



CCICI Cloud Standards and Interoperability

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Agenda

- Why Interoperability
 - Especially in India
- Current Interoperability efforts
 - ISO
 - IEEE P2302
- Our efforts

HONEST MEETING AGENDA

Source: TheCooperReview.com

2:00pm No one is here

2:02pm Someone shows up but leaves again since no one else is here

2:06pm Everyone is here except the "important person"

2:07pm Important person shows up and apologizes for being late, then complains that there's no agenda

2:08-2:15pm Try to get the presentation to work

2:16-2:17pm Try to get person dialing in to mute their phone

2:18-2:27pm Try to understand what the point of this meeting is

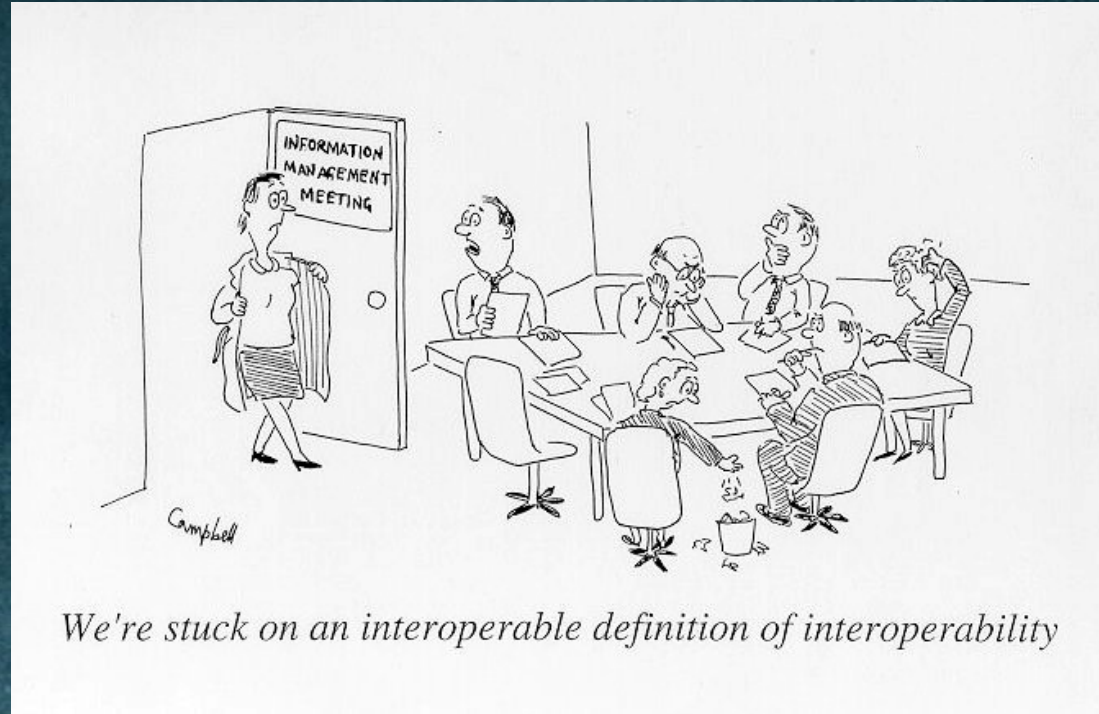
2:28pm Important person leaves without explanation

