FORMULA 3D PRINT

11th July 2017

@ St Paul's Catholic School

Phoenix Drive, Milton Keynes. MK6 5EN

2017

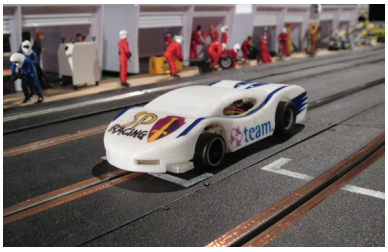
Formula 3D Print

FORMULA 3D PRINT

Invitation

from your hosts

Following up on the very successful Formula 3D Print Challenge at St Paul's in 2016 – it's that time again! See the videos from 2016 on the website at **http://www.3dprintworld-aylesbury.co.uk/competitions** and admire your wonderful creations and great racing. For those of you who are new to the event, take note and learn from those who would like to think they are the experts – and plan to win!



St Paul's are proud once again to be hosting the 2107 Milton Keynes Formula 3D print event on Tuesday 11th of July from 2.30pm-6pm. The competition is for Year 8 pupils and the aim is to design and build a 3D printed shell for a Scalextric slot car. 3D Print World will supply the running gear for testing and at the main event and an .stl file for the car chassis, as well as offering expert support to individual schools.

There is a cost of £250 per school to take part in the main event which covers the hiring of new, multi lane digital Scalextric track which includes overtaking and refuelling!

At St Paul's, we are again running Formula 3D as an extended curriculum opportunity for talented Design and Technology pupils who will all build a car. These will race and the winner put forward for the Milton Keynes main event. We will be looking for the pupils to find sponsorship, perhaps from the PTA or other local businesses to cover the costs of taking part in the main event.

Your contacts are:
Paul Tillman (paul.tillman@st-pauls.org.uk) and **David Dilworth (dil@3dprint-world.co.uk)**.

This is a not to be missed opportunity to raise the profile of our subject in Milton Keynes with pupils, parents, local businesses and within our own schools. We look forward to seeing you on the grid!

St Paul's CATHOLIC SCHOOL
Design and Technology

3D Print World Aylesbury

Paul Tillman
paul.tillman@st-pauls.org.uk

David Dilworth
dil@3dprint-world.co.uk

bq

bq

FORMULA 3D PRINT is a design and 3D print competition for Year 8 students. Its main objectives are;

- To attract students to Design & Technology
- To encourage local businesses to sponsor their local school
- Sponsorship money to contribute towards 3D printers for that school
- To encourage students to hone their CAD skills and introduce them to 3D Printing

And

- To have FUN

The Lead-In to the Event

3D Print World Aylesbury will supply each school with up to 10 sets of analogue running gear and an .stl file from which to print the chassis in the week commencing 18th April.

Black Country Atelier will provide a log-in for online support material to help with the Design Process. Please contact: info@blackcountryatelier.com or phone 0121 236 8400 for details.

Black County Atelier, in addition to the Formula 3D Starter Pack, are offering hands-on masterclasses in 3D car design (see over), which may be particularly helpful for schools with less 3D design experience.

We suggest that up to 10 teams of 2-3 students design and print up to 10 cars which they can race and test against each other on a standard Scalextric track. The best team goes on to represent the school on Tuesday July 11th.

For Race Day, a team of 3-4 is recommended to enable feedback to the driver from the leader board and the pit information together with the ability to drive in relay. Teams must be given a name.

Supporters are encouraged and welcomed (max. 15 passes for Team, Teachers and Supporters, more by agreement with Dil at 3D Print World). Please advise Dil of guest list and team name by 30th June.

On The Day

At the event the analogue chassis you have printed will be swapped for a digital one printed from the same .stl file at the point of scrutineering. This enables us to make sure that the relative performance of the cars is due to the design work carried out by the competitors and that any local print problems do not cause mechanical issues on the day.

