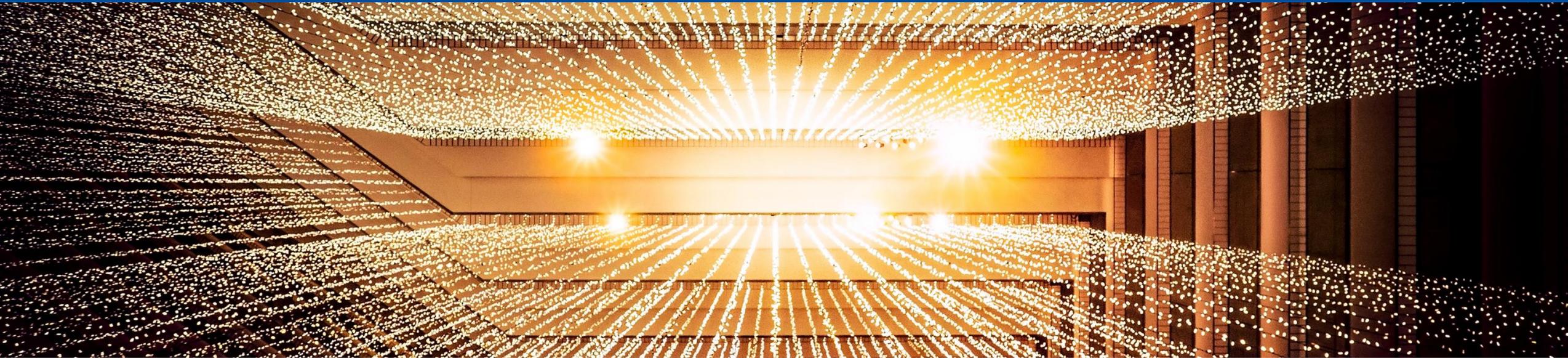


Digital Radiological Passbook Application

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Pintado, E. Ferreras, I. Villanueva, STI-CSN



Contents

I. Regulatory framework

II. Digital Radiological Passbook

- Need for action
- Concept
- Advantages

III. Processes, details and practical implementation. Data from trials.

IV. Challenges

Regulatory Framework

Royal Decree 1029/2022, Regulation on health protection against the risks arising from exposure to ionising radiation (RPSI) (Transposition of EU Directive 2013/59/EURATOM)

- Definition: Instrument for data recording, where relevant aspects related to the application of the radiological protection system to the worker are kept.
- Chapter 6: Occupational Protection of External Workers:
 - Article 54: Occupational protection of external workers
 - Article 55: Obligations of the external company
 - Article 56: Obligations of the license holder
 - Article 57: Obligations of the external workers
 - Article 58: Radiological Passbook

Safety Instruction IS-01 on the format of the Radiological Passbook needs to be revised

Safety Instruction IS-01

Defines the format and contents of the individual radiological monitoring document

- Clearly states the obligations of all involved parties (external companies and license holders)
- The external company registers with CSN and requests the Radiological Passbook for the worker.
- The external company provides medical fitness as well as basic radiation protection training, keeping records of both in the radiological passbook.
- The license holder provides specific radiation protection training for the outside worker and dosimetric control of the activities performed in the facility.
- The outside worker doesn't have obligations related to recording exposure data.

|| Digital Passbook

NEED FOR ACTION

- Digital Transformation Plan of the CSN (2020)
- Simplification of the processes, ease of use and agility adapting to changes.
- Minimize potential loss of information.
- Avoid inconvenients derived from the physical format.
- Sustainability

|| Concept

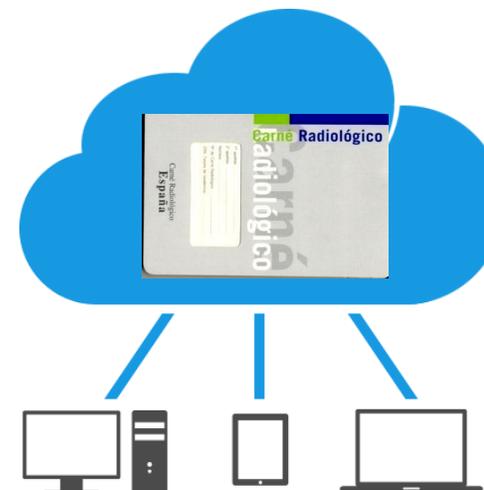
Actual state

- “Distributed database” of impracticable access.
- Physical Passbook made out of paper.
- Expensive print and regular mail shipments.
- Manual input of data, signatures and seals. Data quality?



