DESIGNING DYNAMICAL SYSTEMS FOR SECURITY AND
DEFENCE NETWORK KNOWLEDGE MANAGEMENT. A CASE
OF STUDY: AIRPORT BIRD CONTROL
FALCONERS ORGANIZATIONS

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Abstract. The main purpose of this paper is to show and highlight through
an example, the relevance of designing a properly strategic communication
model (SCM) in order to improve organizations efficiency standards when a
sharing knowledge network is used. This example shows as well that even if
this configuration upgrades the competitor's standards it will give as an answer
the ontological foundations for the knowledge to be shared that guarantee the
best practice involved in the framework of the Knowledge Management (KM
process).

The case of study takes advantage of some lesson from Network Centric
Warfare (NCW) and the Network Enable Capability (NEC) systems to devel-
oped a Strategic Communication Model that looks for increasing the falcon
breeding efficiency which it is a direct function of the falcons flight efficiency
which creates a free wild-life area in the most sensitive airport locations and
which is a priority concern of nowadays falconer's organizations.

1. Introduction. Several management techniques and procedures are involved
nowadays in usual knowledge management (KM) transfer process, but some of them
when are arranged by the common stakeholders of an organization under an appro-
priated strategic communication model, allows to increase the organization and
competitors efficiency level to higher values by avoiding competitive obstacles of
each stakeholder.

Usual KM transfer processes are based in data and technical information man-
agement in where the stakeholders share some of their knowledge with an added
value which was built through their expertise skill developed in different fields of
study. However when the Knowledge owner is a competitor, the rest of stakeholder
finds out a wide barrier to these transfer processes but when the knowledge runs
under a sharing process set by an appropriate communication model, the Knowl-
dge and Technology Management (K&TM) is able to avoid competitive barriers
and become an important tool for the entire stakeholders involved.

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The present financial status makes a break point also in K&TM transfer due to funding restrictions that limit the traditional value chain generation from universities research programs, research centres, and other public or private development projects. This break-point forces the stakeholders to consume their own resources to carry out the R&D&i to improve their existing innovation competitive advantage and standings that support the organization efficiency, up to this point the organizations need to free resources from unnecessary processes that do not produce any profit or just because they do not contribute to increase the organization efficiency and improve all the technology transfer process involved in todays framework to access the knowledge needed for this purpose.

According to KM framework in relationship with R&D&i strategy, applying deductive knowledge extracted from the most common net capabilities management experiences seems to be a good opportunity to configure the KM processes under a specific strategic communication system to design an inductive knowledge mechanism to lead processes to fulfill the ontology knowledge gap existing in each field of study.

The objectives of this paper are: I) to review some traditional K&TM processes as well as some R&D&i processes; II) Explain under a functional point of view how KM through a network configuration helps to reach goals that require several disciplines from the organizational structure; III) Study KM in Defence Framework to extract some lesson that can help to design a SCM that may improve the case of study analyzed.

2. Knowledge management and technology transfer. The KM and Technology transfer process has been widely analyzed through the industrial activity
as a management process in which all the stakeholders interplay in a closed loop of founding, research, development, innovation and production that lead to create competitive advantages in a specific sector or in a specific market where the organization performance and strengths will not be, just by themselves, enough guarantee to extend the organization commercial activity.

2.1. Traditional K&TM process. The traditional K&TM Process is defined as the process that takes place in an appropriate private or public financial environment and in which the knowledge transfer mechanism (University-Enterprise-Society) explains how these stakeholders work together under the administration headlines to provide knowledge and technology to solve the actual and future social needs [21].