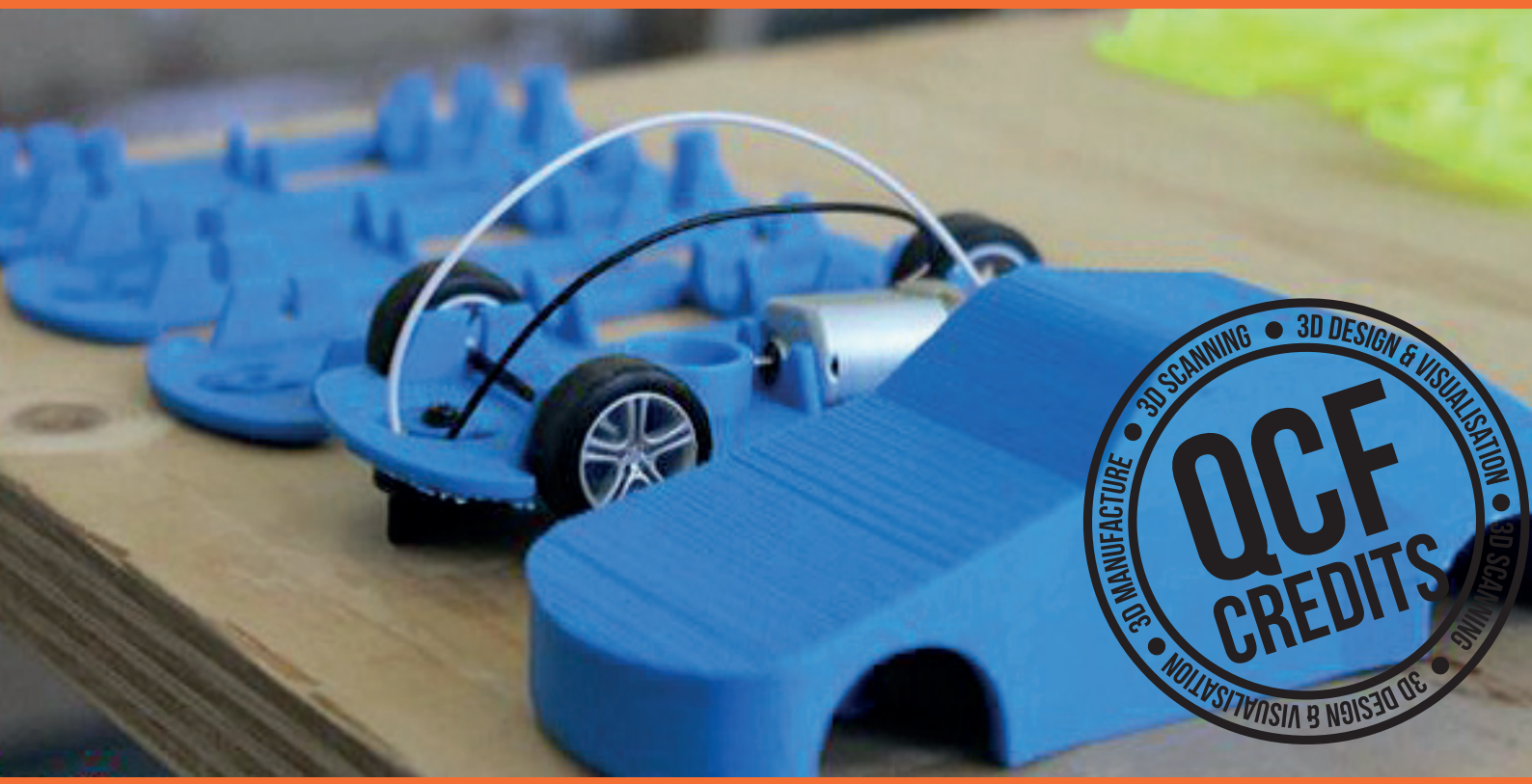
There will be 3 competitions:

1. Concours d'Élégance
   Prize: A Hephestos 2 3D Printer from bq
2. Fastest Lap
   Prize: A Robotics Kit from bq
3. The 24 Minutes of Le Mans
   Prize: A Robotics Kit from bq

BLACK COUNTRY ATELIER .com

FORMULA 3D STARTER PACK & MASTERCLASSES

BCA is curriculum partner for Formula 3D racing



***FREE* F3D COMPETITION STARTER PACK:**

CAD car templates to get you 3D printing and on the track faster
Starter guides to designing and printing your competition car

HANDS-ON MASTERCLASSES IN 3D CAR DESIGN:

On-site masterclasses with 3D printing experts
Comprehensive guidance on 3D design and printing

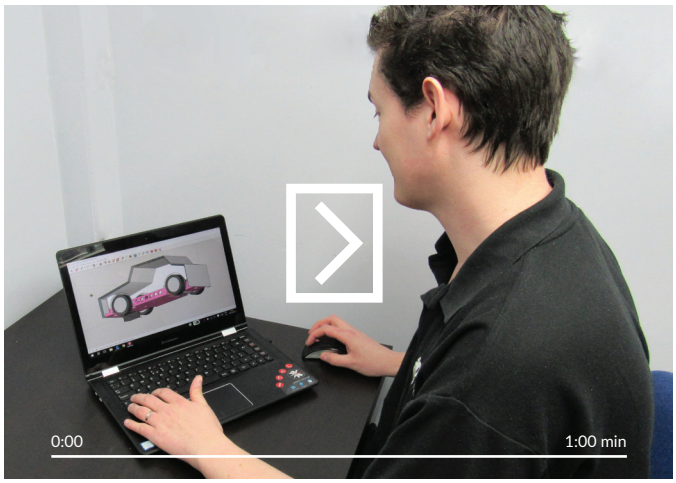
AWARD CERTIFICATES:

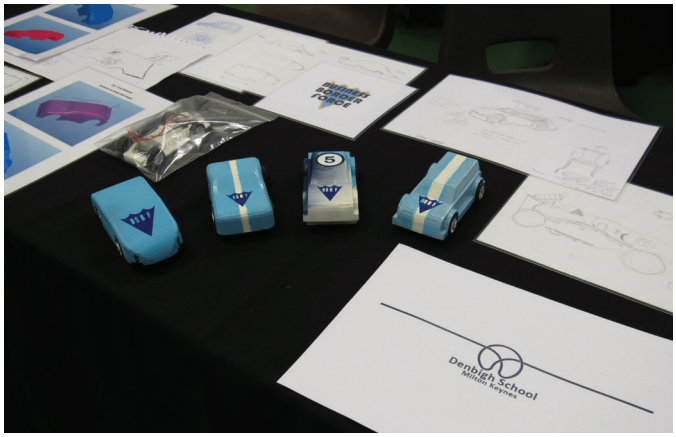
Write up and evaluate the project for students to gain Level 1 or Level 2 Ofqual Awards in Additive Manufacturing (3D Printing)

SPECIAL COMPETITION OFFER
50% OFF WORKSHOPS
~~£700~~ **£350**

TO REQUEST YOUR COMPETITION PACK AND DETAILS ON MASTERCLASSES AND AWARDS:

T: +44 (0) 121 236 8400 or
E: info@blackcountryatelier.com





For the Concours d'Élégance competition

Each car will be judged on appearance, standard of design, effort and use of 3D Print Technology.

