EMERGING TRENDS IN TECHNOLOGY THAT ARE CHANGING THE AVIATION WORLD

A

PRESENTATION

BY

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AT

SABRE NIGERIA ANNIVERSARY LECTURE, AWARD/GALA NITE

Sabre

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CONGRATULATIONS TO SABRE
ON THE 10TH ANNIVERSARY OF SABRE NIGERIA

- Sabre Corporation is the leading technology provider to the global travel industry.

- Sabre's software, data, mobile and distribution solutions are used by airlines and hotel properties to manage critical operations, including passenger and guest reservations, revenue management, flight, network and crew management.

- Sabre also operates a leading global travel marketplace, which processes more than US$120 billion of global travel spend annually by connecting travel buyers and suppliers.

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WHERE ARE WE HERE?

- TREND
- TECHNOLOGY
- AVIATION

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DEFINITIONS

- Trend
  - Noun
    - A general direction in which something is developing or changing.
    - A general development or change in a situation or in the way people are behaving
    - A fashion
  - Verb
    - Change or develop in a general direction
    - To be one of the words, subjects, or names that is being mentioned most often on a social media website or a news website at a particular time.

DEFINITIONS

- ## Technology
  - The application of scientific knowledge for practical purposes, especially in industry.

  - Machinery and devices developed from scientific knowledge.

  - The branch of knowledge dealing with engineering or applied sciences.

DEFINITIONS

- Aviation
  - **"The activity of flying aircrafts or of designing, producing and keeping them in good conditions"-Cambridge Advanced Learner's Dictionary and Thesaurus.**
  - The **aviation** industry involves all aspects
    - of **operating aircrafts and providing the necessary superstructure, infrastructure and equipment for this.**
    - **It also entails the act of technical and economic regulations of these operations**
    - **The aviation industry consists** of Aircrafts Designers and Manufacturers, other OEMs, airlines and training centers, MRO vendors, Airports, Air Space Service Providers and regulatory authorities etc.

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EFFECT OF TECHNOLOGY

- Technology affects your social life and social skills
- It has positive and negative effect on our lives
- Every part of our daily life is related to technology in one way or the other
- The development of technology is not confined to any one sector, industry or society.
- Technology develops according to needs and requirements
- The challenge always is do you want to
  - Leap-frog or go gradually
  - An innovator
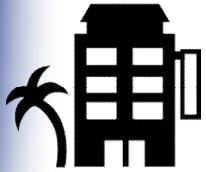 - An early adopter
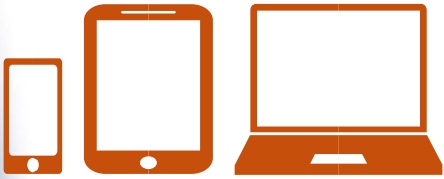 - Or laggard

Or A More Adventurous Seat that is WiFi enabled

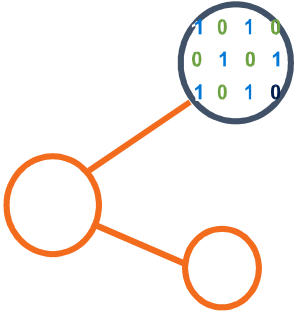Airbus proposed in flight entertainment 2050

Technology Trends

What is Driving the Rapid Change in Technology and Application of Technology in the Aviation Industry
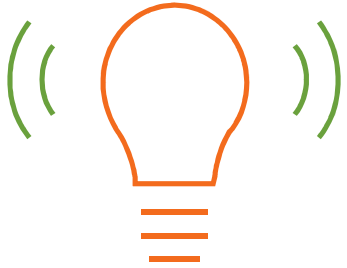
Mobility

Big Data

Cloud

Intelligence

BIOMETRICS

CONTEXTUAL THREAD
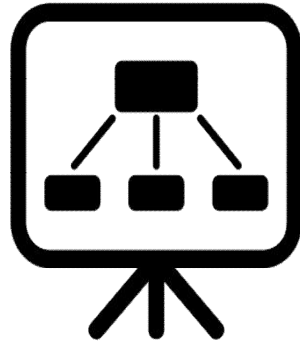
AUTOMATION

DIGITAL EXPERIENCE

DRONES

AR / VR

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Technology trends – Transition Flow

Business

Models

Business

Operations
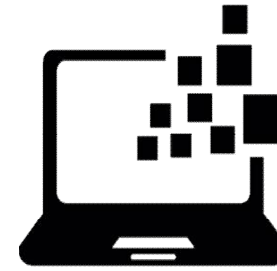
Technology

From	From	From
ASSETS	INTERNAL	COST CENTER

To	To	To
ASSETLESS	CUSTOMER EXPERIENCE	BUSINESS INTEGRATION

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- The aviation industry has always been a leader in development of technology and innovation in systems, processes and procedures.

