Design Brief

Due:	**Weight:**	**Allocation:**
2022-10-25 @ 22h00	10%	Team

Assignment Overview

In Praxis I, we put emphasis on each strand of the design process to allow you to develop a deep understanding of that strand. That way, when the strands come together, you will be able to weave them into good and effective design work. To that end, this stage of the course involves working primarily[1] on Framing. Framing stresses the engagement with stakeholders, the establishing of design priorities (such as DfX), and the defining of requirements.

At this stage, you need to collaborate with your team to create a coherent team-level vision for your work together to address the broad opportunity. Your challenge is:

> Develop an opportunity to address a "Splartz" for the University of Toronto community

"What on earth is a 'Splartz'?" you rightly ask. First, 'Splartz' is a made-up word—you will not find it in a dictionary. We use this word because no word gets at the idea without prejudicing your design work. A 'Splartz' is an annoyance or an irritant, or a minor problem in your lives, or an opportunity for something that could be better if only we did something about it. We think the word itself is a little annoying—so it sort of fits. Your task as a team is to identify a 'Splartz' where some new design(s) would make it better.

What might you interpret as irritating or annoying or even good but worth improving? What you observe, possibly research, and potentially frame with your team may become the basis of your design brief.

A design brief is a document that frames an opportunity from an engineering design perspective. The overall objective of a design brief is to provide an engineering design team with the information and interpretations needed to successfully develop designs with the potential to legitimately address the opportunity.

For this purpose, design briefs should provide sufficient information, interpretation, and guidance of the Splartz such that the respondents can focus their efforts on developing conceptual designs. Specifically, a design brief makes use of stakeholder input, which gets corroborated with research input, to explain the opportunity (the Splartz) and develop a set of requirements—objectives, metrics, constraints, and criteria. A design brief should also enable the respondents to revisit and reframe elements of the brief if they find it necessary or appropriate to do so.

This document describes the requirements for the Design Brief Assignment. It should be understood in conjunction with the Design Brief Independent Assessment Tool.

[1] Since all the strands are always in play to some degree, we need to qualify this claim with 'primarily'.

Assignment Stakeholders

The following stakeholders have an interest in this assignment and what you create in response to it. These stakeholders are:

- Possible responding team(s) that may use your design brief to develop a design concept that addresses the opportunity that you have identified and who therefore require sufficient, relevant, credible information to understand the opportunity in a way that allows them to make efficient and effective use of their time.
- Your team, who must leverage its collective interests, values, and design skills to identify and frame an engineering design opportunity.
- You, an aspiring engineering designer who must develop both individual skills in communication and design and skills in working collaboratively within a team.
- Your Studio Teaching Team, who are responsible for helping you to shape the opportunity that your team has identified into a design brief that is a suitable foundation for the remainder of the term.
- University of Toronto community, who may benefit from, a Splartz being addressed.
- Other members of the University of Toronto community who may be affected by a Splartz being addressed

Requirements

The key words “must”, “must not”, “required”, “shall”, “shall not”, “should”, “should not”, “recommended”, “may”, and “optional” in this and following sections are to be interpreted as described in RFC 2119.[2]

Objectives

1. Identify and explain an opportunity that satisfies the challenge
2. Justify the legitimacy of the opportunity through background research and first-person observation, including but not limited to identifying stakeholders and analyzing their stakes
3. Develop engineering requirements that appropriately frame the opportunity from an engineering design perspective
4. Verify that existing solutions (e.g. reference designs) fail to address the opportunity in a manner consistent with, or at a sufficient level of quality as defined by, the engineering requirements
5. Document your experience(s), research, framing, and requirements in the form of a design brief that integrates textual and graphical elements to meet an **engineering reader**’s need
6. Use praxis (i.e. the integration of experience, judgment, and formal models, tools, and techniques) to work effectively and efficiently as a team.

[2] RFC2119 is a document designed for software developers to formalize and standardize language. It has become an informal standard in electrical and computer fields. You can find it here: https://tools.ietf.org/html/rfc2119

Constraints

Your Design Brief:

1. **Must** present an opportunity that can be addressed through a verifiable physical design concept
2. **Must not** present preliminary or proposed engineering design(s) that address the opportunity[3]
3. **Must** be submitted as a single PDF file through Quercus.
4. **Should not** exceed 1800 words of text, exclusive of references, graphical elements, or appendices

   Note that "should" does not suggest that longer Design Briefs are preferred (see "Characteristics for Evaluation"). Teams who exceed 1800 words should do so only after considered discussion and as a means of significantly improving their submission.
5. **Must** include a total word count at the top of the document.
6. **Must** incorporate a title that allows a reader to understand the opportunity
7. **Must** be in 11 or 12 pt font with 1-1.25 line spacing and 1.0 inch margins
8. **Must** be completely anonymous with respect to your team, that is it **must not** include any information (e.g. names, student numbers, identifiable photos, team identifier, etc.) that could be used to identify members of your team in the body of the Brief itself[4]

   For other stakeholders you should exercise professional judgment as to how much identifying information you include. Your objective is to balance stakeholder privacy with the needs of a team that may address the opportunity.
9. **Must** include relevant extracts from any used references in an Appendix titled "Source Extracts."

Characteristics for Evaluation

These characteristics describe the attributes that will be evaluated. For the full metrics consult the Design Brief Independent Assessment Tool. That Tool places these characteristics alongside descriptions of levels of achievement that you can use to independently assess your work. For all characteristics, the criteria are "more", "higher", or "greater".

Note: These characteristics may not be weighted equally.

1. Quality of the opportunity

   A good opportunity

   i. reflects the team's and primary stakeholders' interests and values,

   ii. represents a stakeholder need (as demonstrated by observation and research),

   iii. is solvable by a team of first-year engineering science students,

   iv. can be represented and solved in multiple meaningful ways (e.g. calculation, physical prototype(s), drawings, demonstrations, or other means), but

   v. cannot simply be solved by selecting an existing design (existing product or service).

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[3] Note that reference designs which demonstrate partial solutions, interesting points of departure, flaws, gaps, or weaknesses in existing products are acceptable as, by definition, they provide reference but do not address the opportunity being framed in the Design Brief.

[4] Quercus will automatically tag the document with the team's identity, so your assessors will have your identity. However, other students will have an opportunity to read your Brief (and possibly select it to work on), while maintaining your anonymity.

2. Correctness, appropriateness, and credibility of the engineering requirements

   Good Requirements

   i. model the opportunity and stakeholder experience in engineering terms,

   ii. incorporate codes and standards, handbooks, DfXs as necessary,

   iii. are usable for Engineering Science students in their 1st term of study who have limited time to complete their design activities,

   iv. are internally consistent and consistent with the remainder of the brief.

3. Quality of reference designs

   Use of reference designs demonstrates thorough consideration of existing solution possibilities and/or can be used to guide future design activities

4. The quality and credibility of your engineering arguments

   In engineering, arguments work from the data gathered (observation and research) and are structured using logical models (Toulmin Model) with an emphasis on reason (logos).

5. Quality of the document as a Design Brief

   A good design brief should allow a reader to read without re-reading and find information quickly. Readability is aided by an introduction, structured headings and sub-headings indicating sections, claim-first paragraphs or lists, and a brief conclusion, with the internal structure of the document designed in response to the Design Brief's content.

6. The coherence and clarity of your written and visual communication

   Integrated visuals and text provide the best means to express your meaning. Proficiency with engineering visuals and text is important to communicate to engineering readers, so try to use the specific language of Engineering and design. Visuals are often the clearest way to express ideas in engineering (not just for decoration).