Future state

- Centralized data easy to access (web based application)
- Secure Platform (Sede Electrónica CSN)
- Data input verified by digital ID certificate
- Possible automation of processes



|| Advantages

Outside Worker

- Full historic data always available.
- Fast registration and company switching.
- Impossible to lose.
- Quick accessibility

External Company

- Fast registration of outside workers and new hires.
- Elimination of bottlenecks (medical fitness, shipment of physical passbooks, etc) and custody.
- Elimination of renewal process.
- Reduction of mistakes in records.
- Increase data records quality

Facility

- Fast and convenient integration into the workforce and release of outside workers
- Elimination of the need to check compliance of the passbook records, as well as the need for custody.
- Reduction of mistakes in records.
- Increase data records quality

III Processes

Registration of an outside worker in a external company

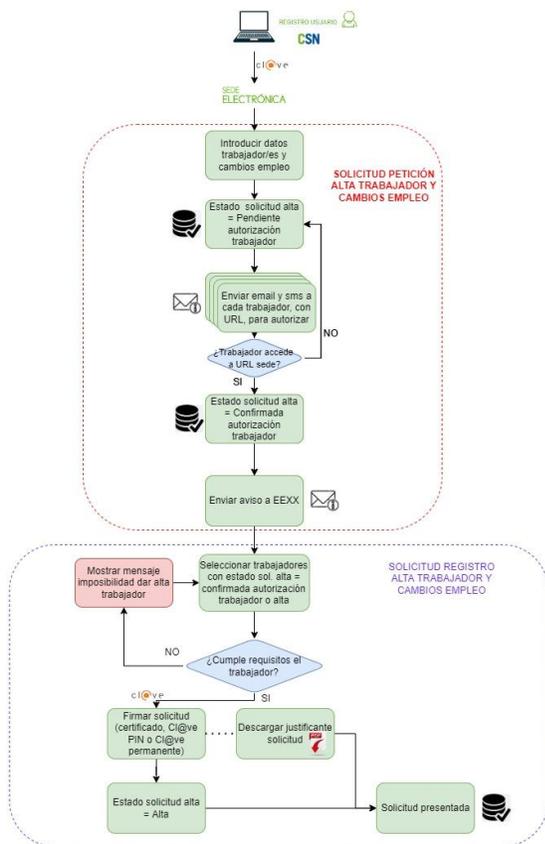
- Two possibilities: New registration as exposed workers or company change.
- Confirmation from the worker via a code sent by SMS or email.
- The registration request is digitally signed by a representative of the company and kept in record.

Data fields to be fulfilled by the external company

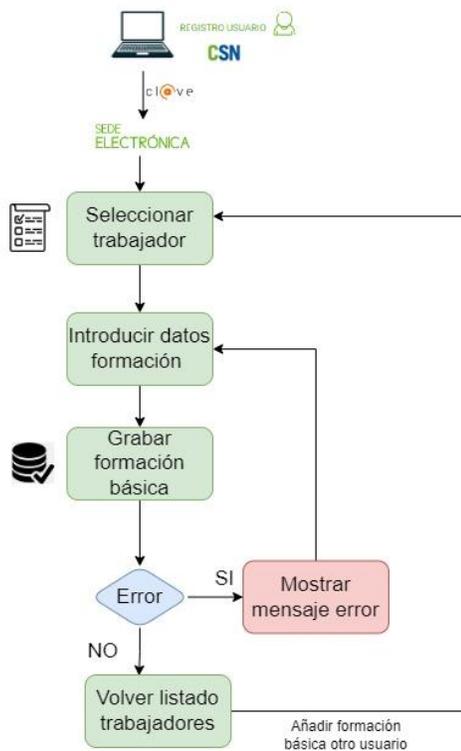
- Radiological Protection Basic training (regulated by Safety Instruction IS-06)
- Medical fitness for radiation exposures

