

Project Proposal

For Engineering and Project Management

ACDA5025A

By Charles H, 2420823

Table of Contents

1 Abstract	3
2 Introduction	3
3 Project proposal	3
3.1 Aim	3
3.2 Objectives	3
3.3 Features	3
3.4 Potential markets	4
3.5 Current Competition	4
4 Research.....	4
5 Design considerations.....	4
6 Project Timeline.....	5
6.1 Gantt chart	5
6.2 Critical path analysis	6
.....	7
7 Financial Considerations.....	8
7.1 Development costs	8
7.2 Marketing price and profits	9
8 Risks and mitigating strategies.....	10
9 Environmental, ethical and societal impacts	11
10 Further product development options	11
11 Conclusion.....	11
References	12
Appendices.....	14
A Prevent certification.....	14
B Equality and diversity certification	15

1 Abstract

Formula 1 has seen large growth in recent years and expanded into kids' entertainment including partnerships for toy cars. A forgotten market is aesthetic additions such as circuit parts to create a toy racetrack. The proposal sets out a plan to create a toy version of start and pit lights authentically with an alarm and countdown clock features for additional marketability. This also provides options for additional expansions later. The expected development period is 9 weeks to create a second prototype based on feedback from the first, with the potential to be on market well within a year. A unit would retail around £25 with a profit of £11.90 and a breakeven volume of units. There are a few risks on top of our standard operating risks and considerations on the impact this product could have externally.

2 Introduction

Since the beginning of 2020 Formula 1's popularity has more than doubled [1] [2] [3]. Among many factors it can be attributed to success in restarting racing earlier than other sports after the first waves of lockdowns and media production such as the F1 movie and drive to survive. The production of F1 kids with Sky TV [4] and partnerships with companies like Lego [5] and Hot wheels [6] is introducing young audiences and families to the sport. A major market gap is that currently only the cars are sold. The most important aspect to playing with cars is the race that's created and having starting lights to reflect what they see on tv and at circuits will enhance their play.

3 Project proposal

3.1 Aim

- To create a miniature toy replicating the standard FIA start gantry and pitlane lights, which is fully functional for a start sequence and an optional countdown before a formation lap.

3.2 Objectives

- To have a start gantry which is modular and can be expanded as the user prefers.
- To have controls which can be operated by anyone without previous motorsport experience.
- To swiftly and reliably respond to user inputs.
- To run on power from both a USB port and a replaceable battery.
- To operate with any future additions.

3.3 Features

- Front and rear facing lights on the gantry.
- Snap together gantry pieces for customisable positioning.
- Quick or long start sequences, including a random delay before lights out.
- Screen for status and selecting operating modes. Supporting feature to the lights.
- Race mode to use gantry as flags during a race.
- Few buttons and potentiometers for control and mode select.

3.4 Potential markets

- Decoration in toy car collections
- Toy car racing
- Use in slot car circuits and championships
- Alarm and countdown clocks for motorsport fans

3.5 Current Competition

After brief research, there were some drag strip style lights [7] [8] made by hobbyists which offered solutions to make your own. There was also a large-scale version [9] although it's also DIY project which has non-standard timings. There were no competitors that sell a competing product pre-assembled to the public of any racing type.

4 Research

There will need to be in depth research conducted for the success of the project including important features to the potential audience, acceptable prices, intended use conditions and a deeper search into competing products. Understanding how users may use the product and being able to accommodate them will be vital to its success.

To reflect the motorsport environment, the product should follow some standards set out by the FIA, motorsports governing body, like colours and patterns [10] [11] [12] [13]. They may also reflect solutions used by motorsport circuits [14] [15].

