

The webinar will start in a few moment

With the participation of :



Continuing Education in Applied Artificial Intelligence

Datum Latam



Animated by Ing. Constanza Alvarado Mariño
Datum Academy LATAM coordinator

AGENDA



- Pr. Serge Miranda: "BIHAR Institute": (International Institute for Applied AI) eBIHAR Master degree and its "GRADEOS" (Micromasters, Microbachelors)
 - Carlos Diaz: What's Coming in Oracle Database 23c
 - Jorge Gómez Montalvo: Applied AI in Mexico
 - Pr. Fáber D. Giraldo : Applied AI in Colombia
 - Pr. Philippe Anierte : INDICATIC AIP and AI
 - Dr. Gerardo Escudero: Proyecto ATN/ME-19615-PN BLOCKCHAIN Y PRECISIÓN
 - Jorge Lezcano : Applied AI in Panama
 - Dr. Congduc Pham : Edge-AI in optimized irrigation for smallholder farmers communities
 - Eddy Martinez : European Project DEEP FARM on digital agriculture in Santo Domingo
- 

MISSION STATEMENT



- *More than **40%** of consumers globally believe AI improves their lives in some way.*
- *AI will be responsible for **9%** of all new jobs by 2025.*

(Zyro AI , 2023)

MSc eBIHAR dedicated to Artificial Intelligence & Big Data



eBIHAR

ESTIA
INSTITUTE OF TECHNOLOGY

ORACLE
University

 **CCI BAYONNE
PAYS BASQUE**
Euskal Herri

© 2023 DATUM ACADEMY



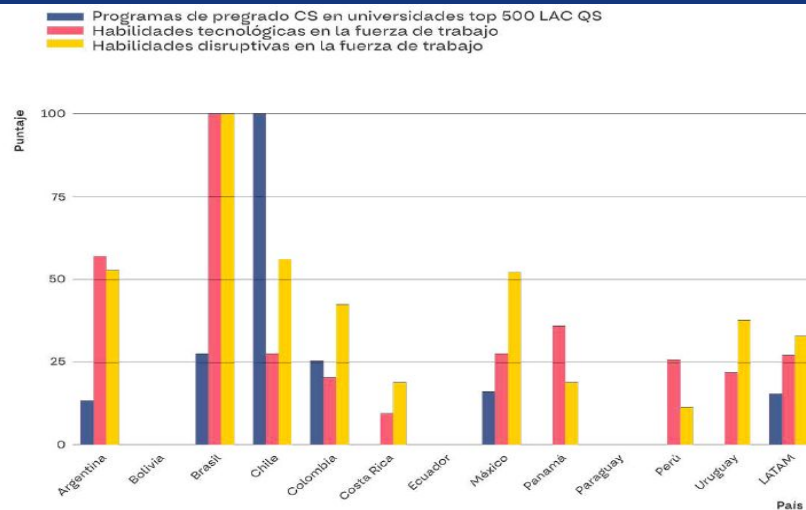
01

Talent Development



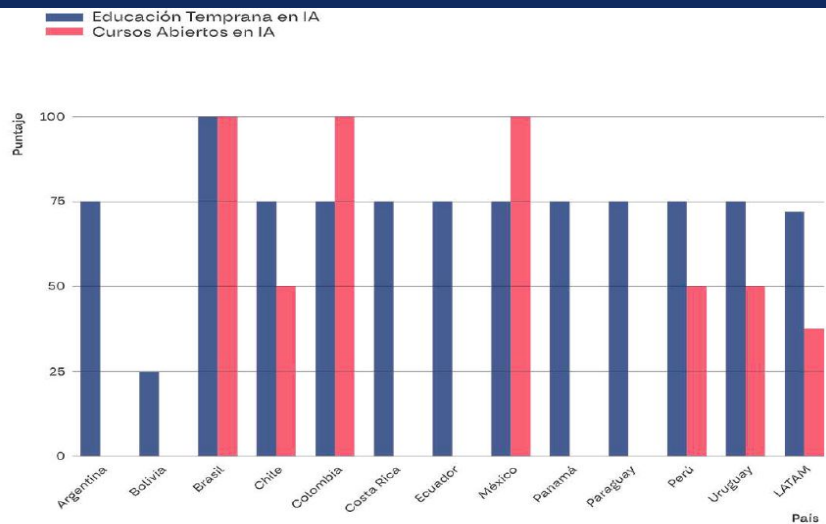
PROFESSIONAL TRAINING

Source. ILIA 2023. Datos. Ranking QS 2022; LinkedIn



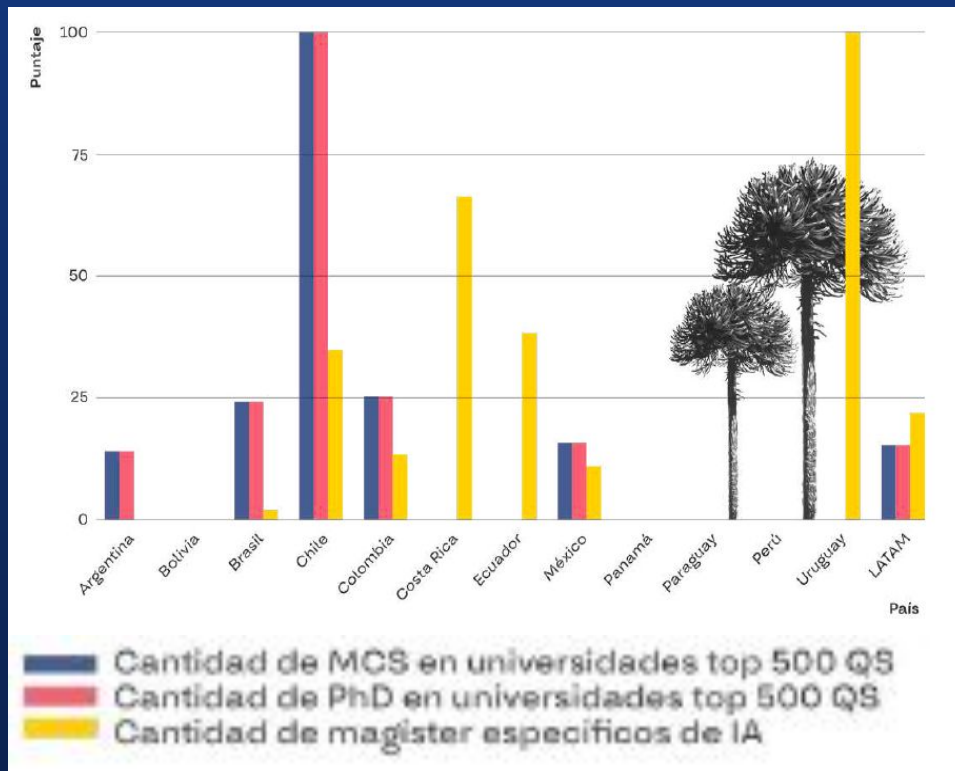
AI LITERACY

Source. ILIA 2023



ADVANCE HUMAN CAPITAL

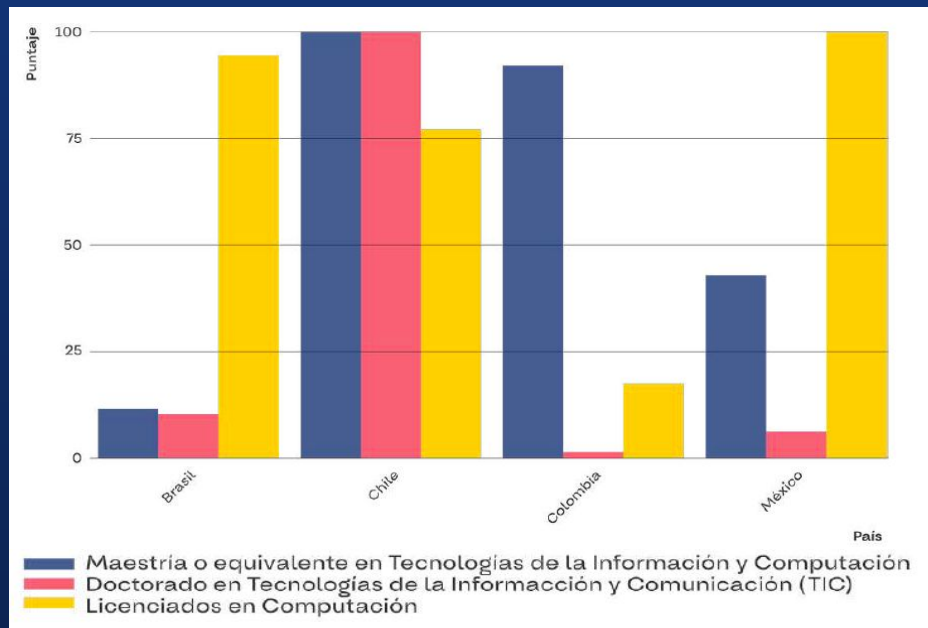
- Number of Master's and PhD programs in Computer Science or AI
- Number of graduates and graduates of Master's and PhD programs in ICT or equivalent.