Processes

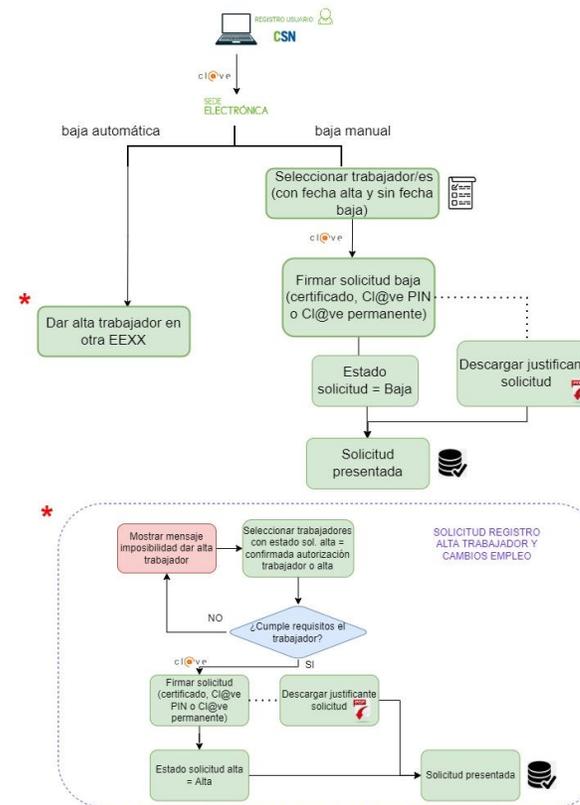
SOLICITUD ALTA TRABAJADOR Y CAMBIOS EMPLEO EN EEXX



ALTA FORMACIÓN BÁSICA



SOLICITUD BAJA TRABAJADOR EN EEXX



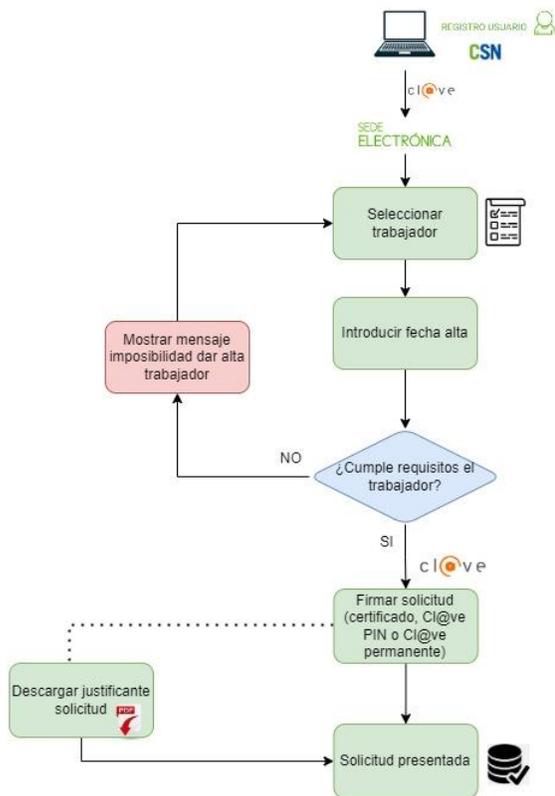
III Processes

Data fields to be fulfilled by the license holder

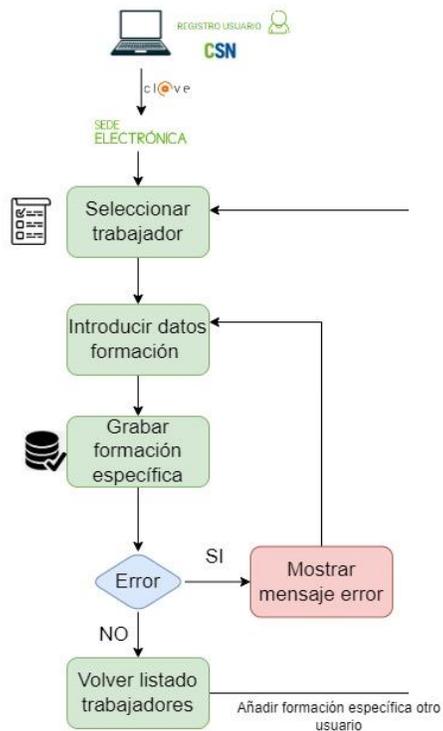
- Specific Radiation Protection Training (regulated by Safety Instruction IS-06)
- Initial internal dosimetry control
- Operational dosimetry data
- Final internal dosimetry control

