

# MIRION **Connect** 25

Annual Users' Conference

## INNOVATION AT WORK

Connecting Visionaries in Radiation Safety, Science and Industry

Conrad Orlando Resort, FL – July 28<sup>th</sup> – August 1<sup>st</sup>



**MIRION**  
TECHNOLOGIES

# MC25 – Breakout Session

## DosiServ

**BLEUSE Olivier**

Dosimetry & Telemetry – Product Line Manager

Mirion Connect | Annual Users' Conference 2025

Orlando, Florida

# Agenda

- **DosiServ Introduction**
- **DosiServ Part 2: Advanced features**
- **DosiServ Part 3: DosiServ 2026  
US features & Roadmap**

# DosiServ

- Introduction

# Mirion Electronic Dosimetry

## A dosimeter for everyone, for all purposes

- Over **one million DMCs** electronic dosimeters in service
- Used in all NPPs around the World:  
**More than 70 % of reactors** are using a Mirion dosimeter
- Equipped many armies around the world (SOR R/RF/T)
- **Long in service life**, Low failure Rate  
(DMC 2000, DMC 3000)
- Full & complete ecosystem
- **Qualification** with IEC & other standards





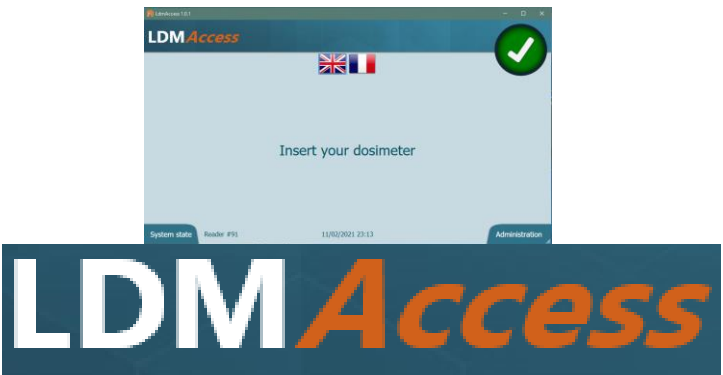
# Mirion Dosimeters & Ecosystem



Dose Management SW



Access Control SW



Telemetry SW



DMC Configuration SW





# Mirion Dose Management Software

- **Dose Management SW from 2006**

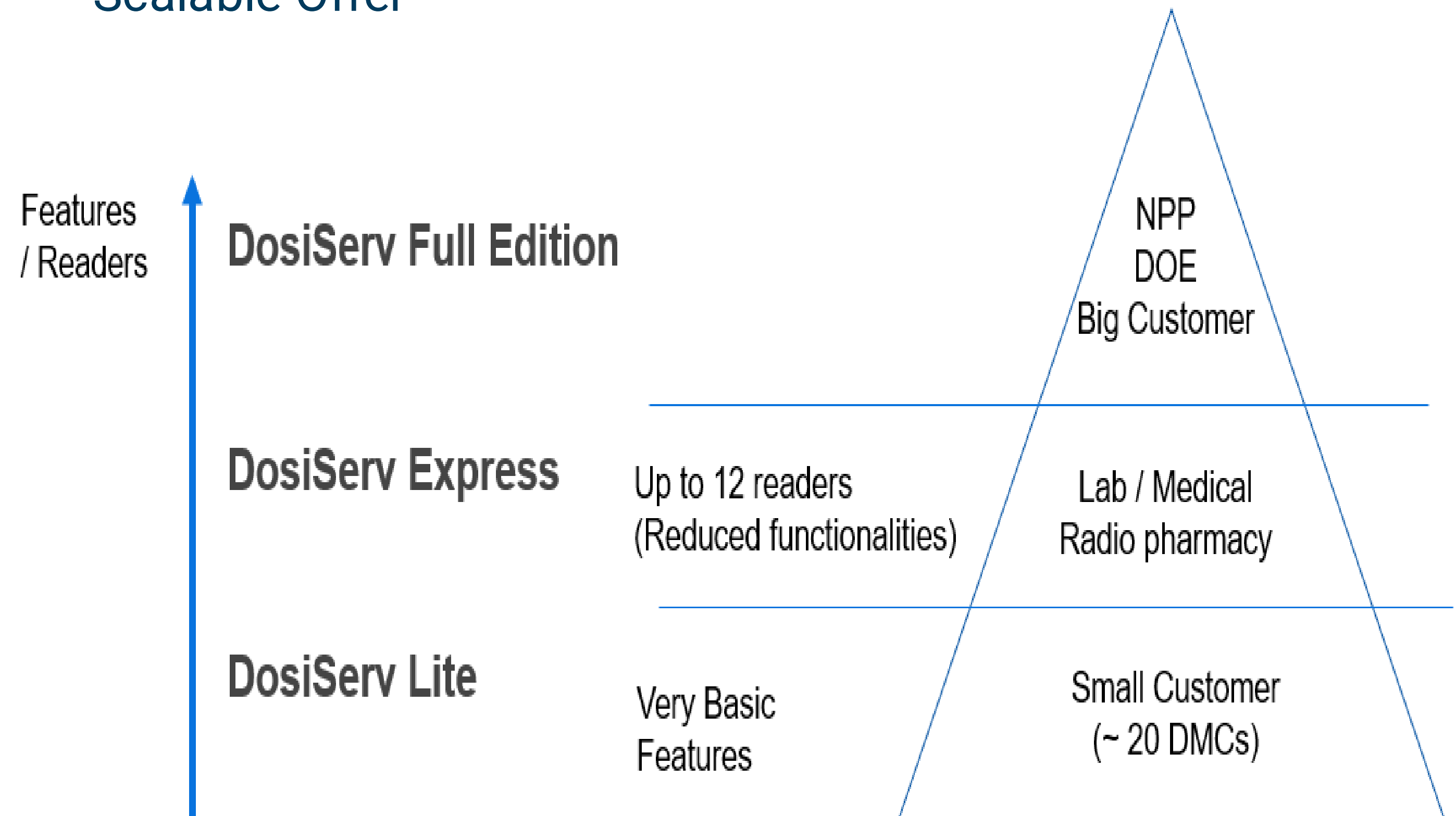
- Leader in Europe & **Strong Customer base**
- **Modern & efficient solution up to date**
- **Evolute & customizable**
- **Cybersecurity up to date**

- **DosiServ Community**

- Biannual user letter
- Conferences

# DosiServ™

- **Scalable Offer**

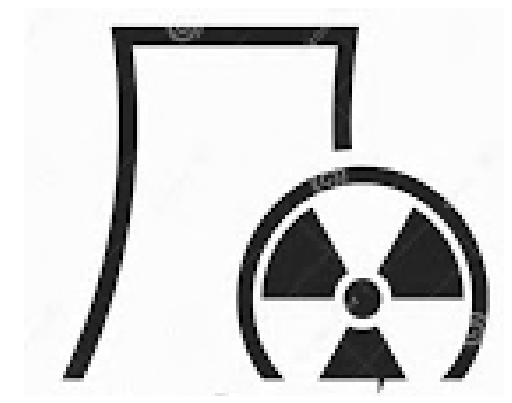


# What is a Dose Management Software ?

# Manage the dosimetry of exposed people



Database Server      Application Server      Workstation



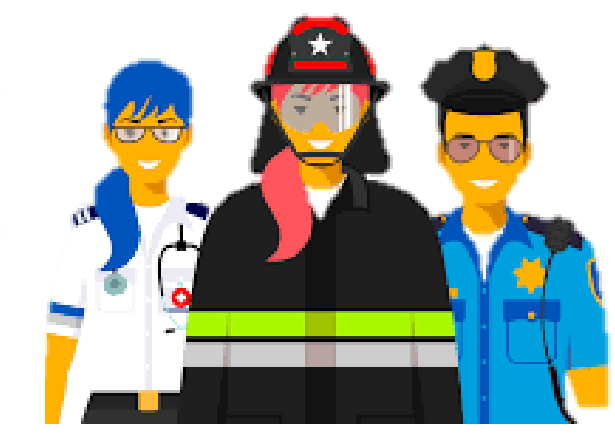
**Nuclear Energy**  
(NPP&Lab)



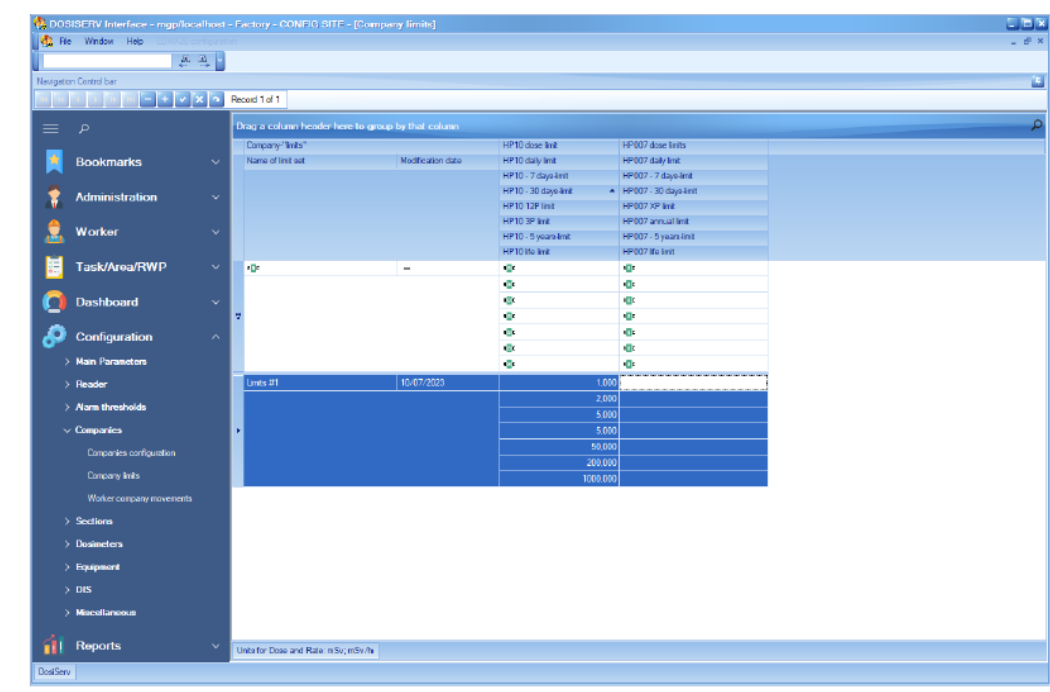
Industrial  
Oil & Gas  
Mining



Military



Civilian  
- Medical  
- FR/HLS  
- Gov



DosiServ

- **Mirion Dose Management Software scalable (NPPs, Lab, Hospital, etc...)**

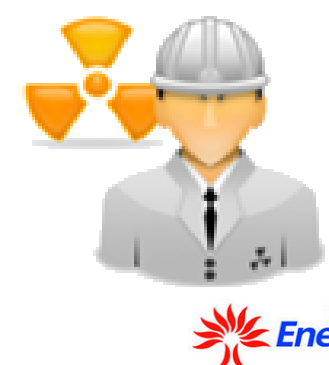
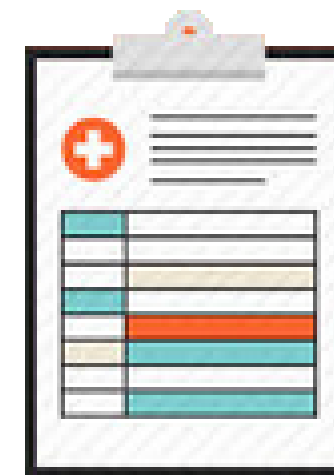


# What is a Dose Management Solution ?

- Management of workers, entrance/exits in RCA , DMC configuration
- Management of RWP, task & authorization, alarms
- Management of collective dose / Worker dose / Credit Dose / RWP dose
- Automatic Reports
- Scalable & customizable product



Work Orders &  
Asset Management



# Mirion Dose Management Software Scalability

## Health Physics Unit



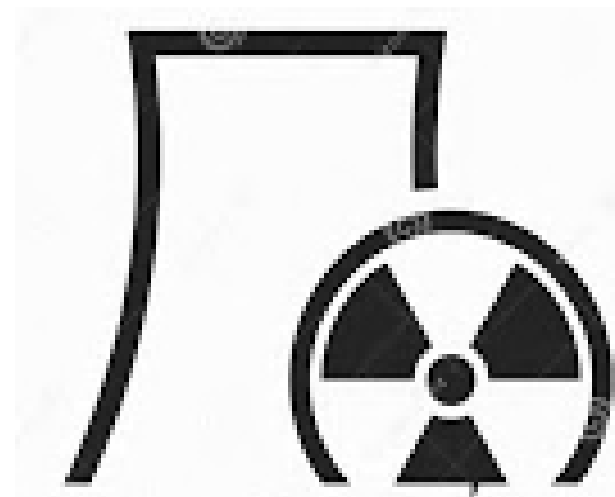
Database  
Server



Application  
Server



Workstation



NPP 1 & 2

# Mirion Dose Management Software Scalability

Health Physics Unit

Health Physics Unit

Duplicate or custom



Database  
Server



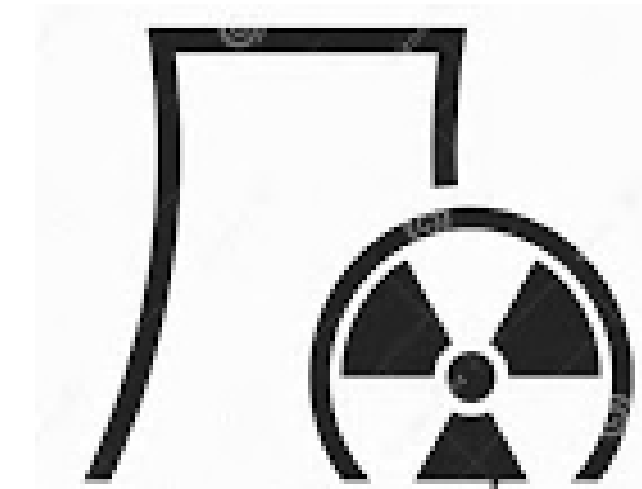
Application  
Server



Workstation



NPP 1 & 2



NPP 3 & 4



Workstation



# Mirion Dose Management SW

User friendly & GUI up to date  
Global management approach  
Scalable & Upgradable  
Evolutive & Innovative  
CyberSecurity up to date

Automatic reports ready

⇒ **Great flexibility regarding demands and needs**

Health Physics

Physics Unit

NPP 1 & 2

NPP 3 & 4

# DosiServ Significant References

## Nuclear reactors:

- Spain
  - ALMARAZ (R)
  - ASCO
  - VANDELLOS
  - TRILLO (R)
- Sweden
  - RINGHALS
  - Barsebäck
  - Forsmark
  - Oskarshamn
- Finland
  - Olkiluoto (R)
  - Loviisa
- Belgium
  - DOEL
  - Tihange
- Netherlands
  - BORSSELE
- China
  - Taishan
  - Qinshan
  - Sanmen
  - Day Bay
  - Ling AO
  - Fang Jiashan
  - Tianwan
  - Fuqing

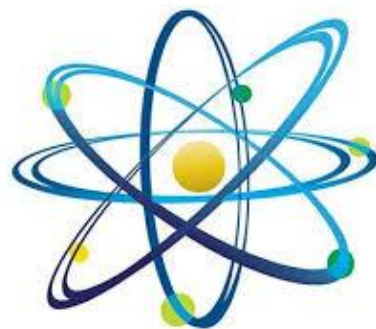
- Pakistan
  - Chashma
  - Karachi
- Ukraine
  - Zaporozhye
- Italy
  - Caorso
  - Trino
- RSA
  - Koeberg
- Switzerland
  - Gosgen
  - Leibstadt (R)
- Slovenia
  - Krsko
- Czech Republic
  - Temelin



31

## Industry facilities/Labs (significant)

- Studsvick (Waste &Decommissioning /Sweden)
- Svafo (Waste&Decommissioning/Sweden)
- ESS Lund (Sweden)
- NRG(Research/Netherlands)
- COVRA (Waste Mgt/Netherlands)
- CURIUM (Medical Isotopes/Netherlands)
- CYSBIO (Medical Isotopes/France) X 2
- CERN (Research/Switzerland)
- ISPRA / JRC (Research Italy)
- GANIL (Waste Mgt/France)
- PSI Institute (Research/Switzerland)
- ISS/STFC (Research/UK)
- Helmholtz-Zentrum Geesthacht (Germany)
- KTE Karlsruhe (Germany)
- French Navy (boats + bases + shipyards)
- Andra (Waste Mgt/ France)
- ILL (Research Reactor/France)
- Centraco (Waste Mgt/France)
- Cyclife Uk Ltd (Waste Mgt/UK)
- Cyclife Sweden AB (Waste Mgt/Sweeden)
- CH2M HILL BWXT West Valley, (DOE/USA)
- DND (Dpt of National Defense Canada)
- Global Medical Isotope (Oak Ridge) (USA)
- CURIUM (USA)
- General Motors (Industry/USA)
- LLNL (Lawrence Livermore National Laboratory, research/USA )
- MURR (Missouri University Research Reactor/USA)
- MIT (University USA)
- Los Alamos NM (USA)
- Kinetrics (CANADA)
- ANGRA Fuel dry Storage (Brazil)
- LLWR (EDF Repository UK)
- NORTHSTAR Medical (USA)
- SHINE Medical (USA)



35

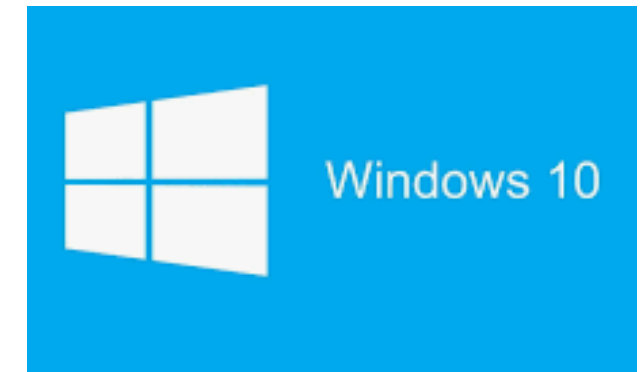


# DosiServ

- Introduction
- DosiServ Ecosystem



# Introduction



- The DosiServ dosimetry system is an integrated **state of the art dose management** system.

➔ **Current version name : DosiServ 2023**

It is fully **scalable** in order to comply with nuclear power plant as well as smaller industry expectations.

**Multi-languages**

# Introduction (Architecture)

## Dosimeter



system : Dosimeters + reader + management software

## Front-end

## Back-end

Mirion Readers or DYI



Network

Dedicated management SW

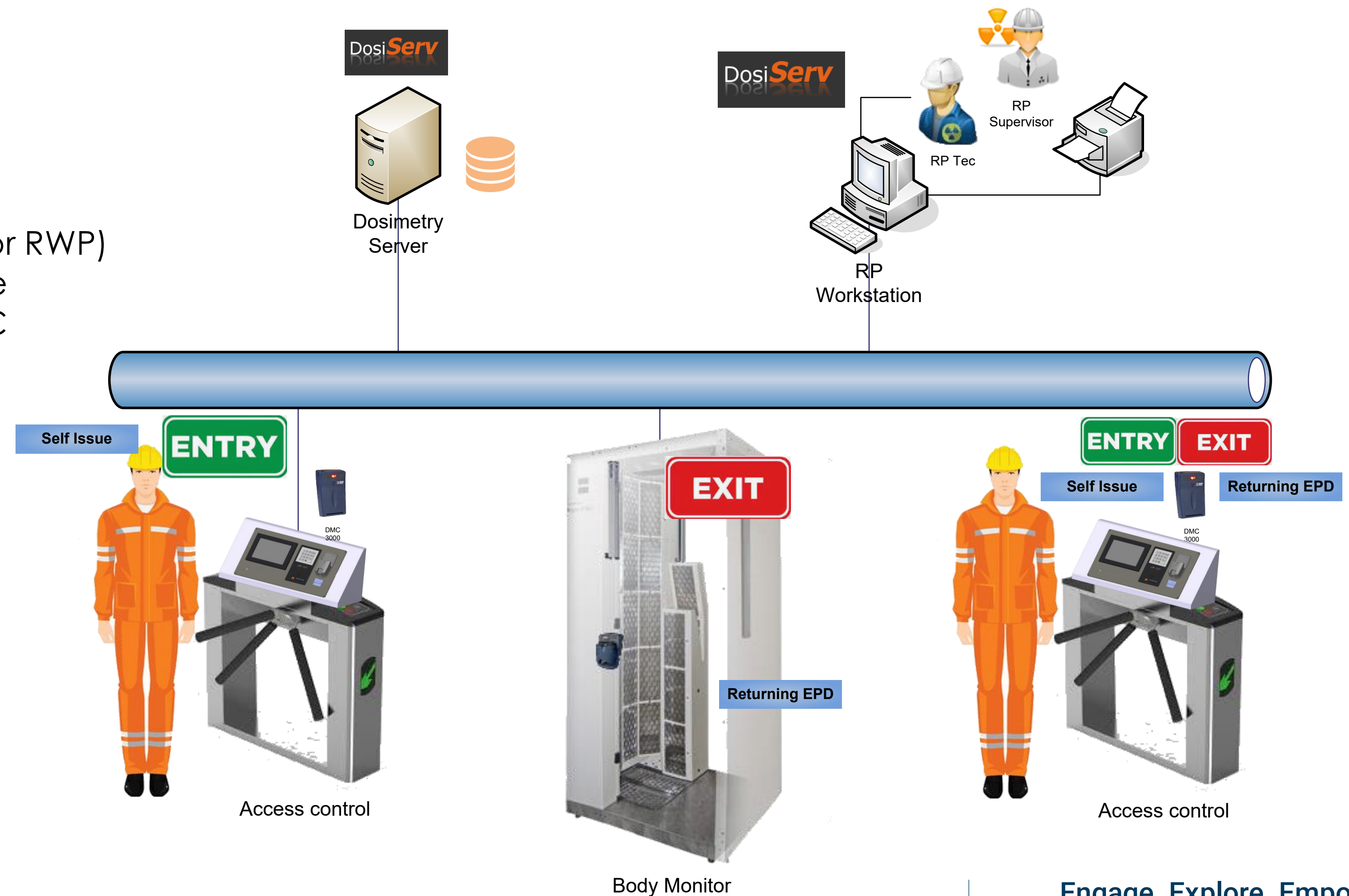


# Dosimetry system main concepts

## Architecture

- Verifying the Dosimeter is operating properly
- Verifying workers identity and qualification
- Selecting a Job code (also called Task code or RWP)
- Verifying the selected Job code is appropriate
- Programming the Alarms set point on the DMC
- Switching the DMC on

