

Traffic.com's "Data Lock Scheme"

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Summary

Traffic.com has engineered a scheme designed to control the traveler information market in our nation's most congested cities through legislative connections that led to earmarks in the last two large transportation bills (TEA-21 and SAFETEA-LU) as well as support from the top of the U.S. Dept. of Transportation.

This scheme involved creating a significant (\$2 million/city) outlay of what they could market to state governments as "free" federal money to pay for traffic data resulting from the installation of new pole-mounted traffic detectors in our most congested cities – ostensibly to improve the ability of local agencies to detect and inform the public about traffic conditions, to provide the FHWA with valuable data about historical changes in traffic congestion patterns, and to energize the commercial traveler information business in these cities.

Traffic.com's agreements with both state/local departments of transportation – the details of which have only been made publicly available recently -- often severely restrict the state/local partner's ability to utilize that data from Traffic.com's detectors in real-time traveler information applications, or to share that data with other public or private-sector partners (TV/radio stations, even neighboring jurisdictions). That restriction would not normally be too onerous, however, since these agencies typically have many different sources of real-time traffic data. However, in effect this scheme is much more pervasive, because once the data from Traffic.com's new detectors blends in with all of these other sources of data, it in effect "spoils" the entire data stream in many cases, and prevents the agency from sharing any of that blended data with others in order to get the word out about real-time travel conditions to commuters, trucking companies, vacationers, etc. In many cases, Traffic.com is actually responsible for marketing and distributing that blended data with others – including its own competitors in its traffic information business. Obviously, being the "gatekeeper" for data that can enhance their competitors' own traveler information products creates a huge inherent conflict of interest for Traffic.com.

In effect, there are two different types of "data lock schemes" at work in the TTID program:

1. Traffic.com's control ("lock") on the ***new real-time traffic data*** that comes from the new sensors (typically 100 per city) deployed by Traffic.com in the publicly-subsidized TTID program, and
2. Traffic.com's effective control ("lock") in many of the ITIP/TTID cities on the ***combined data*** that includes data from the new TTID sensors as well as the partner-agency's own data from loop, video, and other detectors.

By, in effect, "locking" the real-time data stream for their own purposes in many if not most of the

cities that have signed agreements with Traffic.com, the company's plan was to become one of if not *the* most successful traveler information provider in the country, rapidly surpassing other companies (e.g., Westwood One, Metrocommute, Inrix) in the traveler information business.

The Basics of Traveler Information

Figure 1 shows how traffic information is created. By "traffic information" I mean information provided by various means to travelers about how well traffic is flowing. Such information may include information about traffic speeds, about the location and severity of accidents and incidents, or about travel times when going from point A to point B.

Detection/Instrumentation

In order to provide traveler information, an agency (typically a state or local department of transportation) must have adequate real-time sensing of current conditions on important roadways. This sensing is typically provided by one or more different types of *detectors*. The *level of instrumentation* on the roadway is a common term used by transportation professionals for the degree to which these traffic detectors are available on particular roadways. (See the left side of Figure 1.) Here's a synopsis of the various types of detectors that are often used:

- *Inductive loop detectors*, or just *loop detectors*, consist of a loop of wire that is typically imbedded in asphalt that can electrically sense when vehicles are over the loop. These are by far the most common types of permanent traffic detectors. They are used for many different purposes, such as detecting traffic queues in left-turn lanes so as to keep the left turn arrow lit until all traffic in the queue has turned, and detecting travel flow and traffic speeds on freeways (when loops are typically used each half-mile).
- *Video detectors*, consisting of pole-mounted cameras that can sense traffic across multiple lanes. Such detectors are commonly used in climates with frequent freezing and thawing (e.g., Minnesota), which can cause a high failure rate for loop detectors.
- *Microwave/radar detectors*, which are also mounted on poles. These types of detectors are typically much less costly than video detectors, and (like video detectors) do not require lanes of traffic to be shut down when they are installed or require service. Thus, both types of detectors are often called *non-intrusive detectors*. This type of detector has been mostly provided by Traffic.com in their ITIP/TTID programs involving \$2 million in earmarked funds for each of our nation's most congested cities.
- In the past ten years, there have been a number of tests in *deriving traffic data from cellphones*. By working with cellular providers (e.g., Verizon, Cingular), data can be generated about the movement of individual cellphones. Since cellphone use in vehicles is very substantial, in effect this data makes a cell-phone user's car a type of probe vehicle. Some cellphone traffic data schemes can even generate data when the cellphone is simply turned on but not used, since a cellphone periodically registers with the nearest cell towers. Traffic.com has begun to experiment with this type of traffic data, which was a major element of their contract awarded last year with the Utah Dept. of Transportation. (See a company press release about this project, dated March 31, 2006, at: http://corporate.traffic.com/news/press_releases/Release_SLC_GreenLight.htm)
- There are other possible types of *probe vehicles*, as well. Any type of public service vehicle

