Integrated Risk Management Platform

Portugal

GENERAL INFORMATION	
Name of the organisation	Instituto de Informática I.P.
Type of organisation	Social Security Organisation
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Topic of the good practice	National practices (legal and administrative) to detect and prevent bogus self-employment
Geographical focus	Nation-wide
Duration	7/1/2024 – 6/1/2026
Summary of the good practice	The Integrated Risk Management Platform is the new social security solution for fraud risk monitoring. This solution uses a set of indicators and an analytical model, based on machine learning, which, using data from the Social Security Information System, can detect patterns of behaviour of companies and citizens in various analysis factors, determining their level of risk. It is thus a support tool for the different social security teams, contributing to greater efficiency and effectiveness in their risk prevention, control and mitigation actions. At the end of March 2025, a module focusing on the risk associated with employers was put into operation. In July 2025, the beneficiaries module was made available, which has been enriched with different areas, such as illness, parenthood and unemployment.

	In October 2025, we made available the module related to digital fraud and internal fraud. This solution will also be extended to other areas of social security, such as pensions, family benefits or social facilities.
OBJECTIVES AND ACTIVITIES	
Background/context What challenge, need or gap were you trying to solve or respond to? Why was this issue relevant or urgent in your context (sector, region, country)?	▶ The social security system in Portugal is based on a principle of intergenerational and social solidarity. Funded by contributions from workers and employers, it aims to ensure the protection of citizens in vulnerable situations such as unemployment, sickness, disability, maternity or old age. The occurrence of fraud in this system undermines its foundations, distorts its objectives and undermines its long-term sustainability. Social security fraud in Portugal has a significant impact, not only in terms of lost revenue or undue payments, but also eroding citizens' trust in the system. The loss of revenue undermines the ability of the state to finance pensions, allowances and other essential social benefits. The Integrated Risk Management Platform will therefore contribute to the sustainability of social security in Portugal.
Objectives What were the main goals of this practice (e.g. better compliance, faster processing, improved worker protection)? (Please limit to three) Who or what were these goals intended to help or change? (Please limit to three)	▶ The Risk Management Platform, based on machine learning practices, has the ability to recognize patterns and learn from the feedback obtained in the treatment of flagged cases. This analytical capacity allows for identification of potential irregularities in a more effective and timely manner, enabling the implementation of preventive, educational and reactive actions with greater efficiency and impact. With this, the implementation of these risk assessment and management mechanisms will allow: ▶ **Preventive Action - Early Fraud Detection** The solution uses advanced risk scoring algorithms,

	including models based on machine learning techniques, to continuously monitor the behaviour of taxpayers, beneficiaries and institutions and to detect potential internal fraud. This approach makes it possible to identify irregular patterns and anticipate risk scenarios before they are implemented, thus strengthening the preventive response capacity of social security organisations. ▶ **Educational Action - Communication and Awareness-raising Activities** It aims to simplify processes of relationship with the citizen/company in order to clarify obligations and foster communication with groups at risk, in order to force compliance with obligations, through awareness-raising activities that promote the development of an ethical culture to combat unwanted behavior. ▶ **Reactive Action - Prioritisation of Follow-Up Actions** The application can increase the effectiveness of mitigation actions, allowing a rapid and targeted intervention in areas or cases of greater risk. To this end, it provides functionalities that enable the structured handling of flagged cases, including the assignment of specific tasks involving both manual and automatic mitigation measures. These measures can be operationalized through their integration with the various social security systems, ensuring a coordinated, efficient and focused response in the most critical cases, thus optimizing the allocation of resources and strengthening the capacity for preventive action.
Main activities What were the main steps or actions you carried out to put the practice into effect? Were any tools, materials, partnerships, or processes created?	▶ The first step was to define priority areas for action. The decision was to determine the risk in three distinct areas of analysis: 1. Taxpayers: employers, self-employed persons, domestic services and private social security institutions (IPSS);

2. Beneficiaries: remuneration, contributions, benefits (unemployment, social inclusion and sickness) and pensions (old age, survival and disability);

3. Internal fraud

- The implementation of the Platform was divided into two complementary components:

1. Component 1 – Analytical Model – Calculation of the estimation of the risk index of each Social Security Identification Number (NISS);

2. Component 2 – Risk Management Application where the analysis, treatment and monitoring of risk situations identified by component 1 is carried out.