- reads the dosimeter
- stores the dose(s)
- stores dosimeter conditions
- switch the dosimeter off





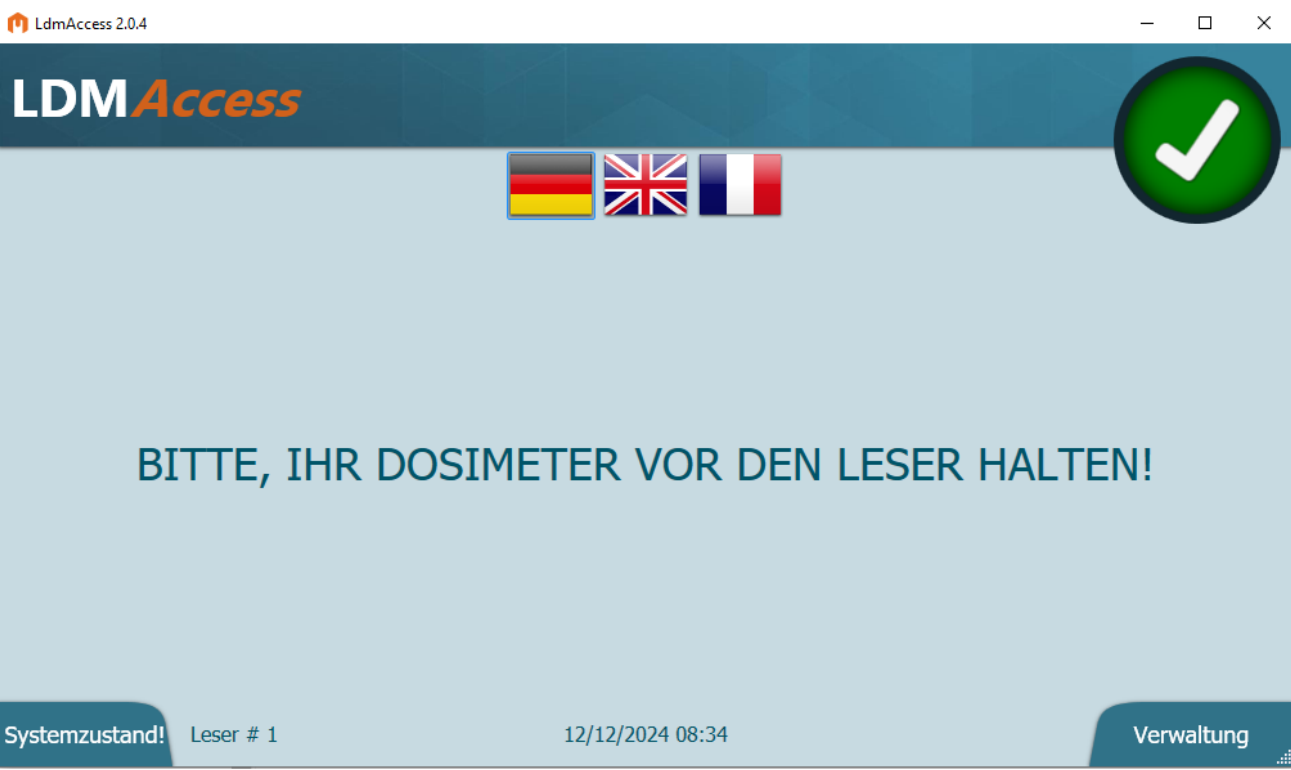
# DosiServ

- Introduction
- DosiServ Ecosystem
- Access Control
  - From worker point of view

# From the worker perspective



LDMAccess



# From the worker perspective

## RCA ENTRY

A very basic RCA Entry sequence is made of:

- Dosimeter Insertion
- Worker identification  
(badge input or scan)
- Job code/RWP selection





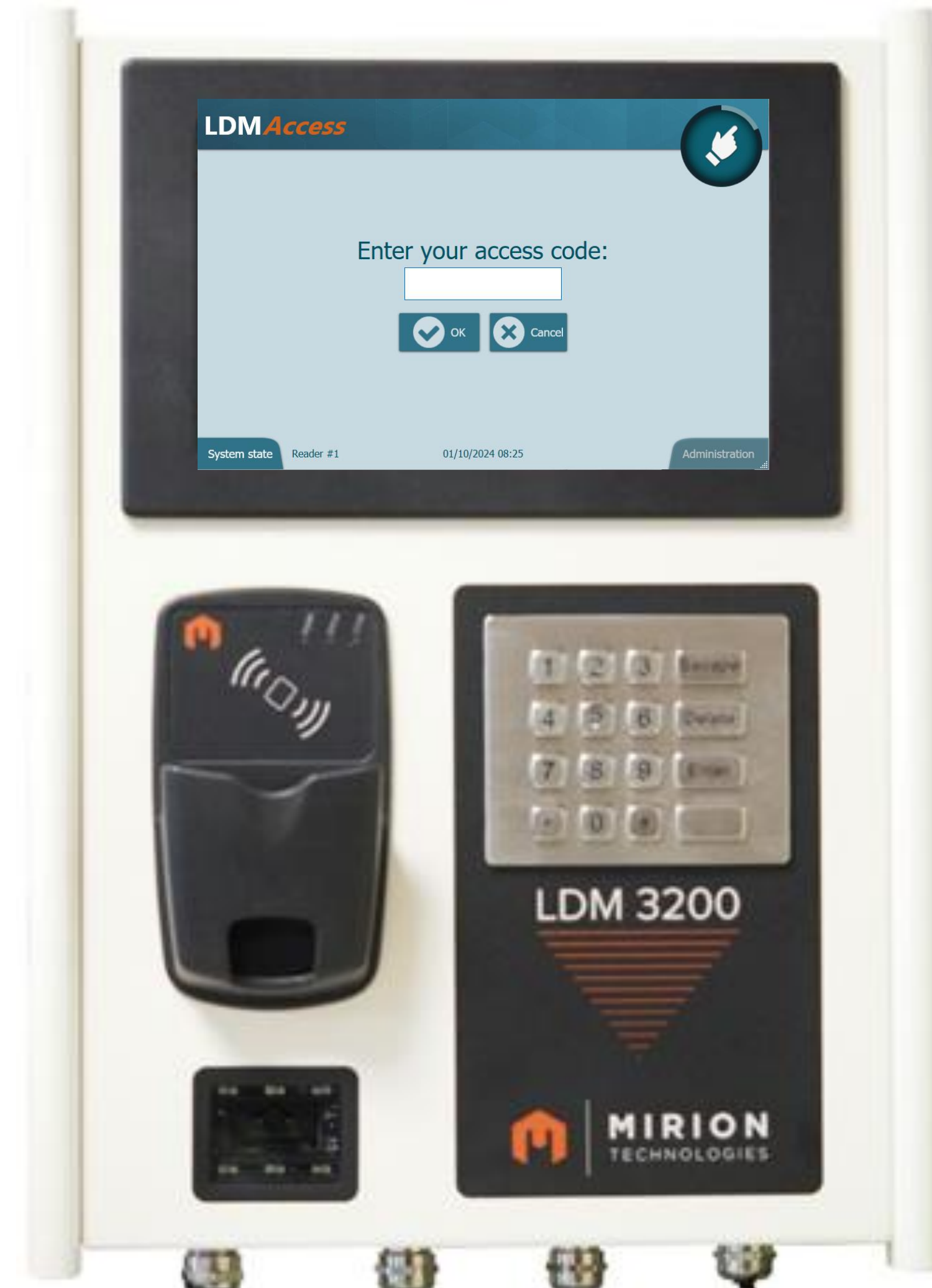
# From the worker perspective

## RCA ENTRY

Worker Identification

Once a dosimeter has been detected, the worker identification process starts:

- Badge can be read using barcode reader or dedicated badge reader
- Badge number can be typed using keyboard
- Badge number can be read from the dosimeter if it is assigned to an individual.



# From the worker perspective

## RCA ENTRY

Job / RWP input

Job / RWP input can be performed:

- Using barcode reader
- Using keyboard
- By selecting an item from the suggested list.



# From the worker perspective

RCA ENTRY

Access Denied



Once all inputs have been done, the access control is performed and if some mandatory checks fail then access is denied.

- The reason for the denial is displayed to the worker.





# From the worker perspective

## RCA ENTRY

Access Authorized



Once all inputs have been done, the access control is performed and if all mandatory checks succeed then access is authorized and the appropriate alarms are set on the dosimeter.

- The successful entry message can be customized.



# From the worker perspective

## RCA ENTRY

Additional Inputs

The entry sequence can be configured to request additional inputs from the worker:

- RWP and then Task input
- Official Dosimeter number input (OSL, TLD, DIS...).



# From the worker perspective

## RCA EXIT

A very basic RCA Exit sequence is made of:

- Dosimeter Insertion
- ....and that's it !!

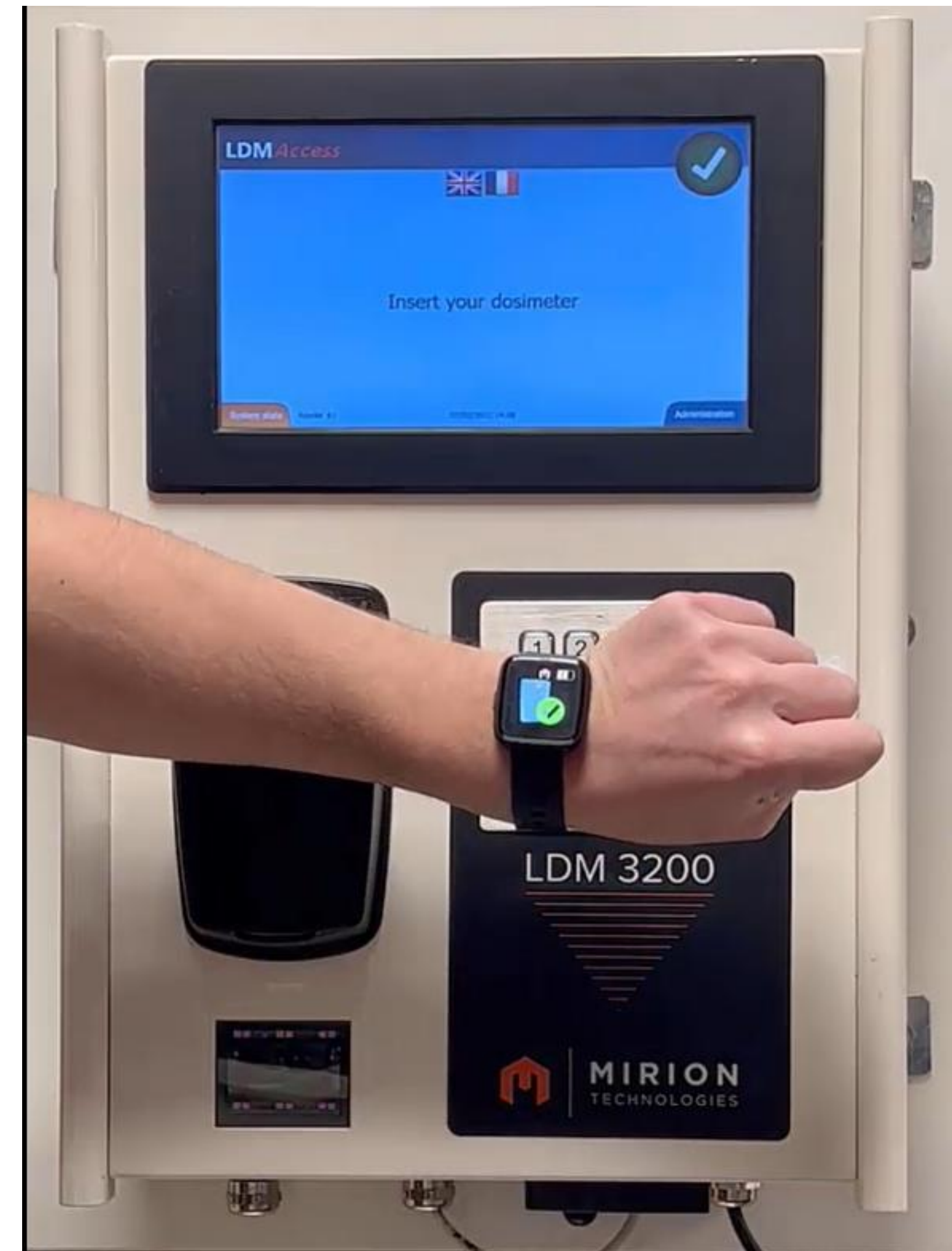




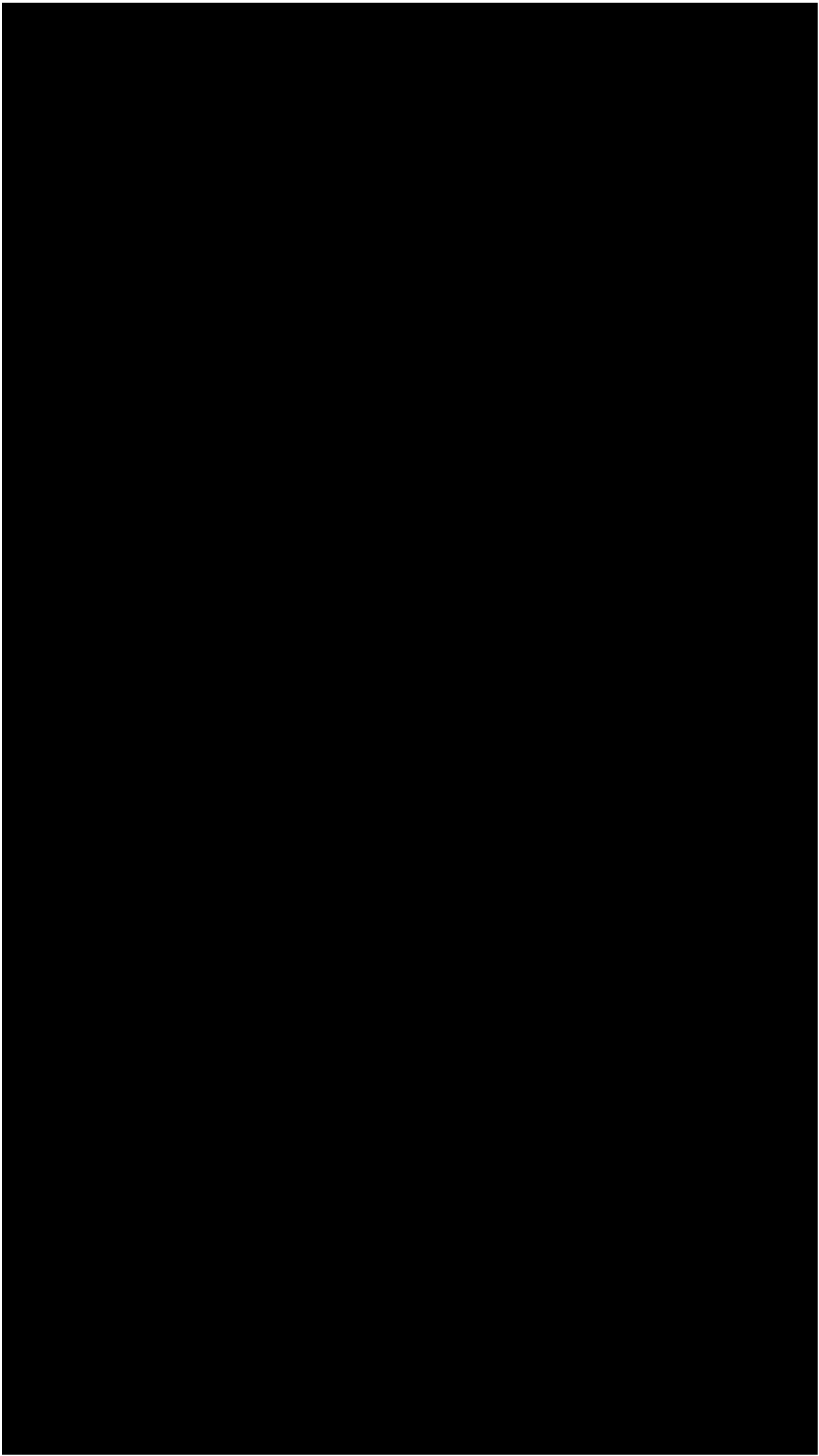
# From the worker perspective

## EXTENDED CAPABILITIES

- The DosiServ ecosystem can leverage from all the latest innovations that have been introduced in the active dosimetry product line.
- The use of external module (Beta, Neutron...) can be checked depending on the selected RWP/Job.
- The NFC capability can be used for MirionWatch Quick & Easy Pairing/Unpairing.



# From the worker perspective

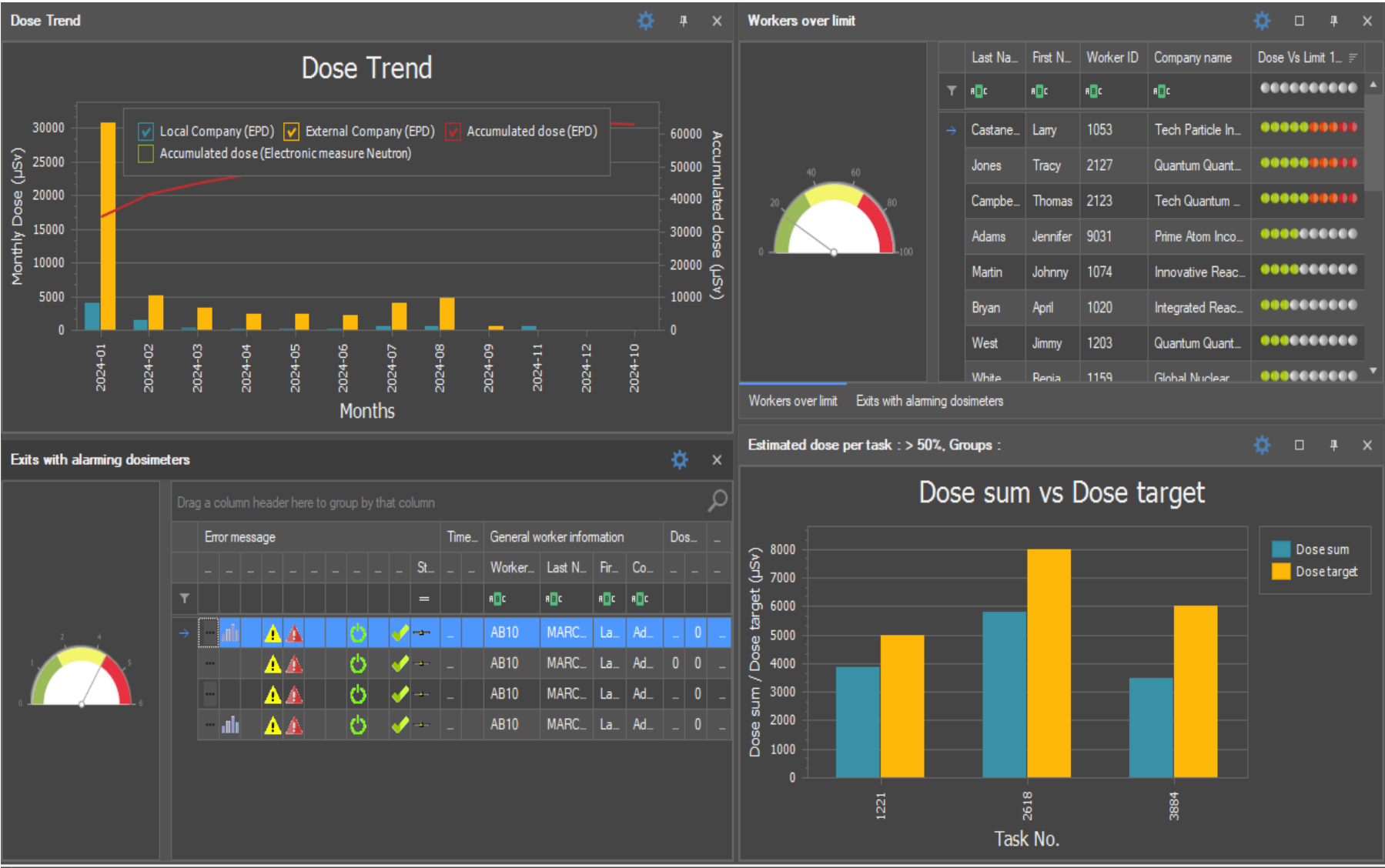


# DosiServ

- Introduction
- DosiServ Ecosystem
- Access Control
  - From worker point of view
  - From HP perspective



# From the Health Physics perspective



Worker Details

Last Name:

First name

Insurance No.

ID Number

Mrs

Adams

Jennifer

9031

Information

Dosimetry

Access

Additional fields

Tasks / Areas / Rwp

Visits

Worker information

Title

Last Name

First Name

Sex

Pregnancy criteria

Birth name

Adams

Jennifer

Woman

DOSISERV Interface - mgo/localhost - Factory - CONFIG SITE - [Search for a worker]

File

Window

Help

LDMX20 configuration

Navigation Control bar

Record 1 of 1003

Search Parameters

ID Number

Last name

First name

Equipment type

Having personnal limits

Film/TLD Number

Dosimeter No.

Exterior Number

Equipment name

Company

Section

Clear

Search

Remember

Auto search

Drag a column header here to group by that column

Summary

General worker information

Additional worker information

HP 10 dose information

W..

Al..

Sex

Last name

First name

Identificati..