Formación Universitaria en Ciencias de Computación y TIC . Source. ILIA 2023. Data OCDE Stats 2020

ADVANCE HUMAN CAPITAL

- Cantidad de programas de Magíster y Doctorado en Ciencias de Computación o IA
- Número de licenciados y egresados de programas de Magíster y Doctorados en TIC o equivalentes.



Presencia y Calidad de programas de postgrado / Source.. ILIA 2023. Data.Ranking QS 2022; OCDE Stats 2020.

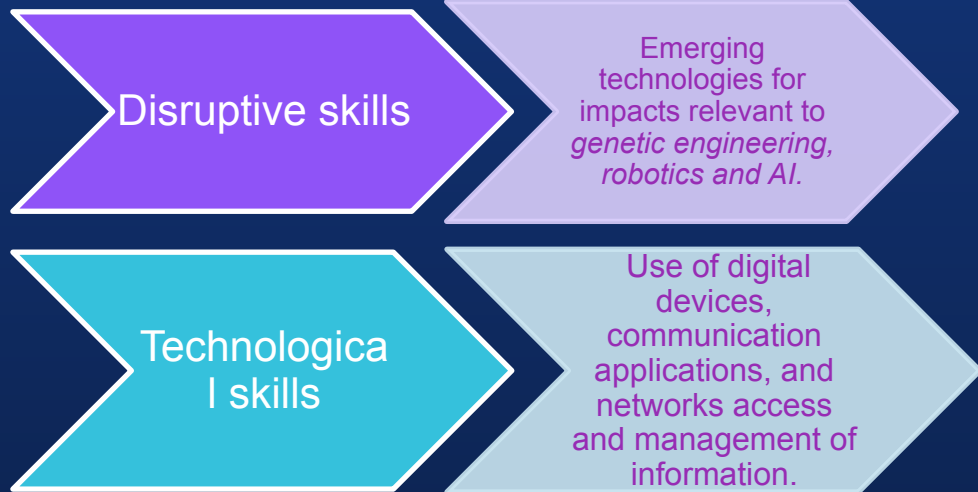
02

Approximation to the presence of AI skills in the Latin American labor market



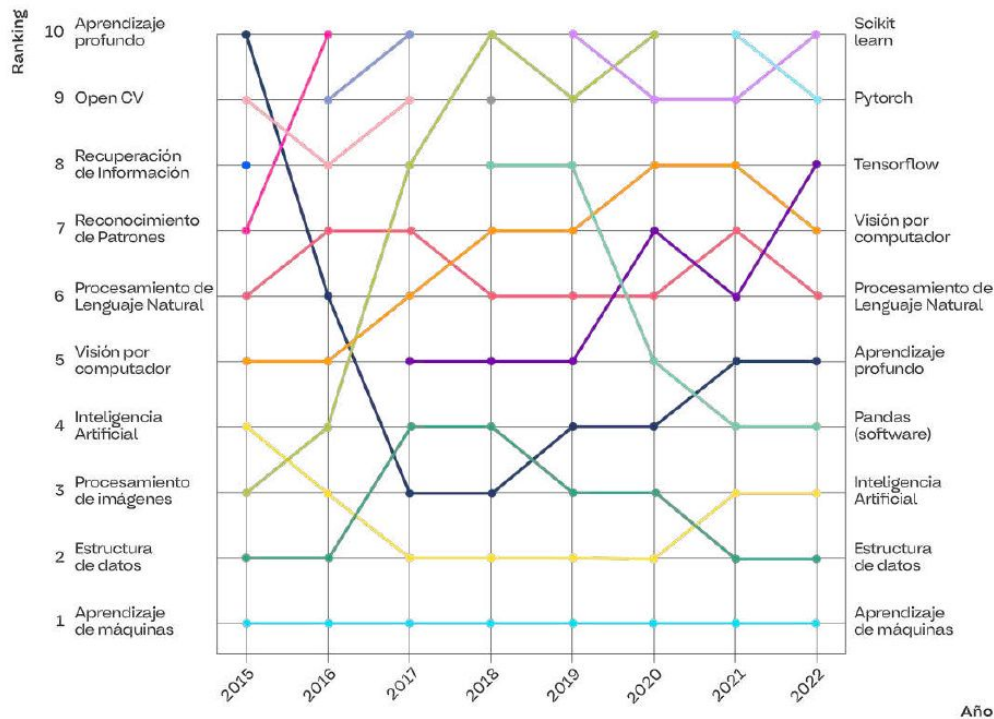
TASK FORCE VS. TECHNOLOGICAL CAPABILITIES

Latin America
penetration of different
productive sectors productive
sectors and countries



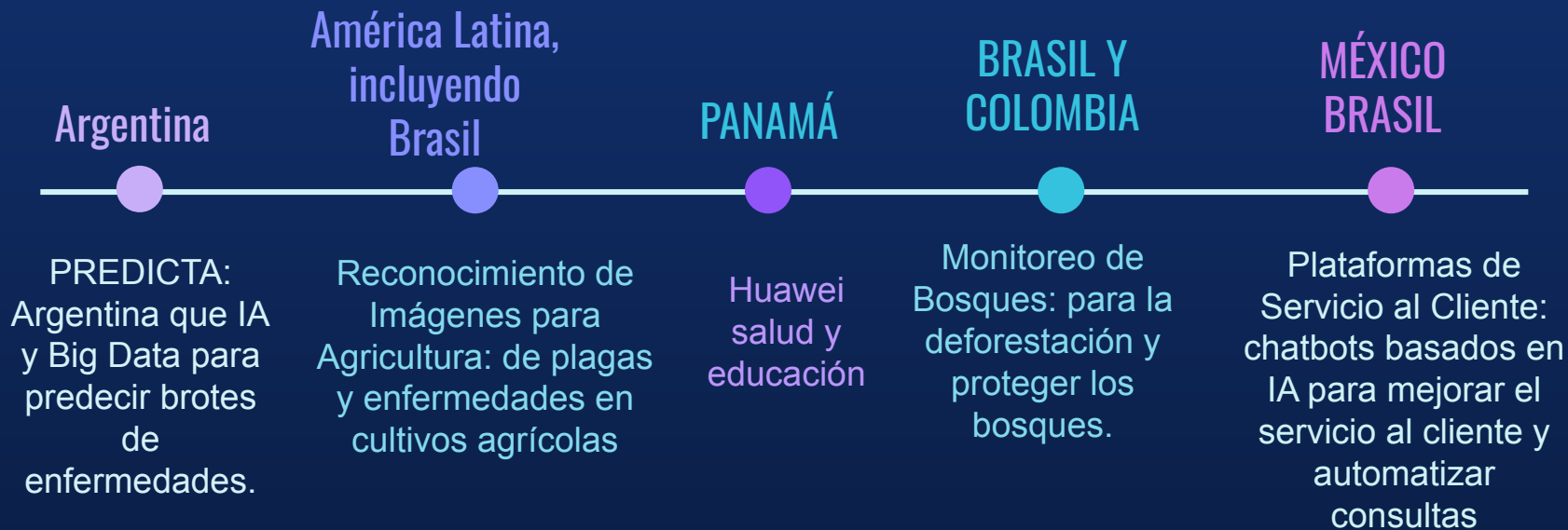
The workforce incorporates technology skills linked to AI
(Source. LinkedIn social network, 2023)


TASK FORCE VS. TECHNOLOGICAL CAPABILITIES



Habilidades más frecuentes según año (2015-2022)
/ Source. ILIA (based in LinkedIn).

03 APPLIED AI AND BIG DATA PROJECTS IN LATAM





“La tecnología es solo una herramienta. En términos de llevar a los niños a leer, escribir y hacer matemáticas, la tecnología no hace gran diferencia. La verdadera importancia radica en la forma en que los utilizas. La inclusión digital y la inteligencia artificial tienen el poder de democratizar el conocimiento y hacer que las oportunidades sean accesibles para todos, sin importar su origen o situación económica.”