(police car, bus, etc.) that employs automatic vehicle location (AVL) technology can potentially become a probe vehicle. Some regions use "toll-tags" and roadside toll-tag readers to provide probe data. A next-generation technology being explored by a consortium supported by the USDOT, related to "vehicle-infrastructure integration" or "VII," would potentially create millions of probe vehicles in the future.

Data Integration

In order to provide wide-scale, comprehensive and accurate real-time traffic information to travelers, all of the various types of data from the sensors described above must be integrated. That is, all of the data from the various types of detectors must be put together into one "hopper." Integrating the data from these different sources lets the agency (and potentially third-party commercial traveler information companies) provide the best quality real-time information to travelers.

That integration is very important, because typically a transportation agency may have a high concentration of loop detectors in some areas, but few loops in others where they also want to provide traveler information. For example, several years ago, TxDOT's San Antonio District found that it had a high level of instrumentation (e.g., loops) in the close-in freeways, but very poor instrumentation in the "outer loop." Their solution was to install extra tolltag readers in this outer loop, which in effect turned any vehicle that had a tolltag in its windshield into a probe vehicle. The data from those "probes" was integrated with the data from the loops so that the traveler was provided with a seamless and continuous flow of traffic information from both areas.

For many years, the USDOT has been trying to encourage state and local DOTs to fill those "data gaps" and raise the overall level of "instrumentation" on our nation's major roadways. A few years ago the USDOT reported that less than 15% of our nation's roadways were instrumented. Without such instrumentation (e.g., use of various types of traffic detectors), both the state/local agencies and FHWA cannot tell how well those roadway facilities are operating. (That's why the FHWA's "Office of Operations" is so active in this area.)

A few of the larger states, including California and Virginia, have sponsored significant efforts to integrate traffic data from many sources. However, many other states simply do not have either the IT resources or the funds to do a significant data integration effort themselves. So Traffic.com's "pitch" that they would perform this integration function and then provide data back to the state/local agency for their own internal use was very effective.

Real-Time Traveler Information

Once all of the traffic data from various sources is integrated (for larger cities, typically at a Traffic Management Center, or "TMC"), it is then used to provide traveler information in one or more of a variety of forms, including:

- **Internet speed maps.** Many public sector agencies, private sector vendors, television stations, etc. provide speed maps on the Internet. Typically, these maps show traffic speeds in ranges, with different colors superimposed on the roadway map to indicate ranges of speed such as: 0-20 mph, 20-40 mph, 40-60 mph, and >60 mph. In many cases, a user can "mouse over" a

particular roadway segment on the map and retrieve more precise current speeds on that roadway. These maps also typically let users click on icons to show more detail about accidents or to display a near-real-time snapshot (picture) of traffic conditions.

