SIRI
(Service Interface for Real-time information)

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What is SIRI?

The Service Interface for Real Time Information (SIRI) specifies a European interface standard for exchanging information about the planned, current or projected performance of real-time public transport operations between different computer systems.

- SIRI comprises a carefully modularised set of discrete functional services for operating public transport information systems.

- SIRI aims to incorporate of the best of various national and proprietary standards from across Europe and delivers these using a modern XML schema and TransModel terminology and modelling concepts.

- All SIRI services are provided over a standardised Communications layer, based on a Web Services Architecture.

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How does SIRI work (Architecture)?

SIRI is intended to be used to **exchange information between servers** containing real-time public transport vehicle or journey time data. These include the <u>control centres of transport operators</u> and information systems that utilise real-time vehicle information to operate the system, and the downstream <u>systems that deliver travel information to the public</u> over stop and onboard displays, mobile devices, etc.

- SIRI uses on eXtensible Markup Language (**XML**) to define its messages. A careful separation is made between **Transport** (how the data is transported) and **Payload** (the domain data exchanged)

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Extensible

- SIRI is extensible and it is expected that additional services will be added over time using the same communications bearer.

- SIRI's modularisation allows an **incremental approach**: only the subset of services actually required needs to be implemented for a particular application. The expectation is that users may start with just one or two services and over time increase the number of services and the range for supported options. Similarly Suppliers may extend their support for SIRI in their products incrementally.

What Services are available?

The Production Timetable Service

The Production Timetables service (PT) exchanges information about the expected operation of a transport network for a specified day in the near future. Typically this is produced a few hours or days before the day in question and incorporates any changes to the timetables known at that stage. A Production Timetable can be filtered by Operator, Line and Date Range, allowing only the section of the timetable of interest to be selected. Suited for provisioning AVL systems and smart devices with base timetables.

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What Services are available?

The Estimated Timetable Service

The Estimated Timetable service (ET) provides details of the operation of the transport network for a period within the current day, detailing real time deviations from the timetables and control actions affecting the Timetable (cancellations, additional Journeys and Detours). An estimated timetable can be filtered by Operator or by Line, allowing only the section of the timetable that is of interest to be selected. Suited for provisioning AVL systems and smart devices with real-time timetables

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What Services are available?

The Stop Services (Stop Timetable and Stop Monitoring)

The Stop Timetable (ST) and Stop Monitoring services (SM) provide stop-centric information about current and forthcoming vehicle arrivals and departures at a nominated stop or Monitoring Point, typically for departures within the next 20-60 minutes for display to the public. The SM service is suited in particular for providing departure boards on all forms of device.