- In addition, Component 2 feeds back information to the risk management model of Component 1, using the results of validated cases to refine and improve the model's accuracy.
This feedback process enables the continuous monitoring of the effectiveness of the signaling criteria and contributes to the training and improvement of risk models, promoting a sustained continuous improvement in the practical experience of case treatment.
To deal with large volumes of information and ensure efficient analysis, the Risk Management Platform uses *machine learning-based* approaches, which allow to identify complex patterns and adapt based on the results obtained. This learning ability makes the system more robust and accurate in detecting irregular behaviors, contributing to a more effective action by social security services.
In terms of implementation, the Platform infrastructure was implemented in *Cloud*, with the exception of the initial modules of component 1, (1) data sources and (2) initial data processing, which were implemented with the *On-Prem* tools available in the Informatics Institute I.P. (II, I.P.).

Funding/organisational resources	The financing of this project is supported entirely by funds from the Recovery and Resilience Plan (RRP).
PARTICIPATION	
Stakeholders involved Organisations or entities actively contributing to the design, implementation, monitoring, or support of the good practice (e.g. labour inspectorates, social security institutions, trade unions, employers' associations, or other).	▶ **Social security organisations** directly involved in these matters participated in the design and development of this solution; both in terms of technical knowledge and the technologies used that were necessary for the implementation: • **Instituto de Informática I.P.** - business knowledge of the areas of analysis and the development of the national applications that generate the data sources • **Institute of Social Security (ISS, I.P.); Institute of Social Security of the Azores, I.P.R.A., Institute of Social Security of Madeira, IP-RAM and the Institute of Financial Management of Social Security (IGFSS, I.P.)** - responsible for the business and end users of the final solution, with an important role in defining the requirements of all situations to be identified and in the tests of its implementation, and in validating the final solution of the display and operation menus of the Platform. ▶ **External entities** • **Zertive** - partner in the idealization of the solution and in the definition of the public tender launched by **Instituto de Informática I.P.** for the construction of the Platform ▶ **EY** - winning entity of that tender, and therefore the partner of **Instituto de Informática I.P.** in the final design of the entire architecture of the solution and its implementation.
Target groups Main groups or categories that the practice is directly aimed at, who should receive its services or who engage with it (e.g. employers, mobile or posted workers, labour inspectors and social security officers, or other).	▶ The recipients of the Platform now developed are all Social Security services, because the solution aims to act preventively and reactively on the situations that are identified, so it includes all Social Security employees in the three areas identified:

	• employees whose function is to provide benefits and pensions • employees responsible for the monitoring and management of benefits and the contributory and legal obligations of employers and citizens • employees responsible for supervision in social security services.
Final beneficiaries Individuals or groups that ultimately benefit from the outcomes of the practice, even if they are not the direct target or user (e.g. mobile or posted workers, vulnerable workers at risk of exploitation, employers benefiting from clearer rules or reduced admin burdens, or other).	▶ This Platform seeks to combat all types of fraud, including tax evasion and abuse of rights (access to social benefits), thus contributing to the sustainability of social security for the benefit of all. ▶ Therefore, the final beneficiaries are: • all companies and citizens that relate in some context to social security services.
GOOD PRACTICE CRITERIA	
Achievements and outcomes What specific results did the practice achieve? (e.g. How many workers or employers were reached, number of publications created? What processes became faster?) What kind of broader benefits did it bring? (e.g. Did it improve understanding of rights and obligations, enhance cooperation between authorities, or reduce legal uncertainty and inconsistent application of rules?)	The Platform creates an integrated risk management system with the capacity to analyse and address risk situations in three distinct areas: ▶ Taxpayers ▶ Beneficiaries ▶ Internal fraud Scoring models have been developed that automatically flag Social Security Identification Numbers (NISSs) with a higher probability of irregularity, allowing faster and more effective intervention. Component 2 of the Platform allows for the treatment of flagged cases, with assignment of tasks and application of mitigation measures, manual and automatic, integrated with social security systems. This process contributes to a more preventive and educational action, with a direct impact on the reduction of critical situations. Concrete results include: ▶ Provision of risk indicators to operational entities;