5 Design considerations

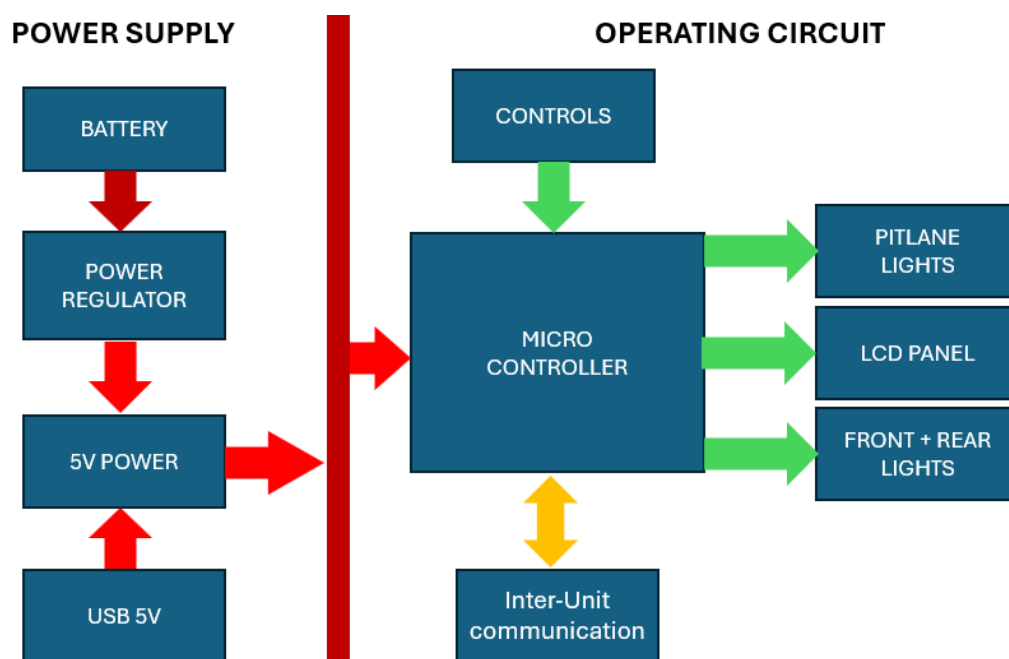


Fig. 1. A circuit diagram, split into two parts. Creating 5V power and the circuitry for the rest of the product.

The hardware used is an important consideration, as minimal lag between inputs and responses will be critical to the unit's success, however overpowered hardware will drive the cost too high.

Microcontrollers such as Arduinos [16] or Raspberry Pi's [17] will most likely be used for their ease and practicality in prototype design. Upon a successful prototype, the microcontrollers circuit can be integrated into the main PCB, removing the cost of purchasing pre-made boards. Some critical concerns are useable GPIO pins, programming languages and power consumption.

Although surface mount components are cheaper and easier to use in manufacturing, some components such as lights may be more suited to through hole components depending on their use and ability to visually emulate circuit lights.

Communication between units needs to be considered. It needs to be simple for customers so cables may be best suited with their reliability for signals but are easily damaged and if there many runs to different units later, it could get complex. Wireless solutions may be better suited, if the speed and quality is reliable and reduce the complexity for end users.

Feedback to the user will be critical for some features. An LCD screen is simpler and draws less power, although an LED screen is more customisable which may be better suited if the systems becomes complex with the information being fed back to users.

