# DEFENSE APPLICATIONS OF BLOCKCHAIN TECHNOLOGY

*COLONEL DR. IR. ARWIN DATUMAYA WAHYUDI SUMARI, S.T., M.T., IPM*

*ASSOCIATE PROFESSOR*

*COMMUNICATION AND ELECTRONICS SERVICE, INDONESIAN AIR FORCE HEADQUARTERS*

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**INDODAX**

**BlockJakarta**

Indonesia's Blockchain Capability Conference

📅 2nd May 2019    📍 Ritz Carlton Pacific Place - Jakarta, Indonesia

# AL-HADI (MAHA PEMBERI PETUNJUK, THE SUPREME GUIDANCE)

*dan agar **orang-orang yang telah diberi ilmu**, meyakini bahwasanya Al Quran itulah yang hak dari Tuhan-mu lalu mereka beriman dan tunduk hati mereka kepadanya dan **sesungguhnya Allah adalah Pemberi Petunjuk** bagi orang-orang yang beriman kepada jalan yang lurus*

And that those on **whom knowledge has been bestowed** may learn that the (Qur'an) is the Truth from thy Lord, and that they may believe therein, and their hearts may be made humbly (open) to it: for **verily Allah is the Guide** of those who believe, to the Straight Way

*(QS AL HAJJ:54)*

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# A BIT ABOUT ME



**Kolonel Lek Dr. Ir. Arwin D.W. Sumari, S.T., M.T., IPM [F.S.I., F.S.M.E., V.D.B.M., S.A., S.R.Eng.]**

**Military (Indonesian Air Force)**
- Indonesian Air Force Academy – 1991
- School of Electronic Officer Branch – 2002
- School of Unity of Command – 2003
- School of Command and Staff – 2011
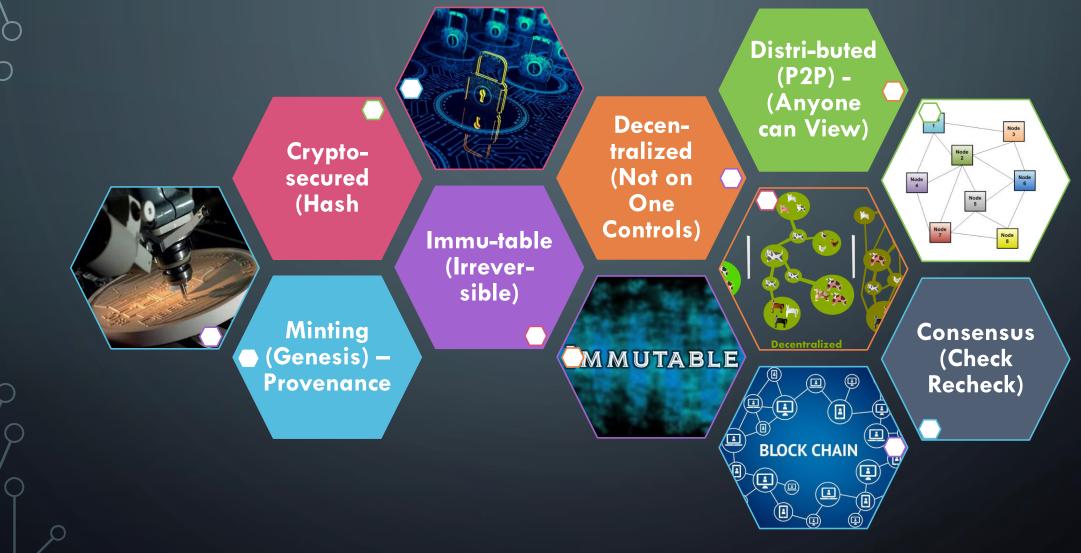- National Security Leadership, George Washington University – 2014