Category

Company name

Dose Vs Limit 12P

Y

=

=

=

M..

Castaneda

Larry

1053

CONTRACTOR

Tech Particle Incorporated

M..

Chen

Marc

3212

A

Advanced Quantum Solutions

M..

Jones

Tracy

2127

A

Quantum Quantum Industries

M..

Campbels

Thomas

2123

A

Tech Quantum Systems

Adams

Jennifer

9031

A

Prime Atom Incorporated

M..

Martin

Johnny

1074

A

Innovative Reactor Technologies

M..

Bryan

April

1020

A

Integrated Reactor Solutions

Personen Details

Name:

Vorname

Versicherungs-Nr.

Ausweis-Nr.

Fr.

Adams

Anna

5000

Stammdaten

Dosimetrie

Zugang

Dynamische Felder

Aufträge/B..

Begehungen

Personendaten

Titel

Last Name

First Name

Geschlecht

Schwanger

Geburtsname

Worker Id

Adams

Anna

weiblich

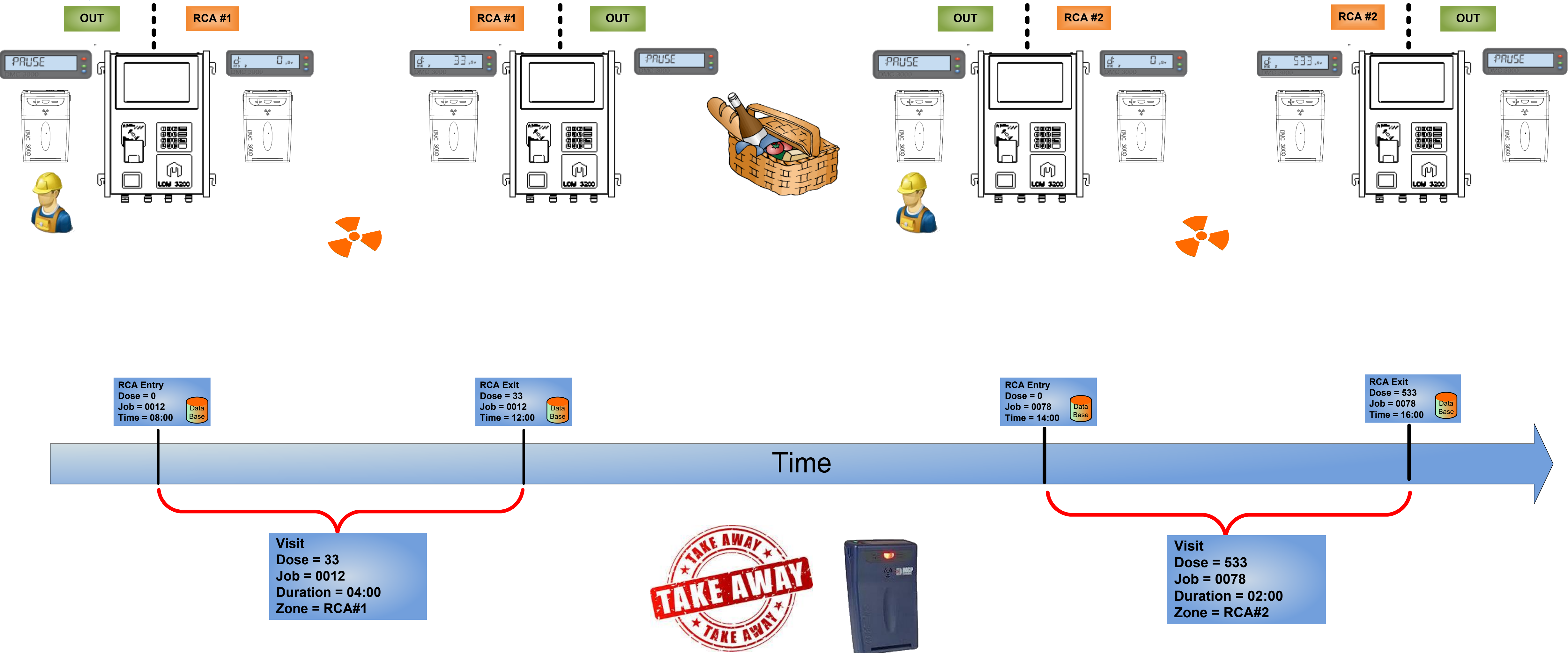
5000

Engage. Explore. Empower.  
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Annual Users' Conference

# Dosimetry system main concepts

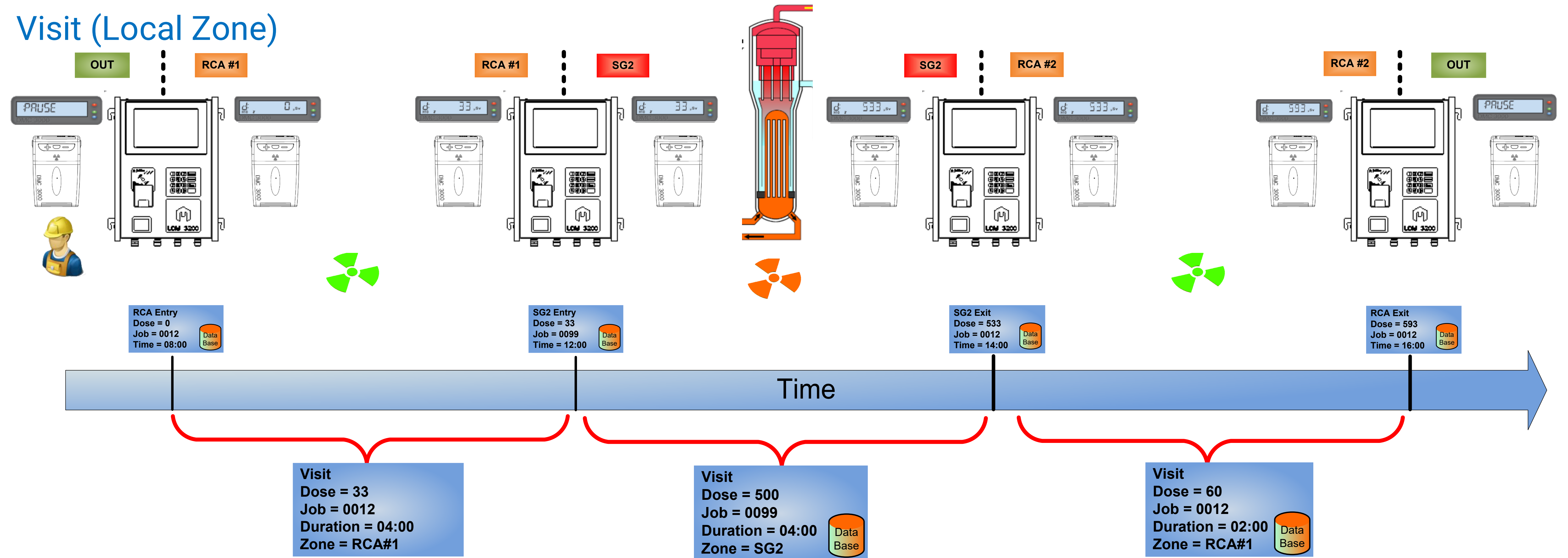
## Visit (simple)



- Everything is recorded/archived
- Including EPD Settings

# Dosimetry system main concepts

## Visit (Local Zone)

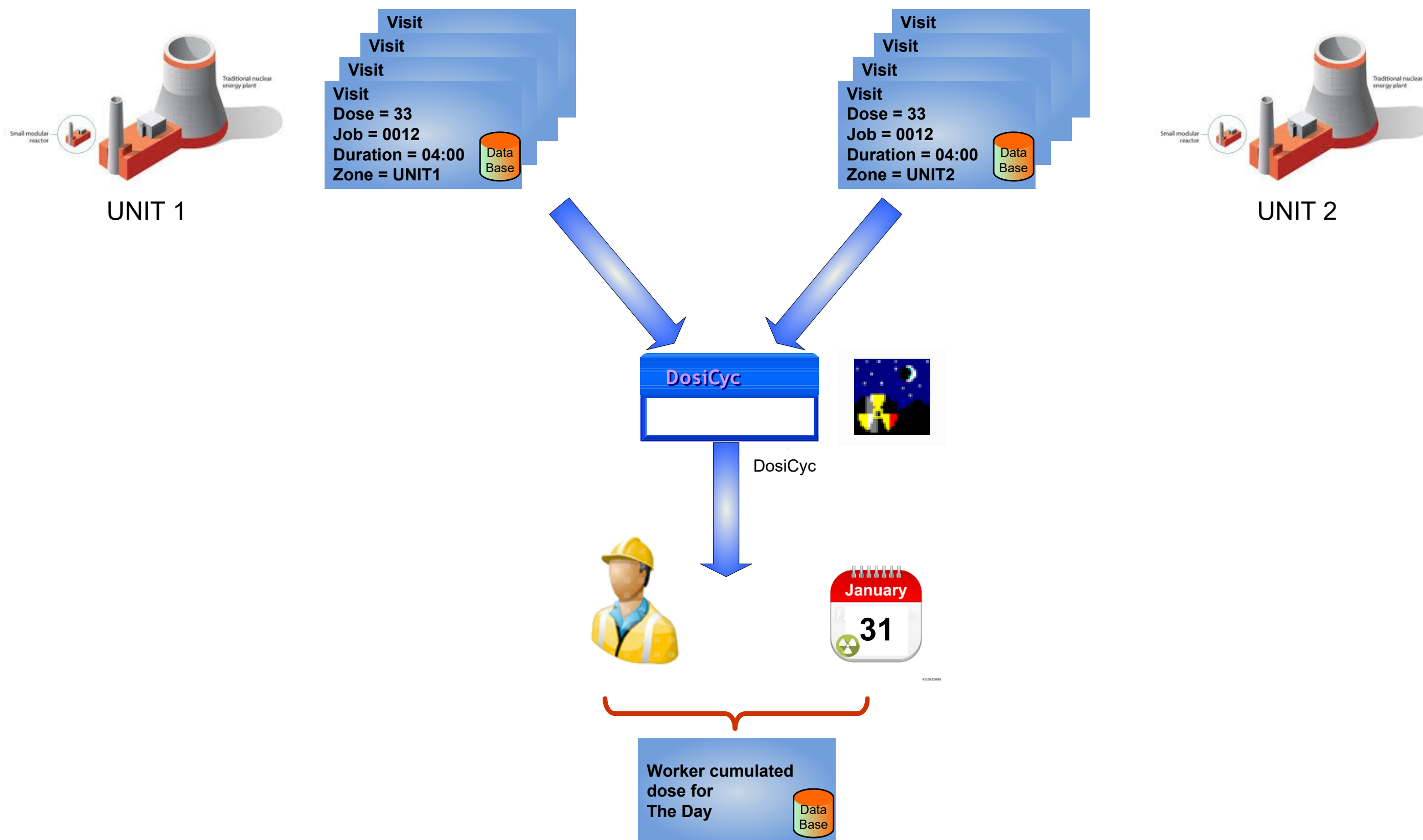


- Within the RCA, EDP settings can be changes without need to switch off and back on
- Everything's recorded to allow dose tracking

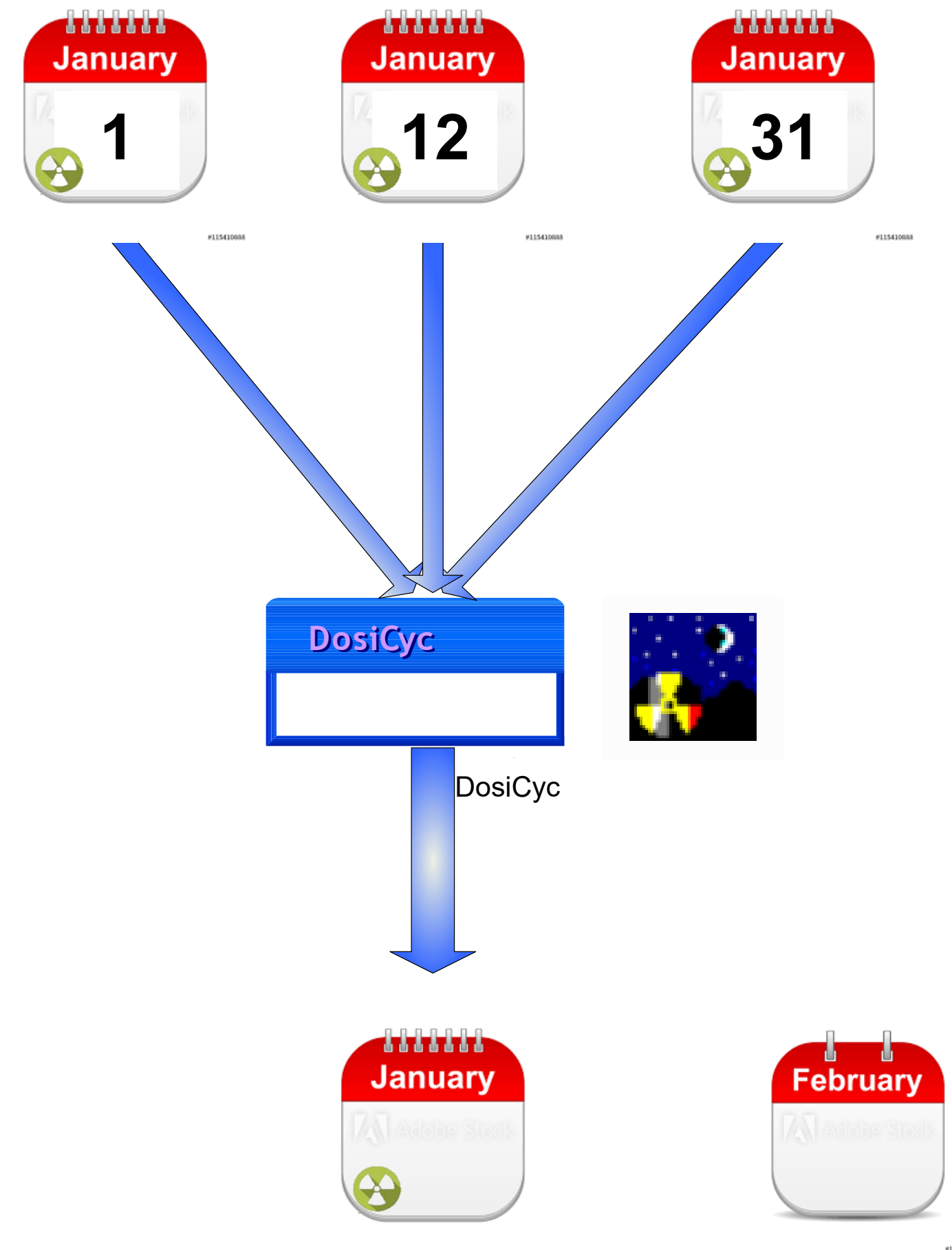


# Dosimetry system main concepts: Dose Summary

## Dose Calculation: Daily Dose (Multi Units & site example)



## Dose Calculation: Daily Dose & Monthly Dose




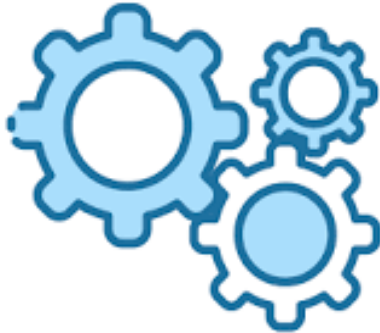

# From the Health Physics perspective

## → Protect Worker VS Legal Limits

- One goal : protect the workers not to go over the yearly legal limit (20mSv/2 rem)
- "Legal" dose can "compete" with Electronic Dose
- One can add any time in the life of the system a dose to monitor and to be part of the calculations



Jan	Feb	Mar	Apr	May	
Jan 0,18 rem	Feb 0,1 rem	Mar 0,4 rem	Apr 0,4 rem	May 0,2 rem	YTD 1,28 rem
Jan 0,1 rem	Feb 0,0 rem	Mar 0,3 rem	Apr 0,3 rem	May ??? rem	YTD 0,7 rem
					YTD 0,9 rem



- Official doses can be combined with EPD doses
- Any doses can participate to the "combination" (such as intakes/WBC measures)
- Official dose can be compared with Electronic dose

# From the Health Physics perspective

→ Create and monitor doses

		Annual limit	
Estimated dose		=	
	<input type="checkbox"/>		
TLD G	TLD Gamma Dose		
TLG N	Passive Neutron Do		
IDLR	Internal measure Off	estimated c	Annual limit
TLD L	TLD Lens of eye		=
SKIN WB	Skin Dose Whole B	100,000	
WDIS_HP007	DIS HP007 Measure		100,000
WINTERAL	Internal measure NC		
INSTD	Instadose Gamma		300,000
INTAKE	Intake		
EXTR	Extremity Dose	300,000	



# Qualifications

Record 1 of 4

Drag a column header here to group by that column

Configuration of dynamic criteria					Definition		
Category	Code	Message	Reader message	Sex conce...	Mandatory criteria	Mandatory date	Default value
ABC	ABC	ABC	ABC	=	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medical	Medical exam	Examen medical invalide ou éch...	EX. MEDICAL INVALIDE	Both	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Training	RESP	Respirator Training and fit test	CALL 887	Both	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Training	Training	Formation invalide ou échéance ...	FORMATION INVALIDE	Both	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Medical	WBC	WBC invalide ou échéance dép...	WBC INVALIDE	Both	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- New qualifications to verify at access control can be added any time
- Qualifications does not need the be always matched
- As they can be connected to a RWP only

RWP details

RWP Step 1 RWP Step 2 RWP Step 3

**Radiological Conditions**

Dose rate Gamma CT	
Dose rate Gamma GA	
Dose rate Neutron	
Dose rate Beta/Gamma	
Surface Contamination (ccps)	
Surface DWLS (Bq/cm²)	
Airborne Contamination (DACs)	

Equipment types:  Add

Drag a column header here to group by that column

Equipment type
PLASTIC SUIT

Dynamic Criteria:  Add

Criteria category	Criteria category
Medical	Medical exam
Medical	WBC
Training	Training
Training	RESP

Record 1 of 1

Record 0 of 0

Units for Dose and Rate: mSv; mSv/h

<-- Previous Next --> Cancel

# RWP / JOB (or both)

**DOSISERV Interface - mgp/localhost - Factory - CONFIG SITE - [RWP information]**

File Window Help LDMX20 configuration

Navigation Control bar  
Record 3 of 36

Filters ▾  
Drag a column header here to group by that column

RWP Code	Operator Code	Revision	Status	Description	Authorized by	Authorization date	HP10 dose sum over estimated d... ▹	Estimated total dose ...	Gamma dose
2024-12	12	=	0 Authorized	Leak testing of radioactive waste storage tanks.	mgp	04/05/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	30,000	87,56
2023-14	14	=	0 Authorized	Calibration of radiation monitoring instruments.	mgp	05/01/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	35,000	85,70
→ 2023-16	16	=	0 Authorized	Thermal imaging survey of the turbine area. ▾	mgp	09/05/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	40,000	92,52
> Task 2023-21	21	=	0 Authorized	Quality control checks of personal protective equipment.	mgp	31/08/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	52,500	96,57
> Areas 2024-19	19	=	0 Authorized	Quality control checks of personal protective equipment.	mgp	11/03/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	47,500	76,87
▾ RWP RWP information 2024-25	25	=	0 Authorized	Calibration of radiation monitoring instruments.	mgp	01/03/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	62,500	84,42
2024-24	24	=	0 Authorized	Leak testing of radioactive waste storage tanks.	mgp	11/06/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	60,000	78,29
2024-29	29	=	0 Authorized	Periodic health physics survey of the facility.	mgp	28/06/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	72,500	91,49
RWP groups 2023-36	36	=	0 Authorized	Review and update of radiation safety procedures.	mgp	11/07/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	90,000	96,56
2023-37	37	=	0 Authorized	Safety inspection of fuel handling system.	mgp	01/01/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	92,500	89,79
Dose Threshold Template Configuration 2023-45	45	=	0 Authorized	Verification of shielding effectiveness in high radiation zones.	mgp	16/04/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	112,500	92,25
2023-47	47	=	0 Authorized	Routine maintenance of cooling system components.	mgp	25/08/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	117,500	93,08
Rate Threshold Template Configuration 2023-53	53	=	0 Authorized	Quality control checks of personal protective equipment.	mgp	31/12/2023	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	132,500	98,98

- Main difference: Workflow to get the number available
- Job code can be part of an RWP (i.e. worker select RWP first then Job)

**DOSISERV Interface - mgp/localhost - Factory - CONFIG SITE - [Task information]**

File Window Help LDMX20 configuration

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**Navigation Control bar**

Record 1 of 32

- Bookmarks
- Administration
- Worker
- Task/Area/RWP
- Task
  - Task information
  - Task Authorizations
  - Task groups
  - Dynamic criteria

### Search Parameters

Task No. Valid from Valid To ☒ Auto search

Drag a column header here to group by that column

General task information		Validity period (in days)			Task dosimetry				Maximum doses	
Task No.	Task name	valid from	valid to	Suspended	HP10 dose over estimated	Estimated to...	HP10G tot...	Dose duration	HP10G max dose	HP10G max rate
1221	Document Review	29/07/2023	01/08/2024	<input type="checkbox"/>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	5,000	3,469	445:36:53	0,686	1,000
1457	Radiation Monitoring	23/10/2023	01/08/2024	<input checked="" type="checkbox"/>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	5,000	2,089	414:10:00	0,569	1,000
1588	Logistics Planning	16/08/2023	08/01/2024	<input type="checkbox"/>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	8,000	2,406	356:51:00	0,577	1,000
2229	System Diagnostics	12/06/2023	12/10/2024	<input type="checkbox"/>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		3,480	399:11:01	0,699	1,000
2618	Field Survey Building 1	17/01/2023	09/08/2024	<input type="checkbox"/>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	8,000	4,888	417:24:00	0,688	1,000
2738	Field Survey	20/04/2023	16/08/2024	<input type="checkbox"/>	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		1,440	427:04:37	0,413	1,000

# Dose Budgets

- Global budget for the Job
- Access still allowed ?
- Dose per **individual** for that Job
- Access still allowed ?

