



Carma Technology Corporation
600 Congress Avenue, Floor 14
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May 12, 2020

Metropolitan Transportation Commission (MTC)
Bay Area Metro Center
375 Beale Street, Suite 800
San Francisco, CA 94105

RE: Selection Dispute - App Vendor for Smartphone App-Based Occupancy Verification System Pilot

Dear Mr. Nguyen and Commissioners:

On behalf of Carma Technology Corporation (dba Carma), I respectfully submit this objection to the selection of *Rideflag Technologies* for the above-named RFP on the grounds that the provisions of the RFP or applicable provisions of federal, state or local law have been violated or inaccurately or inappropriately applied.

In particular:

1. Rideflag Does Not Meet the Proposer Minimum Qualifications

- With reference to Page 4 of the RFP, the vendor must demonstrate that the Proposer has a mature, functioning product that meets the Specifications described in Appendix A, Scope of Work and that the “Proposer must identify at least one existing toll facility where their proposed app is or has been deployed/tested”.
- Rideflag does not have a mature, functioning product for vehicle occupancy verification and has not deployed a vehicle occupancy verification smartphone app. Rideflag is in the early stages of a first pilot of its vehicle occupancy verification technology with the Utah Department of Transportation. Rideflag has some prior carpool pilot experience, but they have never been commercially deployed for occupancy verification.
- With reference to Page 9 of the RFP, “Proposers failing to meet the Minimum Qualifications will not be considered.”
- By comparison, Carma has an active commercial deployment of its *GoCarma* smartphone app for vehicle occupancy verification, processing 15,000 daily HOV transactions in the Dallas-Fort Worth metroplex. The app has more than 30,000 active users.

2. Rideflag Does Not Meet the Functional Requirements Outlined in the RFP

- With reference to Page 17 of the RFP, “VENDOR’s app must not require the driver to interact with the app while driving.”
- Rideflag requires a driver to manually interact with the app to confirm a pick-up and to take a photograph of another person in the car. It is not credible that the driver will limit their interaction with the app to times when they are not behind the wheel. This is particularly true in the case of a casual carpool pick-up, for example.
- By comparison, the GoCarma app is a touch-free experience. A user does not need to open the app to be verified in a vehicle - it works entirely in the background using Bluetooth and / or GPS to verify HOV status.

3. Rideflag’s Approach Disregards California Vehicle Code, Section 23123:

- With reference to California Vehicle Code, Section 23123, a person may not interact with a smartphone app unless it is necessary for emergency services or the vehicle is on private property.
- Rideflag requires a user to interact with the smartphone app to initiate a pick-up and to take a photograph of a person without a smartphone to verify their presence in the vehicle. Again, in the example of casual carpooling this would require a driver to interact with their phone on an active roadway with vehicles waiting behind - both at time of pickup and dropoff.
- Therefore, awarding this contract to Rideflag disregards applicable provisions of Californian state law.
- By comparison, the GoCarma app automatically verifies vehicle occupancy without a user interacting with the app.

4. Procurement of Facial Recognition Technology and Services is Outlawed in San Francisco

- A city of San Francisco ordinance bans facial recognition technology from being used by all city departments, including police and transit authorities.¹
- As published in a paper by Rideflag’s CTO, “**Our facial recognition system** processes a user’s image on his/her phone and produces a facial biometric signature that is unique to that person.”²
- The Rideflag app requires the use of facial recognition technology to verify the occupancy of someone without a smartphone, including a child. The app also uses its facial recognition technology for auditing of vehicle occupancy. This is a major privacy concern that goes beyond the standard set by the FasTrak and BAIFA privacy policies as well as recent trends away from facial recognition technologies in California.

¹ <https://sfgov.legistar.com/View.ashx?M=F&ID=7206781&GUID=38D37061-4D87-4A94-9AB3-CB113656159A>

² <https://media-exp1.licdn.com/dms/document/C4E1FAQEbV6PmtfG2vg/feedshare-document-pdf-analyzed/0?e=1589367600&v=beta&t=fNv0KZVnKEhRddEWTBR-AZaVDIf-j4aiBnOeeLmvMwk>

- Following the controversy associated with the *Clearview* smartphone app using facial imaging technology, as described in the New York Times,³ 40 privacy groups called for a federal moratorium on the use of facial recognition technology.⁴
- Regardless of whether the image is communicated to a server or remains within the app, the use of such technology is a major privacy concern that is subject to hacking and further vulnerable to variance in skin tone. San Francisco was the first city in the county to ban the use of facial recognition technology in surveillance cameras. Oakland followed due to concerns confirmed in an MIT report about its effectiveness with darker skin.⁵

