INTEROPERABILITY IN THE INDONESIAN AIR FORCE ZERO ACCIDENT POLICY

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Abstract - The Zero Accident Policy is a priority of the Indonesian Air Force to reduce accidents and incidents in the aircraft operations of the Indonesian Air Force. Implementation of the policy can reduce the number of accidents and incidents that can cause casualties and Air Force Weapon System. However, the policy implementation is still done manually so that interoperability cannot be realized in implementing the policy. Using the interoperability business process approach, an analysis of the implementation of the Zero Accident Policy is carried out. This study uses a qualitative research design with primary data sources through purposive sampling. The results showed that the implementation of the policy using the interoperability system in the Zero Accident Policy had not been carried out by the Air Force sub organizations. This study recommends the use of application in order to realize the interoperability in the implementation of Zero Accident Policy.

Keywords: policy, interoperability, zero accident.

Introduction

The Zero Accident Policy continues to be carried out by the Indonesian Air Force and is a top priority of the Chief of Staff of the Indonesian Air Force force to reduce the number of victims, damage to the defense equipment, and ensure the success of operations carried out by the Air Force. The Indonesian Air Force Chief of Staff carried out the Zero Accident Policy since 2004 to reduce the occurrence of aviation incidents and accidents and work within the Indonesian Air Force unit. The policy shows a decrease in the number of aviation accidents and aviation incidents. Between 2012-2019, this figure has decreased compared to the same period between 2005-2011.

The success in suppressing the number of aviation accidents between 2015-2019 was certainly not only due to the caution of the pilots, but it also

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involved the flight crew at the base or airfield carrying out the maintenance, care and control of Indonesian Air Force aircraft operations, standardized work procedures, and interconnected control system, resulting in the interoperability between Air Force units in aviation safety. Besides, the weather factor which is also a major consideration when a flight is carried out is also one indicator that is considered when the human factor, aircraft, and base facilities have met the flight and work safety standards. Flying incidents and accidents continue to occur so that regardless of weather conditions, human factors as policy implementers can lead to accidents and incidents that can disrupt the effectiveness of Zero Accident Policy implementation.

The operational readiness of the Indonesian Air Force is very much needed in supporting the main tasks of the Indonesian Armed Forces to maintain the integrity and sovereignty of the Unitary Republic of Indonesia in accordance with the mandate of Law Number 34 of 2004 on Indonesian Armed Forces. The operational readiness of the

Air Force was indicated by the low number of aviation accidents and aviation incidents. The number of aviation accidents and aviation incidents in 2015-2019 in support of the Zero Accident Policy is implemented through the flight safety program. In 2012-2019 the Indonesian Air Force flight safety program which showed a decrease in aviation and work accidents was essentially aimed to foster a safety culture through the Chief of Staff's priority program.

Flight safety among the civilian and military airlines is also a concern of the government. In fact, Indonesian President Joko Widodo, observing the occurrence of military aircraft accidents, stated that the number of aviation accidents suffered by the military must reach zero or zero accident[3]. The Chief of Staff emphasized that the risks posed by military airplane crashes could result in a decrease in military capability in the readiness of the main weapon system, as well as the loss of personnel and people affected by military aircraft accidents and incidents. The types of aircraft defense equipment by the

3   Target Zero Accident, 3 Langkah Akan Dilakukan KSAU Baru. Source: https://nasional.tempo.co/read/837265/targe
t-zero-accident-3-langkah-akan-dilakukan-ksau-baru, accessed 01 February 2020

Indonesian Air Force units have experienced accidents and incidents in the period 2012-2019 can be seen in Table 1.

In connection with flight safety, the indicator is the number of accidents and incidents related to aviation accidents. Based on the information in Table 1 above, it can be seen that the number of Indonesian Air Force aircrafts involved in accidents consisted of various types of aircraft, training aircraft, and transport aircraft with a total of 8 aircrafts. This number certainly has a major influence on the operational readiness of the Indonesian Air Force and the effectiveness of the Zero Accident Policy.

On the other hand, the aviation accidents that occurred between the period of 2012-2019 also caused casualties among the Air Force soldiers and the community. Data on the number of fatalities that occurred due to aviation accidents between the period of 2012-2019 can be seen in Table 2.

