

# Origins

by Karen Yeung

## About the iPhone Application:

**URL:** [http://karenyeung.net/IPHONE/run\\_iPhone\\_app/deploy-to-web/Main.html](http://karenyeung.net/IPHONE/run_iPhone_app/deploy-to-web/Main.html)

“Out of sight, out of mind”, correctly describes how many of us view the way we consume products and later dispose of it. We buy products, use them, and throw them away. But do we wonder exactly where it goes? What happens in today’s society is that we do not want to deal with waste and often we pay other countries to discard our trash for us. What if this could be changed? What if we could live in a world where 100% recycling is a reality? What if knowledge about where trash goes and how is produced became everyday knowledge? Imagine what would happen if everyone could do this on a everyday basis from their iPhone application. Not only could we use this knowledge to build more efficient and sustainable infrastructures, but also promote behavioral change. In this future, the invisible infrastructures of trash reuse and removal will become visible and the final journey of our trash will be exposed.

The main intention of iPhone application, Origins, is to use pervasive technologies to expose the challenges of waste management and sustainability. Origin uses thousands of smart location aware tags, designed to be molecularly imprinted onto the surface of any object. Prospectively, with this technology future products will have pre-embedded tags that were imprinted by their respective manufacturers. The tag will be unique and it will allow companies to input information about how the product was made. To do so, one simply scans the object one wants to track with a scanner that emits low-intensive infrared light. The infrared light will embed the tag into each scanned molecule of the desired object. In addition, more than one tag can also be layered on top of a single molecular structure. A general user, such as an everyday consumer, can use their own unique smart tag to embed onto the same object. What this will potentially enable is dual data, one can now link the product’s end cycle back to its origins with supportable and reliable information. The overall goal is try to limit consumption these items be followed through the city’s waste management system, revealing the final journey of our everyday objects in a series of real-time visualizations.

## Types of Users:

- Conscious Green Consumer
- Corporate Supply Chain Managers
- Environmental Law Enforcer
- Environmental Researcher

## About the Types of Users:

Conscious Green Consumer: Americans are becoming increasingly concerned about the environment. Studies have shown that the percentage of Americans who worry about the environment “a great deal” or “a fair amount” has increased from 62% to 77% between 2004 and 2006. More people are making their homes energy efficient, driving more fuel efficient cars,

focusing more on recycling, and buying products that are healthier and less harmful to society and the environment. For more information, see: <http://www.uwex.edu/ces/cced/downtowns/lb/lets/LTB1106.pdf>

Corporate Supply Chain Manager: For many businesses, going green isn't necessarily about saving the environment. Rather it's about saving the business. Supply management is one of the most critical and the least understood functions of modern organizations. Supply management is responsible for the design, development, optimization, and management of an organization's internal and external components of its supply system. Supply chain management addresses the challenges of integrating the members of an organization's supply chain in a seamless manner. A well run supply system will greatly improve an organization's profits, its productivity, and the quality of its products and services and, therefore, its market share and profitability. Corporate supply managers investigate the highly dynamic, timely, and little understood area of cost management in the supply chain. The focus on cost management is designed to give firms an appreciation of cost reduction as a critical tool in the business strategy of competitive firms. Emphasis is redirected from price to total cost of ownership. The process of identifying costs in the system, methods of measuring costs, determining cost drivers, and developing written strategies on reducing/managing costs are all duties of a corporate supply chain manager.

Environmental Law Enforcer: Environmental Law Enforcers are responsible for protecting the people, environment as as the cultural and natural resources through enforcement education and public service. They provide assistance in disasters such as hurricanes, oil or chemical spills, and other threatening conditions that endanger life or property. The are the guardians in the field, responsible for the enforcement of environmental laws and regulations for the detection and investigation of suspected violations. Each day, personnel assist in emergency response, conduct environmental investigations, patrol, and educating the public to ensure that the environment is protected for generations to come.

Environmental Researcher: Those who work in the field of environmental research are those who engage in the study of the environmental, and the solution of environmental problems. The social science for understanding human relationships, perceptions, and policies towards the environment are incorporated into this research. Subjects that are investigated in environmental research include understanding how the earth processes, evaluating alternative energy systems, pollution control and mitigation, natural resource management, and the effects of global climate change.

**Personas and Use Cases:**



Environmental Protection Agency Administrator

John Goodwin, Male, Age 57

John Goodwin is a EPA administrator from the Office of Environmental Information. The main purposes of his job include managing the life cycle of information to support EPA’s mission of protecting human health and the environment. He identifies and implements innovative information technology and information management solutions that strengthen EPA’s ability to achieve its goals. John wants to always ensure the quality of EPA’s information, and the efficiency and reliability of EPA’s technology, data collection and exchange efforts, and access services. His responsibilities include collecting environmental information, ensuring accurate information, analyzing information, and developing as well as implementing policies for information technology.

