

Telogis® Integration: Uniting the Enterprise

Middleware that multiplies the value of Telogis solutions

At the core of Telogis Integration is *TDE (Telogis Data Exchange)*, which is a new species of product: *cloud-based middleware*. If you rely on large enterprise systems to support your critical missions, this middleware will protect and support your investment in Telogis solutions.

Bridging IT and Telogis assets

Telogis Data Exchange is the integration gateway that bridges your enterprise applications and your Telogis data. It keeps the traffic of data flowing seamlessly between your local business systems and your Telogis solutions, day in and day out.

This bridge supports *many* lanes of traffic, flowing to and from your IT assets:

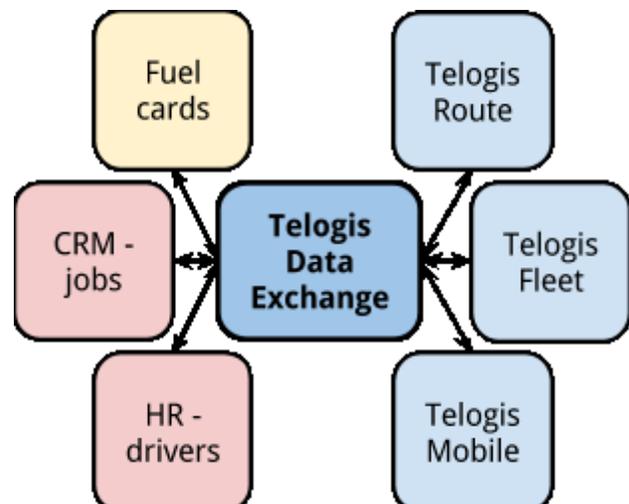
- Multiple enterprise systems (CRM, ERP, ECM, etc.)
- Third-party services (such as HR and fuel cards)
- Multiple Telogis products (such as Fleet™, Route™, and Mobile™) you may use

That TDE routes this complex data flow through just *one* bridge, rather than many, is the key to understanding its unique value.

Syncing data between enterprise systems

Data exchange — for keeping multiple systems synchronized — is core to the purpose of TDE. Using Workflows and Endpoints, TDE works while your staff sleeps. Organizations use TDE to automate data transfers, to sync all of the workday's changes each night:

- Populate a data warehouse of vehicle events
- Update driver changes with your HR system



- Import fuel transactions
- Upload new vehicles
- Download job information
- Generate reports on performance/problems
- Bulk import of markers and jobs
- Daily reporting of daily job status and routes
- Bulk updates to markers and jobs

Automating real-time response and tasks

TDE also works throughout the day, automating action triggered by your data, in real time. Organizations use TDE to solve work-day needs:

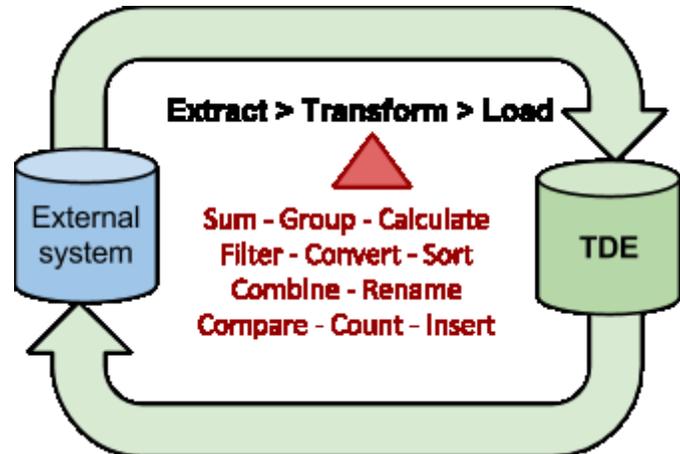
- Real-time API – scan the message stream for critical events
- Trigger service when a tank nears empty
- Process forms that drivers submit in the field
- Email supervisors about compliance problems
- Create a workflow due to an alert
- Send alerts for incomplete forms
- Support customer self-service, such as live updates to ETA
- Delete markers en masse
- Ad hoc queries and update on jobs

Transforming data on demand

TDE goes beyond shuttling data between systems: it lets you *transform* it to solve problems. TDE users routinely add functions in their templates to:

- Filter results to specific data needed
- Convert values between units of measure and between date formats
- Calculate values, such as duration, from information across multiple fields
- Use JavaScript logic to map values from one type of data into another

- Sort and group by, to collapse multiple rows into a single entity (such as a driver)
- Aggregate functions, such as to turn many Stops being uploaded into a single Schedule
- Accumulator functions, such as to total up the number of deliveries



