



Transformación Digital en la Acreditación: Oportunidades y Desafíos

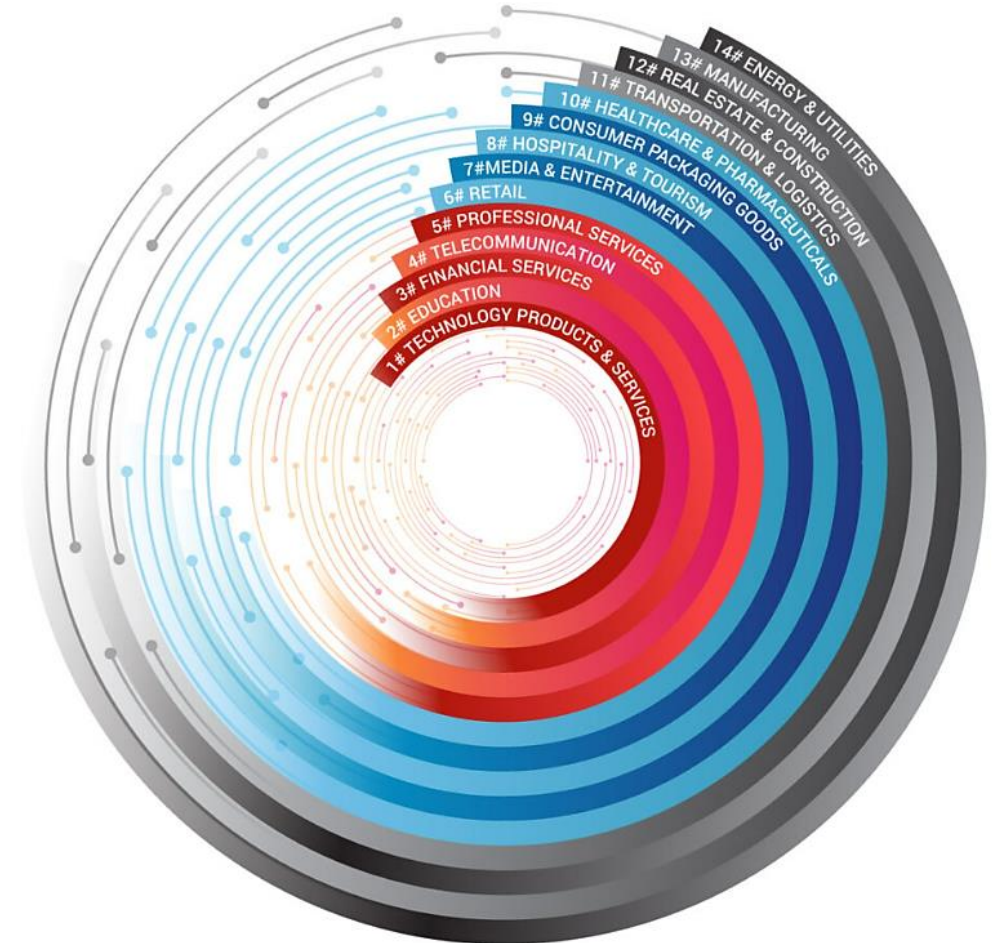
Digital Transformation in the Accreditation: Opportunities and Challenges

Digital vortex and QI

Does the market need a Digital Quality Infrastructure?