**Academic Career**
- **S-1** in Electronics Engineering ITB, focus on **Artificial Neural Networks (ANN)** – 1996
- **S-2** in Computer Engineering ITB, focus on **Multi-Agent System (MAS)** – 2008
- **S-3** in Electrical Engineering and Informatics ITB, focus on **Cognitive Artificial Intelligence (CAI)** – 2010
- **Senior Researcher** at Cognitive Artificial Intelligence Research Group (CAIRG) ITB since 2007
- **Associate Professor** on Assymetric Warfare, IDU – 2015
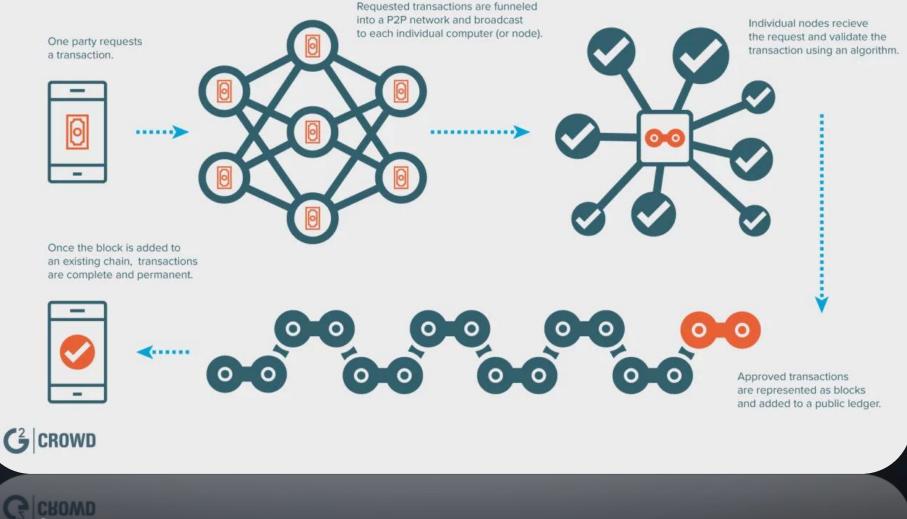
# OUTLINE

- **Blockchain Technology Features**

- **Cases in Defense (Military) and Blockchain Application Possibilities**

- **The Prospect of Blockchain Implementation**

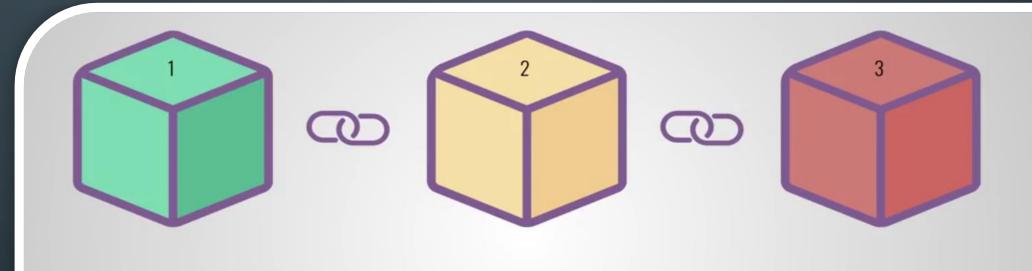# Blockchain Technology Features

# BLOCKCHAIN TECHNOLOGY FEATURES



Crypto-secured (Hash

Distri-buted (P2P) - (Anyone can View)

Decen-tralized (Not on One Controls)

Immu-table (Irrever-sible)

Minting (Genesis) – Provenance

Decentralized

BLOCK CHAIN

Consensus (Check Recheck)
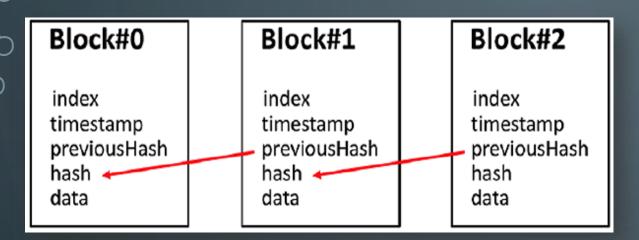
# BLOCKCHAIN – HASHING
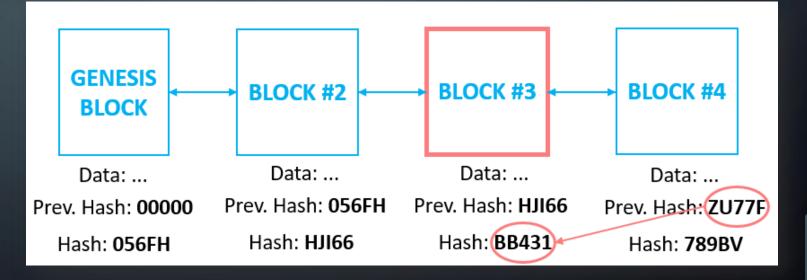
# BLOCKCHAIN – IMMUTABILITY

