



INTRODUCTION OF NATIONAL DOSE REGISTRY (online)

National Institute for Radiological Protection, China CDC

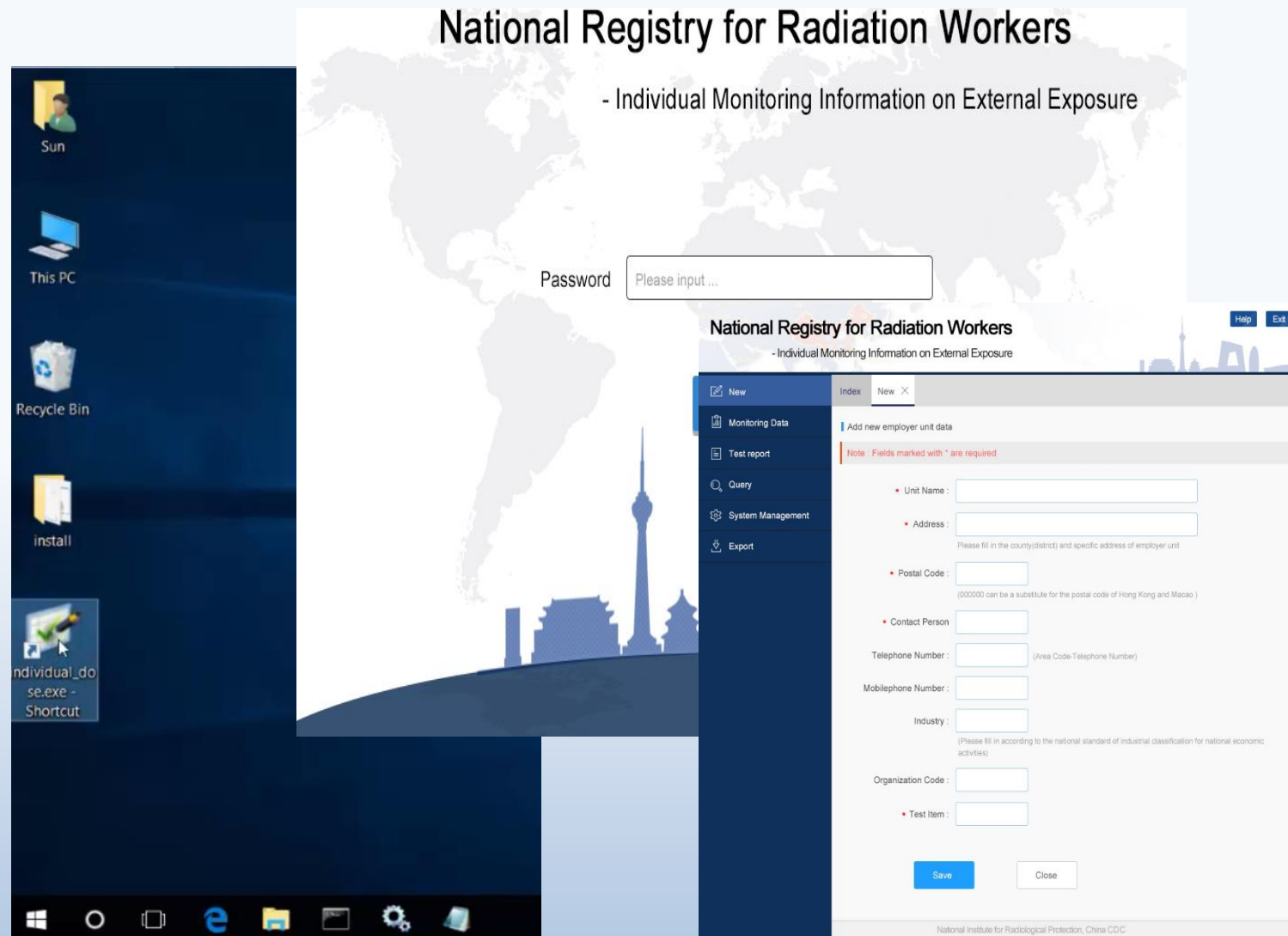
