

Reactive to Predictive Aviation Risk Management: Rise of the BIG DATA

Fahad Masood

MRAeS, Squadron Leader (R)

fahadmasood111@gmail.com



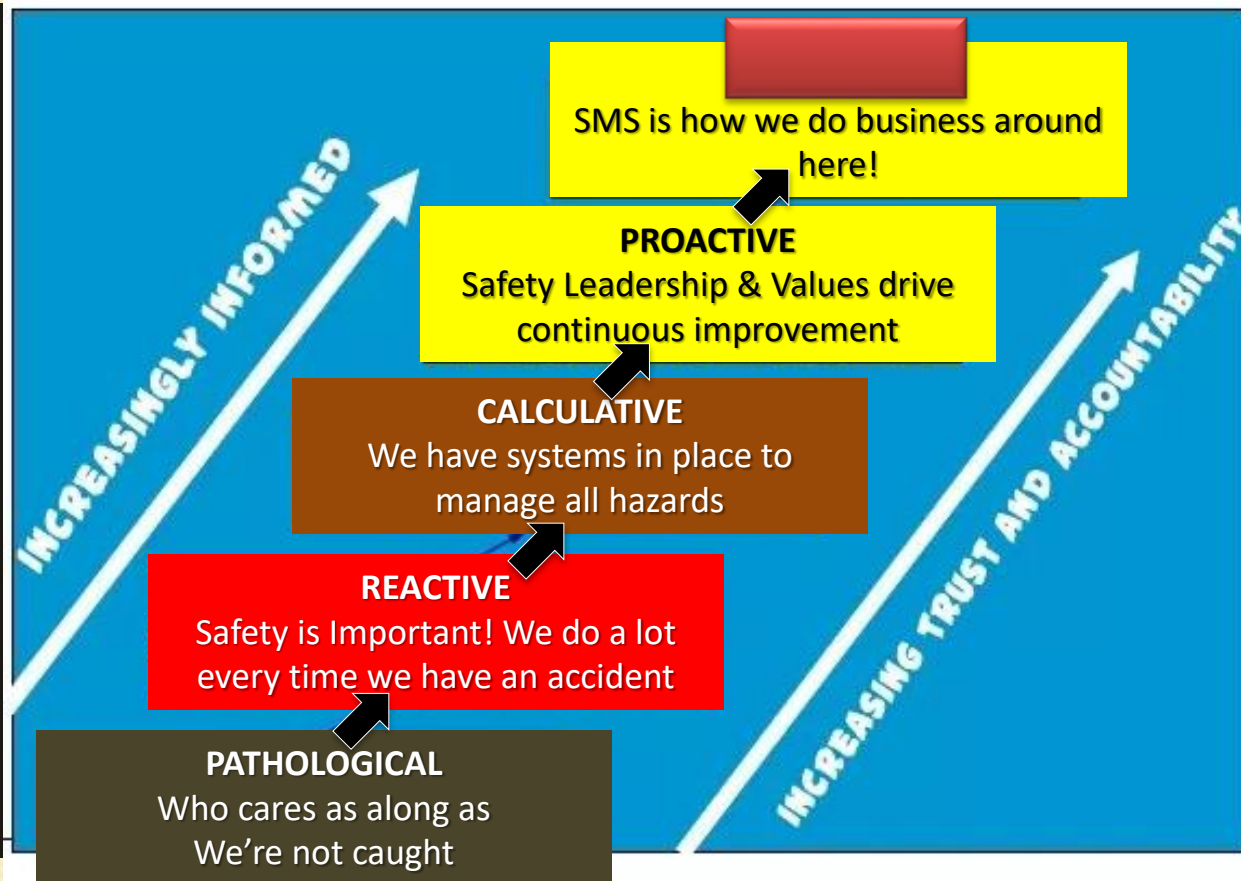
Introduction

- **Fahad Masood, MRAeS, Sqn Ldr (R)**
- **Directing Staff-Human Factor**, College of Aviation Safety Management, 2013–2018
- **MBA-Aviation Management**, Karachi Institute of Economics & Technology, 2017
- **DDAAFS Australia** - Aviation Safety Officers Course, 2017
- **Embry-Riddle Aeronautical University** Online Courses...
 - **Aircraft Accident Investigation**, 2015
 - **Unmanned Aerospace Systems (UAS) – Key Concepts for New Users**, 2016
 - **Aviation-101**, 2017
- **Post Graduate Certificate-Aviation Safety**, University of Karachi, 2014
- **SPL Holder, Undergoing CPL/ATPL**
- **Instructor/Fighter Pilot** 2004-2013, Pakistan Air Force