Is the Quality Infrastructure ready for serve the market

- Standards
- Metrology
- Testing
- Certification
- Accreditation



Digital vortex 2023



StartUs insights

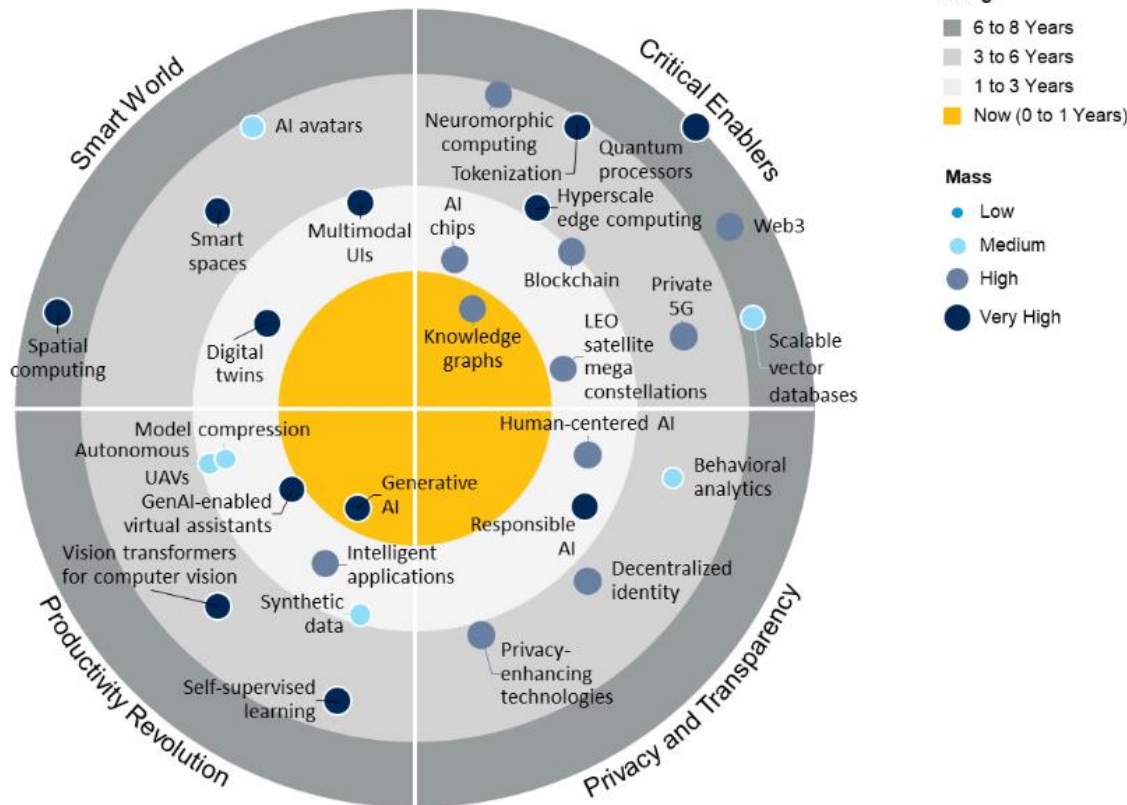
Impact of Emerging

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Heavy Industries

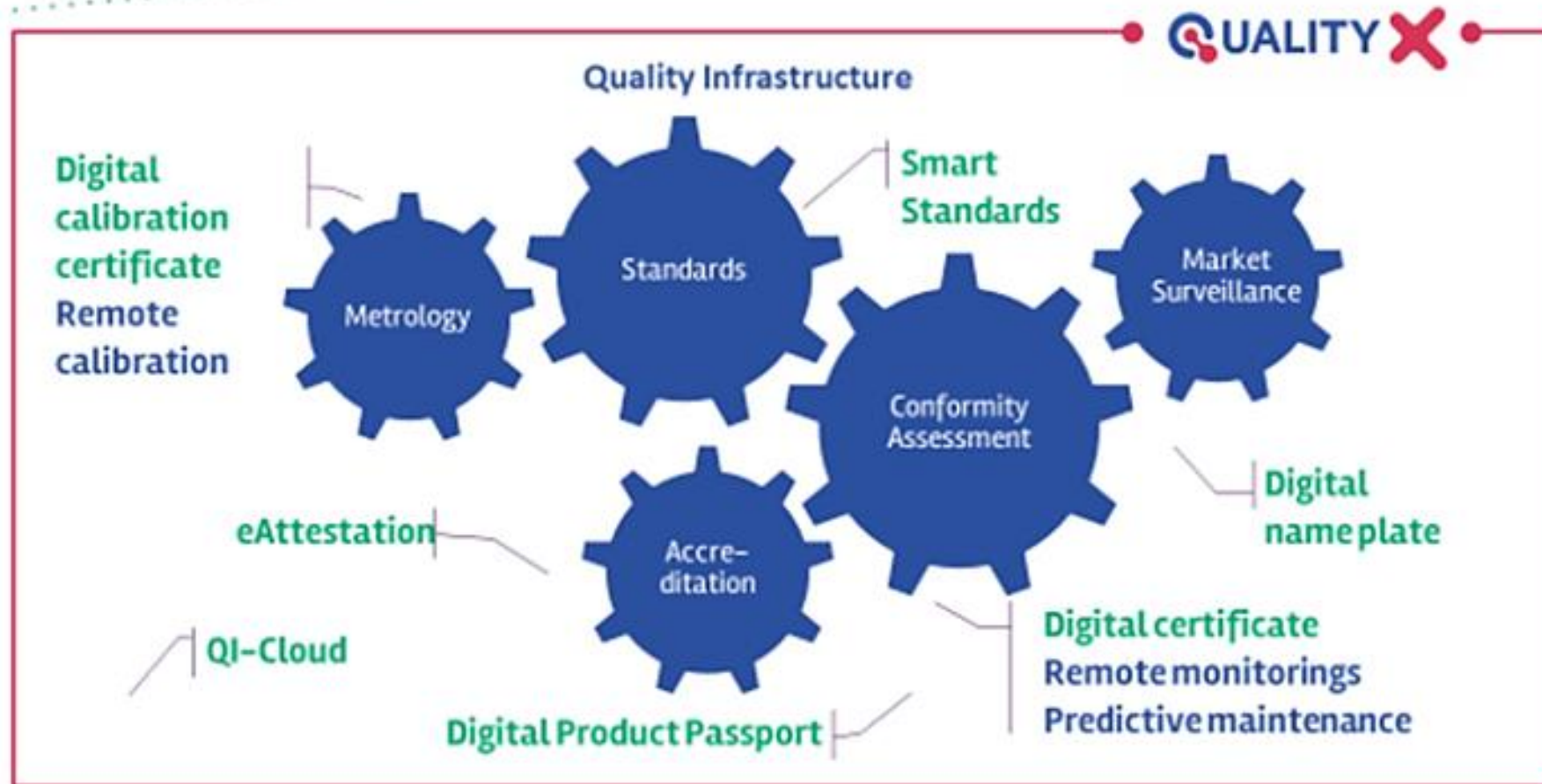
	Aerospace	Automotive	Construction	Energy
3D Printing	<ul style="list-style-type: none"> Cabin Customization Custom Tools & Fixtures Repair & Maintenance 	<ul style="list-style-type: none"> Custom Accessories Rapid Prototyping Lightweight Components 	<ul style="list-style-type: none"> Building Component Fabrication Custom Design Elements Rapid Prototyping 	<ul style="list-style-type: none"> Component Manufacturing Custom Enclosures Maintenance Parts
AI	<ul style="list-style-type: none"> Autonomous Flight Systems Air Traffic Management Predictive Maintenance 	<ul style="list-style-type: none"> Autonomous Vehicles Quality Assurance Supply Chain Management 	<ul style="list-style-type: none"> Project Planning Safety Monitoring Design Optimization 	<ul style="list-style-type: none"> Smart Grid Management Energy Consumption Analysis Predictive Maintenance
AR & VR	<ul style="list-style-type: none"> Pilot Training Simulations Design & Prototyping Virtual Tours 	<ul style="list-style-type: none"> Vehicle Design and Prototyping Manufacturing Training Service and Maintenance 	<ul style="list-style-type: none"> Project Visualization On-site Navigation Remote Collaboration 	<ul style="list-style-type: none"> Training and Simulations Remotely Guided Maintenance Infrastructure Design and Planning