The chain with conflicting transaction data is no longer in consensus with the main blockchain and isn't validated
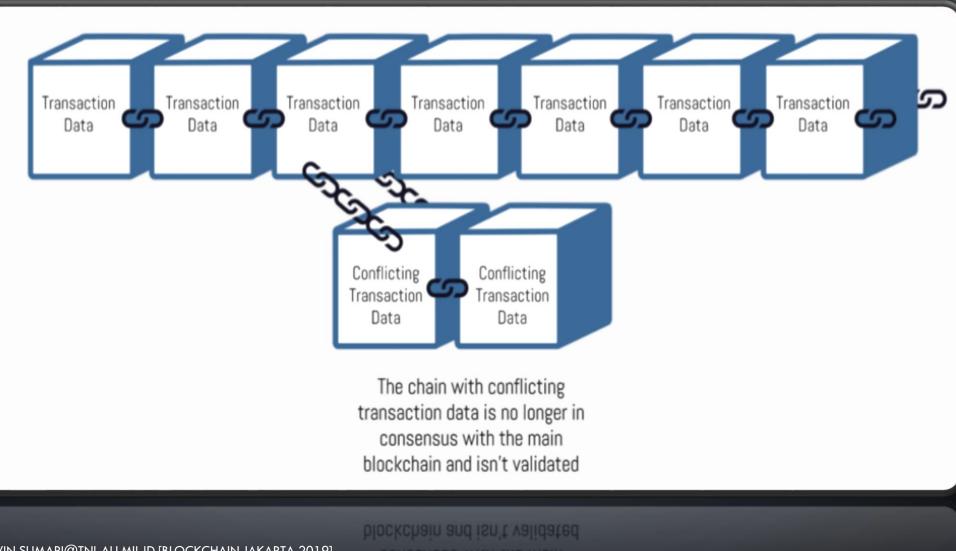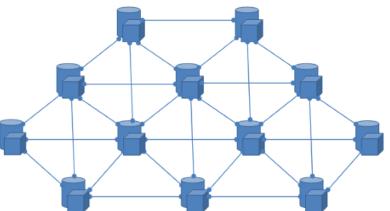
# BLOCKCHAIN – DECENTRALIZED

Fault Tolerance

Attack Resistance

Collusion Resistance

Lack of Focus

Work Duplication

Slow

**Decentralized**
*nodes are only connected to peers*

# BLOCKCHAIN – DISTRIBUTED



Distributed
nodes distribute work to sub-nodes

- Availability
- Cost Reduction
- Expandability
- Improved Performance
- Local Autonomy
- Reliability
- Scalability
- Shareability

# Cases in Defense (Military) and Blockchain Application Possibilities

# CASES IN DEFENSE (MILITARY)

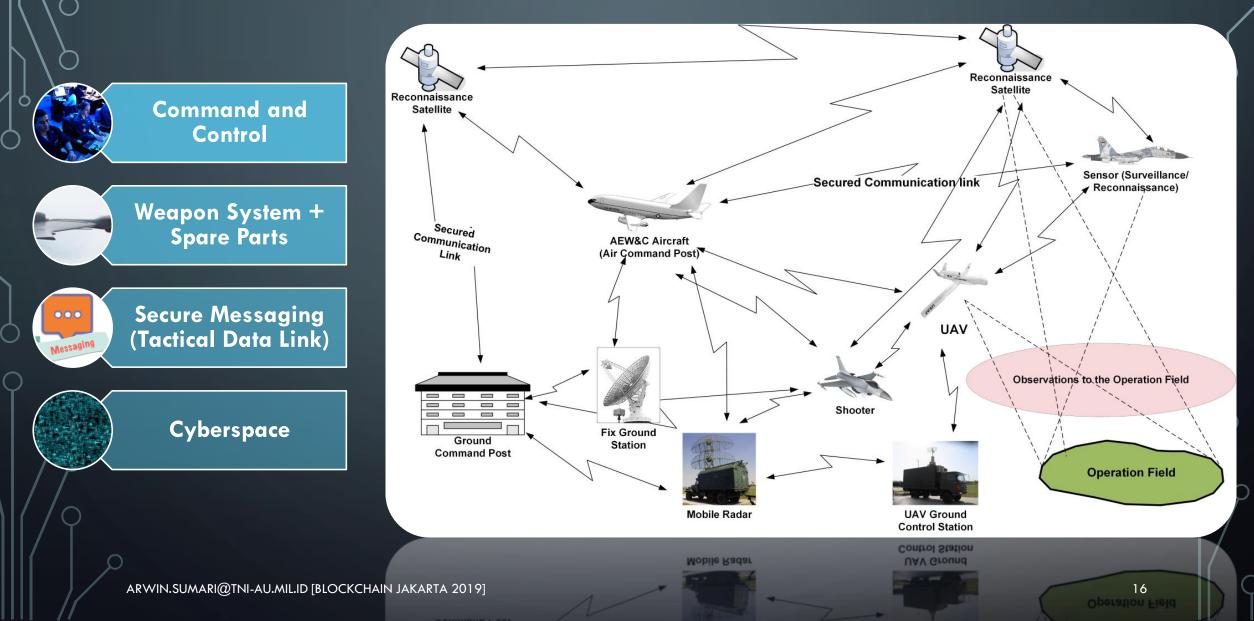**Command and Control in Autonomous and Joint Operations**

