



Carciel

Generic Proposal No.1

 フランス産業ドローンに関する
コンサルティングスタディーのご提案

カーシエルグループ
Aerospace & Defense Innovater



欧州ドローンビジネスコンサルティングのご提案

Class	Category	Normal employment	Normal Endurance (minutes)	Normal Payload (kg)	Normal Operating Altitude (ft AGL)	Normal Mission Radius (LOS km)	Example platform
CLASS I (< 150 kg)	NANO < 0.2 kg	Close range	10	0.05	Up to 200	1	Black Hornet
	MICRO < 2 kg	Tactical PI, Sect, Individual (single operator)	Up to 30	0.2 to 0.5	Up to 200	3 to 5	DJI Phantom NANOHAWK NX70 (Novadem)
	MINI 2-20 kg	Tactical Sub-unit (manual launch)	Up to 120	2 to 5	Up to 3 000	10 to 25	Scan Eagle, Skylark, Raven, IT180 DT26X (DELAIR)
	SMALL > 20 kg	Tactical Unit	Up to 240	5 to 8	Up to 5 000	50	Luna, Hermes 90 IT200N
CLASS II (150 kg to 600 kg)	TACTICAL	Tactical Formation	Up to 600	100 to 700	Up to 10 000	200	Sperwer, Iviev 250, Hermes 450, Aerostar, Ranger
CLASS III (> 600 kg)	MALE	Operational / Theatre	Up to 1440	700 to 1000	Up to 45 000	Unlimited	Predator B, Predator A, Heron, Heron TP, Hermes 900
	HALE	Strategic / National	Up to 1440	1000 to 2000	Up to 65 000	Unlimited	Global Hawk
Strike / Combat	Strategic / National			Up to 65 000	Unlimited		
Francis Duruflé							
22 July 2018							



調査範囲

CLASS	カテゴリー	飛行時間	積載重量	最大飛行高度(AGL)	ミッション半径
CLASS I	NANO	市場過密および性能限界のために産業用目的には不適			
	MICRO				
	MINI 2-20 kg	最大120分	2kg-5kg	900m	10km-25km
	SMALL >20 kg	最大240分	5kg-8kg	1500m	50km
CLASS II	TACTICAL	ほぼ軍事用で初期投資が大きい上に開発時間も長く、産業用目的には不適			
CLASS III	MALE				
	HALE				
	STRIKE/COMBAT				



Class2:SPERWER



Class2:HERMES450



Class3:PREDATOR



Class3:GLOBAL HAWK



軍用ドローン：長距離無人偵察・爆撃用機

Summery

The aim of this report is to provide a detailed overview of the drone market in France. It is important to understand that still today the official name is not drone but Remotely Operated Aircraft System (RPAS). Like in nearly all other European countries the autonomous operation of drone is not yet authorized.

As soon as the local regulation was available it has been a tremendous increase in drone companies (1 every 4 hours in France).

It is obvious now that we will not come back to old times and stop using drones. It is a mandatory tool used in many different domains and the list is not yet closed.

This report will present the commercial picture of drones in France

1	Market analysis of drone activity in France and other selected European countries
1.1	List of manufacturers
1.2	List of operators
1.3	Key players
1.4	Market share
1.5	Market volume

Summery

This report will give the status of evolution and a prospective study on what is quickly coming in this domain. The drone industry is very young and composed of very innovative companies both for the design and manufacturing and for the operations.

The list of applications is not yet closed as every day you discover a new possible application with the drones. They are not all commercially attractive but the capabilities of this new tool are very important.

This report will present existing or new applications for drones that are not limited to France or Europe but worldwide.

5	Future Evolutions
5.1	New applications and new products in drone domain
5.2	Medical
5.3	Agriculture
5.4	Construction
5.5	Safety
5.6	Security
5.7	Environment

Summery

The aim of this report is to provide a comprehensive overview of the technologies involved since the beginning in the drone industry.

Design of drones for civil application has been possible thanks to the impressive evolution of the technology. Integration and cost reduction of keys technology blocks leads to the first design of the drones.

