

DEVELOPING FOR SMALL SCREENS



WHAT DOES IT MEAN... SMALL SCREEN DEVICE?

There is no official definition when we talk about a 'Small Screen' Device.

For the purposes of this lesson, we will refer to Small Screen Devices to mean mobile phones and tablets.

There are other devices, such as netbooks, that could also be considered as small screen devices.



JUST TO BE CLEAR...

A mobile phone is a device that can be used to take calls through radio connections, while roaming through a geographic area.

A tablet device is a portable computer whose, screen, circuitry and battery are a single unit.

A Netbook is a category of portable, light and inexpensive computers.

An iPod is...

- A portable music player?
- A portable music player with a touch screen?
- A portable small screen device containing touch capabilities?

INPUTTING DATA ON SMALL SCREEN DEVICES

Usually on small screen devices (modern devices at least), users will use their fingers alone as a means of input.



Some devices still have a keyboard available to the user. Most of these devices, such as blackberry, are widely used in a secure corporate setting.



Some devices encourage the use of a stylus (A pen like instrument that conducts low levels of electricity on its tip and acts as an input device for touch screens).



Voice control is gaining popularity.



WHEN IS USING A STYLUS AN ADVANTAGE?

Note taking

Some applications allow you to take physical notes. Instead of using a physical or virtual keyboard, the user scribbles notes and drawings on the screen, some of which may be translated by OCR to electronic text.



Signing Documents

Have you ever signed a physical signature digitally? Perhaps to get a passport or ID card? Try signing using your finger!

Drawing

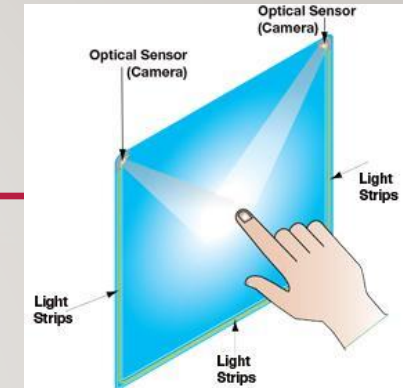
From simple doodles to complete artistic digital creations, tablets now offer multitudes of applications for the more creative ones among us. The increased accuracy and increased dexterity of using the stylus can produce better results in this situation.



TOUCH SENSOR TYPES

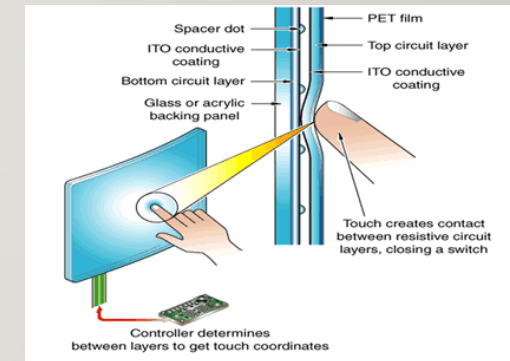
Optical Touch

Infra red rays from the corners of the screen are projected to the other. When the user touches the screen then these rays are interrupted. These x and y coordinates are then processed.



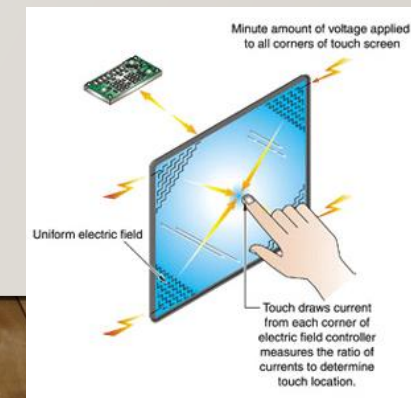
Resistive Touch

The user touches the screen and pushes the small membrane back to touch a contact point. A small piece of electricity passes through the point touched. These x and y coordinates are then processed.



Capacitive Touch

A small amount of electrical energy is released and stored on the screen. When a bare finger touches the screen, a small current flows to that point. These x and y coordinates are then processed.



WHEN CREATING OUR INTERFACES AND THEIR INTERACTIONS WE NEED TO CONSIDER NOT ONLY THE TYPE OF SCREEN BUT ALSO THE AMOUNT OF TOUCH POINTS AVAILABLE TO US.

Single Touch Point

The device can only detect one point touched at a time.

Multi-touch

Many points on the screen can be detected at any point.

Don't forget about Multi-modality!