This award is aimed at recognising creativity and imagination rather than simply out and out performance.

Each car must be presented with a portfolio/folder detailing the design process, screen shots of the CAD progress, testing results, materials used, type of printer used, thickness of print and weight etc.

Video Diary (one minute max.)

A video diary of the car being designed, printed and raced in school is part of the presentation. If possible please shoot on iPhone, wear school uniform and feature yourselves as well as the activity!

Please start each shoot with a piece to the camera with your nominated Team Member saying:

"Hello, my name is ..... from Team ..... at ..... School. Today we are:

- Designing the bodywork
- Racing the cars
- Improving the design by ..... (say how)
- Applying Sponsors'/School's names on the car"

To help with filming, an .stl file for a phone holder is to be found with the other downloadable files on **www.3dprintworld-aylesbury.co.uk/competitions**

Lead-in to the day

If your school has a general consent agreement to video and photography for all students that is great (please confirm this to us), if not all students will need to sign a release form.

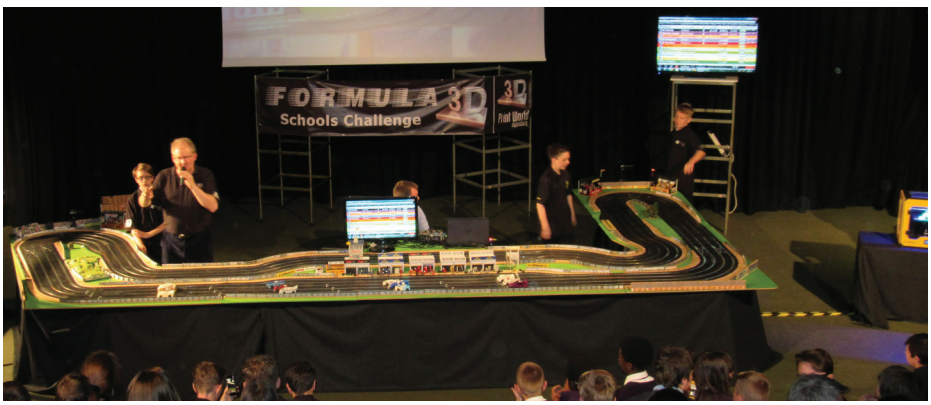
One week prior to the event a Jpeg picture of your car must be e-mailed to 3D Print World so that it can be uploaded to the large screen leader board.

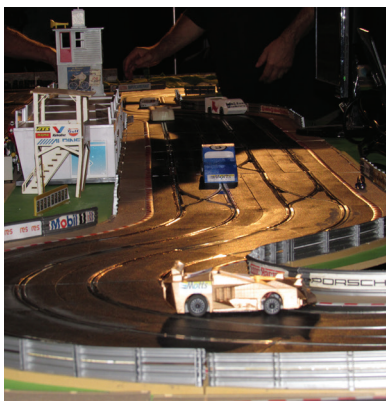
A debrief appointment is required for w/c 17th July latest for teams & teachers to meet with 3D Print World. This ensures that we all learn as much as possible and will help improve future events.

Please see the Planner on the following page for details and a checklist.

Planner with checklist

W/C	TASK	PHASE	WHO	✔
18th April	Return registration form and entry fee		School	
24th April	Distribute info packs, parts and stl files		3D Print World	
1st May	Start video diary. Print chassis.	Design bodywork	Students	
8th May	Build and test chassis	Design bodywork	Students	
15th May	Take screen shots of the design	Design bodywork	Students	
22nd May	Email screen shots to Formula 3D	Design bodywork	Students	
scrutineering	Design bodywork	Students		
29th May	Half Term			
5th June	Receive feedback	Adjust design	Students	
12th June	Print bodyshells	Construct and test cars	Students	
19th June	Print and apply any sponsors logos to cars	Select competition cars	Students	
Key Date	Send digital photo of car to 3D Print World for leader board display	Put presentation together incl. video diary	Students	
26th June	Complete Risk Assessment for the event on behalf of your school. Contact Dil at 3D Print World if you require a copy of the Risk Assessment of the event by St. Paul's Catholic School. Confirmation of photography consent is also required		Students	
27th June	Send digital photo of car to 3D Print World for leader board display	Put presentation together incl. video diary	Students	
3rd July	Please email list of those attending to dil@3dprint-world.co.uk with any requests for extra passes		Students	
10th July	Prep event...		3D Print World	
11th July	Turn up and have fun	Everyone	Everyone	





Race Day Programme

TIME	ITINERARY
2.30pm	**Arrival** Please arrive on time. If you are running late unavoidably please note that between 3.10pm - 3.45pm school coaches are picking up and it is not possible to drop off
2.45pm	**Scrutineering Opens** Judging of Concours d'Élégance will take place during these sessions
2.45pm	**Practise** Informal practise starts
3.30pm	**Formal Practise** Getting into position on grid and starts Lane changing Fuel
4.30pm	**Fastest Lap** 'Racing the clock' Qualifying
5.15pm	**The 24 Minutes of Le Mans** Endurance race Test of team organisation
5.45pm	**Prize Giving**
6.00pm	**Finish**

Evening event T.B.A

There will be an opportunity later in the day for Teachers, Staff and Parents / Carers to race... more details to follow.