Task information

Task 2618 Field Survey Building 1

Information Daily Doses Dashboard

Record 5 of 32

**General task information**

Task No.	2618
Task name	Field Survey Building 1
SISERI Key	
Comments	
Generic	<input type="checkbox"/>

**Validity period (in days)**

valid from	17/01/2023
valid to	09/08/2024
Suspended	<input type="checkbox"/>

**Expected total dose and duration of task**

Estimated total dose HP10	8,000
Estimated total dose HP007	
Estimated total duration	
Access denied if estimated dose is reached	<input type="checkbox"/>

**Dose and duration limit for individual worker**

HP10 estimated individual dose limit	0,500
HP007 estimated individual dose limit	
Estimated individual duration	
Access control on individual dose/duration	<input type="checkbox"/>

**Min. dose credit necessary for using the task**

HP10 minimum dose	
HP007 minimum dose	

**Dose alarm setpoints**

HP10 dose threshold	0,100
HP007 dose alarm	
Neutron fraction (%)	

**Dose pre-alarm setpoints**

HP10GN dose pre-alarm	0,080
HP007 dose pre-alarm	

**Rate alarm setpoints**

HP10G dose rate alarm	1,000
HP10N dose rate alarm	
HP007 dose rate alarm	
Maximum duration alarm	

**Task dose**

HP10G total dose	4,888
HP10N total dose	

HP007 total dose  
HP3 total dose  
Dose duration 417:24:00  
Neutron coefficient

**Access Control**

Allowed Dosimeters types	All
--------------------------	-----

Units for Dose and Rate: mSv; mSv/h

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# Dose Budgets

ag a column header here to group by that column

General task information		Validity period (in days)			Task dosimetry			
Task No.	Task name	valid from	valid to	Suspended	HP10 dose over estimated	Estimated to...	HP10G tot...	Do
ABC	ABC	=	=			=	=	=
5999	Project Planning	16/05/2023	06/05/2024	<input type="checkbox"/>		1,000	2,903	
8171	Performance Review	12/06/2023	28/11/2024	<input type="checkbox"/>		2,000	3,661	
3179	Equipment Testing	17/06/2023	08/05/2024	<input type="checkbox"/>		4,000	3,647	
5902	Inspect Safety Gear	06/10/2023	24/03/2024	<input type="checkbox"/>		5,000	4,020	
5160	Coolant System Check	27/11/2023	21/05/2024	<input type="checkbox"/>		6,000	4,377	
1221	Document Review	29/07/2023	01/08/2024	<input type="checkbox"/>		5,000	3,475	
2618	Field Survey Building 1	17/01/2023	09/08/2024	<input type="checkbox"/>		8,000	4,888	
3884	Safety Briefing	20/09/2023	11/01/2024	<input type="checkbox"/>		6,000	3,052	
7570	Technical Writing	15/07/2023	20/06/2024	<input type="checkbox"/>		4,000	1,866	
8058	Inspect Safety Gear	12/04/2023	11/04/2024	<input type="checkbox"/>		4,000	1,838	
1457	Radiation Monitoring	23/10/2023	01/08/2024	<input checked="" type="checkbox"/>		5,000	2,089	
1588	Logistics Planning	16/08/2023	08/01/2024	<input type="checkbox"/>		8,000	2,406	
8408	Hazard Assessment	12/12/2023	10/01/2024	<input type="checkbox"/>			1,399	

# DMC Selection

- WHAT DMC are to be used for the JOB/RWP

Task information

Task 2618 Field Survey Building 1

Information Daily Doses Dashboard

General task information

Task No.

2618

Task name

Field Survey Building 1

SISERI Key

Comments

Generic

☐

Validity period (in days)

valid from

17/01/2023

valid to

09/08/2024

Suspended

☐

Expected total dose and duration of task

Estimated total dose HP10

8,000

Estimated total dose HP007

Estimated total duration

Access denied if estimated dose is reached

☐

Dose and duration limit for individual worker

HP10 estimated individual dose limit

0,500

HP007 estimated individual dose limit

Estimated individual duration

Access control on individual dose/duration

☐

Min. dose credit necessary for using the task

HP10 minimum dose

HP007 minimum dose

Dose alarm setpoints

HP10 dose threshold

0,100

HP007 dose alarm

Neutron fraction (%)

Dose pre-alarm setpoints

HP10GN dose pre-alarm

0,080

HP007 dose pre-alarm

Rate alarm setpoints

HP10G dose rate alarm

1,000

HP10N dose rate alarm

HP007 dose rate alarm

Maximum duration alarm

Task dose

HP10G total dose

4,888

HP10N total dose

HP007 total dose

HP3 total dose

Dose duration

417:24:00

Neutron coefficient

Access Control

Allowed Dosimeters types

All

Access Control

Allowed Dosimeters types

All

☐ Select All / None

☐ Gamma

☐ Neutron

☐ Beta

☐ GammaContrib

☐ NFC

OK

Cancel



# Dashboard

- The dashboard is a standalone application that does not need human interaction

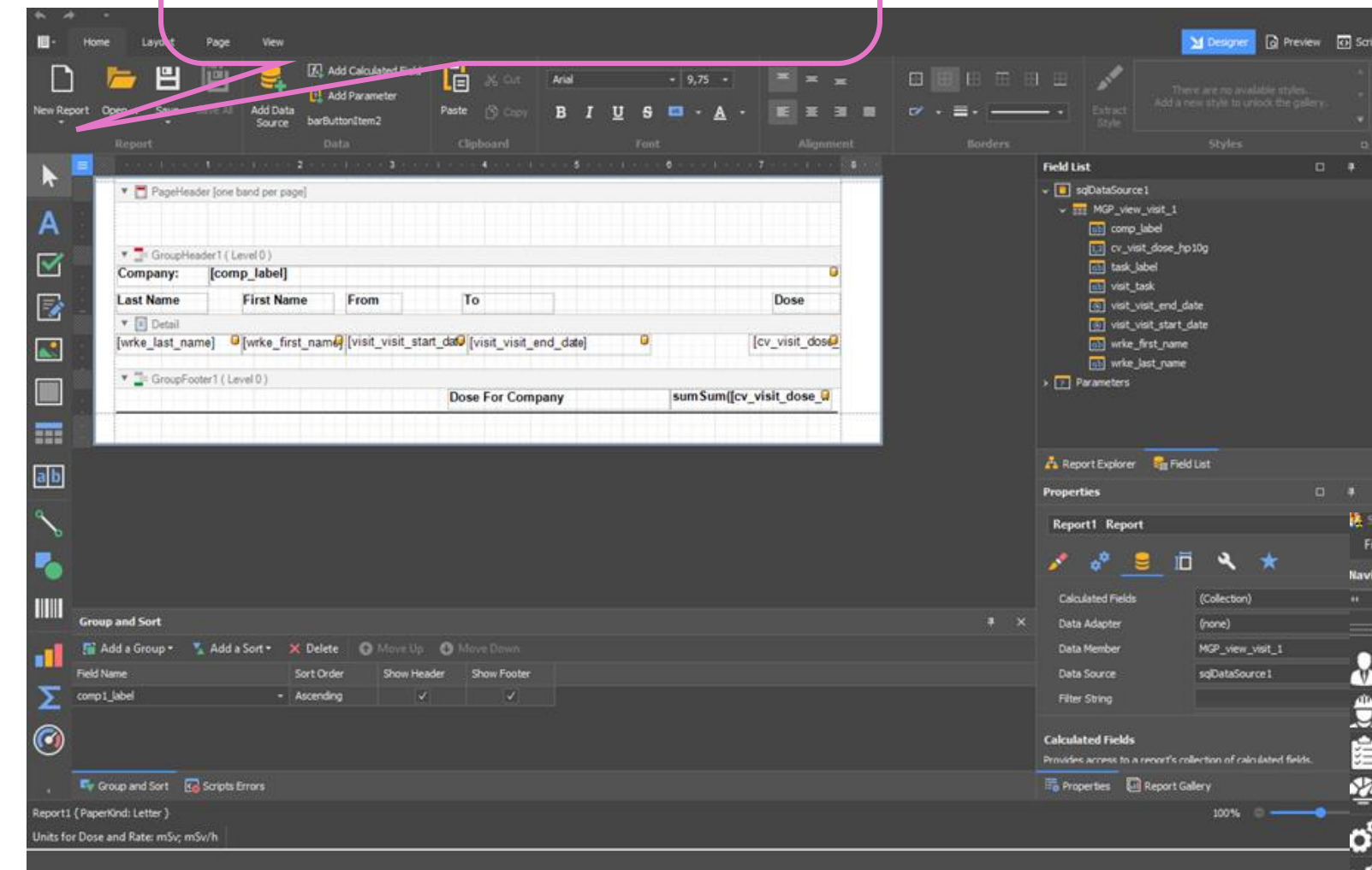




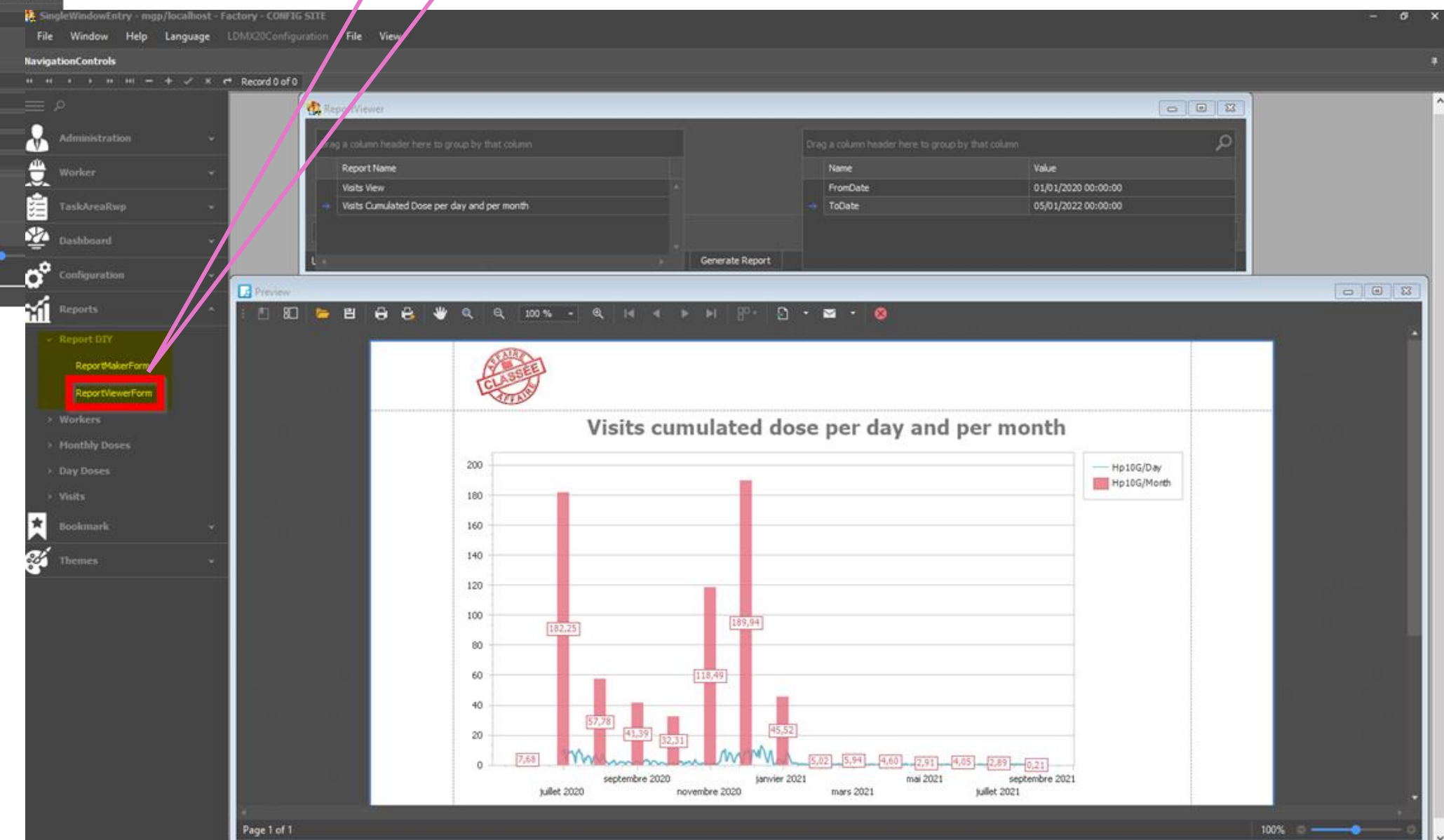
# Reporting

- Training
- Excel direct into the database
- Power BI direct into database
- Dedicated tool

Step 1 : create report



Step 2 : make it available for others



# Body Monitors Measurements

## Contamination Monitoring and Dosimetry Integrated Products



DMC 3000 Personal Electronic Dosimeter and LDM 320W Dosimeter Reader



DMC 3000 Personal Electronic Dosimeter and LDM 320D Dosimeter Reader

- 1. Th
  - 2. Wh
  - 3. Workers take necessary actions and finally exits
  - 4. Worker witch of dosimeter
- DosiSery will record a visit for that person and the Job code selected at entry time

connect the **visit** with the **Contam Event AND** with the **measurement results**



# Body Monitors Measurements

SingleWindowEntry - mgp/localhost - Factory - CONFIG SITE - [Contamination Measurements]

File Window Help LDMX20 configuration

Navigation Control bar

Record 1 of 101

Bookmarks

Administration

Worker

Worker information

Workers list

Tracking list

List of visits

List of passages

Groups of workers

Daily doses

External measurements

Monthly Doses

Contamination measurements

Incorrect passages

Workers Doses Management

Worker Transfer

Task/Area/RWP

Dashboard

Configuration

Search

Worker ID

External ID

Last Name

First Name

Start Date

End Date

Contamination Portal ID

Local companies

Company

Section

Task

Area name

Ssc number

Clear

Remember Values

Auto-Search

Search

Drag a column header here to group by that column

Contamination information	Contamination date	Portal Id
+ 18/07/2024 12:54:00	Argo5 U	
+ 18/07/2024 11:05:00	Argo5 U	
+ 18/07/2024 10:59:00	Argo5 U	
+ 07/07/2024 23:18:00	Argo5 U	
+ 07/07/2024 21:11:00	Argo5 U	
+ 07/07/2024 20:04:00	Argo5 U	
+ 07/07/2024 19:42:00	Argo5 U	
+ 07/07/2024 17:31:00	Argo5 U	
+ 07/07/2024 17:02:00	Argo5 U	
+ 07/07/2024 14:37:00	Argo5 U	
+ 07/07/2024 13:42:00	Argo5 U	
+ 07/07/2024 13:39:00	Argo5 U	
+ 07/07/2024 09:19:00	Argo5 U	
+ 07/07/2024 09:17:00	Argo5 U	
+ 07/07/2024 07:59:00	Argo5 U	
+ 07/07/2024 05:54:00	Argo5 U	
+ 07/07/2024 00:58:00	Argo5 U	
+ 06/07/2024 22:57:00	Argo5 U	
+ 06/07/2024 20:49:00	Argo5 U	
+ 06/07/2024 19:01:00	Argo5 U	
+ 06/07/2024 15:20:00	Argo5 U	

Worker contamination detail

Record 5 of 101

General worker information

Last Name

First Name

Worker Id

External ID of the worker

Company name

Section code

Section name

Social Security Number

Worker's health physics category

Contamination information

Contamination date

Portal Id

Position

Import date

Model

Sanction

Measurements

Foot Detectors

DETECTOR 01 BETA

DETECTOR 02 BETA

Leg Detectors

Body Detectors

Side Detectors

Hand Detectors

Arm Detectors

Top of head Detectors

Shoe Detectors

Frisker Detectors

24 11:05:12

1221

Document Review

CZ

24 10:59:54

2229

System Diagnostics

CZ

24 23:08:00

1588

Logistics Planning

RCA U1

24 21:11:00

2229

System Diagnostics

RCA U1

24 20:04:00

4894

Security Patrol

RCA U1

24 19:42:00

3505

Environmental Tes...

RCA U1

24 17:31:00

2738

Field Survey

RCA U1

24 17:02:00

3884

Safety Briefing

RCA U1

24 14:37:00

2921

Supply Inventory

RCA U1

24 13:42:00

4894

Security Patrol

RCA U1

24 13:39:00

5160

Coolant System Ch...

RCA U1

24 09:19:00

4067

Operational Testing

RCA U1

24 09:17:00

1588

Logistics Planning

RCA U1

24 07:59:00

1457

Radiation Monitori...

RCA U1

24 05:54:00

8171

Performance Revi...

RCA U1

24 00:58:00

RCA U1

24 22:57:00

1457

Radiation Monitori...

RCA U1

24 20:49:00

3505

Environmental Tes...

RCA U1

24 19:01:00

5602

Performance Revi...

RCA U1

24 15:20:00

5000

Logistics Planning

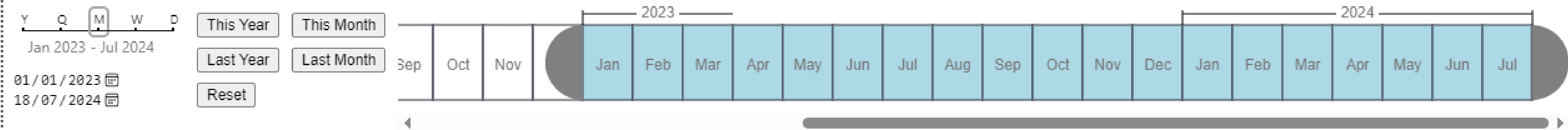
RCA U1

MIRION  
Connect 25  
Annual Users' Conference

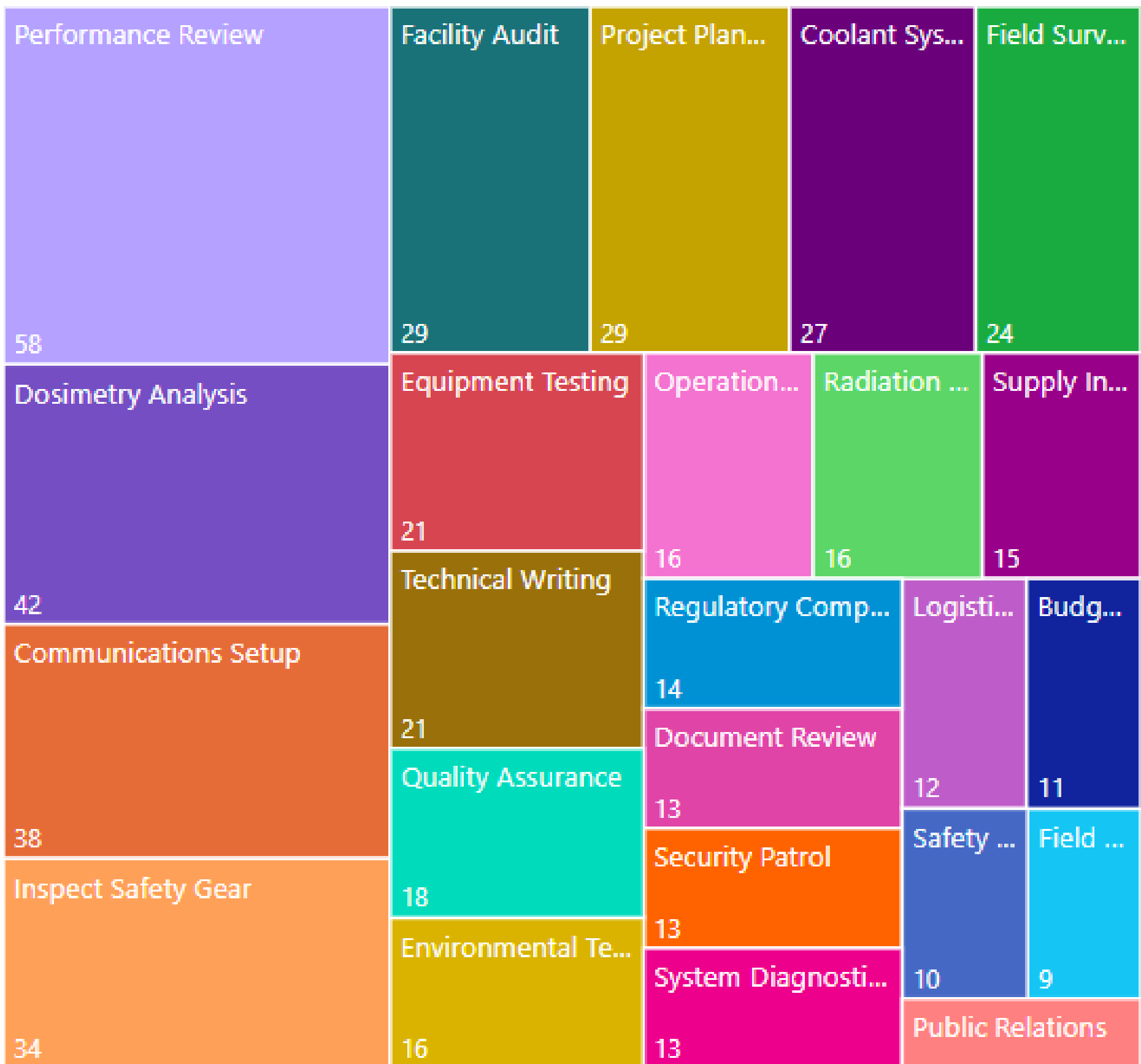
Engage. Explore. Empower.  
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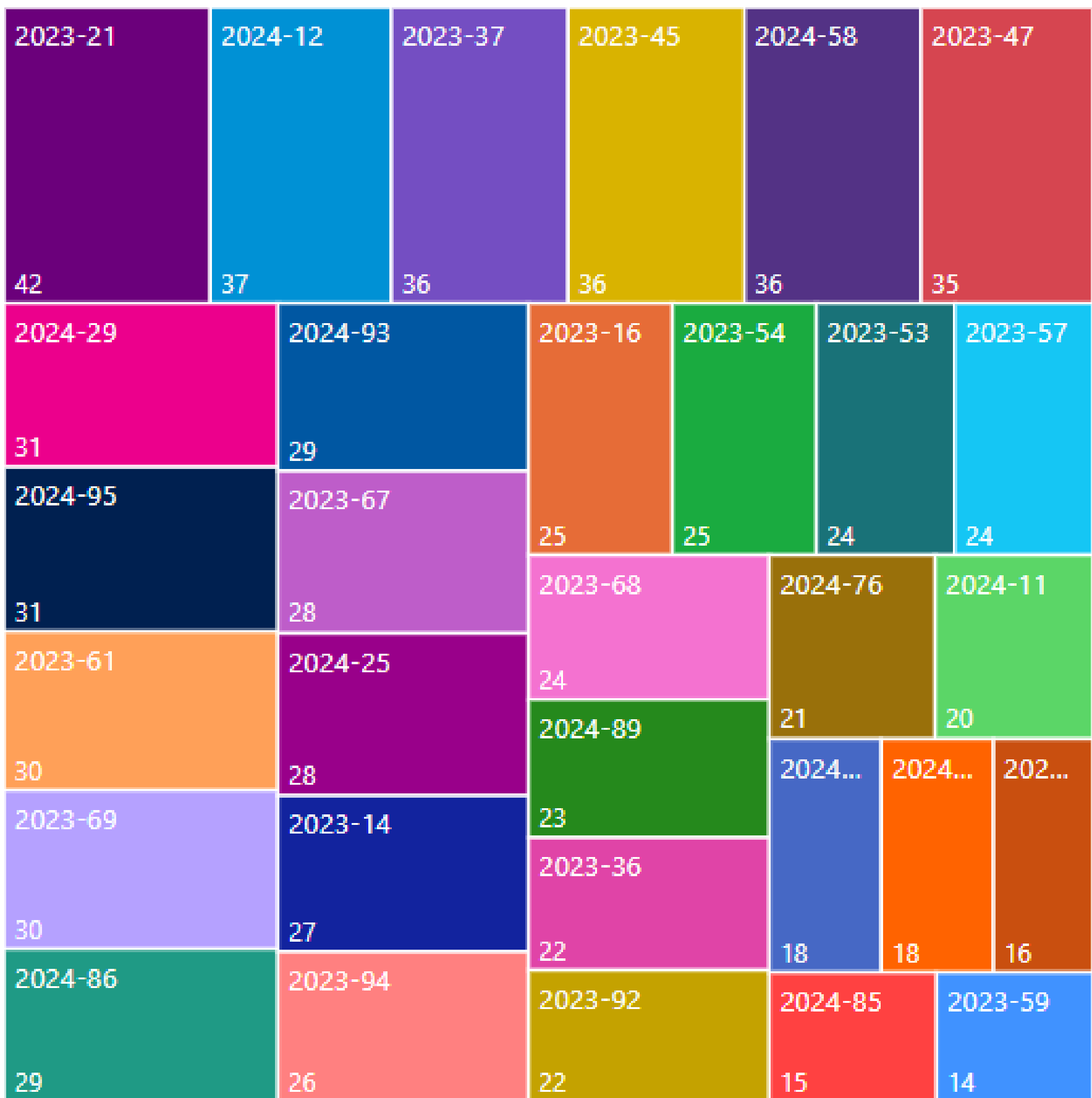
# Body Monitors Measurements



