

## Needs Survey: Outlining technical requirements for your graphical color touch display

There are a lot of questions embedded engineers need to address when facing the task of adding graphic LCD color touch technology to their products. That's especially so if your particular engineering expertise is *not* LCD color touch. We've created this Needs Survey to help you outline your technical requirements.

### How the Needs Survey works

1. Outline technical requirements in the following areas:
  - a. Display
  - b. Touch
  - c. Connectivity
  - d. Power
  - e. Programming
  - f. Up-time/reliability
  - g. Lead time/supply chain requirements
  
1. Summarize project details such as project phase, schedule, and new product/upgrade of an existing product.
  
2. Use the [Reach Product Guide](#) to help you determine the development kit that fits your needs. Development kits contain everything you need to get a touch interface up and running in a matter of days. The kit includes an SLCD controller board, an LCD display, a touch screen, cables, sample images, sample code and power supply. It also includes technical support. Nearly 1,300 units sold so far. If questions remain, we'll help you make the final determination at the time of your call
  
3. Call Reach at 503-274-7335, and order the appropriate development kit.
  
4. Get a jump-start on your project. When you've ordered your kit and you're waiting for it to arrive, you can do the following:
  - a. [Download data sheets](#) for specific products.
  - b. [Download technical manuals](#) (hardware and software).
  - c. [Watch a 15-minute video](#) that shows you how to set up your hardware and software. It also shows you how to create your first screens.

## Technical requirements

1. Does the display have to fit into specific mechanical outline?
  - a.  Yes, if so, what are the parameters?
  - b.  No
2. Is there a request/requirement for video on the display?
  - a.  Yes
  - b.  No
3. Is panel depth/bezel size an issue?
  - a.  Yes
  - b.  No
4. What are your environmental requirements:
  - a. Temperature range?
    - i.  0 to 70C (commercial)
    - ii.  -20C to 70C (extended commercial)
    - iii.  -30C to 85C (automotive/industrial)
    - iv.  Other
  - b. Waterproof?
  - c. Harsh environment? If so, describe
5. What sort of annual volume of our product will this application use?
  - a. Annual?
  - b. Monthly ramp rate?
  - c. Growth rate overall?

Additional Notes:

## A. Display Requirements

6. Do you have a preferred display manufacturer?
  - a.  No
  - b.  Hitachi
  - c.  LG Phillips
  - d.  Prime View
  - e.  NEC
  - f.  Other:
7. Is there a significant value in having an LCD with:
  - a.  Long term lifetime availability (5-7 years), or is
  - b.  Price a big enough factor to make it worth accommodating a multi-vendor panel mechanical mount?
8. What screen size?
  - a.  4"
  - b.  4.3"
  - c.  5.7"
  - d.  8.4"
  - e.  10.4"
  - f.  Other
9. How much screen data needs to be displayed at any one time? How far away does it need to be readable?
10. Are multiple "screen pages" acceptable to show the data?
11. What resolution?
  - a.  QVGA (320x240)
  - b.  WQVGA (480x272)
  - c.  VGA (640x480)
  - d.  WVGA (800x480)
  - e.  5.7" QVGA/VGA
  - f.  Other:

12. What format?

- a.  Landscape
- b.  Portrait
- c.  Both (on-the-fly switchable)
- d.  Other:

13. How bright? (nit = cd/m<sup>2</sup>)

- a.  Don't care (PDA brightness OK)
- b.  Desktop 250 nits
- c.  Industrial 350 nits
- d.  Daylight readable?
- e.  Dimming range (e.g. aircraft cockpit needs very wide range)
- f.  Other:

14. What are the back lighting requirements?

- a.  CCFL
- b.  LED
- c.  Don't care

15. Viewing angle requirements?

16. What are the characteristics of your color requirement?

- a.  8 bit (256)
- b.  16 bit (65,536)
- c.  18 bit (262,144)
- d.  24 bit (16,777,216)
- e.  Other:

17. Color purity (% of NTSC)

18. Special requirement for no on-board signals in a specific frequency range?

- a.  Audio, specifically \_\_\_\_\_Hz to \_\_\_\_\_Hz
- b.  Other, specifically \_\_\_\_\_Hz to \_\_\_\_\_Hz

Additional Notes:

## B. Touch Requirements

1. Do you need touch? If so, what type?
  - a.  No (if no, skip to next section "C")
  - b.  Standard - resistive like PDA (finger, pen or both)
  - c.  Special - medical safety (multi-touch reject)
  - d.  Special - high clarity capacitive
  - e.  Special - projected capacitive (finger or gloved finger)
  - f.  Display + pushbuttons
  - g.  Other:
  
2. Does the touch screen need to be replaceable (e.g. if damaged but LCD underneath is still good)?

Additional Notes:

## C. Connectivity Requirements

3. How will this unit need to connect into the product? Interface options:
  - a. Do you need to connect to a "host"?
    - i.  Yes
      1. What is the host (PC/Micro/network)
      2. If host is Micro, what is the processor  
Vendor:  
Part #:
    - ii.  No
      1. What is connected to/what does it control
  - b. Interface details:
    - i.  RS232
    - ii.  USB
    - iii.  RS485
    - iv.  RS422
    - v.  Ethernet

- c. What are your connectivity requirements?
  - i.  SPI
  - ii.  I2C
- d. Is communications speed a concern?
  - i.  Yes
  - ii.  No
  - iii.  Don't know
- e. Distance from host/connected device
- f. Other serial devices connected to the display module?
- g. Are you worried that the serial interface won't be fast enough?