Big Data & Analytics	<ul style="list-style-type: none"> Flight Data Analysis Weather Prediction Models Aircraft Health Monitoring 	<ul style="list-style-type: none"> Consumer Behavior Analysis Vehicle Performance Optimization Supply Chain Analytics 	<ul style="list-style-type: none"> Resource Allocation Workforce Management Cost Prediction 	<ul style="list-style-type: none"> Load Forecasting Grid Optimization Renewable Integration
Blockchain	<ul style="list-style-type: none"> Smart Contracts for Leasing Passenger Identity Verification 	<ul style="list-style-type: none"> Vehicle Identity and History Secure Transactions 	<ul style="list-style-type: none"> Automated Transactions Supply Chain Management 	<ul style="list-style-type: none"> Energy Trading Grid Security Renewable Energy

Impact of Emerging Technologies on +40 Industries Globally



Impact Radar 2024 – Gartner

Vision of a digital quality infrastructure



ILAC, IAF, IAAC Digital transformation

IAF

WG Digital Transformation

Task Force Remote Audit Methods for Auditing MS

ILAC

WG Metrology work on Digital Calibration Certificates

Remote Inspection

IAAC

WG Digital Transformation (A4DT)



VISION 2030

Evolucionar en la Infraestructura de la Calidad en América por medio de la **innovación y uso de la tecnología digital** en la **evaluación de la conformidad acreditada**, con la finalidad de que sea interconectada, accesible, interoperable y ágil, creando así una **cultura de transformación digital** en la región.

To evolve the Quality Infrastructure in the Americas through **innovation and the use of digital technology** in **accredited conformity assessment**, in order to make it interconnected, accessible, interoperable and agile, thus creating a **culture of digital transformation** in the region.