- Aviation has matured and grown, today it's finely balanced eco-systems has been built through constant activity, growth, change and advancements.

- These balanced eco-sytems are based on resilient technologies.

- Airlines and Airports across the world are continuously in the process of
  - Identifying (innovating),
  - adopting or
  - adapting

  new and emerging technologies that can enhance business efficiency and improve customer experiences as passengers and cargo move, to, from and through airports, aviation value chain touch points & nodes.

EXAMPLES OF AVIATION ECO-SYSTEMS THAT ARE REGULARLY IMPACTED BY TECHNOLOGY

- PASSENGER SERVICES ECO-SYSTEMS
  - Reservation Systems
  - GDS
  - DCS & LDCS
- AIRPORT ECO SYSTEMS

(**AIRPORT OPERATIONS MANAGEMENT SYSTEMS- AOMS**)

- Passenger Handling
- Baggage Handling
- Ramp Handling
- Aircraft Handling

Manual Operations vs Technology driven Operations

AIRCRAFT & AVIATION ASSETS MRO ECO-SYSTEMS

- On-board Maintenance Systems and Sensors (OMS)
- Real-time Maintenance and Diagnostic System (RTDMS)
- Complemented By Real-time Communications System (ACARS/HTSU)
- Electronic Centralised Aircraft Monitor (ECAM)

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Passenger Facilitation Technology- Overview of a Complete Range of an Ecosystem…

Nigeria-Where do we go from here

Examples of emerging technology impacting aviation

- The 2016 Sabre Labs Emerging Technology Report stated that the following three major technology trends are likely to have the greatest impact on the travel industry in 2017:
  - Conversational Interfaces - Voice, messaging and the shift to new forms of communication
  - Digital Realities - How virtual realities (VR) and augmented realities(AR) are changing the travel landscape
  - Connected Intelligence - The role of **Robots** and its virtual derivative, **bots** (web robot, WWW robot or simply **bot**, is a software application that runs automated tasks (scripts) over the Internet. Typically, **bots** perform tasks that are both simple and structurally repetitive, at a much higher rate than would be possible for a human alone), and location beacons in travel

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Examples of Emerging Technology impacting Aviation

- **Artificial Intelligence AI**, coupled with machine learning and predictive analytics, can drive personalised online interactions and marketing intelligence to revenue management and ticket pricing, a multitude of areas will be affected by AI. Emirates and Etihad are already investing in AI.

- **Robotics**, currently been used for baggage handling (at Amsterdam Airport Schiphol) and car parking (at Düsseldorf Airport), Customer Service Agents, Japan Airlines and Glasgow Airport etc.

- **Biometrics,** is being positioned to drive a more seamless and secure air travel process by both airlines and airports. Air New Zealand has introduced biometric-enabled bag drop, Alaska Airlines have tested biometric boarding passes, and Changi Airport is planning in T4 the extensive use of biometrics to expedite and secure processing at each of the key passenger touch points.

HOLOLENS: EXAMPLE OF EMERGING TECHNOLOGY IMPACTING AVIATION-AS IT RELATES TO THE OF FUTURE PILOT SIMULATOR & ENGINEERING TRAINING