Simplifying ETL through virtualization

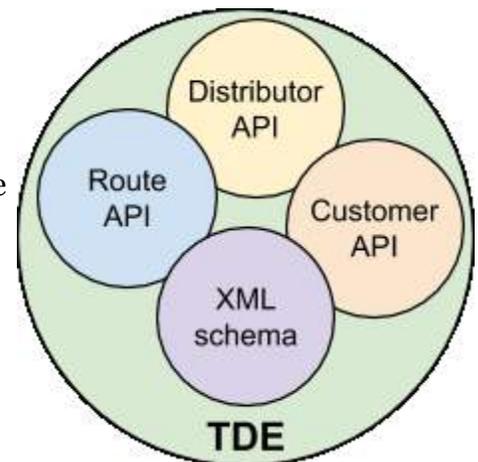
TDE uses data virtualization for ETL (*extract, transform, load*), which greatly simplifies what is typically a complicated and costly process of integrating separate systems and data warehouses. Data virtualization through TDE allows you to dynamically mix relational, object, cloud, and XML-based applications. It doesn't require you to write SQL to set up connectivity, define the transforms, tune data quality, or get the system integration into production.

Unifying separate APIs

TDE is not just another API: it is far more than a single application programming interface. TDE is a super-API that unifies product-specific APIs across all of Telogis: one interface to work across *multiple* Telogis products.

TDE is also a super-API in that it lets you work with it as best fits both the needs of your organization and the skill sets of your staff. TDE uniquely offers a *choice* of access methods:

- Full standard XML (SOAP)
- Streamlined JSON (REST)
- Batch file processing (Templates)



Each technology has unique strengths: Template files are written as easily as Windows INI files, manageable by power users who are not programmers. REST has very low overhead and efficient calls. SOAP has low barrier to entry (with proper tools) and is more structured.

Use what's best for the job: SOAP and REST

- REST is good for exposing data; SOAP is good for logic and matching specifications
- REST is good for browser use, limited bandwidth, and simple CRUD operations

- SOAP is good for managing state and using background processing, such as for financial transactions and complex/continuing operations

Controlling risk via hosting

TDE is cloud-hosted middleware that you never have to install, customize, or maintain. The costs are completely transparent, versus the difficulty of quantifying the *true* cost of platforms that you implement yourself.

Equally difficult is keeping your in-house platform from aging and breaking. With hosting, the platform is always updated for you, to the latest technology versions, fixes, and enhancements.

Safety in standards

Just as important, such middleware reduces your risk tremendously by keeping you from having to invent custom applications. In addition to the cost of their development, custom apps can trap you in time, blocking you from upgrading and adapting your platform. They also create a code liability, leaving you vulnerable to disruption due to bugs or the loss of a key developer.

TDE is as standards-driven as the plumbing in our buildings. Just like plumbing, TDE ties together complex systems in a standardized way. In the same way that water pipes are hidden away in the walls, TDE invisibly connects your applications to Telogis systems. Like standard plumbing connections, TDE's interface keeps you from needing to invent your own.

Typical problems solved by TDE

Live Snapshots

Need: To get immediate snapshots of live data, containing all vehicle information.

Solution: Created templates that query Unit table, requested via HTTPS, producing XML output to fit their schema.

Complete Data Feed

Need: To get all data pertaining to certain vehicle events in a timely way, without any data loss from outages, to populate a data warehouse on the back end.

Solution: Filtered messages (via Realtime API) to just the events required, requested securely via HTTPS, producing XML output to fit their schema.

Daily Update of Driver Changes

Need: Have *several* systems be able to send driver changes (new, updated, terminated) daily, securely transferred (PGP-encrypted) by FTP as pipe-delimited files.

Solution: Created templates to *CreateOrUpdate* the Driver table, using external keys to identify drivers in those external systems. Each new FTP file upload triggers the template to run, with Endpoint configured to decrypt and unzip incoming data.

Daily Import of Fuel transactions

Need: To create a daily file that contains data for multiple customers, and make it available to Telogis on external FTP site.

Solution: Created templates that query the FuelTransaction table, with each transaction identifying customer/user. Ran the template as a user with rights to all customers and set up Workflow to retrieve from remote endpoint on a schedule.

Lightweight Transactions - WorkPlan

Need: To process a large number of mixed transactions, which deal just one object at a time, on a client that can already work with JSON objects.

Solution: Use the REST API.

Lightweight Transactions from Java

Need: To process a mixed set of transactions, which deal with single objects, on a client that can already consume SOAP services.

Solution: Use the SOAP API.

For details about TDE usage, read more here: api.telogis.com/Documentation