6 Project Timeline

6.1 Gantt chart

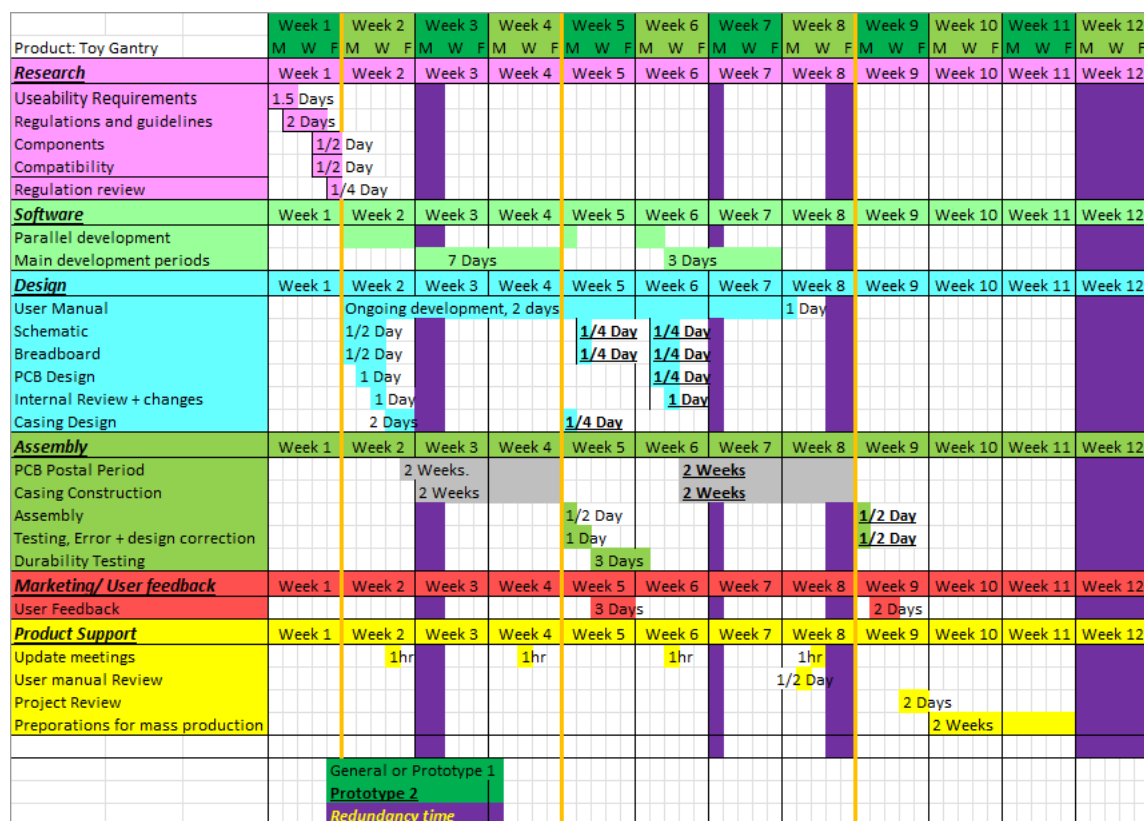


Fig. 2. A Gantt chart for the timeline of the project

Every task for the project comes under one of 6 sections: research, software design, hardware design, assembly, marketing and product support. The project is also split into 4 sections.

The first section is scheduled for 1 week and is dedicated to research for the design of the product.

The second section involves Week 2 which is designing the product, and the delivery of both the PCBs and casing. They should arrive by the end of week 4. It is common for orders to arrive within 10 days of purchase with the regular suppliers, allowing 2 contingency days at the start of week 3. We can also pay for faster shipping and in parallel most of the software can be developed, with the rest developed later.

Section 3 contains assembly the first prototype batch, identifying errors and fixing them. The second half of week 5 some of the prototypes can be durability tested while the rest given to marketing for feedback from potential users which can be fed into the second prototype. While the second prototype parts are being ordered, the software will be finished and tidied, implementing changes suggest from the market testing.

The last section is assembly the second prototype batch and taking them for more feedback with the finished software uploaded to them. A project review can then take place before preparing the product for mass production by the end of week 11 if it's signed off, with an additional week planned as contingency.

Figure 3 beneath shows the expected time for each task and maximum feasible overrun, allowing easier changes to the timeline if needed. The overrun column is calculated for everything going wrong. The expected time is rounded up to each ½ day, allowing tasks small delays without impacting the project.

Task	Expected Time (Days)	Feasible maximum Overrun	Dependencies	Other Teams	Additional Staff	Staff Cost	Production cost	Total cost
Research	4.75	1.75			1	1200	20	1220
A: Useability Requirements	1.5	0.25			1 (for 1/2 Day)	400	0	400
B: Regulations and guidelines	2	1		Legal	1 (for 1/2 day)	500	0	500
C: Components	0.5	0.25	A		0	100	20	120
D: Compatibility	0.5	0.25	A, C		0	100	0	100
E: Regulation review	0.25	0	B	Legal	1	100	0	100
Software	10	5	J		0	2400	0	2400
F: Parallel development	-	-			0	0	0	0
G: Main development periods	10	5		Software	1 (for 2 days)	2400	0	2400
Design	10.75	5.25	Research		4	2950	125	3075
H: User Manual	3	2	Software,	Marketing	1	600	0	600
I: Schematic	1	0.5			0	200	0	200
J: Breadboard	1	0.5	I		0	200	0	200
K: PCB Design	1.5	0.5	I,J		0	300	25	325
L: Internal Review + changes	2	1	K	2x designers	2	1200	0	1200
M: Casing Design	2.25	0.75	K,L	Manufacturing	1	450	100	550
Assembly	49.5 (40)	21.5 (20)	Design		2	3350	270	3620
N: PCB Postal Period	20	10	K	Post service	0	0	20	20
O: Casing Construction	20	10	M	Manufacturing	1	2000	250	2250
P: Assembly	1.5	1	N,O		0	300	0	300
Q: Testing, Error + design correction	2	0.5	P	Testing	1 (for 1/4 Day)	450	0	450
R: Durability Testing	6	0	P	Testing	1	600	0	600
Marketing/ User feedback	5	0	Physical Unit		2	1000	0	1000
S: User Feedback	5	0		Marketing	2	1000		1000
Product Support	13	5			5	3300	0	3300
U: Update meetings	0.5	0		Stakeholders	4	500		500
V: User manual Review	0.5	0	H	Marketing	1	200		200
W: Project Review	2	0	Marketing	Stakeholders	4 (For 1/4 Day)	600		600
X: Preparations for mass production	10	5	W			2000		2000
Totals	93 (40)	38.5 (20)			14	14200	415	14615
Task	Linear Time (Days)	Leway			Additional Staff	Staff Cost (£)	Production cost (£)	Total cost (£)
	(Out of control once started)				Staff cost calculated at £200/day			

Fig. 3. A detailed breakdown of the Gantt chart and financial costs incurred at each stage.

