Aerospace and Automotive Display Design Checklist

10 customer questions to de-risk display integration in vehicles, cockpits, simulators, and test systems

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How to use the checklist

For each question, capture the application context, the display requirement, the acceptance evidence, and any residual risk. Escalate any unknown response where the display affects safety, uptime, operator decision-making, regulatory evidence, or customer experience. Escalate any unknown response where the display supports driving, piloting, warning response, diagnostics, certification evidence, or safety-critical status.

#	Customer design question	Why this matters	Evidence to request / acceptance criteria	Status / notes
1	**What operational task does the display support, and is it safety-critical or advisory?**	Vehicle and aerospace screens vary from convenience displays to mission- or safety-relevant HMIs.	Use-case classification; critical screen list; hazard analysis; traceability to requirements.	OK / Gap / N/A
2	**What vibration, shock, temperature, altitude, humidity, and pressure conditions apply?**	Vehicle and aircraft environments can accelerate mechanical, optical, and connector failures.	Environmental profile; qualification plan; mounting review; connector retention strategy; thermal margin.	OK / Gap / N/A
3	**What readability is required in sunlight, night operation, and rapid lighting transitions?**	Operators may need instant recognition despite glare, reflections, and changing ambient light.	Luminance/contrast target; dimming response; anti-glare treatment; night-mode assessment; viewing-angle tests.	OK / Gap / N/A
4	**What latency, update rate, and image stability are required?**	Delayed or unstable status displays can undermine operator response and trust.	End-to-end latency budget; display timing validation; flicker assessment; software/firmware interface review.	OK / Gap / N/A
5	**How will touch or physical controls work with gloves, motion, and operator workload?**	In-motion use can increase input errors and accidental activation.	Touch usability test; physical control requirement; lockout/confirmation logic; ergonomic review.	OK / Gap / N/A
6	**What EMC, ESD, power, grounding, and transient requirements apply?**	Vehicle and aircraft electrical systems create challenging noise and transient conditions.	Power input spec; EMC/ESD test plan; grounding diagram; cable shielding; surge/load-dump assumptions where relevant.	OK / Gap / N/A
7	**What mechanical integration constraints exist: weight, depth, bezels, sealing, and service access?**	The display must fit the platform while remaining maintainable and robust.	CAD review; aperture/mounting drawing; mass target; sealing strategy; replaceability plan.	OK / Gap / N/A
8	**What lifecycle, configuration-control, and documentation demands apply to the programme?**	Long platform lifetimes need controlled revisions and evidence continuity.	PCN/EOL process; revision control; serialisation; spares plan; build documentation pack.	OK / Gap / N/A
9	**How will faults, stale data, or display degradation be detected and communicated?**	A display should not silently present misleading or stale information.	Fault-state definition; watchdog/blanking behaviour; diagnostic screen; degraded-mode plan.	OK / Gap / N/A
10	**What verification evidence is required before integration or certification review?**	Acceptance depends on traceable evidence, not subjective image approval.	Requirements matrix; qualification test reports; integration test results; customer/certification review pack.	OK / Gap / N/A

Recommended review outputs

·Display subsystem requirements specification: optical, mechanical, electrical, environmental, touch, software-interface, mounting, and lifecycle requirements.
·Risk and application traceability: each display-related risk or customer-experience issue linked to a design control and verification method.
·Evidence pack: drawings, interface specifications, environmental assumptions, test reports, supplier declarations, support/lifecycle plan, and controlled change documentation.

Reference prompts for the project team

··Confirm all customer, site, and regulatory requirements before final specification or quotation.
·Define testable acceptance criteria for every requirement that affects readability, touch operation, reliability, safety, or maintainability.
·Record any assumptions on duty cycle, lighting, environmental exposure, mounting, electrical interfaces, content, and long-term availability.
·Review the final display selection jointly with mechanical, electrical, software, operations, service, and commercial stakeholders.

Use this checklist for control-room, field, kiosk, monitoring, inspection, and process-interface displays in oil, gas, and energy applications. This is a practical customer-discovery guide. Its is not a substitute for project-specific engineering, safety, legal, or compliance assessment, in conjunction with discussion with CDS engineers and/or technical sales team.

For more information or to discuss your project and requirements please contact our technical sales team.