- **511.** The USDOT has been very actively working with other agencies (especially the American Association of State Highway and Transportation Officials, AASHTO) to deploy the 511 traveler information number nationwide. This number was assigned by the FCC several years ago, at the urging of the USDOT, ITS America (the national society promoting intelligent transportation systems), and others. Typically, callers can "zoom in" via their touchtone phone to find out real-time traffic information (vehicle speeds and/or travel times, incident severity and location) on roads of interest.
- **Changeable message signs.** These roadway signs are typically used to tell travelers the anticipated travel time between two locations, or to highlight accidents ahead.
- **Radio/TV traffic reports.** These reports are typically paid for by advertisements. For example, a company like Westwood One or Traffic.com will be allocated twenty seconds of time on a radio station in which they will give a 10-second traffic report and then sell an advertisement for "Joe's Barbeque" to run on the other 10-second portion of their time.
- **Traffic alerts via phone, email, or pager.** These are often considered "premium" services, that is, traveler information companies or cellular companies will charge an extra monthly fee for these services. As congestion nationwide gets worse, these types of premium services are expected to grow, and a number of innovative technology startups (e.g., Trafficgauge.com) are attempting to meet this emerging market. (Such commercial companies, like the larger and more established commercial traveler information vendors, absolutely require accurate and comprehensive real-time traffic data like the data that is produced by the TTID program.)
- **In-vehicle route-guidance.** In-vehicle maps with a synthesized voice telling the driver how to get to a specific destination have been around for many years (particularly available from rental car companies like Hertz). However, these early systems were "dumb" in that they didn't take actual traffic conditions into account. Next-generation "dynamic route guidance" systems that advise drivers as to the quickest route based on real-time traffic conditions (including accidents and congestion) have been the subject of considerable research over the past few years, and are beginning to emerge in the marketplace. They are expected to see widespread deployment in the future.

Non-real-time Uses of Traveler Information

Having historical information about how well our roadway systems are working, and how traffic patterns are changing from year-to-year, is important to both state and local governments as well as the federal government. The same data from the wide range of detectors that is useful for real-time traveler information applications can be archived and later analyzed for changes in roadway usage statistics or travel patterns.

State/local departments of transportation and/or Metropolitan Planning Organizations typically use analyses of this information to help put together their long-term plans as well as nearer-term TIPs (transportation improvement plans). The USDOT, on the other hand, wants to measure the overall performance of the nation's roadway system in order to better understand where its priorities should be and to report to Congress about our national surface transportation needs.

That federal use of the data from the TTID program was and continues to be one of the justifications for the TTID program, along with meeting local and commercial data needs. Traffic.com is required, according to the Statement of Work in the Task Order it signed with the FHWA in June 2002, to provide both monthly and annual performance measure reports to the U.S. DOT for the cities that participate in the TTID program.

How Traffic.com's Data Lock Scheme Works

Originally led by House Public Works and Transportation Committee Chairman Bud Shuster, Traffic.com managed to include provisions for the ITIP program in the large 1998 "TEA-21" transportation bill for deployments in Philadelphia and Pittsburgh. Traffic.com then won a "competitive procurement" to provide data services for those cities, although questions were raised by both Traffic.com's competitors and the press about the openness of that competition and whether or not the result of that solicitation was pre-determined from the start. Cong. Shuster then added language in Section 378 of the Transportation and Related Agencies Appropriations Act of 2001 to expand the budget of the ITIP program by \$50 million. While he wanted all \$50 million to be earmarked so that it could only be spent on Traffic.com, the Federal Highway Administration concluded that "Section 378 does not meet the legal requirements necessary to direct the funds to the existing project" and that recompetition would be required. Even after Shuster "retired" in 2001, his associates (including Pennsylvania Rep. Bob Borski, former Philadelphia Mayor Ed Rendell, and Shuster's successor as Chairman of the Transportation Committee Don Young) pushed for a sole-source contract for Traffic.com, and managed to insert language in the FY2002 Defense Appropriations Act that would do just that.

Following the passage of the FY2002 Defense Appropriations Act, USDOT Secretary Norman Mineta then authorized amending the original ITIP contract so that \$2 million in public (federal) funds could go for traffic data services in these 25 additional cities on a sole-source basis for Traffic.com, particularly to provide data along major highways that were not yet fully instrumented. Each city named in this legislation had to sign a specific agreement with Traffic.com, so Traffic.com instituted a major nationwide marketing program to recruit the participation of these cities.

The company put together a very attractive "pitch" to mostly state departments of transportation that were responsible for the operation of freeways in these congested cities.

Traffic.com Vice President John Collins was and usually is the lead individual from the company making this pitch, and several of his past slide presentations are available on the web. An example is here: <http://www.itsva.org/resources/files/johncollinsITSVA2004.pdf>

The pitch was very compelling, particularly to states that had significant "data gaps" in coverage, and did not have a significant effort to integrate data from their own sensors. Traffic.com would install new detectors in areas that were not instrumented, integrate the data from those detectors with the agency's existing data, and then provide that integrated data back to the agency for their own "internal use." They would also provide "basic traveler information services" to the traveling public. The best part? They would do all this for "free" because the USDOT had decided to waive the normal local agency cash match (typically \$500,000).