Processes

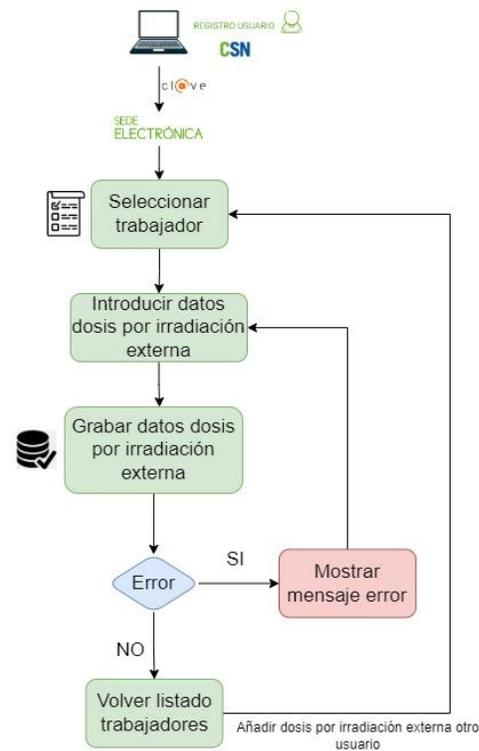
SOLICITUD ALTA TRABAJADOR EN CCNN



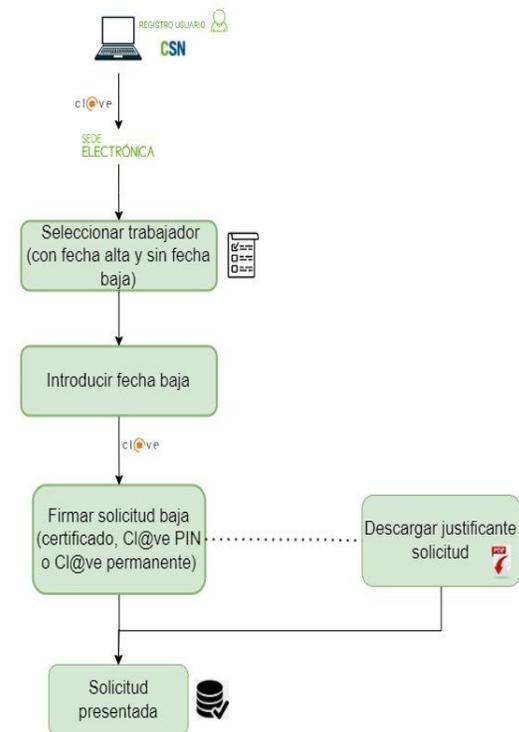
ALTA FORMACIÓN ESPECÍFICA



REGISTRO DE DOSIS POR IRRADIACIÓN EXTERNA



SOLICITUD BAJA TRABAJADOR EN CCNN



Detail of the Digital Radiological Passbook

DETALLE CARNÉ RADIOLÓGICO

DATOS DEL CARNÉ RADIOLÓGICO

Número de Carné Radiológico

Fecha de emisión

123456

12/02/2000

DESCARGAR CARNÉ



DATOS DEL TRABAJADOR

DNI/NIE

Nombre

82551900R

Nombre

Primer apellido

Segundo apellido

Apellido 1

Apellido 2

Teléfono

Correo electrónico

658899800

correo@prueba.es

1.- HISTORIAL DOSIMÉTRICO

2.- HISTORIAL DE ALTAS/BAJAS EN EMPRESAS EXTERNAS

3.- HISTORIAL DE ALTAS/BAJAS EN CENTRALES NUCLEARES

4.- HISTORIAL DE RECONOCIMIENTOS MÉDICOS

5.- HISTORIAL DE FORMACIÓN EN PROTECCIÓN RADIOLÓGICA

6.- INFORMACIÓN DOSIMÉTRICA

1.- HISTORIAL DOSIMÉTRICO

DOSIS VIDA (mSv)

(1) Dosis profunda	Dosis superficial	EXPOSICIÓN EXTERNA						CONTAMINACIÓN INTERNA	DOSIS EFECTIVA [Suma de (1) y (2)]
		Dosis por exposición no uniforme						(2) Dosis efectiva comprometida E _(t)	
		Manos	Antebrazo	Pies	Tobillos	Cristalino	Otras zonas		
23	11	0,1	1	2	0,7	2	0,7	2	0,7

DOSIS EFECTIVA DE LOS ÚLTIMOS 5 AÑOS (mSv) *(sin contar año en curso)*

Año	Exposición externa (1)	Contaminación interna (2)	Dosis efectiva [Suma de (1) y (2)]	Observaciones (*)
2017	1	0,2	1,2	Mis observaciones
2018	2	0,2	2,2	Mis observaciones1
2019	3	1	4	Otras observaciones
2020	1,1	0,2	1,3	Mis observaciones2
2021	3,1	1	4,1	Otras observaciones1

