**NIST OWM Strategy for the Development of Legal Metrology Requirements for Transportation Network Systems (TNS)**

With the adoption in July 2015 of changes to the NIST Handbook 44 Taximeters Code that were recommended by the USNWG on Taximeters, NIST OWM has been considering how to best continue efforts to develop proposed requirements for TNS. After reviewing the tasks ahead of the USNWG and discussing this with various stakeholders, NIST is implementing the following strategy to expedite this work. Outlined below are the principle elements of the strategy followed by additional background information.

**Principle Elements of the Strategy:**

* **Dissolve the GPS Subcommittee immediately; all work will be addressed by the larger USNWG.**
* **The TNS Task Group (established at the October 2015 GPS Subcommittee meeting and chaired by Kristin Macey, CA) will continue development of proposed requirements for TNS.**
* **The TNS Task Group will present its recommendations to NIST Office of Weights and Measures (OWM) for a preliminary review in May 2016.**
  + NIST’s review will focus primarily on how to best integrate the proposed TNS requirements into the hierarchy of NIST HB 44.
  + OWM will provide feedback to the Task Group within a two-week period.
* **The Task Group will present its final recommendations to the USNWG in June 2016.**
* **USNWG members will review the draft recommendations and submit comments to NIST OWM by July 2016.** Negative comments must be technically persuasive (as determined by NIST) and each must be supported by an explanation and a recommendation for change.
* **NIST OWM will summarize USNWG member comments; incorporate recommended changes as appropriate; and present a final proposal to the USNWG for ballot.**
* **A final proposal will be submitted to the NCWM by August 2016 for consideration by the regional weights and measures associations in fall 2016.**

**USNWG GPS Subcommittee Task Group on TNS:**

At its October 2015 meeting, the USNWG GPS Subcommittee (a subsection of the larger USNWG) formed a Task Group on Transportation Network Systems (TNS). The Task Group was established with the intent of developing a useable set of standards applicable to TNS as quickly as possible. To facilitate that work, Ms. Kristin Macey (CA Division of Measurement Standards) agreed to lead the Task Group and to select participants to serve in this group. The membership of the Task Group was purposefully limited to only a few members with the notion that a relatively small group would be able to expedite the work more efficiently than a larger, more diverse group. Members of the Task Group include: representatives from Transportation Network Companies (TNCs) – Uber and Lyft; a few select officials from California State and County regulatory agencies; and the NIST Technical Advisor.

The mission of this Task Group is to develop a draft of a proposed requirements for TNS to include in NIST Handbook 44 to be used in the regulation of TNS. Issues identified as particular concerns that the Task Group would focus on were; security of the TNS and a provision for sealing of the devices used in the systems; and the requirements for a disclosure of information to the consumer regarding the manner in which transaction information will be provided to the consumer. Prior to NIST’s revision of its strategy as outlined above, these draft requirements were intended to be reviewed by the GPS Subcommittee as a beginning to a vetting process through the larger USNWG and then the NCWM.

During a meeting of the GPS Subcommittee in January 2016, Ms. Macey indicated that the goal of the Task Group was to be able to offer draft requirements for TNS to the GPS Subcommittee by May of 2016. At that time, the GPS Subcommittee anticipated that, upon the receipt of the draft requirements, a review could be completed within 2-3 months, after which the draft would subsequently be passed to the USNWG on Taximeters for further vetting. It was expected then that the USNWG would be able to submit a proposed draft TNS requirements for consideration to the four Regional Weights and Measures Associations before their 2016 fall meetings.

**USNWG GPS Subcommittee**

The USNWG GPS Subcommittee was originally established by the USNWG with a mission to address the use of GPS (and other positioning and location services) in combination with software applications or “apps” to calculate passenger’s fares by companies providing transportation services. The GPS Subcommittee was initially intended to include a limited number of members to facilitate development of proposals to be brought back to the larger USNWG for consideration. Increased interest in the GPS Subcommittee work by members of the larger USNWG has led to a corresponding increase in requests for membership on the Subcommittee, blurring the lines between the Subcommittee and the larger USNWG and resulting in what NIST believes is an unnecessary layer to the USNWG. Additionally, the completion of the USNWG's work on the existing Taximeters Code in July 2015 has significantly freed up resources within the larger USNWG to allow more focus on the development of requirements for TNS. In view of the recent formation of the above mentioned Task Group and with consideration to the work that has already been accomplished by the GPS Subcommittee, the GPS Subcommittee will be dissolved at this time. The continued development of a TNS Code will be accomplished through the Task Group as described above, thereby eliminating one step in the review process of that TNS Code.

**Roles in the Vetting Process:**

**NIST OWM:**

The technical staff of NIST Office of Weights and Measures (OWM) will review the draft TNS Code with a focus on assessing how to best facilitate the integration of performance-based requirements for transportation service applications into the hierarchy of NIST Handbook 44. A key goal of this step is to attempt to resolve any perception of unequal treatment of stakeholders prior to the introduction of the proposals to the larger USNWG. Participation in the Task Group by NIST OWM’s John Barton is expected to aid in the development of a draft standard within the Task Group, thus limiting the need for any significant additional technical revision by NIST OWM’s technical staff. Feedback will then be provided to the Task Group regarding any recommended changes. NIST OWM will expedite its review of the draft with a turn-around of no more than two weeks after the draft is received. The end result may take the form of a separate TNS Code or an expanded Taximeters Code with delineated requirements for the different types of systems covered.