Table 1. Types of Indonesian Air Force Aircraft Involved in Aviation Accidents Between 2012-2019

No	Type	Amount
1	Fokker 27	1 Unit
2	Hawk 200	1 Unit
3	T 34 Charlie	1 Unit
4	Jupiters Aerobatic Team (JAT)	1 Unit
5	T50 Golden Eagle	1 Unit
6	Super Tucano	1 Unit
7	Hercules C-130	2 Unit

Source: Data from various sources 2019 (Reprocessed)

Table 2. Recapitulation of Indonesian Air Force Aviation Accidents Between 2012-2019

Year	Description	Mortality
2012	Indonesian Air Force Aircraft Fokker 27	7 Deaths
	Indonesian Air Force Aircraft Hawk 200	None
	Indonesian Air Force Jet Trainer Aircraft T-34 Charlie	1 Death
2013	None	None
2014	None	None
2015	*Jupiters Aerobatic Team (JAT)* TNI AU	None
	Indonesian Air Force Aircraft Hercules C-130	109 Deaths
	Jet Trainer AircraftJet T50 Golden Eagle	2 Deaths
	Aircraft F-16 Fighting Falcon	None
2016	Indonesian Air Force Aircraft Super Tucano	2 Deaths
	Indonesian Air Force Aircraft Hercules C-130	12 Deaths
2017-2019	*Zero Accident*	-

Source: Data from various sources 2019 (Reprocessed)

Based on the information in Table 2 above, it can be seen that the number of aviation accidents continues to decline, especially in 2012-2014. However, between 2015 and 2015 the number of aviation accidents increased again. Meanwhile there is zero accident between 2017 and 2019, meaning that the number of aircraft losses and fatalities reached zero.

Aviation safety is inherent in every Air Force soldier (Interview with Kadislambangjaau, 2019). Aviation safety is a culture that must be instilled in every individual soldier of the Air Force to be able to support the operational readiness of the aircraft in supporting the duties of the Air Force. Flight safety is mandated by Law No. 1/2009 on Aviation in Article 1, Paragraph 48, stating that "Aviation Safety is a state of fulfilling safety requirements in the use of airspace, aircraft, airports, air transport, flight navigation, and supporting facilities and other public facilities." In accordance with the mandate of the law, flight safety is a form of interoperability between air space, humans as the operating air crews, defense equipment, and the system used in its control.

In line with the increasing sophistication of information and communication technology, interoperability is a key requirement to foster uniformity and the same indicators to ensure the effectiveness of the programs implemented. System interoperability can also be a device used to evaluate trends or causes of aviation accidents or incidents. Human factors are the main consideration to find out the causes of aviation accidents and incidents. In other words, human factors that cause accidents or incidents cannot be separated from mistakes made by humans (human error). Winarsunu (2008) stated that human error can cause 80% to 90% of work accidents. Heinrich (1931) in "The Origin of Accident", put unsafe actions committed by humans as the biggest contributor to workplace accidents, as many as 88%.[4] Joshcheck (1981), Butikofer (1986), and Uehara and Hoosegow (1986) in their research also stated that human error is

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[4] William Herbert Heinrich, *Industrial Accident Prevention*, (London: McGrawHill Publishing Co, 1931).

the biggest contributor to work accidents.[5]

The importance of the human factor in ensuring the aviation safety was also conveyed by the Commander in Chief of the Indonesian Army and the Chief of Staff (2019) who stated that the risks posed by humans (human error) resulting in aviation accidents would have an impact on the lack of ability of the Air Force in carrying out air defense duties.[6] Therefore, safe and secure conditions are the top priority in every task implementation so that zero accident can be realized.

Zero Accident Policy is one of the policies of the Air Chief Marshal Yuyu Sutisna (2019). In general, the implementation of the Zero Accident Policy still uses a manual system. In line with the development of information and communication technology entering the digital era, interconnection between entities that implement the zero accident priority program is obligatory. In other words, inter-entity or units of the Indonesian Air Force must have interoperability so that accidents and

incidents can be prevented by the same standardization. Utilization of the internet in building interoperability security systems requires electronic devices that connect one subject to another so that the Zero Accident Policy can be implemented effectively. The effectiveness of the policy by using an electronic system is used to increase the success of building cooperation and coordination. In other words, the success of building cooperation and coordination between government agencies today cannot be separated from the use of electronic government (e-government) systems.

The concept of electronic government is used to build integration, information sharing and data resources between government organizations. All government administration processes have been well integrated, so that documents and data resources can be used to evaluate and improvise to prevent aviation incidents and accidents on an ongoing basis. In other words, zero accident can be achieved by building an electronic safety system. Countries that

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[5] David A. Colling, *Industrial Safety Management & Technology*, (New Jersey: Prenctice Hall, 1990).