- **Crew Resource Management (CRM) Facilitator** – Safety Management Center
- **MRAeS**, Royal Aeronautics Society, UK
- **Member International Society of Air Safety Investigators**, USA



Which tier is missing in this Safety Culture Ladder?

(K)



What is penultimate level of SMS Maturity? (App)



What are the Activities in Predictive Aviation Risk Management portfolio? (App)



Its not WHAT you see...

Its HOW you see it!



INSPIRATION...

‘ICAO Global Aviation Safety Plan’

Technical capabilities should be developed to collect and analyze data, identify safety trends and disseminate results to relevant stakeholders. An SSP may require

investments in technical

systems that enable analytical processes, as

well as **knowledgeable &**

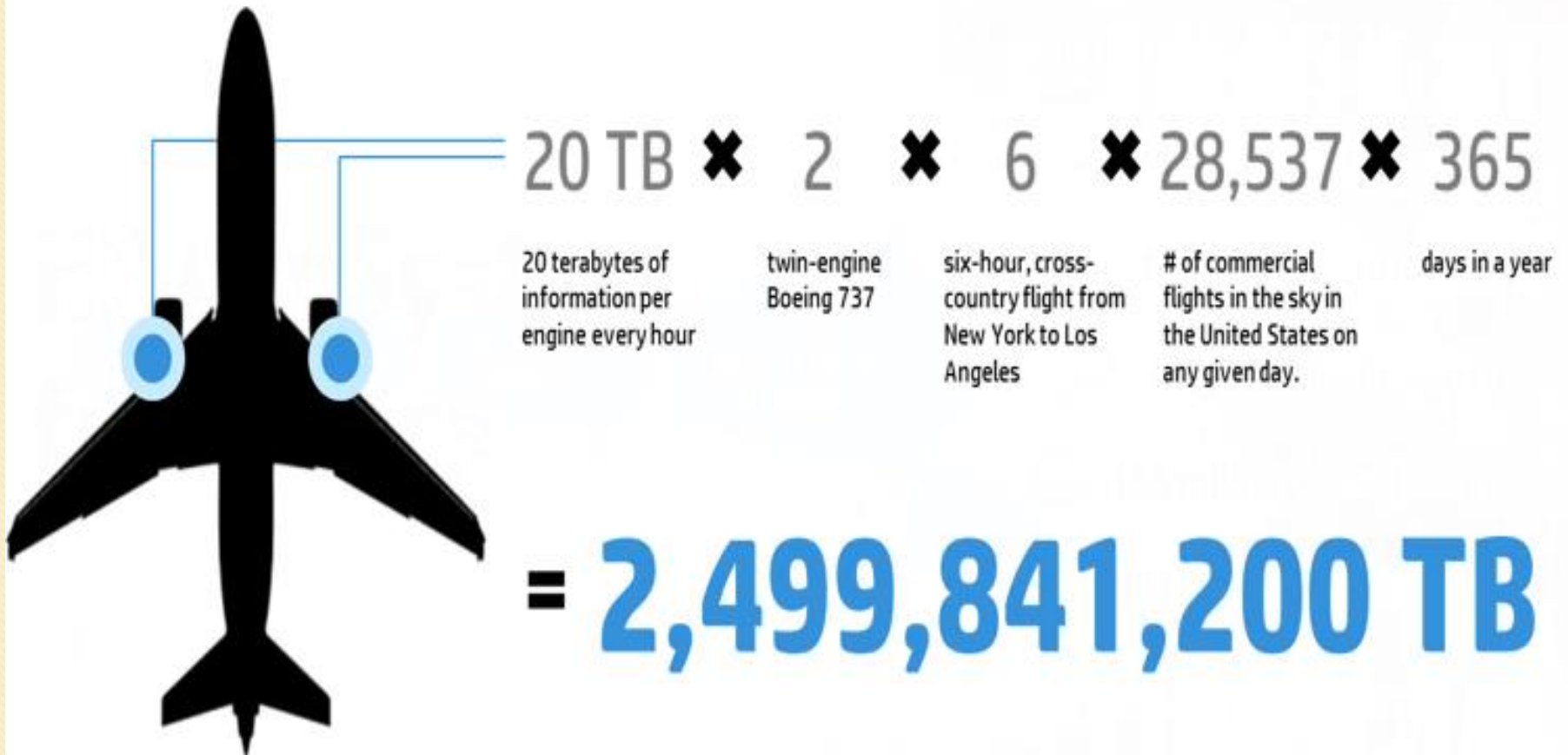
skilled professionals required to support the programme

