



Proposal:  
Product development

Prepared for:  
**Cameron Ashton, Philip Bateman  
& Tobi Nagy**  
HOH Enterprises Pty Ltd.

Project:  
**Production Ready Truck Cell**

Proposal number:  
HOH-Q001

Date:  
13<sup>th</sup> December 2008

Supplied by:  
Tricycle Developments Pty. Ltd  
ABN: 18 118 823 180  
183 Hawke St  
West Melbourne  
Victoria Australia  
3003  
[www.tricycledevelopments.com](http://www.tricycledevelopments.com)



This document outlines the product development stages that we believe will produce the best result for your project. We can provide all or only some of the stages you will require to successfully get your product to market. Please read below for an outline on all stages and an estimate of costs and project duration.

### Development Process Summary

<b>Stage</b>	<b>Outcome</b>
<i>Scope</i>	Clearly understood document outlining the product function and features. It includes targets the product is required to achieve and features which must be included.
<i>Concept Development</i>	3 Concepts for how the product could be designed to: - suit the target markets user needs - create a strong physical brand for HOH - resolve the basic system and component layout.
<i>Concept Refinement</i>	Review and agree on a design direction and refine the selected concept to a higher level of detail. This will define the form and styling of the final product and how the main system components will be configured
<i>Detailed Design</i>	Detailed component and system integration design. This stage works in 3D* and is about optimizing parts, selecting the best supplier components and refining the assembly and installation processes of the system. (*3D Solidworks CAD models).
<i>Beta Prototyping</i>	Sourcing prototype parts and building a working prototype of the design to verify design, part fit and allow for product testing
<i>Product Testing</i>	Testing the beta prototype unit against the function and safety targets. Verifying the unit against customer use targets and getting market feedback from fitting the beta unit to a key customer vehicle.
<i>Design Modifications</i>	Integrating learning from the product testing stage back into the design to improve performance, functionality and suitability to the market.
<i>Production Prototyping</i>	Sourcing refined prototype parts and assembling a production level prototype to verify the refined design for fit and functional improvements. This prototype will also be highly indicative of future production units from a visual perspective to support demonstrations and marketing
<i>Production Documentation</i>	Final production specification and documentation of the design, including production drawings with critical tolerancing, material specifications, assembly drawings and BOM
<b>Possible Extensions</b>	
<i>Sourcing Production and Tooling Suppliers</i>	Using the production documentation package to find suitable suppliers and facilitating the competitive quotation process
<i>Tooling &amp; Initial Supply Management</i>	Managing the process of building tooling and the supply of initial production parts which meet production specifications.
<i>Production Management</i>	On-going management of part or sub-assembly supply



## Stage 1 | **Scope**

The scope stage establishes the key targets of the product to be developed. It includes:

- Product functions to be incorporated
- Components and features which must be included
- Physical size restrictions
- Standards compliance requirements
- Target market requirements, such as mounting, filling and servicing etc
- Expected production volumes
- Preferred suppliers and manufacture partners to be consulted during the design process
- Product cost targets
- Physical testing targets such as vibration, MTTF, gas permeation etc

The aim of the scope is to create a clear understanding of the expected project outcomes between the parties and to give a bench mark for product testing.

*Deliverables* > - Scope document (pdf format)

*Requirements* > - Existing project background information  
- Access to key customers

*Cost & Timing* >      Duration-      5 days  
                                 Fixed Price-    \$1800

## Stage 2 | **Concept Development**

The concept stage is about developing the visual and layout aspects of the design. This stage incorporates the learning about customer needs, alternatives for the functional layout of the system and the creation of a clear visual brand for HOH. 3 concepts will be produced which explore each of these aspects and then through a review process the best aspects of each concept can be extracted. The concept process is about thinking wider and including the users needs from the beginning. The outcome is a clearer picture of what the product could be and how it could look.

*Deliverables* >            Concept presentation boards (pdf format)  
                                 Concept review and selection meeting

*Requirements* >            Access to technical assistance (Cameron) for layout information

*Cost & Timing* >            Duration-      8 days  
                                 Fixed Price-    \$3500



### Stage 3 | **Concept Refinement**

The end of the concept process is about selecting the concept or aspects of various concepts. This is the starting point for concept refinement where the preferred concept is developed to a higher level of detail. Component layout is addressed more completely and styling is refined to be more indicative of the finished outcome. The outcome of concept refinement is a clear and approved picture of what will be designed in the following stages.