[6] Kadis Lambangjaau, Lambangja adalah Tanggung Jawab Kita Bersama. Source: https://tni-au.mil.id/kadis-lambangjaau-lambangja-adalah-tanggung-jawab-kita-bersama/, accessed 01 February 2020.

have succeeded in building an electronic security system are Australia and Singapore. Learn from Australia and Singapore in building cooperation between Air Force organizations especially regarding aviation safety where the Indonesian Air Force has existing equipment in the regions (Air Bases) and at the headquarters (Air Force Headquarters).

Aviation safety systems to prevent aviation accidents or incidents in order to achieve zero accident within the Air Force environment do not yet have electronic interoperability safety structures. However, in fact the number of aviation accidents and incidents decreased between 2017-2019. This fact interests the authors to conduct a study of Indonesian Air Force aviation accidents and incidents safety system interoperability that integrates all Indonesian Air Force sections or Main Command (Kotama) and units with the Indonesian Air Force Headquarters in implementing the Zero Accident Policy as a priority program for the Chief of Staff. Security system interoperability is a way to achieve the effectiveness of

zero accident priority policy so as to create a safety culture.

Literature Review and Framework

Interoperability systems used in an organization is a work process that can achieve the effectiveness of policies implemented by a complex organization. The meaning of interoperability is as follows:

> Organizational interoperability is concerned with the coordination and alignment of business processes and information architectures that span both intra- and inter-organizational boundaries. [7]

The term interoperability was born from the activities of implementing electronic government systems in the government management. The implementation of electronic government will eventually lead to the integration of all processes in all forms of application used by organizations or governments. In the concept of electronic government, information sharing, process integration, or the process of coordination and evaluation work together in an integrated system.

Zero Accident Policy as a priority

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[7]   H. Kubicek, R. Cimander, & H.J. Scholl, *Organizational Interoperability in E-government: Lesson from 77 European Good Practice Cases*, (New York: Springer-Verlag Berlin Heidelberg, 2011), p. 6.

program is a manifestation of policies that require an integration intra- and inter- entities within the Indonesian Air Force. Integration of work processes in preventing aviation incidents and accidents is carried out to achieve zero accident involving various stakeholders who are in the Air Force Headquarters (Indonesian Air Force Security Staff, Aviation and Work Safety Office, and Air Force Information and Data Processing Office), and the Air Force ranks (Operations Command, Wing, and Squadron).

The principle of interoperability implemented by the Australian Government (AGIMO/Australian Government Information Management Office) can be observed as a comparison. AGIMO stated that there are principles called 9 fundamental principles in the interoperability (AGIMO, 2007:20)[8], as follows:

1) Business process interoperability efforts should focus on outcomes.

2) Business process interoperability outcomes should be linked with the whole of system.

3) Government initiatives (whole of agency for single agency projects).

4) Business processes must be user-driven.

5) The benefits of collaboration and business process interoperability must be identified.

6) A standardised approach to documenting business processes must be agreed and followed.

7) The approach to business process interoperability must be practical, rigorous and flexible.

8) Sharing of business processes across boundaries should promote trust, confidence and security of data.

9) Governance arrangements must be agreed between collaborating agencies. People and culture differences between collaborating agencies must be acknowledged and managed.

In line with the implementation of interoperability of various government instruments within the Australian government environment above, it can be seen that interoperability business processes can guarantee the integration of systems between government entities. The process of sharing information and systems between institutions can foster trust and security.

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8   AGIMO (Australian Government Information Management Office), *Performance Indicator* *Resource Catalogue*, (Australia: Department of Finance and Administration, 2007), p. 20.

Interoperability Business Process has been carried out in developed countries and can be used as an experience to be implemented in Indonesia, especially in the Air Force's organizational environment. For example, the business process interoperability below is carried out by the Australian government as explained in the Figure 1.

As demonstrated in the Figure 1, the Australian government as a whole of government puts forward the interoperability business process between organizations in their governance structures so that collaboration can be realized. This collaboration crosses the boundaries of each agency or institution by considering challenges and needs as well as how the strategic response must be carried out. The Australian Government in its interoperability work processes establish interrelated work processes, information and technology frameworks using an integrated government portal. Implicitly in the collaboration built with the

Figure 1. *Interoperability* **in the Australian Government**
Source: AGIMO, *Performance Indicator Resource Catalogue*, (Australia: Department of Finance and Administration, 2007), p.20.