States that have fully implemented an SSP should focus on systemic identification of existing and emerging hazards and mitigation of safety risks across aviation system through **analysis of multiple data sources**, with goal of achieving **predictive risk management**.

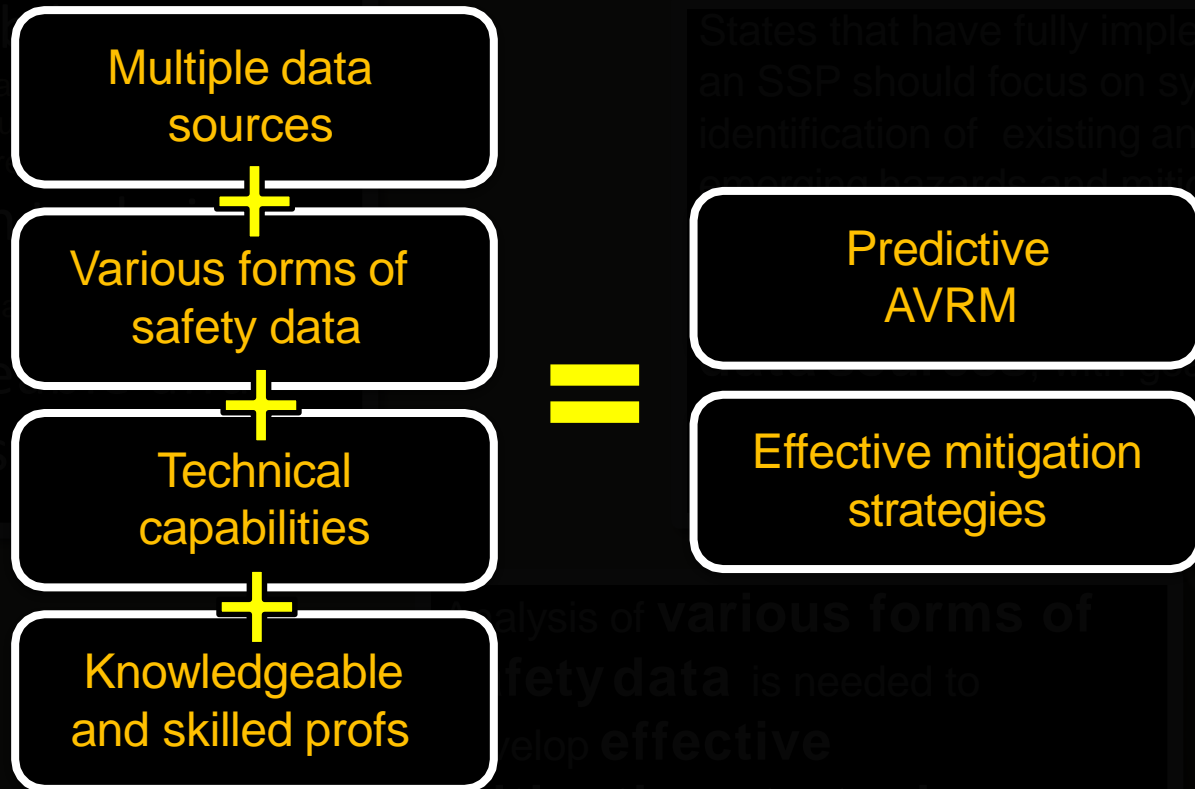
Analysis of **various forms of safety data** is needed to develop **effective mitigation strategies** specific to each State or region