Contam Events Per Task code by task\_label

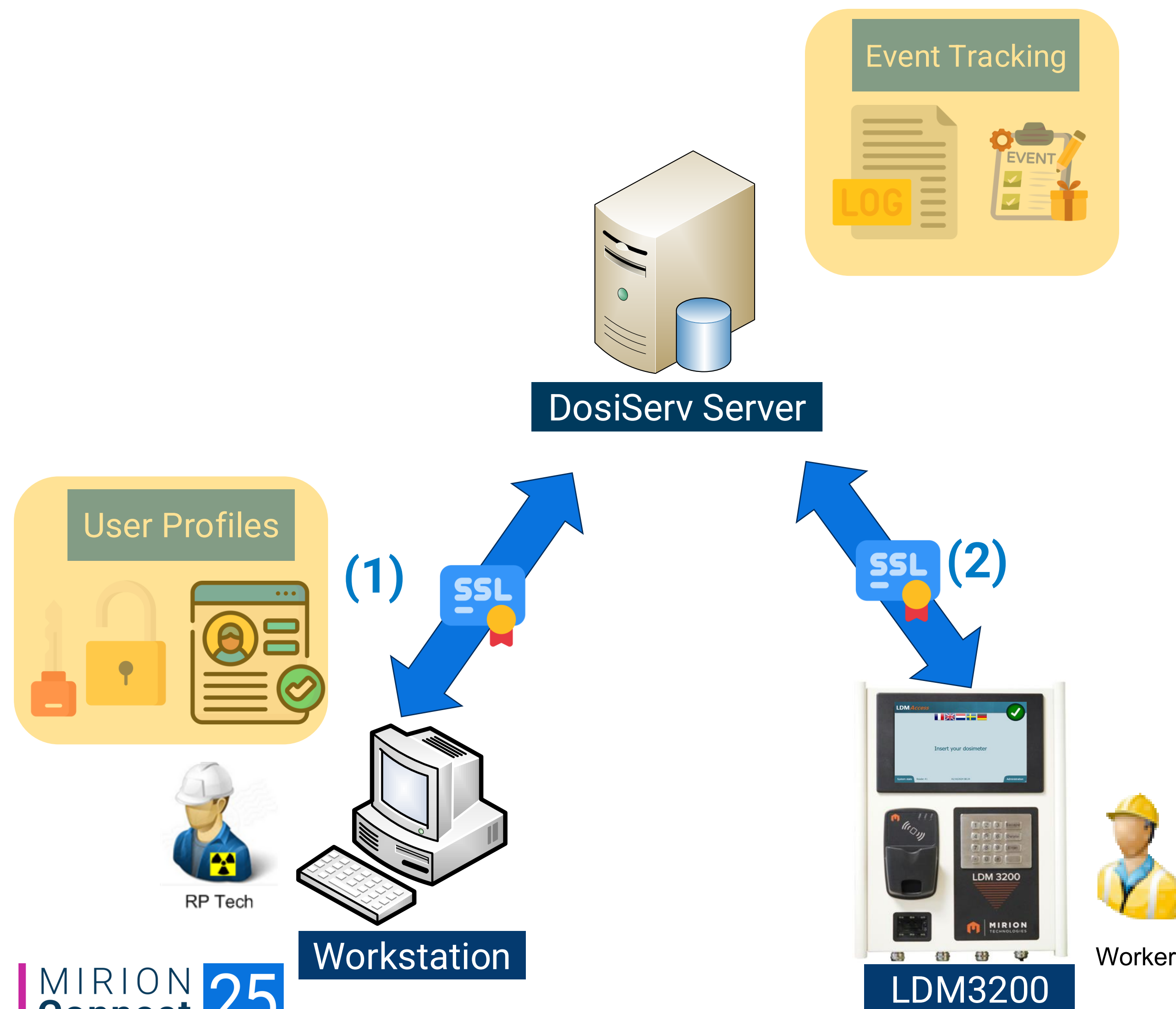


Contam Events Per RWP by visit\_rwp



# Cyber Security in DosiServ

## → Cyber Security Concerns



## Secured Protocols

- **DosiServ offers secured protocols:**
  - Between RP workstations and Server
  - Between Worker access control Kiosk and server

## User Profiles

- DosiServ Client application embeds user rights management to guarantee users will authenticate and access to authorized data only

## Event Tracking

- Several application logs, event logs and journal tables are available to keep track of all important information.

# DosiServ Customer Support

→ Support

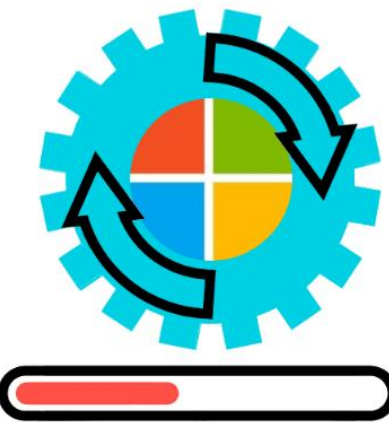
## Customer Support

- Our team provides worldwide customer support.
- Maintenance contract subscription offers:
  - Support (Phone / email)
  - Corrective maintenance
  - Remote intervention
  - Software Upgrades
  - Yearly visit



## Reader Equipment Support

- Support Contract to maintain reader equipment up-to-date (Operating System and SW)



**WINDOWS UPDATE**



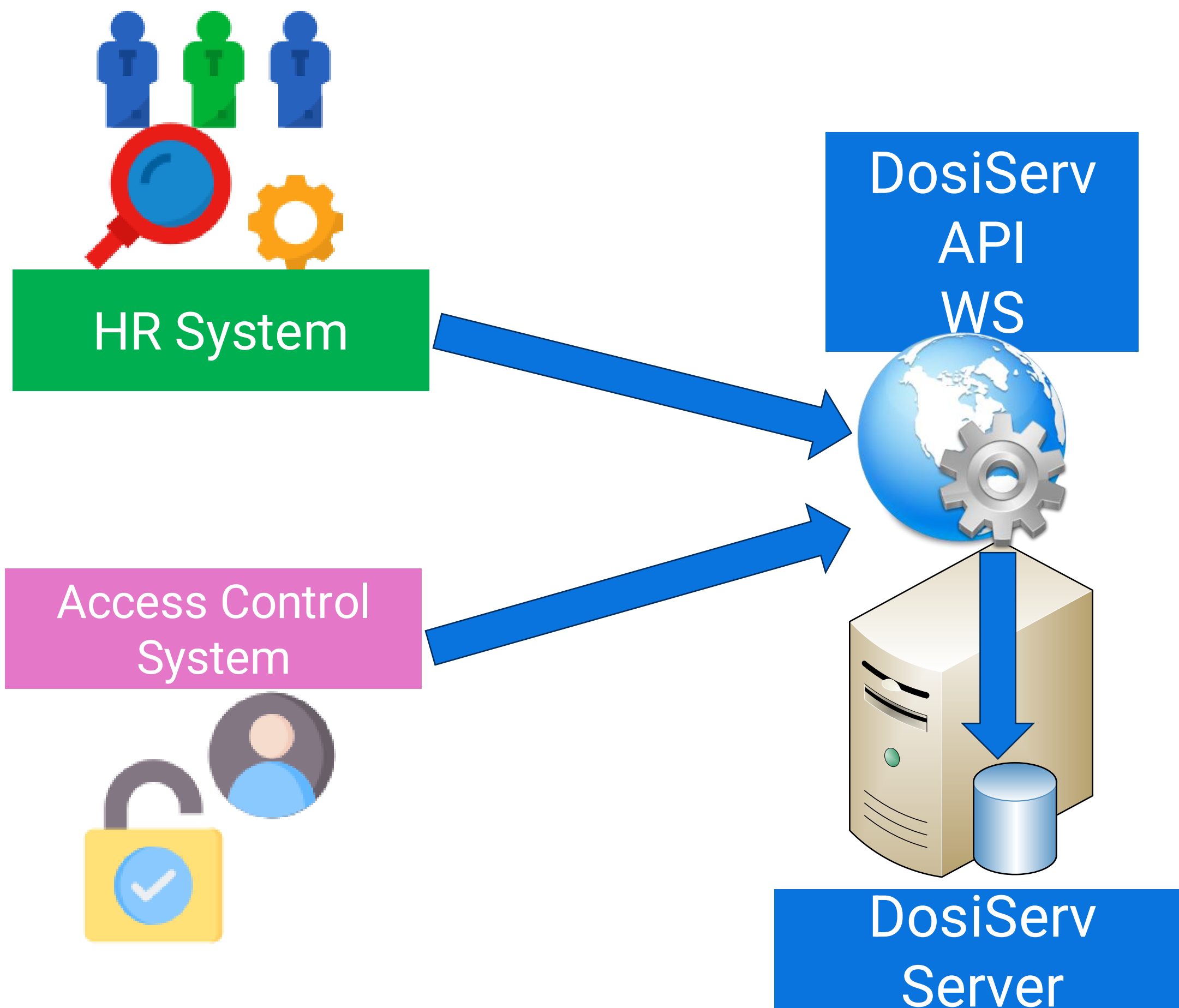


# DosiServ

- Introduction
- DosiServ Ecosystem
- Access Control
  - From worker point of view
  - From HP perspective
- DosiServ Interface

# DosiServ Interfacing Capabilities

## → Integration with Third-party Systems



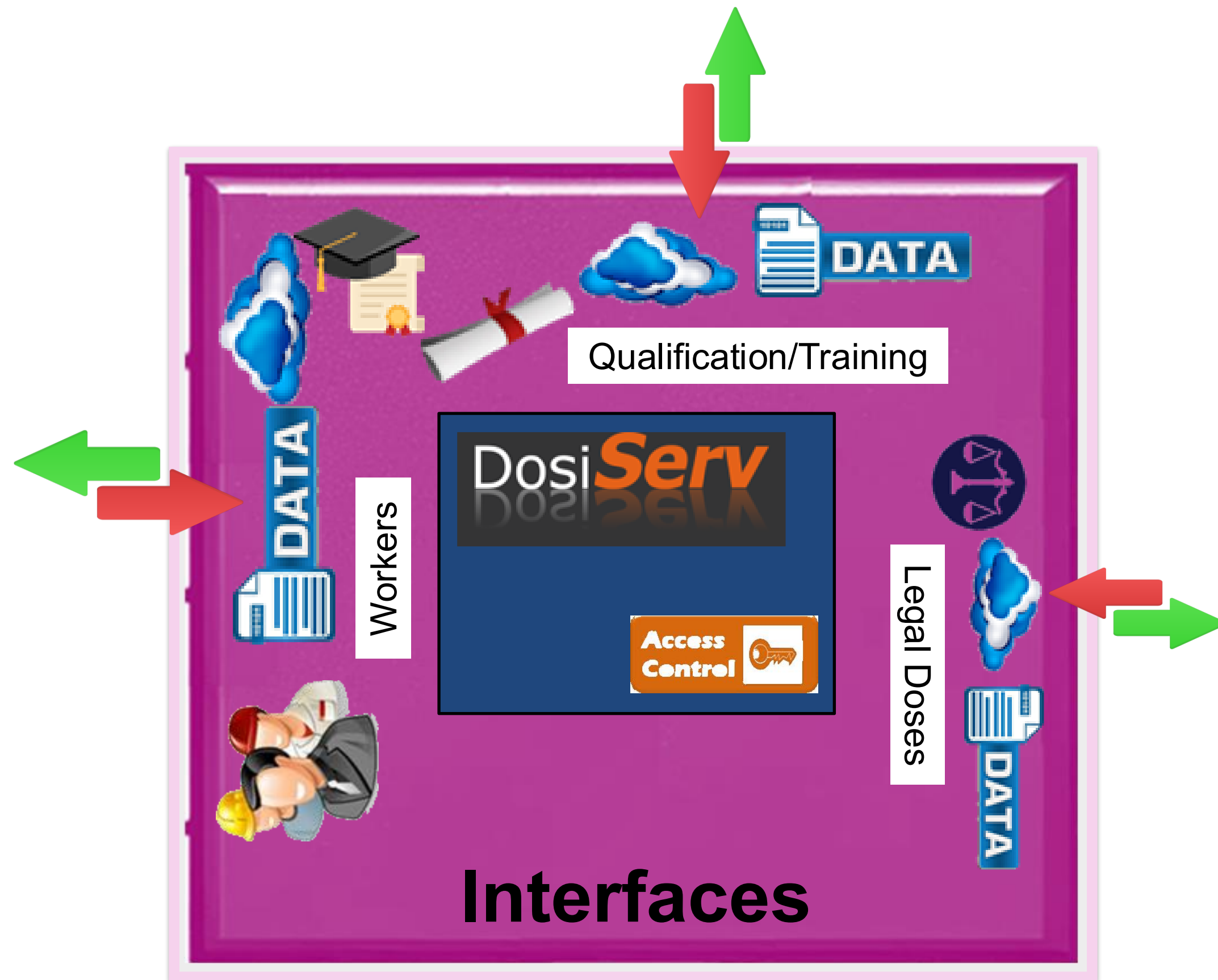
## Standard API

DosiServ provides a built-in API (Webservice) that allows maintaining DosiServ's database information.

- Data that can be updated:
  - Workers Information & Qualifications
  - Workers Doses
  - Workers Jobs Authorization
  - Jobs
  - Companies
  - ...
- This API can be used to maintain DosiServ's data from customer's HR system or access control system.
- It is also an option to be able to import data into DosiServ (migration from a legacy system to DosiServ)

# DosiServ Interfacing Capabilities

→ Integration with Third-party Systems



## DosiServ Integration Scenario

- **Standard DosiServ**
  - The standard version comes with a numerous number of so-called "interfaces with external systems"
  - These interface allows to "feed" the database with data. This can be done via :
    - Web Services
    - File transfer (file imports)



# DosiServ Interfacing Capabilities

➔ Integration with Third Party Systems

## DosiServ Integration Scenario

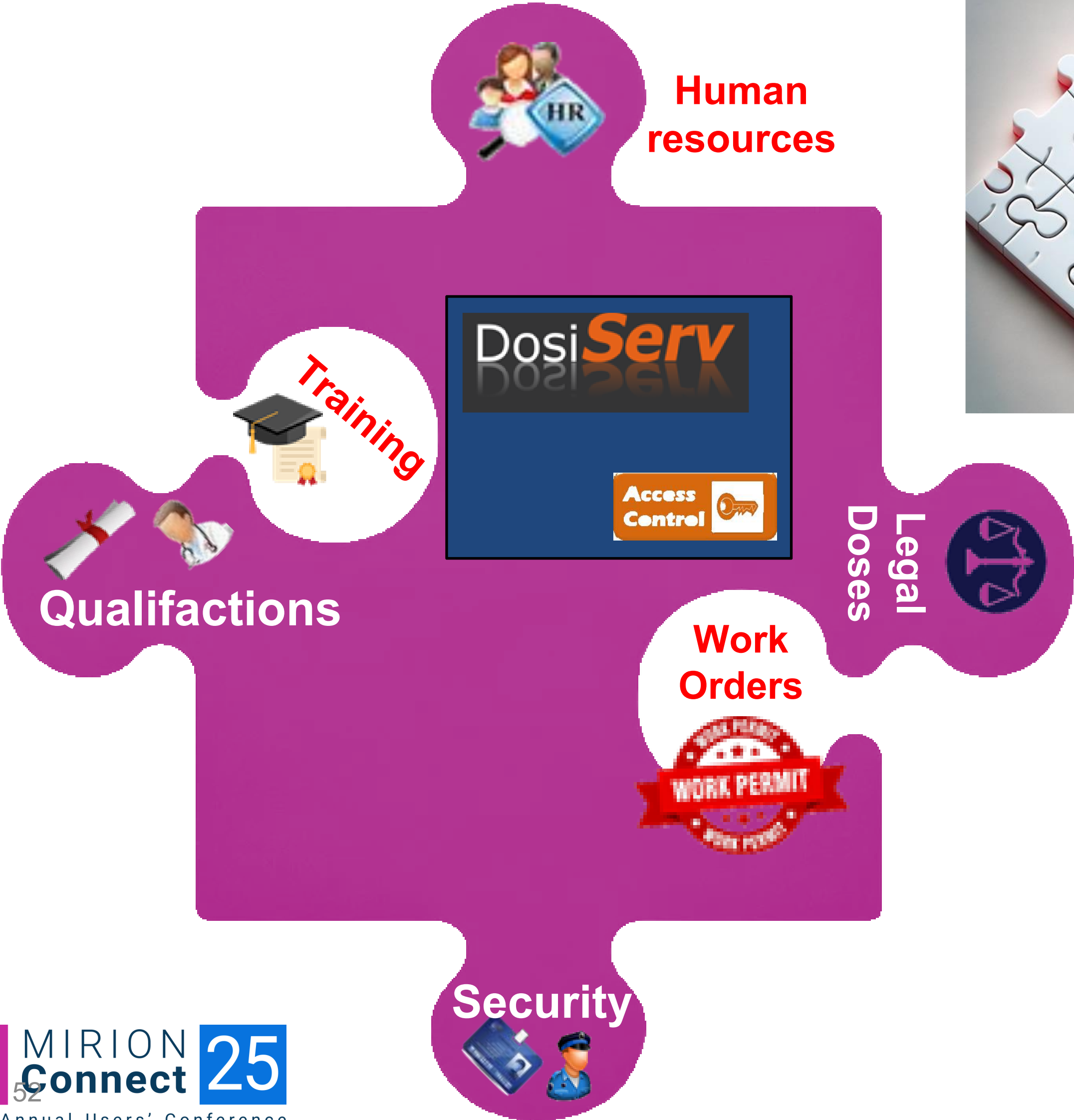
- What do we typically find in a "big" existing installation ? (i.e. NPP)





# DosiServ Interfacing Capabilities

→ Integration with Third Party Systems



## DosiServ Solution

- Customize/adapt

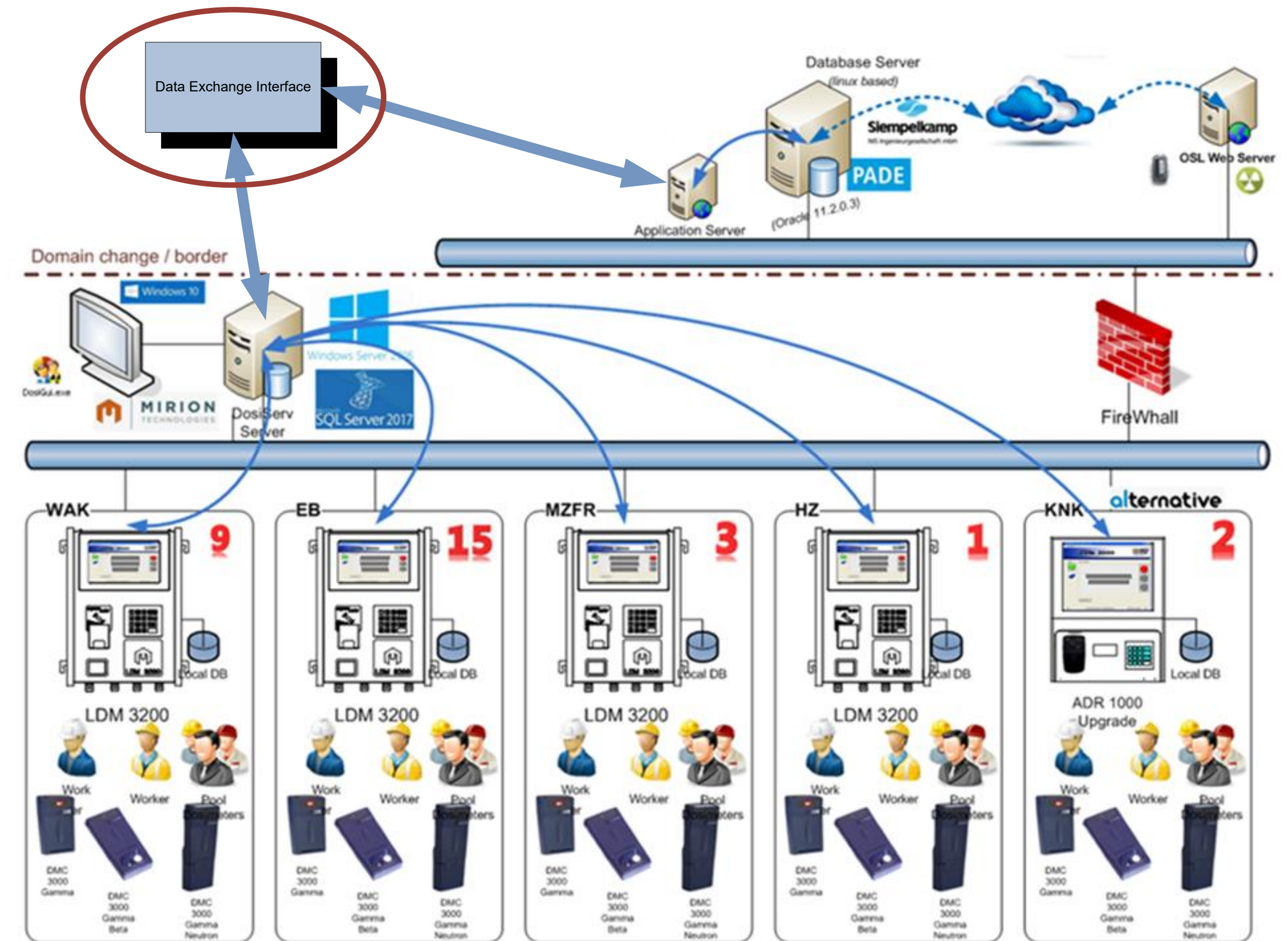
# DosiServ Interface with Local DB

## Interface

DosiServ has been deployed at KTE facility in Karlsruhe.