Public and private stakeholders work together under this model to reach their individual objectives thanks to a sharing process for knowledge transfer through R&D&i environment (see fig.1). In the other hand the financial break point mentioned before in relationship with knowledge acquisition has forced most of the enterprises to develop some strategic models to reach higher efficiency in the K&TM process. Nowadays trend focuses in several strategic communication models that could be used by Organizations to set their knowledge transfer process in other to reach the goals associated to K&TM, as an example the next model call Strategic Communication Model for Corporate Organizations [3] which shows the next four different stages (see fig.2):

- **Stage I: Preliminary Diagnosis.** The start point is an internal analyzing process to define the current enterprise state and the strategic base line.
- **Stage II: Strategic Analysis.** The exhaustive information search and diagnosis are used to rewrite the Communication organization goals.
- **Stage III: Strategic Statement.** Once that all possible scenario deviation has been considered the strategic stamen can lead the organization to next stage.
- **Stage IV: Strategic Implementation.** This stage includes the strategic planning decision, the development feed-back process and actions needed to support the decision making involved.

The design of this model can be used out of governmental limits and adapted to any organizational structure in where the communication seems to be a strategic tool for goals achievement in the field of KM and R&D&i process.

2.2. R&D&i management process. Organizational R&D&i Management process has been widely analyzed and classified through each one of the formal structured developed known as linear models, step models, Interactive model, integrated and net models [29]also developed to be used as a management tool to improve the competitive standards of the small and medium size enterprises [16].

Inside the European framework and the Spanish convergence regulation process in relationship with R&D&i, the public administration offers several management improvement programs to help some organizations to increase their opportunities to survive in todays global market [1] but the environment changes take place so fast that there are not enough reports about examples and cases of studies applied to the kind of enterprises mentioned before. Spanish standards show how even in the last reviewed R&D&i editions the only model proposed still making reference to the most common stage model or chain-linked model [15] (see fig.3).

Through seven stages the Kline model describes the next key aspect:
1. **The Linear Process.** Any new idea starts a sequence that begins at the expected market study and ends when the innovation is commercialized.

2. **Internal Feedback Process.** The feedback between two closed stages tries to solve any undesirable deviation from the base line projected.

3. **General Feedback Process.** As a general guarantee to improve the final result.

4. **The Scientific and technological Knowledge interaction.** The knowledge background allows the organization to move from a stage to another and if this one is not enough then a new research process tries to develop it.

5. **Both way process.** Research & Innovation works to force market in what is call a Technology Push?strategy.

6. **Relational process.** Marketing analysis stage and Researcher may provide specific solutions to solve the market problems

7. **Cycle Innovation process.** First place the organization has to watch the market, next step is to focus on market problems so all the stakeholder probably will need to get a specific train to increase their capabilities, another next step will set up all the actions needed. The cycle ends with a lesson learned process to increase the organization Knowledge

These processes are no longer useful under a global market in where there is a closed link between the organization and the customer thanks to nowadays technologies, which otherwise did not exist when this model was defined, so in order to give a valid answer to this circumstance, a search inside the network methodology management may be of interest to find out a strategic model updated to todays enterprise reality. The defence Knowledge processes may be a valid starting point of study because these processes are characterized by the integer of KM through Transfer processes from Technological Observation Centres and other Research Institutions as well as processes in where the stakeholders interacts and manages network capabilities that take place under international cooperation’s agreements.

2.3. **Knowledge management network.** Nowadays communications technologies for networking configurations allow to take an advantage over the KM processes and in specific way over the scientific and technological knowledge involved.
in R&D&i process. So there are already several ways in which the networking is being exploited to earn profits some of these ways are collaborative learning networks, virtual networking environments, networking for educative ecosystems, design thinking through networking, networks for ontology development.

Other examples of networking to reach goals that require several disciplines from the organizational structure may also take advantage from the Organizations cognitive qualities by focusing on its creativity and communication abilities [7] Nevertheless these processes must be planned taking the technological and methodological knowledge of the organization into account [13] to force the working teams to engage each others with a cooperative strategy in order to reach a desired goal.

There are some working headlines that try to take into account the organization features mentioned before in order to create a network in where the stakeholder can developed their competences through net-learning [24] These are:

- **Experiences and Knowledge Exchange.** The past experiences make a condition of how the future relationship between the organizations will be.
- **Work in Sharing Projects.** When the organization is up to work in sharing projects it means that there is a standard developed for that purpose.
- **Give and receive other users support.** Taking the internal Intellectual capital into consideration forces the organizations to develop an active role in the knowledge exchange.
- **Evaluate the ones and another users work.** The feedback processes are essential to improve.

