IEEE P802.11
Wireless LANs

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| Liaison from Wi-Fi Alliance re: NGV Use cases and requirements |
| Date: 2018-11-15 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Dorothy Stanley | Hewlett Packard Enterprise | 3333 Scott Blvd.Santa Clara, CA 95054 | +1 630 363 1389 | dstanley@ieee.org  |
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Abstract

This document contains a liaison statement received from the Wi-Fi Alliance (WFA) in response to the IEEE 802.11 WG request for comments on NGV use cases and requirements, see <https://mentor.ieee.org/802.11/dcn/18/11-18-1303-02-0ngv-liaison-requesting-feedback-on-ngv-usage-scenarios.docx> .

The received liaison is embedded below and reproduced on the following pages.



10900-B Stonelake Boulevard, Suite 126 • Austin, TX 78759 USA



 Phone: 512.498.9434 • Fax: 512.498.9435 [www.wi-fi.org](http://www.wi-fi.org/)

Date: 16 October 2018

To: Ms. Dorothy Stanley, Chair, IEEE 802.11 WLAN Working Group

From: Automotive Market Segment Task Group, Wi-Fi Alliance

RE: Liaison Statement reply to “IEEE 802.11 WLAN Working Group Liaison Communication related to Next Generation V2X (NGV) Use Cases and Requirements

The Automotive Market Segment Task Group in Wi-Fi Alliance has reviewed the 802.11 NGV

Use Cases and Requirements document as referenced in the Liaison Communication from IEEE 802.11, dated 23 July 2018. Attached is the requested prioritization feedback as well as additional comments.

Best Regards,

Wi-Fi Alliance

**Title: Prioritization and comments on 802.11NGV Use Cases and Requirements (IEEE document number 11-18/1323r0)**

**Source: Wi-Fi Alliance**

**To:** Dorothy Stanley, Chair, IEEE 802.11 Working Group Bo Sun, Chair, Next Generation V2X Study Group

**Attachments: None**

Dear Ms. Stanley,

 The Automotive Market Segment Task Group in Wi-Fi Alliance has reviewed the 802.11NGV document on Use Cases and Requirements (document number 11-18/1323r0) and members have submitted rankings and comments.

**Ranking**

(1=highest priority, 6=lowest priority)

**Basic Safety Messages**

**BSM**

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**Sensor Sharing**

**Multi**

**-**

**Channel**

**Operation**

**Infrastructure**

**Applications**

**Vehicular Positioning**

**& Location**

**Automated Driving**

**Assistance**

**Rank**

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\* = see comments on Use Case 1

# Comments on specific use cases

Use Case 1 Basic Safety Messages (BSM)

* BSM is very important…it’s the primary use case o Should clarify whether the intent is to send BSM only with NGV or whether legacy 802.11p will be used for BSM. If only legacy 802.11p will be used for BSM, then do you also intend to send a redundant BSM using NGV?
* SPaT and MAP messages can also be sent in Channel 172
* In the EU, safety messages are CAM and DENM, not BSM
* Antenna diversity (both TX and RX) is not required today; they are optional features that are vendor specific and not described in standards, either IEEE 802.11p or SAE J2945/1. NGV may choose to standardize these features.

Use Case 2 Sensor Sharing

* Sensor sharing messages could be either raw sensor data or metadata. The size of the messages could vary significantly between the two. In either case, these messages would be larger than BSM.
* This use case could require a significant amount of bandwidth. Is NGV considering spectrum outside of 5.9GHz for this use case?

Use Case 3 Multi-Channel Operation

* Not clear how this reflects multichannel operation as described in IEEE 1609.4
* Not clear which is the “non-safety” channel. Under the FCC bandplan, all channels are considered safety channels; there are no “non-safety” channels. Two channels (172 and 184) are safety only; the rest can be a mixture of safety and non-safety.
* IEEE 1609.4 defines a control channel (178) for multi-channel service channel operations. The assumption in the industry is that one radio is dedicated to channel 172 and another radio is dedicated to monitoring the control channel and moving to a service channel for exchanging data on the channels advertised in the control channel. Not clear how many radios this feature entails: 2 (safety + control), 3 (safety + control + service channel), or more (safety + control + multiple service channels). How many radios does NGV propose to use?

Use Case 4 Infrastructure Applications

* One additional usage: Drive assist; e.g., high definition maps download
* Certificate distribution is another significant type of data that could be transmitted to vehicles from infrastructure
* Should consider possible future SW upgrades to allow existing 11p in roadside units or onboard units to support new or modified applications.
* “Higher layer (e.g. IEEE1609) protocol should be defined for version negotiation (out of NGV scope)” – this statement needs clarification…it’s not clear what it means.
* The requirement for high throughput implies use of multiple data rates; if multiple data rates are going to be used, selection criteria need to be defined. Perhaps there needs to be an advertisement of the supported rates by an OCB device.

Use Case 5 Vehicular Positioning & Location

* Is this is intended to send sensor information derived from GNSS or other external systems from vehicle to vehicle or infrastructure, or is the plan to use the NGV waveform itself for fine positioning, as in 802.11az?
* If the plan is to use 802.11az, how is the baseline established?
* If not using 802.11az, suggest review of 802.11v, which has an optional frame for carrying GPS location and timing.

Use Case 6 Automated Driving Assistance

* What is the anticipated throughput?
* Are there requirements for latency and range?
* There are many other use cases in automated driving in addition to cooperative maneuvers.
* Infrastructure (I2V) would also be useful for these use cases.

# Overall comments

* IEEE 1609 or SAE DSRC TC (J2735 & J2945) are the standards bodies that would define new message types, revised BSM content, and performance requirements.
* SAE J2945/1 defines a congestion control algorithm today which is cross layer in its operation. Is NGV proposing a congestion control algorithm that would be contained in layers 1 and 2 (PHY and lower MAC) only?

**References:**

<https://mentor.ieee.org/802.11/dcn/18/11-18-1303-02-0ngv-liaison-requesting-feedback-on-ngv-usage-scenarios.docx>