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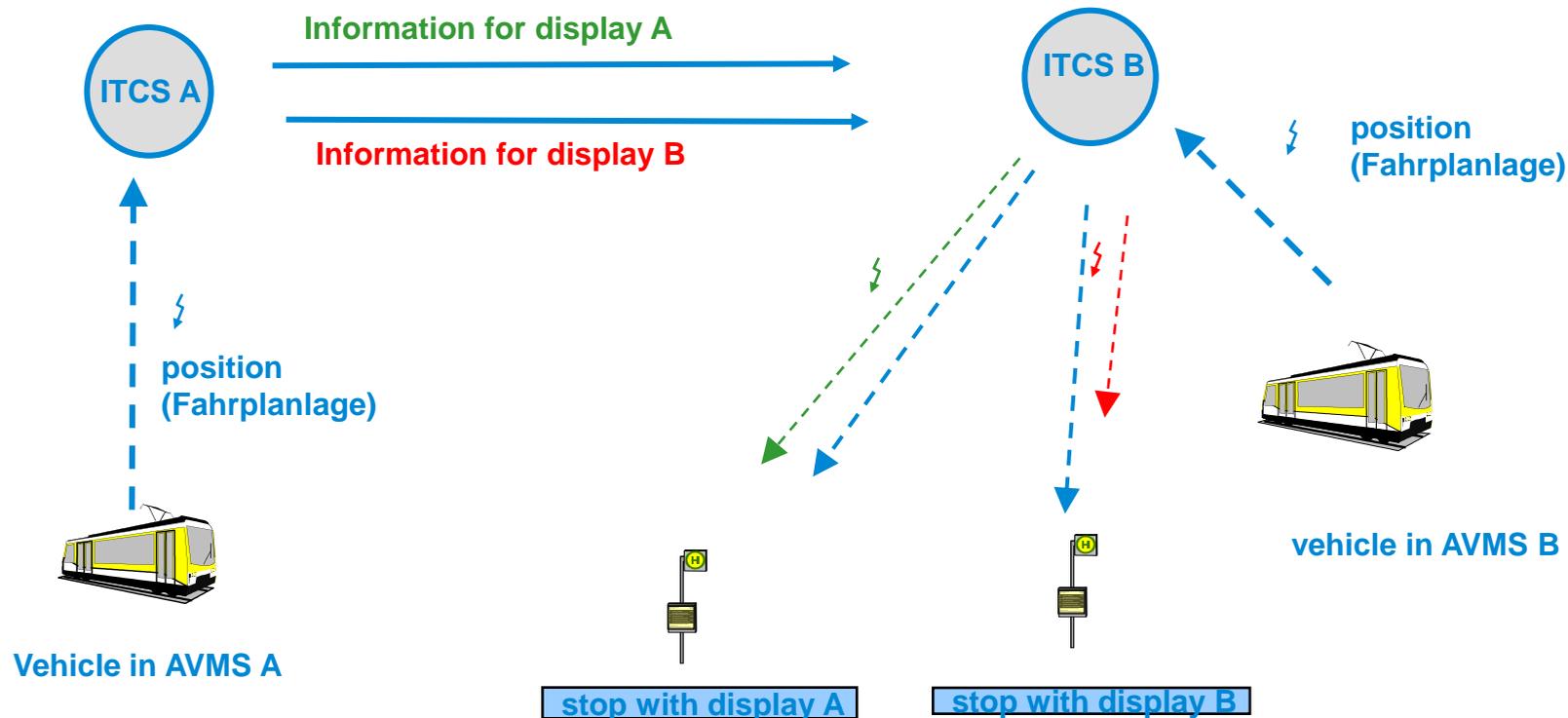
What Services are available?

The Vehicle Monitoring Service

The Vehicle Monitoring service (VM) provides information about of the **current location** and expected activities of a particular **vehicle**, and can give the current and subsequent Journey and the Calling points on each journey, together with the scheduled and expected arrival times. The VM service is suited in particular for onboard displays, and visualisation of vehicle movement, and for exchanging information on roaming vehicles between different control systems. It also constitutes a detailed logging feed suitable for collecting historic about performance against schedule.

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What Services are available?

The Connection Protection Services (Connection Timetable and Connection Monitoring)

The Connection Timetable service (CT) and Connection Monitoring service (CM) allow transport operators to exchange information about the real-time management of interchanges between feeder and distributor vehicles arriving and departing at a connection point, for example, to let passengers on a delayed train know that a local bus service will wait for them. It can be used in particular for Guaranteed Interchange ('Connection protection') services.