JUN DENG

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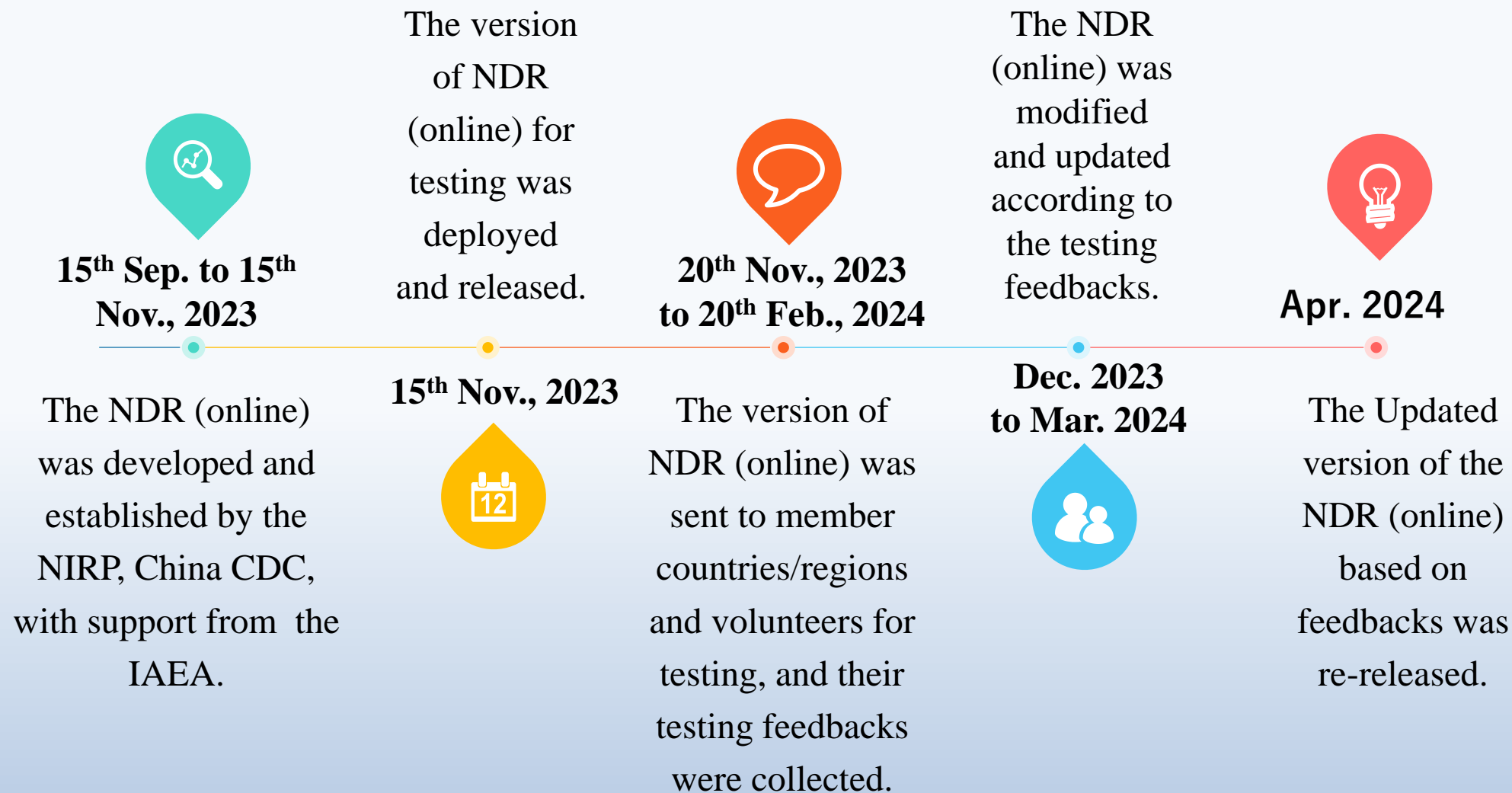
NDR (offline) developed in 2018