ITS earmark programs like this one normally require a 20% state/local agency funding match to go

along with the 80% of federal funding. However, in this case, the USDOT changed the rules so that the private-sector partner (Traffic.com) could get credit for what was called a "non-Federal match" even though in most cases no new funds were actually contributed to the project. Recent communication from USDOT Secretary Mary Peters to Sen. Orrin Hatch indicates that Traffic.com, in fact, received credit for the entire "non-Federal match" for all but three of the 25 new cities (in addition to Philadelphia and Pittsburgh) that participate in the ITIP/TTID program. From the perspective of most of the state or local agencies (typically state departments of transportation) that signed agreements with Traffic.com, the normal local agency cash match was "waived" by the FHWA so that participation in this program was essentially "free."

However, that "free" money does not come without conditions. A major condition in most of the agreements between Traffic.com and state/local agencies is that the data from Traffic.com's detectors can only be used by the state or local agency for either "basic traveler information" (red/green/yellow colors on Internet speed or congestion maps), non-real-time ("archival") applications, or internal operations and planning uses. The company retains the right to provide comprehensive real-time traveler information deriving from those ITIP/TTID program detectors themselves, or to market that data to others (radio/TV stations, other traveler information providers) at prices and terms that it alone determines.

In many (perhaps most) cases, the local agency partner cannot itself use the most useful data from this publicly subsidized program to provide traveler information to its own constituents. For example, the data from Traffic.com's detectors cannot be used by a major public-sector entity in the San Francisco Bay Area to compute travel times that are provided on their own 511 system, and the agency has thus been forced to consider using redundant detectors in the areas and roadway segments that are supposedly "served" by Traffic.com's detectors. In another case, their agreement with Traffic.com prevents a state DOT from using data from Traffic.com's detectors to compute and display travel times on the agency's own changeable message signs. In both these cases – which are likely mirrored in many if not most of the ITIP/TTID cities -- while public (federal) money went into a program designed to generate data about traffic conditions, that data cannot in turn be used by the local public-sector partner to inform the public about traffic conditions via two of the primary mechanisms that the FHWA itself actively promotes (511 and travel times on CMSs).

Also, agencies who signed agreements with Traffic.com are usually prevented from sharing the data from Traffic.com's detectors directly with private-sector competitors (such as Westwood One), with TV stations, or with other organizations that want to provide real-time information to travelers about traffic conditions. The rationale that Traffic.com used in these agreements is that since they are contributing their own funds for procurement, installation, and operations/maintenance of those detectors, they should be able to reap a fair profit from any real-time traveler information services that should result from that data. Of course, that argument completely ignores the \$2 million in federal (public) funds that the company receives from each city that signs up for this earmarked program.

That restriction of how the data from Traffic.com's detectors can be used by the agency or shared with others is bad enough. In practice, however, this scheme is often much more pernicious. Because Traffic.com often integrates the data from their new pole-mounted detectors with many other sources of traffic data, the entire set of integrated traffic data is, in effect, "tainted" by the Traffic.com data and therefore cannot (by the signed agreement) be shared by the agency partner with

third-parties. State or local agencies would, in effect, be required to strip out Traffic.com's own proprietary data before sharing the rest of that data with others, including Traffic.com's competitors. Some cities that signed ITIP agreements in a few states (e.g., California and Virginia) do share their integrated data (minus Traffic.com's data) with third parties, but most states either do not have that capability or have simply deferred to Traffic.com for that role. In addition, agencies are typically prevented from sharing their own internal real-time traffic maps or other detailed traffic information with possible partners or travelers, if that information is derived in any way from Traffic.com's publicly subsidized data.

Very few state DOTs (exceptions including California and Virginia) have sufficient information technology (IT) resources to strip data from Traffic.com's detectors out of the integrated data stream so, in effect, the agency either cannot share that data and traveler information with others or, in most of the agreements, the responsibility for marketing and sharing that distributed data to others rests with Traffic.com. Of course, that puts Traffic.com in the sole position of marketing and distributing the underlying traffic data in many of our nation's most congested cities to its competitors. Clearly, in order to win out in the traveler information business (including the Internet and 511), Traffic.com has an incentive to, in fact, *prevent* their competitors from having as rich a set of the underlying traffic data as they (Traffic.com) have. This is clearly a huge conflict of interest.