2:29pm Someone shows up asking what he missed

2:30pm Meeting adjourned, someone suggests a follow up

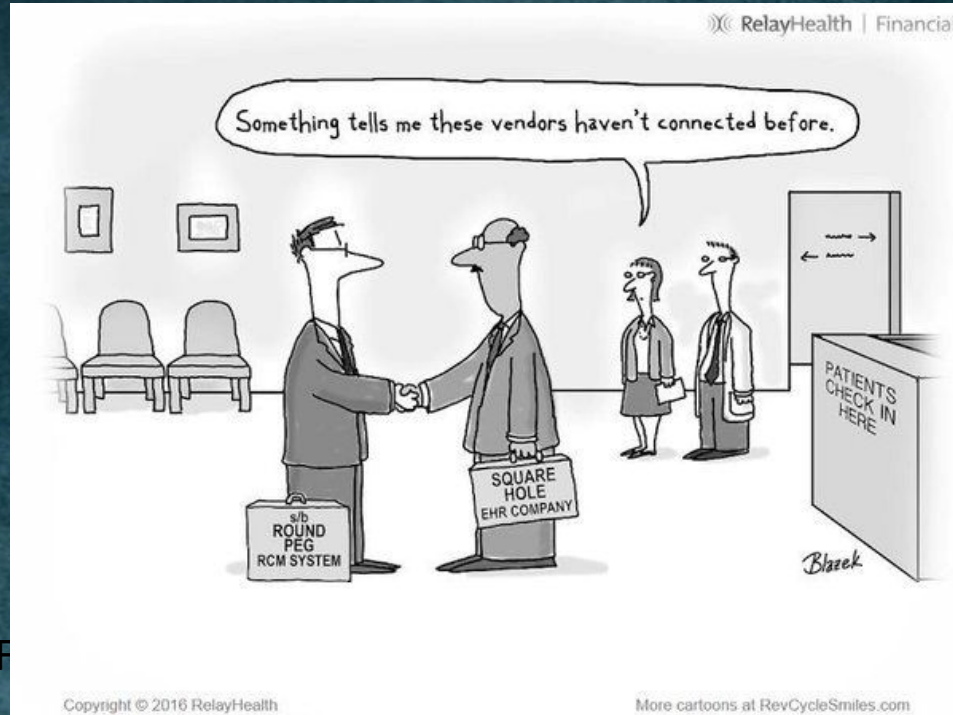
WHY INTEROPERABILITY

Current State of Interoperability



It was really
starting to catch up with Fred and his team

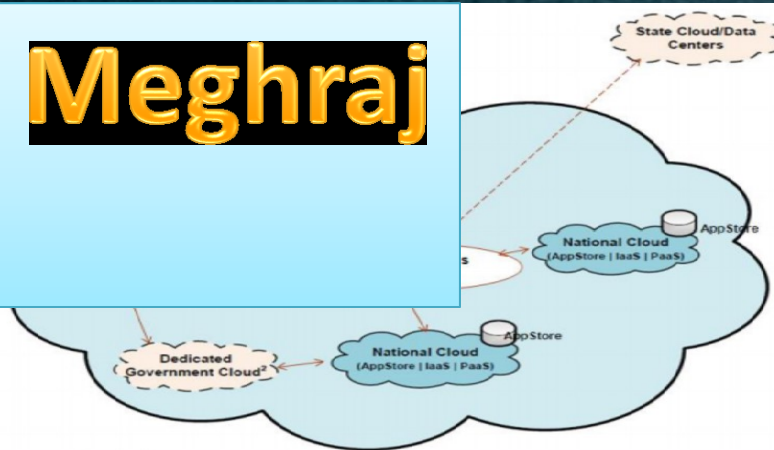
Current State of Interoperability



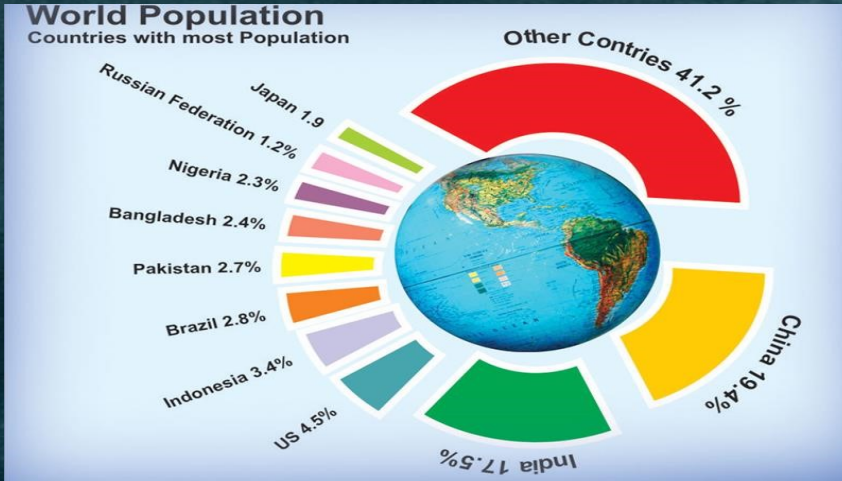
Government is fuelling the adoption of CLOUD



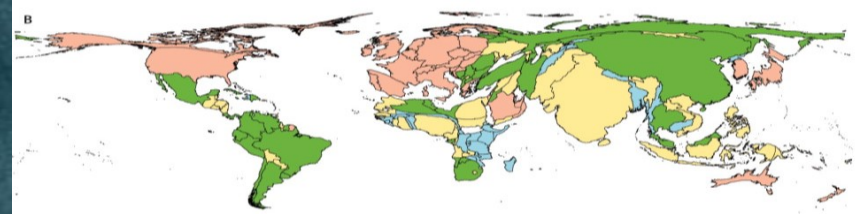
Meghraj



Why India?



Our scale requires us to use cloud



An opportunity to leapfrog in technology

Joint Task Force to Develop Cloud Interoperability and Cloud Standards has been set up



- Under DoT
- Developing and promoting India-specific requirements