Theses headlines are included in the accepted definition about the support services used to reach the organization networking knowledge goals, which states that support services are defined as software tools that increase the learning network viability and make easier the network stakeholders operations [24] The learning network under this definition seems to be recognized between the stakeholders as a domain that does not belong to just one net-member but all of them and it represents the common interest of a unlike collective group. The ecosystem in where
these groups interact has been defined by other experts as Educative Ecosystem when are focused on the educative contends [17] and are characterize by:

- The information is centralized and this makes easier to localize it
- The communication follows a diffusion model that starts at its core and expands the information outside until it reaches the connected users
- Standard services or product. A common structure must exist to give support to the information itself and the communication processes needed in what it is called a kind of bone structure in where all the options are analyzed starting at the standardized foundations of the organization

This information can be combined with some of the most important key concepts in model management which are, as an example, the quality standards definition, the scope limitations and the procedures development or acquisition. All of these key-concepts consolidate the development of a service inside of any organization but when the network is an important part of the KM framework it is needed then that the communication process attend to several variables of the educative environment [19] In relationship with this matter, the Europeans Commission white-paper cites that it must be requested that all users have an easy access to any information database through any available media centre, laboratories, institutes or administration offices as a guarantee for full information access [23]. To preserve the free information transfer between users, the organizations needs a strategic communication model that allows delivering a collaborative process that gives support to KM network with no reserve in relationship with the performance of the communication itself.

Under these criteria the “Design Thinking” may be a useful tool as a previous strategy to create the foundations of a collaborative system applied to KM. Design thinking resumes a communication strategic process [11] [25] inside the organization framework in which the next sub-process will be found:

- **Understand.** This process requires the organization to acquire all the ontological knowledge in relationship with the matter of study and, after an internal organization process, understanding the circumstances and the minimum concepts needed to guarantee the deep learning of the knowledge dimension about the case of study.
- **Observe.** By this process the organization extrapolates the knowledge from other enterprises or governmental institutions in where it was used or could be used to solve a similar Organization’s needs. This is a reflexive process that requires the understanding of the Organizations needs and others dominions analysis capability.
- **Define Point of view.** Each working group will focus on its own resources according the knowledge areas under their full understanding and will provide solutions linked to these strengths.
- **Ideate.** This is the creative process in where all solutions considered are interrelated with the strengths of the whole group to provide a specific solution to the Organization’s need.
- **Prototype.** This is the first real approach to the solution that satisfies all the technical or conceptual specifications extracted from the previous process and that will be validated in the next step.
- **Test.** This process validates the solution proposed before by testing all the models, prototypes, etc and finally by the formal communication of the final user acceptance.
3. KM in defence framework. The Security and Defence Industry, including all the governmental observatories for military transfer technologies, acts as an independent stakeholder for R&D&i and it is allocated in the management transfer model as a dual mechanism in where civil and military environment interact together[5]and makes all the enterprises related with this industry develop a Focus on Defence Organizations (FDO) strategy centred on socioeconomic and military results and therefore the entire society profit. The KM in Defence framework is a mixture of communication and knowledge management processes subject to corporative strategies in where a global vision of the knowledge itself and the expertise involved is needed to improve the transfer process between common industries and defence and security industry (see fig.4). The Defence Industry in this framework acts as one more stakeholder in R&D&i processes that looks for taking advantage on the industry knowledge to enforce its capabilities.

The Defence Industry trend is to economize the transfer processes to reach the highest efficiency standings, perhaps this is a consequence of a continuous budget reductions trend under general financial crisis. Therefore this situation lead the rest of the enterprises involved that instead of ceasing their activity, replace their external funds with own resources in order to offer through knowledge tested technology or services to final customer, this matches with the increasing risk for the supplier enterprises by assuming the cost of each Organization’s goals mistaking while this circumstance takes place.