Sensor Data from a Cross-Country Flight

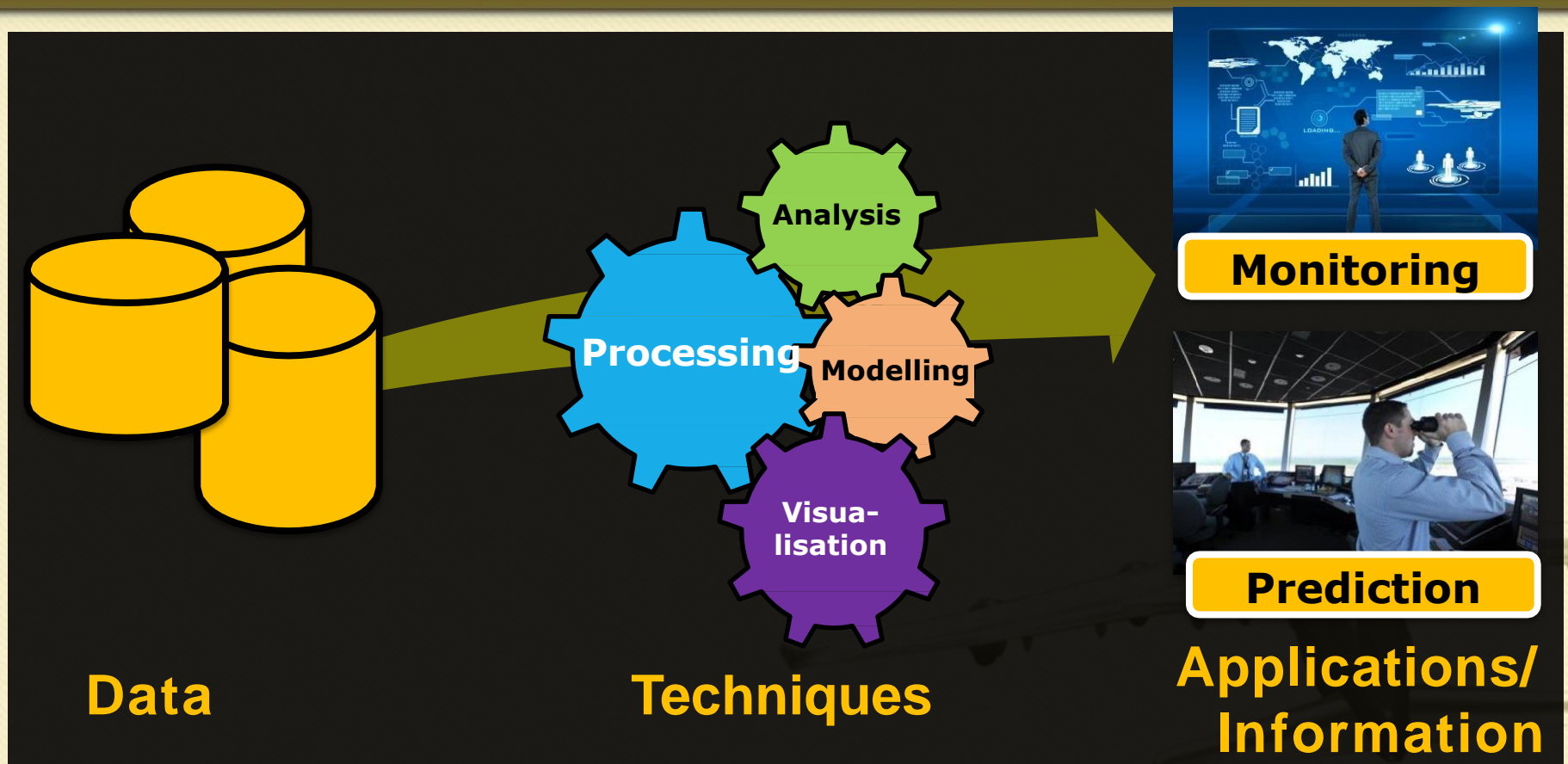


Method to the Madness!