**Weapon System Procurement**
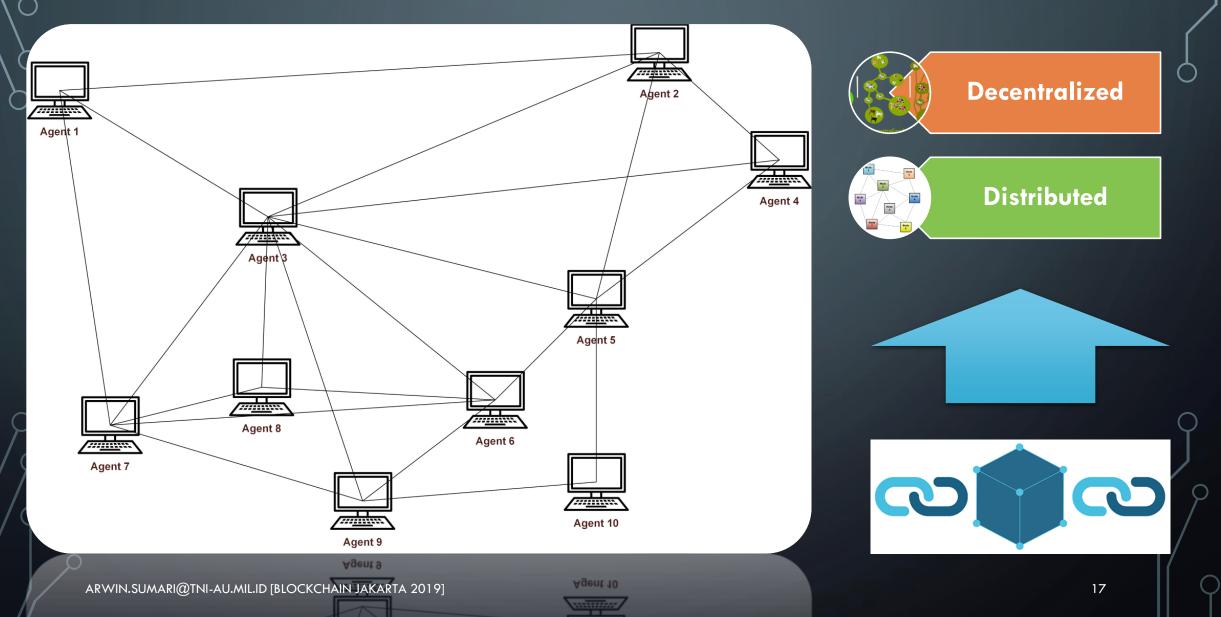
**Weapon System Supply Chain and Maintenance**

**Cyberspace Operations**

**Messaging System**
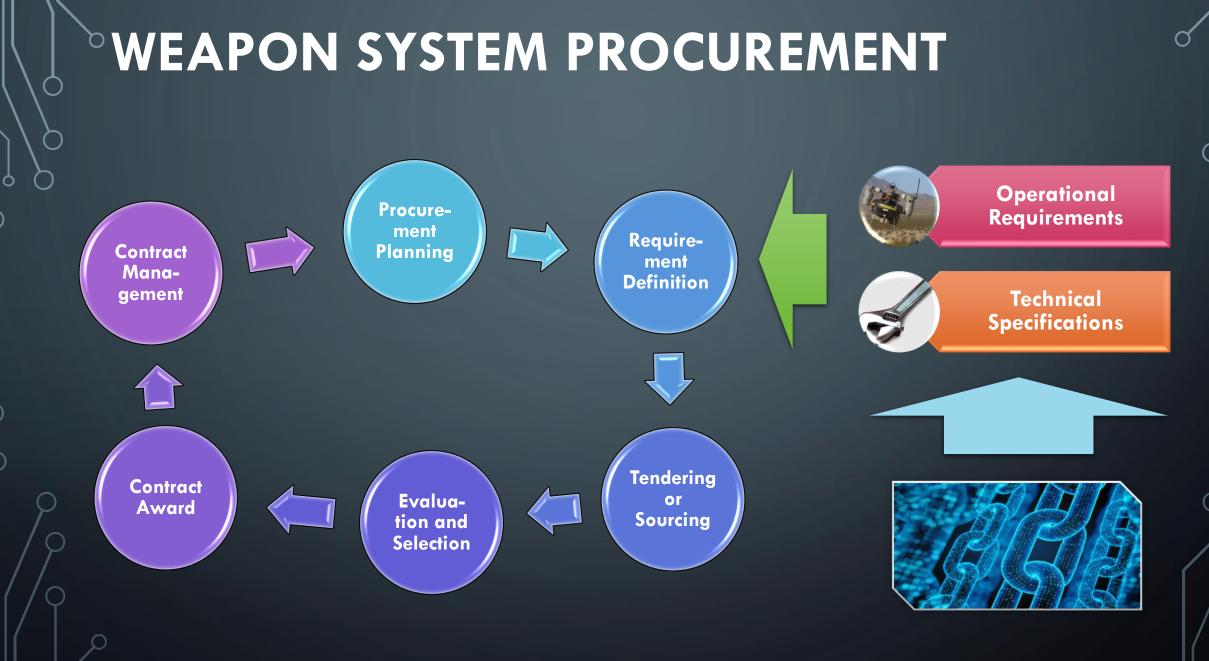
# MILITARY OPERATIONS – NATION DEFENSE



Command and Control

Weapon System + Spare Parts

Secure Messaging (Tactical Data Link)

Cyberspace

# MILITARY OPERATIONS – REPRESENTATION



Agent 1
Agent 2
Agent 3
Agent 4
Agent 5
Agent 6
Agent 7
Agent 8
Agent 9
Agent 10

Decentralized

Distributed

# WEAPON SYSTEM PROCUREMENT



Contract Management → Procurement Planning → Requirement Definition → Tendering or Sourcing → Evaluation and Selection → Contract Award → Contract Management

