

US CASE STUDY

Renault group spare parts management is considering the whole supply chain.

Issues have to satisfy customer and distributor expectations. International environment needs proper answers to moving situations.

Missions

PART I

Focusing on multimodal issues, downstream supply chain dedicated to the U.S. market is expecting your multimodal transport plan organization considering

- 1- Procurement and shipping constraints
- 2- Needs from the U.S. central distribution center of Milwaukee
- 3- To optimize cost, service to answer customer expectations
- 4- After deciding your organization please show your flows chart
- 5- Your work will be sent back through a report
 - a. Each company function : Finance, purchasing, marketing, logistics, transport by selected modes
 - b. A general report of the company strategy and choices

Spare parts delivery steps

Planning department is collecting each orders daily received from France, other European countries and other parts of the world. Orders are routed to distribution order centers of Flins, Douia and Cergy Pontoise where related inventories are stored. US Market is referring to Cergy Pontoise.

Total number of item references is 70,000 and their availability rate is 96% which is quite significant. Even low demand parts are usually available. 7,000 references out of 70,000 account for 95% of annual turn over. The 63,000 remainig ones are available. This cost is taken over by Renault.

Each order received implies a request passed on to the dedicated distribution center. Considering heavy

parts such as engines, a retrieval machine is able to identify what kind of engine is requested thanks to the barcode printed on the goods issue document and automatically ship it to the shipment area of the center. As far as lighter parts are concerned, an operator is looking for the part in the storage box thanks to the reference mentioned on the form. Then the parts take place on the conveyor unit that will deliver it to the shipment area as well.

At the shipment area, a laser reading helps a palletizing robot to consolidate packages to the same delivery place together.

Emergency parts are delivered by express carrier next day after receiving the order

Before 8 am in France

Noon in other EU countries

Other countries by airway, 6 T are daily shipped from Paris CDG airport are delivered between D + 3 days till D + 7 days depending on flight frequency

Looking for a better organization

Turn over is about 2 billions Euros as far as spare parts are concerned and volume is continuing to increase.

The cost has to be reduced as showing a significant charge. Purchasing department has to make new proposals and has to work it with other Renault departments.

Renault is using all transport modes except pipelines. Loading units might be full containers, consolidated shipments.

Available information are :

Data

Place of shipment

All spare part here are shipped from Cergy-Pontoise center, 30 kms away from Paris. The center is equipped with rail sidings.

Packing

- *cardbox pallet* : with triple lays protecting efficiently the box against humidity (sea and air transport mode)

- *collapsible container* : for European deliveries, quite costly and reimbursed when sent back by the consignee

Shipping conditions

Incoterms are decisive and the ICC 2020 version is applicable here.

Seasonality shows high peaks from May to June and from October to November each year showing a demand 50% than the rest of the year.

Product sheet

Packing list

Outer case dimensions
0.70 x 0.25 x 0.45 m
Unit gross weight : 10 kgs

Pallets are stackable (double stack)
Maximum height of one pallet size 80 x 120 cm is 2 m
Maximum loading weight of one pallet is 800 kg
Empty weight of the pallet 30 kgs
Pallet height 15 cm

Transport modes

F1 - railcar, K70

F2 - trailer

F4 – Sea container

F5 - "Computation of charges" air cargo tariff



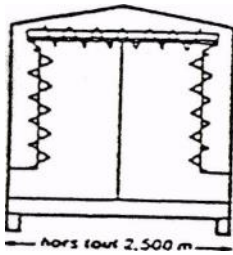
F1

code	K70	
International marking	Kils	
Used for	Palettized cargo	
Specificities	Mechanical tarpaulin making possible to load on both sides	
Useful length	12.50 m	
Useful width	2.78 m	
Useful height	2.50 m	
superficy	35.0 sqm ²	
volume	89.0 cbm	
Tarpaulin maximum opening	8.10 m	
Stowage system	22 points	
Loading options	80x120	31
	100x120	24
	1200x1200	20
load line C	26.0t	
Load line D	30.0t	
Load lines Candt D	26.0 t	
tare	14.0t	
Total length	13.94 m	
Total height	4.29 m	
Height between floor and railway	1.20	

Between bogies rear to ahead	8.94m
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F2

Trailer with tarpaulin



13,60 m
Total weight of rolling
stock
Box and chassis 38 t
Empty box 3 à 4t5
volume 70 to 80 cbm