A Software Interface has been implemented between DosiServ and PADE, PADE being used as the main Dosimetry System and DosiServ being the interface between Access Control Readers and PADE.

The advantage is that it allows leveraging the DosiServ's supervision capabilities.





# DosiServ Interface with other DB

## Interface

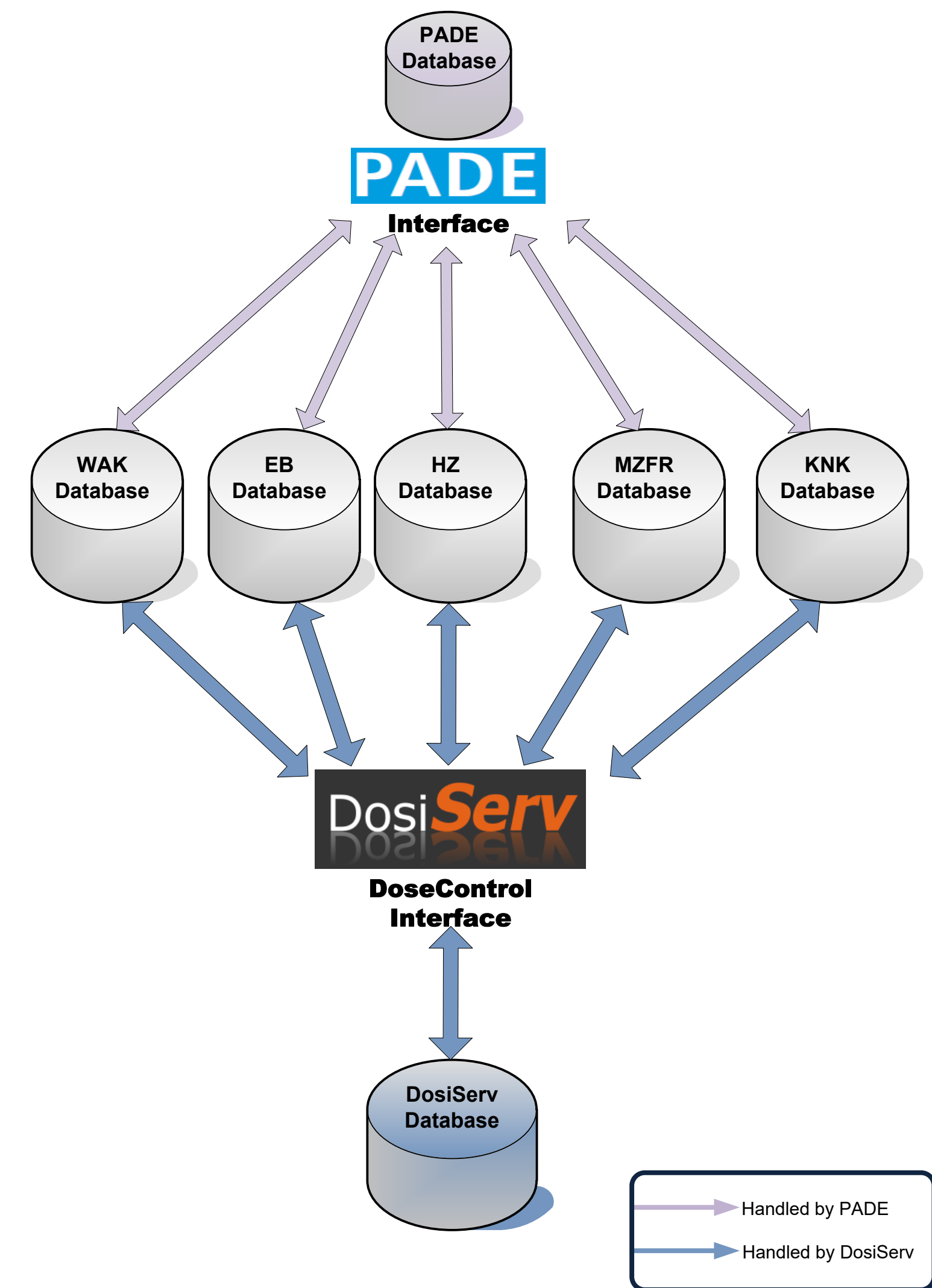
The interface allowed synchronization of both DosiServ and PADE databases.

Data update from PADE to DosiServ:

- Worker data (General information, Dose limits, message to be displayed to the worker...)
- Tasks
- Workers tasks's authorizations
- Dosimeters information (serial numbers and calibration date)

Data update from DosiServ to PADE :

- Dose transactions

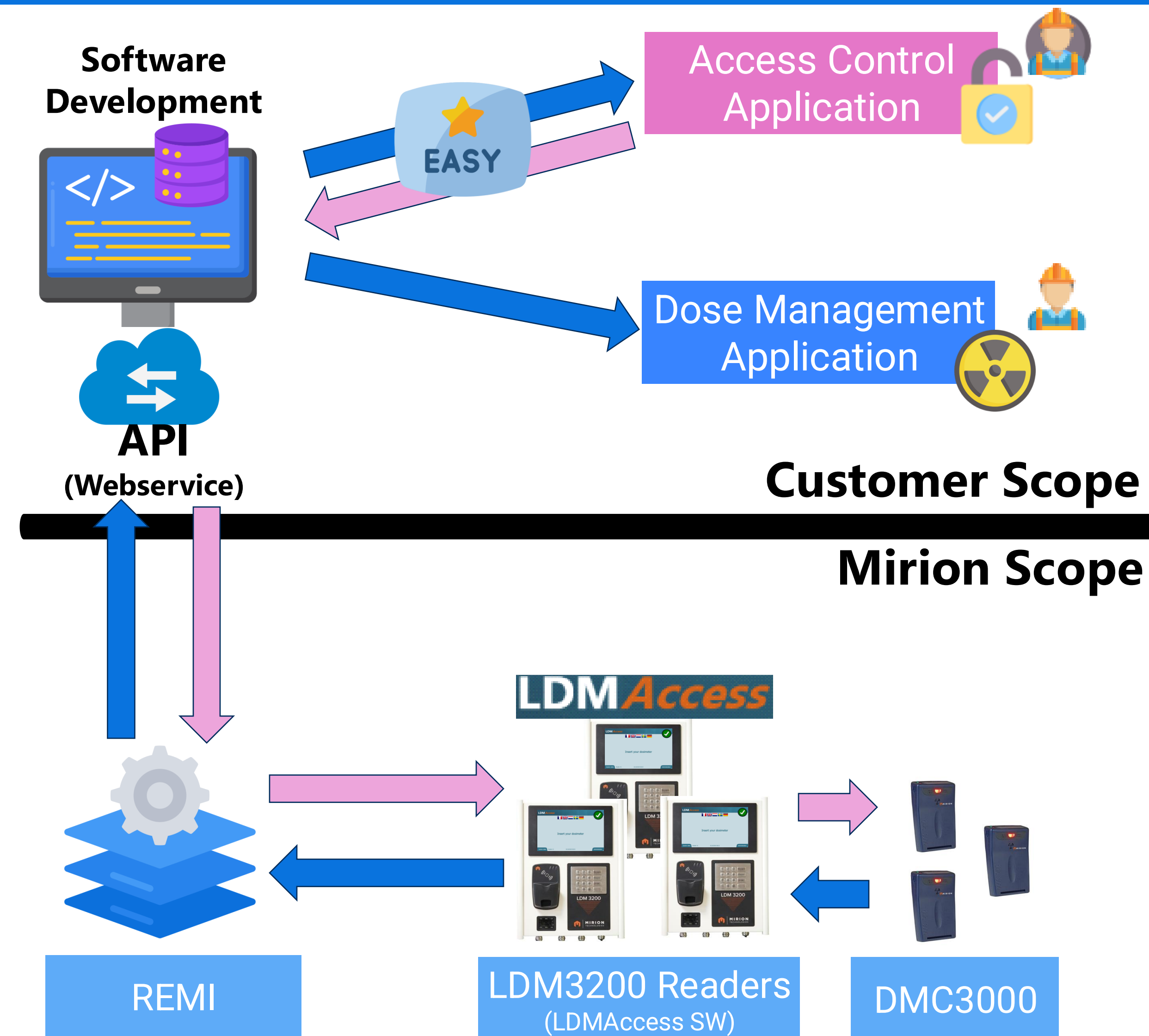


# Building a Dosimetry System using REMI

## REMI

REMI (Reader Ethernet Management Interface) is a Middleware that can be used to drive a network made of several Mirion's access point readers (LDM3200 / LDM1000).

- **Mirion Readers:**
  - Deal with DMC3000 communication using information provided by REMI (Alarms)
  - Send Collected Data to REMI
- **REMI:**
  - Handles Readers' incoming access requests and calls an API (Web Service) to get the access request verdict (Access granted/denied + Alarms)
  - Processes API (Web Service) responses and drives readers accordingly to program DMC3000.
- **Customer has to:**
  - Develop the Access Control API (Operations contract is provided by Mirion).
  - Develop its own application to consolidate data from DMC3000 (Dose management)



# DosiServ

- Introduction
- DosiServ Ecosystem
- Access Control
  - From worker point of view
  - From HP perspective
- DosiServ Interface
- New feature & Coming Up



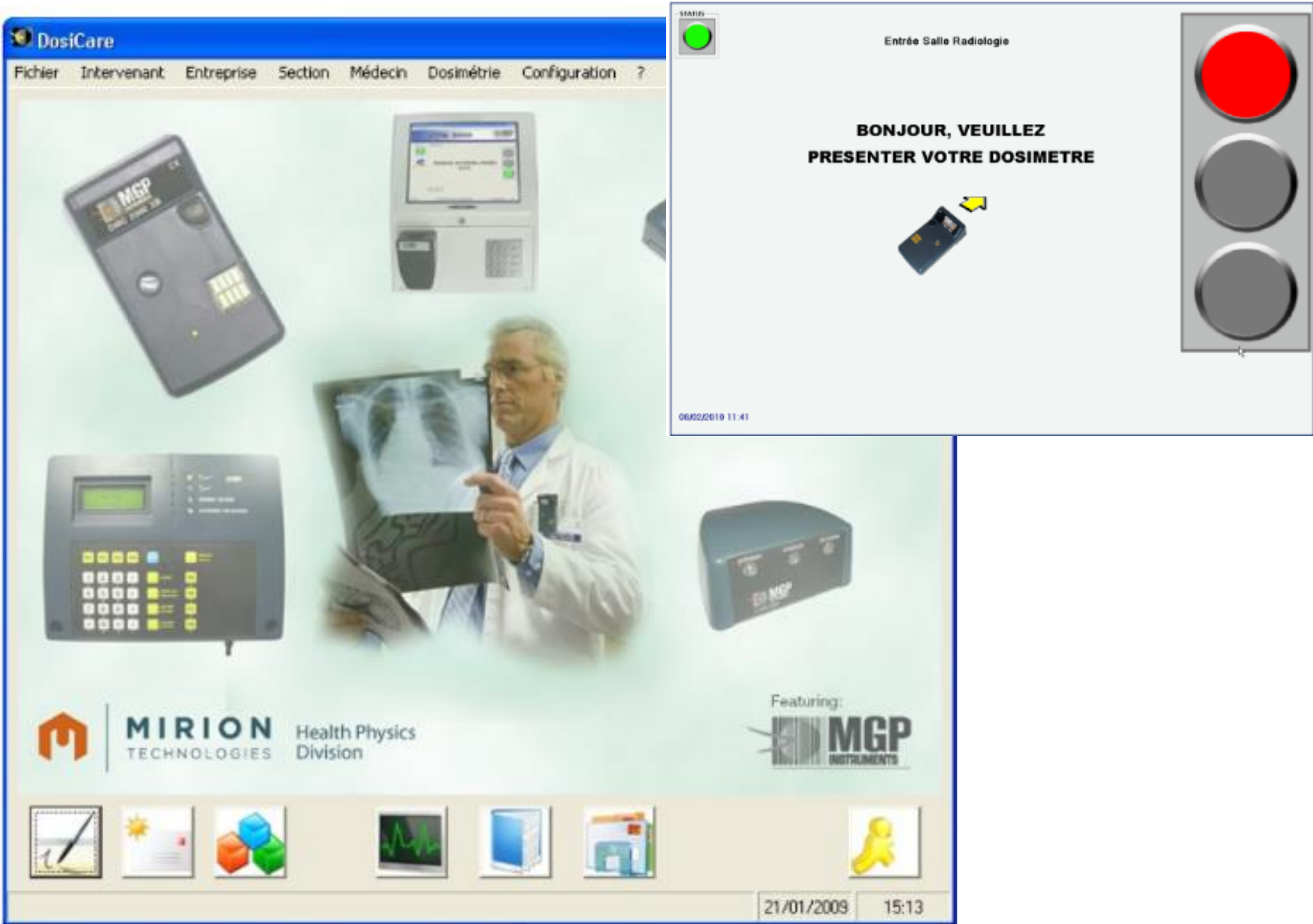
# HSE Legal Approval

**DosiServ has been legally approved in the UK**

No need to passive (TLD) Dosimeters when system audited by regulator



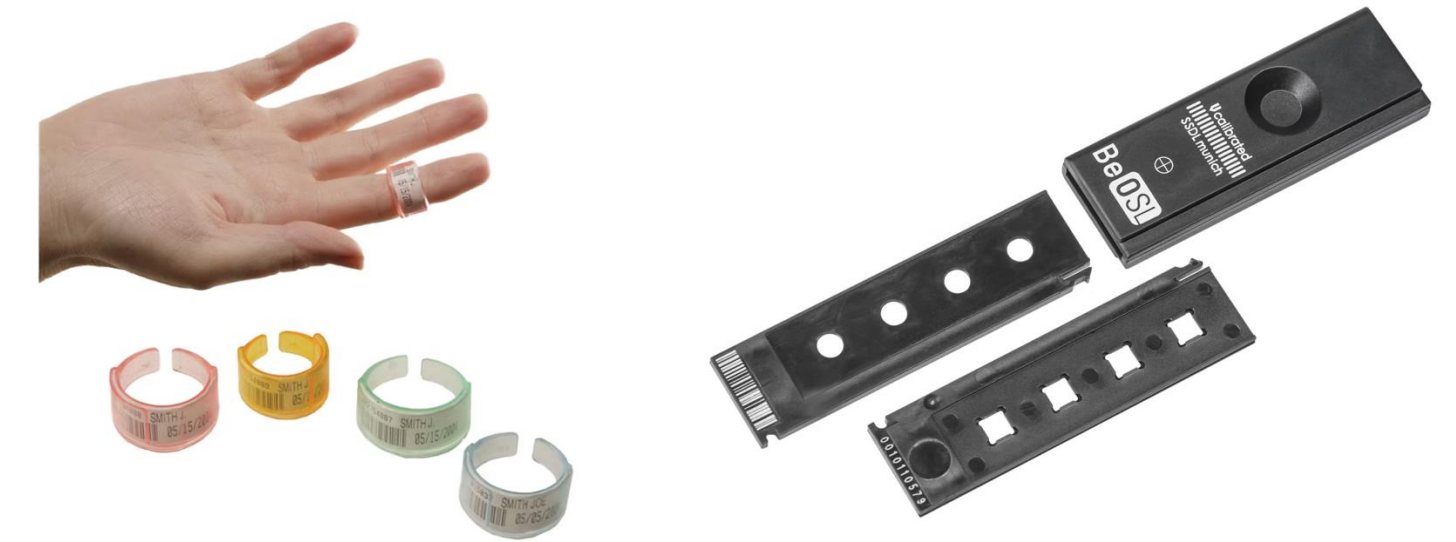
# DosiServ Lite: Coming Soon





# DosiServ 2026 : New Features

- LDM Access / WACS Bridge
  - Nuclide library/Intakes management
  - Form 4/5
  - Workers Instrumentation verifications
  - PII (Personal Identifiable Information)
  - Document attachments
- 
- Multi badging
  - Survey management
  - PADS interface
  - Automatic recognition
  - Source Control
  - Many other.....