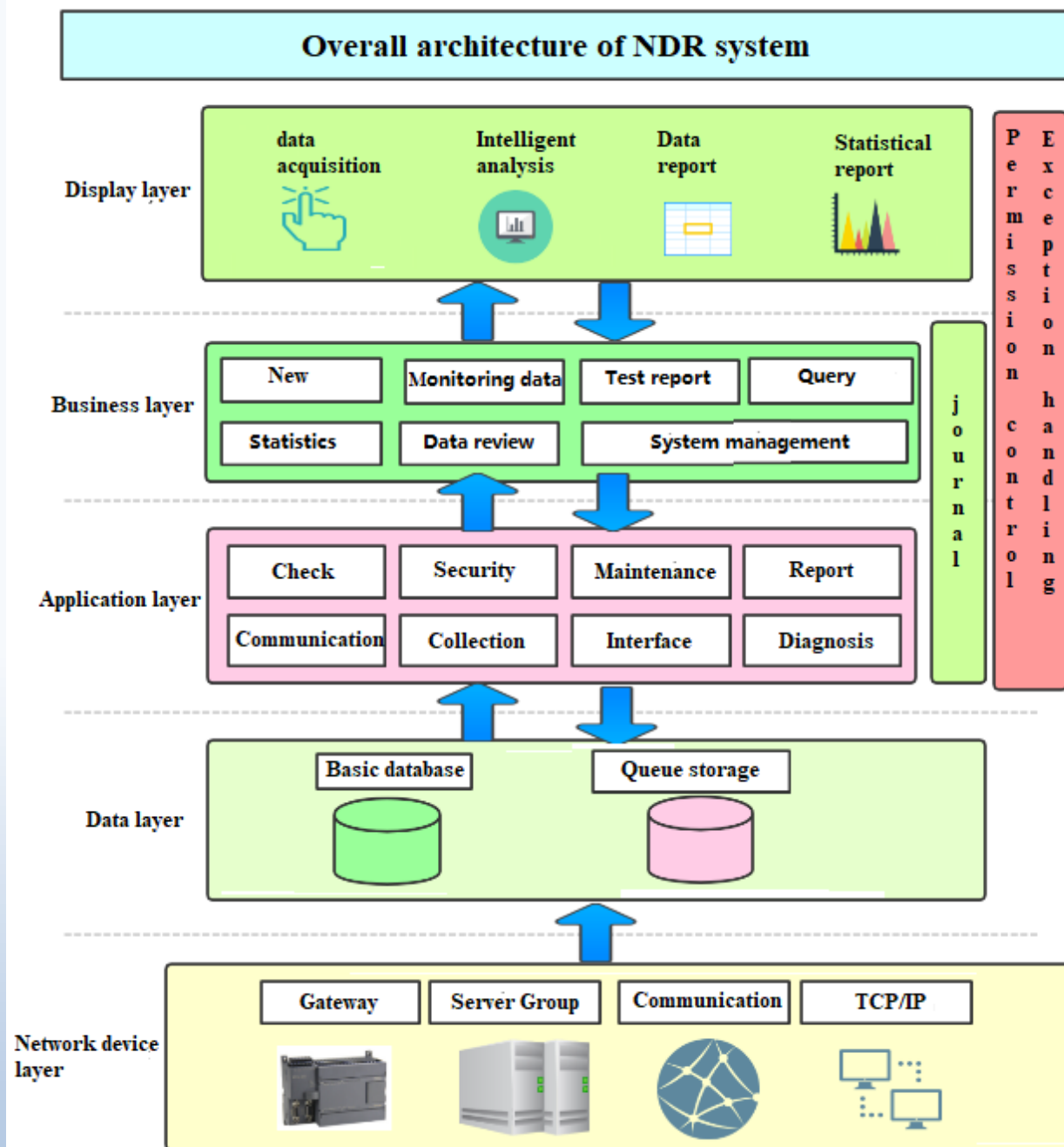
Deficiencies of the NDR (offline)

1. Relying on a fixed PC of the soft to register data. It is difficult to realize the unified management of multiple IMSPs in a region/country, or several technicians in the same IMSP.
2. Authority is limited to review the occupational data in a fixed computer.
3. Inconvenience in update of the information system.
4. No standard interface for data exchange.