Sea container



Internal Dimensions

	20'ST 20'x8'x8'6"	40'ST 40'x8'x8'6"	40'HC 40'x8'x9'6"	45'HC 45'x8'x9'6"
Length	5.900 mm	12.034 mm	12.034 mm	13.556 mm
Width	2.352 mm	2.352 mm	2.352 mm	2.352 mm
Height	2.393 mm	2.395 mm	2.700 mm	2.700 mm



Door Opening

	20'ST 20'x8'x8'6"	40'ST 40'x8'x8'6"	40'HC 40'x8'x9'6"	45'HC 45'x8'x9'6"
Width	2.340 mm	2.340 mm	2.340 mm	2.340 mm
Height	2.280 mm	2.280 mm	2.585 mm	2.585 mm

Weight

	20'ST 20'x8'x8'6"	40'ST 40'x8'x8'6"	40'HC 40'x8'x9'6"	45'HC 45'x8'x9'6"
Max Gross Weight	30.480kg	30.480/32.500 kg	30.480/32.500 kg	30.480 kg
Average Tare	2.230 kg	3.720 kg	3.900 kg	4.700 kg
Maximum Payload	28.250 kg	26.760/28.780 kg	26.760/28.780 kg	25.780 kg

Capacity

	20'ST 20'x8'x8'6"	40'ST 40'x8'x8'6"	40'HC 40'x8'x9'6"	45'HC 45'x8'x9'6"
Nominal	33,2 CU.M	67,8 CU.M	76,4 CU.M	86,0 CU.M

Security Rings

	20'ST 20'x8'x8'6"	40'ST 40'x8'x8'6"	40'HC 40'x8'x9'6"	45'HC 45'x8'x9'6"
Quantity	16	32	32	40
Resistance	1.500 kg	1.500 kg	1.500 kg	1.500 kg

**Road transport cost in France we can get related to a truck with a chassis
Total rolling stock 40 t**

Variable cost per km	Fuel	€/km	0.382	26.3%
	Tires	€/km	0.038	2.6%
	Repair and maintenance	€/km	0.123	8.5%
	Tolls	€/km	0.043	3.0%
Daily cost of drivers	Salaries	€/day	179.97	28.4%
	Travel expenses	€/day	28.14	4.4%
Daily fixed cost	Insurance	€/day	12.59	2.0%
	Taxes	€/day	2.53	0.4%
	Truck daily cost of owning	€/day	55.56	8.8%

	Truck daily cost of chassis	€/day	17.14	2.7%
	Capacity cost	€/day	81.73	12.9%

Time to load and to unload : 30 mm each

Average speed 70 km/h

Driving time : 9 h a day

Procurement management of parts

US Market study

A warehouse which is owned as a subsidiary is covering USA as well as Canada.

- 1- Management of each kind of products
- 2- Procurement policy you decide to apply to match with transport policy

To simplify data each part is referring to a letter code

Appendix 1

En € Parts	A	B	C	D	E	F	G	H
Handling cost	55	25	3	1	2	15	2	2
Ordering cost	650	600	700	750	650	600	500	800

Appendix 2

Reference	Volume per year in cbm dedicated to US market	%	Unit price	Expected procurement time In working days FCL / LCL	Country
A	291		60.00	2 days / 7 days	France
B	1817		6.00	5 days / 15 days	Poland
C	727		7.50	3 days / 14 days	Germany
D	363		300.00	2 days/ 7 days	France
E	1454		03.125	3 days / 14 days	Italy
F	436		32.00	4 days / 15 days	France
G	1090		16.66	2 days / 7 days	Belgium
H	1090		02.5	40 days / 120 days	China
Total	7267				

	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

Gauss table

Information about North American market

Following information are available :

Annual data :

Volume 7 269 cbm

Total weight 950.794 tons

Turn over 20 136 020 Euros

Shipment : 5% LCL/LCL ; 95% FCL

Money rate : 4% (per year)

Exchange rate : 1 USD = 0,80 Euros

Available transport modes :

Sea, 20' FCL, 40' FCL or consolidation LCL

DOCUMENTS

1) SNRI OFFER

7. rue Bernard - B.P. 165 - 93003 BOEIGNY
S.A.R.L. au capital de 160000 €
COMMISSIONNAIRE DE TRANSPORT ,
LICENCE N- 031M

