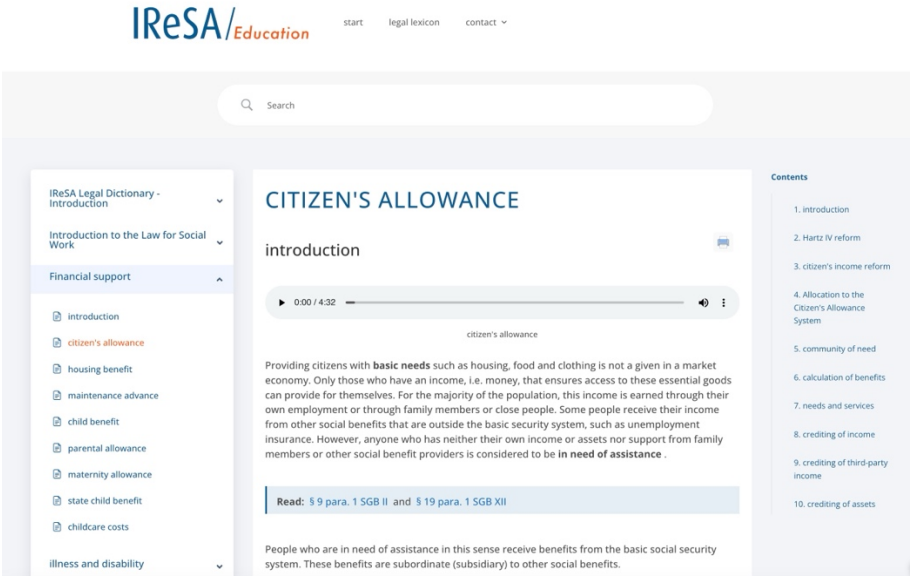


The system's support functions were developed with a particular focus on user-friendliness. Integrated help texts and contextual information guide the user through the counseling process.

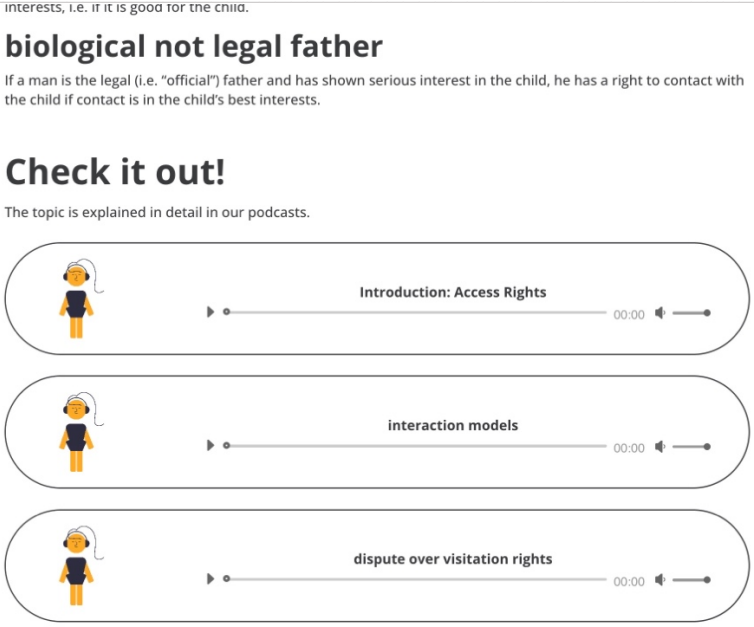


2.2 Digital Legal Lexicon

The integrated legal lexicon represents a central knowledge database that goes far beyond conventional legal databases. The content components contain a structured presentation of legal foundations, continuously updated through the integration of current jurisdiction.



The linking with legal texts occurs dynamically, thereby always reflecting the current legal status. A particular innovation lies in the multimedia preparation of content through videos and podcasts that convey complex legal matters comprehensibly.



The implemented editorial system enables efficient management and updating of content. The user-friendly content management system allows legal professionals without deep IT knowledge to maintain the content. The versioning of all content ensures the traceability of all changes. Automatic update notifications inform users about relevant changes. The taxonomy-based structuring enables intuitive navigation through legal content.

2.3 Support Modules

The developed support modules extend the system's functionality in various areas. In the area of process support, a complex system for automatic deadline calculation and monitoring has been implemented. Continuous process status determination gives users an overview of their cases' current status at any time. Automated jurisdiction determination significantly reduces administrative effort. Integrated progress monitoring enables efficient control of processing procedures.

The system's language modules ensure precise and appropriate communication. The context-related grammar module ensures correct use of case, gender, and number. A specialized person module ensures adequate addressing of different user groups. The multilingual templating functions enable consistent translation of documents. Automatic text adaptation optimizes the comprehensibility of generated documents.