	▶ Execution of rule engines and retraining of machine learning models based on feedback from treated cases; ▶ Improved responsiveness and efficient allocation of resources.
Cost effectiveness How did you keep costs low while still achieving results? (e.g. Did you reuse existing tools, automate processes, or share resources across teams?) Can you show that the outcomes were worth the investment? (e.g. Did small changes lead to big improvements, or were expensive tools avoided?)	▶ The solution was designed based on principles of reuse and integration. Existing infrastructures were used, namely *on-prem* Instituto de Informática I.P. tools for the initial processing of data, and a *cloud* model was adopted for the remaining components. The automation of processes, such as the calculation of indicators and the execution of rules, has significantly reduced manual effort and operational costs. The investment proved justified by the Platform's ability to anticipate risks and avoid losses associated with fraud and irregularities, with clear gains in efficiency and impact.
Transferability What are the key features that make this practice work well? (e.g. a digital platform, clear guidelines, a joint inspection process, or strong coordination) What would another country or organisation need to make this work for them? (e.g. certain laws, IT systems, or staff training)	▶ The practice is based on a modular and scalable architecture with a strong digital component and integration with existing systems. The use of *machine learning* approaches and rule engines allows for adapting the models to different contexts and realities. In order for another country or organisation to implement this practice, it would be necessary to have: • structured and interoperable information systems; • legislation allowing the use of data for risk management purposes; • involvement of business teams throughout the analysis, design, monitoring of the implementation and testing of the solution.
Sustainability **How is the practice sustainable from a social, financial or environmental perspective?** **What makes this practice able to continue over time? (e.g. It is now part of regular work or has been built into law or procedures?) and how are you**	The practice is sustainable at several levels: • **Social:** contributes to the fairness and protection of citizens' rights by ensuring that social security support is allocated in a fair and transparent manner.

making sure it lasts beyond the pilot or project phase?	• **Financial**: allows for more efficient management of resources, reducing fraud losses and optimising intervention. • **Operational:** is being integrated into the regular procedures of social security entities, with progressive acceptance and functional validation by end-users. ▶ Continuity is ensured by the planned evolution of the Platform with model retraining cycles, regular testing and updating of risk indicators.
Innovativeness What makes this practice new or different in your field or country? (e.g. Is it the first of its kind, or does it combine actors who don't usually work together, or activities not performed before?) How does it improve older or less effective approaches? (e.g. By reaching more people, using data better, or simplifying complex procedures)	This practice represents an innovative approach in the context of the Portuguese social security system: • It is the first **integrated solution** that applies machine learning to contributory and provisional risk management; • It brings together technical and operational entities in a collaborative model of requirements definition and functional validation; • It introduces automatic risk signalling and treatment mechanisms with continuous learning ability. It significantly improves previous approaches by enabling earlier and more accurate detection of critical situations based on data and behavioural patterns.
Digitalisation What kind of digital tools or platforms were used in this practice? (e.g. online portals, automated case tracking, data sharing, digital databases or other) How did these tools help in reaching your goals? (e.g. Did they save time, facilitate access to data in real time, reduce errors, help detect fraud, or improve coordination between authorities?)	The Platform uses several digital tools: • Cloud infrastructure for processing and storage, implementation of rule engines and machine learning models for predictive analysis; • Dashboards and reports for viewing and operation by users; • Application for the analysis, distribution and treatment of flagged risk cases; • Integration with different social security systems, to enrich the operation with the risk index.

	These tools contributed to: • Reduction of errors and duplications; • Access to risk indicators; • Improved inter-entity coordination; • Automation of tasks and decisions with a direct impact on efficiency and responsiveness.