Under this environment and as long as the own resources keeps decreasing the risk of running out of inter-financial founding increase, so in order to guarantee the financial support for R&D&i, the Organizations must find out some kinds of synergy to share the cost and the risk involved in these processes. Here is the perfect scene in where the communication strategic models play an important role to solve this problem by putting in common all the resources and all capabilities that could help the organizations to reach their specific goals. Therefore Organizations can find out from inside the Security and Defence management activities, some management models that are not only focused in knowledge management but also in Stakeholders Capabilities management through networking applied for military purpose, these are the Network Centric Warfare (NCW) and the Network Enable Capability (NEC).

These models (NCW & NEC) theory starts around 1988 with the Revolution on Military Affairs (RMA) developed by Andrew W. Marshall, nowadays director of the United States Department of Defences Office of Net Assessment [12], and probably was developed due to the complex nature of the data managed in the field of security and defence that required a new and practical methodology to be applied for the military resources management, so the RMA was basically a new structure able to take advantage more efficiently of not only the information itself but the resources involved. With the incursion of the information and communication technologies (ICT) into organizations culture the networking frame opened a new available way to improve the efficiency of this model. One of today definition for network resources management, under the point of view of Security and defence and widely accepted by Spanish Ministry of Defence sates as follows:

“Under the common definition of Net-Centric and other related terms, it is made a reference to any driven initiative to take advantage of the ICT era for the military operations deployment” [8]
The two models mentioned before display some differences and similitude from each other and are easily identified at present, one starts at United States of America and is the one described as Network Centric Warfare (NCW) and the other starts at United Kingdom and is commonly named Network Enable Capability (NEC). However both models manage efficiently all the interesting information which may be integrated in decision making processes concerning to an operative stage that previously has been configured under a modular design.

3.1. Network enable capabilities systems (NECs). The NEC system was originally designed at the UK, under one of the ministry of defence’s program in order to improve the advantage of present and future networking framework to manage capabilities and military assets with the truly purpose of being able to give fast answer to fast changes in todays army forces environment. The KM lesson from this experience states that the capabilities can be sorted by seven leaderships characteristics which are in a hierarchic descending order: The information, the training, the future prospects, the defence the sustenance and the operation itself [27] These characteristics in turn are created under four main levels (see fig.s5 & 6) that represent moreover the time framework associated to each one of the seven characteristics.

- **Level 4**: The long term capabilities planning, usually defined in terms of years.
- **Level 3**: Capability solutions that includes option and choices search and decision making process. The time framework is set in months.
- **Level 2**: Implementation of specific solutions. This level includes updating the existing capabilities or creating other ones in a timeline from weeks to months.
**Level 1.** Network-enable operations. This level represents how the technology being combined with the systemic structure provides the integration profit. The timing is measured in minutes or hours.

![Figure 5. Development and Capabilities Levels](image)

Some NEC applications have a service oriented software architecture when they are defined as a functional systems integrator for mission accomplished [22], these systems includes people, processes, procedures and any facilities needs for their implementation as well as all their capabilities. The main attributes of these integration systems generates a cycle under Knowledge Management frame which shows clearly the next KM lessons:

![Figure 6. NEC Readiness Themes Levels](image)
• **Dependability.** It represents the restrictions that are involved in the making decision processes.

• **Agility.** Ability to provide solutions to the faster changes that take place in the systems framework.

• **Interoperability.** The system is where the stakeholders interact and so it must provide a common framework to allow these actions.

• **Availability & Affordability.** All Organizations shall be able to give support to their strategies and to guarantee that all the resources are ready to use whenever it is needed.

Other lesson may be learned from a number of core themes which are arranged for the NEC development, these are:

• **Agile Mission Groups.** This capability allows the organizations to raise several working groups in where the knowledge is able to be shared or coordinated.