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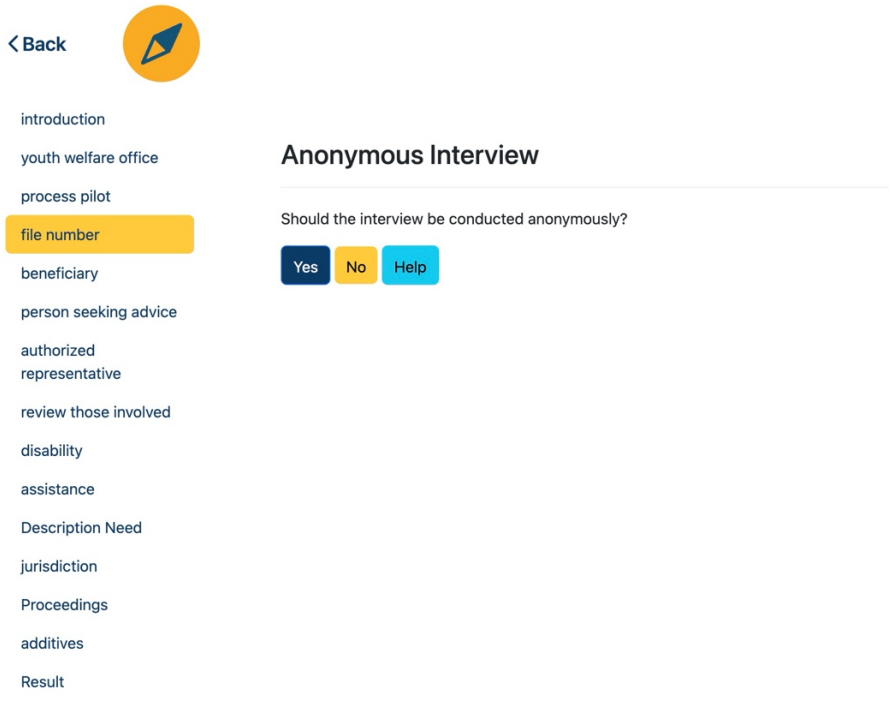
3. Security and Data Protection

The system's security concept is based on a multi-level approach. Server-related security measures include continuous encryption of stored data and SSL/TLS encryption of all communication. Automatic certificate management ensures continuous updating of security certificates. Regular security updates protect the system from current threats.

Access security is ensured through a sophisticated system of authentication and authorization. Multi-factor authentication prevents unauthorized access. Role-based access control enables granular control of user rights. Implemented protection mechanisms against brute force attacks additionally increase system security. Session management ensures secure handling of user sessions.

The data protection concept consistently follows the principle of data minimization. The possibility of anonymous use is a central feature of the system.



After counseling is completed, data is automatically deleted unless legal retention requirements exist. Data storage follows the minimal principle, with all data transfers occurring encrypted.

Compliance with data protection requirements is ensured through comprehensive measures. All processing procedures are fully documented and comply with GDPR requirements. Defined deletion periods ensure timely deletion of no longer needed data. The transparency of data processing is ensured through detailed user information.

4. Scaling and Maintenance

The system's scaling concept was developed with future requirements in mind. Technical scaling is based on a flexible container architecture that enables horizontal scaling across multiple servers. A system for automatic resource adjustment continuously optimizes system utilization. Redundant systems ensure the required fail-safety.

Functional scalability is achieved through the system's modular structure. API-based integration enables uncomplicated connection of additional system components. Flexible adaptation to new legal areas is ensured through the chosen system architecture. The extensible user interface enables integration of additional functionalities without fundamental system changes.

The maintenance concept encompasses both technical and content aspects. Technical maintenance occurs through a system of automated updates, regular backups, and continuous performance monitoring. A structured incident management ensures quick resolution of possible disruptions.

Content maintenance focuses on continuous updating of legal content. Changes in jurisdiction and legislation are promptly incorporated. Quality assurance of counseling content occurs through a multi-stage testing system. The integration of user feedback enables continuous system optimization based on practical experience.

E. Expected Effects and Evaluation

The project's effectiveness will be evaluated based on concrete, measurable indicators. For example, the processing time for jurisdiction clarifications should be reduced from currently about two hours to 15 minutes. A monthly usage of at least 500 automated consultations is targeted, as well as an improvement in counseling quality, documented through systematic user feedback.

In quantitative terms, it is expected that through efficiency increases, approximately two full-time positions per youth welfare office can be saved or used differently. Qualitatively, an improvement in

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counseling quality through more consistent recommendations and increased legal certainty is aimed for.

F. Data Protection and Technical Security

Data protection is addressed through a multi-level concept. In principle, anonymous counseling is possible. If personal data is collected, this occurs under strict observance of GDPR and sector-specific data protection law. Technical implementation occurs through own hosting on German servers with comprehensive security measures such as encryption, firewall systems, and automatic deletion after counseling completion.

G. Sustainability and Perspectives

The project's sustainability is secured through several factors. The use of open-source software enables flexible further development and adaptation. The applicant guarantees the provision and maintenance of the system until at least 2027, including continuous updating of content and technical infrastructure.

The project has the potential to sustainably change working methods in youth welfare offices and significantly improve participation opportunities for young people and their families. It thus makes an important contribution to the digital transformation of the public sector and the modernization of child and youth welfare.

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