Rules for Formula 3D

- Magnets are not allowed on the slot car
- All Bodywork must be 3D Printed
- The Car must be designed in accordance with the size restrictions
- All wheels must be in contact with the track and must rotate (the big wheels attach on the back and the small wheels attach on the front)
- Team size recommended of 3-4 for Race Day
- Tyres must not treated or modified in any way once given to the team
- When designing the car, great care must be taken to place fixing points in the bodyshell to match the chassis. Self tapping screws are provided in the Pack from 3D Print World.
- The Chassis will be swapped out for Digitally enabled Chassis on Race Day which will be identical in dimension to the file supplied: Please do not modify the Chassis Design as this may mean that Race Day Chassis do not match your Designs…
- Judges' Decisions are final on Race Day
- You will be disqualified if you tamper with any other Team's equipment
- Have Fun!!!

Cars must comply with the following dimensions:

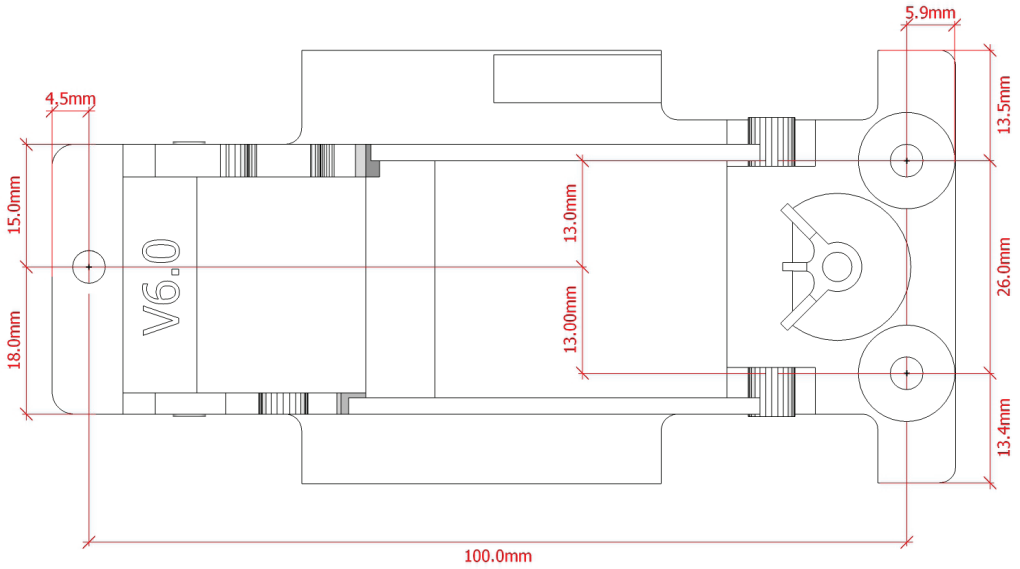
		MINIMUM VALUE	MAXIMUM VALUE
6.3.1	Overall length	100mm	165mm
6.3.2	Overall width	-	64mm
6.3.3	Overall height	30mm	50mm
6.3.4	Ground clearance	-	-
6.3.5	Front wheel diameter (wheel arch clearance)	21mm	21mm
6.3.6	Front wheel width (wheel arch clearance)	10mm	10mm
6.3.7	Rear wheel diameter	21mm	21mm
6.3.8	Rear wheel width	10mm	10mm
6.3.9	Slot guide length (as supplied)	-	25mm
6.3.10	Slot guide pivot lead (as supplied)	-	107mm

We indicate the maximum sizes in the following diagrams and the wheel arch clearance recommended. Please bear in mind that weight is key to performance. However if the team is focused on winning the Concours d'Élégance and creativity is more important than out and out performance, then these are the maximum dimensions.

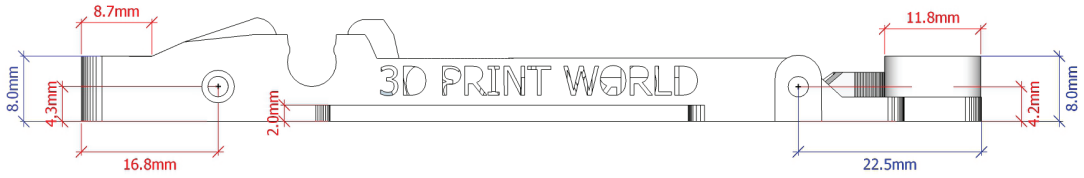
Downloadable .stl Files, Diagrams and Illustrations