5. Rideflag's Product Appears to Infringe at Least One Carma Patent:

- Based on Pierce Gould's comments to the Operations Committee (May 8th, 2020) related to how the app "counts smartphone signals in a car as a proxy for vehicle occupancy" as well as prior public disclosure from Rideflag about its "passenger proximity" occupancy validation technology, it appears that Rideflag's product may fall within several of Carma's patents and patent applications that are soon to issue, all of which have a priority date of February 12, 2007.
- We believe that the features of Rideflag's product may be covered, at least, by Carma's U.S. Pat. No. 10,083,608 ("Continuous Coordinated Proximity Monitoring in a Shared Transport Network"), U.S. Pat. No. 10,453,339 ("Pooled Point-to-Point Ride Hailing in Shared Transport System"), and in U.S. App. No. 16/564,819 ("Systems and Methods for Detecting Continued Occupancy of Transport Users in Transport Vehicles") for which a patent is expected to issue in the next couple weeks -- all of which claim a priority date of February 12, 2007.
- Most notably, the claim features in U.S. App. No. 16/564,819 (for which a patent is soon to issue) include:
 - determining, by the transport network, that the transport user device has entered the transport vehicle, or is within transport proximity, of the transport vehicle based on determining a coordinated proximity between the transport user device and the transport provider device;
 - determining, by the transport network, that the transport user remains within the transport vehicle, or within transport proximity, of the transport vehicle by verifying that the coordinated proximity continues to exist between the transport user device and the transport provider device; and
 - determining, by the transport network, that the transport user is no longer within the transport vehicle, or within transport proximity, of the transport vehicle by detecting a break in the coordinated proximity between the transport user device and the transport provider device.

³ <https://www.nytimes.com/2020/01/18/technology/clearview-privacy-facial-recognition.html>

⁴ <https://www.technologyreview.com/2020/01/27/276067/facial-recognition-clearview-ai-epic-privacy-moratorium-surveillance/>

⁵ <https://www.sfchronicle.com/bayarea/article/Oakland-bans-use-of-facial-recognition-14101253.php>

- These claims make clear that any vendor’s product undergoing a verification of a coordinated proximity between a transport provider device and a transport user device would be at risk of patent infringement.
- Carma has pioneered smartphone-based vehicle occupancy verification and takes its intellectual property seriously. We have submitted a Public Records Request for more information related to Rideflag’s proposal. Based on confirmation of Rideflag’s approach to vehicle occupancy verification, Carma will take legal action, as appropriate.

Comparison Chart: Rideflag and Carma

We believe that an objective comparison of Rideflag and Carma’s products would support our dispute of the selection of Rideflag for this project. We include a comparison chart below.

II. PROPOSER MINIMUM QUALIFICATIONS (RFP PAGE 4)		
	Rideflag	Carma
1. In the Transmittal Letter, Proposer must declare that it has a mature, functioning product that meets the Specifications described in Appendix A, Scope of Work.	<p>Rideflag does not have a mature, functioning product that meets the Specifications described in Appendix A, Scope of Work.</p> <p>Rideflag does not have a fully developed smartphone app for verifying vehicle occupancy. Rideflag is adapting its carpool ride-matching app to include facial recognition technology and is about to start testing this product in a pilot with the Utah Department of Transportation.</p>	Carma’s “GoCarma” app is a mature, functioning product that already meets the Specifications and is ready for immediate deployment in a pilot.
2. In the Transmittal Letter, Proposer must identify at least one existing toll facility where their proposed app is or has been deployed/tested.	Rideflag does not have an active deployment and has only completed a survey as part of their pilot with the Utah Department of Transportation. There has never been a commercial release of RideFlag using facial recognition for occupancy verification.	App is fully deployed with 30,000 active users in the Dallas-Fort Worth metroplex, processing 15,000 daily HOV transactions across a 120-mile managed lane network.
APPENDIX A: SCOPE OF WORK REQUIREMENTS		

