

Efficient and Reliable Transportation of Consignments (ERTOC)

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ABSTRACT

This paper describes a new initiative to drive business improvement and sustainability throughout the supply chain from factory to point of sale. The effort, called Efficient and Reliable Transportation of Consignments (ERTOC), aims to develop a standards based open architecture data hub to deliver accurate information for transport operators and their customers to use and improve business efficiency and effectiveness. Only by understanding the true environmental costs involved, users will be able to compare and assess different transport options to make better informed choices. Such a need drives this effort to demonstrate how a standardised data hub can track the carbon costs of transport at consignment level. The paper presents the underlying architecture of the proposed system, which serves to integrate (diverse and third party) resources, involving collection of data, storage and provision of it for further processing.

Keywords: Carbon Tracking, Consignments, Logistics, Open Architecture, Standards

INTRODUCTION

This paper describes a new initiative launched by Ricardo UK, Unipart Logistics, IRIS Tech-

nology, GS1 UK and Coventry University to drive business improvement and sustainability throughout the supply chain from factory to point of sale. ERTOC is a two-year collaborative project aiming to develop a standards based open architecture data hub to deliver accurate

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information for transport operators and their customers to use and improve business efficiency and effectiveness.

The focus of the project is to demonstrate how a standardised data hub can track the carbon costs of transport at consignment level. By understanding the true environmental costs involved, users will be able to compare and assess different transport options to make better informed choices. The project will also develop a demonstration application that will use the information required for carbon tracking to show how a data centric open architecture can deliver new functions.

ERTOC aims to provide information that will drive the following benefits to transport operators, retailers, manufacturers and regulators. This will be achieved by

- Transport optimization, through the comparison of the true environmental costs of different modes of surface transport,
- Improved process efficiency, through the simplified and standardised flow of information between transport users and providers,
- Reduction in energy consumption and emissions, by providing standardised access to driver behaviour data, and
- Improved supply chain visibility, by providing timely information on the status and location of consignments.

Existing tracking systems are not integrated, expensive, closed and provide limited, vehicle centric information. ERTOC is designed to provide near real-time tracking of carbon emissions and provides for a single interface to multiple sources of data, allowing users in the transport and logistics sectors to be able to dynamically optimize operations at a consignment level. This offers a truly innovative systems for the sector and aims at convergence of all sources of transport and traffic data.

The rest of this paper is organized as follows. The following section presents the motivation for carbon tracking in the logistics sector. This is followed by an in-depth examination

of the technical architecture underlying the ERTOC system. A test strategy for the entire system is subsequently discussed. The adoption of standards and design security is then examined in relevant detail. The last section concludes the paper.

Motivation

The purpose of this section is to present a case for a new approach to how logistics can be made more efficient and reliable.

Within the next few years either legislation or customer demand will push organisations to know, understand and declare their carbon emissions to external stakeholders, and also cost drivers will move organisations to look deeper and further along their supply chains. Currently organisations are using internal systems to understand their CO₂ emissions but not at consignment levels and probably with only proxy data. ERTOC looks to address this situation with real data captured at the consignment level allowing accrued CO₂ emission to be attributed to specific consignments when transported across distribution networks. The ability for an organisation to then compare their network distribution's emission performance against others that support similar transportation and consignment needs provides an insightful view of own performance as well as growing an awareness of alternative more efficient and emissions effective options for freight distribution.

The ERTOC initiative has a number of specific objectives that all fall under the umbrella of "moving goods more intelligently". It sets out to provide users with access to new data sources capable of being integrated with existing applications of differing levels of maturity that in themselves support businesses in the intelligent and efficient shipping of goods. Combined these provide end users/businesses with a means to monitor/assess key shipping parameters on a consignment level basis. These parameters include the increasingly important Carbon transportation cost necessary to support a carbon trading infrastructure and meet the

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