In effect, the Traffic.com arrangement in many cases effectively "poisons" the entire set of integrated data, prohibiting the agency from sharing that data with a wide variety of possible partners and collaborators.

One might think that one option available to the state DOT would be to simply tell Traffic.com to stop providing the data from their pole-mounted ITIP/TTID detectors into the agency's main data stream. That option is made more difficult, however, because of the USDOT's directive (spearheaded by former Secretary Mineta) in the ITIP/TTID initiative to the state/local agencies to provide integrated historical traffic information data – including data based on Traffic.com's own proprietary detectors – to the USDOT on both a monthly and annual basis. So, in effect, the USDOT has required that Traffic.com's data is integrated with all of the other local traffic data.

How to Remedy this "Data Lock Scheme"

Clearly, this data-lock scheme is designed to profit Traffic.com at the expense of the traveling public, by limiting the ability of the state/local partners to fully utilize the data that comes from this publicly funded initiative and restricting Traffic.com's commercial competitors from accessing this data. Restrictions on sharing both the information from Traffic.com's detectors as well as the integrated pool of data imposed by this scheme significantly reduces the availability of real-time information about traffic conditions to the public through multiple outlets in many of our nation's most congested cities, where that information is most needed.

The agreements between Traffic.com and the FHWA, and between Traffic.com and state/local transportation agencies are just now becoming publicly available, through Freedom of Information Act (FOIA) requests. Those agreements, particularly between Traffic.com and their state/local partners, document the many restrictions that have been put in place to prevent the state/local agency from fully utilizing the data from this publicly-financed data initiative.

An analysis of these agreements (sixteen so far) clearly shows several key ways in which Traffic.com has managed to implement and sustain that "data-lock scheme," including:

1. **Waiving the normal local agency funding match.** Most of these agreements clearly show that Traffic.com is putting up the funds for the "non-Federal match," a fact that was recently confirmed in a letter from USDOT Acting General Counsel Rosalind Knapp to Senator Orrin Hatch. Thus, Traffic.com is easily able to buy their way into an expansion of what Senator Hatch calls their "monopoly."
2. **Data use and sharing restrictions.** Virtually all of these agreements limit the state/local agency partner's ability to fully utilize the data from Traffic.com's detectors, as well as the larger set of integrated data, in traveler information services. They also typically prohibit the agency partner from directly sharing either Traffic.com's data or the larger integrated data set with others – that "gatekeeper" role is left to Traffic.com.
3. **Revenue sharing.** Almost all of the agreements reviewed so far include a "revenue-sharing" provision that looks good on paper but in fact is not really a revenue sharing agreement at all. First, the revenue that is shared includes money from the sale of traffic data to other commercial traffic information providers and, as was discussed earlier, Traffic.com has a huge incentive *not* to distribute this data to their competitors. Further, Traffic.com in most cases decides how this "shared revenue" is spent -- in "consultation" with the local agency partner -- and the funds can be used to offset Traffic.com's own operating expenses. In short, the revenue is not shared with the agency for the agency's own use, it is shared back to the "project," which is code language for going back into Traffic.com's own profit-making business.
4. **Marketing program.** In most of these agreements, Traffic.com is solely responsible for marketing and distributing "integrated" traffic data to any other private-sector company that wants it, including other traveler information companies (e.g., Inrix, Metrocommute, Westwood One, TANN) or other traveler information outlets (e.g., radio/TV). As a "gatekeeper" responsible for marketing traffic data to its competitors, Traffic.com obviously has a huge conflict of interest. From a purely competitive standpoint with regard to the traveler information market, Traffic.com's incentive is clearly to prevent access to traffic data by their competitors, thus making their own traveler information products more accurate and comprehensive, and thus more attractive to customers. Anecdotal evidence from Traffic.com's competitors says that's exactly what is going on in this program, to the detriment of the public interest.

