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Individual Requirements Assignment: Vacuum Cleaner

Underlying Need:

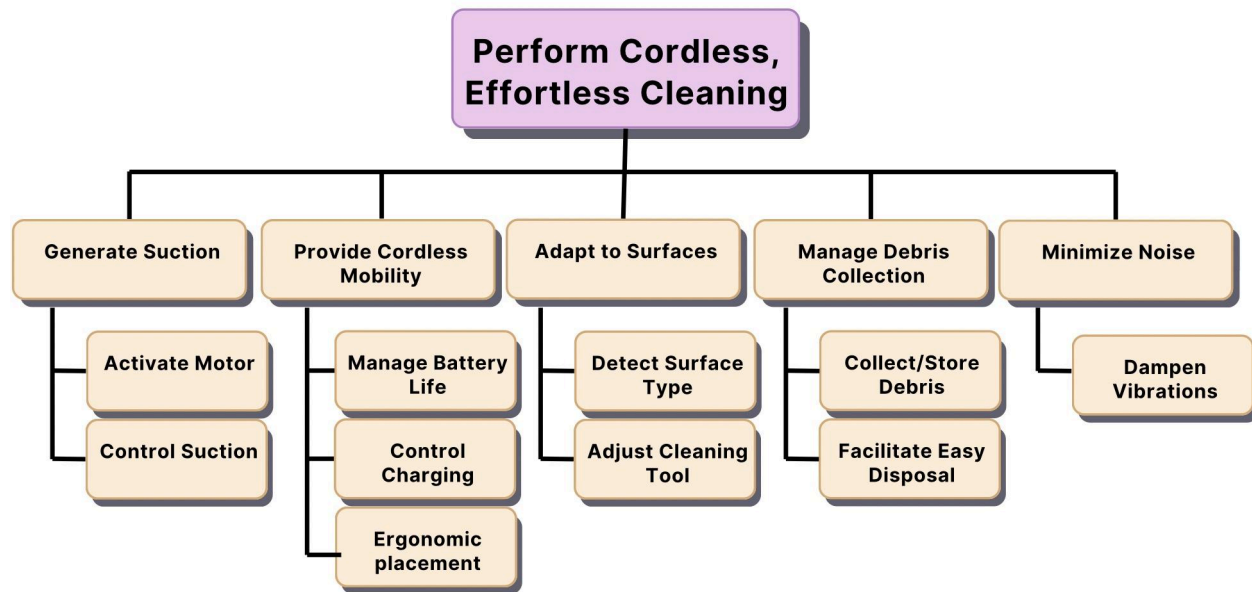
The underlying need for a cordless household vacuum is that it must provide the user with effortless, quick cleaning free from the hassle of cords while remaining flexible for a variety of surfaces inside modern homes.

ZotGPT List of Attributes:

Prompt: *Considering a cordless household vacuum that must provide the user with effortless, quick cleaning free from the hassle of cords while remaining flexible for a variety of surfaces inside modern homes. Create a list of design attributes for this vacuum cleaner idea.*

- ❖ Cordless & Portable:
 - Lightweight design without cords for unrestricted movement and easy handling around the home.
- ❖ Extended Battery Life & Quick Charging:
 - A powerful battery that supports prolonged cleaning sessions with minimal downtime.
- ❖ Versatility Across Surfaces:
 - Adjustable suction and multiple attachments to efficiently clean hard floors, carpets, upholstery, and tight corners.
- ❖ Robust Suction Performance:
 - Engineered for strong, consistent suction to handle a variety of debris types effectively.
- ❖ Ergonomic & User-Friendly:
 - Comfortable grip, intuitive controls, and easy-to-empty dustbin for a seamless cleaning experience.
- ❖ Compact & Space-Saving:
 - A design that is easy to store in small spaces, fitting modern household environments.
- ❖ Quiet Operation:
 - Reduced noise levels to ensure a disturbance-free cleaning process.
- ❖ Durability & Quality Construction:
 - Made from high-quality materials to withstand regular use while maintaining performance and aesthetics.