TEL: 01.91.12.12
TELECOPIEUR : (01.91.21.92 R.C.S. PARIS

Collection price from Paris area

Price per kg / Euros	Price-list A	Price-list B
Minimum	14 Flat rate	16 flat rate
to 500 kg	6	7
501 to 1001 kg	5	6
1001 to 1500 kg	4	5
1501 to 2000 kg	3.70	4
2001 to 2500 kg	2.80	3
2501 to 3000 kg	2.50	2.80
3001 to 4000 kg	2.40	2.60
4001 to 5000 kg	2	2.10
5001 to 10000 kg	1.70	1.80

1 cbm=300 kg

price list A : Dept 75 92 93 94 95

price list B : Dept 78 91

2) ACL OFFER

Commodity description/packing	Natl US\$ North Atlantic Ports	Gulf US\$ Ports	PAC US\$ Pacific Ports
Motor vehicle parts Per 20ft ctr Per 40 ft ctr	1025 1475	1550 2340	1425 1860
To Dallas/Fort Worth TX per ctr		2119	
To Harahan LA Per 40ft ctr		1820	
To Houston TX Per 40' ctr		1896	
To Selmer TN Per 20' ctr Per 40' ctr		1675 2125	
To Lyndhurst NJ Per 20ft ctr Per 40ft ctr	1100 1300		
From Hamburg Per 40' ctr	1825		

Extra information :

North Europe – USA rate agreement Ocean and intermodal freight tariff FMC NO 10
From : ports and points in Europe To : ports and points in USA
Except as otherwise provided herein, rates apply per 1000 kilos (W) or 1 CBM (M) ; whichever produces the greater revenue

Drayage Cergy/Le Havre 275 Euros
CSC Le Havre 20'/40' 135 Euros

drayage Cergy / Antwerpen 420 Euros
THC 130 Euros

THC New York USD 420 / 20' USD 500 / 40'

drayage New York / Milwaukee
by rail 1 week USD 800 / CTR
by road 2 days USD 1470 / CTR

transit time Antwerp New York 10 days with stop at Liverpool and Halifax

New York port is an (Natl) North Atlantic port.

SHIPPING SCHEDULE

two departures a week. Containers, Ro-Ro

	ship		Concert Express	Companion Express	Dusseldorf Express	Atlantic Compass	Nuernberg Atlantic	Atlantic Cartier	Stuttgart Express	Atlantic Conveyor	Koeln Atlantic	Concert Express
Closing Time hour		voyage	0202	0203	0803	0204	0804	0205	0805	0206	0806	0207
FCL	LCL	Port										
24	48	Bremen	29.05	5.06		12.06		19.06		26.06		03.07
12	24	Rotterdam	31.05	7.06	4.06	14.06	11.06	21.06	18.06	28.06	25.06	05.07
12	24	Antwerpen			31.05		7.06		14.06		21.06	
12	24	Le Havre	25.05	31.05	5.06	7.06	12.06	14.06	19.06	21.06	26.06	28.06
	NJ	Lyndhurst	10.06	7.06	12.06	24.06	19.06	1.07	26.06	5.07	3.07	15.07
		New York	12.06	19.06	14.06	26.06	21.06	3.07	28.06	10.07	5.07	17.07
	TX	Houston			18.06		25.06		2.07		9.07	

3) CAST – Paris Offer

a) Re : quotation no 04/041

Rovault traffic

We thank you for your quotation request, our flat offer is :

From Cergy 95 to Milwaukee, door to door
 USD 1886 per 20' loaded to 17t774 maximum
 Overcharges CAF et BAF included

Commission rate 45 US\$ per 20'

Our next departures

89087 C. BEAVER 26/05
 89089 C. CARIBOU 31/05
 89091 C. HUSKY 05/06
 89093 C.POLARBEAR 10/06
 89095 C. MUSKOX 15/06
 89097 C. OTTER 20/06
 89099 C BEAVER 26/06
 99101 C. HUSKY 03/07
 89103 C. CARIBO U 08/07

you will be advised at least one month before of any price change due to :

US dollar currency overcharge CAF

Fuel price increase, energetic overcharge BAF or all other charge from our supplier.