interoperability of the business process, coordination between entities is crucial to be performed internally and between collaborating entities. The implementation of electronic government in Australia, including the Armed Forces organizations, especially the Air Force, shows that the implementation of the 9 fundamental principles continues to be carried out in various policies including the Zero Accident Policy so that it becomes the culture of the organization as a whole. Collaboration can be realized with the existence of coordination.[9] Coordination within government units is a necessity especially in providing services to the community.[10] Collaboration between work units or separate departments in government organizations according to the specialization of the specified division of labor. Each work unit is a sub-system of a massive and complex government system so collaboration is realized with close coordination. Collaboration which is realized with coordination takes into account the

terms of building coordination described by Hasibuan (2016: 25), as follows:

1) Sense of cooperation or a feeling of cooperation, this must be seen from the point of view per department of the field of work (not from person to person).

2) Rivalry that in large companies there is often competition between different departments, so that this each department competes to achieve progress.

3) Team spirit means that each individual in the departments must respect each other.

4) Esprit de Corps means the departments that are included or valued generally will render the activities to be more exciting.[11]

A policy certainly requires evaluation as consideration to ammend some parts, replace the overall policy with a new policy, or change the policy to achieve organizational effectiveness. According to Dunn (2003: 608) evaluation can be equal to appraisal, rating, and assessment. Hence analyzing

9   Emily R. Lai. 2011. Collaborations: A Literature Review (New York: Pearson, 2011), p. 2.

10 Andrew B. Whitford, Soo-Young Lee, Taesik Yun & Chan Su Jung, "Collaborative Behavior and The Performance of Government

Agencies", *International Public Management Journal*, 2010, Vol. 13, No.4, pp. 321-349.

11 Malayu S.P. Hasibuan, *Manajemen Sumber Daya Manusia, Edisi Revisi,* (Jakarta: Penerbit PT Bumi Aksara, 2016), p. 25.

the results of the policy in terms of units of value. Dunn (2003: 608) also stated that in a more specific sense, evaluation relates to the production of information about the value or benefits of a policy. Dye in Winarno (2007: 232-235) stated that the impact of a public policy requires indicators that can be used in evaluating. Policy evaluation can be performed by using information technology in the form of a government application system. Indicators in the application system in the interoperability business process zero accident program must be sourced from the Paris Convention, the Chicago Convention, and the Aviation Law. The technical and operational requirements stated in the Paris Convention (1919), the Chicago Convention (1944), and Law Number 1 of 2009 on Aviation were built in an evaluation system based on information technology. In other words, collaboration between Indonesian Air Force units has the similar standard to coordinate and evaluate aviation accidents and incidents in a measured and sustainable manner.

Business process interoperability is an effort to improve the process of implementing the Zero Accident Policy by the Air Force Base and must focus on the results to be achieved by taking into account the Indonesian Air Force road to zero accident policy and the Air Force Base itself. In an effort to improve the efficiency and effectiveness of the implementation of the zero accident in the Air Force Bases, continuous collaboration to realize the results of interoperability with work processes is connected with the whole system.

Thus, the framework for building collaboration in the Zero Accident Policy interoperability business process is carried out by the internal organizational entity of the Indonesian Air Force between the Indonesian Air Force Headquarters, the Main Command and the Air Force's units in coordination so that data (information), control, and functions, both individually and in groups, to create collaboration. The use of information technology (e-government) is a highly important decision in improving coordination between Air Force units to implement the Zero Accident Policy. The description above can be explained in the form of a business process interoperability diagram scheme between Mabes (Headquarters), Kotama (Main Command) and the Commander of the Air Force, as can be seen in Figure 2.
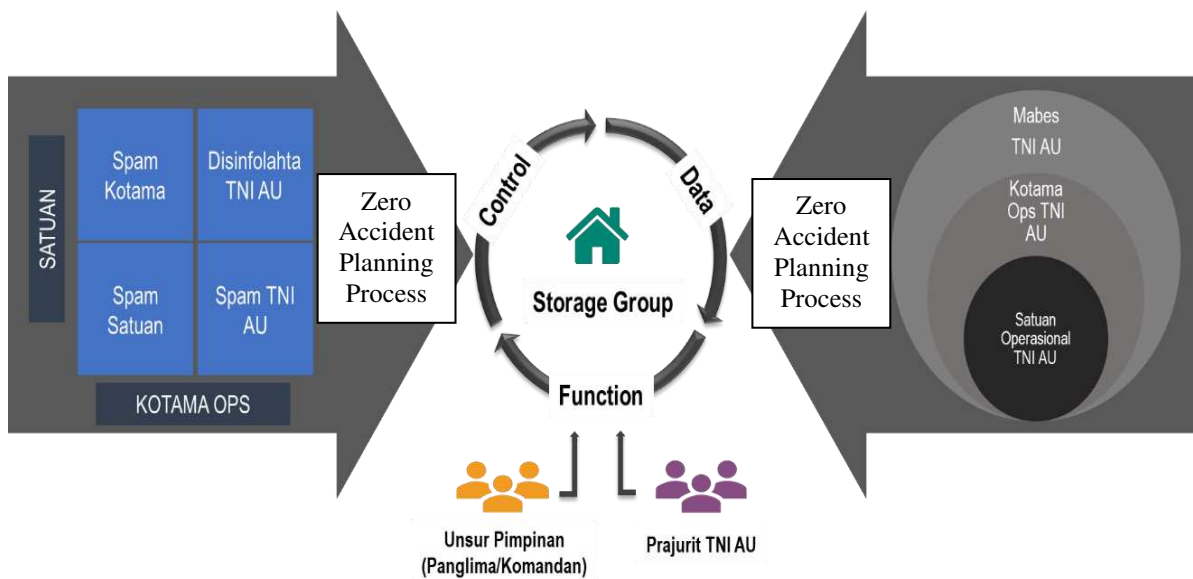
Figure 2. Indonesian Air Force Zero Accident Policy's Interoperability Business Process Concept
Source: Processed by Author, 2020

