

2021

Hawai'i Annual Code Challenge (HACC)

Challenge Title	Trail Traffic/Rate/Donate Management Tool
Department / Organization	DLNR (State Parks and DOFAW)
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The Challenge	
Describe situation to be solved	<p>High use of recreational features leads to crowding, resource damage, and community conflict. DLNR would like to encourage voluntary use of alternative recreational features and/or use at different times of day/day of week to spread out impact and reduce conflict.</p> <p>DLNR doesn't have information on how many people use a feature and what they like or don't like about the experience. Information on the number of people using a feature and rating feedback will help users select features that are appropriate for their needs/expectations and help DLNR better manage those resources to improve quality of experience and mitigate impacts.</p> <p>Funding for management of recreational features is not sufficient to meet demand, however, charging to use outdoor areas presents barriers to marginalized and underserved communities. Instead of charging to hike, we would like to provide an opportunity for users to easily donate funds to cover management costs.</p> <p>We would like to combat social media sites that spread inaccurate information with accurate, value added information to promote responsible outdoor recreation.</p>
Preconditions <i>(How does it work now)</i>	<ol style="list-style-type: none">1. Residents and tourist find out about features and go as they please;2. Social media amplifies use of popular and unsanctioned areas;3. Communities complain to agencies and elected officials;4. Agencies struggle to manage features with limited budgets.
Assumptions/Issues <i>(list any conditions that could impact the solution)</i>	<ol style="list-style-type: none">1. Uber media or other aggregated cell phone data could be used to inform people of "traffic" at various locations;2. Assume that folks would self-select to go to less crowded places;3. Assume that folks would select a less crowded time of day/week;

	<ol style="list-style-type: none"> 4. Assume users are willing to donate to features they like or see need to be improved; 5. Assume users want to provide feedback and use ratings to inform selection of places to visit;
Current Approach <i>(how is situation currently being handled)</i>	<ol style="list-style-type: none"> 1. DLNR provides information on features on our website and Outer Spatial app.; 2. People self-select locations to visit as they please; 3. Features are mostly free (only charge for parking).
Users <i>(Who would use the application - employees or constituents or both? How many users would there be?)</i>	<ol style="list-style-type: none"> 1. Residents and visitors – outdoor recreationalists; 2. Employees – using data to guide management actions (i.e., number of users per unity time to inform trail maintenance); 3. Donations fund management of that trail/feature; 4. Ratings inform management need and what people like.
Business Rules	<p>Identify any business rules or constraints that would impact solution approach – (for example if your app was to collect field data for an Animal tracking app, you might specify the app should be limited to android devices because that is what would be supplied to collectors).</p> <p>Data would be updated on a regular basis to provide accurate/timely information available on the fly (i.e., every 15 minutes?)</p> <p>ESRI products/enterprise license, incorporation into the Outer Spatial app and DLNR website powered by WordPress; accept donations to appropriate account; curate rating feedback for managers.</p>
Special Requirements	<p>Identify any special non-functional requirements, such legal, privacy or performance issues to be considered during design or implementation</p> <p>Sorting of local (808) number vs out of state numbers to track resident vs visitor users; vendor to offer PCI payment card industry standard – data security standard to protect card information; SSL to do transfer of payment – Apple Pay, Venmo, PayPal, Zelle.</p>
Technical Platforms <i>(in use or desired to be used)</i>	<p>ESRI products/enterprise license, ultimately incorporating into the Outer Spatial app would be a goal; WordPress for DLNR website.</p> <p>Username/log in to use app; personal information protections; collection of money and ratings.</p>
Data set to be used or collected	<p>Uber Media (Near/IT Intelligence) from 2019-2020; ESRI - NAH Trail layer, DLNR managed land shapefiles. Agency would provide capacity number</p>

	breaks between green (not crowded), yellow (marginally crowded), orange (crowded), and red (very crowded) for each trail/recreational feature.
Data set calculations or reporting needs	Visualization of users (numbers of hikers) of recreational features over time in sub-hourly increments (traffic map); number of total users per day (management implications); app could capture location of registered users as well as all cell phone locations on features; widget to visualize use over time per feature; widget to show number of users who donate to influence giving; widget to show rating score for trail by other users; widget to show reduction in destructive behaviors over time (reduction in number of rescues, erosion, etc.); widget to show improvement in management of recreational feature over time (better user reviews, less complaints from community, less erosion); push notifications for passing through geofencing (i.e., if hiker goes beyond viewing area at Manoa Falls trail, a message would pop up urging them to retreat).
Solution Road Map	
Basic Flow <i>(steps of user action/system response)</i>	<ol style="list-style-type: none"> 1. Users download app/visit website; 2. Create a username/password or enter as a guest; 3. Select island/type of feature of interest; 4. Zoom into map with recreational features/options and self-select visits to less crowded sites; 5. Filter/tag options – kid friendly, easy hike, waterfall, view, ADA accessible, etc.; 6. Linked to apple pay to easily make donation after hike.
Goal of Solution	Develop a framework/prototype whereby DLNR could develop a SOW to contract full development of tool for use on existing platforms. DLNR is actively seeking funding for full implementation.
Business Value <i>(potential financial or time savings)</i>	Spread out use over a larger area; increase maintenance efficiency; decrease community conflict, increase user satisfaction (manage expectation), increase user satisfaction and environmental condition through better maintenance funded by donation
Success Scenario <i>(how you know a solution is working)</i>	Straightforward framework/prototype to put out to bid for full development; prototype that could use live data for launch; easy to use by novice/public, integrates with fiscal requirements to accept funding stream.
To be completed by the HACC Planning Committee	
Community/Industry Data Available	
Potential Community/Industry Co-Sponsors	