

# Turkey's Integrated Social Assistance System

## Abbreviations

DG	Directorate General
EU	European Union
IMIS	Integrated Management Information System
ISAS	Integrated Social Assistance System
ISKUR	Turkish Employment Agency
JPA	Java Persistence API
JTA	Java Transaction API
KYK	Credit and Dormitories General Directorate
MIS	Management Information Systems
MoE	Ministry of Education
MoFSP	Ministry of Family and Social Policies
NGO	Non-Governmental Organization
OECD	Organisation for Economic Co-operation and Development
PMT	Proxy Means Test
PPP	Purchasing Power Parity
PTT	Postal and Telegraph Services Corporation
RIA	Rich Internet Application
SAIS	Social Assistance Information System
SA	Social Assistance
SAIS	Social Assistance Information System
SASF	Social Assistance and Solidarity Foundation
SADG	Social Assistance Directorate General
SMS	Short Message Service
SSI	Social Security Institution
TL	Turkish Lira
TÜBİTAK	Turkish Scientific and Technological Research Institution
UHI	Universal Health Insurance
VPN	Virtual Private Network
YBB	Social Assistance Data Bank

## I. Overview

### A Snapshot of the Social Assistance and Social Protection Systems in Turkey

As Turkey's economy continued to grow in the past decade, so did its capacity to deliver social assistance. Social assistance has traditionally been a very small component of Turkey's social protection system, but a large number of new programs have been implemented over the past decade, increasing its importance. In 2014, social assistance expenditure was 22.9 billion Turkish Lira (TL), 1.31 percent of the GDP, up from 0.57 percent of GDP a decade before in 2003.

*Table 1: Turkey's Social Assistance System in Figures (2014)*

<b>Total Social Assistance Expenditure</b>	22,914,990 (000 TL)
<b>Share of Social Assistance Expenditures in GDP</b>	% 1.31
<b>Number of Households Receiving Social Assistance</b>	3,005,898
<b>Number of Households Receiving Regular Social Assistance</b>	2,274,182
<b>Number of Households Receiving Temporary Social Assistance</b>	1,892,656
<b>Amount Transferred to Assistance from Social Assistance and Solidarity Encouragement Fund (SYDTEF) Resources</b>	4,351,800,939,30 TL
<b>Number of Old-Age and Disability Salary Beneficiaries under Law No. 2022</b>	1,300,377
<b>Number of People for whom Universal Health Insurance (UHI) Contributions are Paid by the Government</b>	9,261,748
<b>Rate of Individuals with per Capita Daily Expenditure below 2.15 USD per Current Purchasing Power Parity (PPP) (2013)</b>	%0.06
<b>Number of Social Assistance and Solidarity Foundations (SASF)</b>	1000
<b>Number of SASF Staff</b>	8,611
<b>Number of SASF Social Assistance and Inspection Officers</b>	3,845

Social assistance in Turkey is managed at the national level by the Social Assistance Directorate General (SADG) under the Ministry of Family and Social Policies (MoFSP) and is implemented by 1,000 locally based Social Assistance and Solidarity Foundations (SASFs). The SASFs are under the chairmanship of the provincial and sub-provincial governors.

The basis of this current system was created in 1976 with the approval of Law 2022, which provided for a small monthly benefit payment for the elderly or disabled poor. In 1986, Law 2022 was supplemented with Law 3294, which established the SASFs and developed their decentralized structure. At the time, social assistance was managed nationally by the Fund Secretariat General within the Prime Minister's Office and administered locally by the SASFs.

In 2005, the Government expanded and enhanced Turkey's flagship Universal Health Insurance program, which was Turkey's largest targeted social assistance program up to that time. In addition, a number of new social assistance programs were developed, including the provision of coal and food and a Conditional Cash Transfer program for education and health. Education programs were implemented in order to facilitate access to basic education, including free textbooks and school lunches and transport and shelter subsidies. In 2005, the Turkish Disability Act was adopted, which led to a substantial increase in the disability pensions provided under Law 2022. Housing programs were implemented in 2006 and 2009. New programs providing cash transfers for widows and for families of soldiers conducting compulsory military service were implemented in 2012 and 2013, respectively (see Table 2 for a full list of programs).

MoFSP was created in 2011 to unify the substantial number of un-coordinated social initiatives and reduce fragmentation in the sector. Concurrently, the SADG was reorganized under MoFSP. The SASFs at the local level and MoFSP at the national level today represent the core institutional framework for social assistance in Turkey. The majority of social assistance programs, including the SADG, are now housed under MoFSP, which proved to be an important initiative for reducing sector fragmentation.