Methodology

The study was conducted using qualitative research methods. Qualitative research methods with interpretive and constructive paradigms, which view social reality as something holistic/intact, complex, dynamic, meaningful, and with an interactive (reciprocal) relation of phenomenon (Sugiyono, 2016:210).[12] The researchers chose the evaluative qualitative research design considering that the Zero Accident Policy has been implemented since 2004 and will continue to be implemented in the future, thus it requires evaluation. The data source consisted of primary data obtained through informants namely Kadislambangjaau (Head of the Air Force Safety and Work Department of the Air Force), Head of the NTSC (National Transportation Accident Commission), Air Force Wing Commander, and Air Force Squadron Commander. The selection of informants as primary data sources was based on consideration of the qualifications held by the informants and their relevance to the Zero Accident Policy. The question raised by the selected informant (purposive sampling) was in the form of a semi structured interview guide.

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[12] Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif dan R&D*, (Bandung: Alfabeta, 2016).

Secondary data was obtained through documents, archives, references, records, and others relating to the 2012-2019 research object. Data collection was conducted by interview or correspondence with selected informants (purposive sampling) and documentation studies. Data analysis was performed with Data Condensation, Data Display, and Conclusion Drawing/Verification[13] (Miles, Huberman, and Saldana, 2014). Data credibility test or trust in data from qualitative research results can be performed through triangulation of sources.

Result and Discussion

The principles used as indicators by AGIMO (2007) provide a foundation for institutions/entities in the Air Force organization to be used in achieving the effectiveness of a zero accident priority program based on information technology so that the collaboration in the interoperability business processes of intra- and inter- entities are realized[14]. Collaboration in achieving the effectiveness of the Zero Accident Policy is the low number of aviation accidents and incidents.

Coordination intra- and inter-entities to build a mutual collaboration can be well performed by using the thought process that has been described (figure 2) above. The plan compiled in the Zero Accident Policy to be implemented throughout the Air Force Bases is accompanied by collaboration through continuous coordination using an integrated and connected application system. By using the interoperability business process approach, creative cooperation will be realized by defeating rivalry between entities only to reduce the internal accidents and incidents of the organization, but without considering greater cumulative results, which is equivalent to the level of Air Force. This means that the results achieved by Air Force Base are the results achieved by the Air Force and vice versa.

A research conducted at the Air Force Base and Indonesian Air Force Headquarters (2019) shows that, from the planning up to the process of implementing the zero-accident

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[13] M.B. Miles, A.M. Huberman, dan J. Saldana, *Qualitative Data Analysis, A Methods Sourcebook,* Third Edition, (USA: Sage Publications), Terjemahan Tjetjep Rohindi Rohidi, (Jakarta: UI-Press, 2014).

[14] AGIMO (Australian Government Information Management Office), *Performance Indicator Resource Catalogue,* (Australia: Department of Finance and Administration, 2007), p. 20.

program, it is indicated that the entities within the Air Force are collaborating with each other. Aviation and work safety as the Chief of Staff's top priority can demonstrate a decrease in the number of incidents and accidents from 2017 to 2019 (see Table 2). A research at Dislambangjaau found that zero accident was an Indonesian Air Force program which was a continuation of a series of road to zero accident policies carried out from 2004 to 2012. The zero-accident program was a joint responsibility of all Indonesian Air Force soldiers so that collaboration through coordination could distance individuals and the organization of unprofessional behavior (unsafe actions and unsafe conditions) as the main foundation for the implementation of zero accident.