These are all available by clicking through to 'downloadable files' from the competitions page on the 3D Print World website **www.3dprintworld-aylesbury.co.uk/competitions**. Please download the Zip file. Your password to open this Zip file is: **F3D!m4t3rialz**

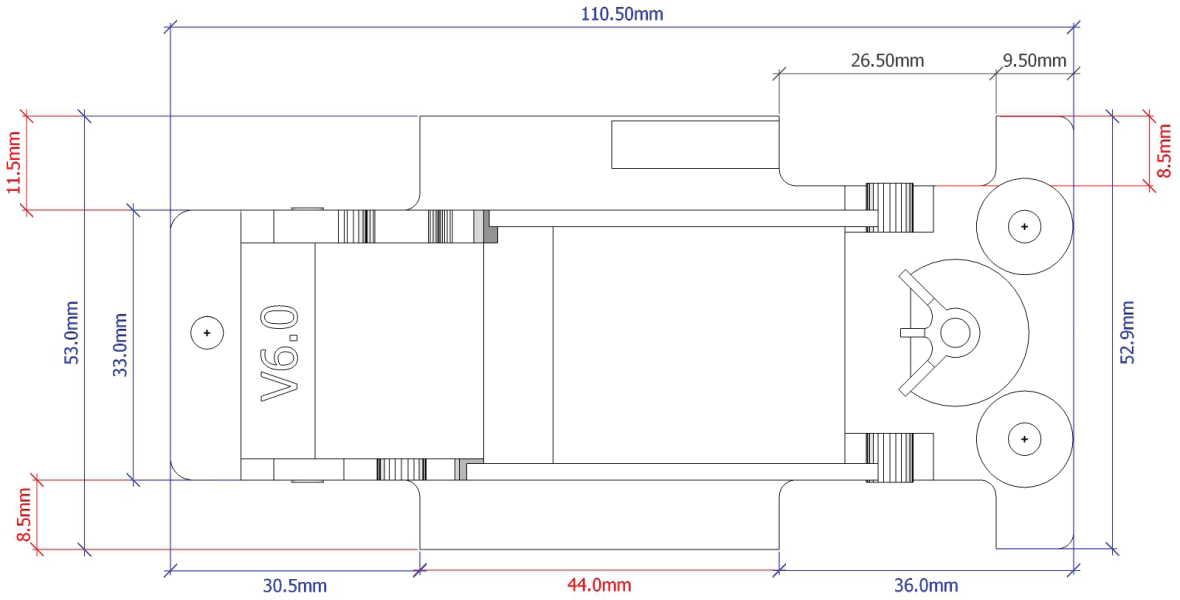
Hole Location Guide (top view)



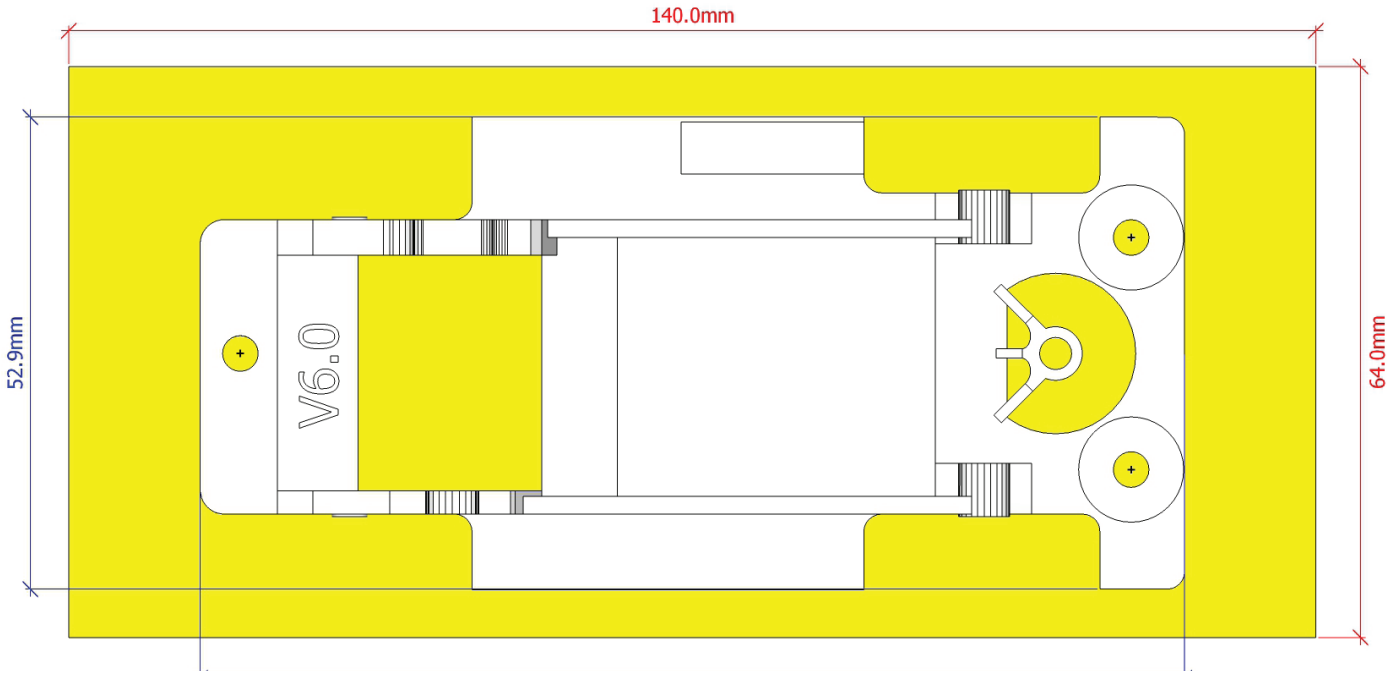
Hole Location Guide (side view)