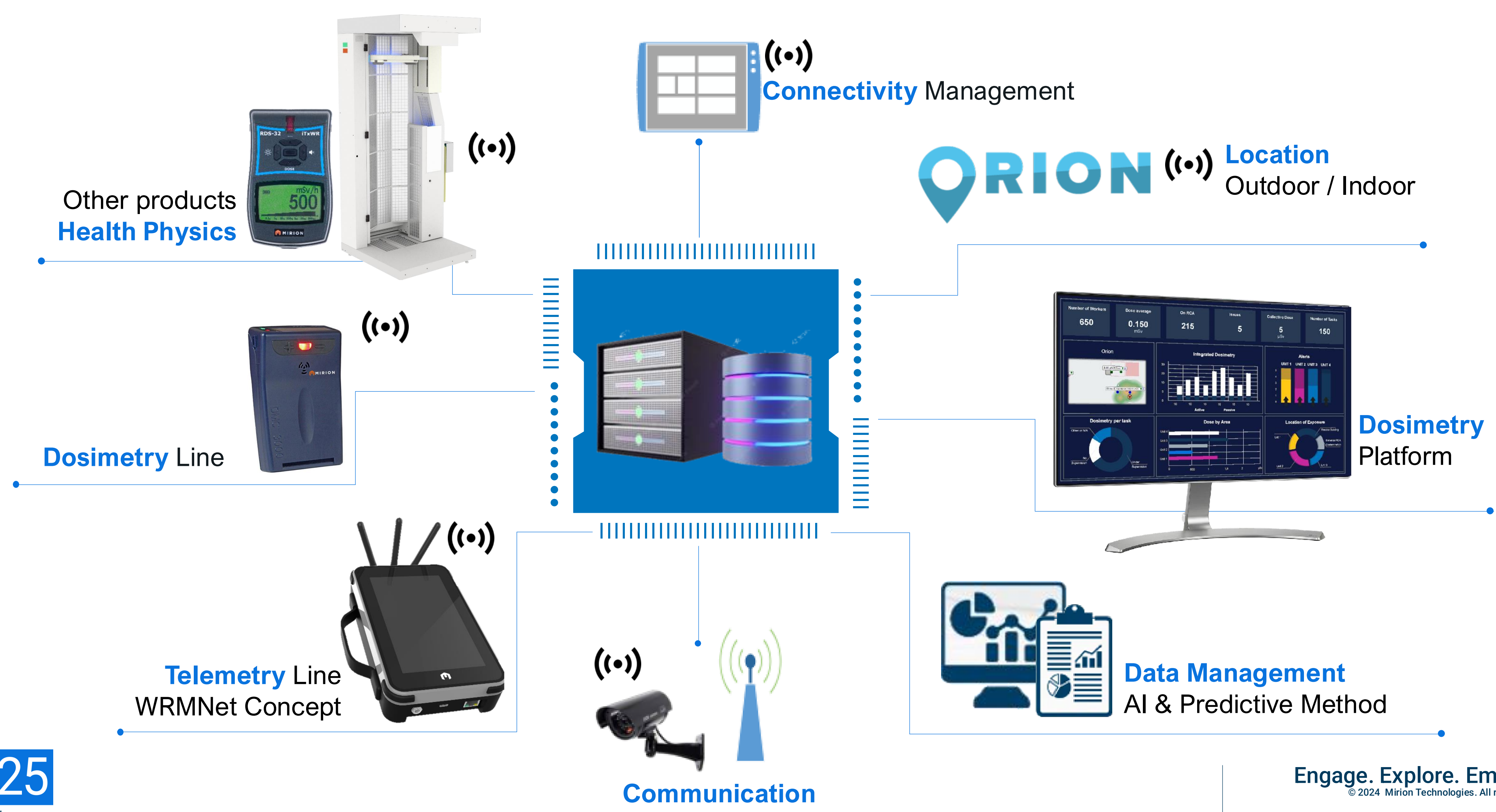


- BeOSL
- Instadose

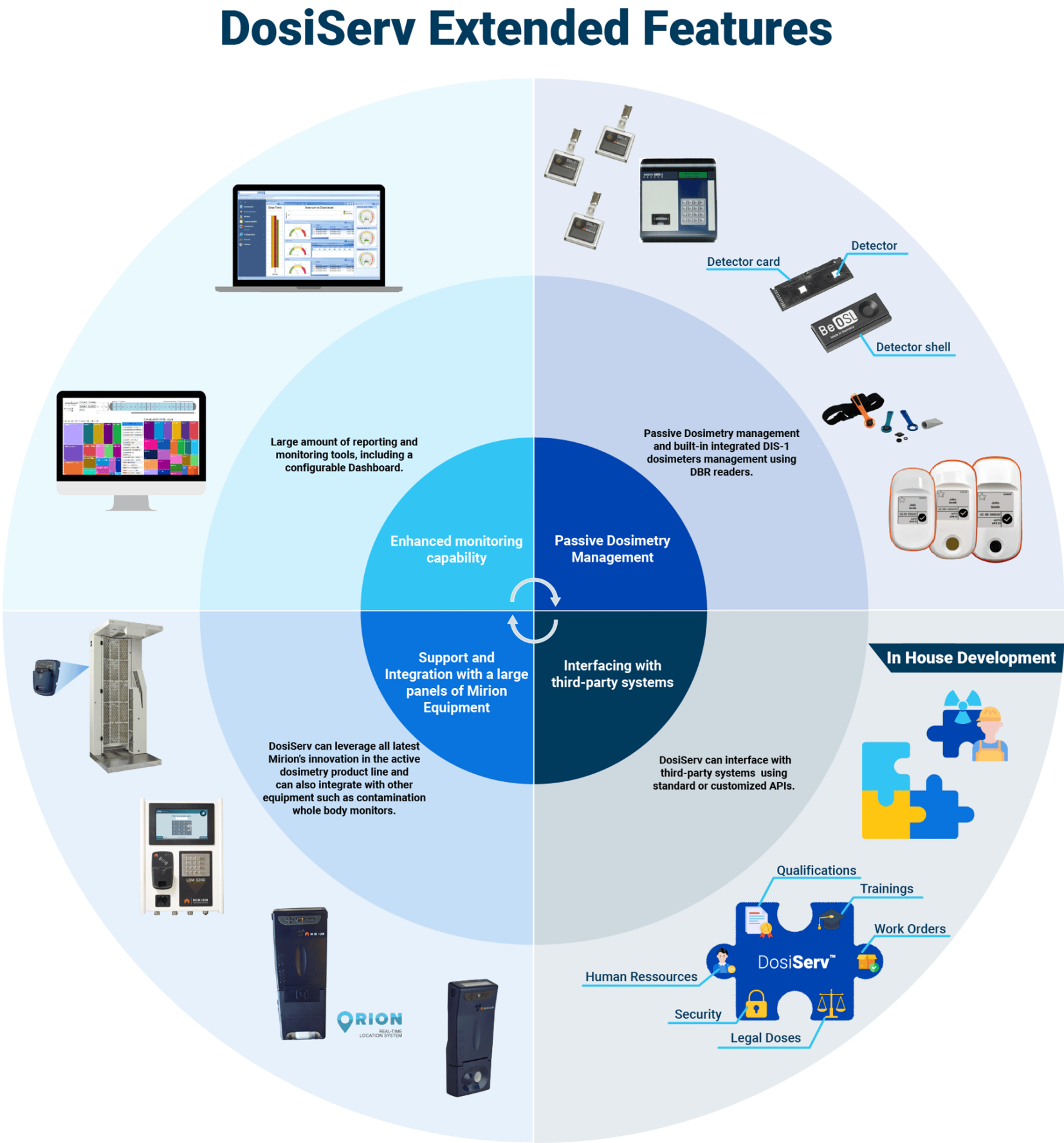
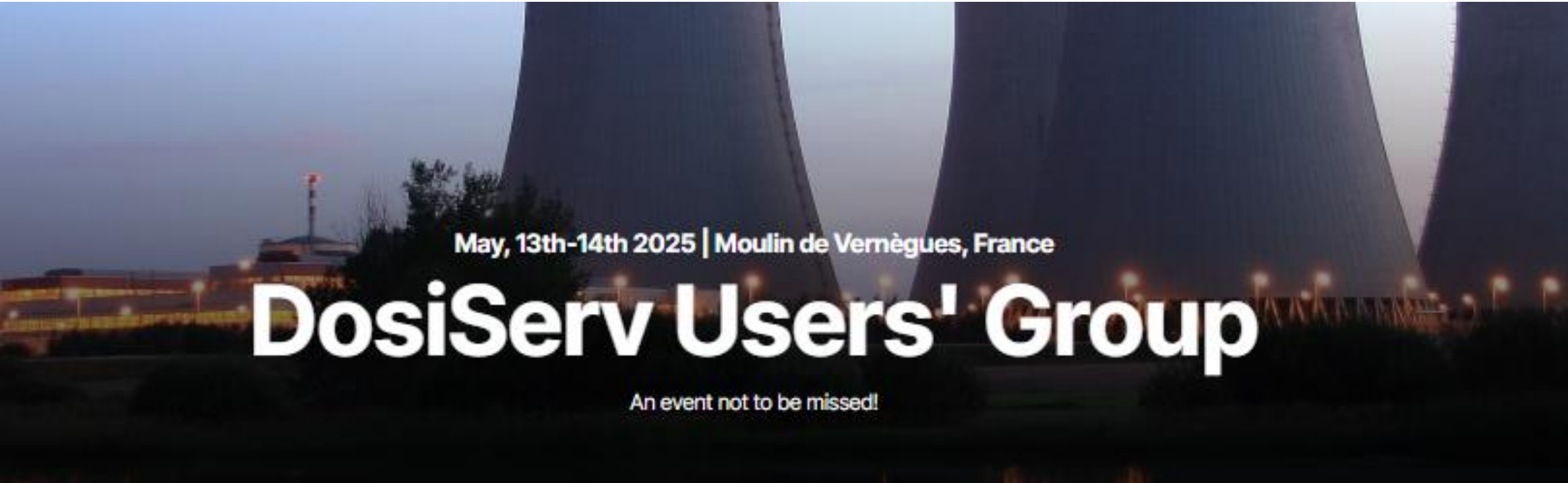
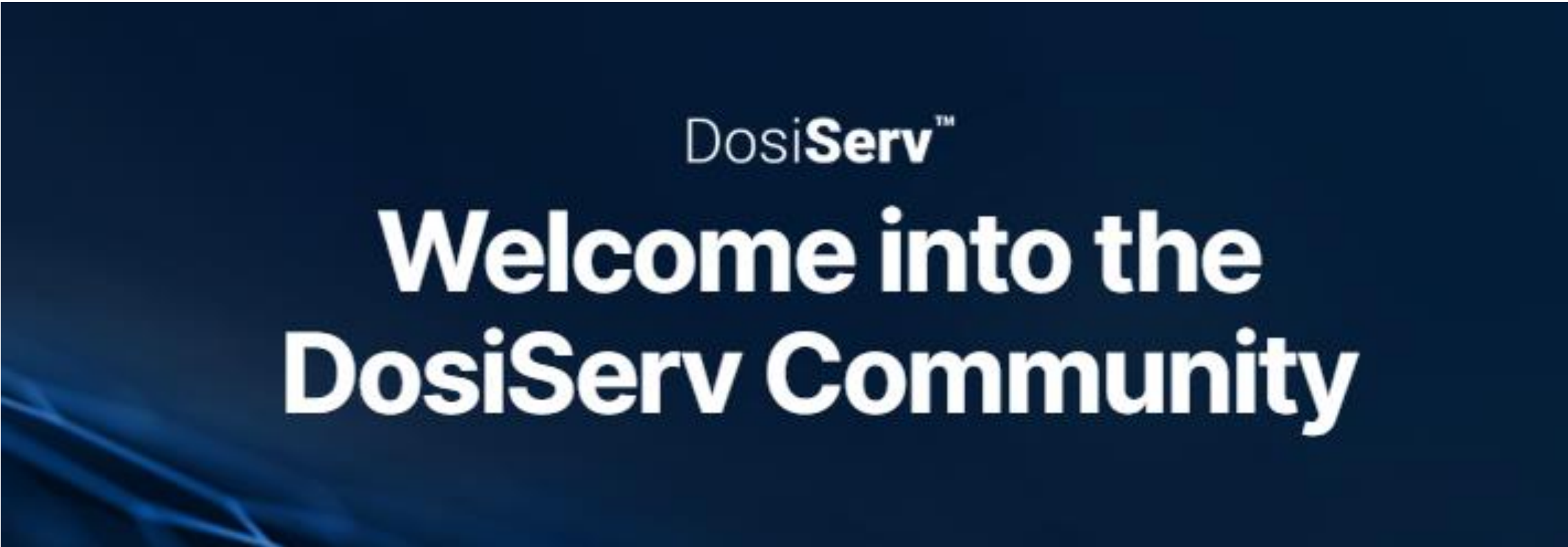




# What's next: Vision 2030



# DosiServ Community



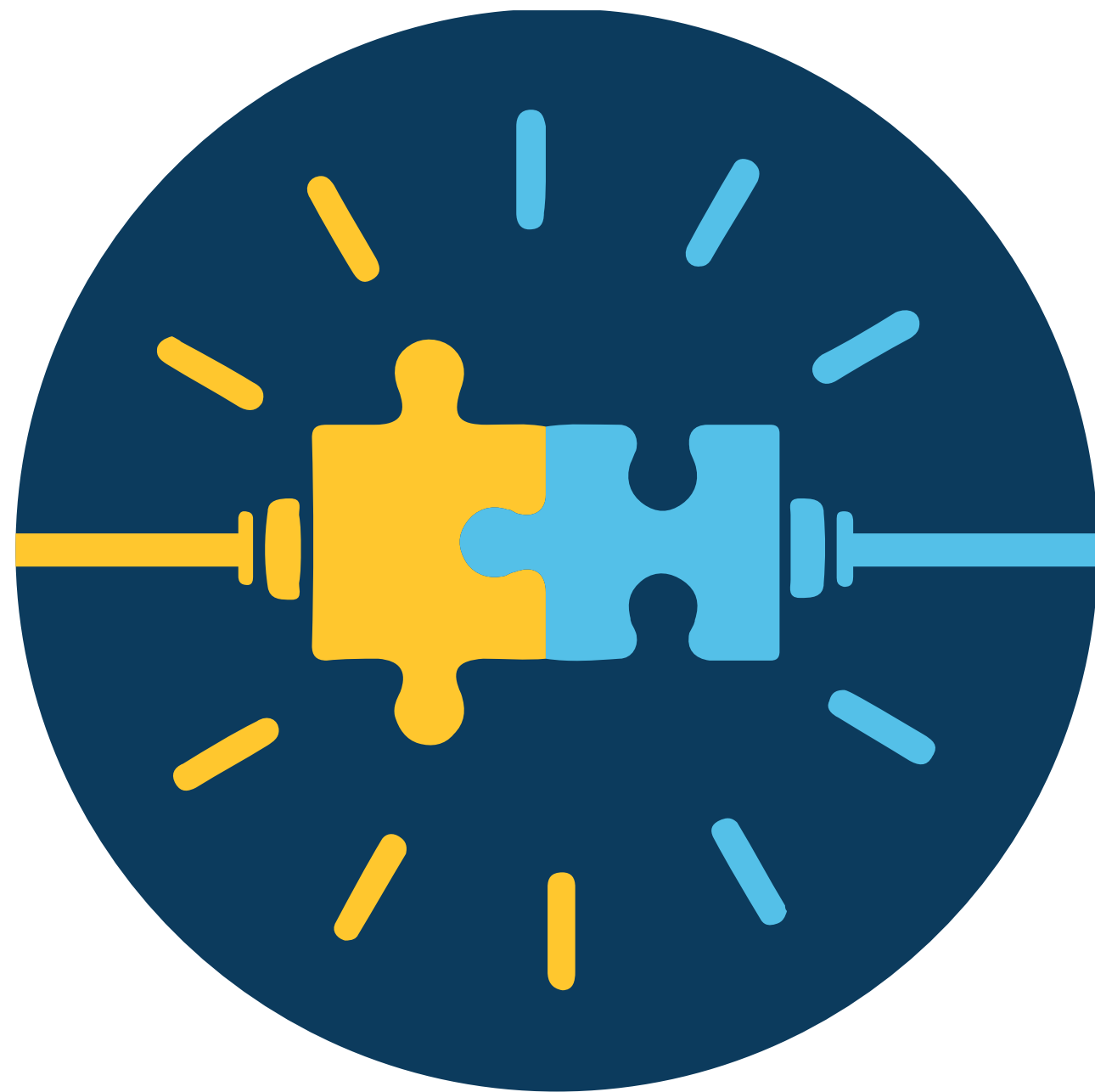


# Conclusion

- **Mirion Dose Management SW: Best in class dose management SW**
  - More than 25 years of experience & customer feedback
  - Innovative & efficient, compliant with regulation
- **Solution robust & mature, up to date**
  - Cybersecurity compliant
  - Customizable, localizable, evolutive
  - Mirion support expertise & reactivity
- **Migration / Transition to DosiServ Easiest**
  - Great feedback & experiences
  - Period of 6/8 months



# DosiServ™



The Power of  
Partnership.

DosiServ

Question

# Additional information about DosiServ Features

The following slides will not be detailed during the DosiServ meeting but can provide more details to whoever would like to go deeper into DosiServ capabilities.



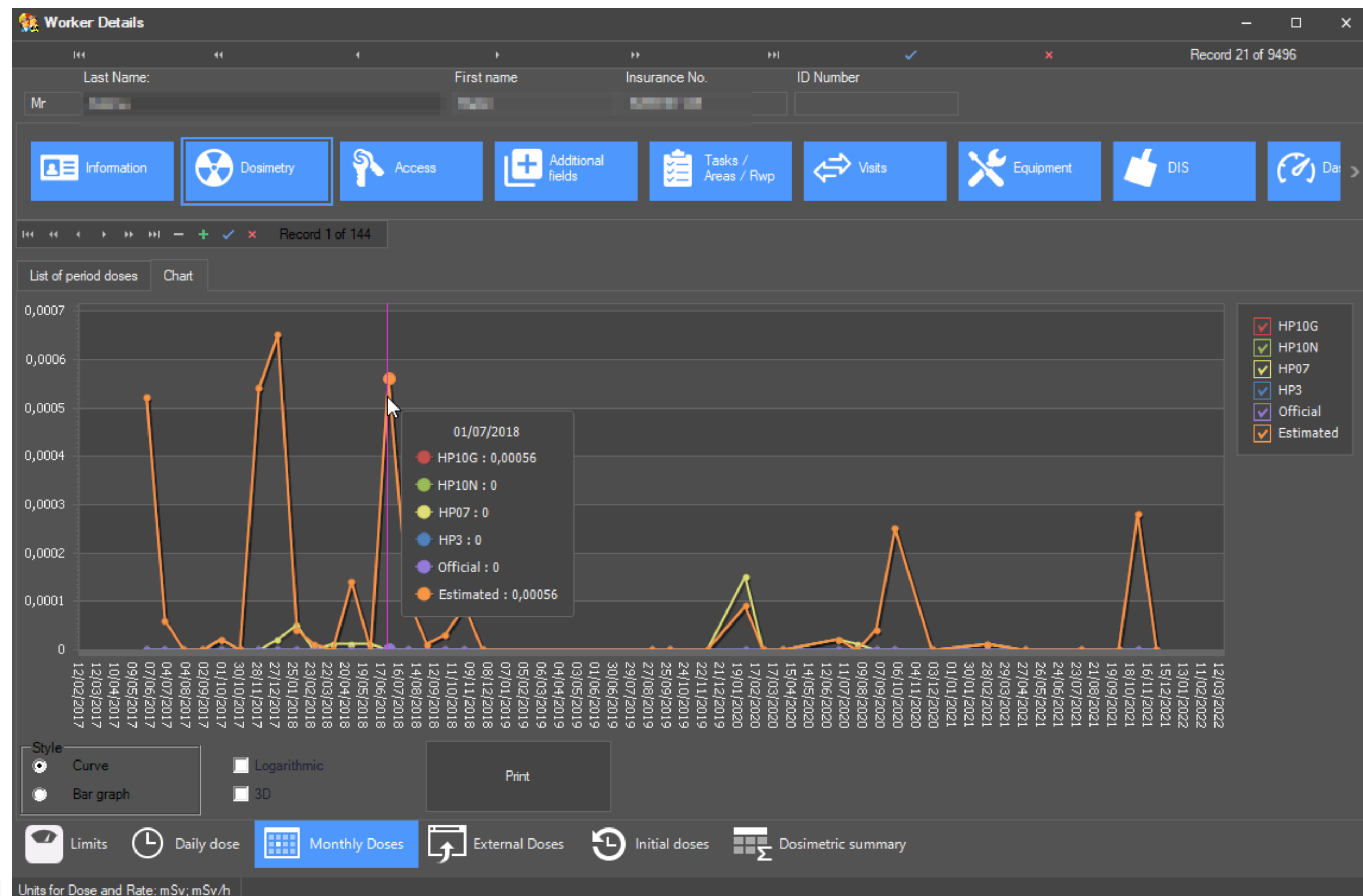
# From the Health Physics perspective

→ Reporting/monitoring

## Individuals Monitoring



DosiServ offers several features providing an at the glance vision on individual important information (dosimetry status, qualifications status, access blocked...).



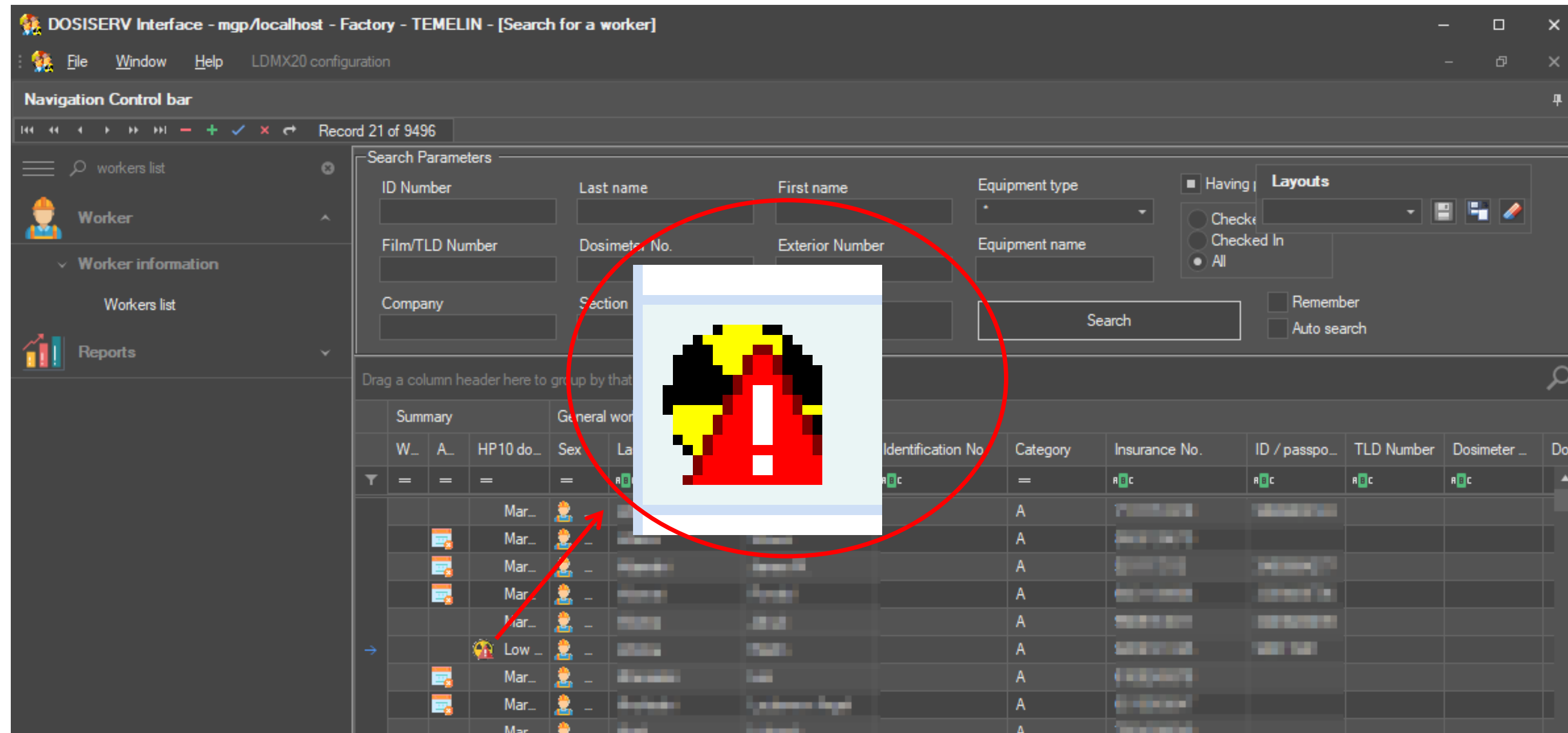
Worker Daily doses / Monthly doses charts

# DosiServ Reporting / Monitoring

## Individual Monitoring



DosiServ offers several features providing an at the glance vision on individual important information (dosimetry status, qualifications status, access blocked...).