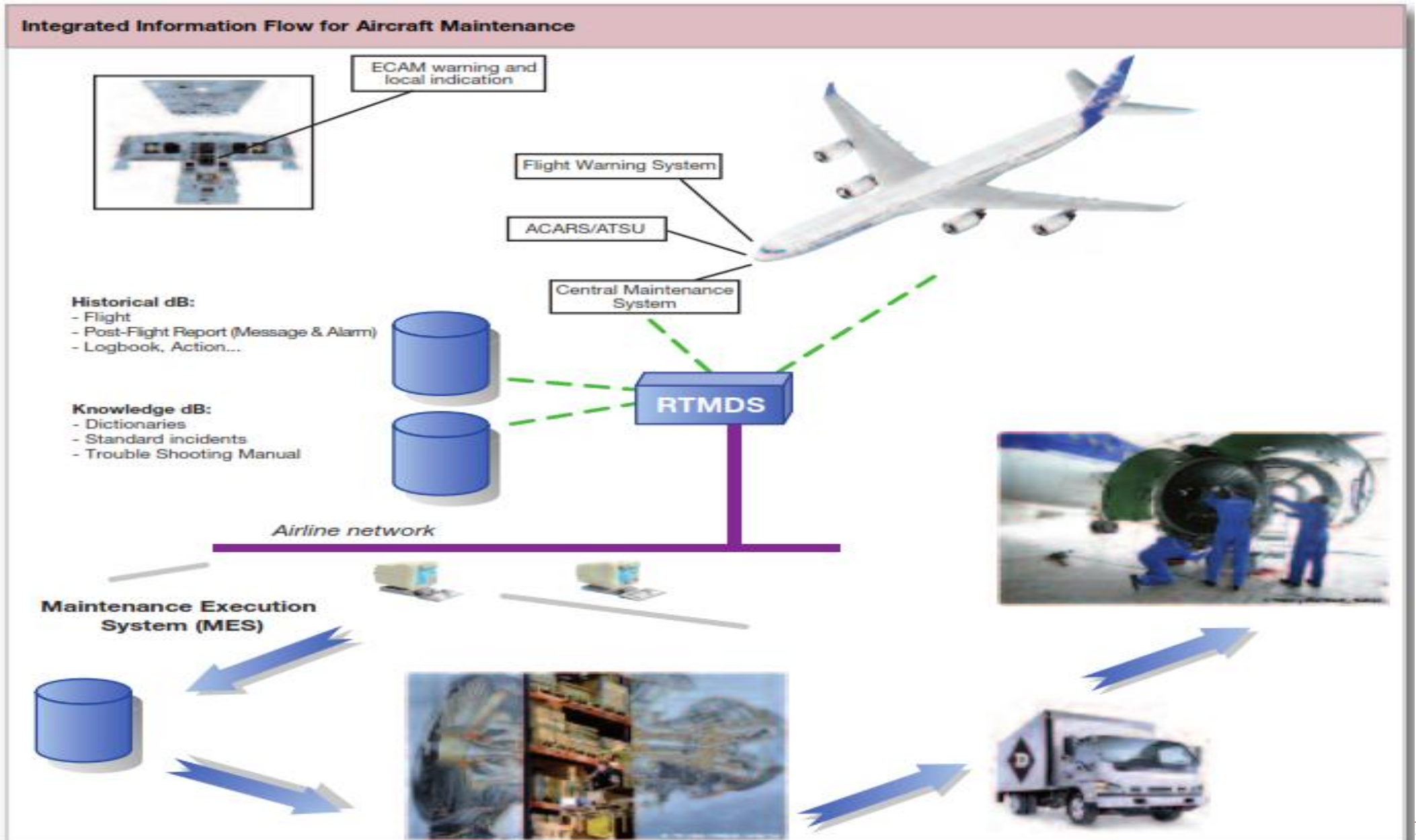- **Wearable technology (enterprise and consumer)**

Japan Airlines is using Microsoft's **HoloLens** to provide supplemental training to crew and engineers.

EXAMPLES OF EMERGING TECHNOLOGY IMPACTING AVIATION

Virtual Reality (VR) and Augmented Reality (AR)

Emirates launched the industry's first interactive amenity kits (using **Augmented Reality** technology) in 2016 which, via an app, passengers can use to unlock entertainment and activities to keep them occupied on board. San Jose International Airport has partnered with the Google Tango team to trial augmented reality technology for wayfinding, airport retail promotions and even AR billboards displaying destination information.

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Examples of emerging technology impacting aviation-Aircraft MRO

Integrated Information Flow for Aircraft Maintenance

ECAM warning and local indication

Flight Warning System

ACARS/ATSU

Central Maintenance System

Historical dB:
– Flight
– Post-Flight Report (Message & Alarm)
– Logbook, Action...

Knowledge dB:
– Dictionaries
– Standard incidents
– Trouble Shooting Manual

RTMDS

Airline network

Maintenance Execution System (MES)

Source: Capgemini

- On-board Maintenance Systems and Sensors (OMS)
- Real-time Maintenance and Diagnostic System (RTDMS)
- Complemented By Real-time Communications System (ACARS/HTSU)
- Electronic Centralised Aircraft Monitor (ECAM

WHAT PROMOTES OR SCARES TECHNOLOGY

- Enabling Environment
- Skill Pool
- Fear of Expropriation
- Limitations in Infrastructure

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WE ALL KNOW
THE
MAEVIS STORY

Nigeria was once at the forefront of aviation technology at least in terms of the AOMS