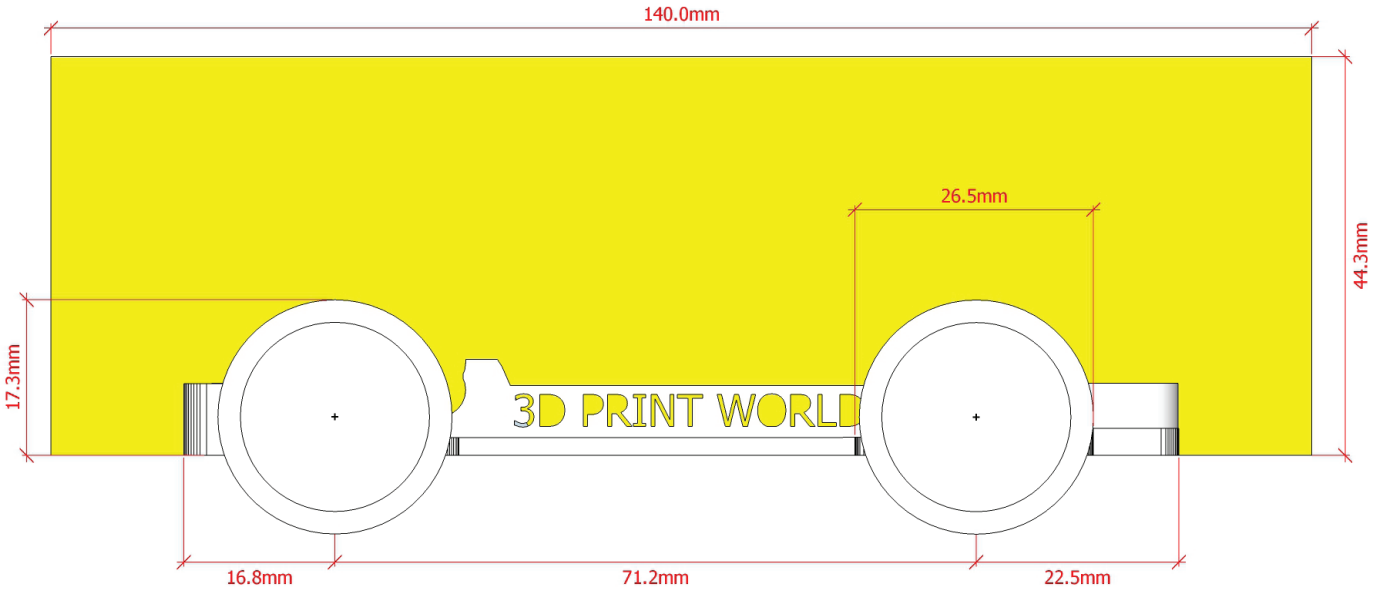
Internal Dimensions (bodyshell platform)



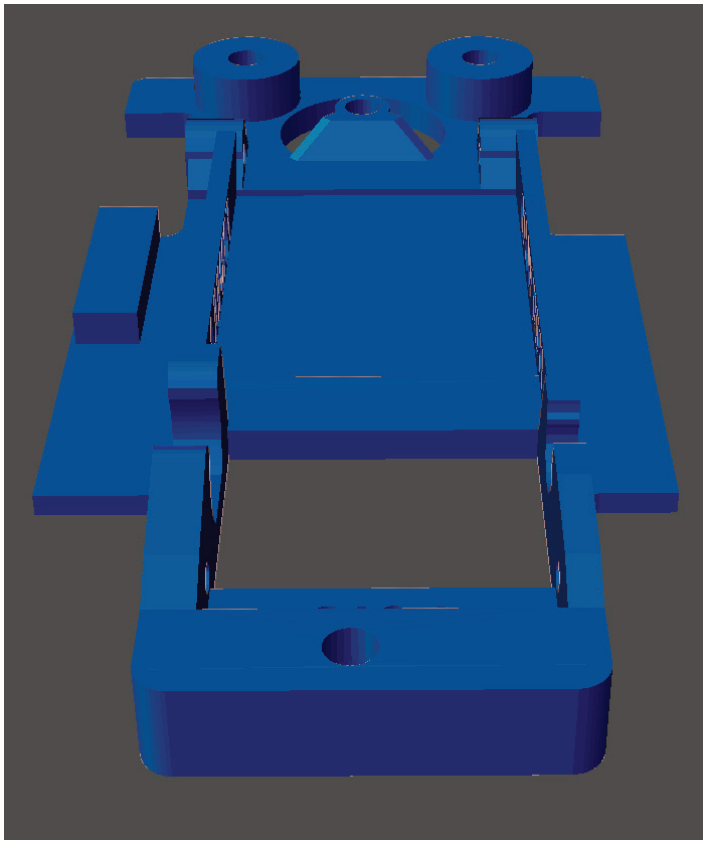
Overall Dimension Guide (top view)