*Deliverables* >      Refined Concept board (pdf format)  
                                    Concept approval meeting

*Requirements* >      Access to technical assistance (Cameron) for layout information

*Cost & Timing* >      Duration-              6 days  
                                    Price-                  \$2600

### Stage 4 | **Detailed System & Component Design**

The approved concept design is now broken into its individual components and developed in 3D CAD (Solidworks). Through this process the functional, fitment and assembly issues of the system are addressed. Components are optimized to make them suitable for manufacture, reduce the cost and allow for ease of assembly. Customer needs such as mounting points, water filling points and maintenance access are addressed. While many parts will be custom to the unit, many other standard parts will be sourced and selected to form key parts of the system including fittings, switches and the pump. Some consideration will also be given at this stage to branding, labelling and packaging of the unit to ensure that the design accommodates these issues.

As part of the design process FEA computer simulation will be used to verify the structural integrity of mounting and pressure components. This process ensures material strength in critical areas and reduces the number of prototype tests required to optimize the design.

The outcome of stage 3 is a detailed product design for your product with documentation suitable for beta prototype manufacture. This includes a 3D file of your product which you can rotate and manipulate to understand the geometry in detail.

*Deliverables* >      3D CAD files of proposed design (includes E-drawing 3D model) \*  
                                    Beta prototype documentation

*Requirements* >      Access to technical assistance (Cameron) for detail component and  
                                    system information

*Cost & Timing* >      Duration-              4 weeks  
                                    Price-                  estimated \$34000

\*Note: Given the CAD model outcome of this stage, detailed rendered (photo like) images and animations become relatively easy to produce for marketing material and instructions.





### Stage 6 | Design Refinement

Design refinement involves responding to test results and customer feedback. This stage is difficult to estimate and is obviously highly dependant on how stringent the standards are for the product in the scope. Design refinements will often be developed in CAD then sourced from prototype suppliers to allow the improved design to be re-tested on the beta unit.

*Deliverable >*

- A significantly improved product design which will meet pre-defined requirements
- 3D CAD files of proposed design (includes E-drawing 3D model)
- Production prototype documentation

*Cost & Time >*

Duration-	estimated 4 – 6 weeks
Price-	estimated \$8000 + \$5000 parts

### Stage 7 | Production / Market Prototype

Given that the beta prototype has been tested, and retested, while the design has been significantly improved and production prototype is build. The production or market prototype involves sourcing all the required components, some as custom 1 off parts from various suppliers and assembling the system to verify the fit and function of the production ready design. Particular attention is placed on achieving a prototype that is visually close to an off-production unit as possible so that the prototype can be used for demonstrations and market testing.

*Deliverable >* A production / market ready prototype ready for pre-production approval testing and marketing demonstrations

*Requirements >* Access to technical assistance (Cameron) for assembly and sourcing

*Cost & Timing >*

Duration-	3-4 weeks ( supplier and design dependant)
Sourcing/assembly-	estimated \$8000
Parts -	estimated \$15000

### Stage 8 | Production Documentation

The outcome is a production documentation package which will allow the product to be manufactured by commercial suppliers in production quantities.

*Deliverable >*

- Production documentation package including assembly drawings, bill of materials, standard component specs and custom component drawings.
- 3D CAD data for tooling or machining of custom components

*Cost & Time >*

Duration-	2 weeks
Fixed price-	\$5200



Product Cost & Outcome Summary:

Stage	Duration	Price	Key outcomes
Scope	5d	1800	
Concept Development	8d	3500	
Concept Refinement	6d	2600	- Product imagery
Detailed Design	~4w	~34000	- 3D product data
Beta Prototyping	~4w	source/ass ~8000 parts ~15000	- Working prototype
Product Testing	~6w	~4000	- Test data for design
Design Modifications	~6w	design ~ 8000 parts ~5000	3D product data
Production Prototyping	~4w	source/ass ~8000 parts ~15000	Improved working prototype
Production Documentation	2w	5200	Manufacture docs
Project Total	~29 weeks	~\$ 110100	
		(includes part costs ~ 35000)	
Tooling budget		~\$ 200-250,000	- Production parts

~ = estimate only

*Additional services:*

Marketing renderings

Using the 3D CAD model generated during the design stage we can generate a realistic 3D rendering (picture) of your product. This can be very useful in preparing marketing material, or getting more detailed customer feedback for products which do not yet exist. If you are interested we can provide you with a series of examples.

Production / Tooling sourcing, management and supply

We can assist with sourcing and/or supply of components and toolmaking from our network of suppliers both on and off shore.

**Notes:**

- All costs detailed above are subject to an additional 10% GST.
- All prices other than Stage 1-3 are estimates, firm quotation will be confirmed on a stage by stage basis.
- Accounts will be sent at the completion of each stage and are payable on 14 days term.
- Please note our terms of business are not attached to this proposal and will be provided should we commence this project.
- Quotation is valid for 30 days