- Track hard to decompose materials such as plastic
- Track toxic materials such as battery fluid
- Input information about how damaging certain materials are
- Wants to know how much waste major IT companies are creating each year

Goals	Needs
Track hard to decompose materials such as plastic	Ability to trace nearby and far plastic products Ability to trace certain types of plastic Access to GPS points and their relative distance to you
Track toxic materials (i.e. battery fluid)	Ability to differentiate harmful and non-harmful waste Ability to filter contain and non-contained hazardous waste products

<p>Input information about how damaging certain materials are</p>	<p>Account login and verification  Access to a wiki-style database of information  can read informational material  Ability to see update history  Ability to ban users and flag high contributors  Ability to cite information  Ability to input updated statistics and later update them</p>
<p>Wants to know how much waste major IT companies are creating each year</p>	<p>Ability to search and select one or more companies to view  Ability to read growth or conservation rate in the form of a graph  Ability to write a report, create a record, and send warnings to a violating IT company</p>
<p><b>User Tasks</b></p>	<p><b>Scenarios</b></p>
<p>View an overlay on the map environment for plastics</p>	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch “Track Map”</li> <li>3. Type in “plastics” on the “What do you want to track?” page</li> <li>4. Press “Go”</li> <li>5. Phone turns on overlay</li> <li>6. Touch header brings to bring down more options such as toggle on/off overlay and back</li> </ol>
<p>Detect harmful waste in a color gradient (red being most severe)</p>	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch “Track Map”</li> <li>3. Type in “all toxic waste materials” on the “What do you want to track?” page</li> <li>4. Press “Go”</li> <li>5. Phone turns on overlay</li> <li>6. Touch header brings to bring down more options such as toggle on/off overlay and back</li> </ol>
<p>Check how informational the description of the material is and edit it to add in more</p>	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch “Track Map”</li> <li>3. Type in “[insert product name]” on the “What do you want to track?” page</li> <li>4. Touch product’s blurb tag on the overlay</li> <li>5. Tap “More info” to read a full page blurb</li> <li>6. Select “Edit”</li> <li>7. Sign in as an contributing authorized member rather than as a member of the public</li> <li>8. Text editor appears</li> </ol>

	<ol style="list-style-type: none"> <li>9. Press "Save"</li> <li>10. Confirmation page appears showing that the updated entry has been successfully saved</li> <li>11. Touch "OK" to go back to map overlay</li> </ol>
Look up a company's waste profile	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch "Browse"</li> <li>3. Type in "[insert company's name]" on the "What do you want to find?" page</li> <li>4. Touch drop-down menu and select "Companies"</li> <li>5. View company profile page</li> <li>6. Look at the company's greenness rating</li> <li>7. Touch "View Products" to browse products</li> </ol>



Sustainable Engineer, Program Coordinator, and Researcher

Derrick Tani, Male, Age 25

Derrick Tani is a Sustainable Engineer and Researcher who understands the process of using energy and resources better than anyone. He is constantly trying to find better approaches to improving the education on sustainability in developing countries. In 2010, he was enlisted by the World Bank and the United Nations Environmental Program to launch programs across the United States for engineering students and practicing engineers. His goal is to teach others on how to apply sustainable development concepts into their work. He believes that a long-term solution could be found by exchanging information with partners and using new technologies to solve global environment problems. He wants to advocate to his fellow engineers that before starting a new project, one should take in consideration of the environmental costs, impacts, and conditions

throughout a project's life cycle. He wishes there was a way to show others that compromising the natural environment is not the answer for it tampers the ability of future generations to meet their own needs.

Track how much material is reused for housing and shelter

Find large landfills as sites for supply material

How recyclable is a type of building material

Amount of potential pollution

Goals	Needs
Track how much material is reused for housing and shelter	Access records to housing and shelter data Ability to scan and read the materials used to making a particular structure
Find large landfills as sites for supply material	Ability to search for large landfills Ability to search for a type of material Ability to select search categories such as most relevant, most plentiful, most toxic, least toxic, most reviewed, most green, etc.
How recyclable is a type of building material	Access to background information about the type of material Access information on what the material is made of Access information on how much the material is recyclable (in percent) and how to recycle it Access to information on how long it takes for the material to decompose and what the material is suitable for
Amount of potential pollution	Access a full explanation on pollution risks such as rate of decay, damage reversal or permanency, effects on flora and fauna, case studies, etc.
User Tasks	Scenarios
Point phone at a physical structure and see what materials were used	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch "Track Map"</li> <li>3. Leave entry field blank on the "What do you want to track?" page</li> <li>4. Press "Go"</li> <li>5. Phone turns on overlay</li> <li>6. Touch header brings to bring down more options such as toggle on/off overlay and back</li> </ol>