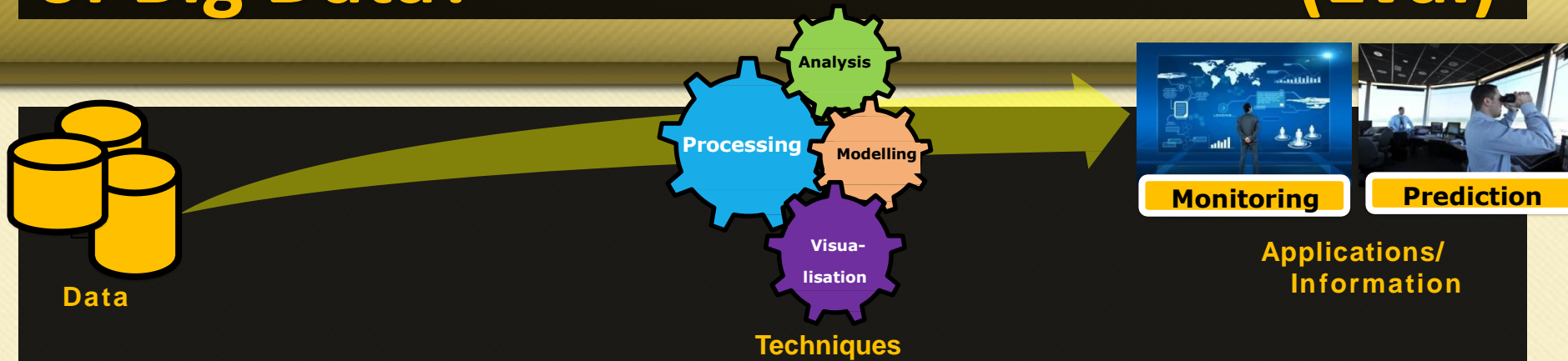


Analysis of various forms of safety data is needed to develop effective mitigation strategies specific to each State or region

Contents



Which is the most important Function of Big Data? (Eval)



1. Data driven performance monitoring
2. Data + Machine Learning = Prediction of indicators
3. Analysis / Visualization of data from occurrence reports
4. Data + Risk Modeling = Risk picture
5. Text & Data Mining of occurrence reports

Show of Hands...?

*Aircraft sensor **data**, maintenance data and operational data has grown to the point of **exceeding** most aviation company's **ability** to **efficiently** and **effectively** improve business processes and outcomes.*

Agree ???

Answer



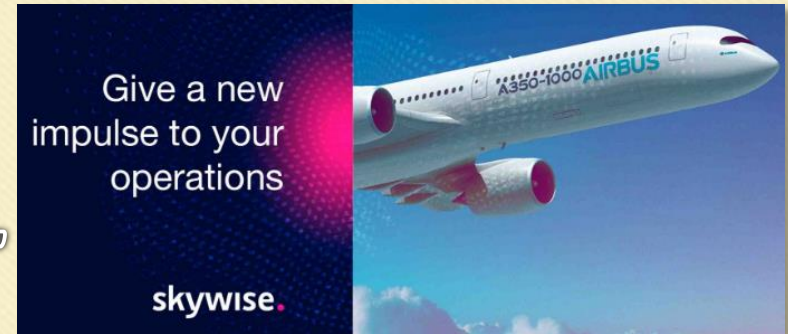
73.4%

Airline & MRO executives Strongly Agree or Agree: data volume, velocity, variety and veracity exceeds most operator's ability to effectively and efficiently drive business value.