Payment terms : freight payable at invoice receipt

b) quotation #108 from CAST EUROPE France

frequency : Antwerpen Montréal every 6 days

freight rate all in door to door including freight, CAF, BAF, CSC, port charges, bill of lading cost and other charges

valid until 31.12.2005

Origin / destination container door to door flat rate

Cergy / Milwaukee 40' 2270 USD
via Montreal

Terminal Antwerpen/terminal Montréal 10 days

Terminal Montreal / domicile Milwaukee 4 days

Do not hesitate to contact us should you need further information.

Annexe D15

ZCZC OAC197 TXD639: HLF B 640626F

A L'ATTENTION DE FRANCIS BACON / CAT BOULOGNE DE :
CATHERINE COLE / HAPAG-LLOYD PARIS

PARIS : le 03/09

RE : « AUTO PARTS » CNTRS 20' ET 40' DRY A DESTINATION DE MIAMI FREE ZONE

SUITE COW. TEL. DE CE JOUR. VEUILLEZ TROUVER CI-APRES NOS CONDITIONS ACTUELLES
CONCERNANT LE TRAFIC PRECITE:

_ PRETRANSPQRT :

_ CERCY-PONTOISE -LE HAVRE: EUR 290 _ FRET :

USD 1350 PAR 20CET USD 1550 PAR 40' ALL IN

(CES TAUX COMPRENENT LES CSC, THC, CAF, BAF ET LIVRAISON LOCALE)

Container service

From US Gulf/South Atlantic

SHIPPING SCHEDULE

Ship		Spirit of Provence	Express Bleiberg	Express Spirit	
Closing time		Voyage	139	278	195
FCL	LCL	Port			
24	48	Rotterdam	05/31	06/07	06/21
24	48	Bremerhaven	06/02	06/09	06/23
24	36	Felixstowe	06/04	06/11	06/25
24	48	Le Havre	06/06	06/13	06/27
24	48	Miami	06/15	06/22	07/07
24	36	Houston	06/18	06/25	07/09
24	48	New Orleans	06/20	06/27	07/11
24	48	Savannah	06/23	06/30	07/14

June shipping schedule example to apply to the whole year

3) France CONTAINER GENNEVILLIERS

NVOCC service

PORTS

	Freight prepaid W/M-CBM/T	M/M
New York	110	110
Milwaukee	250	250

File cost 50 Euros

Export Customs formalities cost 50 Euros

Clearance 20 Euros

weekly departure

merchandise delivered to Gennevillers wharf : must arrive one week before ship departure

Gennevillers Milwaukee, forecast 27 days

Transit time 15 days

SRNI

**TRANSPORTS NATIONAUX
ET INTERNATIONAUX
ROUTE - AIR - MER - AFFRETEMENTS**

Annexe CC

7, rue Bernard - BP 165 - 93003 BOBIGNY

S.A.R.L. au capital de 24.392 EUR

COMMISSIONNAIRE DE TRANSPORT
LICENCE N° 03214

TEL. :01 48.91.12.12

TELECOPIEUR : 01 48 45 21 92

TELEX : 231 926 F

R.C.S. PARIS 331606939 00014

TARIFS ENLEVEMENTS OU LIVRAISONS REGION PARISIENNE

PRIX AU % de Kg. EN EUROS	BAREME A		BAREME B	
M/M	14,50 EUR	FORFAIT	17,55 EUR	FORFAIT
JUSQU'A 500 Kg	06,90 EUR	Les % Kg	07,35 EUR	Les % Kg
501 A 1001 Kg	05,95 EUR	Les % Kg	06,60 EUR	Les % Kg
1001 A 1500 Kg	04,30 EUR	Les % Kg	04,75 EUR	Les % Kg
1501 A 2000 Kg	03,95 EUR	Les % Kg	04,45 EUR	Les % Kg
2001 A 2500 Kg	03,10 EUR	Les % Kg	03,35 EUR	Les % Kg
2501 A 3000 Kg	02,75 EUR	Les % Kg	03,05 EUR	Les % Kg
3001 A 4000 Kg	02,60 EUR	Les % Kg	02,75 EUR	Les % Kg
4001 A 5000 Kg	02,10 EUR	Les % Kg	02,30 EUR	Les % Kg
5001 A 10000 Kg	01,80 EUR	Les % Kg	02,00 EUR	Les % Kg