- Standardizing solutions for meeting these requirements
- Contributing these to international standards



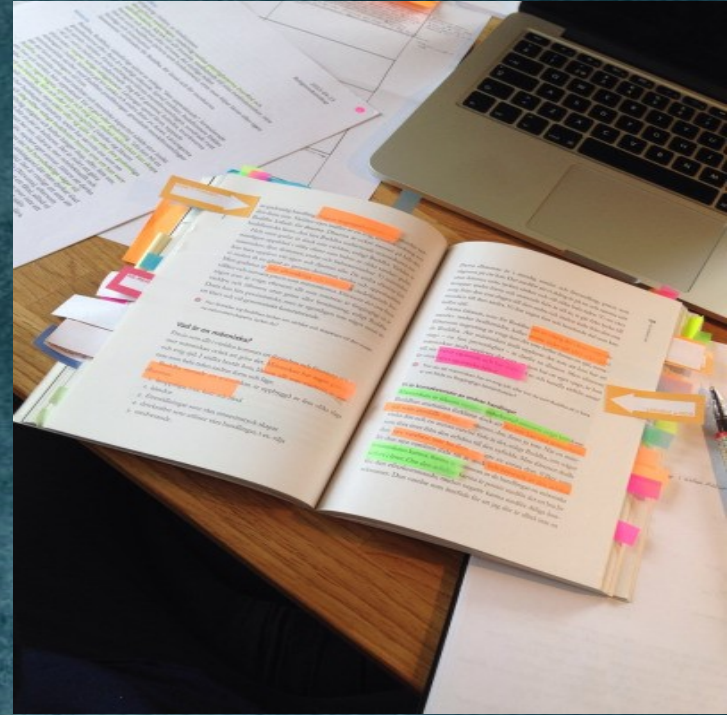
Cloud Computing
Innovation
Council of India

- Non-profit society
- Collaborative platform
 - Academia
 - Government
 - Industry
- Mission: Foster growth of cloud computing
- Important initiatives
 - White paper
 - Advisory role to govt
 - Meity-CCICI Cloud Study
 - Interoperability task force

CURRENT INTEROPERABILITY EFFORTS: ISO AND IEEE-NIST

Highlights of ISO IEC 19941

- Goals
 - Establish common understanding
 - Establish common vocabulary
- Approach: Define facet model
 - Cloud Interoperability
 - Cloud Application portability
 - Cloud Data portability



