



Why Consumer Location is Different

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Location Provider Concerns

- Making LBS a reality
- Emergency/E911 less of a driver
- Location usage
 - Killer applications
 - Integral part of daily device usage
- Device sales
- Location revenue

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What's Changed?

Military



Industrial / Commercial



Cars / PNDs

- Vehicle Navigation
single use case



Mobile consumer devices

- Varied use cases
- Varied environments

- Device independence
- Non-carrier deployments
- Application variety
- iPhone 2.0

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What is Consumer Location?

- **Challenging scenarios**
 - Majority of time indoors
 - Dense population centers
 - Difficult form factors
 - Power issues dominate (voice priority)
- **High expectations**
 - Location everywhere
 - Consistent level of high accuracy
 - Fast response times

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Trust and Usage Relationship



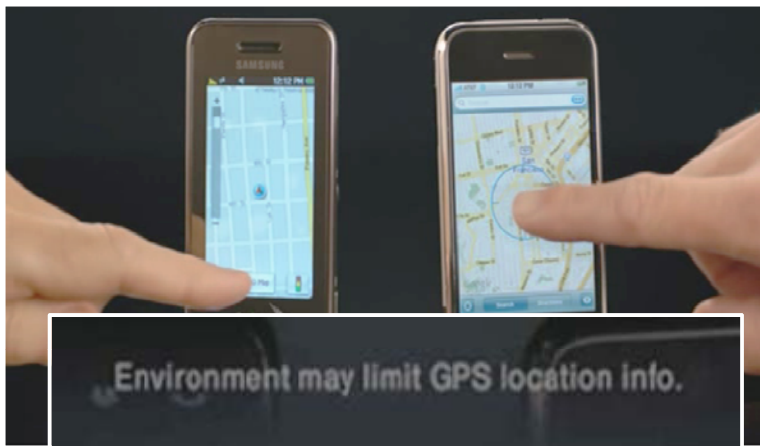
- Enabling technology just first step
- Need killer applications
- Need consumer usage
- Usage will be a result of user "trust"

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Is A-GPS Enough?



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What Environment do they mean?

Tips for efficient GPS use

Here are a few things to keep in mind to get the best out of your GPS enabled Nokia device.



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Tip 1: Avoid blocking the antenna with your hand

The GPS antenna is placed under the numeric keypad of the device. For best reception, open the keypad and try not to cover it with your hand.



Tip 2: It only works outdoors

The device works best under a clear sky. The satellite signal gets easily blocked by roofs, or even tall buildings nearby.

Source:
<http://www.nokia.co.uk/A4486252>

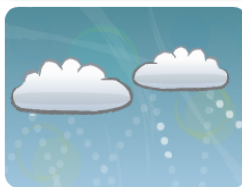
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We can't say these things

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Tip 3: Weather conditions may weaken the signal

The satellite signal is affected by the air it travels through. Rain, clouds, or fog may make GPS reception very difficult.



Tip 4: Be patient: connecting to the GPS system takes a while

Connecting with GPS satellites takes at least 40 seconds. The same applies to standalone GPS devices.



Tip 5: UV protected or heated windscreens may block the signal

Although not designed for it, the GPS receiver can be used in a car – if the conditions are very good. For example, a UV protected or heated windscreen may dampen the signal.

Source:
<http://www.nokia.co.uk/A4486252>

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Tech Support Can't Fib

- **Garmin Online Tech Support**

Question: Why is my unit not acquiring satellites?

Answer:

- Make sure that it is outside with a clear view of the sky.
- Be sure you are not moving while it is trying to acquiring.

- **TomTom Online Tech Support**

Topic: Finding a GPS signal

In the following cases it can take up to 5 minutes to find your current position:

1. You start your TomTom device or GPS receiver for the first time.
2. You start your TomTom device or GPS receiver after it not being used for a lengthy time.
3. You start your TomTom device or GPS receiver after it has been relocated without using it (e.g. after travelling by plane or train).

If it takes longer than 5 minutes, make sure that you are in an open place without tall buildings or trees around you.

