

How to built an Entity/Relationship diagram: The MotoGP example

Manuel Enciso

Universidad de Málaga

<http://motogp.com/>

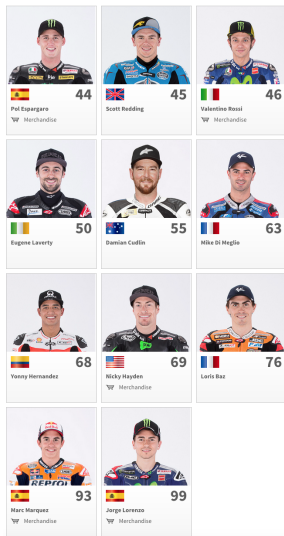
MotoGP™ is the premier motorcycle racing World Championship; an eighteen-race series visiting fourteen countries, four continents and with pan-global television coverage. MotoGP was established as a World Championship by the FIM (Fédération Internationale de Motocyclisme) in 1949. It is the oldest motorsports championship in the world and the premier-class of three racing classes that take to the track on a typical Grand Prix weekend.



How does it works?

- We are asked to store the information of the current season of the “*maximum category*”.
- Ten nationalities of the world's most skilled riders line a grid armed with cutting-edge motorcycle technology with prototype machinery fielded by 5 manufacturers; Aprilia, Ducati, Honda, Suzuki and Yamaha.
- On a Grand Prix weekend there is a race in each of MotoGP.
- A Grand Prix event takes place over three days, with the first two of those for practice. The third day is race-day. Practice times determines grid positions in the race starting line.

- Riders (brief description).
- Riders (full description).
- Each rider belong to a team.
- Information about adjustment in each track are valuable, and it can be shared among the riders. It is up to each rider to do it and the set of riders to share with.
- Teams (brief description).



- Riders (brief description).
- Riders (full description).
- Each rider belong to a team.
- Information about adjustment in each track are valuable, and it can be shared among the riders. It is up to each rider to do it and the set of riders to share with.
- Teams (brief description).



- Riders (brief description).
- Riders (full description).
- Each rider belong to a team.
- Information about adjustment in each track are valuable, and it can be shared among the riders. It is up to each rider to do it and the set of riders to share with.
- Teams (brief description).



EG 0,0 Marc VDS

Scott Redding



Forward Racing

Toni Elias

Loris Baz



LCR Honda

Cal Crutchlow

Jack Miller



Monster Yamaha Tech 3

Bradley Smith

Pol Espargaro



Movistar Yamaha MotoGP

Valentino Rossi

Jorge Lorenzo

Merchandise



Octo Pramac Racing

Daniilo Petrucci

Yonny Hernandez



Repsol Honda Team

Dani Pedrosa

Marc Marquez



Team SUZUKI ECSTAR

Maverick Viñales

Alex Espargaro

- It owns an specific bike for all the season.
- It provides a web, some contact data (email, postal address, etc.) and a description. It also have a logo and a official picture.
- It is composed of its pit crew (one team management, some mechanics and assistants) and one or two riders



CONTACTS

LCR X-Racing S.a.m.

7, Rue du Gabian - 98000 Monaco

Email: honda@lcr.mc

Administration office: headoffice@lcr.mc

Commercial department: marketing@lcr.mc

Media Relations - Elisa Pavan: info@lcr.mc

Fan care: fan@lcr.mc

- MotoGP is very severe, due to security reasons, on team members identification and information.
- The team must provide at the beginning of the season their names, passport numbers, nationality, date of birth, a picture and his email address and personal telephone number.
- MotoGP provides a card pass to access the pit boxes. Each card has a unique identifier (card_id).
- The director role is exclusive, he cannot play another role in the team.

Official teams

- Official teams are selected teams very close to bike companies. So, Repsol Honda is the official team for Honda Motor Co. Ltd.
- These teams are provided with the novelties of its corresponding manufacturer before they are shared with other teams.
- We also store the budget, the creation date, contact data with the home factory and a web link to its home site.