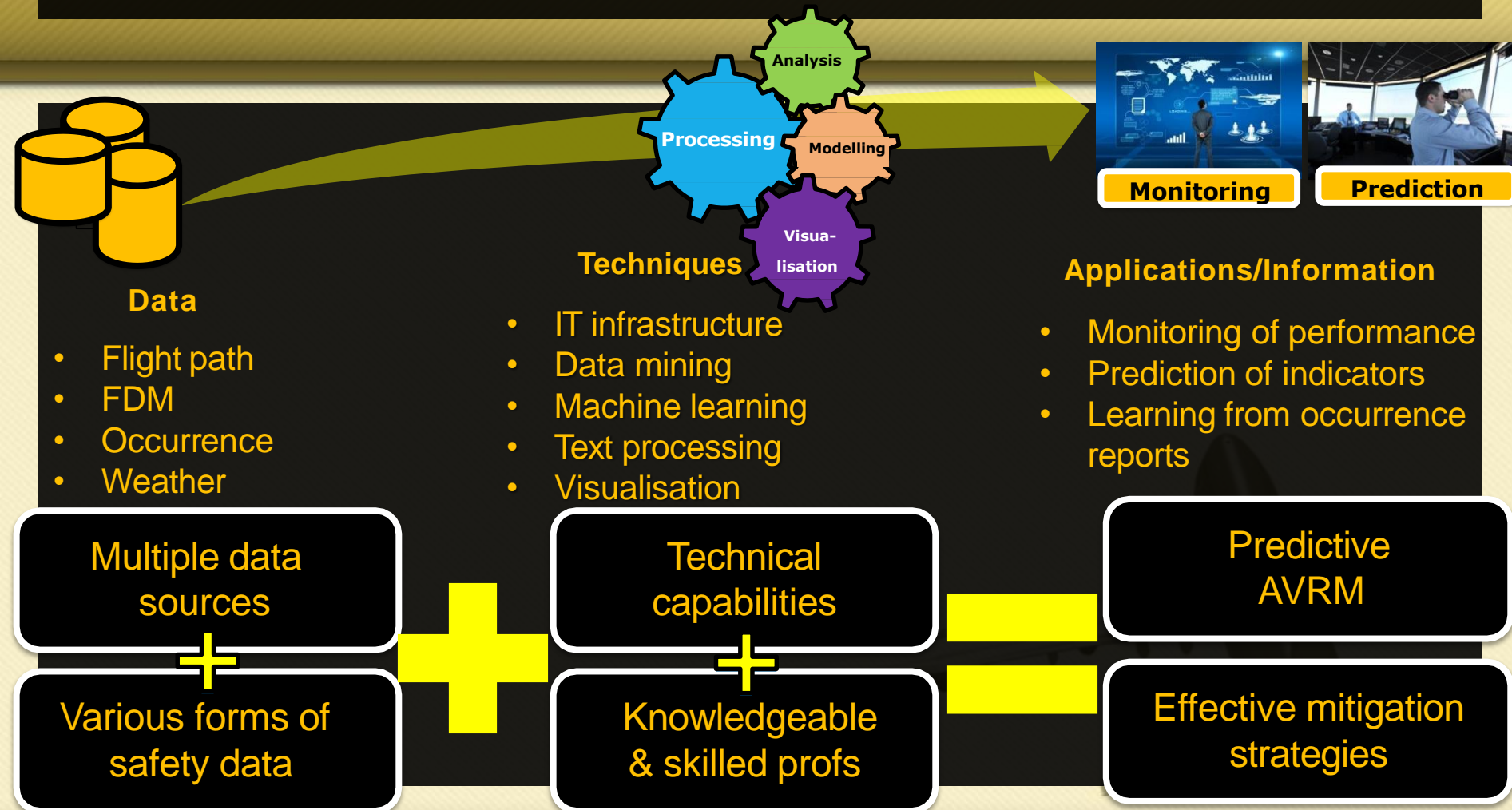
Aviation MRO Big Data & Advanced Analytics Industry Survey by Capgemini Aviation & Aerospace, 2017

Which software options do we have for Data Analytics?

