

2024 KNOWLEDGE EXCHANGE DAYS

Utilizing Digital Technology to Address Welfare Blind Spots

October 31, 2024

Presenter | Woo-Sik Lee, Research Fellow

Table of Contents

October 31, 2024 | Woo-Sik Lee

01

Background and
Development of the Welfare
Blind Spot Identification
System

02

Introduction to the Welfare
Blind Spot Identification
System

03

Advancement of Digital
Technology in the
Identification System

04

Addressing Welfare Blind
Spots Using Advanced Digital
Technology

01

Background and Development of the Welfare Blind Spot Identification System

February 2014

The Songpa Three Sisters Incident Occurred

“마지막 집세입니다”, 모녀 3명 동반 자살

손정호 son50@polineews.co.kr | 등록 2014.02.28 11:16:37



“마지막 집세입니다”는 내용의 편지를 남겨놓고 모녀 3명이 동반 자살하는 사건이 발생했다.

28일 뉴스Y 등 복수 매체의 보도에 따르면, 26일 밤 서울 송파구의 단독주택 지하방에서 세 들어 살던 모녀 3명이 숨진 채 발견됐다. 이들은 집주인의 신고로 경찰이 출동하면서 발견됐다. 집주인은 1주

▲ 사진=뉴스Y 보도화면 캡처

일 동안 인기척이 없어 경찰에 신고했다.

경찰에 따르면, 경찰이 도착했을 때 이 방 창문에는 청테이프가 붙여져 있었다. 방바닥에는 번개탄을 피운 흔적이 발견됐다. 식당에서 일하던 60살 어머니 A씨, 당뇨병 투병을 포기한 35살 큰 딸 B씨, 신용불량자인 32살 작은 딸 C씨, 이들이 기르던 고양이가 한 마리가 모두 죽은 채 발견됐다.

How Can We Proactively Identify Households in Crisis?



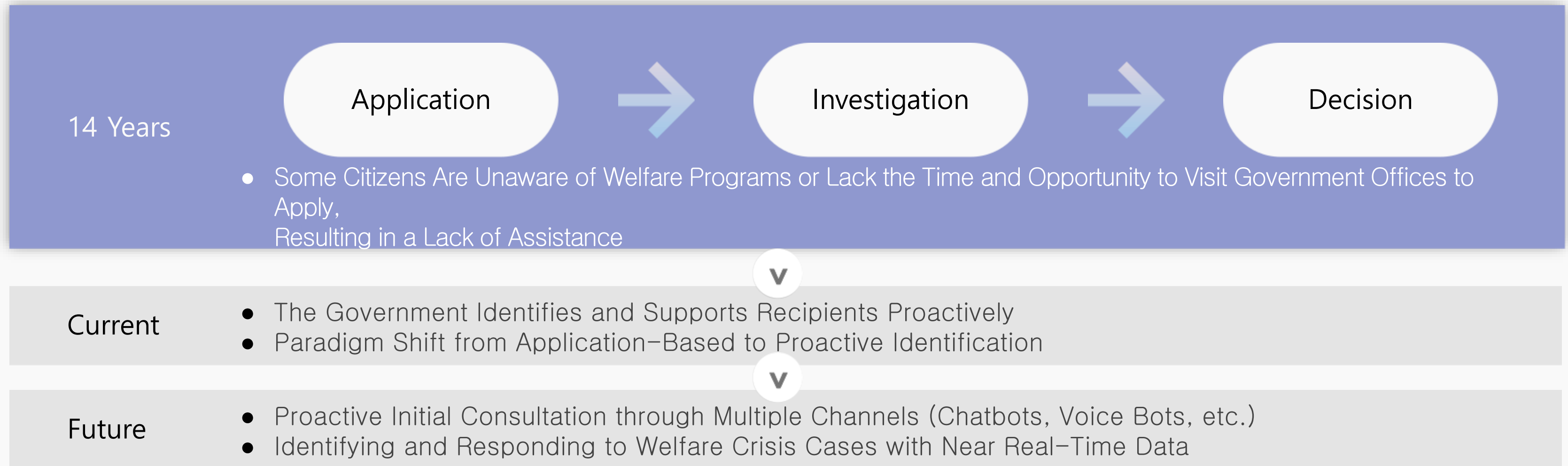
Improvement of the Identification System and Related Policies

10th Anniversary of the Songpa Three Sisters Incident: The Tragedy Continues to Repeat..