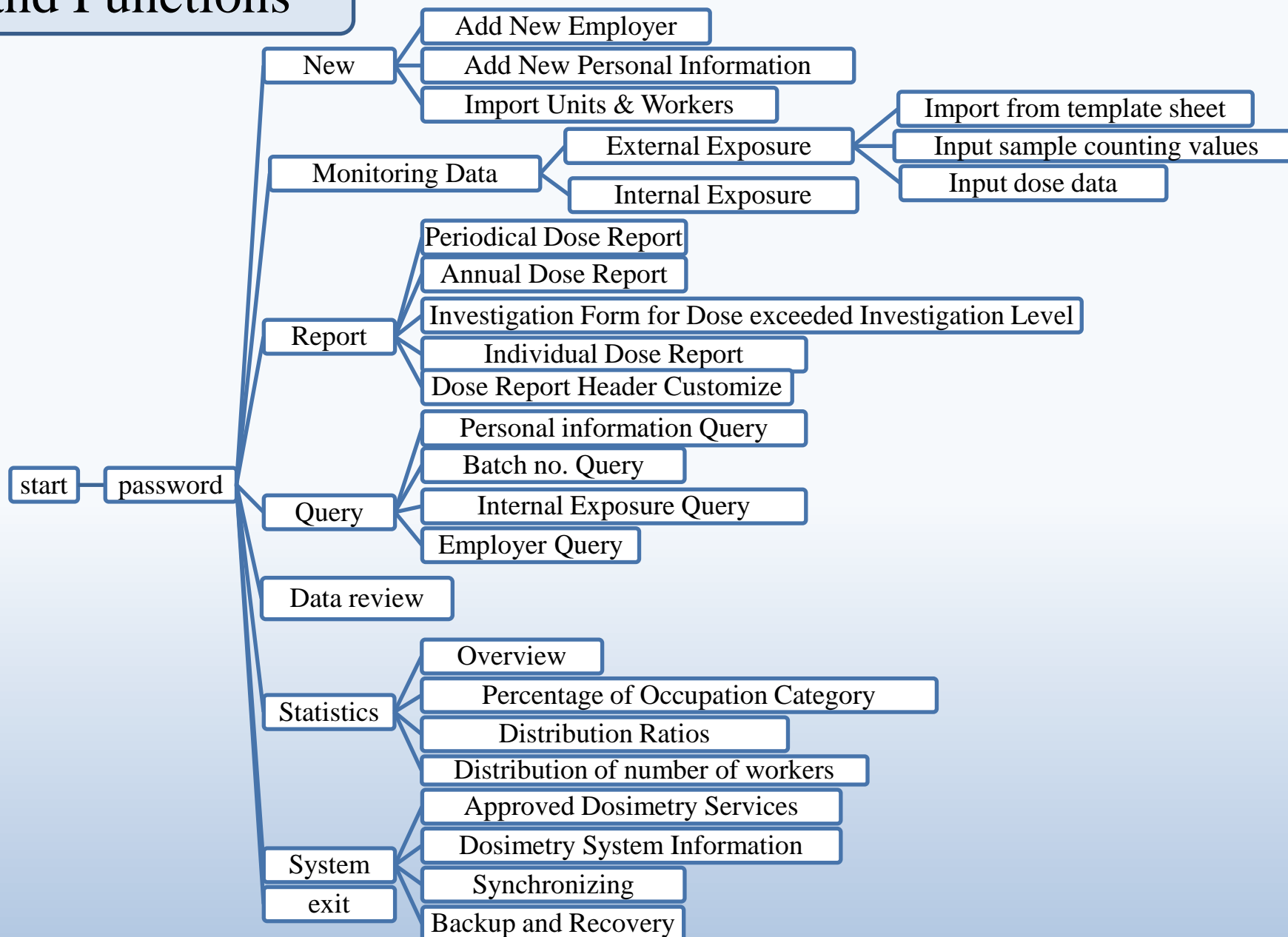
General Introduction







Modules and Functions





Characteristics of the NDR (online)

- Improving direct data registering capability. IMSPs can access the browser and report data directly, no longer be limited to a certain PC. At the same time, can be applied by multiple IMSPs in a region/country, or several technicians in the same IMSP. Realizing the unified management of multiple IMSPs in a region/country.
- Multiple methods and forms of input for Monitoring results.
- Flexible customized services, supporting personalized configuration for data report headers and data uniqueness determination.