	Rideflag	Carma
Vendor shall provide a state of the art, turnkey smartphone app-based occupancy verification system that can be used by the public to detect vehicle occupancy on Bay Area express lanes.	Rideflag is starting to pilot its technology and does not have a turnkey solution. Rideflag has never commercially deployed, nor have they proven an ability to integrate with a back-office billing system like FasTrak.	Our GoCarma app is a turnkey solution that is ready for deployment. GoCarma has been successfully integrated with multiple roadside and billing vendors to date.
Task 1 - Project Management	Rideflag has not successfully project-managed a full deployment of its product.	Carma's Project Manager has successfully managed a full commercial-scale deployment of our GoCarma app. This included continuous engagement with a wide set of project partners, including North Central Texas Council of Governments (NCTCOG), the Texas Department of Transportation (TxDOT), the North Texas Tollway Authority (NTTA), technical integrators such as Cintra and TransCore, and our end-user community. It further includes thousands of pages of documentation related to project management plans, design plans, test plans, interface control documents, conformance traceability, test reports, quarterly reports, communications plans, and ongoing stakeholder updates.
Task 2 - App Specification A1. VENDOR's product must be able to operate on both iOS and Android operating systems.	Compliant	Compliant
Task 2 - App Specification B1. VENDOR's app-based occupancy verification system must have a solution for determining	Facial imaging of the person without the smartphone (e.g. infant / children).	A Bluetooth tag is carried on board when the person without a smartphone is present in the vehicle.

vehicle occupancy for persons without smartphones (e.g. infants / children).		These non trackable tags are provided at no cost to MTC. Violations are automatically identified over time based on big data analysis of coordinated device movement.
Task 2 - App Specification B2. VENDOR's app must not require the driver to interact with the app while driving.	A driver interacts with the app to initiate a pick-up. A driver interacts with the app to initiate the facial imaging of the 2nd person in the car.	No app interaction. The app automatically verifies occupancy in the background using GPS and / or Bluetooth.
Task 3 - App Modification Customization Including: back-end reports, information/data collected for evaluation purposes, pilot participant feedback via app, in-app announcement etc.	No active deployment.	All of these are already available in a full commercial-scale deployment. Carma has confirmed that no MTC staff member reached out to our reference customer NCTCOG. No one inquired about the success of our DFW system, nor our working relationship with 7 agencies, nor did anyone request copies for any of any system performance reports.
Task 4 - Information/Data Request VENDOR shall provide MTC and/or its consultant with information or data needed to support MTC's separate outreach and evaluation activities.	No active deployment.	Data already provided to NCTCOG as part of our Dallas-Fort Worth deployment.
Task 5 - Evaluation Review While the evaluation is meant to be independent, VENDOR may be given an opportunity to review key findings prior to making them public and provide important context that MTC may, in its sole	Rideflag is starting to pilot test its technology and so it has not yet been independently evaluated.	Carma has worked closely with US government agencies for more than a decade and participated in many pilot evaluations. Our Dallas-Fort Worth deployment followed years of extensive evaluation with independent oversight in Dallas, Austin and the San Francisco Bay Area.

discretion, factor into the overall evaluation process.		
<p>Task 6 - Customer Support Services</p> <p>VENDOR shall provide pilot participants a method to communicate app-related questions and report issues to VENDOR throughout the pilot. VENDOR shall respond/resolve customer inquiries/issues within 48 hours of receipt.</p>	No active deployment yet.	<p>So far this year, we have responded to 6,086 inbound support tickets as we on-boarded new users - with an average response time of 6 mins 3 seconds and average time-to-resolution of 26 mins 53 seconds.</p> <p>Since January, when the GoCarma app replaced another app that required user interaction, customer service complaints related to people forgetting to use the app prior to each trip, have dropped from a daily high of 82 down to zero.</p>
Qualifications and References		
	Rideflag	Carma
Active Deployments	None	Our GoCarma smartphone app is fully deployed, enabling 15,000 HOV toll discounts across 120 miles of managed lanes in the Dallas-Fort Worth metroplex. Our partners for this project include the North Central Texas Council of Governments (NCTCOG), the Texas Department of Transportation (TxDOT), the North Texas Tollway Authority (NTTA) and technical integrators such as Cintra and TransCore.
Experience in the San Francisco Bay Area	None	Between 2012 and 2015, Carma was the sole carpool smartphone app used in a San Francisco Bay Area project that was administered by Caltrans and MTC 511 Rideshare with many stakeholders including Contra Costa Transportation Authority (CCTA), Sonoma County Transportation Authority (SCTA) and