TF Estrategia para los organismos de Acreditación /
TF Strategy for Accreditation Bodies

Carlos Echeverría

SAE

TF Transversal Proyectos - Desarrollos ágiles /
TF Projects - Agile Developments

Alejandro Giraldo

ONAC

TF Privacidad de los datos y seguridad /
TF Data privacy and security

Jimena Giménez

OAA

TF Sensibilización, comunicación y eventos /
TF Awareness, communication and events

Verónica Ruano

SAE

TF Creación de ontologías (Estandarización de alcances acreditados, etc.) /
TF Ontology creation (Standardization of accredited scopes, etc.)

Janett Acha

INACAL

TF Digitalización y optimización de procesos /
TF Digitization and process optimization

Paola Mársico

OAA

TF Auditoría Remota y Nuevas Tecnologías /
TF Remote Auditing and New Technologies

Juan Guillermo Hernández

ema

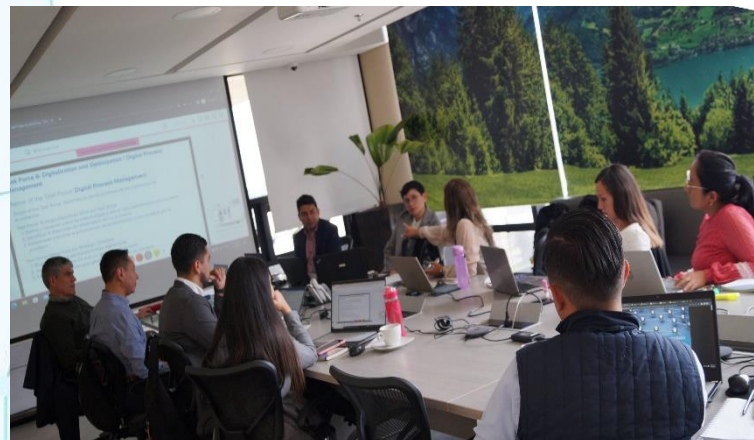


Proyecto Acreditación para la Transformación Digital - A4DT
Accreditation for Digital Transformation project - A4DT



Reuniones híbridas de los líderes con cada grupo de trabajo A4DT /

Hybrid meetings of the leaders with each A4DT working group.



Objetivos estratégicos 2030

Strategic objectives 2030

O1: Desarrollar una cultura de TD en los miembros de IAAC y las partes interesadas

O2: Desarrollar las competencias básicas y avanzadas de TD en los miembros de IAAC

O3: Desarrollar la interoperabilidad e interacción entre los OA y con los otros componentes de la IC de América

O4: Crear primeras experiencias de compartir datos, información y soluciones tecnológicas, etc. en la región.

O5: Adoptar soluciones tecnológicas individuales e interoperables y entre los OA miembros de la región

O1: Develop a culture of DT in IAAC members and stakeholders.

O2: Develop core and advanced DT competencies in IAAC members.

O3 : Develop interoperability and interaction between ABs and with the other components of America's QI.

O4: Create first experiences of sharing data, information and technological solutions, etc. in the region.

O5: Adopt individual and interoperable technology solutions and among member AOs in the region.

O1: Develop a culture of DT in IAAC members and stakeholders.

Encuentros A4DT / A4DT Meetings



First meeting
Digital transformation
for **ACCREDITATION 4.0**

NOVEMBER 2023, 22

14:00 UTC

Connection   Live Streaming  [sinter-american-accreditacion4.0](#)



Primer encuentro **Transformación Digital** para **ACREDITACIÓN 4.0**

QUALITY INFRASTRUCTURE DIGITAL: An initiative of Germany's central QI actors



For modern and efficient quality assurance

- we develop new digital **tools, structures and processes**,
- we work together on solutions in practical and cooperative **pilot projects**,
- we establish a **network** of business, research and QI stakeholders,
- we support the design of an adapted legal framework.



O1: Develop a culture of DT in IAAC members and stakeholders.

Encuentros A4DT / A4DT Meetings

Segundo encuentro
Transformación Digital para ACREDITACIÓN 4.0

A4DT **PTB** **IAAC**

PANEL 3 Transformación digital, una perspectiva desde IAAC, AFRAC, APAC, ARAC, EA y SADCA

MODERADOR
Paola Mársico
Presidente del MLA (IAAC)

Andrea Melo
Presidente (IAAC)

Ron Josias
Presidente (AFRAC)

Ms. Mallika Gope
Director de la Junta Nacional de Acreditación de Laboratorios (NABL) - APAC

Ms. Jennifer Danielson
(APAC)

Maureen Logghe
Presidente (EA)

Moslem Barrak
Secretario (ARAC)

Robin Neeren GOPEE
Presidente (SADCA)

31 Julio 2024

Proyecto Acreditación para la Transformación Digital -A4DT
Accreditation for Digital Transformation project - A4DT