In the research conducted in Mabesau (2019) it was found that the absence of accident through the implementation of the zero accident program was not the culmination or end of the interoperability work process. However, the absence of accident and incident shows that work processes that require collaboration and coordination are more intensive so that the long journey to create a safety culture can be carried out. Zero Accident as a work culture of the Indonesian Air Force which is broken down into a doctrine that can guide the way of thinking, words and actions of all personnel of the Air Force in carrying out their duties and services has not entirely become an indicator used to equalize the work process in the zero accident program. A research in Dislambangjaau and the Air Force unit (2019) shows that the development of the ability of personnel or human resources is an absolute factor and is the center of attention to ensure the Air Force's modern defense equipment can be professionally operated so that any aviation accident and incident can pressed towards the lowest point or zero accident. On the other hand, the authorities also realized that the ability of individuals and organizations to collaborate to implement Zero Accident Policy should have high and measurable standards based on international and national regulations to be practiced starting from the individual level, small units, to the combined units of the Indonesian Air Force.

Interoperability Business Process is a work process demonstrating collaboration through close and continuous coordination. It focuses on the facility to encourage the

participation of individual Indonesian Air Force soldiers and organizations in using a variety of user driven application provided by the Air Force Base and Headquarters. The results of the study (2019) showed that there were Air Force Bases that had internet-based application (such as the Iswahjudi Air Force Base, Supadio Air Force Base and Abdulrahman Saleh Air Force Base), but there were still many Bases, especially type B ones, which had not used internet-based application in building their Interoperability Business Process. The facility of using various application shows that the emergence of zero accident awareness is truly beneficial for soldiers and units of the Indonesian Air Force to obtain information and the potential for aviation accidents and evaluations of prior aviation accidents (research and interview results, 2019). Furthermore, in the interoperability business process implementation of Zero Accident Policy, the security and data validity are guaranteed so that soldiers and units of the Indonesian Air Force are comfortable in using and benefiting from data in Zero Accident Policy planning in accordance with the scope of their organization.

The operational readiness of the Air Force is urgently needed to support the main tasks of the Indonesian Armed Forces to maintain the integrity and sovereignty of the Unitary Republic of Indonesia in accordance with the mandate of Law Number 34 of 2004 on Indonesian Armed Forces. The safety of Indonesian Armed Forces' flights is a concern of the government, even Indonesian President Joko Widodo stated that aviation accidents suffered by the Indonesian Armed Forces must reach zero or *zero accident* (www.tempo.com, 2015).[15] Indonesian military operational readiness is characterized by a low number of aviation accidents and aviationincidents. The number of aviation accidents and aviation incidents can be minimized by the Zero Accident Policy through the interoperability work processes between entities. The risks posed by Indonesian military aviation accidents are high for the military defense equipment, personnel, and losses for people affected by Indonesian Air

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[15] Tragedi Hercules, Jokowi Minta Modernisasi Persenjataan. Source: https://fokus.tempo.co/read/1002212/tragedi- hercules-jokowi-minta-modernisasi-persenjataan, accessed 7 November 2019.

Force's aircraft accidents and incidents that are faced with the outdated conditions of defense equipment and unfriendly natural conditions as a result of global climate change.

In implementing the interoperability business process of Zero Accident Policy, it involves individuals and work units of the Air Force at the national and regional levels. The implementation of accidents and incidents is done flexibly, has clear standardization of documentation, and strict and open access authorization so that all soldiers and Air Force units understand and understand what they must do to play a role in the zero accident priority program. This priority program will be more effective if accompanied by an integrated application system.

The use of this interoperability business process model in the zero accident priority program requires a clear legal umbrella in the form of Standard Operating Procedures in utilizing internet-based application. Regulations are indispensable for the use of a system or application of plans, implementation, and evaluation of zero accident activities within the Air Force's organizational environment. The SOP

should be compiled by the Indonesian Air Force Headquarters so that it becomes a standard indicator to be fulfilled as a general agreement for each unit or entity and indicators that have specificity in accordance with the real conditions of the Air Force and its aircraft. This must begin with a joint agreement between the Commander or Commander of the Indonesian Air Force on the indicators included in the application system so that the agreement will be actually implemented with the strict coordination of Spamau and Dislambangjaau.