• **Fully Networked Support.** The previous and the following support must not been short to the operative theatre, it must include all nongovernmental stakeholders as they are the industry, universities, public services, etc.

• **Flexible Working.** The resources and the task force must be reconfigured to provide faster answers to any change in the framework.

• **Synchronized Effects.** Adding feedback processes to the frontier between planning and acting, the whole processes can be improved and synchronized within the present environments.

• **Effects Based Plannings.** Strategic Planning processes centered in resources management and its direct effects allow the organizations to overtake the next possible framework.

• **Shared Awareness.** This will help the stakeholders involved to improve their environment understanding.

• **Full Information Availability.** The existing resources must allow a software platform to gain full information access, filtering non interesting data at anywhere and anytime.

• **Resilient Information Infrastructure.** To guarantee a secure environment for resources and knowledge under a fulltime availability framework.

• **Inclusive Flexible Acquisition.** The mechanism needed to involve all the stakeholder in the whole process must be developed, so the incursion of new technologies and the acquisition management planning can be efficiently deployed.

### 3.2. Network Centric Warfare Systems (NCWs)

The NCW systems were an evolution of the RMA theory based in the information era changes which have been dominated by the co-evolution of economics, information technology, and business processes and organizations [6]. This process of evolution includes three main themes that characterized the NCW which are the changed focus from the platform to the network, the stakeholders no longer viewed as independent actors to viewing them as an interacting group and the making strategic relevance to answer effectively to the changing environment.

In relationship with KM frame there are mainly four basic dominions which are important lessons to be analyzed in order to extract information suitable to be used in other environment, these dominions are the framework or physical domain,
the Information itself, the cognitive dominion as the know how reported by the se-
nior experiences and the organizational dominion in where the processes take place
subjected to the organization hierarchy characteristics. The domain influencing
actions are developed by making decision processes in where the collaborative net-
works allow to apply the knowledge and understanding from the stakeholders to the
organizations purpose (see fig.7) so the highest efficiency standings are guaranteed
by these processes.

The equilibrium between the management dominions is the framework that lim-
its the scope statement in security and defence processes management (see fig.8)
and in where planning, communication, command, are coordinated and operative
actions processes are coordinated [20]. Among all of these processes the Organi-
zation Command and Control (C2) stands out by suggesting the next five steps
[30].

1. The framework Analysis. As each environment may have own regulations
   and circumstances.
2. Decision-Making Model Design. The model purpose is to direct the com-
   munications and information management processes to give support to the
decision-making process.
3. The effective actions statement. The model must help to identify and
   communicate the available possible actions to be considered.
4. The Organizational Structure statement. The Organization may be
   adapted to actual circumstances in order to allow the interactions between
   the tactical and operative domain within the organization’s environment.
5. **Design Analysis by consistency testing process.** The organizations need several feedback processes in all domains to guarantee the perfect adaptation capability.

![Image of KM Domains interactions in NCW systems](source: [20])

4. **Strategic communication model.** The enterprises and organizations overview about technology transfer processes shows how these processes act as communication processes by themselves, just in the same way it happens when the knowledge management is focused on sharing information inside and outside of the Organization limits. These communication processes require a specific strategy according to the market or environment in where they take place and also according to the stakeholders specification involved and the knowledge nature itself as well.

Defining appropriate communications models to every possible scenario seems to be a must when the collaborative relations between enterprises, customers and suppliers are a determinant for the enterprises success, just because the knowledge absorption capability is improved when an important dynamic skill capability is added through these models. The use of specific communications models leads the stakeholders to reach more and faster information and knowledge and therefore a chance to reach competitive advantage in the market field [5].

A proper Strategic Communication Model (SCM) also allows finding out new market sectors that could be hidden due to the stakeholders unknown or missing information and sometimes even due to limited resources that cancel any proposal for new R&D&i projects. An appropriated SCM guarantees that all stakeholders (see fig. 9) share their information and knowledge and even their limited resources to give support to the industrial and technology development and therefore to reach competitive advantages.

