

Development of New Technology for the Improvement of a Citizen Science Project: Clean Marine Smartphone App

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Clean Marine Program

- I. Abandoned vessel removal**
- Since 2004, over 90 vessels have been removed from SC coastal waters
 - 2-day, fishing gear disposal event will be held in the Charleston area in partnership with the Charleston Waterkeeper at selected marina and boating ramps.
- II. Identification, Reduction and Prevention through Community Based Education and Action**
- Since 2009, DHEC, SC SGC and other organizations have partnered to enhance public awareness of the abandoned vessel problem and to recruit volunteers to assist with the identification and preliminary assessment of abandoned vessel sites.
 - As of September 2011, volunteers can submit data via the old paper & web form or using the new Clean Marine App.
 - Once verified by DHEC staff, the detailed inventory of sites will be used to raise awareness among stakeholders and decision makers and support future removal funding requests.

why you should care



wildlife entanglement



gas/oil/chemical



boating



habitat loss



navigation hazards




aesthetics




economic and


types of debris




abandoned vessels



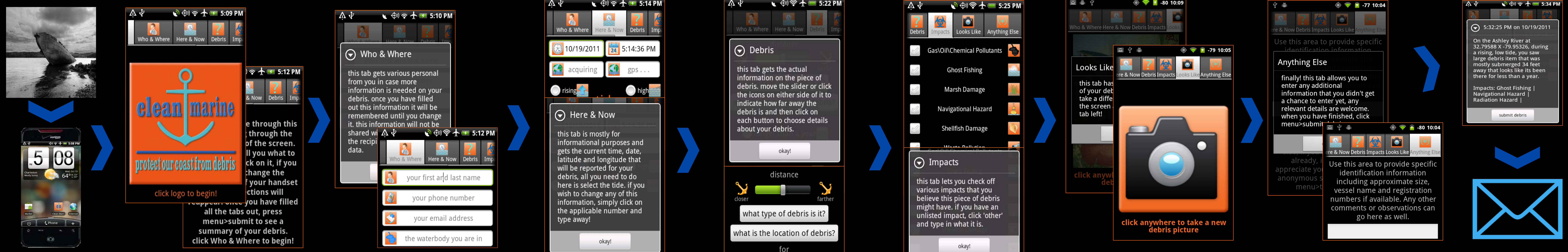
derelict crab trap




fishing gear



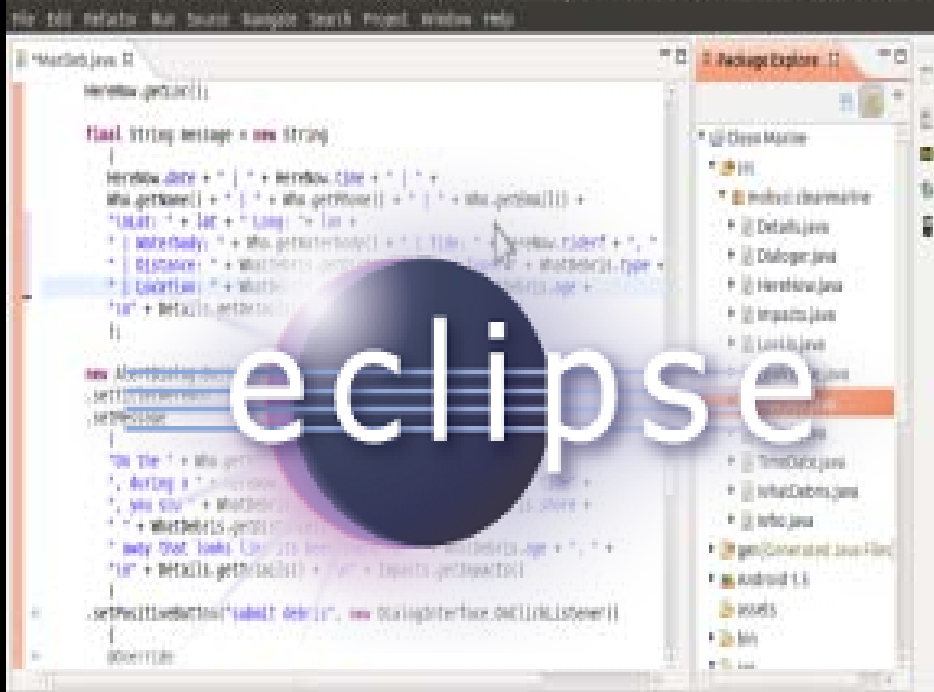
large debris




setup



Android Phone
HTC Incredible



Programming IDE
Eclipse Indigo 3.7



Linux Laptop
ASUS Eee PC 1015P

- While prior experience is helpful, the programming language for Android, Java, is not too difficult to teach yourself
- The Eclipse Integrated Development Environment was chosen because it is free and open source but is also robust enough to be used at the commercial level
- The computer did not have to be Linux based, but doing so removed the need for additional drivers and complications

development

- The app was designed to emulate and improve upon the paper & web forms
- The new method also needed to be fun to use, appealing to look at, and easy to acquire
- The app needed to be faster, require fewer instruments, and be usable in a wider variety of environments

	Web & Paper	Android App
Time	5 minutes	>30 seconds
Tools	Pencil, Paper Form, GPS Unit, Digital Camera, Computer	Smartphone
Training	1.5 hour sporadically held sessions	Casual knowledge of smartphone use
Kayak usable?	With great difficulty	Much easier
Exposure	~ 100-150 Volunteers	130 million registered US Android devices

testing

- Tested for Android 3.2 (Honeycomb) to 1.5 (Donut)
- Performed successfully on all real and emulated devices
- Tested by developer and focus group of around 10
- Test devices include: Galaxy S, Xoom, Charge, Vibrant, Ally, Eris
- App modified based on survey results and market response




design

Pre-Alpha

- Written using the equipment listed in setup over several months
- Started as a Pre-Alpha version that performed exactly as the paper form did but was not fun, appealing, or easy
- Completely reworked with an tabbed, graphical interface in mind

publicity

10 articles in independent news entities, 8 online posts, and 5 education presentations

- Headline front page article of Post & Courier & 2 other articles in P&C
- Radio interview with SC Radio Network





market.android.com/details?id=mobsci.cleanmarine
mob-sci.bellstrike.com/clean-marine
amazon.com/Mob-Sci-Clean-Marine/dp/B00634X1US/