BEFORE MAEVIS

BEFORE MAEVIS

BEFORE MAEVIS

BEFORE MAEVIS

BEFORE MAEVIS

PRE-MAEVIS

MAEVIS CONSTRUCTION
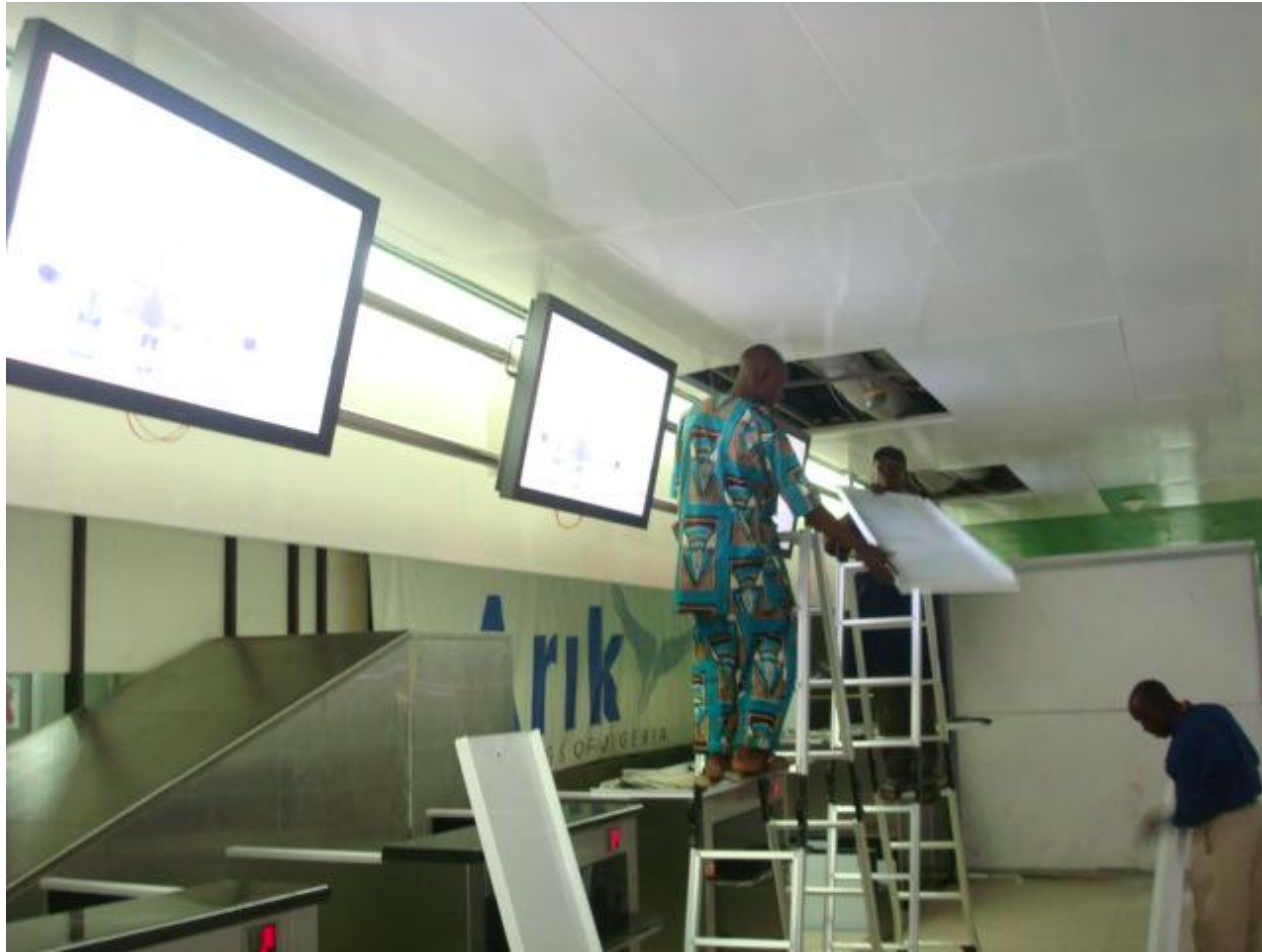
MAEVIS CONSTRUCTION

MAEVIS CONSTRUCTION

MAEVIS CONSTRUCTION

MAEVIS CONSTRUCTION

POST MAEVIS CONSTRUCTION

AFTER MAEVIS

AFTER MAEVIS

AFTER MAEVIS

AFTER MAEVIS

AFTER MAEVIS

TECHNOLOGY AND THE NIGERIAN AVIATION

- Digital technology is transforming most industries and creating new challenges that need to be understood. These include factors such as
  - pace of change,
  - cultural transformation,
  - outdated regulation,
  - identifying the skills needed for the future,
  - overcoming shortcomings in legacy systems,
  - and the need to fund both digital and physical infrastructure.

  Aviation is an early adapter of technology and these challenges need to be addressed by industry and government leaders to unlock the substantial benefits of technology for Nigeria and industry.

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CONCLUSION

- For Nigeria to become the Aviation Leader in Africa, we must become a early technology "adopter and adapters", and not laggards.
- This will require a paradigm shift, infusion of fresh skills, expertise, capital, equipment, systems, business practices, service delivery, new regulation, transparency, data mining, etc.
- We must have the right enabling environment (legal and regulatory), stop expropriation, improve infrastructure, accept change, reskill redundant and old skilled staff.

THANK YOU FOR LISTENING