



# The Freescale Cup EMEA

## Individual Challenges 2012/2013

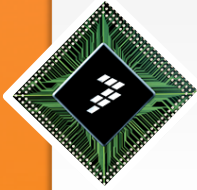
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University Programs EMEA



October 2012

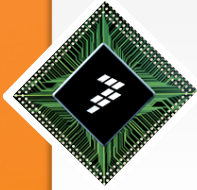
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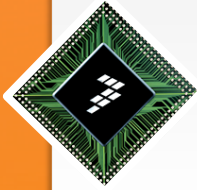
## FAQ (1/2)

- **Purpose of the Challenges**
  - Drive creativity and technological advances
  - Provide additional chances for awards
  - Prepare the students for better overall race performance
- **Are Challenges Mandatory?**
  - For the 2012/2013 season, 2 challenges are mandatory, 1 is optional.
- **What happens if I cannot participate in the mandatory Challenges**
  - You lose the opportunity for additional awards... and fun!!



## FAQ (2/2)

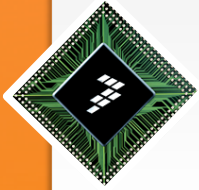
- **When will the challenges take place?**
  - The challenge will be on open schedule on Wednesday March 27<sup>th</sup> morning between 10:00 and 11:30.
- **Are the results of the challenges impacting my ranking for the European Freescale Cup finals?**
  - No. The ranking and winning of the European Freescale Cup title is solely based on the time based competition of the Freescale Cup race
- **Which race car do I need to use for the challenges?**
  - Your team's race car is the one to be used for the mandatory challenges. The eCompass square competition is done at University level (not by team) on a separate car provided by Freescale



# 1<sup>st</sup> Challenge: Start-Stop

1. Start at the normal start line
2. Stop the car in a given area (stop line is a green 4cm thick line)
3. Deliverable criteria:
  - Car must stop passed the green stop line
  - Car must reach the stop area within 10 seconds of start line
4. Calculation of the score
  - Number of centimeters between green line and center of back wheel of the car (rounded cm) \* time between start and stop (in second +1 decimal)
5. Winnings:
  1. Stop the car after the green line within 10 second of start for initial award
  2. Best 3 scores win additional awards

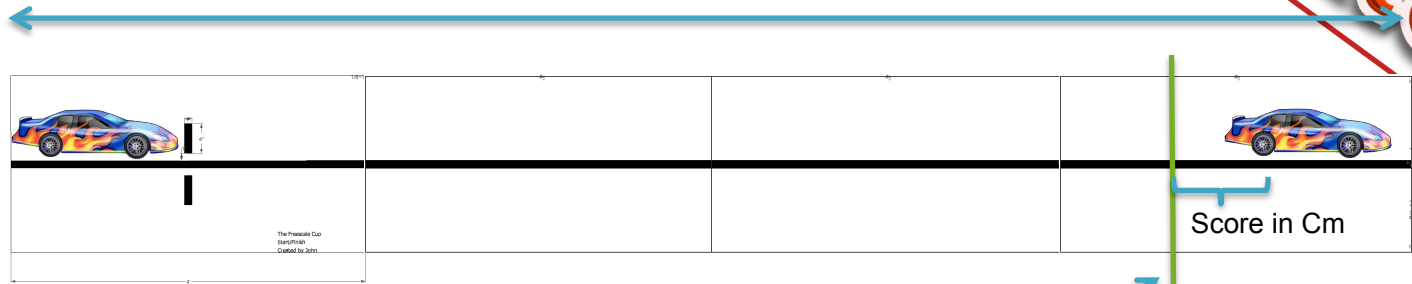
**Mandatory**



# 1<sup>st</sup> Challenge: Start-Stop

**Mandatory**

4 track elements at 1.22m each

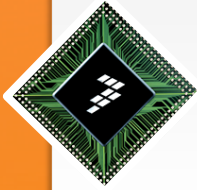


Car Start Position

Stop Green Line (can be anywhere on the track)