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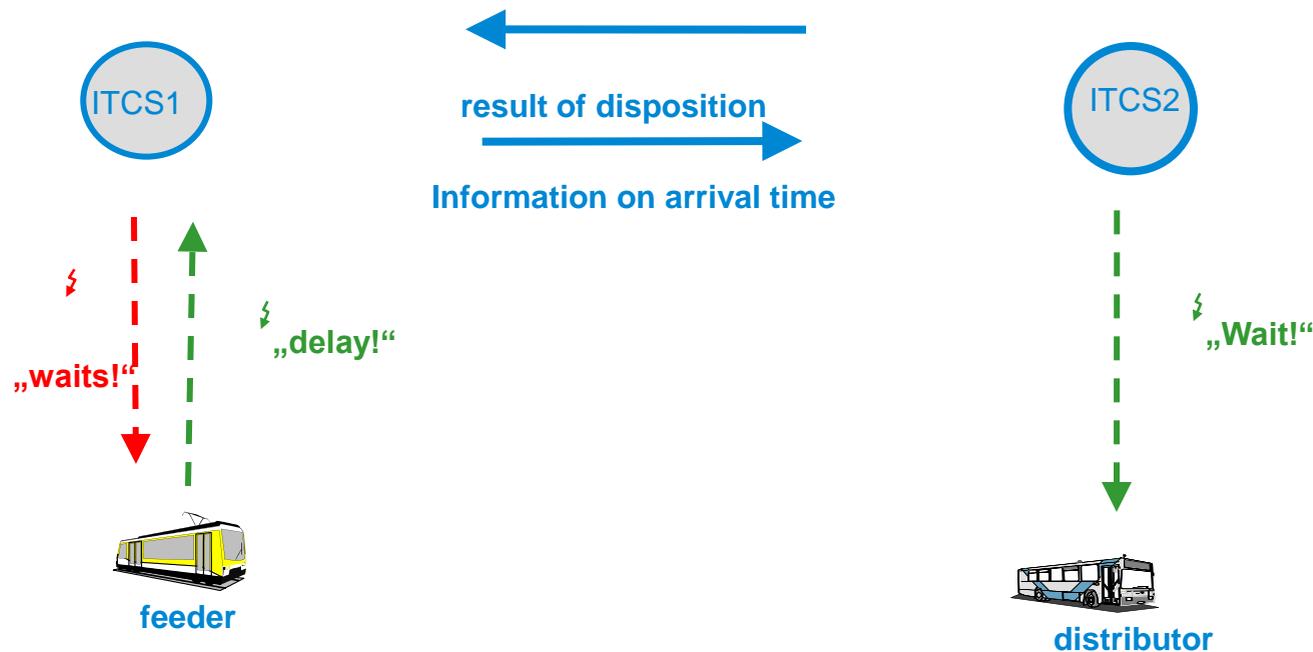
What Services are available?

General Messaging Service

The General Message Service (GM) provides a structured way to exchange arbitrary informative messages between participants, such as travel news, operational advice. Can be used to link together incident management systems in a store and forward architecture.

General communication protocols

The Communications layer upholds a consistent approach for all the functional services to Security, Authentication, Version Negotiation, Recovery/Restart, and Access Control/Filtering.

SIRI uses a consistent set of general communication protocols to exchange information between client and server. The same common patterns of message exchange are used in all the different functional interfaces. Two well-known specific patterns of client server interaction are used: *Request/Response* and *Publish/Subscribe:*

- ***Request/Response*** allows for the ad hoc exchange of data on demand from the client.

- ***Publish/Subscribe*** allows for the repeated asynchronous push of notifications and data to distribute events and Situations detected by a Real-time Service.

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General communication protocols

- ***Request/Response*** allows for the ad hoc exchange of data on demand from the client.

Request / Response
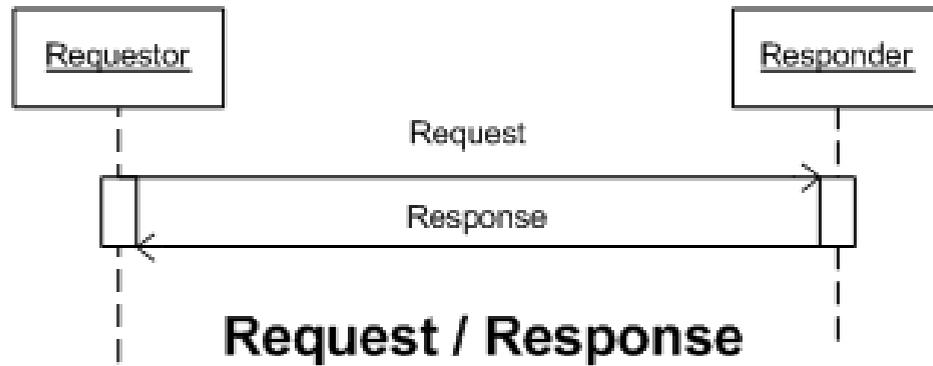
General communication protocols

- **Publish/Subscribe** allows for the repeated asynchronous push of notifications and data to distribute events and Situations detected by a Real-time Service.