## Summary of Turkey's Integrated Social Assistance System (ISAS)

Turkey's Integrated Social Assistance Service Information System (ISAS) is an e-government system that electronically facilitates all steps related to the management of social assistance, including the application, assessment of eligibility requirements, disbursement of funds, and auditing. Turkey's MoFSP contracted the Turkish Scientific and Technological Research Institution (TÜBİTAK) to develop ISAS, which integrates data from 19 different public institutions and provides 112 web-based services in one easily accessible online portal.

Table 2: Overview of Social Assistance Programs in Turkey, 2014

Classification		Name	No. of Beneficiaries	Total Amount Allocated to the Program (TL)	Available in ISAS
Income Support	Family	Food	615,376 (f)	185,860,000	Yes
		Coal	2,159,190 (f)	733,932,0000	Yes
		Widowed Women	301,469	814,747,000	Yes
		Soldier's Family	125,954	222,006,000	Yes
	Education	Education Materials	94,853	651,465,000	Yes
		Conditional Cash Transfer	2,359,843	579,150,860	Yes
	Health	Conditional Cash Transfer	1,012,663	280,123,445	Yes
	Law 2022	Old-Age Pension	629,590	1,009,195,602	Yes
		Disabled Pension	687,554	2,591,989,395	Yes
	Home Care	Home Care Support	450,036	3,982,549	Yes <sup>1</sup>
Access to Health		Universal Health Coverage	9,368,920	6,132,725,570	Yes
Access to Housing		Sheltering	22.609 (hane)	85,970,0006	Yes
		Social Housing	24.000	210,000,000	Yes
Access to Food		Soup Kitchen	34,911	11,470,000	Yes
Access to Education	Basic and Secondary Education	Free Textbook	17.000.000	125,000,000	
		Lunch	672.000	430,000,000	
		Transport & Shelter Subsidy	1810 (hane)	300,000	
		Disabled Student Transport	61000	95,000,000	
		School Milk Project	5,583,649	138,735,000	
		MOE Scholarship	285,639	338,837,000	
	Tertiary Education	KYK Scholarship	385,500	1,140,029	Yes
		KYK Food Support	366,987	385,905,000	
Municipalities		Miscellaneous		939,592,000	Yes <sup>1</sup>

1. Integration into ISAS is ongoing

## II. Turkey's Integrated Social Assistance Service Information System (ISAS)

### Overview of ISAS

Through the development of ISAS, Turkey standardized, integrated, and converted its previously paper-based social assistance procedures into an electronic system. Citizens are currently registered for social assistance via ISAS, where their information is corroborated with several government databases and data that are collected through a household visit. The data collected is used to create a poverty profile that is then used to determine eligibility. Since 2010, ISAS has processed 25 million citizens' applications for social assistance and completed 311 million assistance transactions totaling US\$13 billion (equivalent to approximately 34.31 billion TL).

*Table 3: Institutions and Data Integrated into ISAS*

<b>Ministry of Family &amp; Social Policies</b>	<b>Ministry of Finance</b>
<b>Social Assistance Directorate General</b>	<b>Revenues Administration</b>
Conditional Education and Health Assistance	Tax-Payer Status
Income Generating Project Information	Vehicle Ownership
Social Assistance Information (YBB)	<b>Land Registry and Cadastre Directorate General</b>
Means Test Result	Immovable Property Ownership
Home Care Salary	<b>Ministry of Agriculture and Rural Affairs</b>
<b>Child Services Directorate General</b>	Farmer Registration System Queries
In-Kind/Cash Assistance	<b>Ministry of Health</b>
<b>Foundations Directorate General</b>	Family Medicine Information System Health Control Information
Neediness Salary	<b>Ministry of National Education</b>
Dry Food Assistance	School Attendance Information
<b>Ministry of Interior</b>	Grade Transition Information
<b>Population and Citizenship Affairs DG</b>	<b>Higher Education Loans and Dormitories Institution DG</b>
Certified Household Register Copy	Scholarship and Loan Information
Household Register Copy	<b>Ministry of National Defense</b>
Personal Register Copy	Military Service Status
Incidence Information	Military Service Status of Disabled Citizens
Address Information	<b>Turkish Labor Institution (İŞKUR)</b>
<b>Provinces Administration DG</b>	İŞKUR Register
Terror Loss Compensation	Unemployment Insurance Allowance
<b>Department of Data Processing</b>	Short-Term Employment Allowance
Temporary Rural Guard Salary Information	Job Loss Compensation
<b>Ministry of Labor and Social Security</b>	Employment Activity Result
<b>Social Security Institution</b>	<b>Ministry of Justice (work in progress)</b>
Social Security Information	National Judiciary Informatics System Alimony Information
Health Preauthorization and Entitlement Information	