Functional Hierarchy:



ZotGPT Identified System Requirements:

Prompt: *Again considering a cordless household vacuum that must provide the user with effortless, quick cleaning free from the hassle of cords while remaining flexible for a variety of surfaces inside modern homes. Now create a list of system requirements for this vacuum.*

Below is a concise list of specific, measurable system requirements for the cordless household vacuum cleaner:

- ❖ **Cordless Operation & Battery:**
 - The vacuum shall be powered by a rechargeable battery that provides at least 35 minutes of continuous cleaning.
 - The battery must recharge from 0% to 100% within 4 hours using the supplied charging dock.
- ❖ **Weight & Ergonomics:**
 - The total weight of the vacuum (including battery) shall not exceed 4.5kg.
 - The design shall incorporate an ergonomic handle and balanced structure to ensure effortless maneuverability.
- ❖ **Cleaning Modes & Surface Adaptability:**
 - The vacuum shall offer at least three cleaning modes (e.g., Standard, Boost, Eco).
 - It shall automatically adjust suction power based on the detected surface type (hard floors, low-pile carpets, high-pile carpets).
- ❖ **Interchangeable Attachments:**
 - The vacuum shall provide a minimum of three cleaning attachments (e.g., crevice tool, brush tool, dusting tool) that can be attached or detached within 5 seconds.
- ❖ **Dust Collection System:**

- The device shall include an integrated dust container with a capacity of at least 500mL that is easy to remove and empty without tools.
- ❖ User Interface & Feedback:
 - A built-in digital display or LED indicator shall provide real-time information on battery status (in 10% increments), selected cleaning mode, and maintenance alerts.
- ❖ Noise Level:
 - The operational noise level shall not exceed 70dB when measured at a distance of 1 Meter.
- ❖ Environmental Operating Conditions:
 - The vacuum shall reliably operate in ambient temperatures between 5°C and 40°C.
 - It shall function properly in relative humidity conditions ranging from 20% to 90% (non-condensing).
- ❖ Durability & Safety:
 - The system shall be designed to withstand drops from a height of 0.5m onto a hard surface without damage.
 - A safety feature shall automatically trigger a low-power standby mode after 5 minutes of inactivity.

Reorganized System Requirements:

Requirement Type	Code	Examples
<i>Functional</i>	(FR-01)	The vacuum shall be powered by a rechargeable battery that provides at least 35 minutes of continuous cleaning.
	(FR-02)	The battery must recharge from 0% to 100% within 4 hours using the supplied charging dock.
	(FR-03)	The vacuum shall offer at least three cleaning modes (e.g., Standard, Boost, Eco).
	(FR-04)	It shall automatically adjust suction power based on the detected surface type (hard floors, low-pile carpets, high-pile carpets).
	(FR-05)	The vacuum shall provide a minimum of three cleaning attachments (e.g., crevice tool, brush tool, dusting tool) that can be attached or detached within 5 seconds.
	(FR-06)	The device shall include an integrated dust container with a capacity of at least 500mL that is easy to remove and empty without tools.

<i>Usability</i>		(UR-01) The total weight of the vacuum (including battery) shall not exceed 4.5kg.
	(UR-02)	The design shall incorporate an ergonomic handle and balanced structure to ensure effortless maneuverability.
	(UR-03)	The dust container shall be designed for tool-free removal and emptying, taking no longer than 10 seconds to complete the process
<i>Performance</i>	(PR-01)	The operational noise level shall not exceed 70dB when measured at a distance of 1 meter.
	(PR-02)	The vacuum shall maintain a suction performance variation of less than 10% as the battery charge depletes from 100% to 20%.
	(PR-03)	The vacuum shall be capable of cleaning a standard home area of up to 150 square meters on a single charge.
	(PR-04)	During high-suction modes, the vacuum shall not exceed a motor power consumption of 600W.
<i>System Interface</i>	(SIR-01)	A built-in digital display or LED indicator shall provide real-time information on battery status (in 10% increments), selected cleaning mode, and maintenance alerts.
<i>System Operations</i>	(SOR-01)	The system shall be designed to withstand drops from a height of 0.5m onto a hard surface without damage.
	(SOR-02)	A safety feature shall automatically trigger a low-power standby mode after 5 minutes of inactivity.
	(SOR-03)	The vacuum shall automatically pause the cleaning process and alert the user if the dust container becomes full, resuming operation only after the container is emptied and reset.
<i>System Modes and States</i>	(SMR-01)	The vacuum shall indicate its current operating state (e.g., Cleaning, Standby, Charging) through distinct LED color codes or display messages.
	(SMR-02)	The vacuum shall feature a “Turbo” mode that increases suction power by 25% for a duration of up to 30 seconds for tackling stubborn debris.

	(SMR-03)	The vacuum shall include an “Eco” mode that reduces power consumption by up to 20% while still maintaining effective cleaning performance.
<i>Environmental Conditions</i>	(ECR-01)	The vacuum shall reliably operate in ambient temperatures between 5°C and 40°C.
	(ECR-02)	It shall function properly in relative humidity conditions ranging from 20% to 90% (non-condensing).