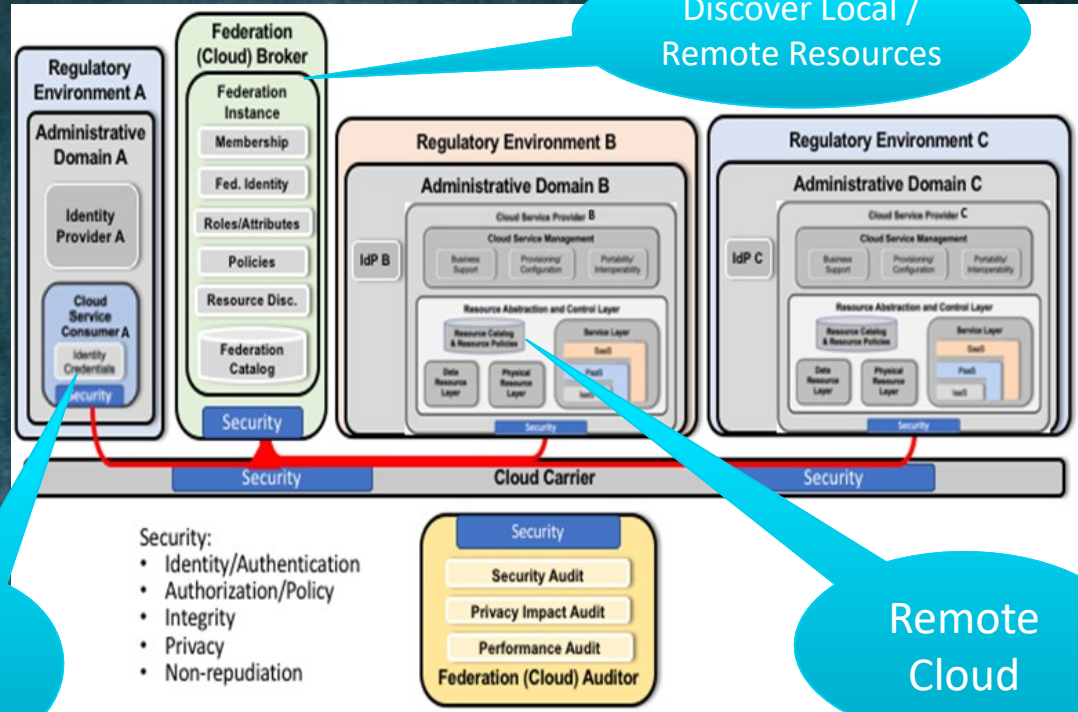
Highlights of ISO IEC 19941

- **Cloud Data Portability Facets**

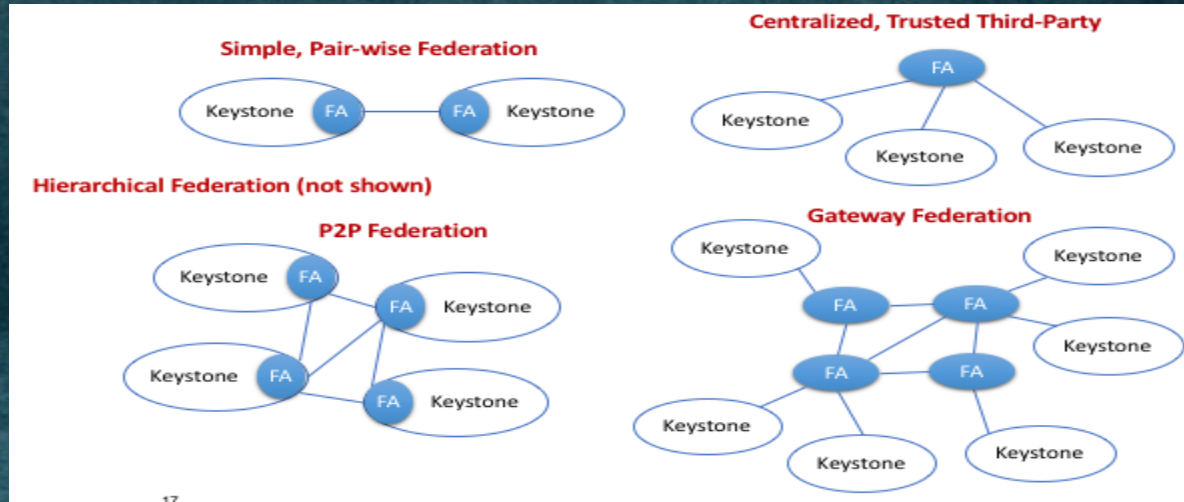
Facets	Aim	Objects	Requirements	Examples
Data syntactic	Receiving data in a machine readable, structured and commonly used format	Data	Common machine-readable data format	XML, CSV, JSON
Data semantic	Assured meaning of data	Data schemas and ontologies	Mutually understood ontologies and metadata	OWL, Dublin Core schema
Data policy	Adhering to all applicable regulations and organizational policies	Regulatory and organizational policy	Agreed set of applicable regulations and organizational policies	Confidentiality levels, privacy rights, cross border transfer

IEEE-NIST P2302 Objectives

- Create transparent cloud provider ecosystem
- Dynamic infrastructure to support evolving models
- Infrastructure for economic audit and settlement
 - In addition to the technical issues



