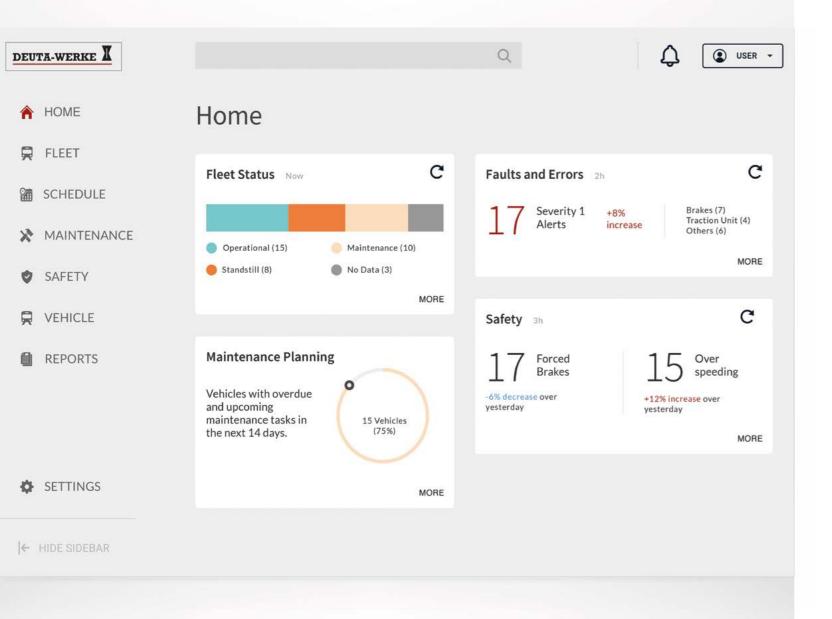
DEUTA RedCloud® Data overview in real time

DEUTA-WERKE		Q	Q (1) user -	 NOR NAT LEAS L	Fleet Status
A HOME	Home				
FLEET SCHEDULE MAINTENANCE SAFETY	Fleet Status Non Operational(15) Standeolit (8) Maintenance (10) No Data (2)	Alerts	+8% Brakes (7) Increase Detection Unit (1) Others (6) MORE	A vonc B nati B sounce A wantpunct	Million (M) Million (M) Spain our Tom our Balance Image: Million (M) Image: Million (M) Image: Million (M)
REPORTS	Maintenance Planning Vehicles with overdue and upcoming maintenance tasks in the next 14 days.	Safety an 17 Forced Brakes -4% Chronous over yesterday	C 15 Over speeding -12% increase over yesterday MORE	Control Sector Research Internet Research Research Research Research	
SETTINGS		NORE			
← HIDE SIDEBAR					
 NUC SIDEDAN 				DIVES ATOM I	a (4
				REET	Fleet Cost Outlook What is the cost outlook for the leased locomotives in my fleet?
				LOCATION MAINTENANCE COST OUTLOOK UTILIZATION DETAIL	Class
				U SAFETY	Cates as hard an user of advance shared where harded by branching agent websited where present of mesons. What is the subtack per leased fleet contract? (In sec) Contract Deception (Sec) (1) (1) (1) (1) (1) (1) (1) (



»DEUTA RedCloud[®] -Processing, Analyzing, Planning«



DEUTA RedCloud®

DEUTA RedCloud[®] is a cloud-based software solution for real time acquisition, processing and analysis of event recorder and sensor data, improving efficiency of railway operations, proving compliance and supporting maintenance activities.

Our approach

We use Lean Product development with human-centred Design Thinking to develop our solution. We partner with potential customers to understand their goals, challenges, problems and pain points. We immerse ourselves in the world of our customers and users. We test user interactions using prototypes. We iteratively develop the solution, continuously testing after each iteration. This ensures we address our customer's most important problems and our solutions are intuitive and fit into existing workflows.

Your evaluation - and fleet data at a glance

The goal of DEUTA RedCloud[®] is to provide a fleet-level view by aggregating data from multiple trains and subsystems. This would provide insights into train use, operations and maintenance activities, which can improve uptime, reliability, safety and reduce cost.

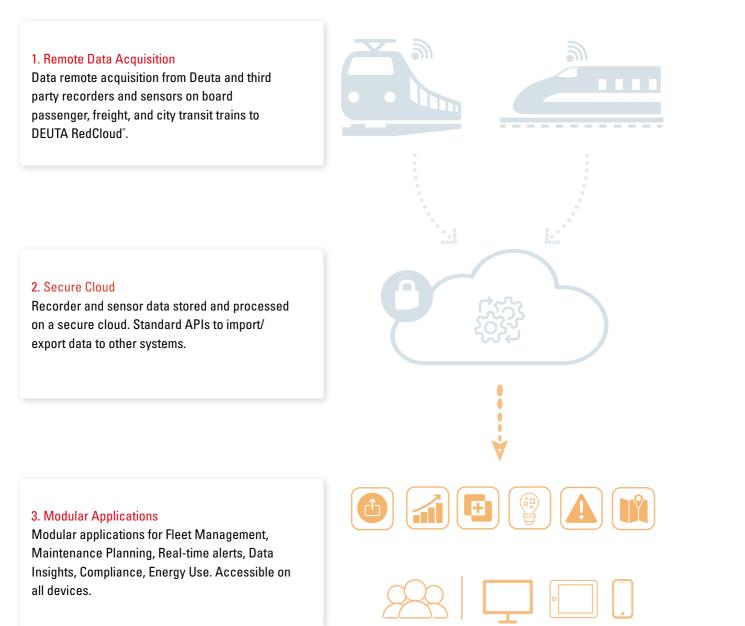
The innovative user interface of the DEUTA RedCloud[®] presents all data clearly at a glance: speed, analogue and digital tracks and train control data are displayed at the same time.