**USNWG on Taximeters**

Following any subsequent revisions to the original draft, it will then be presented directly to the USNWG on Taximeters for review. The larger USNWG will be asked to review and comment on the draft by July 2016. Comments will be considered based upon their merit and technical relevance. Any responses that include comments or suggestions not supportive of the draft must be presented along with an explanation of those objections; must be technically persuasive in their opposing arguments; and must include proposed revisions to address the area of concern. Serving in the positions of chair and as technical advisor of the USNWG (and as a neutral party) NIST OWM will make the final determination of whether or not opposing arguments are “technically persuasive.”

During the review of the draft TNS Code by the USNWG, emphasis will be given to achieving a consensus among key stakeholders rather than a simple majority alone. To ensure balanced input and attempt to eliminate later objections during the National Conference on Weights and Measures (NCWM) review process, an assessment of stakeholder groups who represent major segments of the marketplace will be included in the decision process. For example, considering the votes of industry vs. regulators and, within industry, TNS providers vs. other industry. This approach is often used within the National Type Evaluation Sectors as a means to gauge the need for additional work before submitting proposals for further consideration outside of those Sectors.

**National Conference on Weights and Measures:**

Following the review by the membership of the USNWG on Taximeters and any revision deemed necessary, the final version of proposed TNS requirements will be submitted through the NCWM for consideration to be added to NIST Handbook 44. This process will begin with the presentation of the draft to the four regional weights and measures associations during their fall 2016 meetings, beginning in September 2016. The regional associations will be asked for their input on the draft and asked to support recommending the proposed TNS requirements as a voting item to the NCWM.

If supported by the regional weights and measures associations, the proposal would be expected to be given a “voting” status for the NCWM’s Annual meeting that will be held in July 2017. Any stakeholders wishing to express support or opposition to the proposal would have an outlet to do so during the open hearings sessions conducted in the NCWM Annual meeting. Note that members of the USNWG are able to express their views either as a member of the USNWG and/or individually during these sessions and throughout the comment period. Items that are voted on at the Annual meeting and approved will appear in the subsequent edition (2018) of NIST Handbook 44.

**Key Considerations:**

In discussions at recent GPS Subcommittee meetings, it was noted that some of the arguments presented as to whether TNCs should be categorized and regulated as a “taximeter” are based upon the business models used by TNCs and the manner in which those companies operate.  For example, Uber customers use a software application to access the service.  When opening the software application, the customer is presented with the terms of service via a “contract” at which time they must acknowledge receipt of the terms prior to using the Uber service.  Other Transportation Network Companies are reportedly operating in similar fashion.

This method of accessing a TNC’s service is being compared to the manner in which a customer contacts a taxi to obtain service by simply hailing a taxi on the street (sometimes referred to as a “street hail”) with no prior arrangement being made.  The point has been made that the TNS customer has already had some disclosure (through the contract) of how the details of the transaction will be recorded and provided to the customer.  In addition, the TNS customer is typically provided with an estimated fare before accepting the service.

It is not customary or common to incorporate details regarding a business model into the development of legal metrology regulation. However, such differences can sometimes justify the inclusion of exceptions for variations in how a system complies with applicable legal metrology requirements. For example, in defining what information will be required to be presented to the customer and in what manner that data will be presented/displayed.  An additional point is that the methods used by these different types of companies to provide access to their service can be considered as a “method of sale.” Therefore, it may be helpful if the staff members of the NIST OWM Laws and Metric Program be included in the discussion. The Laws and Metric Program is responsible for NIST Handbook 130, *Uniform Laws and Regulations in the Areas of Legal metrology and Engine Fuel Quality*, which includes “method of sale” requirements.

One of the major considerations involved with the development of regulatory standards for TNS was a determination of whether to amend the existing Taximeters Code in NIST Handbook 44 or to create a separate Handbook 44 Code for TNS. There are some stakeholders who are of the opinion that TNS offer the same service that is provided by a traditional taxi (using a taximeter), in that both provide a transportation service and base the fare charges on distance traveled and time elapsed. Those who have that perspective will tend to support a modification of the existing Taximeters Code and those who believe TNS are something altogether different support the development of a separate TNS Code in Handbook 44.

The effort to develop a new and separate Handbook 44 TNS Code is based upon the notion that distinct differences exist between these types of service providers and those differences are prohibitive of sufficiently modifying the existing Taximeters Code to incorporate TNS. During the October 2015 and January 2016 meetings of the GPS Subcommittee, it was recognized that in the transportation-for-hire industry, there are no well-defined lines of separation between these competing businesses. While some technical differences are obvious (i.e., the use of GPS and software applications), there are some manufacturers that are incorporating a blend of these technologies and thereby blurring any lines of distinction between taxis and TNS.

NIST OWM had requested one of the Transportation Network Companies, Uber, to provide a list of differences between these competing types of services to aid in distinguishing TNS from traditional taxi services. Uber responded to that request as follows:

*“TNCs have a core set of features that are not found in taxis or taximeters.  Although a taxi may, at times, be able to provide one or two of these features, only a TNC can provide all of these features:*

1. *All trips are prearranged—a TNC vehicle cannot be hailed by hand on the street.*
2. *The underlying data used for measuring time and distance and calculating fares comes solely from location services (GPS, cell, wifi), rather than from any mechanical or other function of the vehicle.*
3. *Measurement and fare calculation occurs on a remote server and then is transmitted back to the rider/driver devices.*
4. *All riders have agreed to terms set forth in terms and conditions.*
5. *All drivers have agreed to terms set forth in a technology services agreement.”*

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