A4DT **PTB** **IAAC**

Malika Gope
Coordinadora del proyecto APAC-PTB

Jennifer Danielson
Presidente de la Red de Digitalización de APAC

Robin Neeren
Presidente de SADCA

Carlos Echeverría
Presidente del Comité de Apoyo al Desarrollo IAF

Maureen Logghe
Presidente de EA

Paola Mársico
Presidente del MLA de IAAC

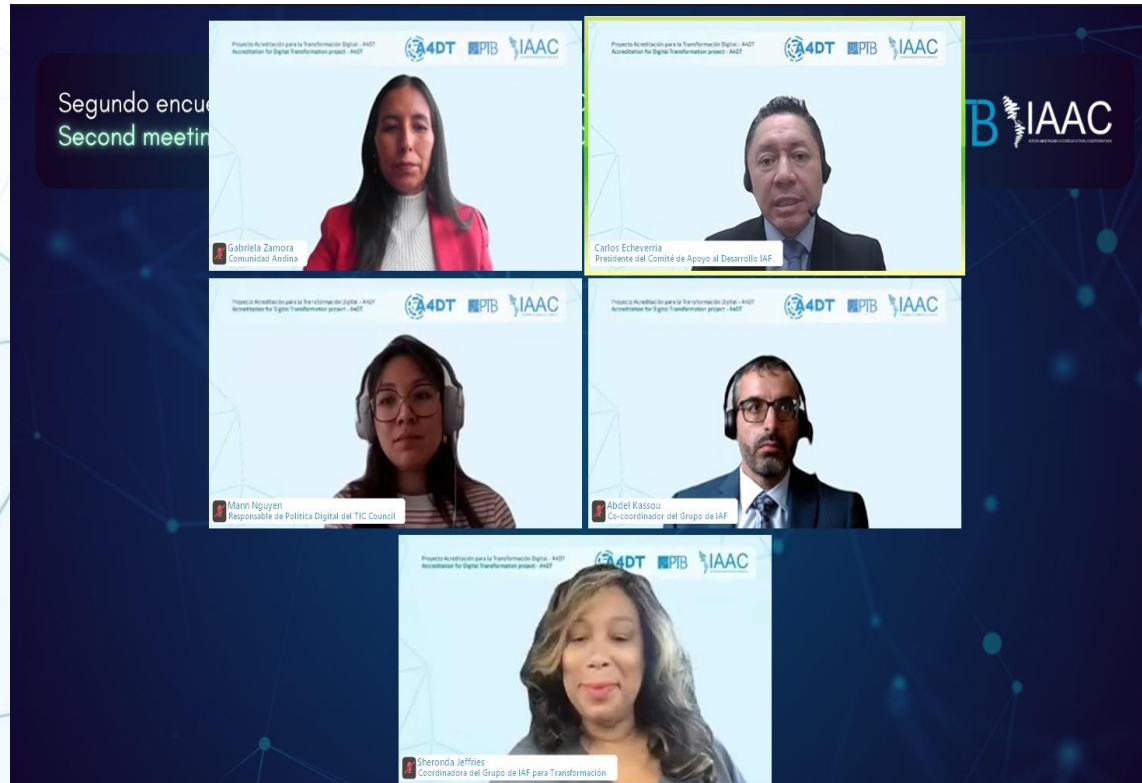
Moslem Barrak
Secretario de ARAC

Ron Josias
Presidente AFRAC

Segundo encuentro
Transformación Digital para ACREDITACIÓN 4.0

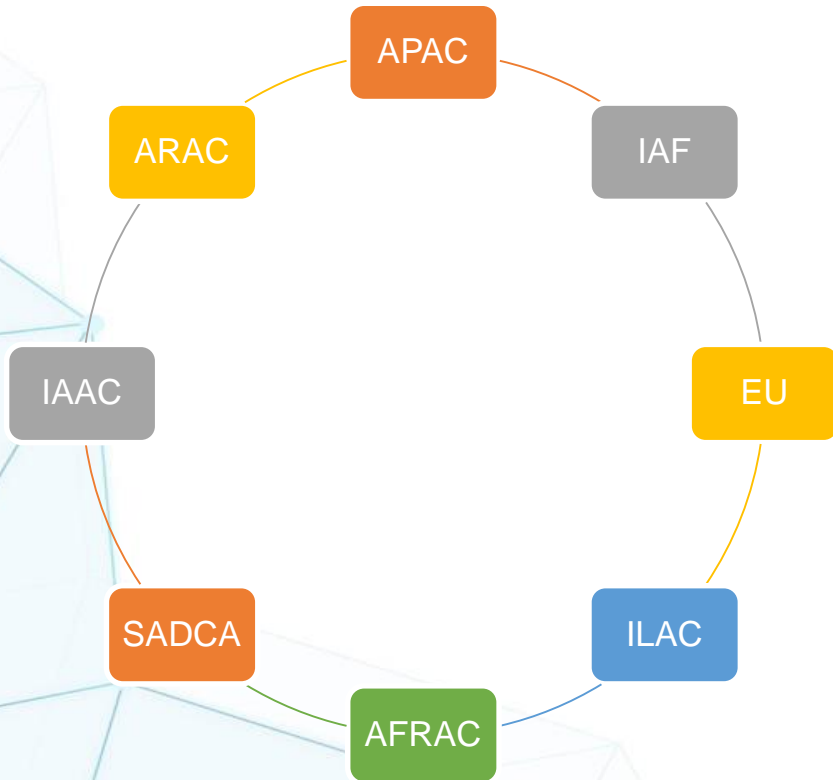
O1: Develop a culture of DT in IAAC members and stakeholders.