## *Historical Context*

Historically, applications for social assistance programs were entirely paper based. Each social assistance program had its own process, and citizens had to obtain documents in hard copy from various organizations to verify their information. In 2005, a decree of the Prime Minister was issued to shift the burden of collecting documents for social assistance registration and other public services from citizens to public servants. One-stop shops were created in sub-governorship offices, where a public servant would prepare and collect the 17 different documents needed for a citizen's social assistance application, such as land, vehicle, and tax registration. The one-stop shop was Turkey's first step in facilitating citizen access to public services, and it also contributed toward streamlining the social assistance process. But although it eased the application process for citizens, it took public servants up to 15 days to collect the appropriate paper documents from various government organizations to complete the application.

### **SAIS**

In 2009, the SADG developed the Social Assistance Information System (SAIS), a software program that enabled the collection of supporting documentation for the social assistance application to be completed automatically online. Building on this effort, in 2010, ISAS was developed around SAIS, integrating data from several institutions and providing additional services to disburse funds, record and track information, and report on programs.

### **VOIP**

Prior to ISAS, it was necessary to guarantee secured data traffic between the SASF offices and the SADG. To this end, the SASF and the SADG were connected on a virtual network. To facilitate this process, all SASF buildings were linked to each other using Virtual Private Network (VPN) technology. At the project's completion in July 2009, all SADG and SASF computers (which numbered approximately 5,000) effectively started operating on the same network. As a result, it became possible to use Voiceover Internet Protocol (VOIP) technologies between the SADG and SASF buildings. Furthermore, through the 1,200 IP sets procured in July 2009, it became possible to make free phone calls between these locations, which has offered significant advantages in terms of both cost and data security. It has also provided an important element of the ISAS infrastructure that can be utilized only through computers connected to the network. It is not possible to access the system through a computer not defined on this network, and the computers connected to the network are managed through centrally defined network security policies. This has allowed for central control of the security of a network that contains the personal data of more than 30 million citizens. It is also possible to centrally intervene if a problem occurs on these computers through remote access, as necessary. Today, this network covers all ministry buildings, two system rooms, and 1,000 foundation buildings.

## **III. SYSTEM DEVELOPMENT**

### **Aspects of Operation and Implementation**

ISAS was developed by the Turkish Government through cooperation between multiple government agencies. Turkey's Deputy Prime Minister signed a goodwill protocol for the

implementation of the project in cooperation with TÜBİTAK on January 16, 2009. ISAS is currently being implemented within the framework of a contract signed between the SADG and TÜBİTAK in May 2010.

An interdisciplinary team of project managers, social policy experts, software engineers, and information technology professionals was put together to design and implement the project. The team began the process by researching similar integrated systems. Core staff attended training sessions on e-government systems, management information systems (MIS), and project management.

## Modular Approach

For ISAS, the system's architecture was built iteratively and incrementally by assembling modules together. Modules have been developed on a rolling basis, starting in 2009 and finished in 2015 (see Table 4). The first module developed was the online application and data management for the Conditional Cash Transfer program. All testing was live and occurred as the module was being developed.

*Table 4: Timeline of Module Development in ISAS*

Program Modules	ISAS Integration
Conditional Cash Transfer Module	2010
Social Assistance Module (Temporary Assistance Module)	2011
Accounting and Resource Management Module	2011
Human Resources Module	2012
General Health Insurance Module	2012
Cash Assistance for Widowed Women	2012
Disabled and Elderly Salaries Module	2012
Home Care Module	2013
Cash Assistance for Needy Military Families	2013
Project Assistance Module (Income Generating and Social Service Projects)	2013
Fund Committee and Social Assistance General Directorate Module	2013
Employment Aid Module	2014
Inventory Stock Management and In-Kind Aid Module	2014
External User and Communication Module (e-government portal)	2015
Central Risk Assessment and Inspection Module	2015
Decision Support System Module	2015
Case Management Module	2015

This modular approach allows developers to detect smaller failures without having them overwhelm the whole system. It also adds flexibility and makes it easier to incrementally increase the complexity of the system by building on top of existing modules. The development of each module follows a cycle that can be summarized in four phases: 1) design, (2) development, (3) pilot application, and (4) implementation. The development phase was the most intense and lasted six months (see **Error! Reference source not found.1**).

## *System Costs*

The total estimated cost of ISAS development was US\$13.1 million. Turkey was able to reduce development costs by contracting TÜBİTAK, a public agency, to develop the system and provide ongoing maintenance.