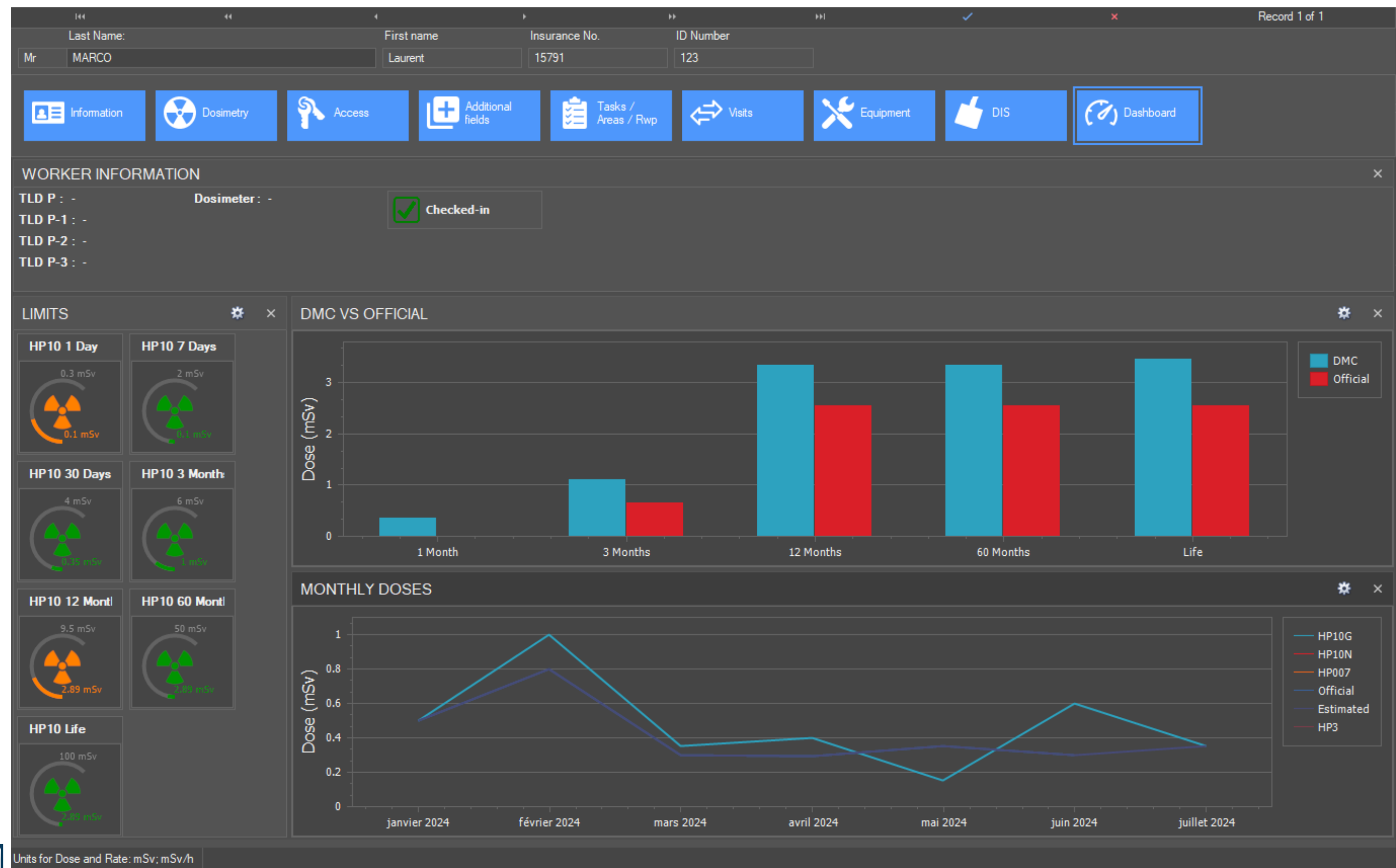
“Low Margin” and “Qualifications outdated” icons on the workers list screen.

# DosiServ Reporting / Monitoring

## Individual Monitoring

DosiServ offers several features providing an at the glance vision on individual important information (dosimetry status, qualifications status, access blocked...).

Dashboard view in worker details screen





# DosiServ Reporting / Monitoring

# Individual Monitoring



DosiServ offers several features providing an at the glance vision on individual important information (dosimetry status, qualifications status, access blocked...).

[illegible]

# DosiServ Reporting / Monitoring



## Monitoring

Limit: All  
Percentage: 80,00  
Sliding Dose: No  
Local Company: Both  
Checked In: Both

RadWorker5	Mr	Mirion Technolo B	Day Dose	1 Days %	7 Days Dose	7 Days %	30 Days Dose	30 Days %	3 P Dose	3 P %
			0,01	4,00	0,25	100,00	0,25	50,00	0,25	16,67
			1 Year DOS	1 Year %	5 Years Dose	5 Years %	Life dose	Life %		
			0,25	4,17	0,25	0,83	0,25	0,50		

## Individual Monitoring



DosiServ offers several features providing an at the glance vision on individual important information (dosimetry status, qualifications status, access blocked...).

Standard built-in Reports like the monitoring report that displays workers who are close or who reached a dose limit

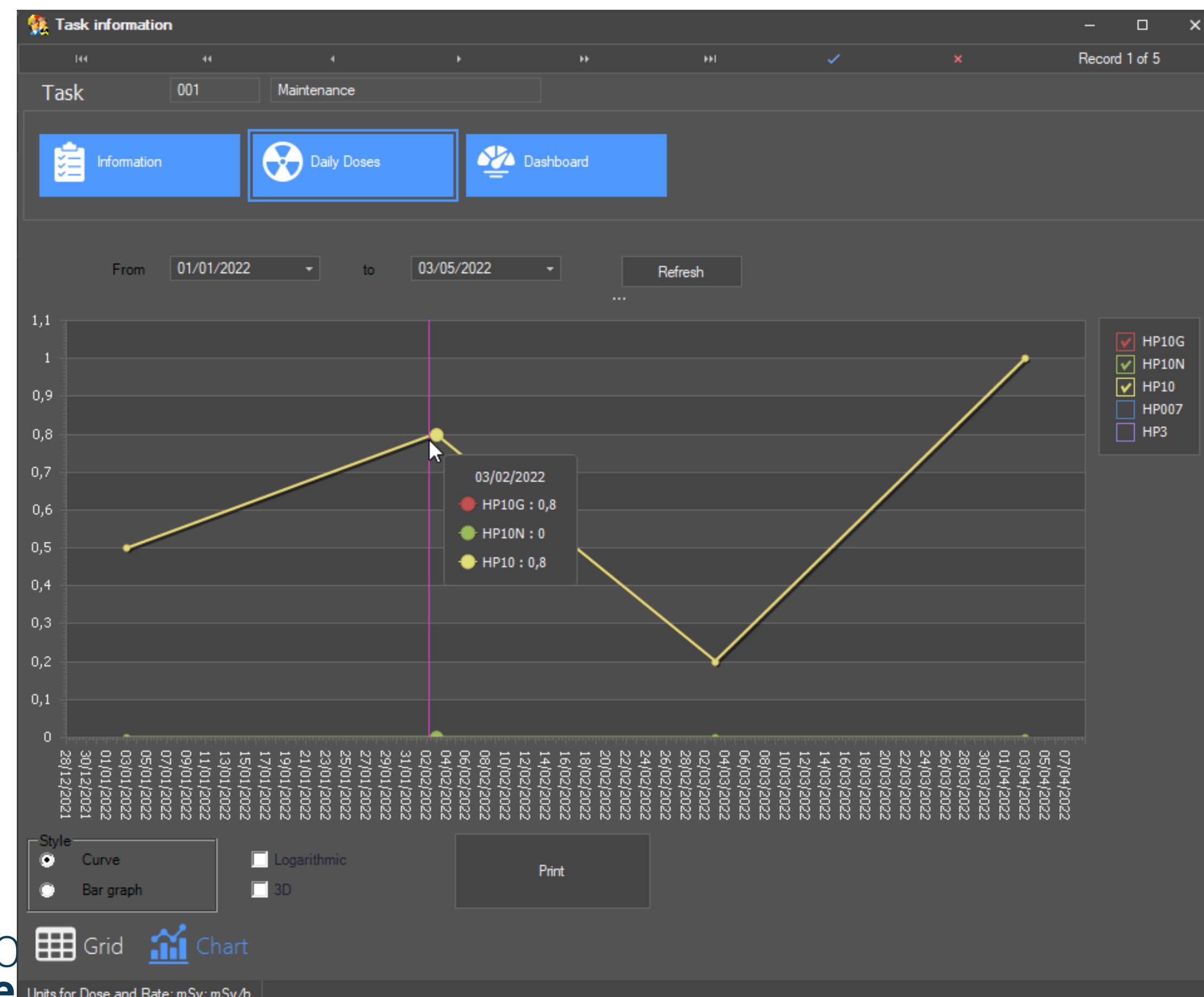
# DosiServ Reporting / Monitoring

## Collective Monitoring



DosiServ offers several screens providing an at the glance vision on collective important information (RWP/Job dosimetry, area dosimetry...).

RWP and Job details screens display the collective daily doses



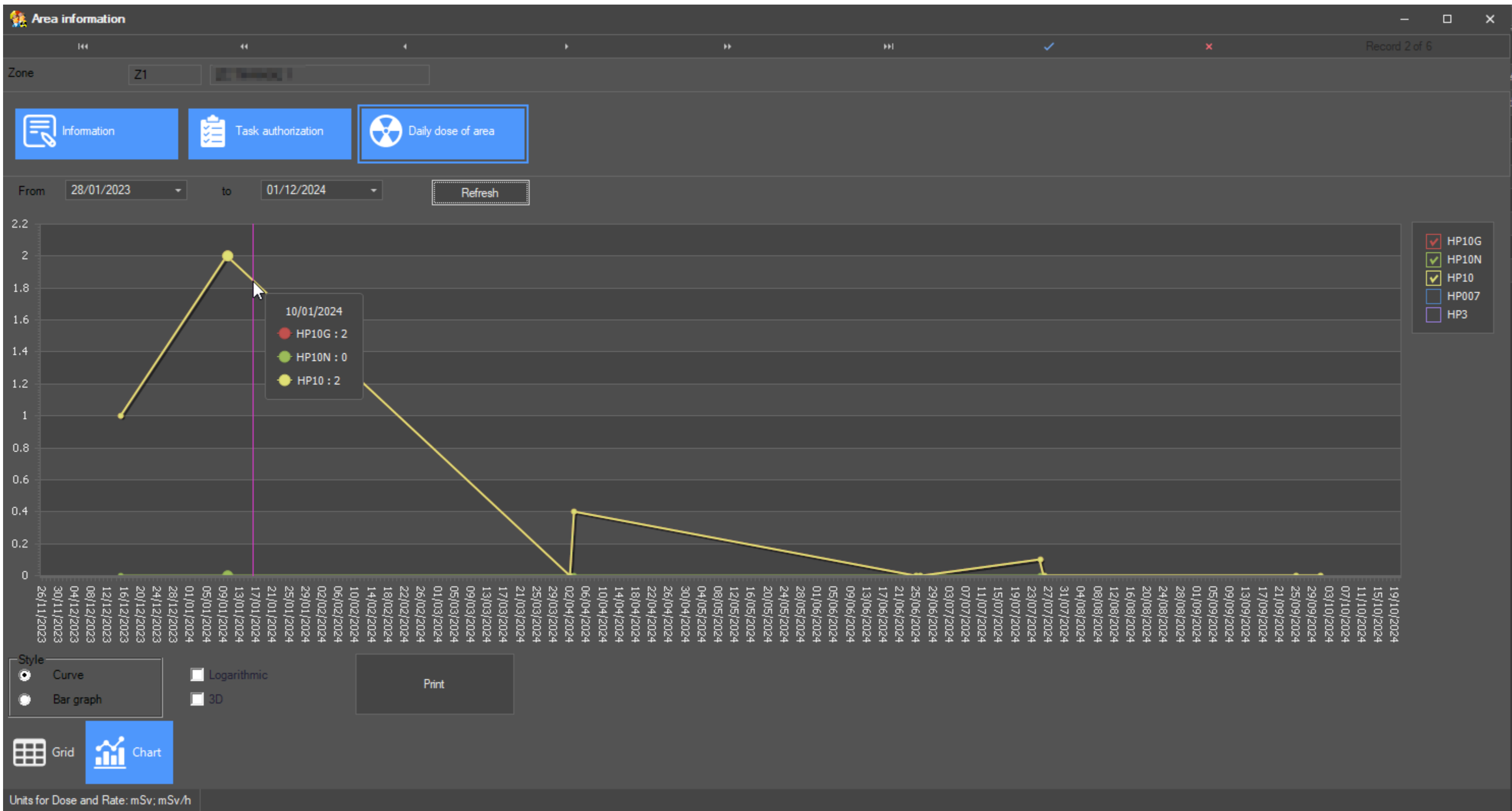


# DosiServ Reporting / Monitoring

## Collective Monitoring



DosiServ offers several screens providing an at the glance vision on collective important information (RWP/Job dosimetry, area dosimetry...).




Area details screen displays the collective daily doses

# DosiServ Reporting / Monitoring

# Collective Monitoring



DosiServ offers several screens providing an at the glance vision on collective important information (RWP/Job dosimetry, area dosimetry...).




**MIRION**  
 TECHNOLOGIES

Health Physics  
 Division

# Dosimetric Summary by Area

---

Report Filter Criteria	
Start :	7/1/2017
End :	7/31/2017
Group :	
Local Company :	Both
Company Code :	
Company Name :	
Section Code :	
Section :	
Worker ID :	
Worker Last Name :	



**MIRION**  
 TECHNOLOGIES

Health Physics  
 Division

## Dosimetric Summary

Start : 7/1/2017  
End : 7/31/2017

Task Group :  
Task Group Code :  
Local Company : Both  
Company Code :  
Company :  
Section Code :  
Section :  
Worker ID :  
Worker last name :

	Worker ID	Last Name	
<b>Group :</b>			
	Area : Control zone		
	Company : Empire		
1	RadWorker1	Mr	8.400
6	RadWorker6	Mr	0.000
	Company sum :		8.400
	Avg		0.700
	Max		7.000
	Area Sum		8.400
	Avg		0.700
	Max		7.000
	Area : Virtual zone		
	Company : Empire		
6	RadWorker6	Mr	0.000
	Company sum :		0.000
	Avg		0.000
	Max		0.000
	Area Sum		0.000
	Avg		0.000
	Max		0.000
	Group Sum		8.400
	Avg		0.646
	Max		7.000
	<b>Grand Total</b>		<b>8.400</b>

**TASK :** Valve001 Checks

---

6 RadWorker6

---

**TASK :** Scaffolding (suspended)


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### Dosimetric Summary by Task

Start : 7/1/2017  
End : 7/31/2017

Task Group:  
Task Group Code:  
Local Company: Both  
Company Code:  
Company:  
Section Code:  
Section:  
Worker ID:  
Worker last name:

	<u>Worker ID</u>	<u>Last Name</u>	<u>First name</u>	<u>HP10G Dose</u>	<u>HP10N Dose</u>	<u>HP007 Dose</u>
<b>Group :</b>						
<u>TASK :</u>	Valve001 Checks					
	6	RadWorker6	Mr	0.000	0.000	0.000
			Task sum:	0.000	0.000	0.000
			Number of Visits:	2		
			Average :	0.000	0.000	0.000
			Max :	0.000	0.000	0.000
<u>TASK :</u>	Scaffolding (suspended)					
	1	RadWorker1	Mr	7.000	0.000	0.000
			Task sum:	7.000	0.000	0.000
			Number of Visits:	2		
			Average :	3.500	0.000	0.000
			Max :	7.000	0.000	0.000
<u>TASK :</u>	Block 2 - Valve001 Checks					
	1	RadWorker1	Mr	1.400	0.000	0.000
			Task sum:	1.400	0.000	0.000
			Number of Visits:	6		
			Average :	0.233	0.000	0.000
			Max :	1.400	0.000	0.000
<u>TASK :</u>	Generic Task					
	1	RadWorker1	Mr	0.000	0.000	0.000
			Task sum:	0.000	0.000	0.000
			Number of Visits:	1		
			Average :	0.000	0.000	0.000
			Max :	0.000	0.000	0.000



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### Dose statistics repartition

Start Date: 1/1/2017  
 End Date: 7/31/2017  
 Show Company? Yes  
 Company Code:  
 Label  
 Show Section? Yes  
 Section Code:  
 Label  
 Show Area Group? Yes  
 Area Group Code:  
 Label  
 Show Area? Yes  
 Area Code:  
 Label  
 Range: Range NPP  
 Worker? Both

<u>Internal</u>	<u>Total:</u>	<u>External</u>	<u>Total Dose</u>	<u>All</u>	<u>Total Dose</u>
0		0		0	
		1	0.000	1	0.000
		1	0.250	1	0.250
		1	0.600	1	0.600
		1	1.500	1	1.500
		1	2.300	1	2.300
		1	8.590	1	8.590
<b>=====</b>	<b>=====</b>	<b>=====</b>	<b>=====</b>	<b>=====</b>	<b>=====</b>
-	-	6	13,240	6	13,240

G Dose    HP10N Dose    HP007 Dose

0.000	0.000	0.000
0.000	0.000	0.000
2		
0.000	0.000	0.000

	0,000	0,100	0,500	1,000	2,000	5,000	10,000	20,000	0,000	0,000
	0,000	0,100	0,500	1,000	2,000	5,000	10,000	20,000	0,000	0,000
		1					1			

Several built-in reports provide collective information (Dose summary by Area, Task or RWP, Dose statistics repartition...)

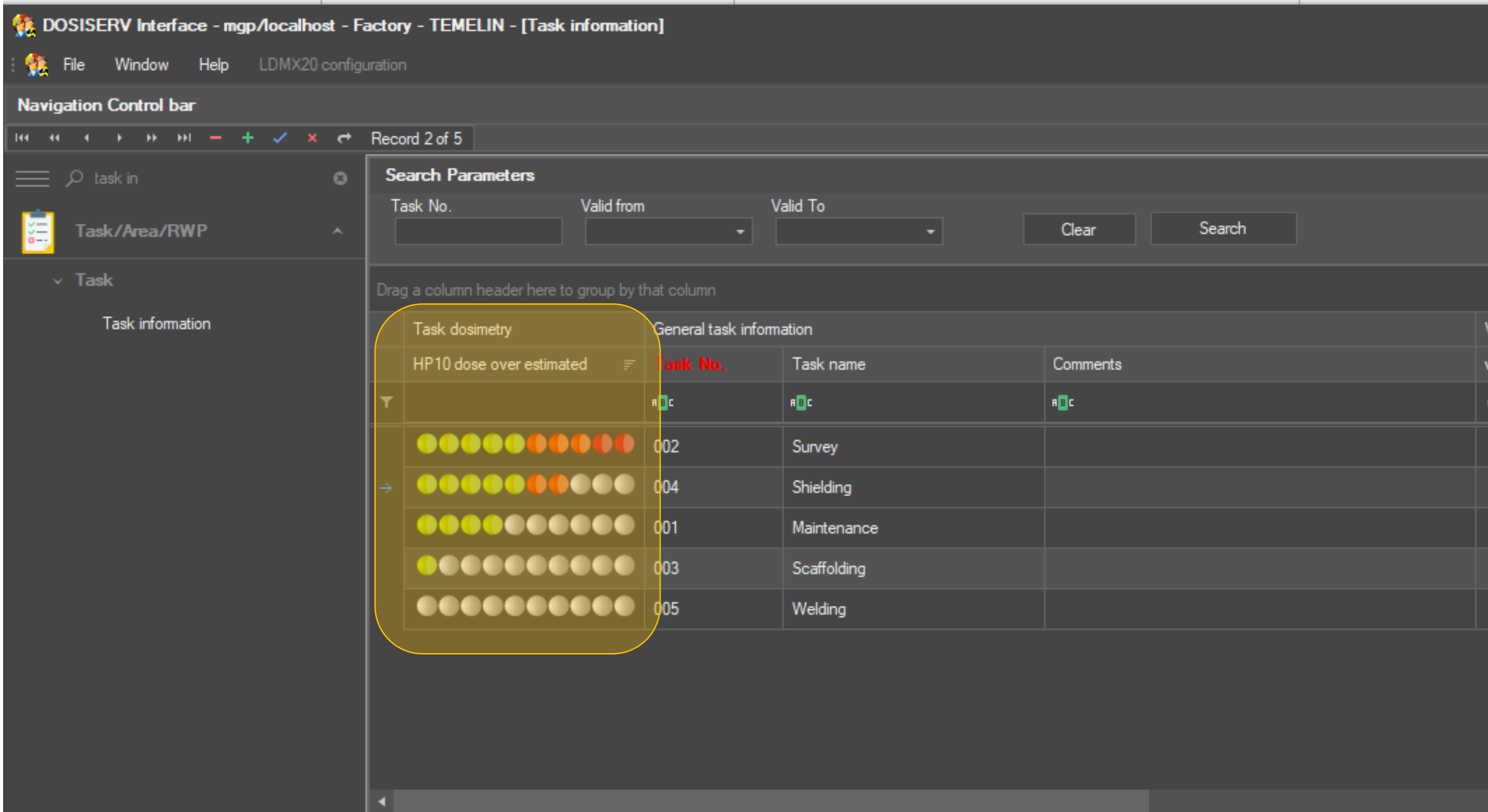
# DosiServ Reporting / Monitoring

## Collective Monitoring



DosiServ offers several screens providing an at the glance vision on collective important information (RWP/Job dosimetry, area dosimetry...).

Dose Limit VS Cumulated dose indicators in the RWP and Task list screens





# DosiServ Reporting / Monitoring

## Dashboard



The Dashboard application provides both individual and collective information.

It offers an overview of the system and highlights the important items to be monitored.