However integrating SCM into a corporative environment requires several and complex processes in where all the decision and tactics interact to reach the Organization communications goals [2], so if the organization configures a model in where the communication takes a strategic role, then this model could be not only the bridge between all the stakeholder mentioned before but also the framework in where the interactions takes place.
The aim of this paper is to analyze a case of study under a competitive framework in where a SCM based in a NEC configuration allows to push down any entry barriers and facilitate to develop a Net-KM process to reach ontological knowledge and therefore to increase the organizations efficiency.

5. **The case of study characterization.** The case of study selected consists in the analysis of a falconry service for wildlife control at an airport area. The falconry is a traditional activity of breeding, keeping and training falcons to keep critical airport areas free from birds and other wildlife in order to avoid bird strikes and collisions with aircrafts.

The falconry requires a wide experience in the fields of breeding and training, this experience is owned by the falconer through his intellectual capital learned along years of hard work in this matter. All falconer agree nowadays that the most common key to have the process under control is to find out the truly “right hunger” grade for each falcon at any time. This seems to be expected because the falconer uses a falcon that flies above critical areas at the airport in order to create a predator’s territorial brand on wildlife natural mind, the falcon is rewarded with food for flying according to the falconer training. So if the falcon has been fed in excess previously he will not start the trained fly, probably the falcon will settle to rest as soon as possible or even escape from the falconer. Indeed if the falcon has not been feed properly previously he will be too weak to fly.

The falconer that uses falcons to create predator’s territorial brand trains the falcon for hunting but also teaches the falcon not to eat the prey but the food provide by the falconer. All the falcons are weighed day by day in order to follow a specific diet designed by the falconer. The key in this case of study is that there is not any research in where any falconer can find the amount of food enough to create a “right hunger” on the falcons that has been feed. This kind of knowledge is the know-how of every falconer and it is learned through day a day experiences.
This case of study represents a common case in where the KM is hampered sometimes because it belongs to the intellectual capital of the falconer and other times due to the competitors threat that can easily take advantages from others know-How (see fig.10). Under this scheme the falconry efficacy is reached through the falconer’s testing and errors without taking into consideration others falconry experience, this makes the full system be limited inside every falconer.

By comparing this characterization with a simplified diagram, the stakeholder can be identified as Organization (Falconry), Communication Model (The way the falconer interact with the customers), the Customer (the airport that hire the falconry service) and the competitors (Other falconry that in the future may compete to be hired by the airport instead). So the process can be resumed as follow:

**Figure 10. Example of a Common Falconry Communication System**

The Organization through the Communication System (see fig.11) interacts with the customers (A), the customers will feed back information through (B), but at the same time competitors can extract some information about the organization by analyzing the customer behaviour (F). The competitors act in a similar way with their customers through their own communication systems (D), get their feedback (E) and allows a non desirable information flow from the customer to other organizations (C) so the Organization strategy should try to maximize the efficiency of process (A), (B) and (C) while minimize the flow of the process (F). The (D) and (E) processes take place independently from the organization and depend on the strategic model designed by the competence, so this is a SCM in where the organization cannot act straightaway otherwise may have an indirectly influence through (F).
6. SCM for KM proposal. The strategic communication model proposed for Knowledge Management development gets to produce knowledge transfer between the entire stakeholders (include competitors) without putting in risk their competitive position or their intellectual capital (see fig.s12&13). Through an specific SCM, the knowledge is managed in a net configuration in where all the stakeholder provide the inputs needed to improve this knowledge until it reaches the highest grade that deploy ontological knowledge as an answer. Then any Organization or Competitor may take advantage by improving their processes efficiency when applying the best practices based on this knowledge.

The SCM proposed allows competitor to collaborate to produce ontological knowledge by transferring some of their own knowledge to a KM network that has been previously configured in order to share specific information desired by all the competitors and at the same time preserving their know-How from each other. This network has been developed through an online Software application that provides a fast estimation of the falcon success by submitting the falcon breed, the age, the temperature, the atmospheric pressure and the relative air humidity and the previous feed. In order to guarantee a cycle process of improvement the software creates as may Data Bases as Falconers are registered in the system and allow them to register their falconry daily records but never share these DB between the competitors, the system only provides the result of applying an algorithm that has been worked out from the all DB registered.