'송파 세모녀 사건' 10주기...정부 "위기가구 발굴 12배 ↑"

CBS노컷뉴스 이은지 기자 | 2024-02-26 10:46

빅데이터 기반 발굴시스템 구축으로 2015년 11만 5천→지난해 139만
전체 위기가구 대비 실제 서비스 수급대상 비율도 16%→49%로 증가



Is This Possible?

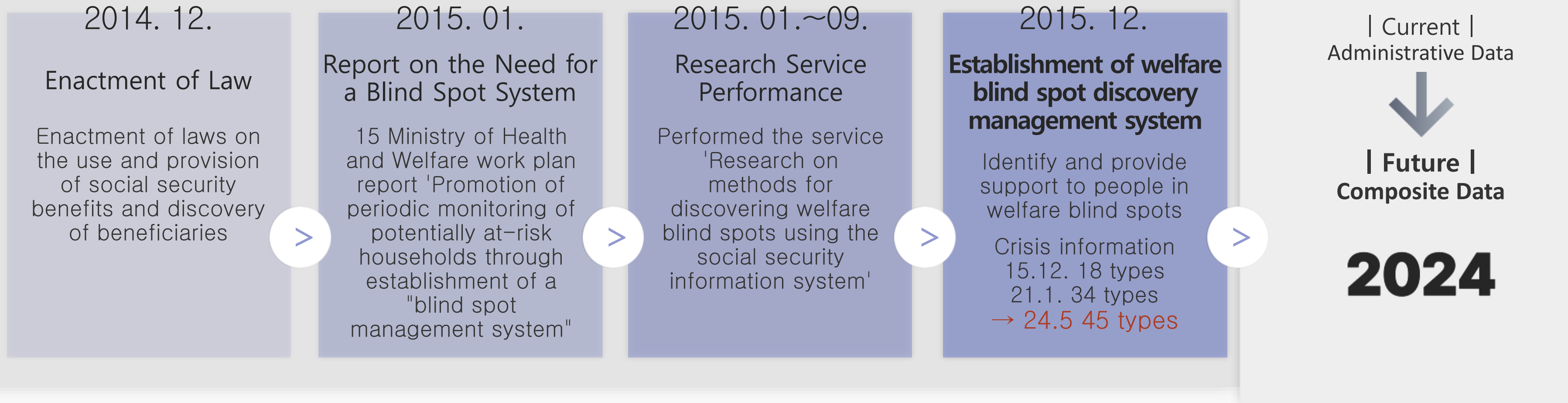
“Identifying Blind Spots Through Data Utilization”

AI-Based Initial Consultation Information System for Proactive Outreach Using Voice
Field-Oriented Welfare Crisis Alert Service with Citizen Participation for Identification

Evolution of Digital Technology Following the Incident

Time	Incident	Risk Factor	Category	System	Model Name	Target	Model Type
'14.2	Songpa Three Sisters	Three Sisters, Serious Chronic Disease, Mother's Absence	Living Conditions	Statistical Model	Logistic, Elastic, GBM	Entire Population	Single Model
'18.2	Jeungpyeong Mother	Husband's Death, Poverty, Unpaid Bills, Mother	Single Parent	Household Classification	XGBoost	Individual/Person	Single Model
'19.6	North Korean Defector Mother	North Korean Defector Resident, Poverty, Unpaid Bills, Mother	Long-term Absence	Hierarchical Consideration	Basic Demographic Model	Individual/Person	Single Model
'20.12	Bangbae-dong Mother	Death, Disability, Field Manual, Basic Livelihood Security Recipient	Basic Livelihood Security	Targeted Selection	Time-Series Model	Individual/Person	Combined Model
'21.5	Disabled Person	Disability, Unpaid Bills, Notification Information	Basic Livelihood Security	Targeted Selection	National Basic Model	Individual/Person	Combined Model
'22~	Most welfare blind spot cases since then have occurred among basic livelihood security recipients. (e.g., July 2021 in Gangseo-gu, August 2021 in Inchoen, etc.)		Basic Livelihood Security	Targeted Selection	Special Age Group Model (Elderly, Disabled)	Individual/Age Group	Combined Model

"Systematic discovery of people in welfare blind spots and provides efficient and convenient target management function."



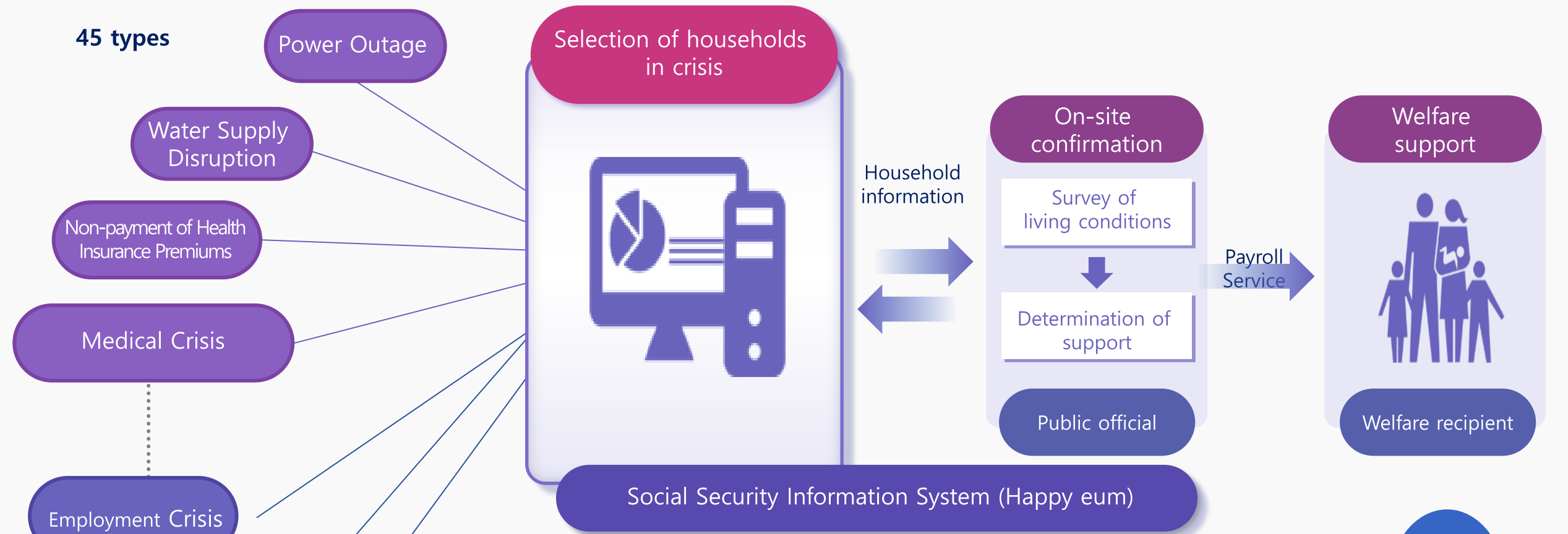
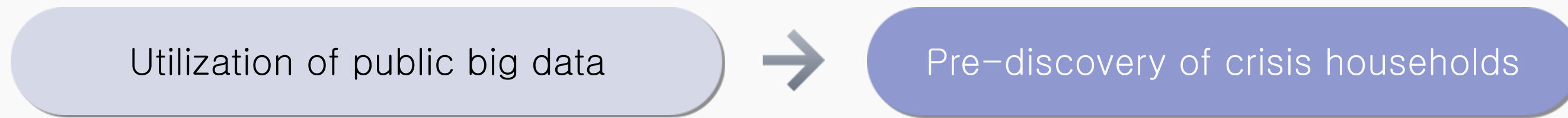
- 1 **Identifying and Understanding Recipients' Needs through Voice-Based Counseling (AI Welfare Bot, Voice Data)**
- 2 Rapid Identification of Households in Welfare Crisis through Individuals or Residents (Welfare Crisis Alert App, Real-Time Data)
- 3 Identifying Households in Crisis Reflecting Regional and Age Characteristics (Regional and Age-Specific Models)

Basis: Law - Article 12 (1) and (2)	
Information content	Holding institution
Power Outrage	Korea Electric Power Corporation
Water Supply Disruption	Single Water Supply Business Division
Gas Supply Disruption	Single Gas City Gas Company
Elementary, Middle and High School Education Expenses Support Project Target (At-risk Student)	Ministry of Education
Non-payment of Health Insurance Premiums	National Health Insurance Corporation
Health Insurance Premium Charge Details	
Elimination and Suspension of Basic Living Emergency Support	Ministry of Health and Welfare
Entering and Leaving Welfare Facilities	
Financial Delinquency	Credit Information Service
Telecommunication Fee Arrears	Korea Information and Communication Promotion Association

Basis: Enforcement Decree - Article 8, Paragraph 2, Appendix 2, Item 2	
Information content	Holding institution
National Pension Insurance Premium Arrears	National Health Insurance Corporation
Medical Crisis	
Crime Victims	Police Agency
Fire Damage	Fire Department
Disaster Damage	Ministry of the Interior and Safety
Housing Crisis	Ministry of Land, Infrastructure and Transport
Employment Crisis	Ministry of Employment and Labor. Et.al.
Visiting Health Program	Ministry of Health and Welfare
Diaper and Formula Support	
Newborn Hearing Loss Support	
Nutrition Plus Project (Not Supported)	
Non-payment of Electricity Bills	Korea Electric Power Corporation
Suicide Risk	Suicide Prevention Center
Reason for Admission: Self-harm or Suicide	Emergency Medical Center
Business Disruptions	National Tax Service for Temporary Closures
Household Head Deceased	Ministry of Public Administration and Security

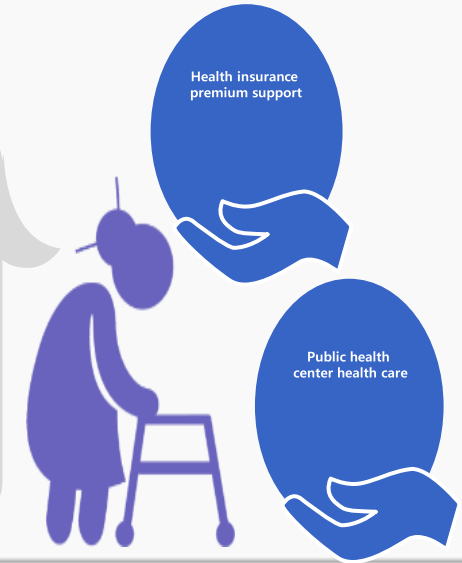
02

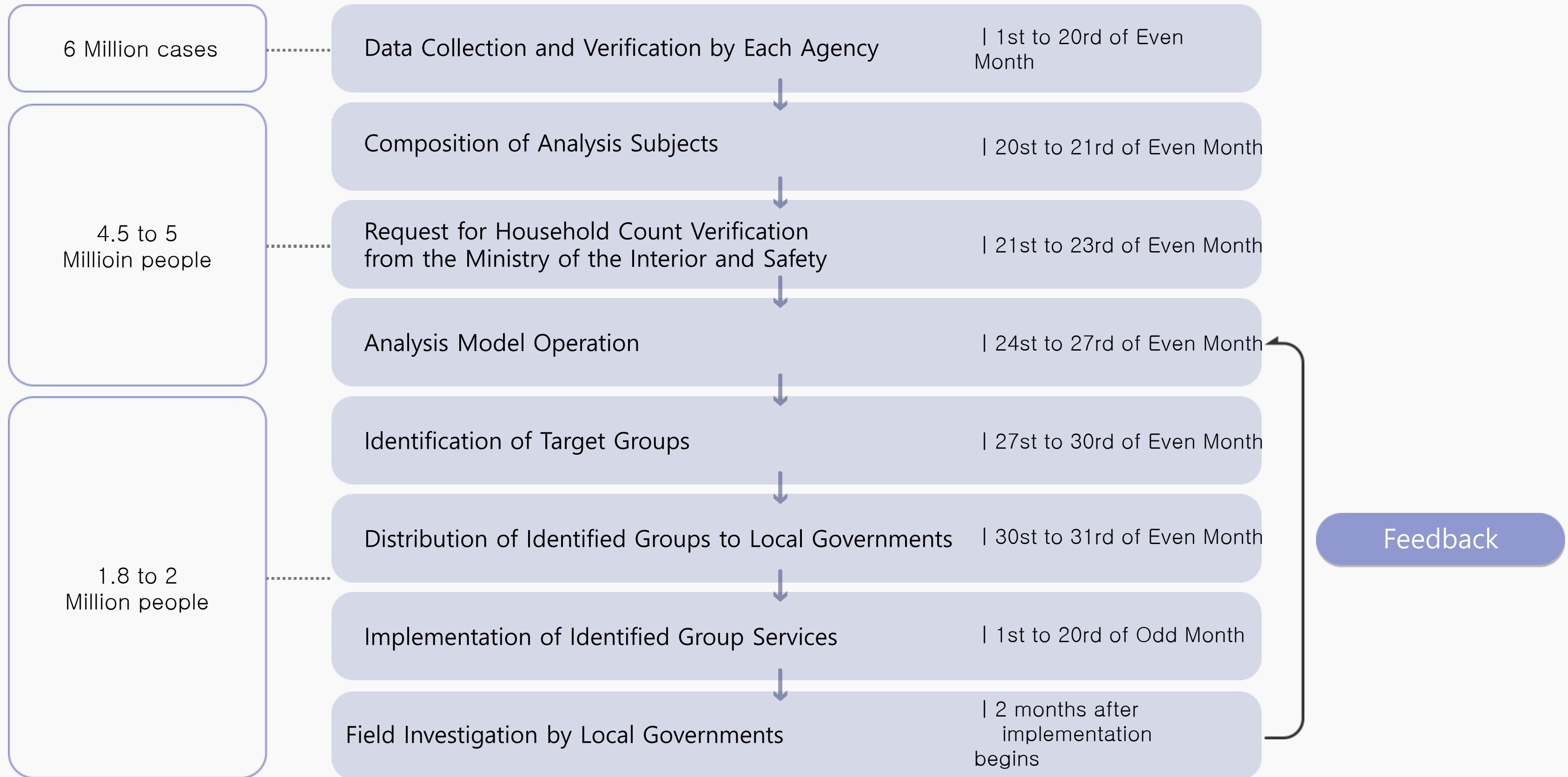
Introduction to the Welfare Blind Spot Identification System



"Because I'm not feeling well, I can't go to the local office without assistance. I'm sorry for the inconvenience, and I haven't been there for a few years, but thank you for coming.."

Household living alone with non-payment of health insurance premiums (○○ Park, Gangseo-gu, Seoul, 80s)



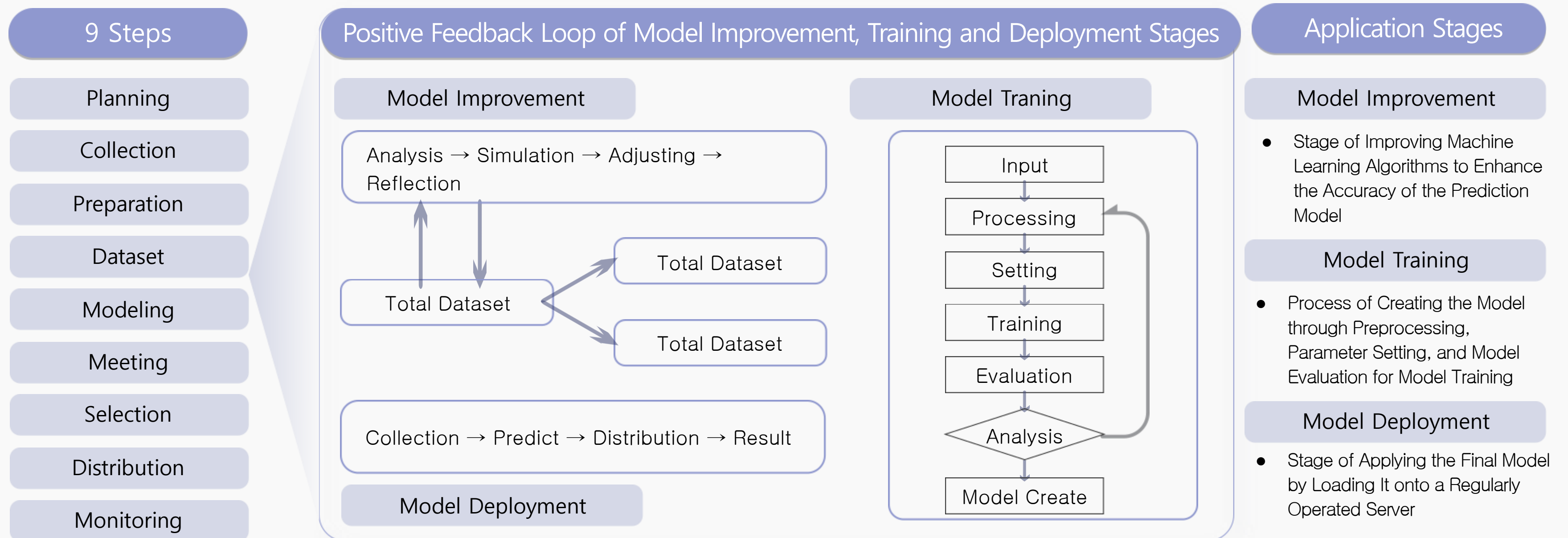


Improvement Process of the Welfare Blind Spot Prediction Model

| Model Improvement - The model is enhanced by applying new feedback data.

| Model Training - The prediction model is trained to create the optimal model.

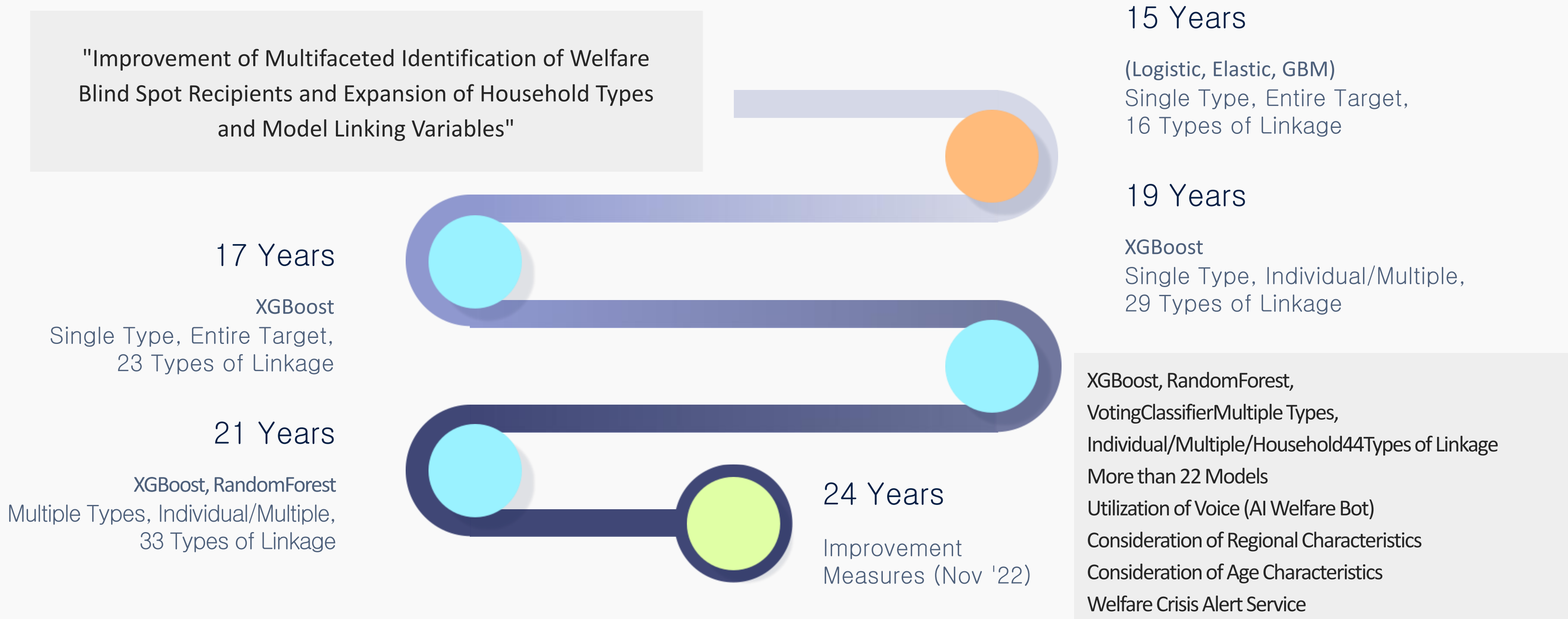
| Model Deployment - The prediction model is applied in real-world operations during the deployment phase.



