pdvConnect

Lessons from the coal face, what it is like to use carrier APIs

pdv
Pacific Datavision, Inc.

About PDV

- PDV's patented applications improve mobile workforce efficiency and effectiveness
- Launched first commercial PTX solutions in 2004 and have commercialized a wide array of enterprise focused solutions over the last 9 years.
- Commercial agreements with AT&T, Sprint, Nextel International, NSN, & Motorola. Two carriers are in the works.
- Enterprise customers in the US include several Fortune 500 companies
- Experienced telecommunications management team with significant Push to Talk expertise, including Brian McAuley & Morgan O'Brien, co-founders of Nextel
- Recognized as a leading innovator in enterprise mobility:
  - NAVTEQ Global LBS Challenge® - APAC
  - Past Winner of Andrew Seybold Most innovative business application
  - GSMA Global Mobile award finalist: Best mobile enterprise solution
  - E-Tech award winner: at CTIA Wireless for innovation in the Enterprise Solutions category
- The pdvConnect solution is server & cloud based and utilizes both carrier APIs and OTT applications.

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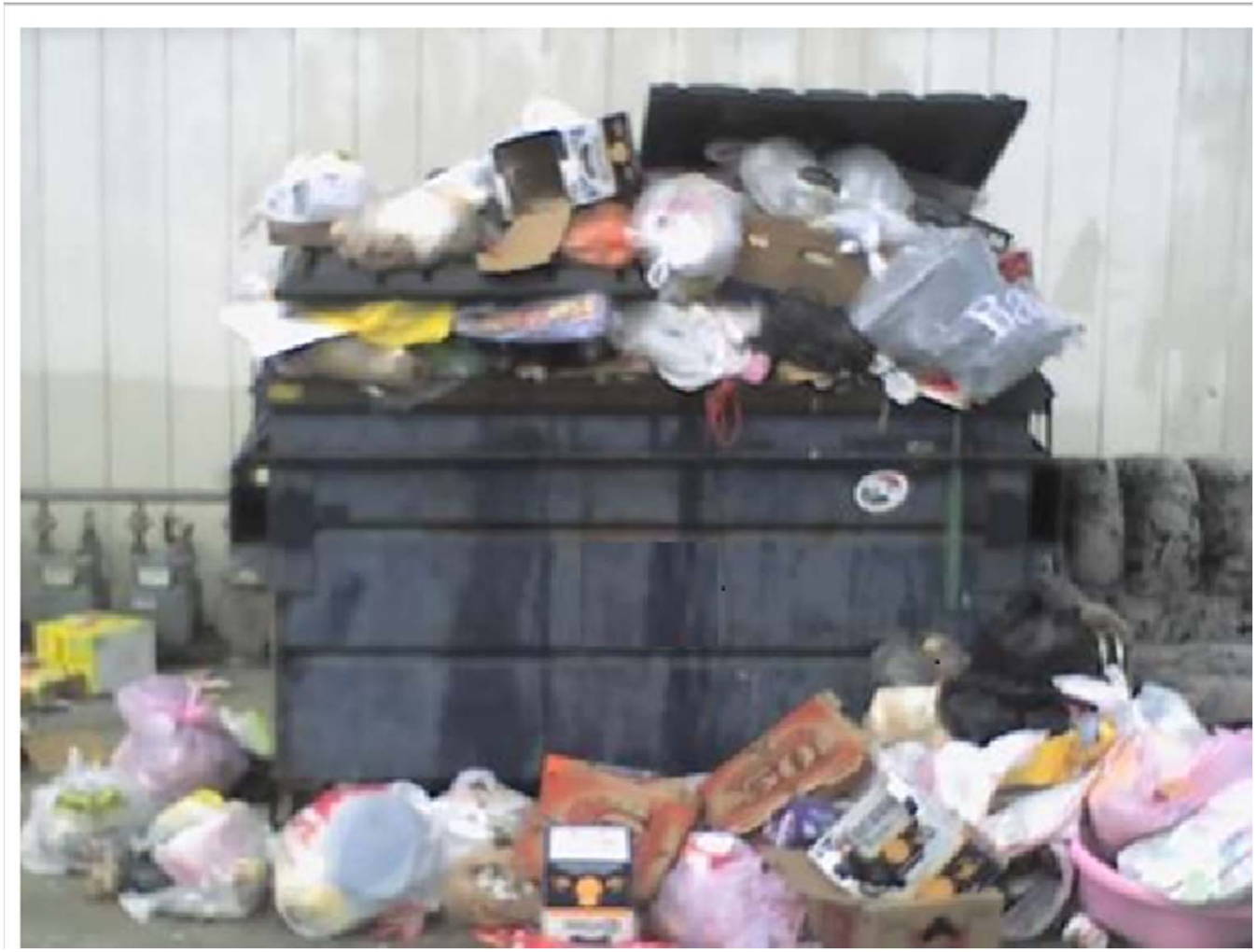
Rubbish