The best practice nowadays to create a predator’s territorial brand on wildlife natural mind is through a mixture of several techniques (Biological, Technical, etc) but overall of them for its excellence results the traditional falconry show up as the basic and more efficiency option [31], the model proposed is expected to improve even more this process for integrating a tool that will provide support to configure the falcon diet that ensure the best result.

The initial study is being developed at the Spanish Air Forces Academy Airport and the falconry service hired which offered their daily record journal from the year 2004 until 2014. This falconry service registers day to day seven different variables, the falcon weight, the food composition, the falconer evaluation, the temperature,
the relative humidity, the atmospheric pressure and the wind speed, these variables means that almost 2.555 records per year and falcon must be analyzed. The falconry owns ten different falcons so it increases the total data to 25.550 records per year/falconry, now for ten years it means that 255.500 records must be analyzed to extract the first algorithm that will be used to give support in the decision making process.

The SCM main objective is the optimization of the falcon breeding thanks to an online application via web that follows to improve the existing knowledge about the proper amount of food that it is required by the falcons to fly successfully. When any falconer submits the critical variables values for a falcon, the systems returns a percentage value that represents the probability of success according to a measurement scale from zero (means probability of flying away or total fly failure) to five (means probability of full success), the falconers can use the system to record their falconry notebook and so the system can update the algorithm that calculate the probability mentioned before, in the meantime the falconers does not have access to other falconers records and this allows them to share information without risking their intellectual capital.

![Figure 12. Strategic Communication Model Proposed for Airport falconry](image)

The falconer behaviour as a competitor under this SCM sends and receives the same information as any other competitor so this tie allows to improve the results by tanking an advantage of a relational knowledge that conclude the feedback that leads the falconer to reach the highest grade of efficiency.

7. **Conclusions and future works.** This paper states a research that tries to lead the nowadays falconry breeding to the highest efficiency standard for the airport wildlife controlling and this case of study will be an example of how designing a
The Strategic Communication Model proposed aims the competitor to collaborate due to an algorithm which provides probabilistic result for a valuation range between zero and five according to the next table:

| Value | Description                                                                 |
|-------|-----------------------------------------------------------------------------|
| 0     | The falcon flies away and will not return.                                  |
| 1     | Bad flight. The falcon alights unexpectedly.                               |
| 2     | Regular flight. The falcon will neither fly at the desired high or around the whole zone |
| 3     | Good flight. The falcon flies at the proper high but will not cover the whole area assigned |
| 4     | Very Good flight. The falcon flies over the whole area assigned but returns lately |
| 5     | Excellent flight. The falcon flies at desired high even success in hunting and returns when he is called |

The online app uses a friendly interface that helps the falconers to manage raptors and submit the weight of each one, the amount of food assigned and other variables such as temperature, humidity and atmospheric pressure, all of them provide thanks to the algorithm the expected probability of happening for each value on the table if the raptor is flown.

These algorithm results may help the falconers to have a wide knowledge about their raptors and have the breeding processes under control. This knowledge set the foundation of the decision making process in relationship with the amount of
food that may guarantee the best result of the raptor at its next fly, this is known as “Right Hunger” status which is the main goal to have it under control by any falconer for the best breeding process.

The raptor management is not only limited to identify the right hunger, it also may help the falconer to read any unexpected variation of the raptor weight as a warning signal to prevent any illness of lack of vitamins, for this purpose the SCM developed allows registering additional data in order to increase the information that helps to understand the real status of the raptors and its availability to create an effective exclusion area for wildlife in airports.

As a secondary objective this SCM follows to develop inductive knowledge that will lead a future research lines about strategic communication and its relevance for developing new abilities or competences in specific industrial activities through knowledge network management.

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