Deployment Models

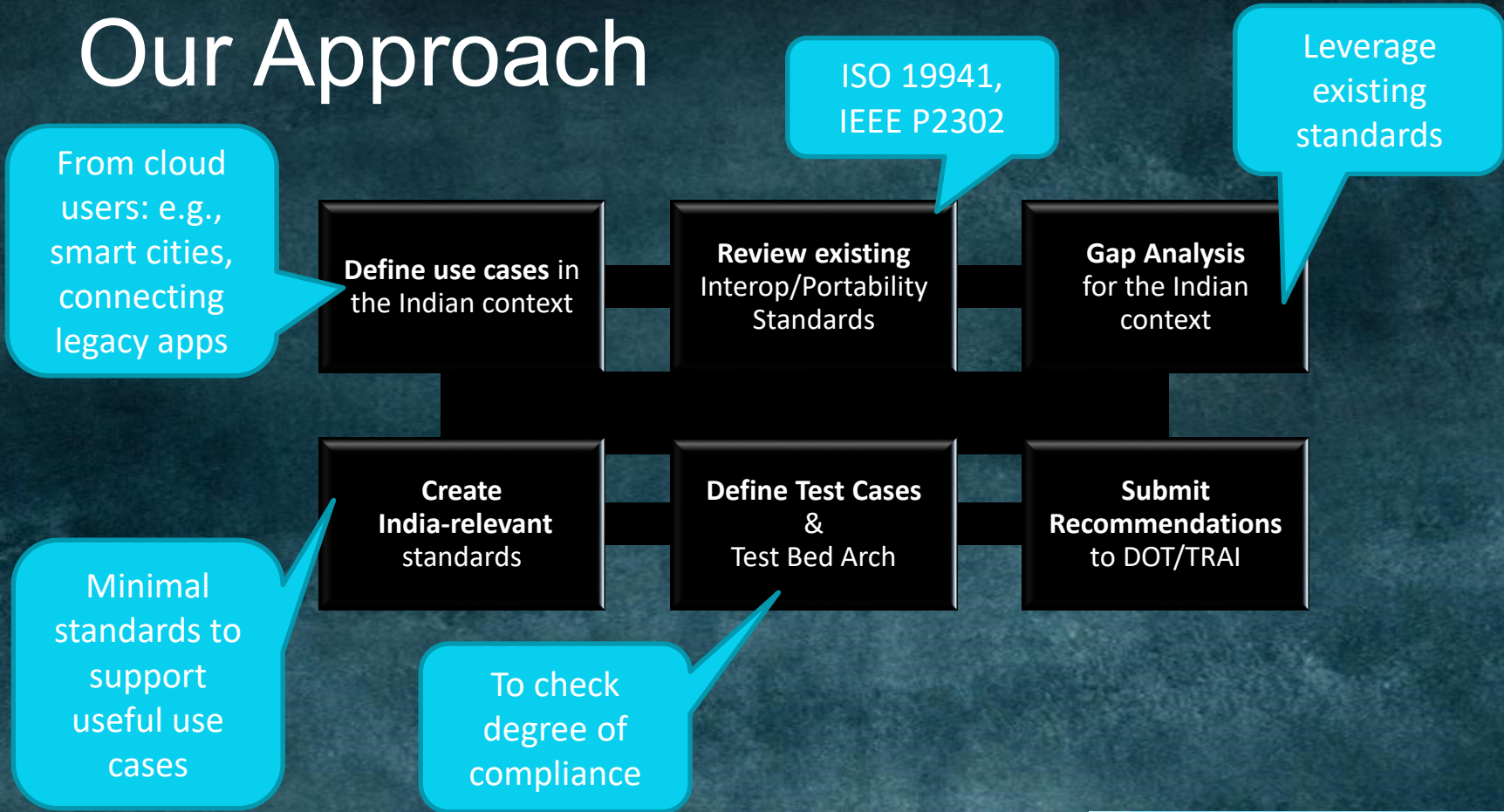


Summary

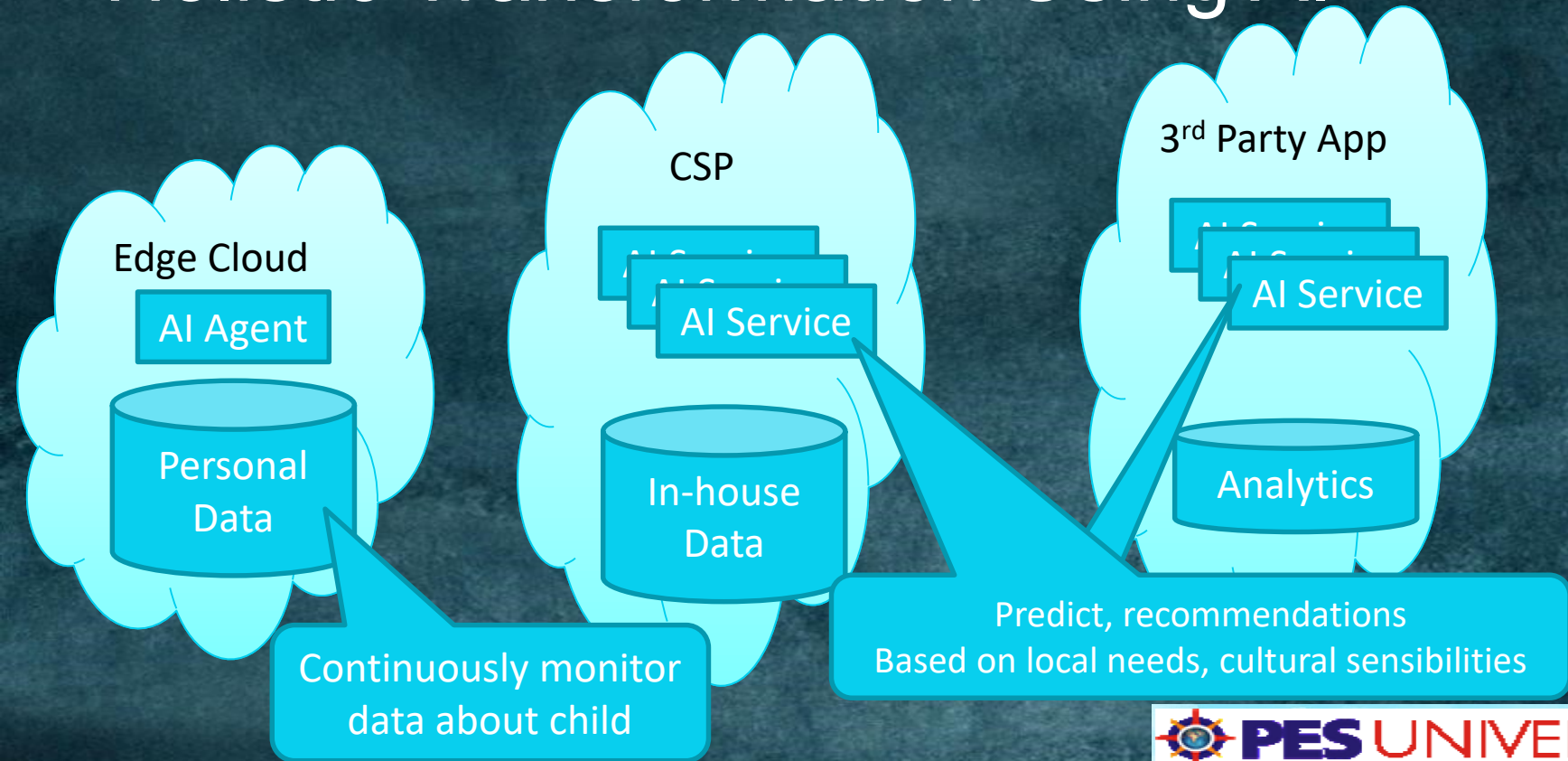
- No interoperability standard currently fits the need
- Proprietary solutions exist