(*) Reflejar aspectos relevantes en relación con las dosis recibidas por el trabajador, como por ejemplo, dosis resultantes de exposiciones especialmente autorizadas.

Detail of the Digital Radiological Passbook

3.- HISTORIAL DE ALTAS/BAJAS EN CENTRALES NUCLEARES

INFORMACIÓN RELATIVA A INSTALACIONES NUCLEARES O RADIATIVAS EN LAS QUE HA PRESTADO O PRESTA SERVICIO EL TRABAJADOR

Instalacion	Direccion	Fecha alta	Fecha baja	Titular de la instalacion / Persona delegada
Central Nuclear Almaraz I	Almaraz (Caceres)	12/03/2017	12/03/2018	Juan Carlos Zurita Montes
Central Nuclear Trillo	19459 Trillo, Guadalajara	22/04/2018	12/03/2019	Angela Osna
Central Nuclear de Cofrentes	46625 Cofrentes, Valencia	22/04/2019		Luis Patino

4.- HISTORIAL DE RECONOCIMIENTOS MÉDICOS

Fecha	Clase reconocimiento	Resultado	Contaminación externa	Contaminación interna	Numero colegiado	Acciones
02/04/2024	RP	No apto	122	112	78542112	

Reconocimiento de alta (RA) Reconocimiento periódico (RP) Reconocimiento especial (RES)

[Añadir reconocimiento](#)

5.- HISTORIAL DE FORMACIÓN EN PROTECCIÓN RADIOLÓGICA

FORMACIÓN BÁSICA

Fecha	Centro / Empresa de instruccion	Responsable de la entidad / Persona responsable del curso	Observaciones	Acciones
12/09/2019	Centro 1	Isabel Gomez		
14/12/2020	Centro 1	Antonio Pena		
23/05/2021	Centro 2	Pedro Sainz Morraz	Observacion 1	

[Añadir formación](#)

6.- INFORMACIÓN DOSIMÉTRICA

DOSIS POR CONTAMINACIÓN INTERNA (mSv)

Fecha de asignación mes/año	Fecha de medida día/mes/año	Tipo de control (*)	Ai total (Bq)	Isótopos	Dosis efectiva comprometida E (t)	Observaciones (**)
09/2019	23/09/2019	Alta	5	P-32	2	
12/2020	23/12/2020	Baja	5	I-131	3	