Encuentros A4DT / A4DT Meetings

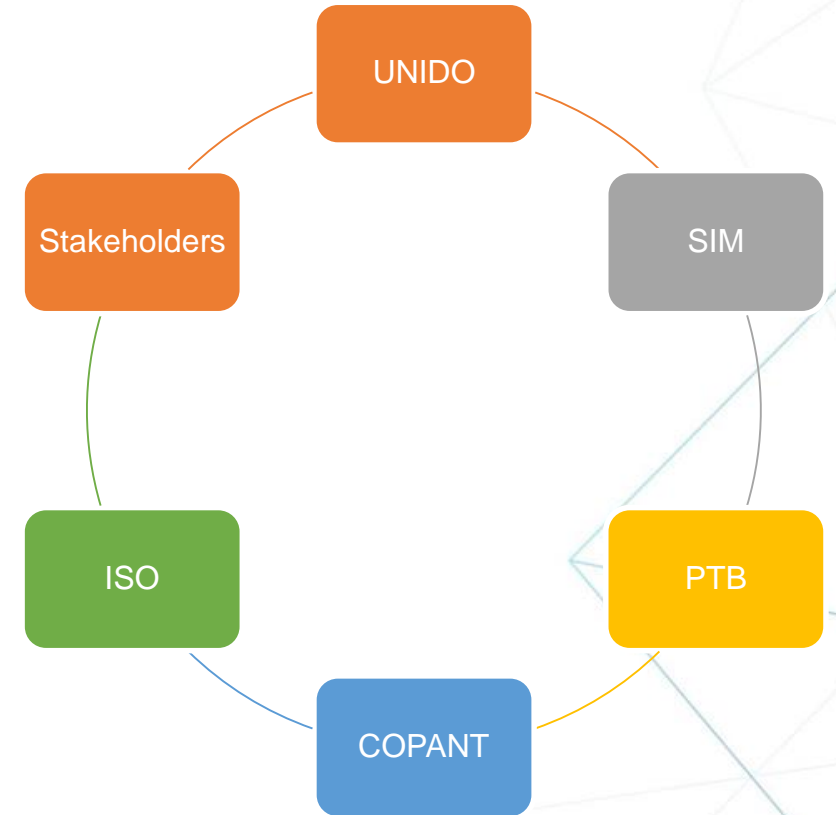


O1: Develop a culture of DT in IAAC members and stakeholders.

Encuentros A4DT / A4DT Meetings



**A4DT
Meetings**



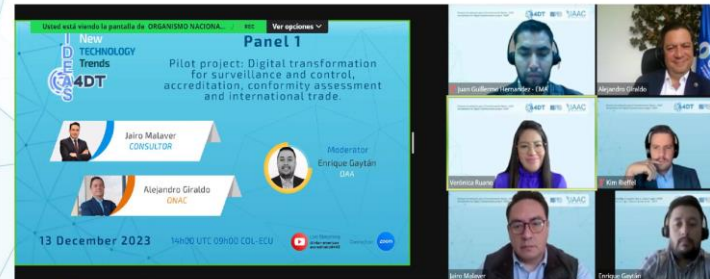
O2: Develop core and advanced DT competencies in IAAC members.