Since this time the technology has quickly evolved and allow now complex design and capabilities for the new systems.

Autonomous functions are more and more developed and next step will be swarm capabilities with mesh radio and Artificial Intelligence is coming very quickly as well.

2	Technologies used for the drone systems development
2.1	Presentation of the different architectures of drones
2.2	List of technologies involved in the design of drones
2.3	Core components for the drone designs
2.4	Autonomous functions : status and evolution through technologies

Summery

This report will give the history and the status of the regulation for drones in France and Europe.
When a company was willing to make a flight before April 2012 it was a long process (3 Months) of discussion and negotiation with the French Aviation Authority (DGAC) and then you received a unique daily authorization with a Police plate to pint on your drone. Hence commercial usage of drones was not possible.
In April 2012 the Aviation Authority (DGAC) released the first decree to allow civil drones to operate in France (following some constraint in term of range and altitude).
As soon as the local regulation was available it has been a tremendous increase in drone companies (1 every 4 hours in France).

3	French regulation on Drones (since first ministerial decree April 2012)
3.1	History (1st decree in April 2012 and before)
3.2	Evolution of regulation
4	European regulation (under construction)
4.1	Status of European regulation for drones
4.2	Position of European countries (tensions, alliances, ..)



安藤浩平 (工博)

CARCIEL Group President & CEO (代表取締役社長 カーシエル株式会社)

[1987年仏国立コンピエーニュ工科大学航空宇宙学部博士課程修了]

強み：長期仏国留学および仏国企業勤務における日本・仏国間の産業文化の相違を熟知

役割：

- ・日仏産業間における架け橋的役割
- ・仏国航空宇宙企業との人的ネットワーク



DURUFLE Francis

CARCIEL株式会社 取締役(代表取締役社長 CARCIEL Europe SAS)

[1990年仏国CNAM(Conservatoire National des Arts et Métiers)電子工学部修士過程修了]

強み：仏国産業UAV理事長(メンバー約350社) によるネットワークおよびVTOLに対する高い技術力

役割：

- ・当社新パートナーの調査
- ・共同研究における中心的役割



Dr. BURUNEL Christian

CARCIEL Europe SAS Director (CTO)

[1983年仏国 Ecole Centrale Paris (ECP) 電気工学部博士課程修了]

強み：20年間に渡る電子機器の応用研究開発経験および15年間に渡るINFOTRON社におけるCTOとしてのVTOL社 (Class 1 Mini-UAVs) の設計・製造責任者経験

役割：

- ・UAV設計・製作に関する専門的な知識・経験

MICRO-ELECTRONICS

ITT (Germany), Alcatel Microelectronics(Belgium), Stepmind (France)

TELECOMMUNICATIONS

Matra Communication (France), Nortel (Canada), Matra Nortel Communications (France)

2007年 Infotron社設立

軍用・民事用UAV ITシリーズを開発・製造・販売企業。フランスを初めとしヨーロッパ・アジア各国で普及。特にフランスではIT-180-60がフランス消防庁スタンダードミニドローンに指定される。2014年フランスECA-ROBOTICSに同社を売却し、ECA-Group社の上級役員に就任

2018年5月 カーシエル株式会社取締役役に就任。9月にCARCIEL Europe SAS代表取締役役に就任

アワード

- ・ 2009年：フランス産業UAV協会理事（現在、参加企業約350社）
- ・ 2012年：フランス国防省よりInfotron社が最優秀イノベーション賞を受賞
- ・ 2014年：フランス経済省より国家新産業プログラム内の民間ドローンロードマップ代表者に就任