The meaning contained in the Interoperability Business Process is coordination in conducting cooperation so that it can unite the common goals of different work units to achieve organizational goals efficiently (Whittford et al, 2010; Lai; 2011). That is, close coordination between entities which are sub-organizations of the Air Force can interpret coordination as a process of unification and cooperation between units or entities in achieving the goals and objectives of the organization. Coordination can provide efficiency in organizational activities so that coordination is considered important in the management and organization

(Fayol, 1998).[16] Coordination has a basic principle that must be considered, which is to help enlarge the results of a group by getting a balance between uniting the activities of important parts, encouraging group participation in the initial stages of planning, and getting acceptance of group goals from each member of the organization.

The Air Force Bases throughout the Republic of Indonesia in implementing still have a tendency to assume that the Zero Accident Policy program is the Chief of Staff's individual program. This is evidenced by the number of aircrafts with zero accident and other aircrafts which still have fluctuating incidence and accident rates. The results of the study (2019) showed that interoperability business processes in the implementation of the zero accident program were considered as the authority of each Air Base and could not be united between the Air Bases with different process standards, even though the object of activities in the zero accident program was the same. This view actually arises from sectoral ego thinking and the challenge of the Indonesian Air Force Headquarters to foster a culture that is concerned with safety (safety culture).

The work process carried out in the implementation of zero accident program must be encouraged by the users, in this case the Air Force Bases, and IT-based policies that are connected between Mabesau and Dislambangjaau with the Air Force units. Universal application can be accessed by existing Bases so that coordination to realize collaboration between different Air Bases and between Air Bases and Indonesian Air Force Headquarters can achieve the effectiveness of Zero Accident Policy in the form of easier coordination to support collaboration and lower numbers of aviation accidents and incidents at their respective bases.

The approach used in the interoperability work process in the form of this application must be practical, precise, and resilient so that creative cooperation can be carried out sustainably in order to implement the zero accident priority program. Practical, precise, and resilient approaches can be realized with the use of application so that coordination and cooperation in building interoperability between

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[16] Henry Fayol, *General and Industrial Management*, (Philadelphia: Pitman, 1998).

entities or institutions can run effectively. The success and effectiveness of the implementation of Zero Accident Policy can ultimately create a safety culture by soldiers and Air Force units.

Using the application to be able to monitor and implement Zero Accident Policy can build cross-sectoral collaboration. This collaboration can foster sharing of work processes that cross borders while still generating trust, increasing self-confidence, and ensuring data security between institutions or agencies in an organization or government. Likewise, in carrying out the Zero Accident Policy priority the Air Force can build an application connecting all entities or sub-organizations of the Air Force in order to foster confidence in carrying out roles by each individual or unit of the Air Force which may encourage aviation safety.

In the implementation of interoperability business processes through zero accident, the application shall has arrangements and mechanisms for inter-agency relations which are agreed by the collaborating bodies through the Air Force Leadership Meeting (Kadislambangjaau, 2019). This means that sub-organizations in the larger organizational system agree on the indicators of zero accident priority program's success in accordance with the direction of the Indonesian Air Force Chief of Staff. The differences that occur between each individual and the character of each unit must be understood and managed properly using the Air Force's zero accident application. Thus, the Air Force's zero accident application can cross individual and organizational characters in order for that collaboration to develop.

By using the model that has been explained in the above frame of mind (figure 2), the Indonesian Air Force Headquarters is the director of the zero-accident priority program. The Air Force's Unit and Kotama (Main Command) have the autonomy to decide the aviation and operational feasibility of the aircraft with the indicators set in the application and stored in data storage managed by the Air Force Disinfolahta and Dislambangjaau which are also connected to Spamau. For the feasibility and non-feasibility of an aircraft for operations other than using application that have been agreed by all parts of the Air Force organization, it is necessary to conduct periodic inspection by the Air Force Headquarters Spam, Security

Staff, Kotama, and Units that are uploaded regularly through the application so that it can be used to support the success of zero accident and safety culture in accordance with the expectations of the leaders and all parties. Air Force Disinfolahta (Information and Data Processing Office) is a unit within the Air Force organization that creates interoperability between units, Kotama, and sub-organizations of the Air Force so that application in the zero-accident interoperability business process run effectively.