—Bill Gates



"BIHAR Institute":
(International Institute for
Applied AI)
eBIHAR Master degree
and its
"GRADEOS" (Micromasters,
Microbachelors)

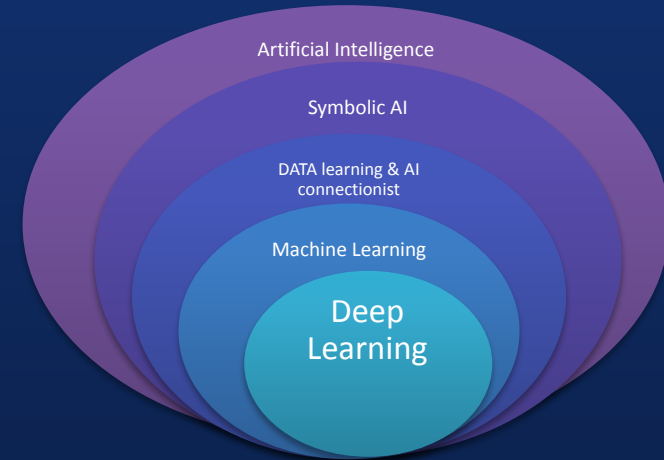


Pr. Serge MIRANDA

Prof. Emeritus in Computer Science, UCA
President of Datum Academy
(Spin off eLEARNING Estia)
Scientific Director of the DATA LAB and
co-founder of the MSc BIHAR at ESTIA

Teaching the third age of AI?

- 1) "AI": Two fundamental disciplines:
 - AI "Science" (Mathematics, Biosciences)
 - AI "Engineering" or **APPLIED AI** in all sectors of the data economy
 - **INSTITUT BIHAR: Master BIHAR, Bachelor BIHAR, and GRADEO**
- 2) The four main ages of AI (born in 1956; McCarthy) and its 2 winters up to 2012!
 - AGE1 (=> 1980): Pioneering AI then Symbolic AI (Rules and mathematics; PROLOG and expert systems)
 - AGE2 => 2012 (with Big Data and GPU): Emergence of Connectionist AI and its first major industrial successes: autonomous cars and automatic translation (DEEPL, ..); DEEP LEARNING (Turing award in 2019)
 - **AGE3 (2020-2050): Specific AI (so-called "weak" AI). Artificial Intelligence serves human beings (Health and well-being, Human resources, Agriculture, Industry 4.0, Commerce, etc.)**
 - AGE4 (>-2050): "STRONG" AI: Doctor, banker, teacher: a robot with consciousness? (transhumanism?)

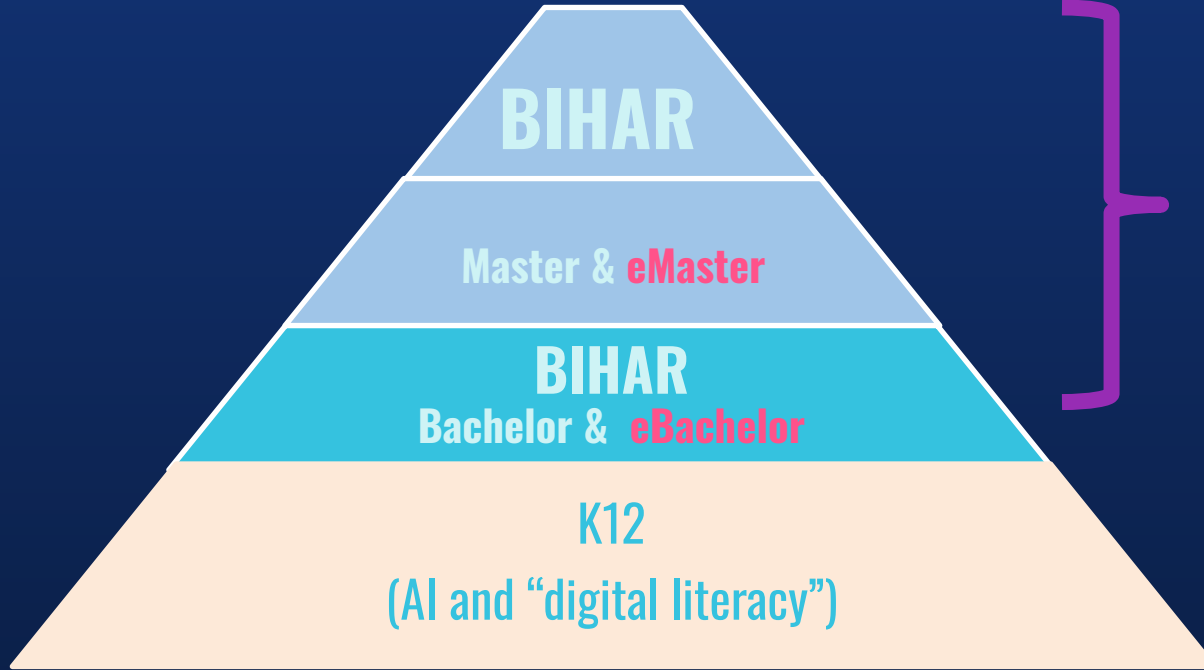


The fundamentals of Artificial Intelligence

eBIHAR online master program



ESTIA eLEARNING Pyramid and DATUM ACADEMY in the BIHAR Institute



Institut BIHAR with its DATA LAB and "GRADEO" (micromasters) In BENIN, CHINA and ..ESTIA in 2024

STAREDU digital literacy project with Google/Microsoft & Starlink/ONEWEB (for Smart Villages)

AI education in France - ("FRANCE 2030" report): 3 major professions (BIHAR Institute curriculum creation database)



4.1 Aligner l'offre de formation avec les besoins des entreprises

Data Scientistes

- Fondamentaux mathématiques de la data science, des algorithmes de ML/DL et de la robotique
- Préparation et nettoyage des données / Techniques de réduction de la dimension
- Conduite de projets de data science - IA de bout en bout jusqu'à l'optimisation des modèles
- Maîtrise d'une ou plusieurs sous-disciplines : traitement du signal, vision par ordinateur, traitement du langage naturel, IA embarquée, robotique autonome, etc.

Ingénieurs de la donnée

- Techniques de stockage des données volumineuses (bases SQL, objets, colonnes distribuées, clés/valeur en mémoire, new SQL, etc.)
- Techniques de calcul parallèle et construction des processus Extract Transform Load : en entrepôts de données ou en architecture virtuelle
- Techniques de traitement des flux de données en temps réel (Data Streaming)

Ingénieurs logiciels ML/IA

- Méthodes de programmation industrielle adaptées à la data science et à l'IA
- Automatisation du déploiement des modèles par utilisation de pipelines, orchestrateurs et conteneurs
- Gestion structurée du cycle de vie des modèles via le monitoring et la maintenance versionnée
- Développement des techniques de robustesse, d'intelligibilité et de conformité des modèles en production



The 3 main AI professions

(Ministry Report France 2030 "National Strategy for IA 2030" December 2021)

Data Scientists

Very strong growth in the data market
(6.5% / year since 2016 according to the European Data Market prospective study)

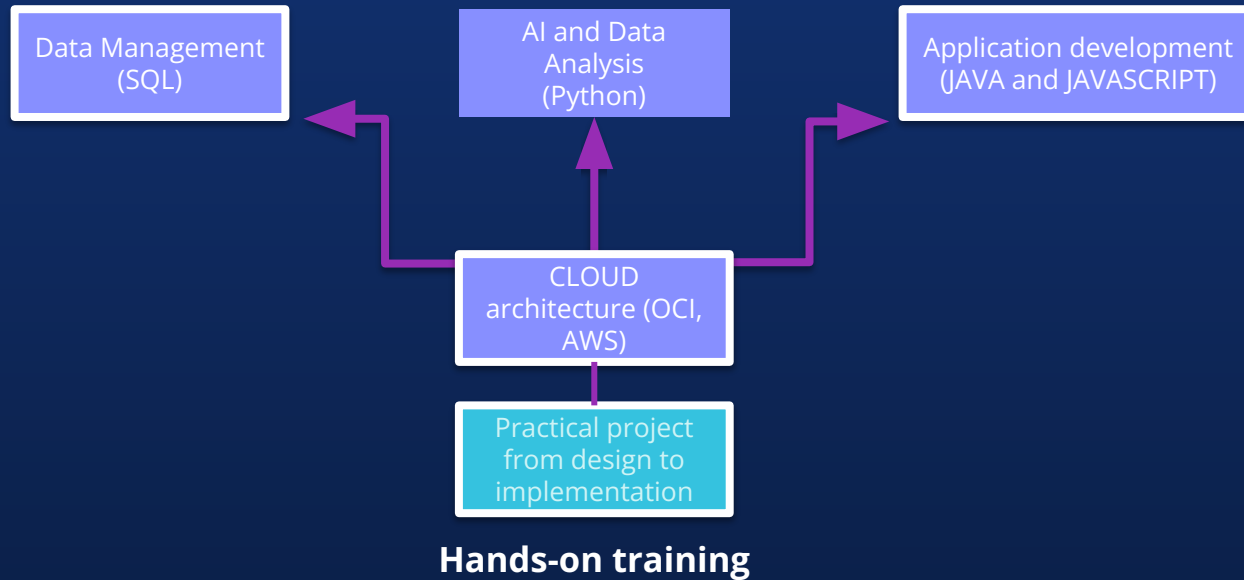
Shortage of trained data workers

Data Engineer

ML/AI Software Engineer

Need to train interdisciplinary profiles with dual skills:
AI + another discipline (health, agriculture, industry, etc.)