Characteristics of the NDR (online)

- Comprehensive permission management functions and different operation permissions can be set according to the roles and responsibilities of different users.
- Based on the browser, the registered data in the NDR (online) could be accessed anywhere and anytime.
- Auto generating report for individual, period and annual dose, and suspicious dose inspection sheet.



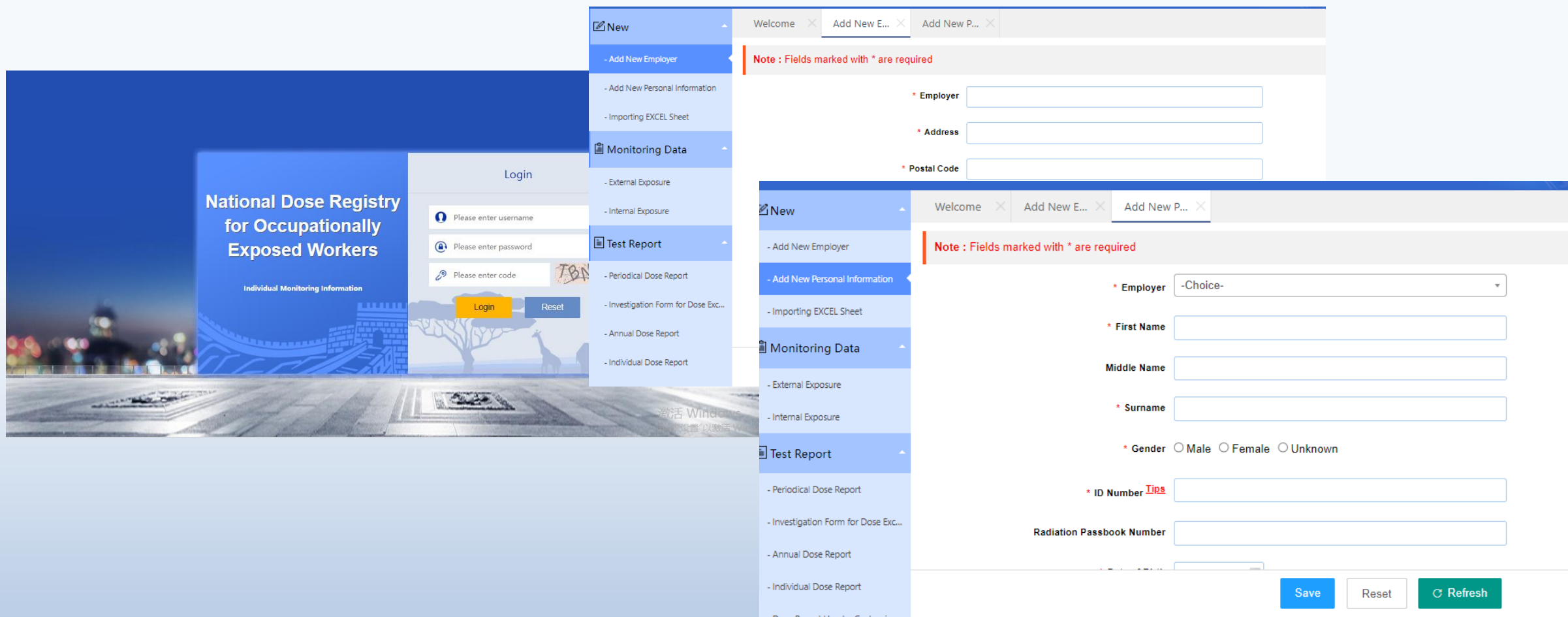
Characteristics of the NDR (online)

- Introducing the data audit mechanism, irregular or unqualified data can be returned to modify online, which could improve data quality.
- Very convenient in promotion, operation and update of the registry system. One time deployment.
- Providing standard data interface.