Official events

- MotoGP design a set of event to promote the championship: press conferences, presentations, gala dinner with MotoGP legends, etc.
- In each moment, only one event takes place and MotoGP invites a set of riders that have to attendance the event.
- Invitations are sent to the email of the team including a description of the event, the date, location and telephone number and the name of a contact person.



- Each race takes place in a circuit.
- Each circuit only holds a Gran Prix per season.
- In each date, only one race takes place.
- We split its track in four sections with specific information (length, maxi and min elevation, asphalt type, etc.)
- We also provide data concerning previous records.

CIRCUIT INFORMATION

Circuito de Jerez

www.circuitodejerez.com

Carretera de Arcos 1709 Jerez de la Frontera, Spain (GMT +1)

(+34) 956 151 100

[Google maps](#)

[Jerez Airport](#)

Highway N-IV (E-5): Madrid-Cadiz

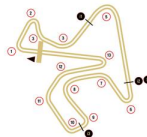
- Each race takes place in a circuit.
- Each circuit only holds a Gran Prix per season.
- In each date, only one race takes place.
- We split its track in four sections with specific information (length, maxi and min elevation, asphalt type, etc.)
- We also provide data concerning previous records.

05/03/2015

GRAN PREMIO BWIN DE ESPAÑA



Circuit	Jerez
Location	Jerez de la Frontera
Length	4.423 mt.
Width	11 mt.
Longest straight	607 mt.
Left corners	5
Right corners	8
Pole position	Left



Built in 1986 and hosting its first Grand Prix one year later, the circuit of Jerez is now one of the most popular MotoGP venues and the focal point for a city fanatical about sport. Set in a slight valley in the south of Spain, Jerez is blessed with consistently good weather and beautiful scenery, its numerous grandstands providing the perfect viewing facilities for up to 250,000 spectators.

With two alternative road circuits (4,423m and 4,428m), which were resurfaced during 2005, Jerez is a popular venue used by many race teams for testing throughout the year, whilst its recently updated corporate and media facilities have proven to be a popular addition to the complex. Other facilities such as the control tower and pit boxes have also been vastly improved.

- Each race takes place in a circuit.
- Each circuit only holds a Gran Prix per season.
- In each date, only one race takes place.
- We split its track in four sections with specific information (length, maxi and min elevation, asphalt type, etc.)
- We also provide data concerning previous records.

MOTOGP RECORDS

Records	Season	Rider	Motorcycle	Time	Speed
Fastest Lap	2015	Jorge LORENZO (SPA)	Yamaha	1'37.910	162.6 km/h
Circuit Record	2015	Jorge LORENZO (SPA)	Yamaha	1'38.735	161.2 km/h
Best Pole	2015	Jorge LORENZO (SPA)	Yamaha	1'37.910	162.6 km/h
Top Speed	2015	Andrea IANNONE (ITA)	Ducati	-	295.9 km/h

- The three existing sessions of Qualifying Practice determine grid positions.

Jerez de la Frontera, Saturday, May 02, 2015

Pos.	Num.	Rider	Nation	Team	Bike	Km/h	Time	Gap 1 st /Prev.
1	99	Jorge LORENZO	SPA	Movistar Yamaha MotoGP	Yamaha	287.3	1'37.910	
2	93	Marc MARQUEZ	SPA	Repsol Honda Team	Honda	289.6	1'38.300	0.390 / 0.390
3	29	Andrea IANNONE	ITA	Ducati Team	Ducati	292.9	1'38.468	0.558 / 0.168
4	44	Pol ESPARGARO	SPA	Monster Yamaha Tech 3	Yamaha	285.6	1'38.539	0.629 / 0.071
5	46	Valentino ROSSI	ITA	Movistar Yamaha MotoGP	Yamaha	286.0	1'38.632	0.722 / 0.093
6	41	Aleix ESPARGARO	SPA	Team SUZUKI ECSTAR	Suzuki	280.0	1'38.638	0.728 / 0.006
7	35	Cal CRUTCHLOW	GBR	CWM LCR Honda	Honda	290.8	1'38.714	0.804 / 0.076
8	4	Andrea DOVIZIOSO	ITA	Ducati Team	Ducati	293.6	1'38.823	0.913 / 0.109
9	68	Yonny HERNANDEZ	COL	Pramac Racing	Ducati	289.3	1'39.464	1.554 / 0.641
10	38	Bradley SMITH	GBR	Monster Yamaha Tech 3	Yamaha	287.9	1'39.491	1.581 / 0.027
11	9	Daniilo PETRUCCI	ITA	Pramac Racing	Ducati	289.0	1'39.789	1.879 / 0.298
12	45	Scott REDDING	GBR	EG 0,0 Marc VDS	Honda	283.6	1'39.825	1.915 / 0.036