The 4 Blocks of Competence of the BIHAR Institute (Bachelor and Master BIHAR)







Vision: Bottom-up construction of an international network of APPLIED AI INSTITUTES ("Bihar Institute")

- Hybrid teaching (Moocs, zoom, face-to-face)
- Construction partnership with Groupe Charlemagne (for a complete Package)
- Feasibility studies in BENIN, CHINA... for launching Bihar Bachelor in 2024





Connected Digital Campus (CDC) online version of eBIHAR and gradeos dissemination with its DATA LAB for continuous education embedded in local industry and support

- **HYBRID TUTORING :**
 - REAL (teachers in CAN): sustainability, blended learning and reinforced individual tutoring (internship/tutoring)
 - VIRTUAL: with the IAGORA platform (HOOK Thesis and ChatGPT)
 - DATA LAB: INNOVATION laboratory on the USES of AI and Big Data, and learning by doing with industrialists, incubators, start-ups, etc.
- 

Inauguration of the first CDC in Africa (ESATIC, Ivory Coast) in March 2022

(2 fully operational CDCs in Oct 2023 with 100 eBIHAR students; 15 CDC agreements signed in the 5 continents up to now)



The CAN was inaugurated on March 29, 2022 in the presence of the French Ambassador (Mr Belliard), two Ivory Coast Ministers, Mr ADOM, Minister of Digital Economy and Telecom and Mr DIAWARA Minister of Higher Education and Research with P.Elisalde Director ESTIA , Adma Traore , Director ESATIC and Pr S.Miranda.

Master Bihar/eBihar's DATALAB :

An INNOVATION LAB for applications in the uses of artificial intelligence and Big Data



DATALAB
ARTIFICIAL INTELLIGENCE ENGINEERING

RECHERCHE & DÉVELOPPEMENT | INNOVATION | TRANSFERT DE TECHNOLOGIE | FORMATION



**INNOVATION NUMÉRIQUE
INTELLIGENCE ARTIFICIELLE
BIG DATA**

Une plateforme au cœur de l'innovation sur les usages de l'Intelligence Artificielle et du Big Data

DATALAB propose aux entreprises un ensemble de services dédiés à la transition numérique dans l'industrie à travers les technologies d'Intelligence Artificielle et du Big Data. Son équipe est composée de chercheurs et d'ingénieurs en apprentissage automatique et développement logiciel. La plateforme conduit des projets structurants dans des domaines comme l'agriculture de précision, la santé et l'industrie, et notamment l'industrie textile.

une plateforme d'innovation
ESTIA
INSTITUTE OF TECHNOLOGY

CCI BAYONNE
PAYS BASCOUS



DATA LAB of Master BIHAR

- Demonstrator FACTORY (POCs: Proof of Concepts/POVs: Proof of Value) with manufacturers
- BIHAR Master's INNOVATION Laboratory for the USES of Big Data and AI
- Towards "functional/business" GRADEOs: AI in agriculture, AI in healthcare, etc.
- Towards an open POCS platform?



Partnership with Google in Oct 2021 at ESTIA
AI IN AGRICULTURE



ORACLE partnership and showroom launched on October 13, 2023 on AI in healthcare at ESTIA



With Valeria Hayotte (Oracle University) at
the launch of the eMBDS in 2019 and the "AI
BY EXAMPLE" gradeos.

Examples of innovation projects from Bihar's DATA LAB (POC/POV of the DATA LAB at ESTIA and IT UNIVERSITY (Madagascar))

- **Health** (Example: Oracle CNAM cf October 13, 2023 and Big Bridge with Oracle research (project 2024) and CHU de NICE on stroke detection and reduction of carotid stenosis with deep learning 3D images (scanners))
- **Digital agriculture** (Example: Google 2022 and European Deep Farm project with 6 CANs and 6 countries (2023-2025))
- **SOCIAL APPLICATIONS with blockchain** (Example: MADA TERRA in Madagascar with POC, MADA COIN for melting cryptocurrency ds smart village for unbanked) □ Digital transformation of Madagascar (Towards MADAGASCAR NUMERIQUE!)
 - 50 eBIHAR students at IT UNIVERSITY CAN
- **INDUSTRY** (Example in progress: RENAULT)
- **Circular economy** (Example: CETIA at ESTIA)



Data for BIG BRIDGE: Nice University Hospital (anonymized data, DICOM (Digital Imaging and Communications in Medicine) files, 3D scanner images)



AI recognition of shoe models shoes for recycling (generation of a dismantling trajectory)

DATA LAB (digital agriculture) :

Example of a DEEP FARM European innovation project (ERASMUS+ 2023 -2025) with 6 CANS from the BIHAR Master's program coordinated by ESTIA: Turkey (Olives), COTE d'IVOIRE (Cocoa), Madagascar (Rice), Benin (Cassava) Rep Dom (Banana) and Haiti (Food crops).

- European ERASMUS+ DEEP FARMING digital agriculture project involving 6 CANS: Turkey/Cyprus, Benin, Ivory Coast, Madagascar, Dominican Republic and Haiti with 6 pilot farms and agronomy departments; 12 eBIHAR students; 800 K grant managed by ESTIA.
- Association of local START UPS.
- Expert agronomist (and ChatGPT) if disease or anomaly detected:
IOT, DRONES, SATELLITE and image analysis by AI (DL) to monitor a crop and optimize water.
- FARMPLUG open source platform developed in ESTIA's DATA LAB
- MOOCS and GRADEO "AI IN AGRICULTURE" to train agronomists and farmers.



MONTCEL
pilot farm in
Haiti



Example CABOSSE of
Cocoa affected by
Moniliophthora roreri



GRADEOs

(Micromasters & microbachelors)

- Google and Oracle partnership (4 Gradeos with Oracle and Google) from the 4 BIHAR master's skill blocks) “dual certificates leading to jobs”
- Series of gradeos IA BY EXAMPLE (2 free Moocs) with Oracle and Pantheon Sorbonne (in SHS) planned





GRADEO : development of continuing professional training for UP-SKILLING and RE-SKILLING associated with each SKILL BLOCK

- There is a growing demand from employers and employees for short programs that provide new skills and are geared to the needs of the labor market.
- The European MOOC Consortium has defined a common framework of micro-credits to meet these needs.

100-150 hours of
work 3-6 ECTS

Level :
Bachelor's or Master's
degree





BIHAR's GRADEO respond to the skills crisis in Big Data, AI and application development.

Dual certification included :
3 or 6 ECTS (CONCEPTS) and
Professional Certification (TOOLS)
around USE CASES

***"DUAL CERTIFICATION LEADING TO JOBS"
(definition and implementation with Oracle and Google)***



Double certificates and GRADEO from Master BIHAR : Micromasters & micro bachelors

1. The 4 "BUSINESS" GRADEOs of the BIHAR Master in 2023 with ORACLE and GOOGLE on the 4 Cursus Competence Blocks
2. FUNCTIONAL GRADEOs "BY EXAMPLE"
3. GRADEO "TOOLS" (& bootcamp)
4. Free MOOCS on FUN :
 - a. AI by example (October 2023) : <https://www.fun-mooc.fr/fr/cours/ia-par-lexemple/>
 - b. ChatGPT by example (October 2024)

Other GRADEO in progress for 2024

- **FUNCTIONAL GRADEOS** around demonstrators from the BIHAR Master DATA LAB and DATUM ACADEMY (Practical dimension "by example" /POC □ triple "A")
 - Free MOOCs
 - **"AI by example"** (Mooc IA360 on October 30, 2023)
 - **"ChatGPT by example"** (PROMPT-U) in October 2024
 - SERIES of functional MOOCS with ORACLE UNIVERSITY :
 - In 2023: AI in healthcare in 2023 with CNAM
 - In 2024: Industry, agriculture, SHS
- **TOOLS GRADEOS** on short courses lasting 1 week on average (including Bootcamp)
 - With EXPERTS/tutors from DATUM ACADEMY (Datum's IAGORA platform)
 - Synchronous face-to-face or remote mode



Thank you for your
attention



ESTIA
INSTITUTE OF TECHNOLOGY

 CONFÉRENCE DES
**GRANDES
ÉCOLES**

BI  **AR**

 **DATUM
ACADEMY**

What's Coming in Oracle Database 23c

Accelerating our mission to simplify development of data-driven apps



Carlos Díaz

Principal Sales Consultant
Oracle Public Sector LAD



Safe harbor statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing, and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.