Operational Requirements

Technical Specifications
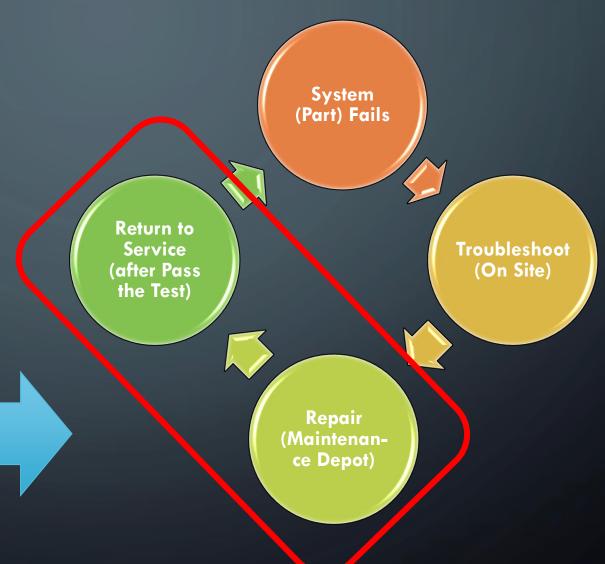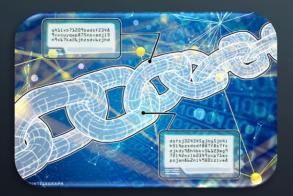
# WEAPON SYSTEM MAINTENANCE

To ensure that the System/Part(s) delivered to be Repaired is the same System/Part(s) which will be returned to Service

System (Part) Fails

Troubleshoot (On Site)

Repair (Maintenance Depot)

Return to Service (after Pass the Test)

# The Prospect of Blockchain Implementation

# CHALLENGES



**Technology Adaptation**

**Perception**

**Skill**

**Regulation**

**Can become Huge Network**

**Slow Information Processing**

# Terima kasih, Thank You

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