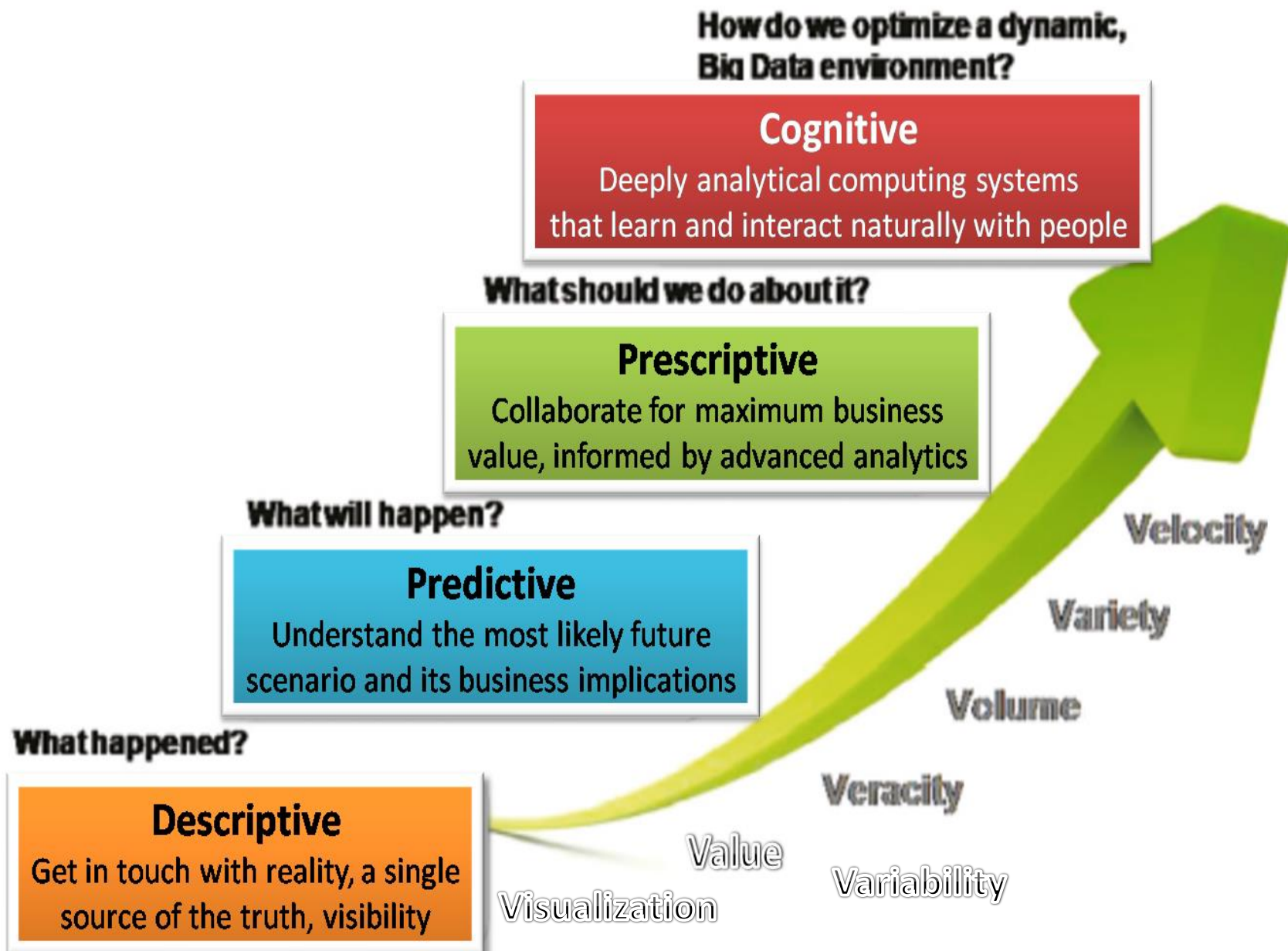
K



Summary



Companies are Driving Toward Predictive Insight and Beyond



Thank You!

- **Fahad Masood, MRaE, Sqn Ldr (R)**
- **Directing Staff-Human Factor**, College of Aviation Safety Management, 2013–2018
- **MBA-Aviation Management**, Karachi Institute of Economics & Technology, 2017
- **DDAAFS Australia** - Aviation Safety Officers Course, 2017
- **Embry-Riddle Aeronautical University** Online Courses...
 - **Aircraft Accident Investigation**, 2015
 - **Unmanned Aerospace Systems (UAS) – Key Concepts for New Users**, 2016
 - **Aviation-101**, 2017
- **Post Graduate Certificate-Aviation Safety**, University of Karachi, 2014
- **Instructor/Fighter Pilot** 2004-2013, Pakistan Air Force
- **Crew Resource Management (CRM) Facilitator** – Safety Management Center
- **MRaE**, Royal Aeronautics Society, UK
- **Member International Society of Air Safety Investigators**, USA