Publish / Subscribe

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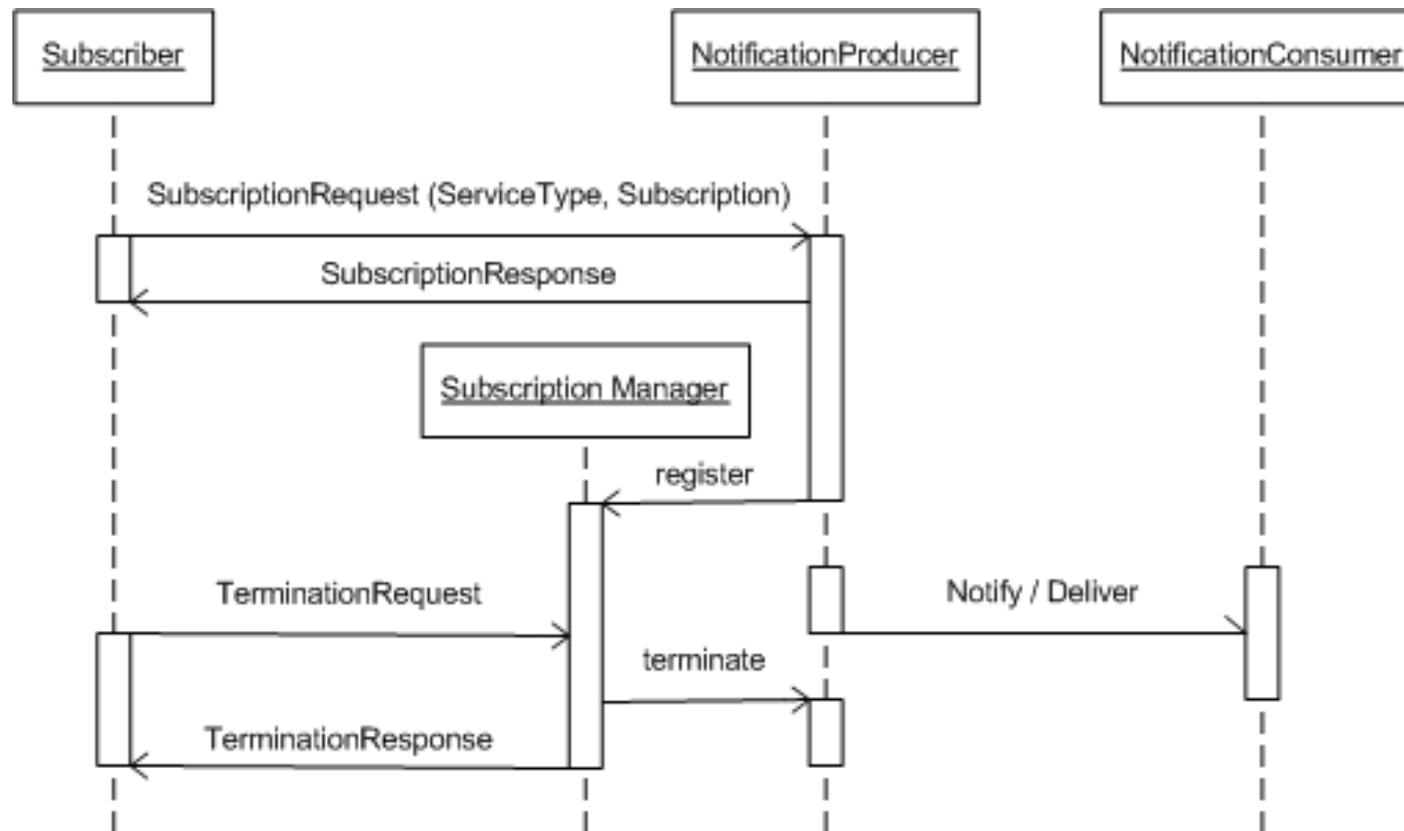
Patterns of message exchange