Find designated landfills	<ol style="list-style-type: none"><li>1. Open Origins application</li><li>2. Touch "Track Map"</li><li>3. Type in "landfills" on the "What do you want to track?" page</li><li>4. Press "Go"</li><li>5. Phone turns on overlay</li><li>6. Touch header brings to bring down more options such as toggle on/off overlay and back</li></ol>
Access quick information about the material	<ol style="list-style-type: none"><li>1. Open Origins application</li><li>2. Touch "Track Map"</li><li>3. Leave entry field blank on the "What do you want to track?" page</li><li>4. Press "Go"</li><li>5. Phone turns on overlay</li><li>6. Touch a traced item</li><li>7. Blurb bubble expands revealing quick information about material/product</li><li>8. Touch "X" icon at the right hand corner of the blurb bubble to close</li><li>9. Touch header brings to bring down more options such as toggle on/off overlay and back</li></ol>
Look up quick information about material's potential environmental damage	<ol style="list-style-type: none"><li>1. Open Origins application</li><li>2. Touch "Track Map"</li><li>3. Leave entry field blank on the "What do you want to track?" page</li><li>4. Press "Go"</li><li>5. Phone turns on overlay</li><li>6. Touch a traced item</li><li>7. Blurb bubble expands revealing quick information about material/product</li><li>8. View greenness meter</li><li>9. Touch "X" icon at the right hand corner of the blurb bubble to close</li><li>10. Touch header brings to bring down more options such as toggle on/off overlay and back</li></ol>



Conscious Consumer

Elaine Kirkland, Female, Age 42

Elaine takes pride in being a green consumer. Without getting technical, she is someone who is very concerned about the environment and, therefore, only purchases products that are environmentally-friendly or eco-friendly. She prefers buying products that have little or no packaging, or at least be made natural ingredients. Products that she have purchased in the past and also use on a regular basis include cleaners that are specially made without causing pollution, hybrid vehicles, hemp sandals, and bags made from recycled materials. Elaine finds maintaining this life-style challenging but worth it. Although she does enjoy purchasing her green products online she does not like waiting for it to arrive in the mail. She wishes there was an easy way for her to check how green a product is before purchasing it at her local market.

- How much energy (gas, electric, water, manpower) was used to create the material
- Track where the products she consumed went after she threw it away and trace how much waste she has created to date
- Where the product was made
- How green and/or organic is the product

Goals	Needs
How much energy (gas, electric, water, manpower) was used to create the material	Graph of energy used Suggestions of similar products that used less energy than the current one

Track where the products she consumed went after she threw it away and trace how much waste she has created to date	View of map showing where the product went Waste counter Ability to link debit/credit cards to her Origins account. This will automatically track items by combining consumer product information with one's personal smart tag information
Where the product was made	Videos showing how the product came and how it was made Breakdown of individual components mapped onto a map showing their origins Trace location by giving an address or GPS location
How green and/or organic is the product	Greenness rating on a scale of 5 leaves Organic stamp of approval
<b>User Tasks</b>	<b>Scenarios</b>
Quickly view how much energy was used to create a product	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch "Track Map"</li> <li>3. Leave entry field blank on the "What do you want to track?" page</li> <li>4. Press "Go"</li> <li>5. Phone turns on overlay</li> <li>6. Touch a traced item</li> <li>7. Blurb bubble expands revealing quick information about material/product</li> <li>8. Touch greenness meter</li> <li>9. View meters gaging how much and what type of energy was used to make the product</li> <li>10. Touch header to go back to the previous page</li> </ol>
View map of traced products and keep track of how much waste was produced in the past month/year/day	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch "My Traces"</li> <li>3. Sign in</li> <li>4. See profile and statistics</li> <li>5. Touch map icon to view traced items map</li> </ol>

View basic product information details about where the item or each item component was made	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch “Browse”</li> <li>3. Type in “[insert product’s name]” on the “What do you want to find?” page</li> <li>4. Touch drop-down menu and select “Products”</li> <li>5. View product’s full profile page</li> <li>6. Touch “Product Breakdown” under “Materials used”</li> </ol>
View product’s green rating	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch “Track Map”</li> <li>3. Leave entry field blank on the “What do you want to track?” page</li> <li>4. Press “Go”</li> <li>5. Phone turns on overlay</li> <li>6. Touch a traced item</li> <li>7. Blurb bubble expands revealing quick information about material/product</li> <li>8. View greenness meter</li> </ol>