P.S. Poids arrondi au 10 Kg Supérieur
3 m3 = 1000 Kg

NOTA : véhicule avec hayon élévateur agréé dangereux - Nous consulter

Barème A : Dépt 75 - 92 - 93 - 94 - 95

Barème B : Dépt 78 - 91

Nota : « % » meaning for each 100 kgs

AIR FRANCE
Cargo
AMÉRIQUE DU NORD
FRANCE / USA

**Au départ de : PARIS, BORDEAUX, LILLE, LYON, MARSEILLE, MULHOUSE, NANTES, NICE.
STRASBOURG, TOULOUSE**

GENERAL TARIFF - EUR / KG

To	CODE	Minimum	Less than 45 kg	+45 kg	100 kg	300 kg	500 kg	1000 kg
Anchorage AK	ANC	66,00	10,70	7,65	5,18	3,25	3,09	2,95
Atlanta GA	ATL	66,00	8,55	6,25	3,70	2,17	2,10	2,03
Boston MA	BOS	66,00	7,35	5,53	3,09	1,86	1,79	1,73
Chicago IL	CHI	66,00	8,55	6,25	3,70	2,17	2,10	2,03
Cincinnati OH	CVG	93,00	8,85	6,58	4,00	2,48	2,34	-
Dallas/Ft Wor TX	DFW	66,00	8,85	6,58	3,81	2,25	2,17	2,10
Detroit MI	DTT	93,00	8,85	6,58	4,00	2,48	2,34	2,25
Houston TX	HOU	66,00	8,85	6,58	3,81	2,25	2,17	2,10
Los Angeles CA	LAX	66,00	9,15	6,89	4,15	2,34	2,25	2,17
Miami FL	MIA	66,00	8,85	6,58	3,81	2,25	2,17	2,10
New York NY	NYC	66,00	7,35	5,53	3,09	1,86	1,79	1,73
Philadelphie PA	PHL	66,00	7,65	5,83	3,39	2,10	2,03	1,96
San- Francisco CA	SFO	66,00	9,15	6,89	4,15	2,34	2,25	2,17
Washington DC	WAS	66,00	7,65	5,83	3,39	2,10	2,03	1,96
San Juan PR	SJU	66,00	9,00	7,05	4,30	2,79	2,64	

SPECIAL TARIFF - EUR / KG to NEW-YORK :

ITEM 7119 LIVRES

1,45 EUR Minimum 1000 kg

IMPORTANT : conditions to tariffs

— Air France can only be designed as first carrier, and our network outway point identified when we are not carrying till end destination.

**From : PARIS, BORDEAUX, LILLE, LYON, MARSEILLE, MULHOUSE, NANTES, NICE,
STRASBOURG, TOULOUSE**

GENERAL TARIFF EUR / KG

To :
MONTREAL (PQ)
TORONTO (ON)
TARIFS SPECIAUX - EUR / KG to
MONTREAL .

CODE	Minimum	- 45 kg	+ 45 kg	100 kg	300 kg	500 kg	1000 kg
YUL	66,00	7,35	5,53	3,09	1,86	1,79	1,73
YYZ	66,00	7,44	5,62	3,18	1,95	1,88	1,82

ITEM 7119 LIVRES = 1,51 EUR Minimum 200 kg

1,44 EUR Minimum 500 kg

APPENDIX

Air CAT
Siège Social
Aéroport CDG
9, route du Midi B.P. 10274
95704 Roissy Cedex Tél : 01
48 62 48 00
Télex : 212987 F
Télécopieur : 01 48 62 48 II

FACSIMILE MESSAGE

TO	Francis BACON / IGA	TOTAL PAGES : 2
cc		
FROM	Annette LAUDERES / AIR CAT	DATE : 11th July

AIR CAT OFFER

Our shuttle is able to pick up daily at your Cergy premises on 3 pm to be in CDG at 4:40 pm.
Air company has to receive your cases 4 hours before flight schedule.

TRANSPORT CERGY/CDG and airport cost : 0.25 EUR/KG

USA.. DESTINATION CHICAGO

CONSOLIDATION TARIFF : 1,45 EUR/KG: 5 Weekly shipments

Delivery airport of Milwaukee : USD 2.75/100 LBS in 21 hours

IATA agreement 204-7078

Agreement ATAF 0273

S.A. au capital de 304 900 EUR

R.C. Pontoise B 3 19160552

Siret 3 19160552 00026 APE 7402