For the delivery of data in responses (to both requests and subscriptions), SIRI for efficiency, supports two common patterns of message exchange, as realised in existent national systems:

- A one step '***Direct Delivery'***, as per the classic client-server paradigm, and normal WS-PubSub publish subscribe usage

Direct Delivery: One Step
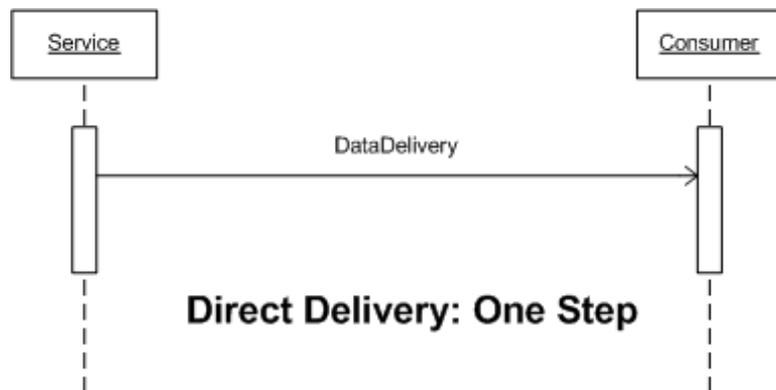
Patterns of message exchange

- A two step '***Fetched Delivery'*** which elaborates the delivery of messages into a sequence of successive messages pairs to first notify the client, and then to send the data when the client is ready.

Fetched Delivery: Two Step
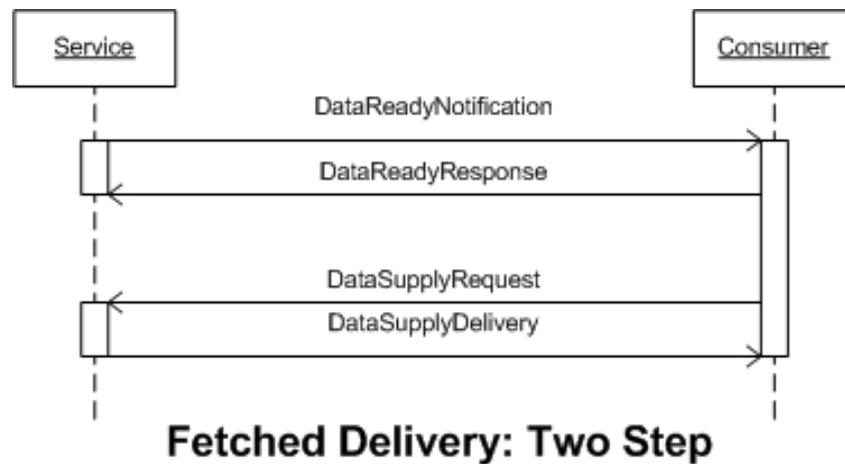
Extensible: SIRI parts 4 and 5 in preparation

- **SIRI extension for status real-time monitoring of facilities in public transport** *(facility monitoring service)*.

- **SIRI extension for** information exchange about Situations/Events of relevance to public transport services (*situation exchange service*)