6.2 Critical path analysis

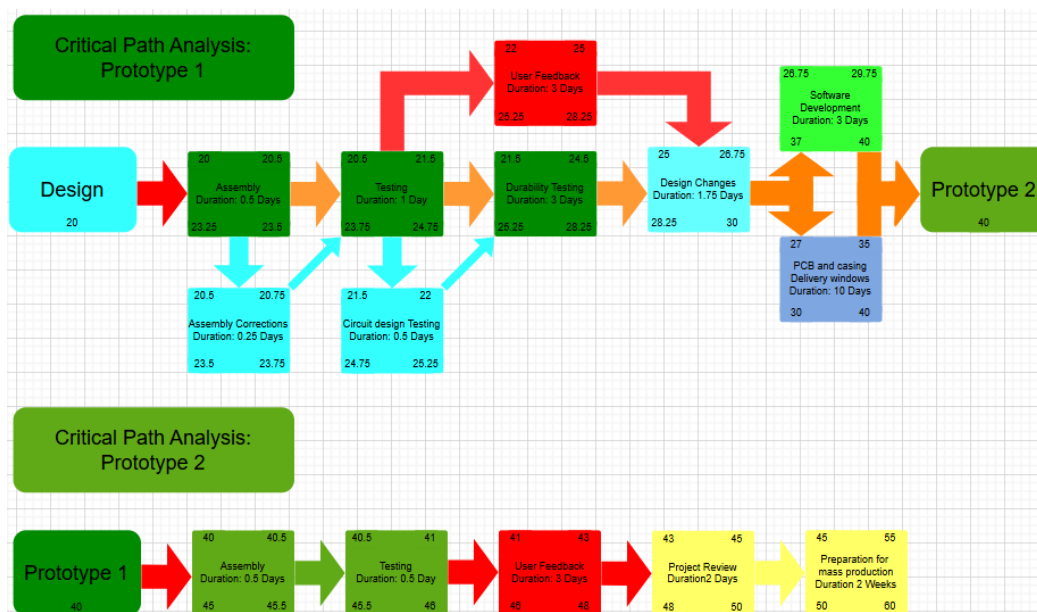
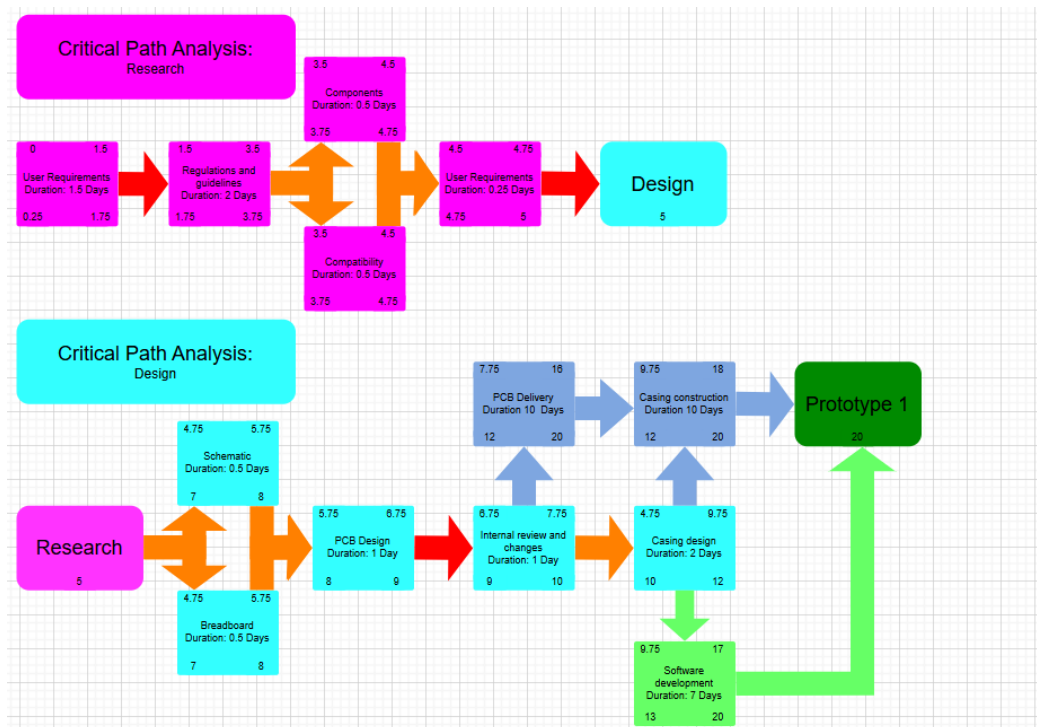