Biography: *Jerry Werner consulted in the Intelligent Transportation Field from 1991 through 2005, the last several years of which was as a subcontractor to the Federal Highway Administration as the Editorial Director for the National Transportation Operations Coalition (NTOC). He has interviewed over 200 ITS leaders in both the public and private sectors. Prior to consulting in the ITS field he was Director of Technology Transfer for a groundbreaking computer research consortium (MCC) in Austin, and the Editor-in-Chief of a leading semiconductor industry magazine in "Silicon Valley." He is a graduate electrical engineer, holds one patent in circuit design, and has a second patent pending for a novel method of distributing digital music over the Internet.*

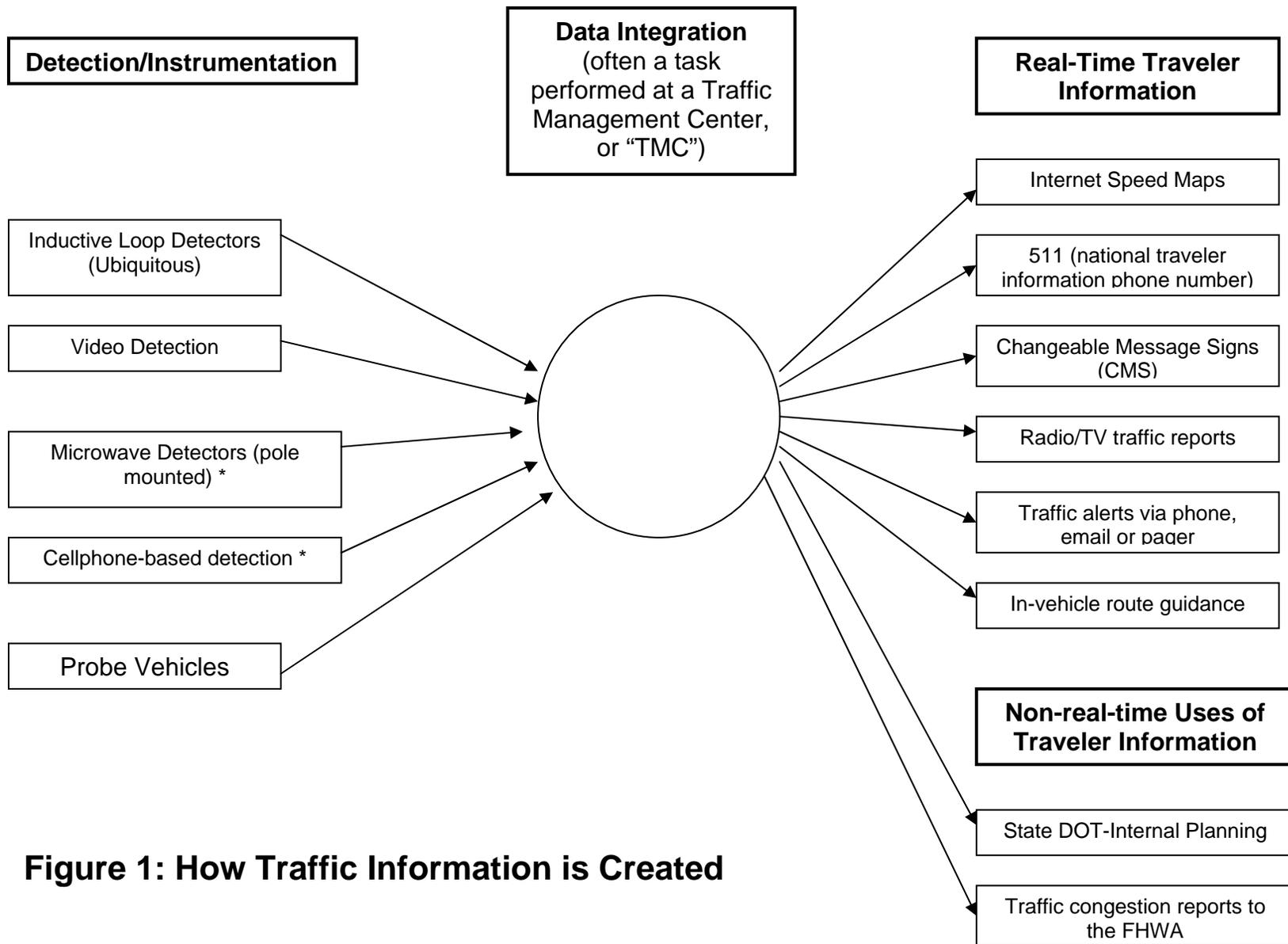


Figure 1: How Traffic Information is Created