Supply Chain Manager

Michael Thornbrook, Male, Age 49

Michael Thornbrook believe that supply chain management is a core competence at world-class firms. The principal benefit of supply chain management is the generation of a sustainable competitive advantage. Michael believes that a company's supply chain extends from the end customer back through the company's distributors, the firm itself, its suppliers, and their suppliers. His job focuses on the design, development, and management of relationships, both inside the company

and with the company's supply world. He believes that these relationships are essential to ensure a smooth flow of quality goods, services, and technology which optimizes end customer satisfaction. As consumers are becoming more earth-conscious, Michael has been focusing on establishing a new regimen that will change his company's image and the way they operate. In past years, his company has been at the bottom of Newsweek's Green list and this has not only negatively impacted his company's brand but also sales as well. Michael is aiming to turn his company into a leader in environmental responsibility. To do so, he must conduct a competitive analysis across his company rival's green products and take note of what materials were used, where they were manufactured, and how much of the product is green. He also needs to help his company adapt of practices in green product development, identify costs in the system, determining cost drivers, and developing written strategies on reducing/managing costs for his company's future line of green products. He hopes that by 2020, his company will reach the potential of reducing global GHG emissions by 15 percent while saving over \$900 billion.

Input variables into his company's product tracking profile such as: where it was made, how recyclable is it, what is each component of the product is made of, how much energy was used to make it, pollution risk

Imprint company's tracking information onto the product

Create a listing of his company's products

Input informational facts about the materials used to produce the product

Goals	Needs
Input variables into his company's product tracking profile such as: where it was made, how recyclable is it, what is each component of the product is made of, how much energy was used to make it, pollution risk, how to reuse or recycle it	Access to his company's profile page Ability to input material information regarding company's products
Imprint company's tracking information onto the product	iPhone attachable imprint device Access to a company assigned RFID/GPS/Aztec smart location aware tags
Create a listing of his company's products	Ability to enter in more products into the list Ability to edit and remove product information Ability to declare that certain products are discontinued Ability to attach a 3D view of the product
Input informational facts about the materials used to produce the product	Text editor Ability to hotspot a place in the product 's photograph and link it to a more info page
User Tasks	Scenarios

<p>Input variables into the company's product tracking profile</p>	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch "Browse"</li> <li>3. Type in "[insert company's name]" on the "What do you want to find?" page</li> <li>4. Touch drop-down menu and select "Companies"</li> <li>5. View company profile page</li> <li>6. Touch "View Products" to browse products</li> <li>7. Select product's full profile information</li> <li>8. Select "Edit"</li> <li>9. Sign in as an contributing authorized member rather than as a member of the public</li> <li>10. Text editor appears</li> <li>11. Press "Save"</li> <li>10. Confirmation page appears showing that the updated entry has been successfully saved</li> <li>11. Touch "OK" to go back to previous page</li> </ol>
<p>Imprint company's tracking information onto the product</p>	<ol style="list-style-type: none"> <li>1. Attach imprint device onto the iPhone device</li> <li>2. Open Origins application</li> <li>3. Select "Track Map"</li> <li>4. Select "Add in New Entry"</li> <li>5. Fill out information form and associate smart location aware tag code with the product</li> <li>6. Touch the "Components" Tab to insert photos and information about the different bits and pieces that make up the product</li> <li>7. Assign a photo of the product and product components</li> <li>8. Save</li> <li>9. Receive successful save confirmation message</li> </ol>
<p>Enter new product profiles onto the company's product page</p>	<ol style="list-style-type: none"> <li>1. Open Origins application</li> <li>2. Touch "My Traces"</li> <li>3. Sign in</li> <li>4. See profile and statistics</li> <li>5. Under my company, select company</li> <li>6. Under company profile, select "Add a product to trace" under "Products"</li> </ol>

Input informational facts about the materials used to produce the product

1. Attach imprint device onto the iPhone device
2. Open Origins application
2. Touch "My Traces"
3. Sign in
4. See profile and statistics
5. Under my company, select company
6. Under company profile, select "Add a product to trace" under "Products"
5. Fill out information form and associate smart location aware tag code with the product
6. Touch the "Components" Tab to insert photos and information about the different bits and pieces that make up the product
7. Assign a photo of the product and product components
8. Save
9. Receive successful save confirmation message

**User Interface Map:**



Run Origins



Login



My Traces

Track Map



Go



My Profile



My Statistics



Zoom but



View My Tracker Map



# Information Flow Map:

