

# FOOD AND NUTRITION INFORMATION SYSTEMS WITH ARTIFICIAL INTELLIGENCE SUPPORT

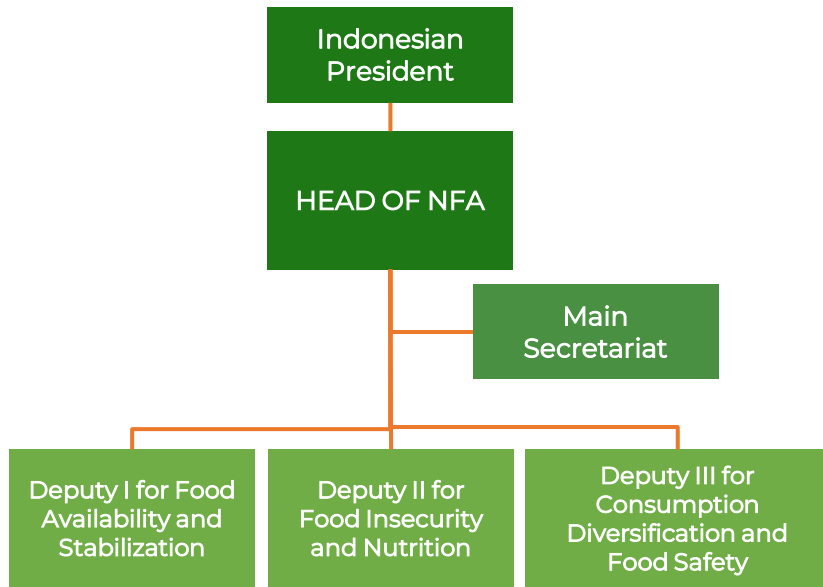
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National Food Agency

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## NFA ORGANIZATION STRUCTURE



## FOOD TYPE

for Availability and Price Stabilization

- |  |  |  |
|--|--|--|
| 1  Rice   | 2  Corn   |  |
| 3  Soya Bean  | 4  Sugar  |  |
| 5  Onions   | 6  Poultry eggs   |  |
| 7  Ruminant Meat  | 8  Poultry Meat   |  |
| 9  Chilli  | <div style="border: 1px solid green; padding: 5px; display: inline-block;">           Types of food for quality control and fresh food safety in accordance with Law UU 18/2012 Article 108         </div> |  |
|  Fresh Fish  Cooking Oil  Cooking Salt  Flour |  |  |

## Delegation of Authority and Authorization

### Article 28

1. The minister administering government affairs in the trade sector delegates authority to the National Food Agency in this regard

- a. Formulation of policies and establishment of policies on price stabilization and food distribution .
- b. Formulation of policies and determining the need for food exports and imports.



2. The minister administering government affairs in the field of Agriculture delegates authority to the National Food Agency in terms of:

- a. Formulating policies and determining the amount of government food reserves to be managed by State-Owned Enterprises in the food sector.
- b. Formulation of policies and determination of Government Purchasing Prices and price fractions.



### Article 29

The Minister who administers government affairs in the field of state-owned enterprises (BUMN) authorizes the Head of the National Food Agency to decide on the assignment of the Public Company BULOG in the context of implementing national food policies.





## Legal Basis

1. Law No 18/2012 - Food
2. PP No. 17/2015 - Food Security and Nutrition;



## Goals

Ensuring the availability of data, quality and access to data and information on food and nutrition which is of value knowledge and can be accounted for.



## Scope of Food Administration

**Article 5  
UU 18/2012**

- Food Planning
- Food availability
- Food Affordability
- Consumption of Food and Nutrition
- Food Safety
- Food Labels and Advertisements
- Supervision
- **Food Information System**
- Food Institution
- Community participation
- Investigation;



## Food Information System Organizer

**Article 114  
UU 18 /2012**

The Food Information System is organized by the Center for Food Data and Information;



## Data Coverage Include

**Article 77  
PP 17/2015**

**Article 114  
UU Pangan**

- |   |  |
|---|--|
| <input type="checkbox"/> type of Food product;                          | <input type="checkbox"/> export and import;                            |
| <input type="checkbox"/> food balance;                                  | <input type="checkbox"/> supply estimates;                             |
| <input type="checkbox"/> location, area size, and Food production area; | <input type="checkbox"/> estimated planting season and harvest season; |
| <input type="checkbox"/> market demand;                                 | <input type="checkbox"/> climate predictions;                          |
| <input type="checkbox"/> market opportunities and challenges;           | <input type="checkbox"/> food Technology;                              |
| <input type="checkbox"/> production;                                    | <input type="checkbox"/> Food needs for each region; And               |
| <input type="checkbox"/> price;   | <input type="checkbox"/> forecast fishing season.                      |
| <input type="checkbox"/> consumption;                                   |  |
| <input type="checkbox"/> nutritional status;                            |  |



## Scope of Food Information System

**Article 114  
UU 18/2012**

The Government and Regional Governments are obliged to build, compile and develop an integrated Food Information Systems.

**Article 75  
PP 17/2015**

- + NFA Priority Data: IKP, Stock, Food Reserves, SKPG, Food Safety, NBM

# FOOD AND NUTRITION INFORMATION SYSTEMS (2)

1



## SUPPORT

Development of Food and Nutrition Information Systems

### Regulatory strengthening

Compilation of regulations and synchronization of ministries/institutions regulations related to food data

### Infrastructure development

Strengthening network, server, storage, operating system, security.

### System Design (backbone / DSS)

Data Support System Architecture

### Human Resource capacity strengthening

Data scientist

### Coordination

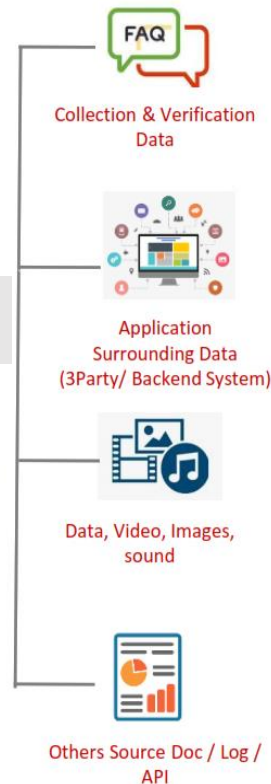
Data producers, inter-data trustees, and the Human Resources Forum

### Foundation Development

- NFA internal application integration,
- Integration of oth ministries/institutions,
- Local Government Integration,

### Build an API Portal

- Portal API management, APIs
- Discoverables, API security,
- Access restrictions. Connected to the Ministry of Communication and Information Government Service Liaison System (SPLP).



2



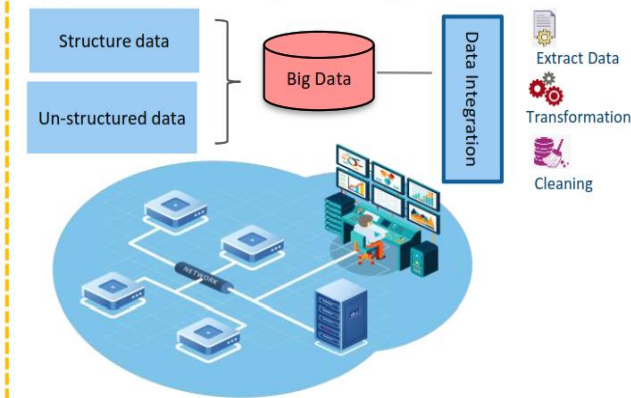
## DATA

System Databases  
Food and Nutrition Information

### Data Management Platform

Build big data and cluster set up a server

### Big Data Repository & Analysis



1. Big Data Management Platform
  2. Big Data Engineering & Analytics
  3. Big Data Application / use case
  4. Portal Application
  5. Mobile Apps
  6. Document Management System
  7. Business Intelligent (Dashboard)
    - Ketersediaan Pangan
    - Stabilisasi Pasokan & Harga Pangan
    - Distribusi dan Cadangan Pangan
    - Pengendalian kerawanan pangan
    - Kewaspadaan Pangan dan Gizi
    - Penganeekaragaman Konsumsi Pangan
    - Standar keamanan dan Mutu Pangan
    - Pengawasan Standar Keamanan dan mutu pangan
- B Infrastructure**
- Server
  - Storage

3



## ANALYSIS

System Analysis Food and Nutrition Information

### Modelling Data Analysis

Analytic data visualization, spatial, prediction, sentiment analysis recommendations



- AI For Food Availability and Stabilization
- AI For Food and Nutrition Insecurity
- AI For Food Diversification and Consumption

# FOOD PREDICTION SYSTEMS

Artificial Intelligence (AI)

Artificial Intelligence (AI)

2

1

3

## Food Availability and Stabilization

### Food availability

### Stabilization of Food Supply and Prices

### Distribution and Food Reserves

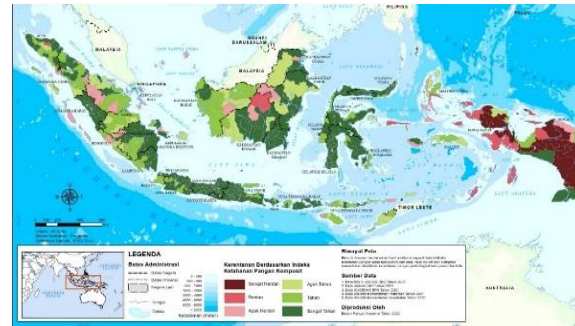


- Regional Projection of Food Surplus/Deficit;
- Identification of the closest producer/business actor/BUMD of Food/ID Food to the nearest location of a vulnerable area;
- Identify off takers
- Projection of Food Distribution Facilitation calculation with the most efficient delivery cost;
- Food price projections;
- Distribution time projection;
- Identification of consumers/beneficiaries

## Food and Nutrition Insecurity

### Food Insecurity Control

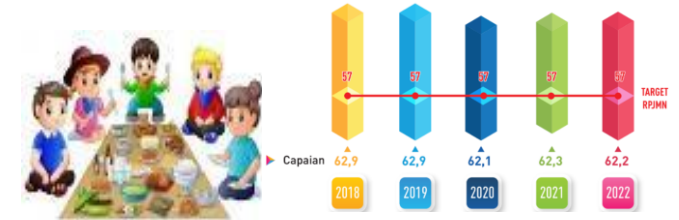
### Food and Nutrition Precautions



- ⚠ Notification of loci that are vulnerable to food insecurity
- Early detection information;
- ⚠ Food insecurity level notification;

## Diversification and Food Consumption

- Identification of food safety level;
- Projection of the impact of changes in food consumption;



### Diversification of Food Consumption

### Food Safety and Quality Standards

Artificial Intelligence (AI)

## Regulation Information

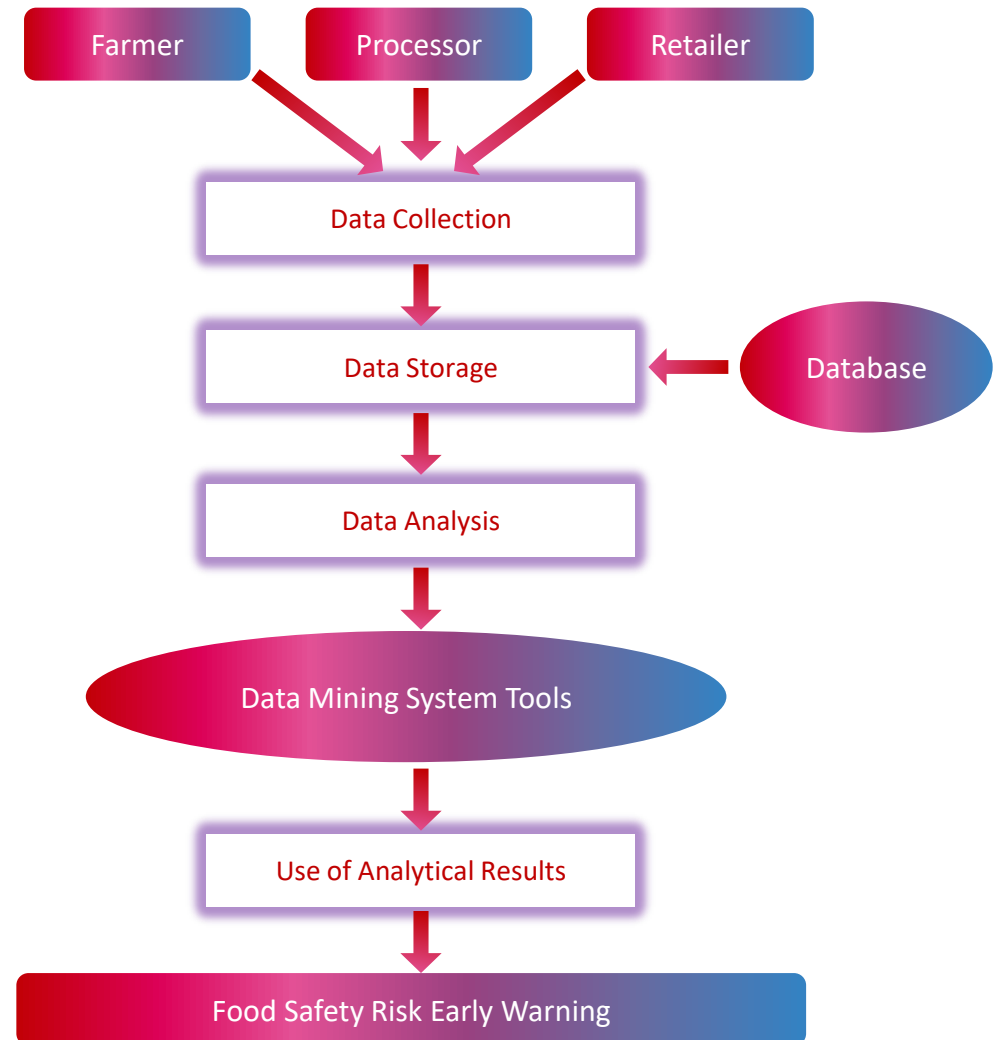
- Information of Regulatory
- Information for administrative permit
- Information for inspection and detection
- Complaint reporting
- Information reported by company involved and others

## Public Information:

- Media,
- Organization from local & overseas and other channel, for example WHO which can release news in timely manner
- Local and overseas news,
- Public opinion via internet, and other

### Source:

- [https://www.e3s-conferences.org/articles/e3sconf/pdf/2018/28/e3sconf\\_icaer2018\\_03084.pdf](https://www.e3s-conferences.org/articles/e3sconf/pdf/2018/28/e3sconf_icaer2018_03084.pdf)
- <https://www.sciencedirect.com/science/article/pii/S2214799320301260>





# THANK YOU