Indonesian Air Force Headquarters, in accordance with the Indonesian Armed Forces Doctrine *Tri Darma Eka Karma*[17] and Indonesian Air Force Doctrine *Swa Bhuwana Paksa* (SBP)[18] is a guideline for the Indonesian Air Force individually and as an organization in carrying out its duties, both in the context of the use of force through Military Operation War (OMP) and Military Operations Other Than War (OMSP), as well as in the context of building force through establishment, development and maintenance. Indonesian Air Force Headquarters as

the capability builder is obliged to be able to implement interoperability business processes between units of the Indonesian Air Force in implementing the zero-accident priority program. The SBP doctrine is a reference to legality to be able to answer the demands of changing times so that the needs of the organization, the development of the strategic environment, science and technology, the nature of threats, and disruption and modernization of defense equipment are in line with national defense policy. The Indonesian Air Force Headquarters, which is a capability builder, needs to accelerate the realization of application that can improve the planning, implementation and evaluation of the zero-accident program.

An evaluation in the implementation of the Zero Accident Policy indicators was prepared by referring to the Paris Aviation Convention 1919, Chicago Convention 1944, RI Law No. 1 of 2009 on Aviation so that it could be mutually agreed upon by different units of the Indonesian Air Force. This objectivity is needed so that

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[17] Indonesian Armed Forces' Doctrine Tri Dharma Eka Karma. Indonesian Armed Forces Commander Decision No Kep/555/VI/2018, dated 6 June 2018.

[18] Indonesian Air Force's Chief of Staff Decision No: Kep/571/X/2012 on Indonesian Air Force's Doctrine Swa Bhuwana Paksa

application that can build cooperation and coordination in order to realize collaboration through application in interoperability business processes are running effectively. Personal interests or personality can be suppressed by application because the expected end result is not only oriented towards zero accident, but also forms a safety culture.

Interoperability business processes using internet-based application in implementing Zero Accident Policy can support the establishment of collaboration. This collaboration will also be built with the coordination between sections or units of the Indonesian Air Force which are the main requirements to be able to foster safety culture as a benefit of the implementation of the Zero Accident Policy. Collaboration that will be realized by coordinating between units of the Air Force ranks can build a sense of cooperation or a spirit of cooperation. The existence of an interoperability system is vital so that each part can refer to the same activity in implementing zero accident. This implies that zero accident in the application system refers to indicators derived from the agreements within the organization and Law No. 1 of 2009 on Aviation, Paris Convention 1919, and Chicago Convention in 1944. In addition, negative rivalry or competition in the Indonesian Air Forces organizations will be eroded because the benefits obtained by the Zero Accident Policy interoperability business process consist of safety culture accompanied by IT-based application. Thus, each unit of the Indonesian Air Force does not merely aim to achieve zero accident or inexistence of incident or inexistence of accident but competes to realize a safety culture. The use of application can also establish team spirit and esprit de corps so that there will be enthusiasm and respect that is transparently valued among different units through the same application in implementing the Zero Accident Policy.

Conclusion

The application system is in line with the increasingly modern governance using e-government. Application is needed to support the successful implementation of the Zero Accident Policy which is a priority of the Indonesian Air Force. The number of aviation accidents and incidents can be well controlled between 2012-2109, but with the use of manual method (non-electronic). This results in the ineffectiveness of Zero Accident

Policy interoperability. Each unit of the Air Force has different perceptions and implementations, so an integrated application is needed through guidance by the Indonesian Air Force Headquarters and staff.

To realize a system that can implement the Zero Accident Policy, the interoperability business process requires an integrating bridge or portal to distinguish the work of the Indonesian Air Force Headquarters and work of Kotama (Main Command) and the Air Force units. Both of them share data information and are tasked with using both financial and other resources in implementing the Zero Accident Policy. This authority is needed to avoid overlapping or even vacuum in the functions that are required in the implementation of Zero Accident Policy.

Interoperability business process is a way for the unification and integration of various units and the Air Force's Kotama with the Indonesian Air Force Headquarters in achieving the same goal of zero accident and safety culture. Manual coordination is highly difficult to implement because it is mainly dependent on the political will and on the personality of the leader. Integration and coordination built in a work system

or known as interoperability business process is an urgent need in the process of implementing Zero Accident Policy as a multi-dimensional object.

Implementation of the Zero Accident Policy requires firmness by pointing to Spamau and Dislambangjaau and Disinfolahtaau to use the application so that the interoperability business processes can be realized in line with the Zero Accident Policy. The Air Force leadership needs to form a working group in compiling applications with the same standard indicators comprehensively and objectively by involving various elements of the Air Force, especially Dislitbangau in order to support the Air Force's zero accident priority program.

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