Modern Apps – Born in the Cloud

Modern data-driven apps use a **new generation of technologies** leveraging the **flexibility** and **efficiency** of **cloud** to enable more compelling **experiences** for users and deliver more **value** from that data

New Types of Data



Relational

{ JSON }

Documents



Spatial



Text

New Types of Analytics



Data Warehouse



Machine Learning



Graph



Lake House

New Workload Types



Micro Services



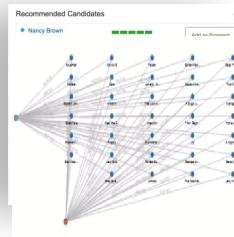
Geo-Distributed



IoT



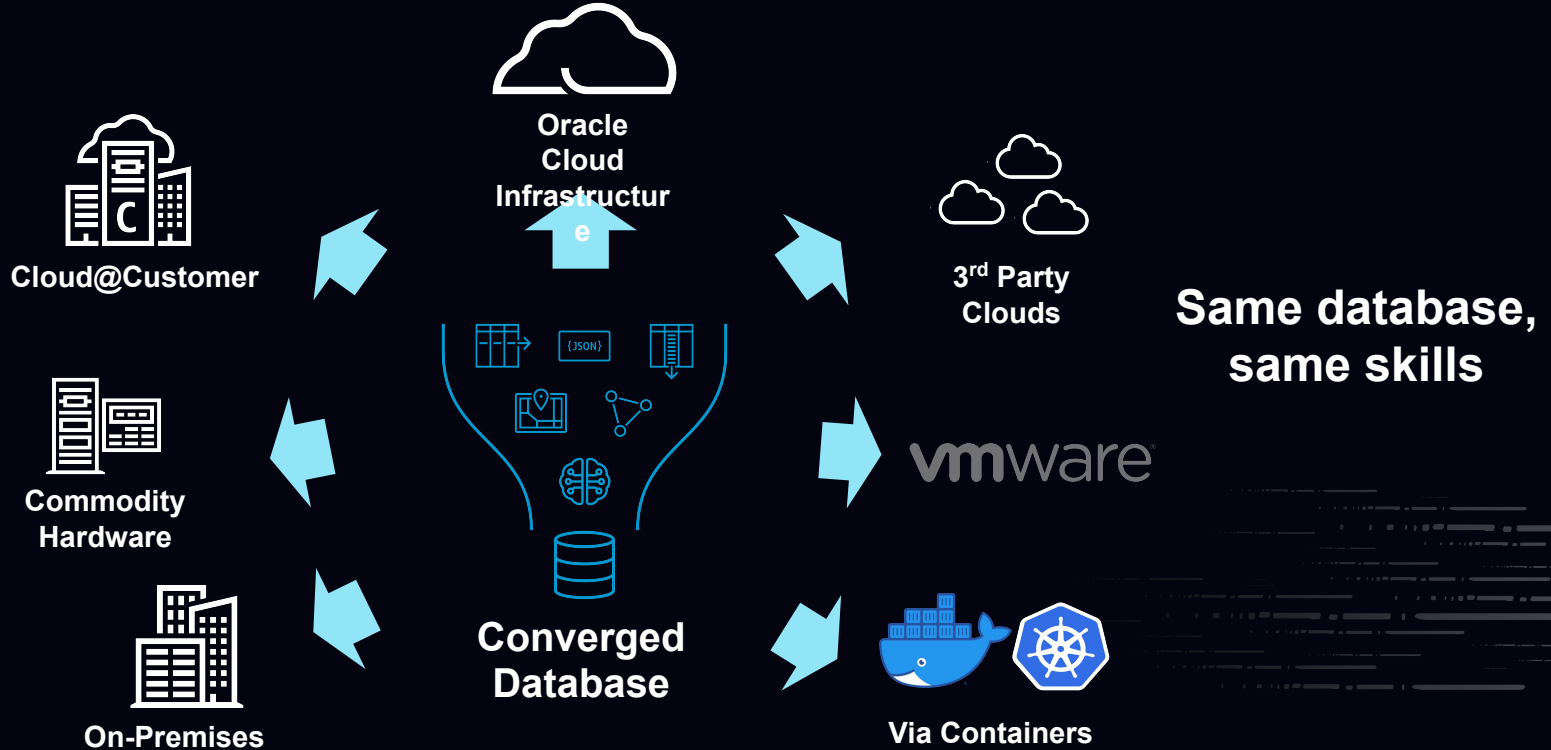
Blockchain



Oracle Data Management Vision

Make it **simple** to **develop** and **run**
modern operational and analytic apps
for **all** use cases, at **any** scale

Oracle's Converged Database Is Available Everywhere



Simplest Integration with Modern Cloud Ecosystem

Autonomous Database has seamless integration with the full range of cloud services that Apps need



**Autonomous
Database**

Cloud App Dev Services



DevOps
CI/CD



Container
Registry



Resource
Manager



API
Gateway



Functions



Artifact
Registry



Streaming

Cloud Runtime Services



Kubernetes
Engine



Vault
(Key Mgmt.)



Identity



Web-App
Firewall



Data
Science



Analytics
Cloud



Object
Storage

Uniquely enables the lowest cost and highest performance cloud applications

Oracle Introduces Integrated Vector Database to Augment Generative AI and Dramatically Increase Developer Productivity

23c

Oracle Autonomous Database

- Makes it easy for developers to extend existing applications with natural language capabilities by posing natural language questions directly to Autonomous Database.
- Autonomous Database takes an open, flexible API approach to integrating LLMs so that developers can select the best LLM from Oracle or third parties to generate SQL queries to respond to these questions.



<https://www.oracle.com/news/announcement/ocw-integrated-vector-database-augments-generative-ai-2023-09-19/>

Oracle Database 23^c

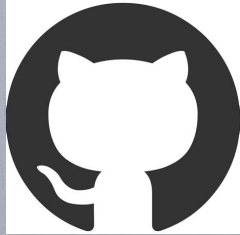
Oracle Database 23^c accelerates Oracle's mission to make it **simple** to develop and run all data-driven apps

Over 300 new features in 23^c

<https://docs.oracle.com/en/database/oracle/oracle-database/23/nfcoa/#Oracle%C2%AE-Database>



Try Everything...for FREE



free-oracle.github.io



cloud.oracle.com/free



bit.ly/ADB_free



developer.oracle.com/live-labs



Thank you



Applied Artificial Intelligence in Mexico



Jorge Gómez Montalvo

Lecturer and researcher at FMUAY, Mexico

Applied Artificial Intelligence in Colombia



Pr. Fáber D. Giraldo

Professor & researcher in the University of Quindío, Colombia

INDICATIC AIP
Instituto Nacional De
Investigación Científica
Avanzada en TIC
Agencia de Interés Público
Panamá



Pr. Philippe Aniorté

Dr. en Informática, Director del INDICATIC AIP, Panamá

INDICATIC - Posicionamiento

- Instrumento de la estrategia nacional “Panamá hub digital”
 - Transición / transformación digital
 - Sistemas Inteligentes (Smart Systems) para varios dominios (agricultura, ciudad, educación...)
 - Basados en entornos conectados (IoT y IoE)
- => Sistemas Ciber Físicos (Cyber Physical Systems)

INDICATIC – Líneas de investigación

- Ingeniería de Sistemas Ciber Físicos
- Procesamiento de los numerosos datos generados con el fin de tomar decisiones (automáticas y/o con expertos) y hacer predicciones

⇒ Palabras claves:

⇒ arquitectura de sistemas, (meta)modelos

⇒ Big Data, IA

INDICATIC - Alcance

- Una investigación aplicada
- en articulación con:
 - la formación tradicional y profesional (diplomados)
 - la innovación (empresas)
- en un contexto de internacionalización

=> Proyecto DATUM Academy

INDICATIC - DATUM

- Implementación de DATUM LATAM: representación de DATUM Academy en América Latina y Caribe
- Campus Autónomo Conectado (CAN) hospedado en el ITSE (Panamá)
- Data Lab para desarrollar Proofs of Concept (POCs) con empresas
- Proyecto internacional de agricultura inteligente (caña, arroz, café...) con IICA (Panamá) y LIUPPA (Francia)




Thank you for your attention



INDICATIC AIP

Instituto Nacional de Investigaciones Científicas Avanzadas en Tecnologías
de Información y Comunicación S.A.