The hardware cost for ISAS was US\$5.3 million (13.8 million TL) and included computers, servers, security systems and system rooms<sup>1</sup>. The analysis, technical design, and software cost amounted to US\$7.8 million (20 million TL). The contract that MoFSP set up with TÜBİTAK included ongoing maintenance through November 2015. In addition, MoFSP's IT department provides daily maintenance.

The cost efficiencies that are gained by ISAS outweigh the cost of developing and operating the system. ISAS has the capability to address inefficiencies in the delivery of social assistance, such as duplications in benefits. After implementing ISAS, it was found that up to 10 percent of assistance benefits were duplicated. Making processes electronic also saved costs by reducing paper and staff time. In addition to this, processing time has also been significantly reduced.

## *Management Structure*

An important aspect of a successful management information system is a clear management structure that delineates responsibilities and protocols across multiple ministries.<sup>2</sup> ISAS achieves this by centralizing management at the national level under the SADG within MoFSP and implementing the programs locally through the SASFs.

**The Social Assistance Directorate General** administers the database, oversees management of the system, and provides hardware maintenance. It has three dedicated staff for database management and six for system management. Both teams are led by engineers who report directly to the IT department head. Centralizing functions related to data collection and household scoring ensures consistency in social assistance delivery. Furthermore, as a high-level government office, the SADG is more easily and effectively able to coordinate across ministries to achieve data-sharing agreements.

**Turkish Scientific and Technological Research Institution (TÜBİTAK)** provides system maintenance related to the software, including the development of new modules. Its team also provides research and development for future products. The TÜBİTAK team has 28 software engineers and 12 expert staff.

**The Social Assistance and Solidarity Foundations** conduct household visits to verify application information and assess living conditions. The SASFs employ 3,845 social assistance inspection officers to perform these household visits, which are completed at least once annually. Having this strong presence at the local level allows better oversight and technical

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<sup>1</sup> System rooms have very specific and important requirements based on the standards such as systems for prevention of fire and climate control and etc.

<sup>2</sup> Cesar Baldeon and Maria D. Arribas-Baños, "Management Information Systems in Social Safety Net Programs: A Look at Accountability and Control Mechanisms," SP Discussion Paper 0819 (Washington, DC: World Bank, 2008).



uniformity, creates buy-in from local administrations, and contributes local knowledge to poverty grading.<sup>3</sup>

### *Institutions and Data Integrated into ISAS*

Because ISAS integrates data across various government institutions, interdisciplinary cooperation was crucial to the project's success. At the early stages of the system development, senior management of the SADG held a series of meetings with other government institutions to establish data-sharing agreements.

The SADG has now developed formal agreements with the Ministry of Interior, Ministry of Finance, Ministry of Health, Ministry of Labor and Social Security, and Ministry of National Education. In 2014, the legal basis for integrating data from municipalities and the Red Crescent was concluded through the development of a further regulation on sharing social assistance data, but this has yet to be operationalized.

Agreements with other ministries and agencies detail what data are available in which form. Some of the ISAS information is available to certain institutions via web services and other information can be accessed through the e-government portal. Various other institutional partners can access ISAS only to upload specific information.

### *Staff Capacity and End User Support*

Because integrated information systems like ISAS are complex and continually evolving, it is important to recruit and retain skilled staff members. Staff turnover can be particularly disruptive to a project as complex as ISAS, especially when the staff is critical for software development. To ensure that work can continue uninterrupted despite turnover, all responsibilities are clearly delineated and well documented. In the case of Turkey, TÜBİTAK, a government agency, houses the software development team and is tasked with ensuring its continuity.

The social assistance inspection officers play an important role in social assistance delivery because their assessment impacts a household's eligibility for benefits and services. For this reason, inspection officers are paid a competitive wage and, whenever possible, are expected to have a university degree. Over 80 percent of all inspection officers have at least a four-year university degree.

Special attention must be paid to capacity building to ensure that the team is able to integrate and adapt to new technology. At both the central and local levels, capacity-building days are regularly held for staff, on which various trainings online and in person are conducted. Training videos are also made available on demand via the ISAS website. Once a new module is put online, the ISAS team launches a new training for system users. In addition to training, a help desk with 20 staff members provides technical support.

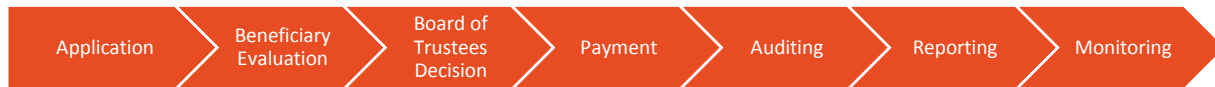
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<sup>3</sup> Victoria Barca and Richard Chirchir, "Single Registries and Integrated MISs: De-mystifying Data and Information Management Concepts" (Canberra: Government of Australia, Department of Foreign Affairs and Trade, 2014).

## IV. System Architecture

### Social Assistance Delivery Process

Turkey has established a standardized process for the delivery of social assistance that builds on the existing operation of social assistance programs at the local and national levels. The full process has seven steps, all of which are integrated into ISAS.



#### *Application*

For all social assistance programs, applicants complete a standard application at their local SASF office. The information is collected in a standardized format, allowing it to be easily integrated with different databases and verified. The application includes questions pertaining to the registrant's household, including employment information, household composition, asset ownership, and social conditions.

As part of the application process, citizens are required to submit a signed consent form to allow institutions to review their social and economic information. This step is not yet digitized and has to be completed in person at a local SASF office. The infrastructure is in place to accept an electronic signature, which would ultimately allow citizens to apply online for social assistance benefits. However, applicants have varying levels of education and comfort with technology, and there is concern that citizens will not fully understand the contents of the consent form or the validity of signature if it is digitized. For now, the signature remains on paper.

#### *Beneficiary Evaluation*

When a citizen's application is completed at a local SASF office, a socioeconomic profile is generated in ISAS by linking datasets from various institutions through the citizen's unique national ID number. The profile contains information about the household's financial status, including the applicant's self-reported household income and working status, as well as property, agricultural land, livestock, and vehicle ownership.

At this stage, the profile is assessed for completeness or for inconsistencies with the self-declared data. If information is missing from the application or if there are inconsistencies in the data, the application will be frozen until the information is validated.

#### *Poverty Grading and Eligibility Determination*

For some programs, applicants must have no income to be eligible. Currently, officials use ISAS to check various sources for a reported income associated with the applicant's household. For example, if the applicant makes social security contributions or receives a pension, the income will be reported in ISAS.

Other social assistance programs, such as the General Health Insurance Program require the applicant's household to earn below one-third of the minimum wage per capita. An income

estimate is calculated by enumerating formal wage earnings, pensions, portions of real estate value, rents received, cattle and livestock value, and vehicle value.

Following submission of the application, the household is visited by an SASF social assistance inspection officer, who completes a standardized questionnaire that verifies information in the citizen's application, collects additional household data, and makes further observations as needed.

The social assistance inspection officer will assess the property, including the home, agricultural land, livestock, and vehicle. Based on this, the inspection officer ranks the household's income status from 1 to 5 (1 being very poor, 5 being well-off). This measure is based on an overall assessment of the applicant's status and is used in the decision-making process.

Information from the household visit is collected by the inspection officer and is uploaded to ISAS. Work is under way to transfer this function to tablets. This approach was piloted in 2012, when inspection officers used APN (Access Point Network) technology, a secure database access, to enter information into an online form within ISAS. The approach is under evaluation for cost efficiency and security issues.

Eligibility for social assistance is determined by a local Board of Trustees and is based on the income estimate as explained above and the inspection officer's assessment. The Board can view an applicant's profile directly through ISAS. An additional poverty score module is expected to be implemented by 2016 for all social assistance programs within MoFSP. The module uses a Proxy Means Test (PMT) that combines socioeconomic data, household characteristics, and geographical variables such as region of residence and whether the household is urban or rural. MoFSP conducted an extensive household survey that provided estimates for the development of regional thresholds or poverty "cut-offs." The thresholds have been further disaggregated for both urban and rural households. Once available, the poverty score will provide a more transparent and objective criteria to determine eligibility and reduce the level of subjectivity in assessment of eligibility.

In 2015, MoFSP has started implementing the decision support system. The system provides guidance to the local board of trustees by providing information on assistance provided to the applicant in the past, each household member's central database reports, list of social assistance programs that families in similar conditions are found eligible for, etc.

### *Payments*

Three methods are used for cash social assistance payments under ISAS.

First is the **social assistance card**. It was launched in cooperation with the Postal and Telegraph Services Corporation (PTT) for citizens receiving regular assistance benefits from the SADG. Currently, approximately 2 million social assistance beneficiaries use these cards. They are exempt from any membership fees/commission charges or any other expense. The cards are prepaid debit cards and allow beneficiaries to:

- withdraw social assistance payments from ATMs without having to wait in bank queues, and
- make payments for their purchases.

Second is the option of **payment at home**, introduced for beneficiaries who cannot withdraw their payments due to geographical constraints, weather conditions, illness, old age, disability, etc. This option is particularly used by the elderly and the disabled, allowing them to receive their assistance payments in cash in their homes in a timely manner and with no additional costs.

Third is payment by transfer to the bank accounts of beneficiaries who receive **occasional cash social assistance payments**. Beneficiaries can withdraw the social assistance payments credited to their accounts from their bank branches.

The payment methods detailed above help to reduce the expenses of beneficiaries' access to social assistance (such as transportation, bank commission charges, etc.), while ensuring reliability, regularity, and efficiency.

### *Auditing*

An important process within ISAS is regular auditing. ISAS has a module Central Risk Identification System that automatically flags problematic inputs that violate certain thresholds. ISAS staff can modify the thresholds to detect outliers.

As an example, a flag is raised if an SASF office spends more than 2 percent of its monthly budget on one-time emergency social assistance or if an SASF office spends a significantly higher amount on social assistance than in the previous month. Both examples could be an indication that households are improperly receiving social assistance, there is a data error, or funds are being misused.

The automatic alerts are shared with an independent auditing board within MoFSP. The board is directly tied to the ministry but operates independently of the SASF to prevent corruption. Inspection officers are dispatched to visit up to 100 local SASF offices per year to conduct in-person audits. The system produces 260 risk indicators and 88 service reports for the use of the inspection officers.

### *Reporting*

Reporting informs accounting and budgeting decisions. ISAS has the capability to produce reports of expenditures for individual foundations that provide social assistance. It also allows decision makers to improve processes and reduce redundancies.

ISAS has significant analytical capabilities. The system compiles data for 30 million people across the country and is integrated with geographic information system (GIS) mapping capabilities, enabling users to produce maps of social assistance provision and allowing analysis by province. The data can be used to improve the design of the existing programs as well as to inform the design of new policies and programs, for example, by conducting simulations, estimating the potential target population of the program, potential impact, and cost implications. Finally, within the framework of the Data Sharing Regulation, anonymized data may be shared for academic and researcher purposes.

## Monitoring

Turkey has made significant progress in the use of information to support decision making related to social policy through ISAS. The system allows to monitor and supervise various processes and identify bottlenecks.

## Information Security Policies

Beyond the core staff of MoFSP, ISAS is accessed by over eight thousand personnel, including social assistance inspection officers, office staff, accountants, directors, and assistants. Two major risks associated with an MIS of this type are corruption of data and protection of privacy. Access to the data must be highly controlled to prevent any tampering or leakage. Security is particularly important because the system contains both personal profiles and financial information for more than 30 million citizens. Turkey has taken several steps to secure access to the system and protect data.

ISAS employs a two-factor authentication process to ensure data security. Users are given a token that generates a one-time password that is required for entry into the system. Each user is given access to a different part of the system based on his/her specific roles and responsibilities. This system prevents unauthorized users from gaining access and allows MoFSP to monitor usage. All queries made in the system are recorded with a barcode, which indicates the type of information that was queried, by whom and on what date. Transactions in the system are logged and monitored.

Controls are placed on the ability to edit data, making it impossible to update or delete records without authorization. The database is further controlled through data scripts following each update that will prompt and alert if data are inconsistent or if an error is detected. Authorized software developers are alerted of the error immediately.

Institution staff who are responsible for providing database updates to ISAS are given access to the system via the VPN. Permission for this access is tied to the staff member's computer and is limited. This is the highest level of access to the system, as data can be uploaded and directly edited.

The system's hardware is also protected with security measures, and system rooms are monitored by cameras and sensors. Only authorized staff are allowed to enter the system rooms and can do so only by using an electronic card and fingerprint verification. Data flow within the system is encrypted according to international standards.<sup>4</sup>

## Data Updates

Updating information is an important component of data oversight. A static or outdated picture of a household's socioeconomic status can lead to faulty eligibility decisions. Eligibility status can change if, for example, a citizen obtains a new job, gets married, or dies. Before converting

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<sup>4</sup> The system follows ISO 27001 for information security and CMMI Level 4 for software maturity and quality. Formal certifications are pending as the system continues to evolve.

to an electronically based system, updates were infrequent, and considerable time was needed to change the benefit status of an individual or household to reflect any new situation.

System prompts are built into the initial application process, requiring information to be current or up to date before registration can be completed. A program is built into ISAS that automatically updates all information in an applicant's profile before eligibility for social assistance can be determined. In addition, ISAS' administrative records are automatically updated at least every 45 days. If an update results in an applicant's ineligibility, the social assistance payment is automatically stopped. As an additional measure, the inspection officer's household visit provides an opportunity to record any further changes to the information.

## V. Technological Aspects

Hardware for systems of this kind must have adequate memory, disc space, and processing capacity. Two system rooms have been established in different physical locations and are operating in active-active mode to ensure that there is no interruption and all the data are properly backed up. The system's application layer includes Windows 2008 servers. All hardware elements, except for the database itself, are virtualized using a VMWARE platform.

A Rich Internet Application (RIA) was chosen for the presentation layer of ISAS software. The technology used is Adobe Flex (Apache Flex). Through the Flash Runtime Environment installed as a browser plug-in, the client software of the integrated application can run on browsers.

Java EE components are used in the application layer. Since multiple shared resources (RDBMS, JMS) need to be accessed, transactions are executed via JTA. In the application layer, JPA is used to store entities on RDBMS. Hibernate has been chosen as the JPA Implementation. Business logic has been developed using EJB. Oracle WebLogic has been chosen as the Java EE container. Oracle Exadata, a DB Appliance of Oracle, is used in the database layer.

The integrated project also involves scheduled task software. This software has been developed on the Spring Batch framework.

## VI. Challenges

The ISAS team faced several challenges during implementation. One was the need to work with databases across different institutions. Data were in different formats, sometimes on paper, and some institutions did not have the technical know-how to transition to an electronic database. The ISAS development staff worked closely with each institution to prepare data for online sharing. In some cases, they supported the development of software for the institution to help maintain its electronic database using a web service; in other cases, they provided hardware support, building a server to store the data.

Another challenge was the major institutional reorganization in 2011 that created MoFSP and introduced new social policy programs. ISAS was already launched at this point but needed extensive revisions to include the new policy instruments and to reassign existing instruments to the ministry. Fortunately, the technical specifications of ISAS were already established, and the

architecture of the system was essentially complete when this transition occurred, making it easier to adapt.

Finally, it proved difficult to update the rules and introduce legislative changes at the same speed as the IT system was being developed itself, whose potential for development moved much faster.

## VII. Benefits of ISAS

Integrating social protection information has many advantages. From the policy perspective, consolidating data related to social assistance facilitates better accuracy in targeting citizens in need. From an operational perspective, systems like ISAS reduce redundancies and create efficiencies, reduce fraud, and are more responsive to citizens.<sup>5</sup> Finally, such systems allow for an overall increase in knowledge and information on social policy issues.

Some of the achievements of ISAS to date include the following:

- ***Social assistance decisions can now be made by assessing the welfare of the whole household rather than the individual applicant.*** In ISAS, an applicant's ID number links that person to his or her household, where all socioeconomic data, social examination reports, and information about social assistance are available at the household level. Previously, this capability did not exist and eligibility was determined for each citizen without considering other household members.
- ***All social assistance services are consolidated on a single platform with a defined procedure for determining eligibility and disbursement.*** Data sharing and consolidation have enabled Turkey to identify bottlenecks in service delivery to improve programs and target households with the greatest need. Today, social assistance decisions are more efficient and the distribution of resources is fairer.
- ***ISAS has reduced the time and costs related to social assistance provision.*** Electronic record keeping through ISAS saves the Turkish Government from having to process a huge number of paper documents and reduces the average application process from days to minutes.
- ***Information sharing and communication across institutions involved in social assistance has improved.*** Integrating programs across different institutions allows a holistic approach to social assistance delivery. Citizens who are ineligible for one social assistance program may be eligible for others, and ISAS provides the capacity to refer and recommend additional services to citizens. For example, when an unemployed citizen applies for health insurance benefits, ISAS will detect the citizen's employment status and refer him/her to the government organization that administers job training programs.
- ***The system has become more transparent and reduces the duplication of social assistance benefits.*** Prior to ISAS, the process of delivering social assistance was lengthy and fragmented, as management was distributed over a number of institutions with little coordination. This led to inconsistencies in the delivery of benefits, including the duplication of services. Indeed, up to 10 percent of all social assistance benefits were duplicated. ISAS

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<sup>5</sup> Barca and Chirchir, "Single Registries and Integrated MISs."

can more easily identify when a citizen is no longer eligible for social assistance. For example, with the Conditional Cash Transfer program for education, benefits are conditional on school attendance. ISAS is integrated into the school's attendance records system and if a student stops attending school, it will automatically stop the delivery of benefits.

Overall, ISAS provides Turkey with a more transparent and accurate mechanism for targeting and disbursing social assistance benefits. It assembles the information needed to make a more comprehensive decision on social assistance eligibility. ISAS also facilitates the tracking and monitoring of social assistance disbursements by geography and socioeconomic characteristics, which can help Turkey plan new programs and improve existing ones.

## VIII. Next Steps

ISAS is built to evolve, and now that the infrastructure is in place, Turkey can add and adapt new services aimed at improving service delivery to beneficiaries. Turkey is currently working toward the development of several new modules in ISAS.

*Case Management System:* This system aims to detect the characteristics of households and refer them to the appropriate programs. For example, the referral service will direct unemployed citizens to appropriate employment opportunities and training programs based on their abilities, or it might detect and flag problematic cases, such as school dropouts, chronic illness, violence, drug use, or alcoholism, and have the ability to automatically refer those persons to other agencies for action. Currently, the system has been developed and tested and has already identified 14,810 cases that could benefit from such referrals. The module will become active once protocols with other institutions are finalized and is expected to be launched in 2016.

*Poverty Scoring System:* As described above, the SADG has developed formulae using information from the applicant's profile, an extensive 2012 field study, and data from household visits that will automatically calculate a poverty score for applicants in ISAS. This module is already developed and is expected to be launched shortly.

*Business Intelligence for Targeting Other Programs:* This tool will use data from ISAS to inform the development and placement of new social policies and programs. Since the system has GIS information on beneficiaries and household characteristics, it enables policy makers to target neighborhoods and communities where the highest numbers of beneficiaries of a new program might reside.

*E-Government Portal for Online Applications:* Currently, citizens visit their local SASF office, where a social assistance officer completes their application and can access an e-government portal online to view their enrollment status in social assistance programs. A new module is under development that will allow individuals to apply to social assistance programs online through a web-based system linked to the e-government portal. This system is already developed and should be online in 2016.

*Data Sharing with Municipalities and Nongovernmental Organizations (NGOs):* Although the SASFs currently operate independently of municipal governments, Turkey is finalizing a data-sharing agreement in which the SASFs and municipal administrations will share information. This



agreement will allow municipal governments to see, on a reciprocity basis, the social assistance that is administered by the local SASF, which will help inform their own programs.

*SMS Service:* Currently, a system is in place to use a short message service (SMS) to provide beneficiaries with information on the status of their application and payment information. Starting in May 2015, the SADG began to send an SMS to the target group for the newly implemented social assistance programs. The SADG is also planning to augment this system to inform beneficiaries of other key program issues; for example, it will send an SMS to disabled persons to alert them that the period of validity for their disability status report is about to end. It is also a useful auditing tool because a beneficiary can call the program hotline, if s/he received the SMS but did not receive the funds.

With these additional modules and with the objective of continuing to deliver incremental improvements, ISAS has a real potential to make a significant contribution not only to the more effective and efficient delivery of social assistance, but also to a broader set of government services within Turkey.

## IX. Lessons Learned

There were many important lessons learned along the way of development and implementation of ISAS that can be shared. These include:

- Having a unique ID number assigned to each resident is the foundation for systems like ISAS. Turkey's national identification system predates ISAS and is already linked to several government institution databases, which allowed developers to use it as the registry key.
- To the extent possible, systems need to be built so that they complement existing business processes. As ISAS modules were developed, processing times and bureaucratic procedures were reviewed and necessary improvements were incorporated to improve overall system efficiency. Part of ISAS' success is that it builds on the structure of the existing social assistance system. The process for delivering social assistance was already administered via local SASF offices. This helped stakeholders better understand their new roles when ISAS was introduced.
- The important pillars of ISAS are complete and up-to-date databases, such as the population, social security, and land registries, school attendance, justice system records, and financial (tax) records. The records from these databases are tied into ISAS using the resident's unique ID number and create the basis for the information needed to determine social assistance eligibility.
- High-level decision making and political will were integral to developing a system like ISAS. The development of ISAS was initiated by the Deputy Prime Minister, which helped provide the impetus for concluding key data-sharing agreements and partnerships across multiple institutions. This also helped to rapidly create the necessary legal amendments and ensure that the institutional framework was in place as the technology for ISAS was developed.
- It is important to communicate the value of data sharing. Government institutions are sometimes reluctant to share data or put the effort into digitizing databases. For Turkey,

data sharing helped save time for many ministries because they no longer had to process requests for documents for social assistance applications. Helping institutions understand this led to a smoother implementation process.

- Since citizens' personal information is shared across government institutions, it is important that the system is developed in a manner that can ensure the security of this information. ISAS takes many measures to ensure information security, including by employing a two-factor authentication process and by restricting access to a core set of staff.
- Continuity in staff, particularly within the core technical team, is important to developing a successful software system. Writing code and developing software for a system like ISAS are complex, and staff turnover can have a significant impact on the system's development timeline. In Turkey, TÜBİTAK's team has remained the same since the start of the project.