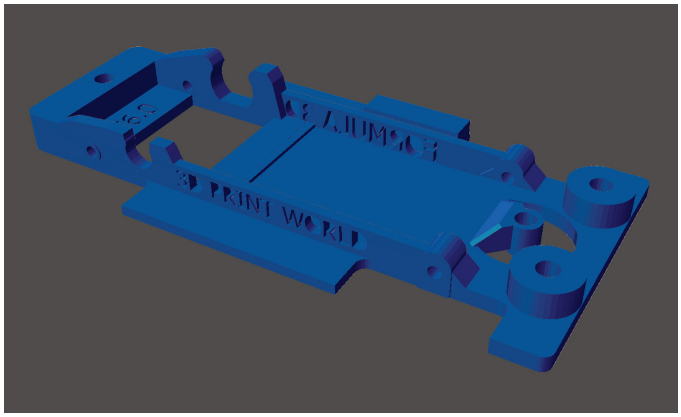


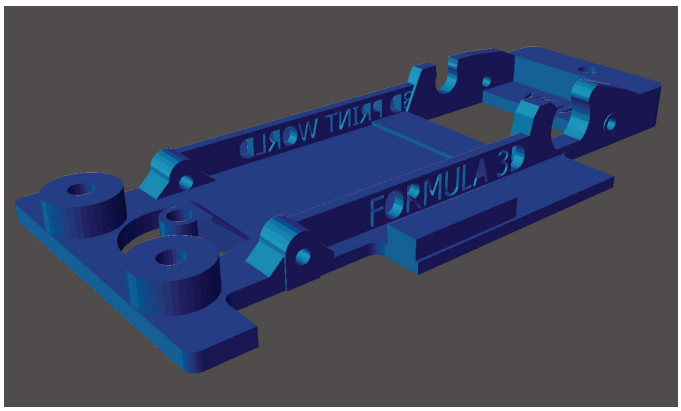
Overall Dimension Guide (side view)