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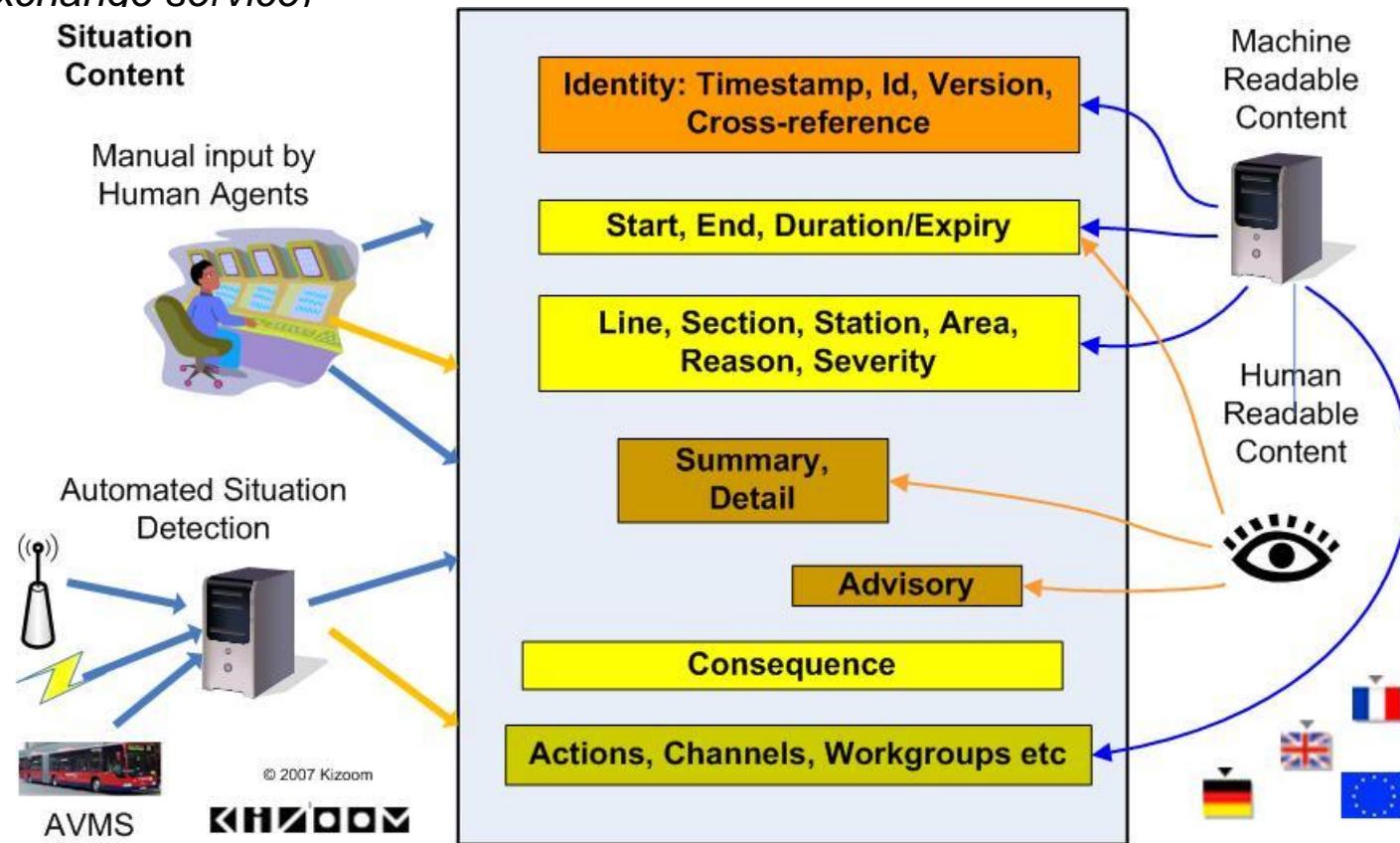
What to do?

- **Specify SIRI in a tender**

  Tenders need to state the specific SIRI functional services that are in scope, and what variant options should be used, for example the data system for stop numbering.

- **Implement SIRI as a supplier**

  Identify the SIRI Services and SIRI Service Capabilities that are relevant to your products. Add product interfaces that conform to the SIRI schemas and validate them.

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What support is available to help to implement SIRI?

- **Web site:** www.siri.org.uk

- **National Web site :** WWW.VDV.DE Projekte

- **Schema:** A robust XML schema is available. The schema is encoded as a W3C .xsd schema, and is modularised into a number of reusable sub schemas and type packages.

- **WSDL** Binding the schema is accompanied by a WSDL binding for creating SOAP services.

- **Specification:** The SIRI documentation, available at the national standardization bodies (Beuth Verlag) describes the architectural principles as well as the detailed functional services.

- **Examples:** There are example XML documents providing instances of request and response messages for all the different functional services.

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Vielen Dank für die Aufmerksamkeit

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