Fig. 4. (top) The critical path analysis up to the end of the first design stage

Fig. 5. (bottom) The critical path analysis from the assembly of prototype 1

The critical path analysis has been made from the 4 sections of the project which act as milestones, with targets of completion at the end of week 1, 4, 8 and 12, with deliverable, tested prototypes in sections 3 and 4. The numbers at the top of each task show the earliest day they can begin and finish, while the bottom numbers show the latest to remain on schedule for that section. Section 3 and 4, the prototypes, have a few days spare if every task remains on schedule. Research is extremely tight on the deadline provided although design has a couple of days spare, and its been assumed that in this critical path analysis, we have decided to not pay for faster delivery, which is an option providing us an additional few days if necessary.

7 Financial Considerations

7.1 Development costs

Table I beneath shows a breakdown of the expected cost to purchase components required for; creating the prototypes, cost for the components used in a prototype and the cost per unit in bulk production.

Table I
Cost analysis for components depending on use

Components required (estimate)	Cost of small order (cost for 10 if small order is less)	Estimated cost per prototype unit.	Bulk price per component (per unit)
1 Uc	£30 for 5	£6	£2
1 LCD Screen	£10 each	£10	£2
40 LEDS	£10 for 100	£3	£0.01 (£0.4)
50 Resistors	£2.40 for 20	£3.60	£0.01 (£0.5)
20 Capacitors	£10 for 100	£2	£0.01 (£0.2)
1 Fuse holder	£2 for 5	£0.4	£0.1
1 9V battery enclosure and connector	£2 for 5	£0.4	£0.2
1 power regulator	£5 for 20	£0.25	£0.1
40 Male header pins	£3 for 1000	£0.12	£0.001 (£0.04)
100 female header pins	£3 for 1000	£0.3	£0.001 (£0.1)
3 buttons	£5 for 50	£0.3	£0.05 (£0.15)
2 potentiometers	£10 for 10	£2	£0.5 (£1)
10 PCB boards*	£40 slow postage, £100 quick postage.	£4 or £10	£0.5
1 Buzzer	£3 for 5	£0.6	£0.1
10 enclosures *	£40 for slow postage, £100 quick postage	£4 or £10	£1
Cost:	£225 + delivery for prototypes	Per prototype: £29 +delivery costs	Per unit: £8.39

The PCB and enclosure prices are based on previous experience. The price varies depending on the size and complexity of the designs although the product should be relatively small and basic so it's unlikely to be much higher.

Task	Expected	Feasible maximum		Other Teams	Additional Staff	Staff Cost	Production cost	Total cost
	Time (Days)	Overrun	Dependancies					
Research	4.75	1.75			1	1200	20	1220
A: Useability Requirements	1.5	0.25			1 (for 1/2 Day)	400	0	400
B: Regulations and guidelines	2	1		Legal	1 (for 1/2 day)	500	0	500
C: Components	0.5	0.25	A		0	100	20	120
D: Compatibility	0.5	0.25	A, C		0	100	0	100
E: Regulation review	0.25	0	B	Legal	1	100	0	100
Software	10	5	J		0	2400	0	2400
F: Parallel development	-	-			0	0	0	0
G: Main development periods	10	5		Software	1 (for 2 days)	2400	0	2400
Design	10.75	5.25	Research		4	2950	125	3075
H: User Manual	3	2	Software,	Marketing	1	600	0	600
I: Schematic	1	0.5			0	200	0	200
J: Breadboard	1	0.5	I		0	200	0	200
K: PCB Design	1.5	0.5	I,J		0	300	25	325
L: Internal Review + changes	2	1	K	2x designers	2	1200	0	1200
M: Casing Design	2.25	0.75	K,L	Manufacturing	1	450	100	550
Assembly	49.5 (40)	21.5 (20)	Design		2	3350	270	3620
N: PCB Postal Period	20	10	K	Post service	0	0	20	20
O: Casing Construction	20	10	M	Manufacturing	1	2000	250	2250
P: Assembly	1.5	1	N,O		0	300	0	300
Q: Testing, Error + design correction	2	0.5	P	Testing	1 (for 1/4 Day)	450	0	450
R: Durability Testing	6	0	P	Testing	1	600	0	600
Marketing/ User feedback	5	0	Physical Unit		2	1000	0	1000
S: User Feedback	5	0		Marketing	2	1000		1000
Product Support	13	5			5	3300	0	3300
U: Update meetings	0.5	0		Stakeholders	4	500		500
V: User manual Review	0.5	0	H	Marketing	1	200		200
W: Project Review	2	0	Marketing	Stakeholders	4 (For 1/4 Day)	600		600
X: Preparations for mass production	10	5	W			2000		2000
Totals	93 (40)	38.5 (20)			14	14200	415	14615
Task	Linear Time (Days)	Leway			Additional Staff	Staff Cost (£)	Production cost (£)	Total cost (£)
	(Out of control once started)				Staff cost calculated at £200/day			