MotoGP Qualifying



Results and timing service provided by **TISSOT**

MotoGP

GRAN PREMIO bwin DE ESPAÑA

Official Starting Grid

Race : 27 laps = 119.421 km

1	137.910 99 Jorge LORENZO Yamaha	2	138.300 93 Marc MARQUEZ Honda	3	138.468 29 Andrea IANNONE Ducati
2	138.539 44 Pol ESPARGARO Yamaha	5	138.832 46 Valentino ROSSI Yamaha	6	138.838 41 Aleix ESPARGARO Suzuki
3	138.714 35 Cal CRUTCHLOW Honda	8	138.823 4 Andrea DOVIZIOSO Ducati	9	139.464 68 Yonny HERNANDEZ Ducati
4	139.495 38 Bradley SMITH Yamaha	11	139.789 9 Danilo PETRUCCI Ducati	12	139.825 45 Scott REDDING Honda
5	139.569 8 Hector BARBERA Ducati	14	139.803 25 Maverick VIÑALES Suzuki	15	139.812 19 Alvaro BAUTISTA Aprilia
6	139.886 7 Hiroshi AOYAMA Honda	17	139.974 50 Eugene LAVERTY Honda	18	140.026 69 Nicky HAYDEN Honda
7	140.166 6 Stefan BRADL Yamaha Forward	20	140.177 17 Karel ABRAMHAM Honda	21	140.260 76 Loris BAZ Yamaha Forward
8	140.365 43 Jack MILLER Honda	23	140.917 63 Mike DI MEGLIO Ducati	24	141.108 15 Alex DE ANGELIS ART

The results are provisional until the end of the limit for protest and appeals and until the ratification of the Event Management Committee.

Time limit for protest expires 87 at the latest after publication of the results - M Time:
These data/results cannot be reproduced, stored and/or transmitted in whole or in part by any means of electronic, mechanical, photocopying, recording, broadcasting or otherwise now known or hereon after developed without the previous express consent by the copyright owner, needed for reproduction in daily press and regular printed publications on sale to the public within 60 days of the event related to those data/results and always provided that copyright symbol appears together as follows below:
© DORNA 2015

Official MotoGP Timing by TISSOT
www.motogp.com



UNIVERSIDAD
DE MÁLAGA

Jerez de la Frontera, Sunday, May 03, 2015 Page 1 of 2



- Lap time is the sum of the intermediate time in each segment.