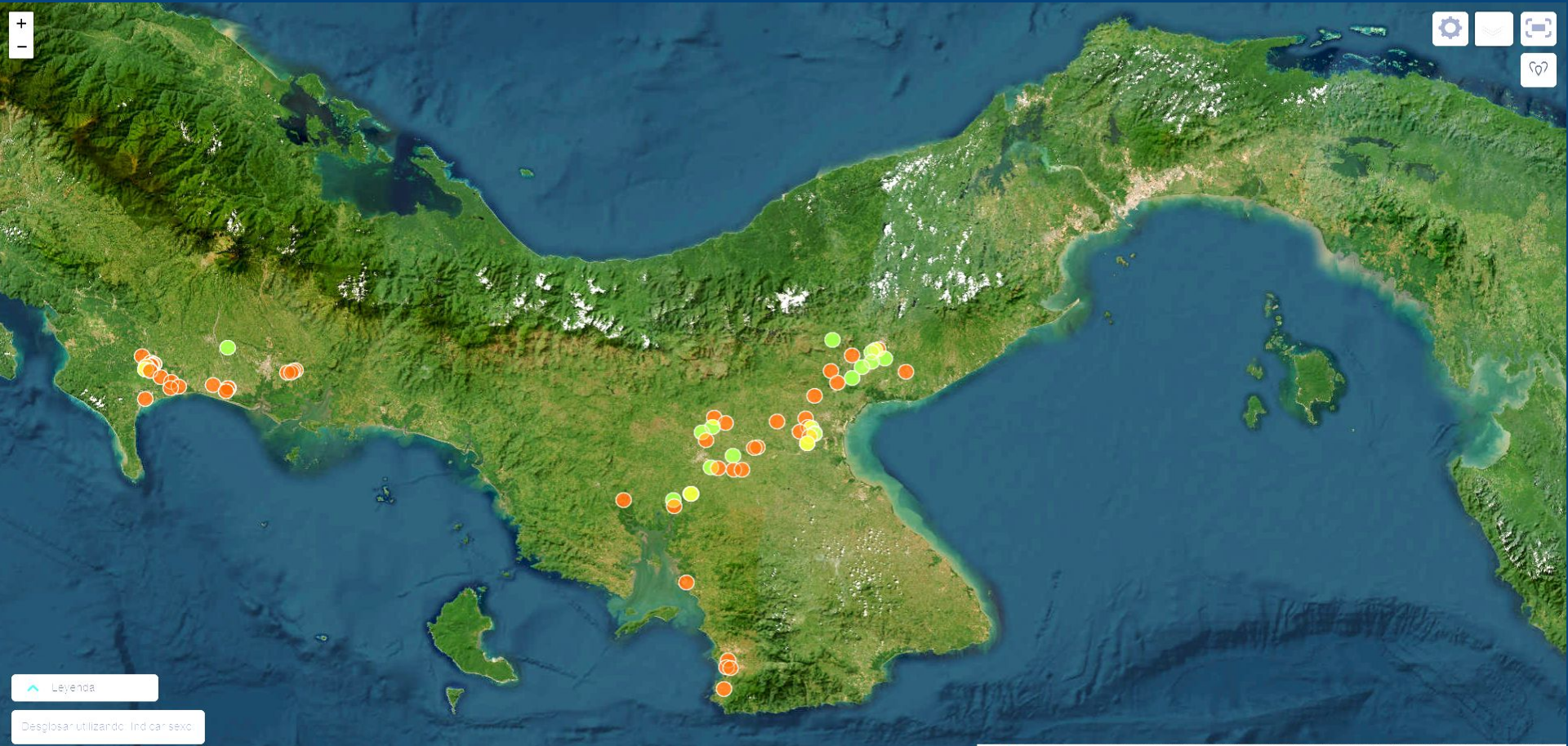


Proyecto ATN/ME-19615-PN
BLOCKCHAIN Y PRECISIÓN:
Innovando Junto a
productores de Cadena de
Arroz en Panamá



Dr. Gerardo Escudero

IICA Director, Panama



↑ Leyenda

Desglosar utilizando: Indicar sexo

El Ciclo de la Confianza



100 productores aplican la NAMA para aumentar la rentabilidad de 6 a 36 centavos por dólar invertido.

Reducen al menos 5,250 toneladas de CO2 y colocan mercado voluntario Internacional



Al menos 70% de los productores utilizan las plataformas digitales y reciben 12 mil reportes semanales de índices de cultivo



Imágenes satelitales



Variables ambientales



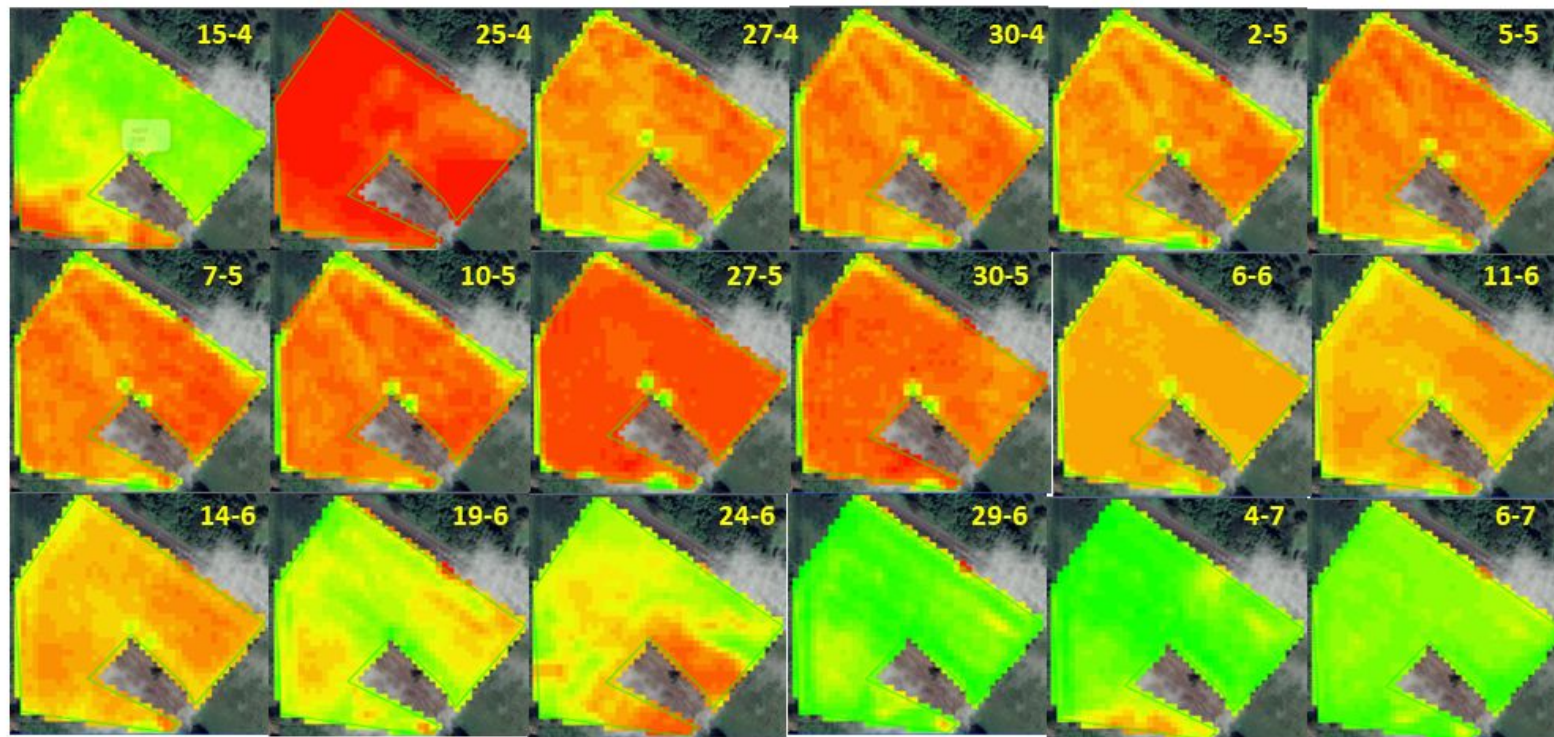
Ciclo fenológico y riesgos de enfermedades