OUR WORK SO FAR

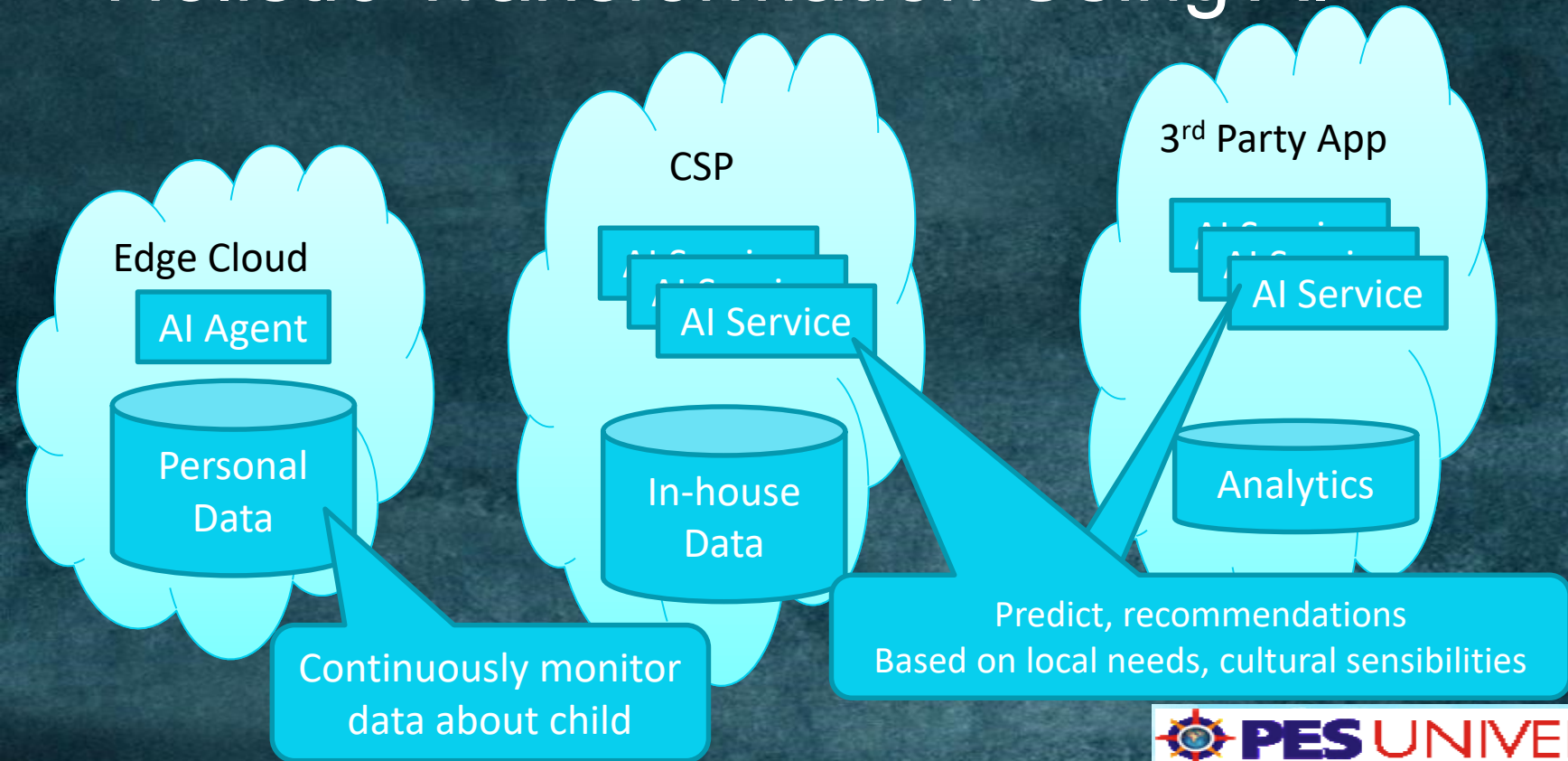
Our Approach



Example Use Case CHoTuAI: Child Holistic Transformation Using AI



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Data Access: Comparing DATA Models

Amazon S3

- Buckets
 - Holder of objects
- Objects
 - The item itself.

Openstack Swift

- Account
 - Metadata about the account
- Container
 - Like a bucket
- Object
 - The item to be stored.

Object storage world

Rest API definitions for S3 and Swift are different

Most Object storage vendors use S3 as defacto standard



Ok. They all talk the S3 language, but is that enough?

Other requirements

- Seamless availability
- Service Level Agreements
 - How to enforce SLAs across clouds
- Enterprise level features
 - Backup/restore?
 - Compliance (healthcare)
 - Security
 - Flexibility



Some Needed Standards

1. Data at rest encryption
2. Secure protocols
3. Efficient Data Transfer
4. Mobile device support
5. Hosting on edge devices
6. Network function virtualization
7. Data collection and usage policies

1. AES, RSA
2. TLS 1.2 or higher
3. LTFS (Linear Tape File System)
4. ISO/IEC JTC 1/SC 38
5. ETSI MEC
6. ETSI NFV SOL001
7. IETF SUPA

Example Gaps

- ETSI NFV spec
 - Security gap: cannot find security level information of cloud
 - Management gap: network devices don't include edge devices



CONCLUSIONS & Next Steps

Collaborative Innovation
Leadership
Open Forum >> Outcomes
Driven by volunteers

Industry, Academia, Government, Professional bodies

In Global Forums & Accelerating deployment & adoption

SMART, Measures of success, Evaluation Framework

SAGE SCENARIOS, PLATFORMS & INFRASTRUCTURE, ENABLEMENT FRAMEWORK

Working Groups, Discussion Forums, Fortnightly updates

Passion for technology, spirit of "GIVE BACK"

DOES THIS INTEREST YOU ?

HERE IS HOW YOU CAN PARTICIPATE AS A COLLABORATOR

– Join a WG, Innovation Task Force

COMPUTING

CLOUD