Interface design

A concise and clear screenshot of the system interface





Interface design

A concise and clear screenshot of the system interface

The screenshot displays a web-based system interface with a blue sidebar on the left containing navigation options: New, Monitoring Data, Test Report, Query, Statistics, System Management, Approved Dosimetry Services, and Dosimetry Systems Information. The main content area is divided into several sections:

- Test Instruments:** A table listing instruments with columns for Name, Model, Number, MDL(mSv), and a Delete button. Data includes OSL (LANDAUER INC, 11050, 0.02), Instadose (NTEST, 5002001, 0.03), and TLD (HARSHAW, 4500, 0.05).
- Periodical Dose Report:** A form for generating reports with fields for Employer, Time Range of Monitoring Period, and a Query button. A note states: "Note : If you print periodical dose report for the first time, you will need to complete the header message on 'Test Report'".
- Individual Monitoring Information:** A table showing monitoring data for various countries and categories. A pie chart titled "The distribution of occupation category" is also present, showing categories like Nuclear fuel cycle, Medical uses, Industrial uses, Natural sources, Defence activities, and Miscellaneous.
- PERSONAL DOSE EQUIVALENT [mSv]:** A table with columns for SEQ, PERSON ID, SURNAME, FIRST NA..., NUMBER OF MEASUREME..., and three dose equivalent columns: Hp(10), Hp(0.07), and Hp(3). The current view shows "No Results".

At the bottom right, there is a watermark for "激活 Windows" (Activate Windows) and a note "转到'设置'以激活" (Go to 'Settings' to activate).



Monitoring results support multiple methods and forms of input.

- 1 . Import data by Excel.
- 2 . Input sample counting values manually and calculate personal dose equivalent by computer automatically.
- 3 . Input personal dose equivalent value manually and calculate mean by computer automatically.

The screenshot shows a web application interface for entering monitoring data. The left sidebar contains a navigation menu with the following items: New, Monitoring Data (with sub-items: - External Exposure, - Internal Exposure), Test Report, Query, Statistics, and System Management. The main content area is titled "External Exposure" and features three radio button options for data entry methods, each with a red number indicating its position in the list:

- Import data by Excel 1
- Input sample counting values manually and calculate personal dose equivalent by computer automatically 2
- Input personal dose equivalent value manually and calculate mean by computer automatically 3

Below these options is a red-bordered note: "Note : Fields marked with * are required". The form includes the following fields:

- * Employer: A dropdown menu currently showing "-Choice-".
- * Monitoring Type: Three radio buttons for "Routine monitoring", "Task-related monitoring", and "Special monitoring".
- * Batch No.: A text input field.

A blue "next" button is located at the bottom right of the form area. The browser's tab bar at the top shows several open tabs, including "The distribu...", "The distribu...", "The overall ...", "Annual dos...", "Approved D...", "Dosimetry S...", "Add New E...", and "A".



Flexible customized services

Customization of data report header

Individual monitoring information

Welcome × Add New E... × Add New P... × External Exp... × Dose Repor... ×

Dose Report Header Customize

Monitoring Method: Whole body

Icon Upper Left: Upload

Icon Upper Right: Upload

Monitoring Standard:

Save Reset

激活
转到

ORDU
12
Phone: 25373131
Fax: 25372430

EXTERNAL DOSIMETRY RESULTS
Dose Report by Period
(REPORT NUMBER: 0.2)

ORGANIZATION: 21212
SECTION: 12
MONITORING PERIOD: 2023-11-01 TO 2023-11-20



Flexible customized services

Unique identification code configuration within the personnel information system

The screenshot displays a web application interface for user management. On the left, a navigation menu includes options like 'Query', 'Export Excel', 'Statistic', and 'System Management'. The 'User Management' option is highlighted with a red box. The main content area shows a table of users with columns for 'Seq.', 'Country', and 'Service Provider'. A modal window titled 'Add' is open, showing a 'User Information' form. The form includes fields for 'User Name', 'Login Name', 'User Level' (set to 'Unit'), 'Country' (set to 'Afghanistan'), 'Service Provider' (set to 'Afghanistan test 1'), and 'User Group' (set to 'offline'). A red box highlights the 'Individual uniqueness:' section, which contains checkboxes for 'User Name', 'Gender', 'Date of Birth', 'Id Card Number', and 'Radiation Passport Number'. The 'Save' and 'Close' buttons are visible at the bottom of the modal.