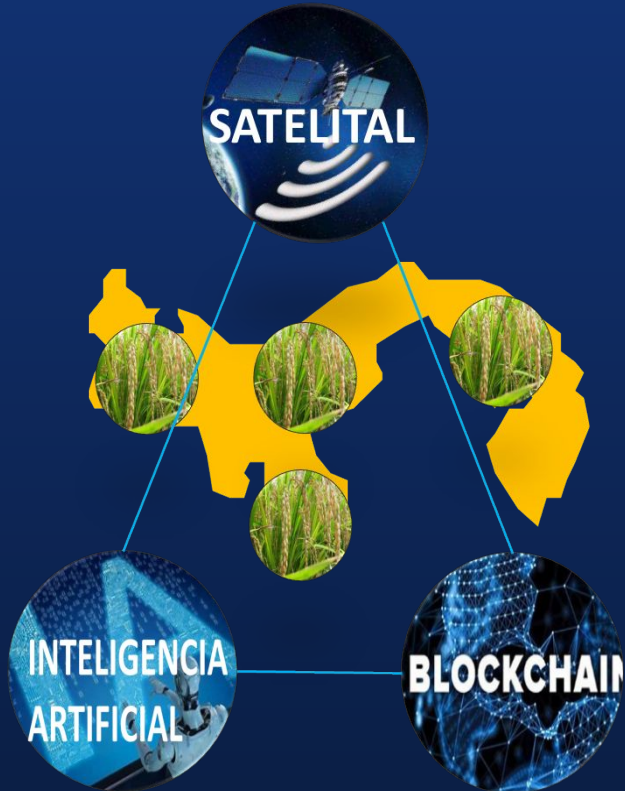
Identificación de Cultivos del país

Inteligencia Artificial

Vigor del Cultivo (NDVI). Serie de tiempo al inicio de la Etapa Vegetativa.



Ecosistema digital interoperable



PRODUCTOS

- Sistema Censal auto reproducible de bajo costo de Arroz Productores, asociaciones, bancos y aseguradoras e instituciones de gobierno (IDA, ISA, BDA, IDIAP)
- Sistema de alertas tempranas de fenología y sanidad del arroz dinámico y automatizado de bajo costo
- Ecosistema de Trazabilidad Sanitaria, NAM/MRV/GEI y Cuantificación de Carbono
- Escalabilidad de implementación de NAMA y reducción de costos

- Acceso a los datos satelitales de la constelación Copernicus a través de Sentinel Hub (<https://www.sentinel-hub.com/>)
- Acceso a todos los datos climáticos de tierra, de NOAA incluyendo los datos históricos desde el año 2015, se cuenta con una biblioteca de software propia para este propósito.
- Se cuenta con base propia de datos históricos de enfermedades del continente en formato comprensivo para la inteligencia artificial.
- Una máquina de inteligencia artificial para evaluar las imágenes satelitales y las variables ambientales para arrojar una probabilidad de riesgo de enfermedad que estará disponible en mapas por regiones y por fincas. También como graficas a lo largo del tiempo.
- Una máquina de inteligencia artificial para la identificación de cultivos de arroz que proveerá una capa de mapa de linderos de plantaciones de arroz.
- Emisión de reportes de los servicios descritos, incluyendo mapas de riesgos y las variables de cultivo, curvas de las variables importantes para mostrar las tendencias.
- Manejo de datos históricos. Esto es un servicio de datos de los últimos años, desde 2015, aparte del servicio día a día.

Thank you for your
attention



Applied Artificial Intelligence in Panama



Jorge Lezcano

Data Scientist Manager Maxia Latam, Panamá



Edge-AI in optimized irrigation for smallholder farmers communities

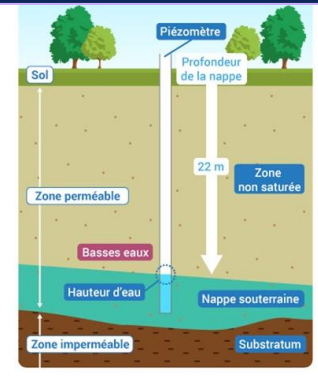
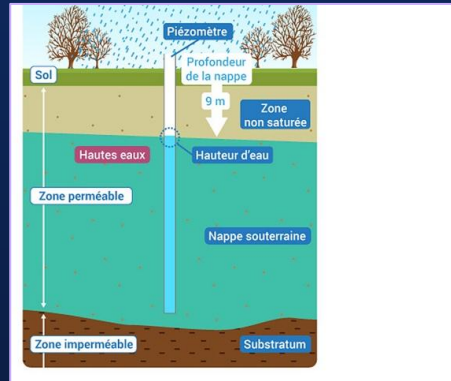
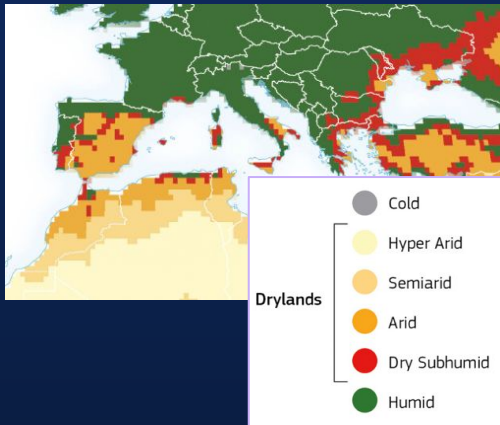
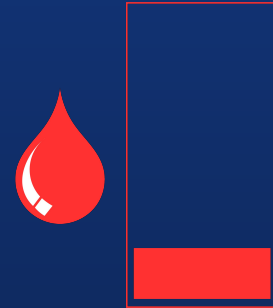
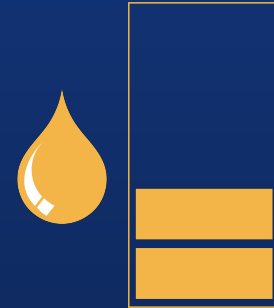


Dr. Congduc Pham

Professor at LIUPPA/UPPA, France
<http://www.univ-pau.fr/~cpham>

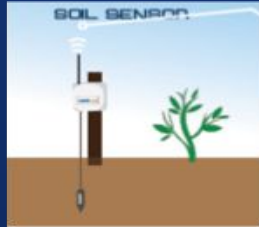


Water resource is precious!



Irrigation with soil moisture sensing

Not as simple as it seems ☹️



Sense

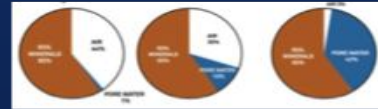


Volumetric Water Content, Water Potential, Water Tension,...

TDR, FDR, capacitance, resistance,



? Analyse



Soil characteristics: bulk density, soil salinity, soil texture & soil type

Evapotranspiration, soil-plant-atmosphere continuum,...



