University of Ottawa
GNG1103

Project Deliverable B- Needs Identification and Problem Statement

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Introduction

This document gives an overview of the client's needs and problems and defines the relevant information needed to solve them. The document also prioritizes the needs of the client highlighting what is most important.

Compiled Notes:

- The jig must be easy to use, and simple to handle
- Maximum budget of the jig is $100, and the maximum budget for the prototype is $50; the jig should be under the $50 mark.
- Cost increase can be justified depending on how much time is saved
- Process with the current jig takes on average 30 min
- The backset can be adjusted on a door-by-door basis, the jig should be able to adjust easily by at least ¼" intervals
- Measurements should be precise to 1/32"
- Cutout is a 6 ¾" by 1" rectangle
- The jig setup should not be long, preferably under 1 min.
- The jig must save a considerable amount of time for the machinist, at least >5 min
- Jig should have user-friendly elements in its design
- Jig should last for a considerable time, at least 1 year as the client specified
- Preferably easy to replace if broken.
- Jig must be capable of providing accurate and precise measurements for the machinist
- The material of the Jig can be 3D printed or created from sheet metal
- Jig must be convenient to use in a dusty and noisy environment.

Organized Table of Needs:

Ease of Use	*Adjustability & Functionality*	*Longevity*	*Constraints*
• The jig must be easy to use, and simple to handle • The jig setup should not be long, preferably under 1 min. • Jig should have user-friendly elements to its design • Use an extendable handle to use less force.	• The backset can be adjusted on a door-by-door basis, the jig should be able to adjust easily by at least ¼" intervals • The jig setup should be brief, preferably under 1 min. • The jig must save a considerable amount of time for the machinist, at least >5 min. • Use a leveler to know if it is straight or not. • Measurements precise to at least 1/32" • Should not damage the door wood when clamped • Cutout is a 6 ¾" by 1" rectangle	• Jig should last for a considerable time, at least 1 year as the client specified • Preferably easy to replace if broken. • The material of the Jig can be 3D printed or created from sheet metal, material should be durable	• Maximum budget of jig is $100, and the maximum budget for the prototype is $50; jig should be under the $50 mark. • Cost increase can be justified depending on how much time is saved • Should be a weight an average person can lift.

Benchmarking:

Specs/Jig	Weight	Adoles 35mm Concealed Door Hinge Jig	Door Hinge Jig Kit Hinged Door Lock Opening Positioner	DUEBEL Aluminum Alloy Door Hinge Jig
Company:		Adoles	Garosa	Duebel
Cost:	5	CAD $40.89	CAD $24.46	CAD $69.99
Adjustability:	4	adjustable dial can adjust the distance with 3mm, 4mm, 5mm and 6mm hinge offsets.	Adjustable height for installation, no adjust for horizontal placement. Only suitable for certain measurements	Adjustable clamps allow for up to 6 cm. Able to adjust depth of the blade of the wood router. Adjustable measurements for installations.
Practicality:	3	Easy to use, surface mounted. Has built-in clamps for convenience.	Easy use, is surface mounted onto door, needs external nails to hold in place	fast clamping and surface mounted: has hand-tightened screws, the clamping part adopts rubber anti-skid design to ensure that the surface of the wooden door will not be damaged
Accuracy:	5	the small swinging amplitude of the drill bit for accurate hole opening. Adjustable dials add onto precision and accuracy	Jig measurements are set up by the user, no super precise mechanism to dial into exact measurements.	The adjustability of side clamps allows for precise measurements. Clamps down on the work surface as well.
Material:	3	High Speed Steel	ABS Plastic	Aluminum
Dimensions:	2	176.78 x 121.92 x 91.44 cm; 699 Grams	22.5 x 9.5 x 2.5 cm; Plastic has negligible mass, also not	49.5 x 22 x 11 cm; 1.78 Kilograms

			specified.	
Has Clamps:	3	Yes	No	Yes
Total:		56	37	58
Links:		Adoles	Garosa	Duebel

Legend: Red = 1; Yellow = 2; Green = 3

Problem Statement:

AMBICO Ltd. requires the development of a reusable jig for routing flush bolt cutouts in door manufacturing processes. The jig must be a cost-effective jig that not only adheres to a strict budget but also significantly reduces the setup time, prioritizes ease of installation, is precise and practical, has good durability, and is adjustable based on different door back sets.