フランス産業UAV協会ロゴ

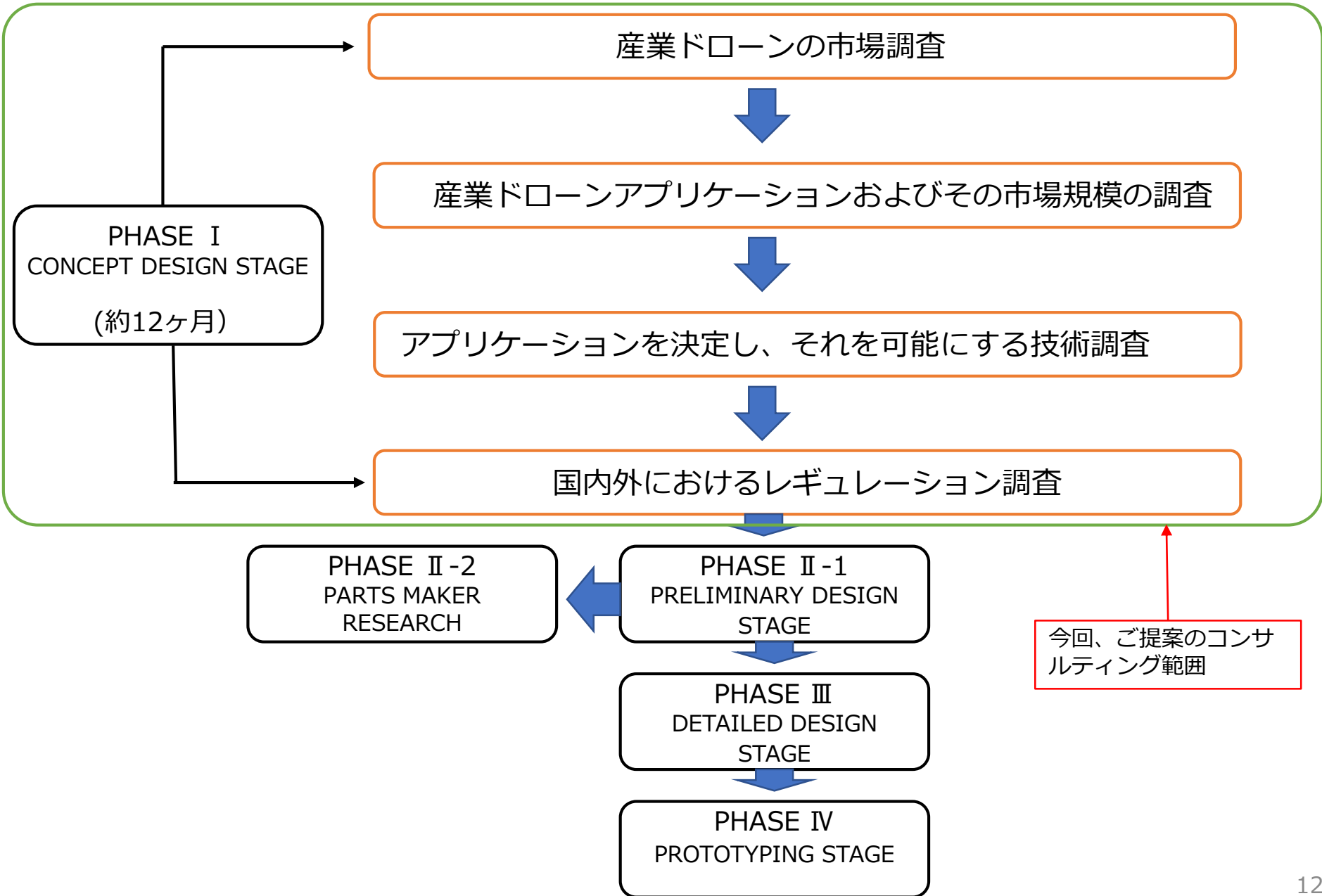


LE DRIAN前国防大臣と国防省にて



HOLLAND前首相とエリゼ宮にて

I Industrial Drone Business Flow



Report No.	Report Title	納期	訪問者	価格
Report A	Market analysis of drone activity in France and other selected European countries	3ヶ月	F.DURUFLE	¥3,640,000
Report B	Future Evolutions	2ヶ月	F.DURUFLE	¥4,570,000
Report C	Technologies used for the drone systems development	2ヶ月	F.DURUFLE C.BRUNEL	¥4,290,000
Report D	<ul style="list-style-type: none"> French regulation on Drones (since first ministerial decree April 2012) European regulation (under construction) 	2ヶ月	F.DURUFLE	¥3,360,000
			合計	¥15,860,000

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