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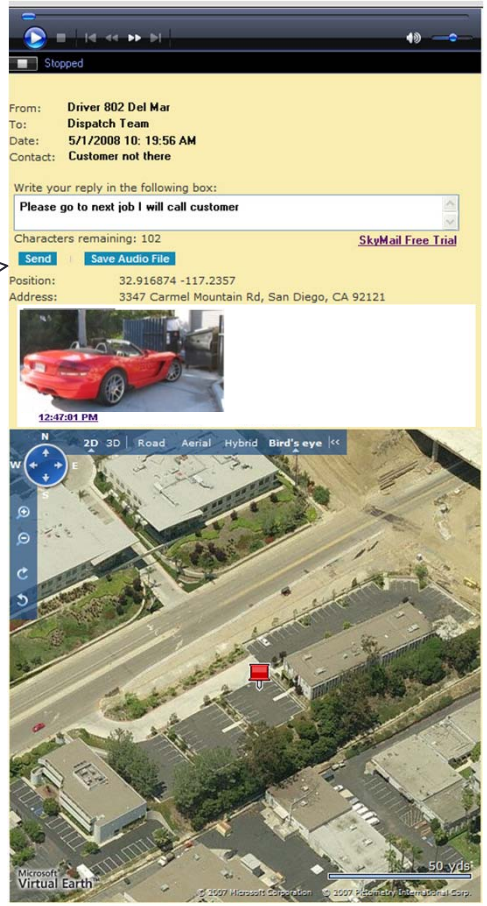
Enterprise / Field Service

1) User makes a call to send a message to notify office of a billing exception (failed pickup): “Dumpster Blocked”

2) Dispatcher recipient gets an audio message and map showing the coordinates, photo and location of the user for verification.



3) Customer gets a call from the office to reschedule a pickup at extra cost.

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PDV Carrier APIs Utilized

- Five different carrier location platforms
- Three different SMS and MMS interfaces
- Two Speech to Text APIs
- Three provisioning interfaces
- Two OSS/BSS interfaces
- Two Push to Talk interfaces in production and four total (SIP, OMA PoC, SIP Trunk)
- Mapping / Reverse Geocoding API
- Number portability lookup

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API vs. OTT Application?

Why use an network API vs. an OTT Application?

- Network API
  - Little or no user involvement
  - Users can be unknown and no application download is required
  - Ideal for feature phones (vs. smart phones)
  - Consumer users can opt out
  - Enterprise users cannot opt out
  - Carrier revenue opportunities
  - Carrier unique and opportunity to differentiate

- OTT Application
  - Relationship with Known users and ability to drive download of an app
  - Superior performance (in most cases)
  - Users can opt out (Uninstall application)
  - Carrier revenue not guaranteed
  - Ubiquitous, potentially all carriers in all countries

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API & OTT Application?

A combination of the two?

- In our case, network location complements OTT location.
- SMS & MMS complement OTT messaging.
- Handset based Speech to Text complements API based Speech to Text
- We do not utilize in app purchases or in app APIs to third parties (Twitter, Facebook, Google, etc.) with our OTT solution.

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Standardization

- We have dealt with so many different interfaces, some easy and trivial to implement such as a REST/SOAP web service or as complicated as a proprietary SIP like PTT network interface with GMPLS connectivity.
- Standards are appreciated and can certainly expedite deployment.
- Competent development teams can connect to most APIs easily.
- Is easy good? Do we want the lowest or no barriers to entry – especially if it consumes carrier resources?

Carrier Grade?

Everything in the carrier network is designed with high availability, and redundancy, but is the API platform?

- Web portal / developer site
- Maintenance planned and completed in agreed upon maintenance windows
- NOC-like monitoring ?
- How often do you get a successful result?
- How accurate is the result? 10m, 9999m, 500 miles?

More on this later . . .

Good Intentions

- Monitoring
- Outage, maintenance and impairment notifications
- Always available or mostly available? What is the service restoration timeline? Are P1 – P4 severity levels defined?
- Ticketing system and process for escalating impairments – how hard is it to get the right people engaged quickly with appropriate sense of urgency.
- Formal escalation procedures, Fix Agent Agreement ?
- Ability to capture logs? The volume is immense and often there is minimal ability to filter on a specific vendor's traffic.

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Are we still having a problem?

- We are the canary in the coal mine, we often discover impairments that the carrier is unaware of.
- Often times we have to capture logs and forward them to the carrier.
- Success rate & accuracy especially with network based location is an issue. Below 80% and you obviate the need for an API, as you can't count on it. Why build it if it isn't ubiquitous, reliable, accurate and available?
- Device support. Some network APIs may be device dependent. Certification not always possible for non-stock devices and iOS products.
- Everyone knows their silo, but no one has the whole picture. The time to resolve issues is often excessive.
- Support outsourced. Who is running your network API platforms?
- Lack of server synchronization, yields 1 of N failures.
- Are we still having a problem?

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Recommendations

- Monitoring has to be a part of an API platform.
- Quantitative and qualitative assessments of performance.
- Maintenance, impairment & outage notifications
- Logging abilities (that work with SSL) for troubleshooting are required – otherwise, it is always on the vendor to prove a fault.
- Always available or mostly available? There has to be an attitude that third party APIs are as reliable, accurate and redundant as the rest of the carrier network.
- Traffic throttling. Should be verifiable. We don't need help reading the manual, but the carrier should know how their throttling is performing.

Recommendations

- Ensure synchronization of all server resources.
- Outsourcing support and siloed expertise makes problem resolution unacceptable for enterprise applications.
- Roundtrip test. Write your own application that uses the API and runs at a low frequency in the background. An end to end test . . . and you can be your own canary!