Results and timing service provided by **TISSOT**

MotoGP

GRAN PREMIO bwin DE ESPAÑA

Qualifying Nr. 2

Chronological Analysis of Performances

22

P Crossing the finish line in pit lane							T1 Time from finish line to 1st intermediate					T3 Time from 2nd intermed. to 3rd intermed.				
							T2 Time from 1st intermed. to 2nd intermed.					T4 Time from 3rd intermediate to finish line				
Lap	Lap Time	T1	T2	T3	T4	Speed	Lap	Lap Time	T1	T2	T3	T4	Speed			
1st	99	Jorge LORENZO					Movistar Yamaha Mot SPA	6th	41	Aleix ESPARGARO					Team SUZUKI ECST SPA	
		Runs=3	Total laps=8		Full laps=3				Runs=3	Total laps=8		Full laps=3				
1	1'45.577	30.936	14.608	29.772	30.261	286.5	1	2'34.888	1'15.068	14.990	30.650	34.180	274.7			
2	1'38.497	24.605	14.515	29.379	29.998	285.7	2	1'38.847	24.725	14.463	29.548	30.111	277.6			
3	2'37.346 P	25.764	14.759	29.751	1'27.072	279.7	3	2'11.475 P	25.309	14.636	30.120	1'01.410	276.6			
4	1'43.693	29.106	14.723	29.700	30.164	286.2	4	1'43.896	28.613	14.724	29.980	30.579	278.7			
5	1'38.243	24.615	14.453	29.210	29.965	287.3	5	1'38.850	24.611	14.552	29.603	30.084	280.0			
6	3'05.318 P	27.244	15.137	29.556	1'53.381	286.0	6	2'04.186 P	25.594	14.943	30.108	53.541	270.0			
7	1'44.227	29.561	14.746	29.766	30.154	285.2	7	1'47.511	30.567	15.004	30.810	31.130	270.0			
8	1'37.910	24.494	14.346	29.224	29.846	287.2	8	1'38.638	24.688	14.519	29.349	30.082	279.9			

- Extra information is also added.

Weather Conditions:

| Track Condition: Dry | Air: 31° | Humidity: 32% | Ground: 48°



Records:

Fastest Lap:	Lap: 8	Jorge LORENZO	1'37.910	162.6 Km/h
Circuit Record Lap:	2013	Jorge LORENZO	1'39.565	159.9 Km/h
Best Lap:	2015	Jorge LORENZO	1'37.910	162.6 Km/h

- Similar information than qualifying sessions: lap times, weather conditions, results, etc.
- See <http://www.motogp.com/en/Results+Statistics> for further details
- Additional information: front and rear tires, race and warm up starting times and crash information.
- After each race, MotoGP publish the rider, team and constructor championship classification, calculated by means of a number of points assigned to each position at the end of the race.



Results and timing service provided by **TISSOT**

MotoGP

PRAMAC AUSTRALIAN MOTORCYCLE GRAND PRIX

World Championship Classification

30

Rider	Nation	Points	QAT	AME	ARG	SPA	FRA	ITA	CAT	NED	GER	INP	CZE	GBR	RSM	ARA	JPN	AUS	MAL	VAL
1 ROSSI Valentino	ITA	296	25	16	25	16	20	16	20	25	16	16	25	11	16	20	13			
2 LORENZO Jorge	SPA	285	13	13	11	25	25	25	16	13	20	25	13	-	25	16	20			
3 MARQUEZ Marc	SPA	222	11	25	-	20	13	-	-	20	25	25	20	-	25	-	13	25		
4 IANNONE Andrea	ITA	188	16	11	13	10	11	20	13	13	11	11	13	8	9	13	-	16		
5 PEDROSA Dani	SPA	165	10	-	-	-	13	16	8	20	13	11	11	7	20	25	11			
6 SMITH Bradley	GBR	158	8	10	10	8	10	11	11	9	10	10	9	9	20	8	9	6		
7 DOVIZIOSO Andrea	ITA	153	20	20	20	7	16	-	-	4	-	7	10	16	8	11	11	3		
8 CRUTCHLOW Cal	GBR	107	9	9	16	13	-	-	10	9	8	-	-	5	9	10	9			
9 PETRUCCI Danilo	ITA	97	4	6	5	4	6	7	7	5	7	6	6	20	10	-	4			
10 ESPARGARO Pol	SPA	96	7	-	8	11	9	10	-	11	8	9	8	-	-	7	-	8		
11 ESPARGARO Aleix	SPA	88	5	8	9	9	-	-	7	6	2	7	7	6	10	5	7			
12 VIÑALES Maverick	SPA	84	2	7	6	5	7	9	10	6	5	5	-	5	2	5	-	10		
13 REDDING Scott	GBR	78	3	-	7	3	-	5	9	3	-	3	4	10	16	4	6	5		
14 HERNANDEZ Yonny	COL	49	6	-	-	6	8	6	-	2	4	4	5	-	6	2	-			
15 BARBERA Hector	SPA	30	1	4	3	2	3	3	-	3	1	-	3	-	-	7	-			
16 BAZ Loris	FRA	28	-	-	2	-	4	4	3	1	-	-	1	-	13	-	-			
17 BAUTISTA Alvaro	SPA	28	-	1	-	1	1	2	6	-	2	-	3	6	1	3	-	2		
18 MILLER Jack	AUS	17	-	2	4	-	-	5	-	1	-	-	-	4	-	-	1			
19 HAYDEN Nicky	USA	16	-	3	-	-	5	-	-	-	-	-	-	4	-	1	3	-		
20 BRADL Stefan	GER	11	-	-	1	-	-	8	-	-	-	-	2	-	-	-	-			
21 LAVERTY Eugene	IRL	9	-	-	-	-	2	1	4	-	-	-	-	-	-	2	-			
22 NAKASUGA Katsuyuki	JPN	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-		
23 PIRRO Michele	ITA	8	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-			
24 DI MEGLIO Mike	FRA	8	-	-	-	-	-	2	-	-	-	-	-	2	3	-	1	-		
25 AOYAMA Hiroshi	JPN	5	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-			
26 TAKAHASHI Takumi	JPN	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-		
27 DE ANGELIS Alex	RSM	2	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-			