Seq.	Country	Service Provider
4		
5	Afghanistan	
6	Angola	
7	Ghana	12
8	Afghanistan	12345667
9	Afghanistan	Afghanista
10	Algeria	Algeria Fir
11	Afghanistan	Angola Fir
12	Angola	Angola Fir



Data verification and computing power

New

- Add New Employer
- Add New Personal Information
- Importing EXCEL Sheet

Monitoring Data

Test Report

Query

Statistics

System Management

Welcome | Add New E... | Add New P... | External Exp... | Dose Repor... | Dosimetry S... | Change pa

Note : Fields marked with * are required

* Employer This field is required.

* Address This field is required.

* Postal Code

* Contact Person This field is required.

* Telephone Number Please enter a number less than 10 digits

* Mobilephone Number

Sectors

* Organization Code

- Individual Monitoring Information Welcome

Welcome | Annual dos... |

Year Occupation Category

Country	Occupation Category	<MDL	MDL-	1.0-	5.0-	10.0-	15.0-	20.0-	30.0-	≥50	Total number of actually monitored worker	Annual collective effect
Angola	Nuclear fuel cycle	12	6	7	2	2	1	0	0	1	30	143.62
Angola	Medical uses	2	6	6	2	0	1	0	0	0	17	50.87
Angola	Industrial uses	7	4	2	0	2	0	0	0	0	16	27.94
Angola	Natural sources	1	1	1	0	0	0	0	0	0	2	2.17
Angola	Defence activities	0	3	1	3	0	0	0	0	0	7	27.54
Angola	Miscellaneous	0	3	4	0	0	0	0	0	0	7	17.16
Total		22	23	21	7	4	2	0	0	1	79	269.3



Permission management

IMSP level user system permissions include (New、Monitoring Data、Test Report、Query、Statistics、Approved Dosimetry Services、Dosimetry Systems Information).

Country level user system permissions include (Test Report、Query、Data review、Statistics、System Management).

Note: IMSP can only view the data filled in itself, and authority can view all the data with the region.

The screenshot shows a web application interface with a 'Privilege Management' window open. The window displays a table of user groups and an 'Edit' dialog box for the 'Testing agency' group. The dialog box shows a tree view of permissions with checkboxes for various functions.

Seq.	Group Name
1	administrator
2	writer
3	Testing agency
4	web-base

Edit

Group Information

Group Name:

- New
 - Add new employer uni
 - Add new personal inf
 - Importing EXCEL shee
- Monitoring Data
 - External Exposure
 - Internal Exposure
- Test report
 - Period Test Report
 - Registry and Investi
 - Annual Dose Report



Data review

After the Unit user submits the data, the Country auditor reviews it.

If there are any issues with the verified data, they can be returned for modification.

<input type="checkbox"/>	ID Number	Name	gender	Date of Birth	Employer	Occupation Category	
<input type="checkbox"/>	101003	Issa SANGARE	Male	1988-02-01	CHU YALGADO	Medical uses	Edit Review
<input type="checkbox"/>	101001	Elisabeth OUÉDRAOGO	Female	1977-01-31	CHU YALGADO	Medical uses	Edit Review
<input type="checkbox"/>	102001	Djeneba TRAORÉ	Female	1970-06-30	CHU SOURO SANOU	Medical uses	Edit Review
<input type="checkbox"/>	123456	sh han	Male	2023-11-01	han01	Medical uses	Edit Review
<input type="checkbox"/>	121541n	jaifj xdr	Male	2019-03-01	ODENL	Nuclear fuel cycle	Edit Review
<input type="checkbox"/>	123	132 123	Male	2019-03-01	ODENL	Nuclear fuel cycle	Edit Review
<input type="checkbox"/>	12	12 12	Female	2019-03-01	21212	Nuclear fuel cycle	Edit Review
<input type="checkbox"/>	12aa	12 12	Female	2019-03-01	333	Nuclear fuel cycle	Edit Review



Data visualization

After the Unit user submits the data, the Country auditor reviews it. If there are any issues with the verified data, they can be returned for modification.