Examples of New Location Requirements



Pedestrian Navigation and Local Search



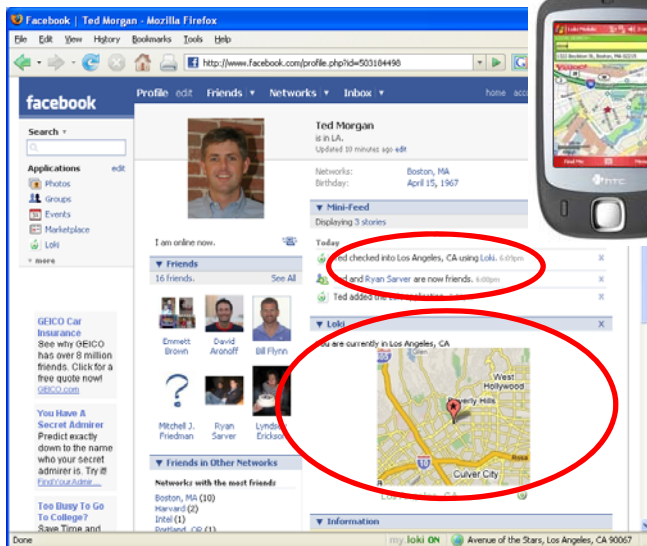
- Time to Fix critical
 - Consumers will not wait for a simple search
 - Advertising relies on a quick display
 - Most searches done indoors
- Accuracy
 - To complete the user case device must show user how to get to destination
 - All the Starbucks in downtown Boston does not solve the problem

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Mobile Social Networking



- Friend finders
- Check location every 15 minutes
- Cross device
- Cell ID location not good enough
- Major battery concerns for GPS

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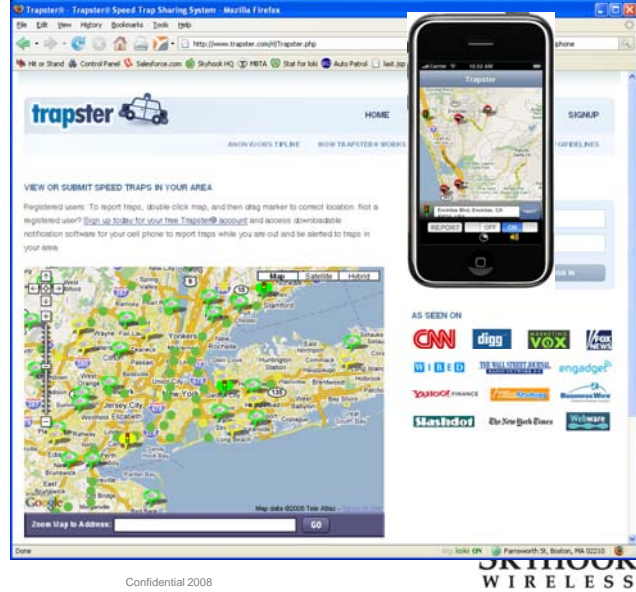
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Trapster

- Speed trap alert sharing network
- > 10,000 traps entered
- Group ratings maintain reliability
- Location challenges
 - Time to Fix critical for short commutes
 - Urban accuracy for red light cameras



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Cameras

- Geotagging images new priority for camera makers
- Better way to organize photos
- Location challenges
 - Time to fix
 - Indoor pictures
 - Power consumption
 - Global coverage



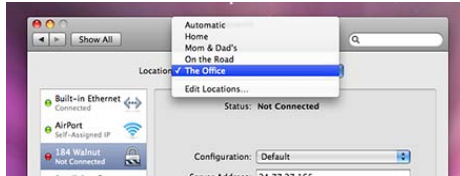
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Profiles and Preferences



- * Set the system location
- * Set the system volume
- * Set the display brightness
- * Change Mail Settings
- * Launch an application or run a script
- * Change the default printer
- * Set screensaver settings
- * Enable or disable Bluetooth
- * Change desktop picture
- * Change time zone

- Location alters system preferences
- Location challenges
 - Laptop not handheld
 - Time to fix
 - Little movement, but frequent checks
 - Indoor environments

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Hybrid Location is Mandatory

- Must anticipate consumer use cases and expectations
- Signals of opportunity
- True hybrid positioning not multi-mode
- Target 100% availability, high accuracy, immediate response
- Optimize power, bandwidth and use case

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A screenshot of a web-based map application showing a street map of Boston. A white popup window is overlaid on the map, containing the text 'Your Location' and 'Brought to you by SKYHOOK WIRELESS'. The popup also includes links for 'Edit - Delete', 'Get directions: To here - From here', and 'Search nearby'. The map shows major roads like I-93, I-90, and I-495, and landmarks like the Massachusetts General Hospital and the Public Garden. A small inset map in the bottom right corner shows the location of Boston within the greater metropolitan area.

Traffic **Map** Satellite Hybrid

Your Location

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[Get directions: To here - From here](#)
[Search nearby](#)

Community College
Austin St
Warren St
99
Charlestown
North Point Park
99
93
1A
Nashua St
28
3
3
28
3
28
3
28
2
Boylston St
Beacon Hill
Cambridge St
Beacon St
Tremont St
Boston
Post Office Square Park
23
20A
Seaport
Public Garden
Boston Common
Government Center at Scollay Square
Massachusetts General Hospital
en Hwy
ide Mill
H Land Blvd
93

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