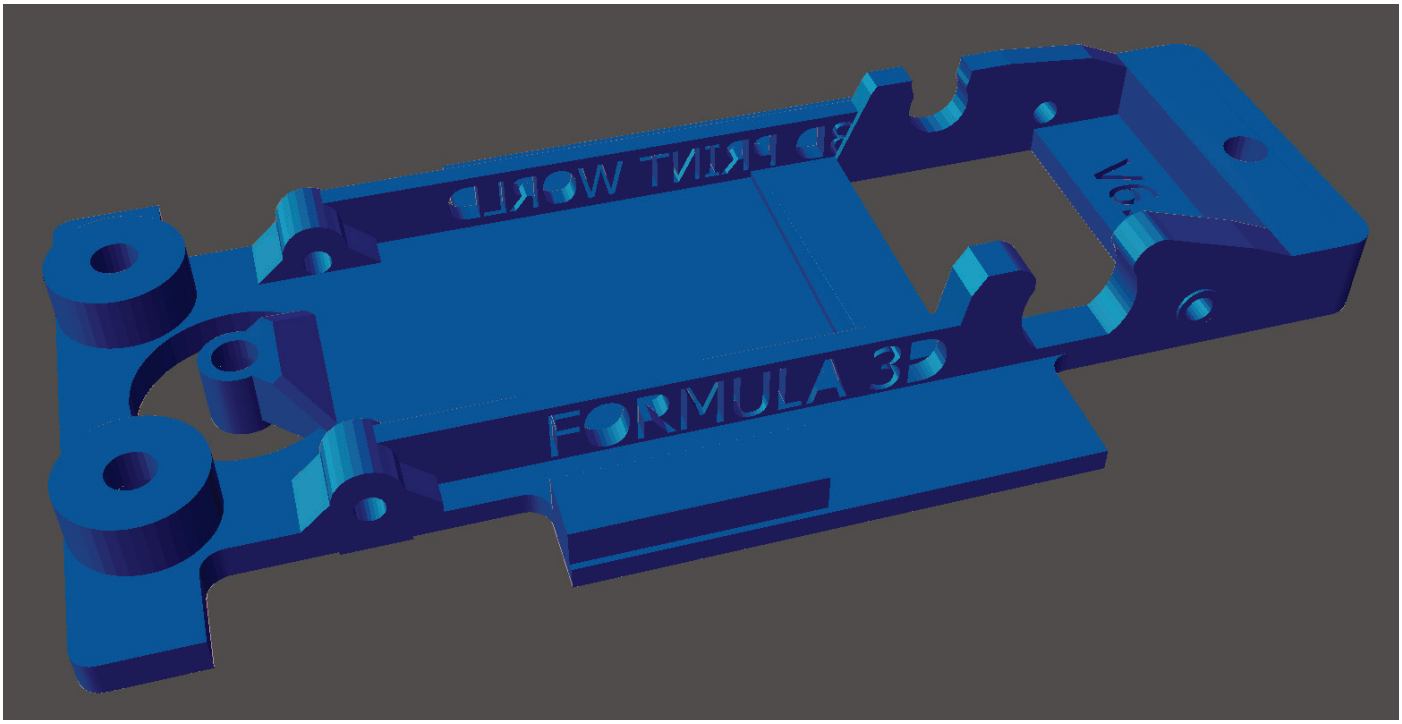


Views of the Chassis Design

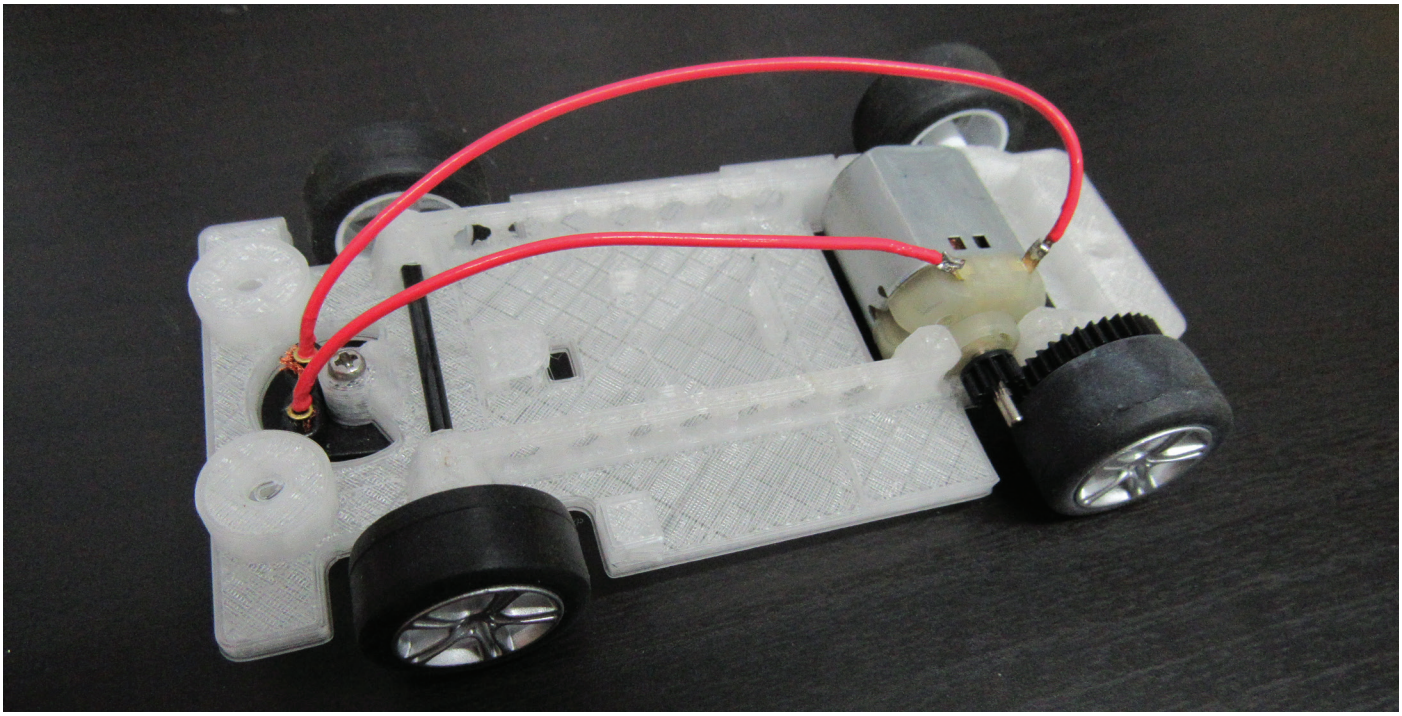




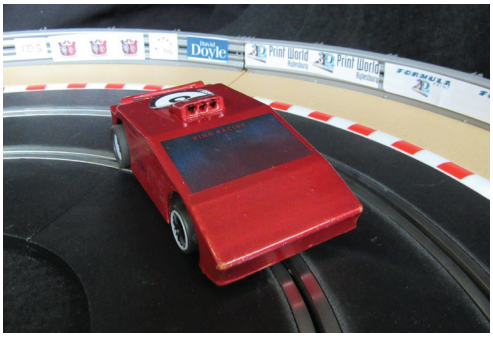


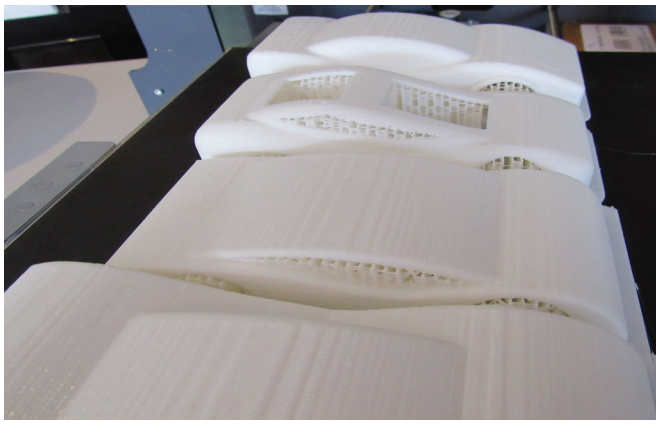


Ready to Roll: The Chassis Ready for the New Shells



Design Ideas: From Previous Contestants





Enjoy!