Charlas por cada Task Force: Ideas A4DT / Talks by each Task Force: A4DT Ideas



Proyecto Acreditación para la Transformación Digital - A4DT
Accreditation for Digital Transformation project - A4DT

A4DT PTB IAAC



Nuevas Tendencias TECNOLÓGICAS Webinar New TECHNOLOGY Trends



Nuevas Tendencias TECNOLÓGICAS Webinar New TECHNOLOGY Trends



Nuevas Tendencias TECNOLÓGICAS Webinar New TECHNOLOGY Trends

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Proyecto Acreditación para la Transformación Digital - A4DT
Accreditation for Digital Transformation project - A4DT



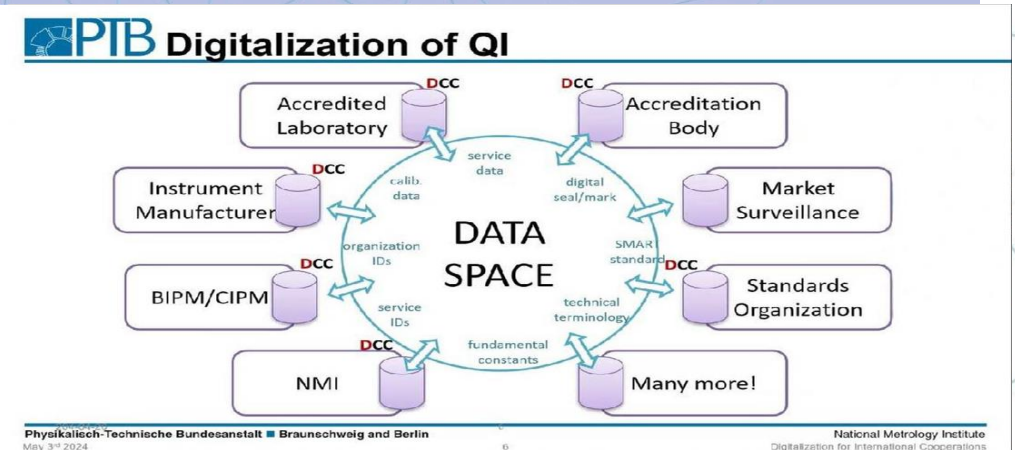
IDEAS A4DT DIGITAL TRANSFORMATION

WEBINAR
Optimización y Digitalización de Procesos



IDEAS A4DT DIGITAL TRANSFORMATION

WEBINAR
Optimización y Digitalización de Procesos



O2: Develop core and advanced DT competencies in IAAC members.

Charlas por cada Task Force: Ideas A4DT / Talks by each Task Force: A4DT Ideas

IDEAS A4DT

WEBINAR
ONTOLOGÍAS EN LA ACREDITACIÓN

Viernes 26-Abril 14:00 UTC

Con la participación de expertos del PTB:
Daniel Hutzschenreuter
Giacomo Lanza
Maximilian Gruber

A4TD PTB IAAC

AGENDA

WELCOME BIENVENIDA

IAAC Technical Secretary

Introduction to Semantic Web Technologies for Ontologies
Introducción a las tecnologías de la web semántica para ontologías

PTB experts (Max Gruber, Giacomo Lanza)

Q & A - Preguntas

Moderador

Glimpse into the digital future: Ontologies in (accredited) metrological services.
Una mirada al futuro digital: Ontologías en los servicios metroológicos (acreditados).

PTB experts (Daniel Hutzschenreuter et al.)

Q & A - Preguntas

Moderador

Closing remarks
Comentarios finales

TF Lead

Applying Ontologies in Accreditation

Glimpse into the digital future: Ontologies in metrological services

Daniel Hutzschenreuter, Sascha Eichstädt, 2024-04-26, A4DT Webinar

Building Blocks of the Semantic Web

- addition of formal logic to the web
 - express data and rules
 - reason about content
 - describe and express complex properties
 - remain decidable
- integration with existing standards
 - build on accepted tools
 - use (hidden) annotations in XML
 - describe meaning and relations with RDF
 - identify concepts globally using a URI
- available collections of information
 - capture domain specific knowledge
 - ontologies define concepts and relations
 - interrelate concepts between ontologies

Digital Transformation*

Digitize
paper → image, PDF file,...

Digitization
analogue process → digital form

Digitalization
digital technologies → change business models, new revenue

* terms Gartner IT glossary

CIPM Vision SI Digital Framework
Digital & FAIR certificate in metrology
Thesauri, Ontologies, ...

Maturity models

Level 1
Digital document
PDF

Level 2
Machine-readable document
XML
Structured document format
Software processing with

Level 3
Machine-readable and -executable content
Self-learning analysis together with automatic validation and optimization
Value-adding services possible e.g. conformity check, question answering, predictive content supply
Earmarked

Level 4
Machine-interpretable content
Information models describing and explaining the content and the relationships between items of information

Level 5
Machine-controllable content
The content of a standard is amended automatically and adopted by automated decision-making processes.
Digital standards are based on a system of artificial general intelligence with cognitive capabilities.
Digital standards adapt constantly to the current state of the art of technical and regulatory framework conditions.

from DIN/DKE IDIS whitepaper 2021

Today → XML based digital certificates (DCC) → SMART standards development →

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O4: Create first experiences of sharing data, information and technological solutions, etc. in the region.