Entering data or input can also take place in other modes (sometimes simultaneously).

For example, Gyroscopically and voice control.

COMMON TOUCH INPUTS

Tap

One finger touches the screen and then is lifted almost instantaneously.

Press and Hold

One finger touches the screen and is not lifted.

Slide

One or more fingers touch the screen and then move in the same direction for a relatively long distance.

Swipe

One or more fingers touch the screen and then move in the same direction for a relatively short distance.

Turn / Rotate

One or more fingers touch the screen and then rotate clockwise or anti-clockwise.

Pinch

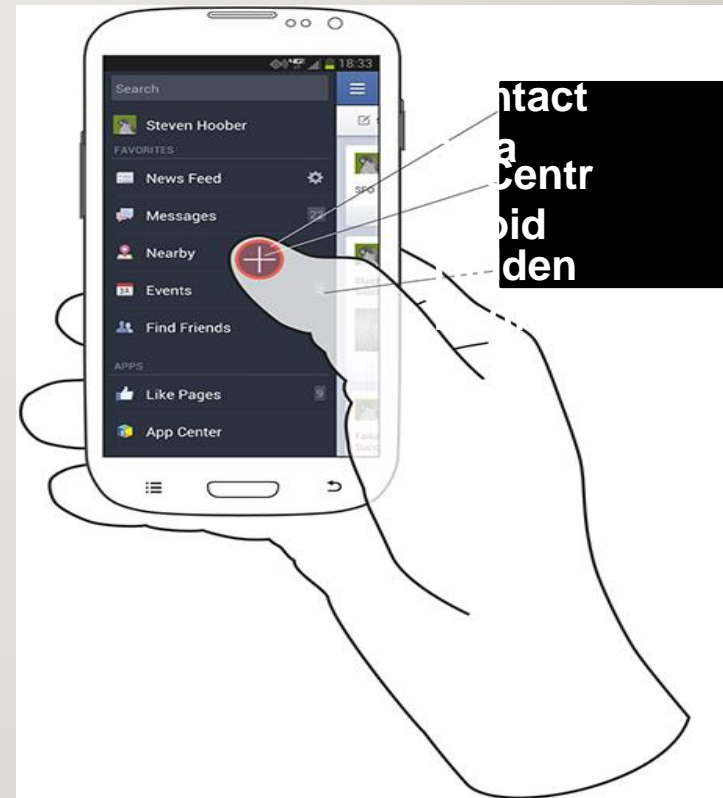
Two or more fingers touch the screen and move closer to one another.

Stretch

Two or more fingers touch the screen and move further away from one another.

Choosing interaction is important for appropriate information architecture. Consider elements such as:

- **Obscurity / Visibility** (when the user's finger is over information that may be important to view)
- **Ease of use** (do you really need to use both hands to provide navigation?)
- **Reaching information or controls** (can the user reach the letters on a virtual keyboard while holding it?)
- **Density of information** (if there are two control within the same vicinity, is it likely that the user will press the wrong one?)



Screen Orientation



Some useful numbers to have...

Minimum recommended sizes for optical targets on different device sizes

	2.5-inch Phone	3.5–5-inch Phone	9–10-inch Tablet
Text	4 pt / 1.4 mm	6 pt / 2.1 mm	8 pt / 2.8 mm
Icons	6 pt / 2.1 mm	8 pt / 2.8 mm	10 pt / 3.5 mm

Touch Targets

Minimum 17 pt / 6 mm

Preferred 23 pt / 8 mm

Maximum 43 pt / 15 mm

Distance between targets to avoid wrong presses

Minimum 23 pt / 8 mm

Preferred 28 pt / 10 mm

Types of Applications

Adaptive Design - Responsive Websites



Change your customer's experience from this:

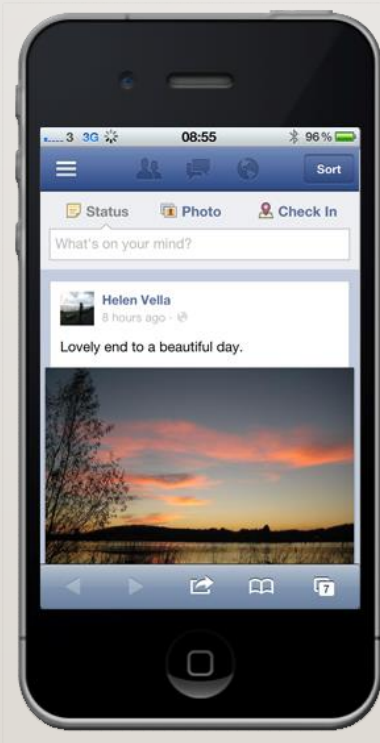
To THIS!