Fig. 3. A detailed breakdown of the Gantt chart and financial costs incurred at each stage.

The main cost will be staff. It's been calculated that each member will cost £200 per day, which accounts for wages and employee benefits.

The casing could be produced internally, taking up to 5 days for each design, resulting in a cost of £2000 for staff and £250 for materials. This option is much more expensive although it eliminates the risk of delivery delays.

The total cost of staff across the project comes to £14,200. With the added cost of £425, allowing for fast delivery on orders, the total cost is expected to be around £14,700 to have a product ready for mass production.

7.2 Marketing price and profits

With no competitors to compare against, the retail price is up to us to set. With small entry level slot car circuits retailing between £30 to £50, and a collection of 20 hot wheels costing around £40 new, £25 seems a reasonable price to target, with it not being too expensive to discourage purchasing.

With parts costing £8.40 per unit, assembly costing £2, which considers all staff involved in running the project, and marketing and distribution costs also being around £1.50, the total cost per unit will be:

$$£8.40 + £2 + £1.50 = £11.90$$

The profit per unit (sale price – cost for production) if the sale price is £25 will be:

$$£25 - £11.90 = £13.10$$

Development costs for the project were £14700, so to break even (development costs / profit per unit), the project would need to sell:

$$£14700 / £11.90 = 1240 \text{ units}$$

8 Risks and mitigating strategies

Table II
Risk Analysis

Risk	Impact	Chance	Effects	Mitigations
Electrically unsafe product.	Critical	Low	Dangerous to use. Potentially cause life changing injuries or death depending on failure, such as battery testing causing a fire.	Testing to follow all safety precautions and complete relevant training. Issues need to be raised to the design teams when they are noticed to fix and find workarounds on prototypes if possible.
Deliveries for PCB and enclosure design delayed beyond 2 weeks	High	Medium	Project gets delayed and gets de-prioritised by departments such as marketing after missing internal delivery windows.	Normal delivery within 10 days. Additional days already planned in. Priority delivery can be paid for to reduce the delivery window and probability of delays.
Small development team and people may be unavailable.	High	Medium	Project gets delayed if people need to take leave or become ill. Small teams could limit design choices by preference and don't provide other people to peer review for errors.	Monitor and manage staff availability in relation to the project. Redundancy days planned for small delays. Avoid a tight deadline for delivery. Provide enough design and research time. A second prototype is planned to fix errors.
Failures of components or parts on prototypes	High	Low	Damaged components could cause a prototype to fail, meaning it can't be used.	Order spares for high-risk components or parts. Produce 5 of each prototype so if one fails, there's still enough for marketing and testing simultaneously. Test high risk component before implementing.

Along with the risks above, there are also the standard workplace and project risks which also need be considered and potentially adjusted to suit the proposal.

If the unit has too many features there's a chance it gets too complicated for many users. A good user manual will help explain how to use the product and help contribute to more sales. Ensuring that feedback collected during the marketing stage includes the user manual will contribute to its success.

9 Environmental, ethical and societal impacts

To reduce environmental impact, any test components which fail should be disposed of safely and in accordance with regulations in place by governments [20] [21][22]. The marketing of the product should recommend re-chargeable batteries to avoid single use, disposable batteries. A cable will be provided but a battery won't be included as it is expected most use cases will prioritise using it plugged in.

Although power draw will be less than an amp, efficiency should be a priority to increase the battery life.