O5: Adopt individual and interoperable technology solutions and among member AOs in the region.

IAAC DT Plan (inside)

- Web page
- Document Management System
- Training Management System
- Project Management System

Emergengy Technologies

- Cloud computing
- AI
- Big Data
- Block Chain

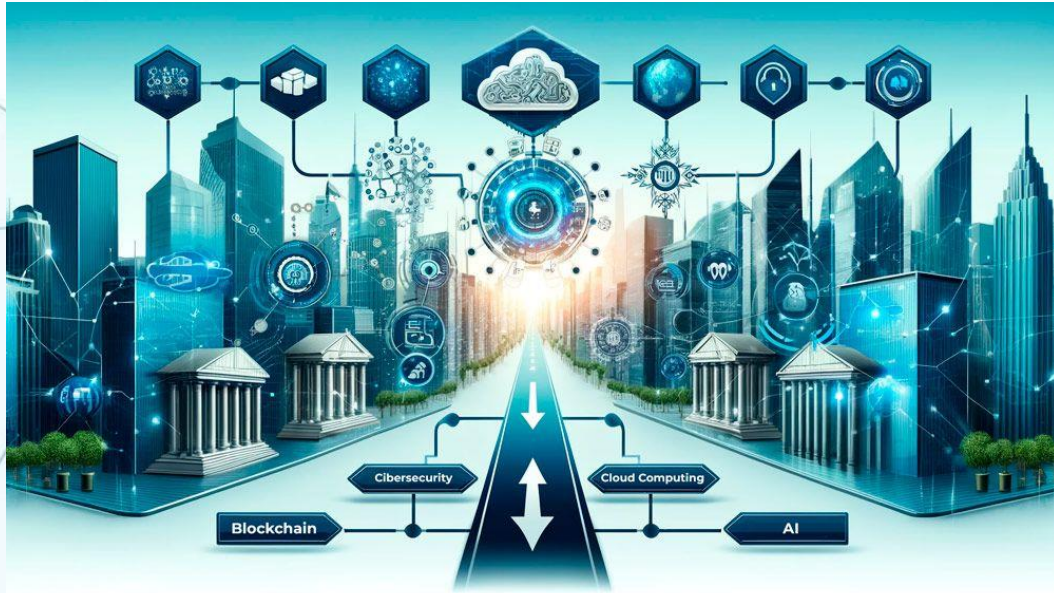
CAN (Colombia, Ecuador Perú, Bolivia)

- Andean Directory of Accredited Conformity Assessment Bodies
- ✓ Armonización
- ✓ Sharing data
- ✓ Interoperability

Other projects

- ONAC – Colombia: Big Data
- ✓ IAS – EEUU: AI Risk
- ✓ ANAB – EEUU:
- ✓ SAE – Ecuador:

Task Forces



- Privacy policies - ISO 27001 standard - we work with the support of an expert
- Ontologies: definition of the scope of accredited calibration laboratories.
- Process improvement / Complaints procedure pilot
- Remote audit guide
- Inventory of new technologies

Oportunidades

Oportunities

Streamlined Integration and Communication

Digital Platforms

Seamless integration between digital metrology and accreditation platforms.

Efficient Data Exchange

Machine-readable metadata enables efficient data exchange.



Oportunidades

Oportunities

Real-Time Monitoring and Traceability

- Real-time monitoring ensures data accuracy from accredited laboratories and metrology systems.
- Digital traceability ensures compliance with international standards
- Collaborative platforms enhance communication between metrology institutes and accreditation bodies.



Oportunidades

Oportunities

Enhanced Transparency and Trust

- Greater transparency in accreditation and conformity assessment activities.
- Remote audits and assessments reduce time and costs for accreditation bodies.
- Secure data management with blockchain ensures trust in digital accreditation processes
- Cloud-based infrastructure enables flexible, scalable quality management systems.



Retos

Challenges

- Harmonization
- Make units of measurement machine-readable
- Machine-readable certificates for metrological services
- Electronic transmission of calibration certificates
- Traceability, keeping and tracking





***!Gracias; Thank you!
Obrigado!***

Carlos Echeverría.

***Presidente Comité de Gestión IAAC / Presidente WG MC
IAAC Chair Management Committee / Chair WG DT***