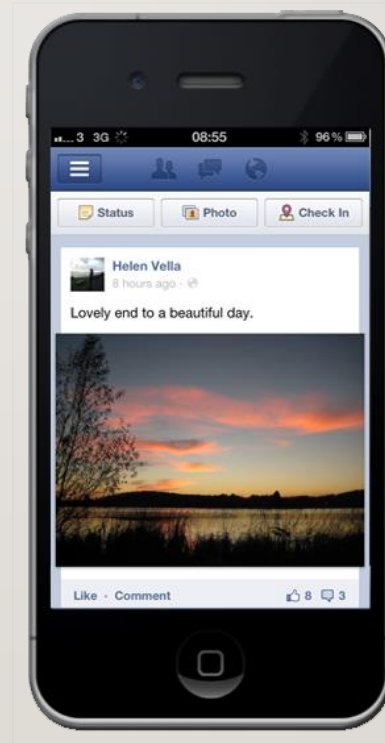
Types of Applications

Native
application

Web



Native



Types of Applications

Hybrid

Application

Web style Interface with Access to the native functions of a device



Application Properties

Factor	Website Application for one device type	Responsive Web Application	Native Application	Hybrid Application	Comments
Adapted to User Proirities	★★★★	★★	★★★★	★★★★	
Content Distribution	★★	★★★★	★★	★★★★	Websites and Hybrid Apps are easier to index.
Funcionality	★★	★★	★★★★	★★★★	Native apps are the best in terms of functionality capabilities (e.g., GPS, camera).
Compatibility	★★	★★★★	★	★	
Development Costs	★★	★★★★	★	★★	
Maintenance Costs	★★	★★★★	★	★★	

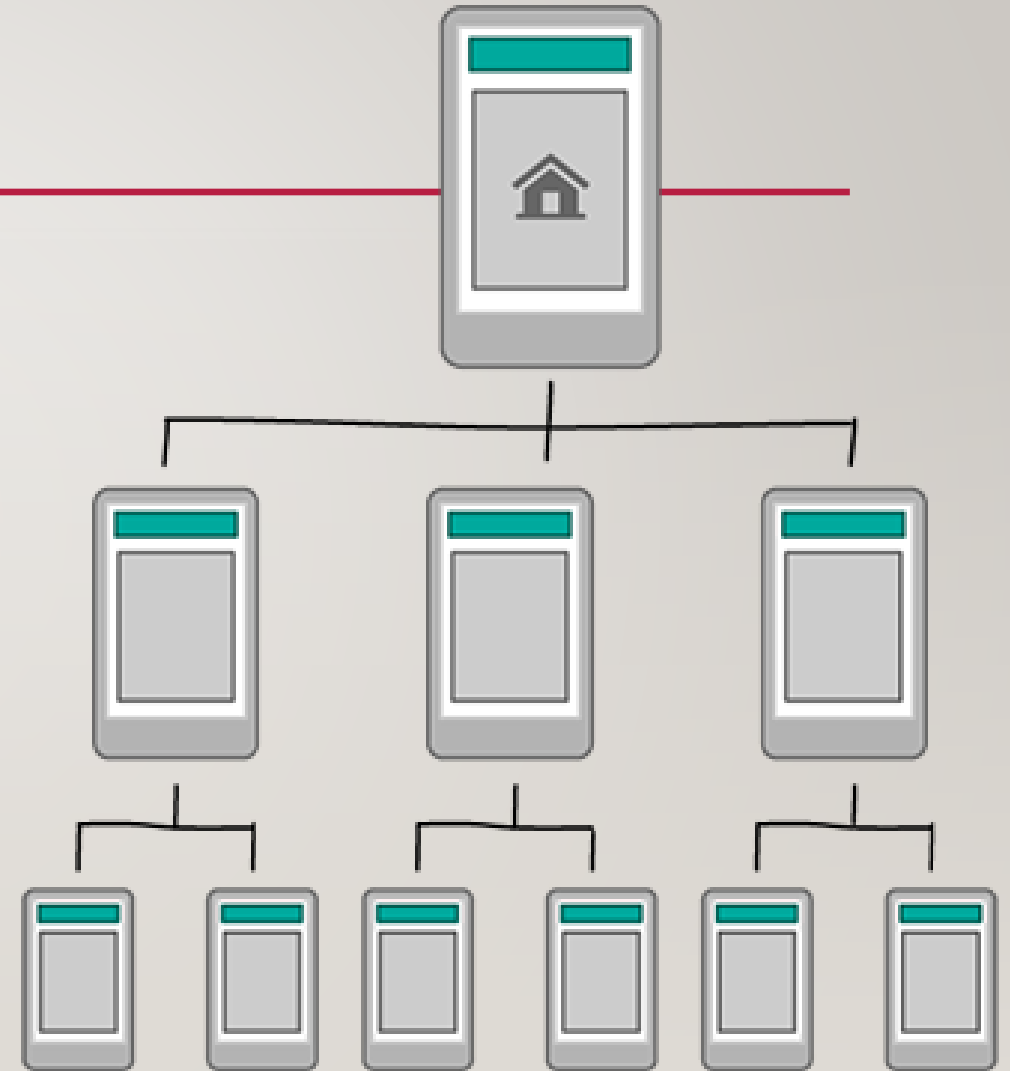
Hierarchy

Good :

Organising complicated site structures that need to follow a desktop site's structure.

Weaknesses:

Sometimes the Navigation. Multi-faceted navigation structures can present a problem to people using small screens.

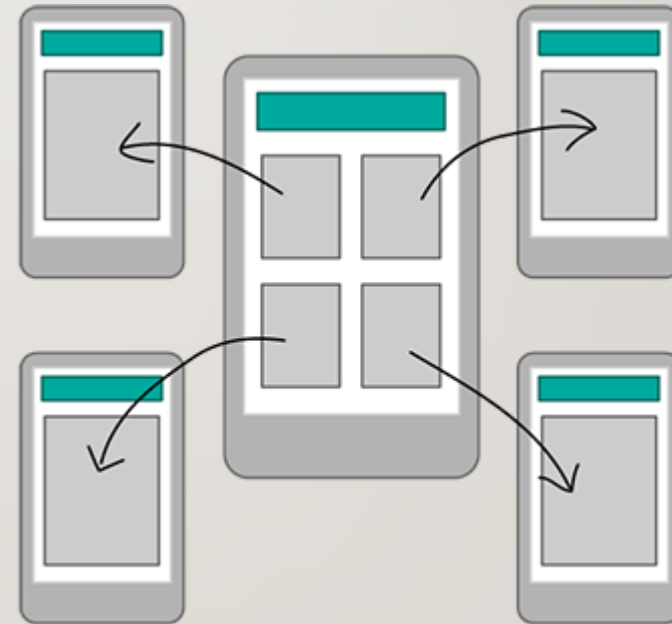


Navigation and Menu Structures

Hub and Spoke

Good:
Suitable for Multi-functional tools and apps.

Weaknesses:
For people that want to multitask.



Navigation and Menu Structures

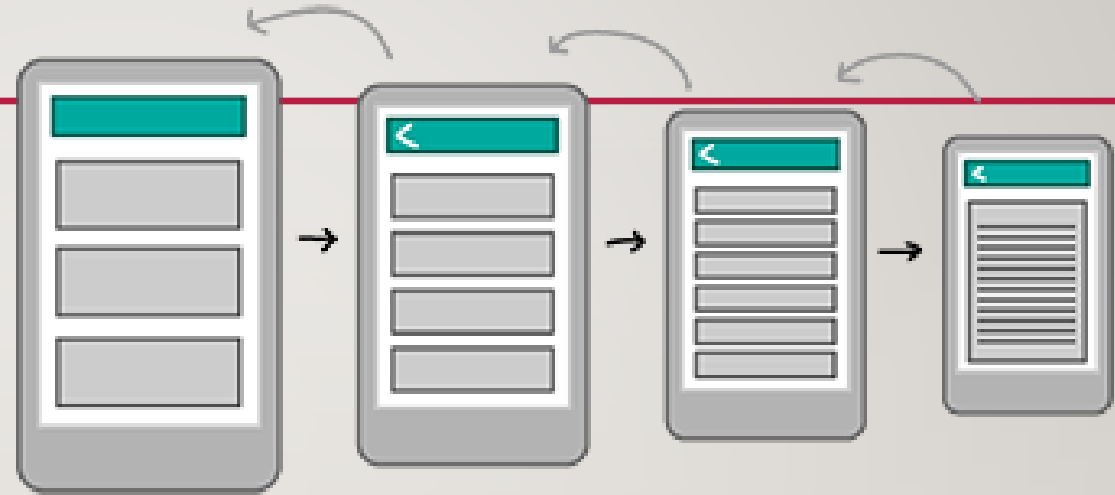
Nested Doll

Good:

Apps or sites with singular or closely related topics. This can also be used as a sub section pattern inside other parent patterns, such as the standard hierarchy pattern or hub and spoke.

Weaknesses:

Users won't be able to quickly switch between sections so consider whether this will be suitable, rather than a barrier to exploring content.

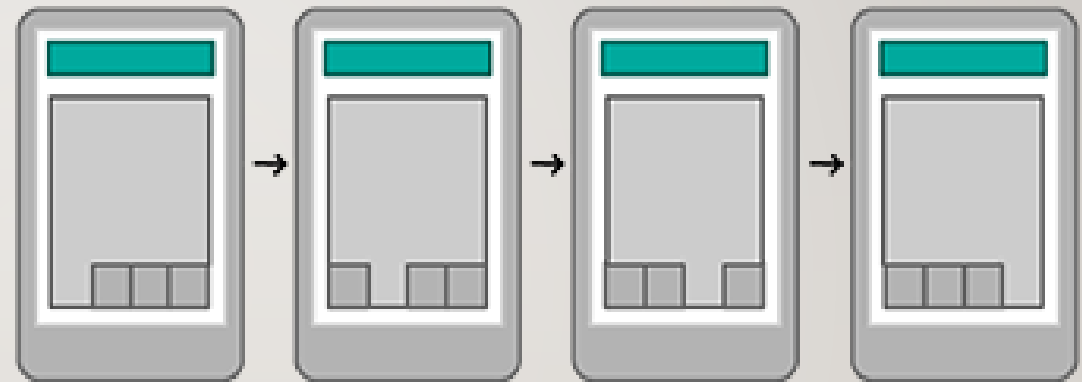


Navigation and Menu Structures

Tabbed View

Good:

Apps or sites with large quantities of content, such as articles, images and videos. Can be a good basis for magazine style apps or sites, or as a sub pattern within another navigational pattern.



Weaknesses:

Mobile. Filters and faceted search can be difficult to display on a smaller screen due to their complexity.

Navigation and Menu Structures

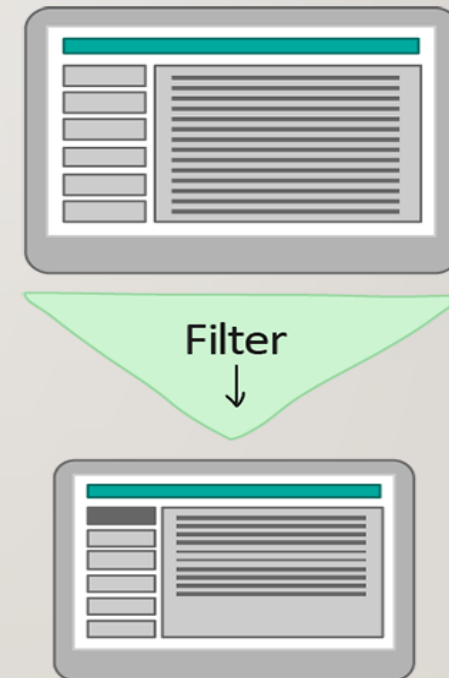
Filtered view

Good:

Apps or sites with large quantities of content, such as articles, images and videos. Can be a good basis for magazine style apps or sites, or as a sub pattern within another navigational pattern.

Weaknesses:

Mobile. Filters and faceted search can be difficult to display on a smaller screen due to their complexity.



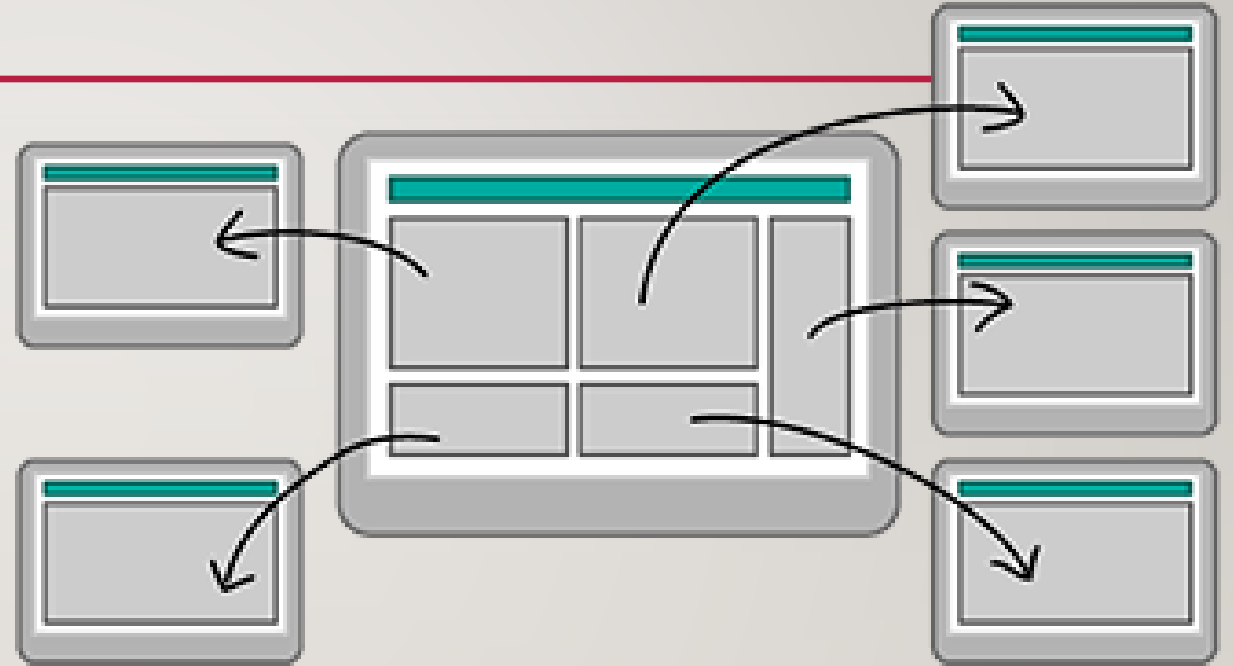
Bento Box / Dashboard

Good:

Multi-functional tools and content-based tablet apps that have a similar theme.

Weaknesses:

The tablet screen gives you more space to utilize this pattern well, however it becomes especially important to understand how a user will interact with and between each piece of content, to ensure that app is easy, efficient and enjoyable to use.



INFORMATION DESIGN PRINCIPLES

Every Screen should focus on one task, and do that task really well.

Less is more - You probably have heard of this one, but it is accentuated on small screen devices. Make sure there is no clutter, and the user's focus is not distracted.

Native Platform - Your app should reflect the design and styles of the platform which you are developing for. There have been crash and burn scenarios where ports have been attempted from blackberry to Android with very little IA redesign...ouch!

Similar Experience - Your users will most probably be acquainted with Android or IOS from previous apps. Use this to your advantage. If you change the way they are used to interacting, then learnability becomes harder and the user experience can deteriorate.

Suitable Layout of Objects - Similar to the previous point, things should always be where they are expected to be. Imagine changing the menu structure on every screen.

INFORMATION DESIGN PRINCIPLES

Loading indicator - if there is something running and taking up processing time, set your user at ease by showing him a loading icon.

Get orientation right! - Keep it portrait or landscape depending on the task (or if you can for the whole app). Choose wisely and also adapt the screen for transitions between the two.

Reduce Scrolling - Scrolling is often not required and reduces the usability and findability of information. How annoying is it when you access a web page or a document and you have to scroll up and down, but even worst, left and right to read the text / information.

Expand for more - to be used with caution. More information can be displayed this way but less information is shown to the user at first glance which may give the impression that the information needed is not there.

INFORMATION DESIGN PRINCIPLES

Reduce input need. Text input being the highest on this list.

Use auto-complete where appropriate. Dictionary files can be simulated with suggestions in text boxes.

Ease findability and increase searching capabilities - Filter large lists into facets for example, reduces scrolling too...

Auto-complete - You can use autocomplete if you already know information about the user, such as name address email etc.