The ethical concerns for the product involve its construction and users. The law and industry standards should be followed throughout the lifecycle of the product. Any sources of materials should also be investigated ensuring they meet our ethical standards. No data will be collected from users, so privacy isn't a concern. Marketing will be targeted towards adults to avoid pressure from children. Research may require children's input, so parents should be approached first and upon consent asking the children, with any personal information collected kept to a minimum.

The product will have societal impacts. It can be used in group activities and encourages collaboration. To be unbiased, any information displayed should be visible at a distance and not just those nearby. The lights should be relatively bright, and all lights should react with minimal delay. Any motorsport product can encourage users to get involved in motorsport, however they may not be aware of the risks involved, so a responsibility is on us to ensure that those risks are communicated in packaging.

10 Further product development options

Once this unit is designed, most of the development work can be utilised in other, similar products. If a communication bus is left free, other units such as marshal posts or a central control could connect and create a larger interconnected system. A large LED matrix [18] could be used for larger, simple and customisable displays. A software update may be required so planning for this may be needed in the design. The enclosure can be designed in a way which allows other parts such as barriers or other circuit aesthetics to connect and create a track.

11 Conclusion

The aim of the project is to recreate the FIA motorsport gantry lights and create a miniature toy scale version with additional features, such as a clock, alarm and countdown timer.

The development cycle should last 9 weeks to create two prototypes and be ready for mass production in 12 weeks, resulting in being ready for sales within half a year. The expected development costs are £14700, and with a profit of £11.90 per unit 1240 would need to be sold to break even. There are minimal risks identified outside our normal operating risks. With no competitors currently noticeable it should be a successful product if its managed correctly.

References

- [Formula 1, "Formula 1 and Motorsport Network Unveil 2025 Global Fan Survey," Formula 1, 01 07 2025. [Online]. Available: <https://corp.formula1.com/formula-1-and-motorsport-network-unveil-2025-global-fan-survey-gen-z-women-and-u-s-audiences-leading-new-era-of-modern-fandom/>. [Accessed 12 07 2025].
- [Motorsport Network, "2025 Global," Motorsport Network, 01 07 2025. [Online]. Available: <https://fansurvey2025-formula1.motorsportnetwork.com/>. [Accessed 12 07 2025].
- [Motorsport Network, "2025 Global F1 Fan Survey," Motorsport Network, 01 07 2025. [Online]. Available: <https://cdn-8.motorsport.com/static/custom/piano/2025globalf1fansurvey.pdf>. [Accessed 01 07 2025].
- [Formula 1, "Second season of F1 Kids to broadcast seven races," Formula 1, 08 03 2024. [Online]. Available: <https://www.formula1.com/en/latest/article/second-season-of-f1-kids-to-broadcast-seven-races.3pmHww5n791dWAnfkqAmjC>. [Accessed 12 07 2025].
- [Lego, "We're Putting Play in Pole Position! The LEGO Group and Formula 1® To Go Full Throttle On New Brand Partnership," Lego, 18 09 2024. [Online]. Available: <https://www.lego.com/en-us/aboutus/news/2024/september/lego-f1-partnership-announcement?locale=en-us&consent-modal=show>. [Accessed 12 07 2025].
- [Formula 1, "Formula 1 announces new multi-year partnership with Hot Wheels," Formula 1, 09 10 2024. [Online]. Available: <https://www.formula1.com/en/latest/article/formula-1-announces-new-multi-year-partnership-with-hot-wheels.7yBhBlS17Bmt8hXLFVxqE2>. [Accessed 12 07 2025].
- [Webb RC Videos, "Making a RC Drag Racing start light {Great for No Prep RC Drag Racing.}," Webb RC Videos, 17 02 2021. [Online]. Available: https://www.youtube.com/watch?time_continue=1&v=F_qJzt5eSNM&embeds_referring_euri=https%3A%2F%2Fwww.bing.com%2F&embeds_referring_origin=https%3A%2F%2Fwww.bing.com&source_ve_path=MjM4NTE. [Accessed 12 07 2025].
- [Robdavinci, "R/C Car Drag Racing Lights," Autodesk Instructables, 21 01 2015. [Online]. Available: <https://www.instructables.com/RC-Drag-Racing-Lights/>. [Accessed 12 07 2025].
- [picprojects, "F1 Gantry Start racing lights (version 3)," picprojects, 1 10 2022. [Online]. Available: <http://picprojects.org.uk/projects/f1lights/index.htm#:~:text=This%20project%20provides%20an%20simple%20F1%20motor%20racing,is%20pressed%20all%20the%20LED%20clusters%20are%20off>.. [Accessed 12 07 2025].
- [FIA, "Recommended light signals for standing starts in circuit events," 23 06 2025. [Online]. Available: https://www.fia.com/sites/default/files/regulation/file/03__Recommended_light_signals.pdf.
- [FIA, "FIA STANDARD 3504-2019 Light panels," FIA, 2019. [Online]. Available: https://www.fia.com/sites/default/files/fia_standard_3504-2019_light_panels_en.pdf. [Accessed 23 06 2025].