		the Transportation Authority of Marin (TAM). In July 2013, MTC asked Carma to support MTC’s efforts during the BART strike when our smartphone app was used to verify hundreds of thousands of HOV trips across the Bay Bridge. Furthermore, Carma has partnered with Contra Costa Transportation Authority for several Bay Area projects including two that verified occupancy along the I680 and I80 corridors.
Privacy Impact		
	Rideflag	Carma
GPS	Within a pilot geofence location only.	Within a pilot geofence location only.
Facial Recognition Technology	For everyone including those without a smartphone, and for auditing purposes.	None
Bluetooth	Unknown	Optional
Other		
	Rideflag	Carma
Fully Automated	No. MTC staff report suggests users of RideFlag must interact with the app before every single trip, and randomly at the end of trips for verification.	Yes. After setup, there is no user interaction before, during or after any trip. Carma verifies every single trip - not a random selection.
Minimize Barriers to Carpooling	Rideflag is a carpool ride-matching app and has some limited experience in building carpool communities.	Although “minimizing barriers to carpooling” was not mentioned in the RFP, Carma is the most experienced vendor in this space, having launched the first carpool ride-matching smartphone app in 2008. With a carpool ride-matching database of tens of thousands of commuters in the Bay Area, Carma

		<p>is uniquely positioned to minimize barriers to carpooling.</p> <p>Carma staff co-authored with Susan Shaheen of UC Berkeley, a comprehensive study of casual carpooling usage and behaviors. During the 2013 BART strike Carma leveraged this expertise to create very successful 'super' casual carpool hubs at BART stations - thus extending the SF Bay casual carpool network.</p> <p>Our GoCarma product currently excludes our patented real-time carpool ride-matching functions due to the fact that 1) most carpools are intra-household family-pools rather than inter-household matched carpools, 2) it was not mentioned in the RFP, and 3) the RFP explicitly states that a driver should not interact with the app.</p>
<p>Future Integration</p>	<p>No integration to date.</p>	<p>For our Dallas-Fort Worth deployment, we are integrated with 2 vendors, TransCore and Cintra. We spent more than a year developing the Interface Control Document. Our solution includes flexible integration options to suit your needs. GoCarma has also shared data with two backend billing vendors (TxDOT Austin & ETCC).</p>

Finally, we think it's highly unusual that MTC staff selected three (3) camera vendors as part of the Roadside Camera-Based phase 1 pilot, and with only 3 valid submissions and 2 shortlist vendors, this same MTC staff only chose to move forward with a single smartphone vendor to pilot.

We have developed our solution over the past decade thanks to strong partnerships with dozens of government agencies who support HOV incentives. We strongly believe that HOV / Express Lanes are the Bay Area's best tool for managing highway congestion and that the GoCarma app is by far the most advanced and cost-effective method, and the only proven smartphone solution, for mitigating HOV violations. We once again encourage MTC staff and commissioners to reach out to the North Central

Texas Council of Governments (NCTCOG - DFW regional MPO) to check our references and learn more about our successful deployment in the Dallas-Fort Worth metroplex. We include key NCTCOG contacts below:

- Michael Morris, Director of Transportation - mmorris@nctcog.org - Michael's team leads this project for the DFW metroplex and is the best person to understand the politics that may need to be addressed.
- Natalie Bettger, Sr. Program Manager - nbettger@nctcog.org - Natalie leads this effort internally and is the best resource to learn more about their 5yr search and funding of the GoCarma platform. She can also provide copies of any of the many project plans including; project management, testing, violations, ICD, customer support and certification.
- Dan Lamers, Sr. Program Manager - dlamers@nctcog.org - Dan sits on several TRB and IBTTA committees and is the best resource for learning about Carma Technology Corporation as a partner. Dan can also provide any performance metrics MTC may be interested in including total transactions, %HOV and system performance.
- Amanda Wilson, Public Involvement, Outreach and Government Relations - awilson@nctcog.org - is the best contact for information about messaging, communications and the press.
- Ken Kirkpatrick, Legal Counsel, Transportation - kkirkpatrick@nctcog.org - Ken is the best legal resource to understand what policies or laws your agency may need to consider. Ken has previously provided a copy of their contract with Carma.

We thank you for this opportunity to submit this objection. We strongly support MTC and the Operations Committee in piloting technologies for mitigating HOV violations and would welcome an opportunity to work with you further on this project. We look forward to your response.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Steinberg', written in a cursive style.

Paul Steinberg, Chief Business Officer
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