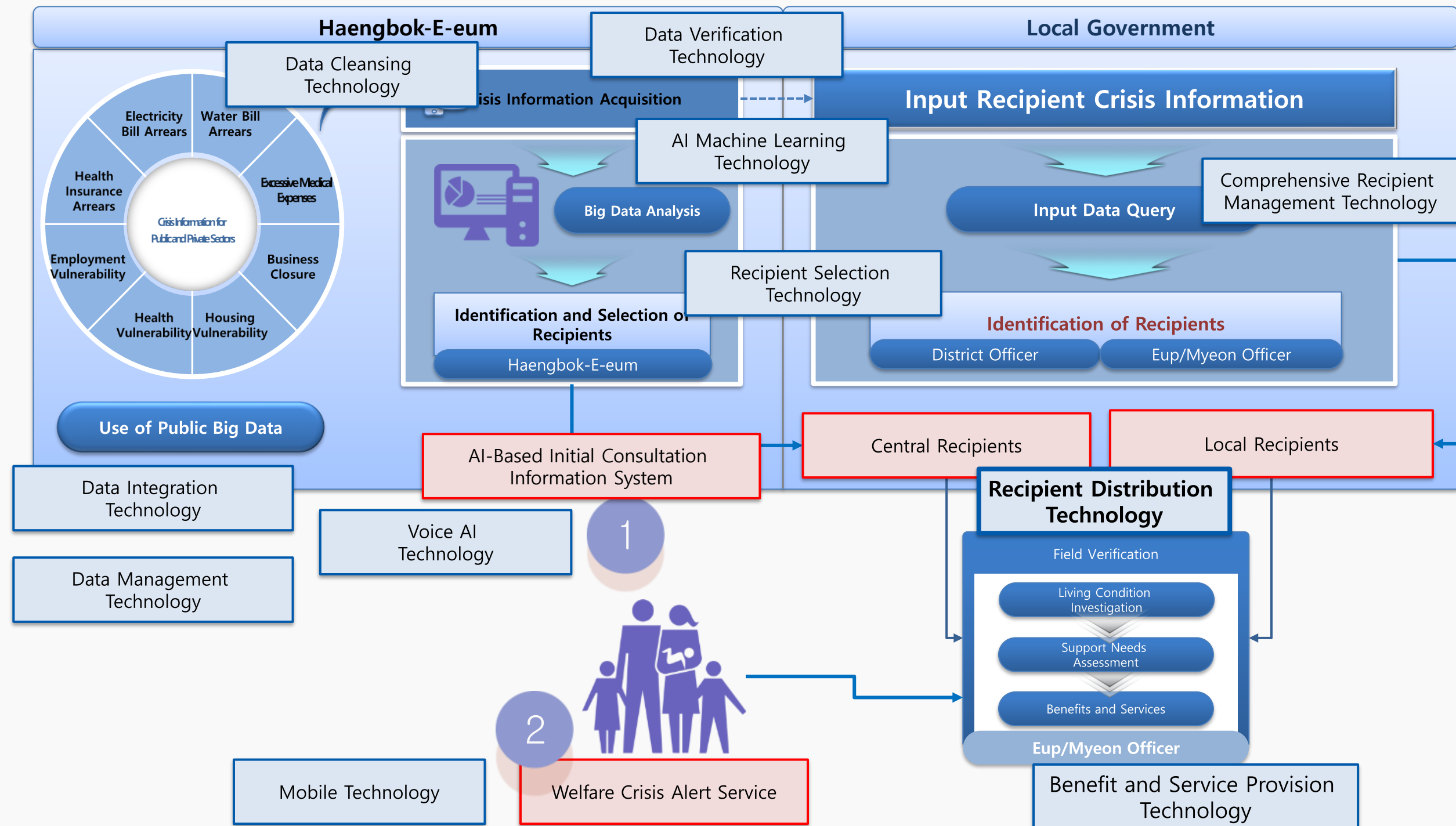
03

Advancement of Digital Technology in the Identification System

Evolution of Digital Technology Utilization in Addressing Welfare Blind Spots



Welfare Blind Spot Identification and Management System Utilizing Various Digital Technologies



04

Addressing Welfare Blind Spots Using Advanced Digital Technology

AI-Based Initial Consultation Information System

Project Name	Project for Establishing an AI-Based Initial Consultation Information System	
Project Overview	Background of the Project	<ul style="list-style-type: none">● Despite efforts to identify welfare blind spots based on big data, local government welfare officials face challenges in providing welfare counseling due to excessive workloads.● By utilizing AI-driven phone consultations, the needs of recipients can be automatically assessed before local officials conduct initial consultations, thereby alleviating the workload of local government employees.
	Overview of the Establishment Project	<ul style="list-style-type: none">● Project Duration: December '23 to May '24● Implementation Structure: Ministry of Health and Welfare (Ordering Agency), Social Security Information Center (Leading Agency)● Main Activities: Developing conversation scenarios, establishing an AI-based initial consultation system, building consultation support functions, and setting up an information system operating framework, etc.

System Flow of AI-Based Initial Consultation Information System

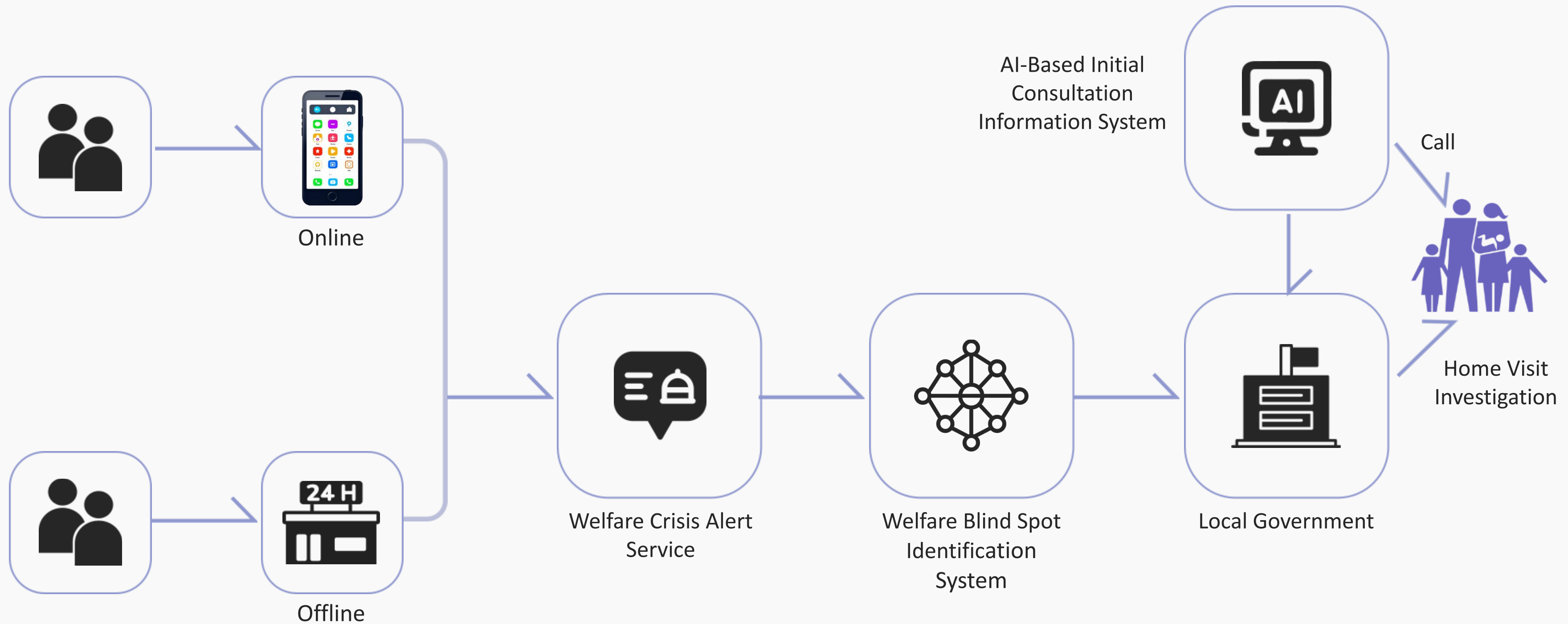
- Establishment of Scenario-Based AI Phone Consultation System (Jul '23 ~ May '24):
Initial Consultation Scenarios, Speech Recognition, Speech Synthesis, Automated Phone System, Consultation Management, etc.



Citizen-Participatory Welfare Crisis Alert Service

<p>Project Name</p>	<p>Citizen-Participatory Welfare Crisis Alert Service</p>	
<p>Project Overview</p>	<p>Background of the Project</p>	<ul style="list-style-type: none"> • Despite efforts to identify welfare blind spots based on big data, cases of crisis arise that cannot be detected due to delays in administrative data • Strengthening the identification of households in crisis through the establishment of accessible online (app, portal) and offline (convenience stores, postal workers) channels to easily report welfare crisis situations.
	<p>Overview of the Establishment Project</p>	<ul style="list-style-type: none"> • Project Duration: October '23 to April '24 • Implementation Structure: NIA (Ordering Agency), Ministry of Health and Welfare, Social Security Information Center (Leading Agencies) • Main Activities: Development of a crisis alert app, portal reporting functionality, establishment of a welfare crisis alert service system using public cloud, and integration with Happiness Link.

Flowchart of Citizen-Participatory Welfare Crisis Alert Service



THANK YOU

Q&A

2024 KNOWLEDGE EXCHANGE DAYS

Utilizing Digital Technology
to Address Welfare Blind Spots