[FIA, “ 2025 FORMULA ONE SPORTING REGULATIONS,” 26 02 2025. [Online]. Available:
1 [https://www.fia.com/system/files/documents/fia_2025_formula_1_sporting_regulations_-_issue_4_-](https://www.fia.com/system/files/documents/fia_2025_formula_1_sporting_regulations_-_issue_4_-_2025-02-26.pdf)
2 [_2025-02-26.pdf](https://www.fia.com/system/files/documents/fia_2025_formula_1_sporting_regulations_-_issue_4_-_2025-02-26.pdf). [Accessed 23 06 2025].
]

[FIA, “ CIRCUIT REGULATIONS,” 02 04 2025. [Online]. Available:
1 [https://www.fia karting.com/sites/default/files/2025-](https://www.fia karting.com/sites/default/files/2025-04/7.1_Pr%C3%A9pa%20RCIRC%20PI%20%2B%20II%202025.pdf)
3 [04/7.1_Pr%C3%A9pa%20RCIRC%20PI%20%2B%20II%202025.pdf](https://www.fia karting.com/sites/default/files/2025-04/7.1_Pr%C3%A9pa%20RCIRC%20PI%20%2B%20II%202025.pdf). [Accessed 23 06 2025].
]

[Pixelcom, “Race Start Lights for Professional Motorsport Circuits,” Pixelcom, 2023. [Online].
1 Available: <https://pixelcom.io/motorsport/circuits/starting-lights>. [Accessed 23 06 2025].
4
]

[EM Motorsport, “Signalling Starting Light system,” EM Motorsport, 2025. [Online]. Available:
1 <https://www.emmotorsport.com/solutions/starting-light-system>. [Accessed 23 06 2025].
5
]

[Arduino, “Arduino Hardware,” Arduino, 2025. [Online]. Available:
1 <https://www.arduino.cc/en/hardware/>. [Accessed 23 06 2025].
6
]

[Raspberrypi, “Pico-series Microcontrollers,” Raspberrypi, [Online]. Available:
1 <https://www.raspberrypi.com/documentation/microcontrollers/pico-series.html>. [Accessed 23 06
7 2025].
]

[thepihut, “rgb-full-colour-led-matrix-panel-2-5mm-pitch-64x64-pixels,” thepihut, [Online]. Available:
1 <https://thepihut.com/products/rgb-full-colour-led-matrix-panel-2-5mm-pitch-64x64-pixels>.
8 [Accessed 23 06 2025].
]

[Arduino, “Nano,” Arduino, [Online]. Available: <https://docs.arduino.cc/hardware/nano/>. [Accessed
1 23 06 2025].
9
]

[“Environmental directives,” Electrical Installation Wiki, 22 06 2022. [Online]. Available:
2 https://www.electrical-installation.org/enwiki/Environmental_directives. [Accessed 23 06 2025].
0
]

[European Parliament, “DIRECTIVE 2012/19/EU on waste electrical and electronic equipment
2 (WEEE),” 24 07 2012. [Online]. Available: [https://eur-](https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:197:0038:0071:EN:PDF)
1 [lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:197:0038:0071:EN:PDF](https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:197:0038:0071:EN:PDF). [Accessed 23 06
] 2025].

[Office for product safety and standards. Department for environment, food and rural affairs.,
2 “Regulations: Waste Electrical and Electronic Equipment (WEEE),” Gov.uk, 22 04 2025. [Online].
2 Available: <https://www.gov.uk/guidance/regulations-waste-electrical-and-electronic-equipment>.
] [Accessed 13 07 2025].

Appendices

A Prevent certification



**AN INTRODUCTION TO
THE PREVENT DUTY
AS IT AFFECTS
HIGHER EDUCATION**

CERTIFICATE OF COMPLETION

THIS ACKNOWLEDGES THAT

Name: Charles

HAS SUCESSFULLY COMPLETED THE INTRODUCTION TO PREVENT E-LEARNING

Date: 28/5/25

B Equality and diversity certification