MotoGP Race

Constructor	Points	QAT	AME	ARG	SPA	FRA	ITA	CAT	NED	GER	INP	CZE	GBR	RSM	ARA	JPN	AUS	MAL	VAL
1 YAMAHA	362	25	16	25	25	25	25	25	16	20	25	25	20	25	20	20			
2 HONDA	310	11	25	16	20	13	13	16	20	25	25	20	11	25	20	25	25		
3 DUCATI	237	20	20	20	10	16	20	13	13	11	11	13	20	10	13	11	16		
4 SUZUKI	120	5	8	9	9	7	9	10	7	6	5	7	7	6	10	5	10		
5 YAMAHA FORWARD	33	-	-	2	-	4	4	8	1	-	-	1	-	13	-	-	-		
6 APRILIA	28	-	1	-	1	1	2	6	-	2	-	3	6	1	3	-	2		
7 ART	2	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-		

Team	Points	QAT	AME	ARG	SPA	FRA	ITA	CAT	NED	GER	INP	CZE	GBR	RSM	ARA	JPN	AUS	MAL	VAL
1 MOVISTAR YAMAHA MOTOGP	581	38	29	36	41	45	41	45	41	29	36	41	36	11	41	36	33		
2 REPSOL HONDA TEAM	392	21	30	-	20	13	13	16	28	45	38	31	11	32	20	38	36		
3 DUCATI TEAM	341	36	31	33	17	27	20	13	17	11	18	23	24	17	24	11	19		
4 MONSTER YAMAHA TECH 3	254	15	10	18	19	19	21	11	20	18	19	17	9	20	15	9	14		
5 TEAM SUZUKI ECSTAR	172	7	15	15	14	7	9	10	13	11	7	7	12	8	15	5	17		
6 OCTO PRAMAC RACING	146	10	6	5	10	14	13	7	7	11	10	11	20	10	6	2	4		
7 LCR HONDA	124	9	11	20	13	-	-	5	10	10	8	-	-	9	9	10	10		
8 EG 0,0 MARC VDS	78	3	-	7	3	-	5	9	3	-	3	4	10	16	4	6	5		
9 AVINTIA RACING	38	1	4	3	2	3	3	2	-	3	1	-	5	3	-	8	-		
10 FORWARD RACING	37	-	-	3	-	4	4	11	1	-	-	1	-	13	-	-	-		
11 APRILIA RACING TEAM GRESI	30	-	1	-	1	1	2	6	-	2	-	5	6	1	3	-	2		
12 ASPAR MOTOGP TEAM	25	-	3	-	-	7	1	4	-	-	-	-	4	-	3	3	-		
13 E-MOTION IODARACING TEAM	2	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-		

Design task

Create an entity/relationship diagram to create a database with the information needed to develop the MotoGP site.