(*) Alta; baja; periódico (anual, semestral...); especial

(**) Reflejar aspectos relevantes en relación con las dosis recibidas por el trabajador, como por ejemplo, dosis resultantes de exposiciones especialmente autorizadas

FICHA DOSIMÉTRICA

DOSIS POR IRRADIACIÓN EXTERNA, DOSIMETRÍA OPERACIONAL (mSv) (*)

Año	Mes/Período	Dosis registrada	Observaciones
2017	05/03-17	0,2	Mis observaciones
2018	10/01-31	0,2	Mis observaciones1

(*) El período de validez de la dosimetría operacional será de 90 días

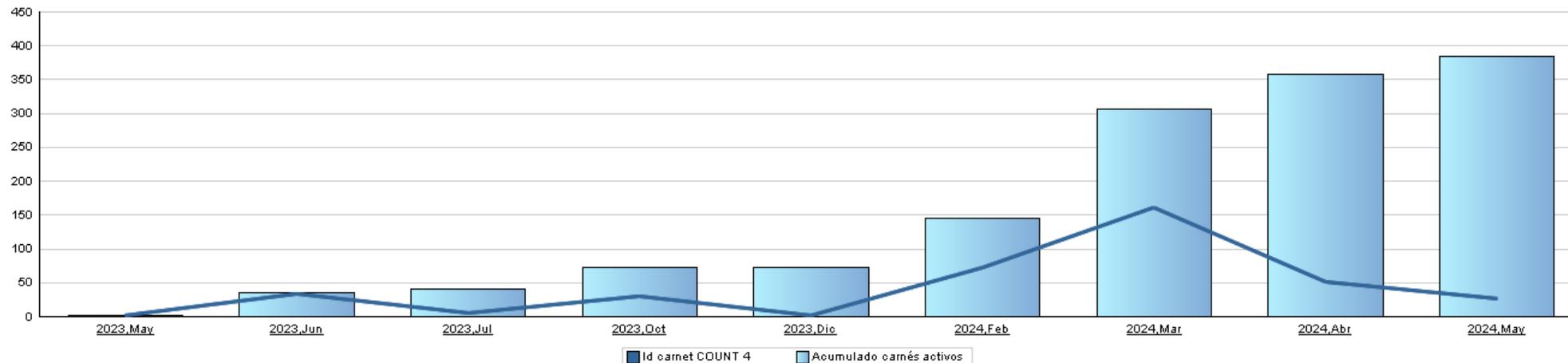
||| Practical implementation

Development, pilot trials and work in progress

- Development of the application in 4Q 2022 and 1Q2023
- First trial. Trillo NPP outage in may-jun 2023. 5 External companies and aprox 40 outside workers.
- Second trial. Ascó NPP outage in nov-dec 2023. 5 external companies and aprox 40 outside workers.
- Present trial phase. Since jan 2024 open to all facilities and some permanent contractors.
- Release of the application for practical implementation expected by jun 30th. From that date on, paper based radiological passbooks will no longer be issued by CSN.
- Transition phase: current paper based Radiological Passbooks in use should be valid until their end of their life (3 years).
- Development of a communication strategy including: communication campaign with infographics and video tutorials aimed to help companies with the transition, and specific training seminars at CSN.

Some data from the trials

- 384 Digital Pasbooks currently in use, only 3 category B outside workers.
- 12 companies active in trials with a number of Digital Pasbooks per company ranging from 4 to 73.
- 119 outside workers with Digital Passbook currently active in 4 NPPs
- Possibility to analyze easily and effectively collective dose from external companies



IV Challenges

- Transition time from paperwork to digital records in the nuclear industry.
- Communication and training for external companies
- Review of the Safety Instruction IS-01.
- Development of inspection procedures for external companies.
- Change regulatory approach on radiation protection oversight.
- Effective oversight of external companies based on a graded approach.

Thank you
Bedankt
Gracias