Car Stop Position

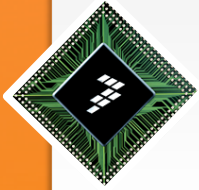
Max 10 seconds



## 2<sup>nd</sup> Challenge: Obstacle Avoidance

1. Start at the normal start line
2. Car must avoid 3 black obstacles (black cubes) positioned on a section of 4m of straight track - could be pass between pieces or avoid with right or left turn.
3. Deliverable criteria:
  - Avoid obstacle (no touch)
  - Cover the track (4m) in less than 15 seconds
4. Calculation of the score
  - Each obstacle touch (obstacle must move from its position) ads 1 penalty
5. Winnings
  - The lower the penalties, the more you win (purchase voucher on [Freescale.com](http://Freescale.com))

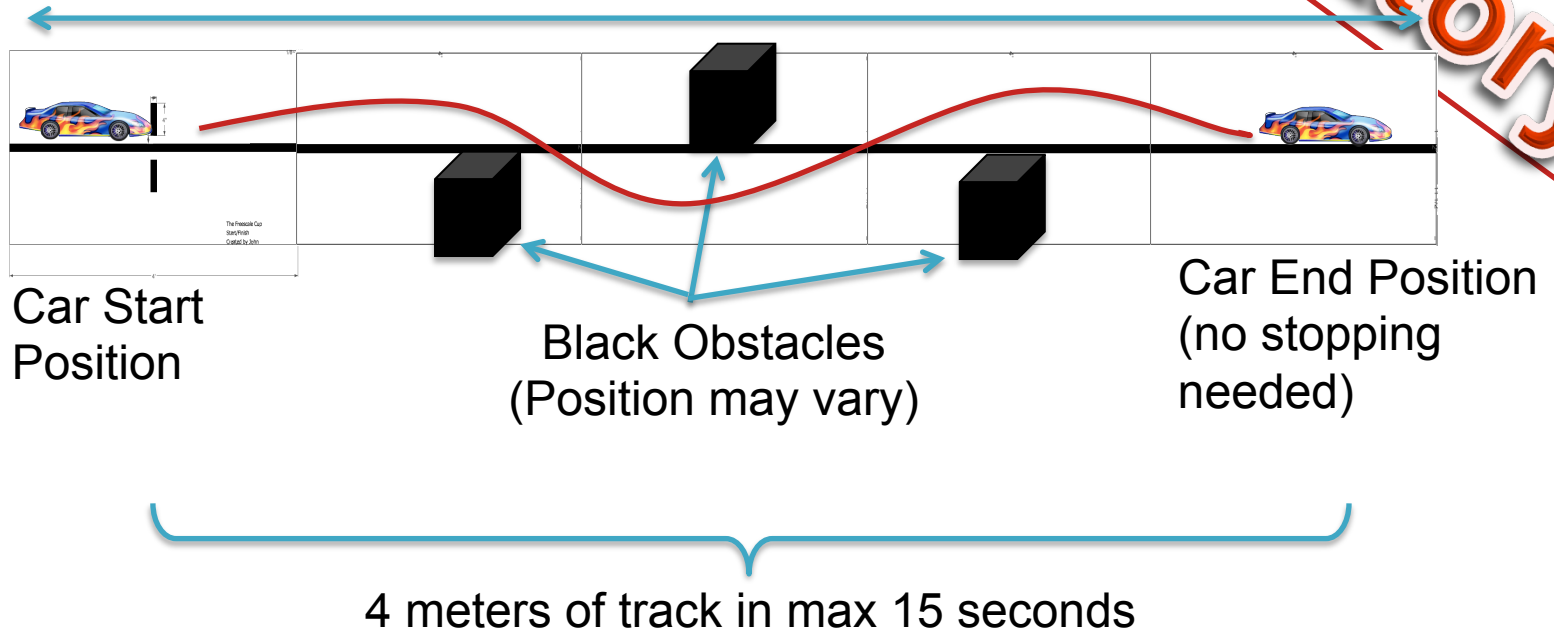
**Mandatory**

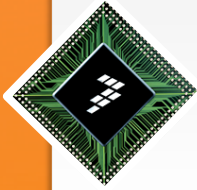


## 2<sup>nd</sup> Challenge: Obstacle Avoidance

**Mandatory**

5 track elements at 1.22m each



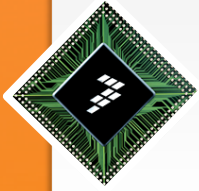


# 3<sup>rd</sup> Challenge: eCompass Square Competition

**Open to only 8 university participants on a first come, first enrolled basis. Enrolled Universities MUST attend the final to participate.**

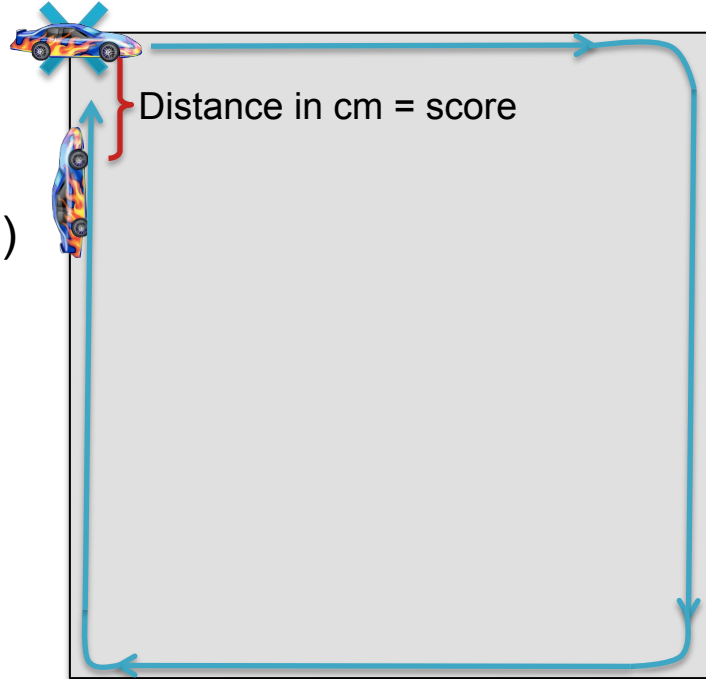
- Start the car on a neutral (not on track) area where a mark is provided (X sign)
- Car must drive autonomously in a square pattern and come back as close as possible to the starting point (X sign)
- Use of eCompass hardware and software only from Freescale
- Deliverable criteria:
  - Car must drive in a square pattern with 3 x 90deg turns
  - Car must drive without any remote support or assistance
  - Car must come to a complete stop on its own
- Calculation of the score
  - Car is disqualified if it has not done the 3 turns (and only 3 turns)
  - Score is number of centimeters between the car start point (X sign) and the closest center of the front wheel to the X sign
  - Lowest score wins
- Special Award for eCompass Competition to the 3 top scores





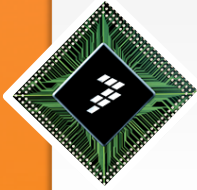
# 3<sup>rd</sup> Challenge: eCompass Square Competition

Car Start Position



Car End Position  
(stopping needed)

Length of the  
square side at  
choice of each  
participant



# 3<sup>rd</sup> Challenge: eCompass Square Competition

## To Sign Up

- Cars equipped with eCompass **must** attend the competition finals in Paris – 1 extra car provided for this challenge with **K60F120M Tower Kit**.
- Sign up **via the Coordinator** with email to [flavio.stiffan@freescale.com](mailto:flavio.stiffan@freescale.com)
- First come, first registered basis
- 8 TWRPI eCompass Kits available only

## Resources

- eCompass Web Page for eCompass software and Application Note  
[http://www.freescale.com/webapp/sps/site/prod\\_summary.jsp?code=eCompass&parentCode=FXOS8700CQ&fpasp=1](http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=eCompass&parentCode=FXOS8700CQ&fpasp=1)
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