The screenshot displays a web application interface for monitoring information. The main window shows a table of individual monitoring data for Angola, with columns for Country, Service Provider, and Employer number. A sidebar on the left contains navigation options like New, Monitoring Data, Test Report, Query, and Statistic. A search and output section is visible at the top right of the main window.

The pie chart, titled "The distribution of occupation category", shows the following data:

Occupation Category	Person number	Ratio
Nuclear fuel cycle	10	30.30%
Medical uses	10	30.30%
Industrial uses	4	12.12%
Natural sources	1	3.03%
Defence activities	4	12.12%
Miscellaneous	3	9.09%

Scalability and compatibility

The system has established a standard interface, which can achieve integration and data exchange with other systems.



Data security assurance

Https + Asymmetric Encryption





Runtime environment

Server:

- OS: Windows Server、Linux、 Unix
- Database: MySQL
- Application Middleware : Apache Tomcat
- CPU: 2.0G or above
- Storage: 500GB or above
- Memory: 16GB or above
- Network Bandwidth : 20MB/s or above



Runtime environment

Client:

- OS : Windows 7 or above
- Memory : 4GB or above
- Storage : 5GB or above
- Display resolution: 1366*768 or above
- Softs: Office Word、 Office Excel、 Winrar etc.



Tools and languages

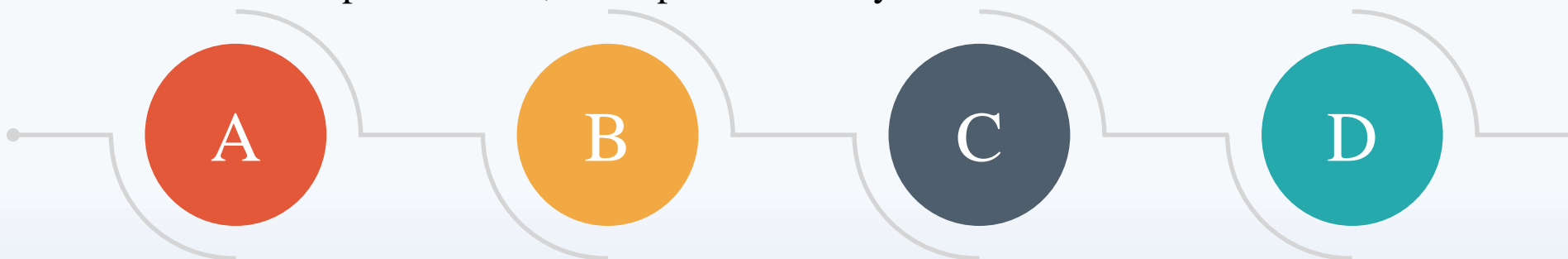
- **Backend application development languages:** Java、 Python
- **Front end application development languages:** HTML、 CSS、 JavaScript
- **Database:** MySQL
- **Tools:** Eclipse、 IntelliJ IDEA
- **Unicode:** utf-8Display
- **Language:** English



System Deployment

Server environment configuration:
updating system and driver, setting up
the network, configuring storage,
configuring security settings, optimizing
performance, backup and recovery.

System deployment and
configuration: configuring
environment variables and
deploying the system.



Preparing hardware and
operating system: CPU,
RAM, storage, network,
power supply, operating
system version.

Installing and configuring
necessary software and services:
MySQL database, SSL/TLS
certificates, JDK version.



Maintenance of the NDR system

- Operation manual in detailed.
- Form filling instructions.
- **Frequent Q&As.**
- **Technical support by telephone/email/Instant Messenger/remote control.**



**Thank you so much
for your attention.**