Additional Notes:

## D. Power Requirements

1. What is your power availability (can check more than one)?
  - a.  3.3V? Amps:
  - b.  5V? Amps:
  - c.  12V? Amps:
  - d.  12-24VDC Amps:
  - e.  12-24VAC Amps:
  - f.  Don't know
2. Battery operation?  Battery nominal voltage?
3. What countries is your product being sold?
4. What are your EMI (electromagnetic interference) concerns/requirements?
  - a.  FCC Class A (or EC equivalent)
  - b.  FCC Class B (or EC equivalent)

5. ESD (Electrostatic discharge) concerns/requirements?
  - a.  2KV
  - b.  4KV
  - c.  8KV
  - d.  15KV
  - e.  Other (e.g. gaming around 25-27KV)
6. EMI/EMC (Electromagnetic Compatibility) - any special requirements?
7. Military? Need special shielding?

Additional Notes:

## E. Programming Requirements

1. Is graphics programming a (leverage-able) core competency?
2. Is it important to have simple to program GUI?
3. What is the "host" operating environment?
  - a.  Bare metal ([Type I](#))
  - b.  OS ([Type II](#)) - which?
4. What is the "host" development environment?
  - a. Which IDE/compiler?
  - b. Language: Assembler/Basic/C/C++/Other
5. What kind of language skills does the team responsible for the success of the display integration have? Assembler/Basic/C/C++/Other
6. Do you plan to program in HTML, ActionScript or other programming language?
7. Do simple ASCII serial commands work for your application?
8. Do you need a USB port for graphics updates?
9. Do you want the system to be in-system-upgradable for both firmware and stored graphics?
10. Do you want to be able to run your own code on the Reach display controller? In what language?

Additional Notes:

## F. Up-time/Reliability Requirements

1. Do you have a backlight lifetime requirement for this product?
  - a.  Yes
  - b.  No
2. What incoming and field failure rate can you tolerate?
3. What kind of warranty does your complete product need to have?
  - a.  90 day
  - b.  One year
  - c.  Other
4. What level of manufacturer support do you require?
  - d.  MTBF (Mean Time Between Failures) data?
  - e.  RMA (Return Merchandise Authorization) turnaround time guarantee?
  - f.  Manufacturing first pass yield data?

Additional Notes:

## G. Lead Time/Supply Chain Requirements

Are you aware that lead times for LCD panels can be up to 16 weeks?

1. Many of our customers have a difficult time forecasting demand and expect us to supply product on short notice. Does this sound like your company's situation?
  - a.  Yes
  - b.  No
2. How much lead time for changes in demand volume can you provide?
3. What do you do now to assure that you can tolerate changes in demand due to long lead times?
4. Do you require that we have a particular type of industry experience?
  - a.  Yes:
  - b.  No

5. Is there value in one supplier with a range of solutions?
  - a.  Yes
  - b.  No
6. Do you have a pre-existing relationship with a chip manufacturer?
  - a.  Yes, if so, whom?
  - b.  No
7. Have you had any bad experiences with a specific manufacturer?
8. Are you concerned about having Reach as a critical sole source component provider?

Additional Notes:

## H. Other Requirements

1. Do you have any other customization requirements?
2. Do you require RoHS compliance?
  - a.  Yes
  - b.  No
3. Would you like a copy of our long term product availability policy?
  - a.  Yes
  - b.  No

## Project Details

1. What is this project name?
2. Why are you adding a color touch control surface to your product?
3. Are you  upgrading an existing product or is this a  new product from scratch?  
If update/upgrade:
  - a. What is being replaced?      If touch screen, who provides the product you are shipping today?      Why are you looking to make a change – why not work with the current supplier for this change or upgrade?      What did the current vendor say when you told them about that?
4. What is the project phase?
  - a.  Feasibility
  - b.  Initial design (architecture/major functional blocks or boards/software tool environment)
  - c.  Detailed design
5. Is there a project schedule?
  - a.  Yes. Are there dates for:
    - i.  Alpha or beta prototypes?
    - ii.  Agency approval test start (FDA/FCC/etc.)?
    - iii.  FCS (First Customer Ship)?
  - b.  No
6. Are you facing a deadline?
  - a.  Ship, if within 90 days of current date, do you already have a vendor selected to help you with that?
  - b.  Production
  - c.  Prototype
7. How soon after you order products, do you need them?
8. Are there dedicated/allocated staff for the project yet? What head count for hardware design? (Can say 0.5 for half-time allocation).      Software design?
9. Do you see board-level components as a way to reduce development costs?
10. Is this a high profile project?
  - a.  Yes (has visibility, not a cost reduction)
  - b.  No

11. What is the price of the finished unit? OR Do you have a target price range?
12. How competitive is the market the finished product is sold into?
13. Patent; will you be patenting this product/package?

### Top Vendor Capabilities

Rate the following items in terms of their value to your organization. Are the following areas are not important, important, or very important?

1. Time to market:  Not important  Important  Very important
2. Help getting up and running:  Not important  Important  Very important
3. Getting features added as needed:  Not important  Important  Very important
4. Technical support:  Not important  Important  Very important
5. Revision/change support (i.e. no unexpected firmware change surprises during production):  Not important  Important  Very important
6. Availability risk reduction - lead time management:  Not important  Important  Very important
7. Local (US) support:  Not important  Important  Very important
8. Who else are you talking to about this situation?
9. Do you have any other questions?