? Decide

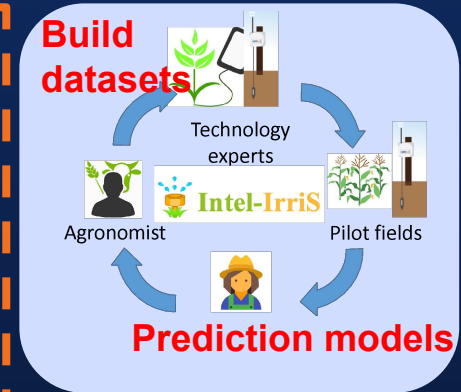
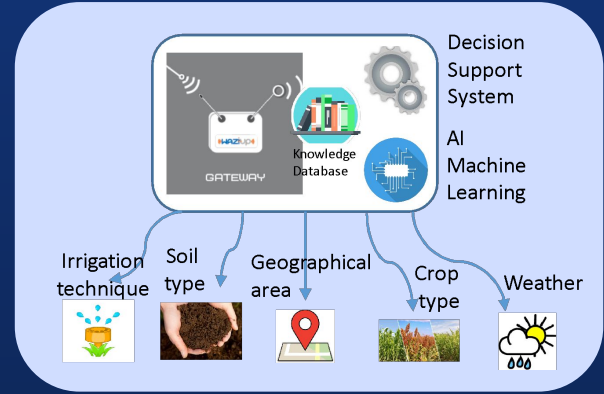
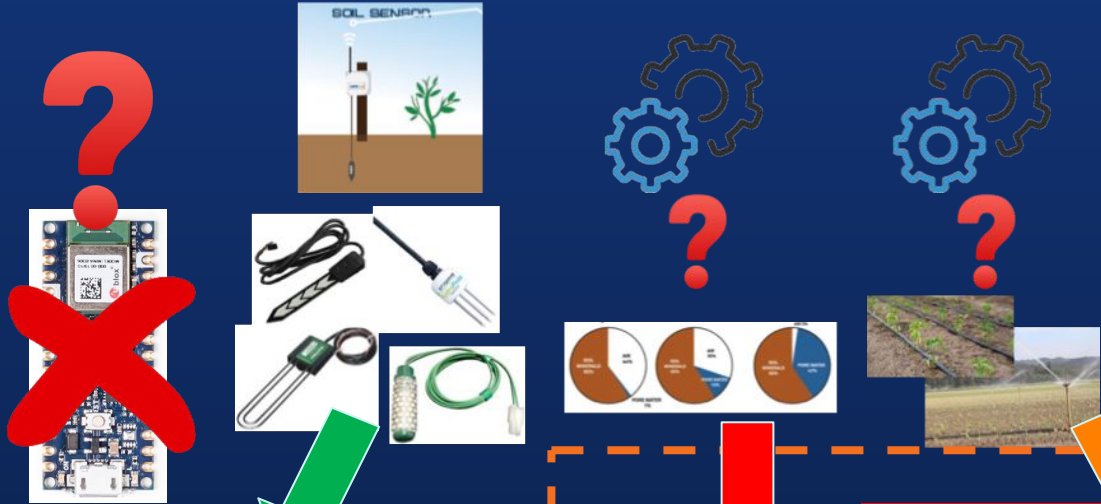


Irrigation type: drip, furrow, sprinkler,...

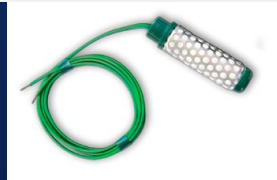
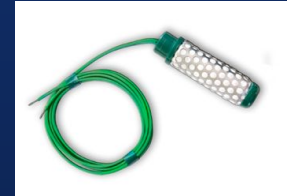
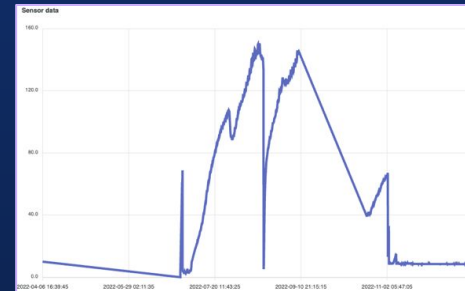
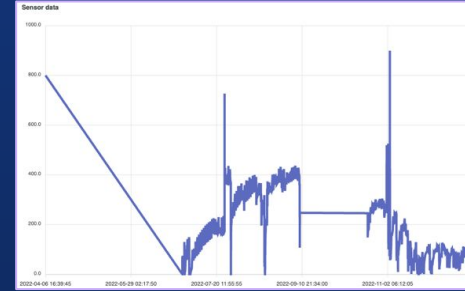
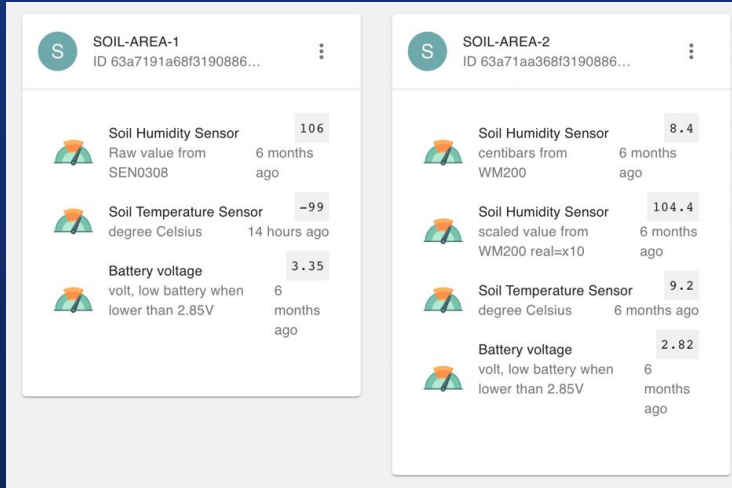
Plant/Crop varieties

Relationship with other agriculture inputs

INTEL-IRRIS: embedded intelligence

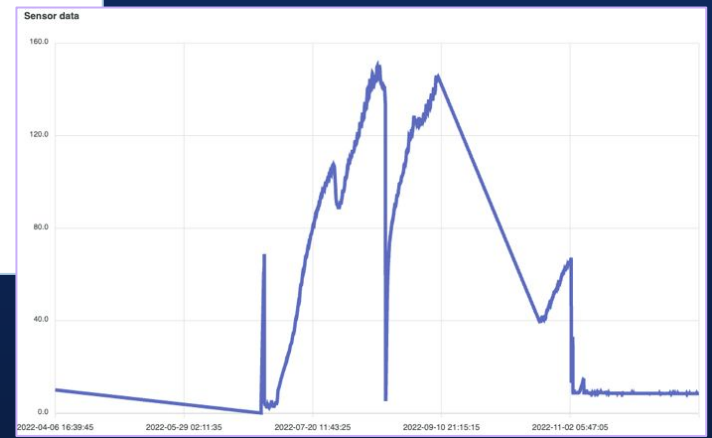
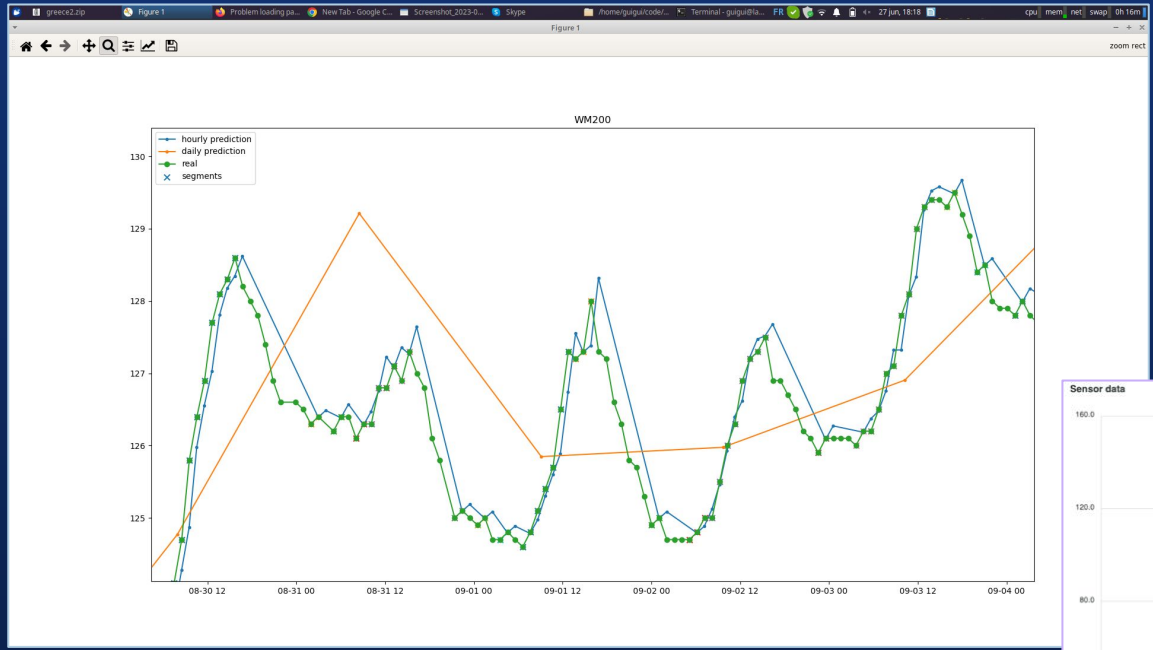


From raw data to dataset



- Soil type, plant type, evaporation, weather condition,...
- Where to apply IA, how to handle irrigation cycles, ...?

Towards prediction of soil humidity?



Thank you for your
attention



European Project DEEP FARM on digital agriculture in Santo Domingo



Eddy Martinez

Santo Domingo Cyber Park President, and Head of European Deep Farming project on digital agriculture in Santo Domingo

Questions





Thank you all for following us!

The replay will be available on our website
(www.datumacademy.com) and our Youtube channel
from Monday, along with the presentation document.