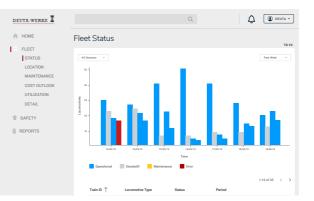


»The Basics«

»Fleet Management«

The Fleet Management module provides a view of operational status across the entire fleet. It provides details on fleet location, standstill, upcoming scheduled

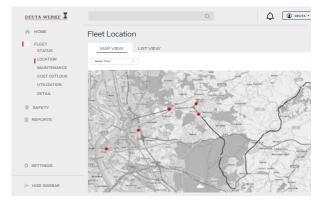




The Fleet Management module includes algorithms to estimate dates for planned maintenance based on past mileage (for mileage-based maintenance) and operating

 MOME FLEET STATUS CARTON MARTENANCE COSTOUTLOOK UTLIZATION CARTON SAFETY SAFETY SAFETY SAFETY CARTON CARTON<!--</th--><th>DEUTA-WERKE</th><th>Q</th><th>DEUTA -</th>	DEUTA-WERKE	Q	DEUTA -
STATUS What is the cost outlook for the leased locomotives in my fleet? LOCATION MAINTENANCE LOST OUTLOOK UTILIZATION DEFAL SAFETY Cut while near and located freed on coveral outloak REPORTS What is the outlook per leased fleet contract?		Fleet Cost Outlook	
MAINTENANCE COST DUILLOAN UILLAATION DETALL © SAFETY © SAFETY © REPORTS Content of the outlook per leased fleet contract? Cost was based on curvet and function the per leased fleet contract?		What is the cost outlook for the leased locomotives in my fl	eet?
UTILIZATION DETAIL O SAFETY Cost sub based on covert out forscart miles y buelled by icometices gainer contract (Raipool) Cost us based on covert out forscart miles y buelled by icometices gainer contracted miles y sources all contracts. What is the outlook per leased fleet contract?		(1.1mi) (2.1 mi)	leased fleets will exceed
DETAIL Contract (Nappool Cast within contract Cast with contract Cast with contract Cast with contract Cast			
SAFETY Costs are based on current and forecast mileage branklet by located in subject and transition against contracted mileage across all contracts. What is the outdlook per leased fleet contract?	DETAIL	Cost within contract Cost within contract Cost exceeds contract	contract (Rallpool)
What is the outlook per leased fleet contract?	SAFETY		ed mileage across all contracts.
п. жижа •	REPORTS	What is the outlook per leased fleet contract?	
		ELL 2018 A2 ×	
Contract Description (750,000 (1.6 mil		Contract Description	€750,000 €1.6 mil
ELL 2018 A2 constant for 5 Vectora locanothics with annual mileage of 350000 km r, the cost of this constant is 01.4 mil. Mileage above the constanted amount will be charged at 01200 cm additional 1000 km. Milease babter the		mileage of 350,000 kms. The cost of this contract is €1.4 mil. Mileage above the contracted amount will be charged at	

maintenance based on mileage or operating hours, and the ability to drilldown into the details of a single locomotive.



hours (for operating hours-based maintenance). The module also allows modelling maintenance dates by increasing/decreasing utilization.

DEUTA-WERKE		Q	¢	DEUTA *			
HOME FLEET STATUS	Fleet Utilization						
LOCATION	What is the current utilization of my fleet and how much spare capacity do I have?						
COST OUTLOOK UTILIZATION DETAIL	85% locomotives utilized	(† 3% increase)	nouves				
SAFETY	Utilization is based on locomotive mileage. Ze	o mileage / day is counted as spare capacity. Adjust	this threshold of one day in	Settings.			
	What is the utilization trend acr	oss the fleet?					
	8-			Past Week v			



»Maintenance Planning«

The Maintenance Planning module provides details on all upcoming scheduled maintenance and past completed maintenance operations faciliating more

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		Maintena	nce > Ove	erview				
~	SCHEDULE		~	Calendar Viev	v		Next 7 Days *	
	MAINTENANCE OVERVIEW CURRENT TASKS COMPLETED TASKS ADMIN SAFETY	Upcoming M 2 Overdue Maintenance	Laintenance 4 Vehicles Impacted	8 4 2	T T	in the second se		
Ŗ	VEHICLE	Overdue and Upcoming Maintenance List						
8	REPORTS	Due Date ↑	Vehicle Name	Туре	Interval	Status		
		Overdue	Lok 02	jährliche FFST Frist	2,5 years	Booked (April 24, 2020) CHANGE	MARK	
		Overdue	Lok 110	W2	3.500 hours	To do	BOO SKIP	

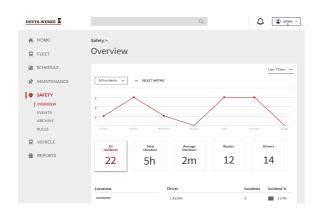
efficient planning. The module also provides the ability to store the log of maintenance tasks performed ensuring all information is accessible in a single place.

PROTE-WERKE I C

»Safety and Compliance«

The Safety and Compliance module provides automated reporting and alerting on common safety topics such as overspeeding, signal overruns / forced braking. The

Reports module automatically extracts reports from Deuta juridical recorders for evaluation.





»Driving data evaluation«

The innovative user interface of the DEUTA RedCloud[®] presents all data clearly at a glance. Speed, analogue and digital tracks and train control data are displayed at the same time. You have the choice of viewing the data chronologically (time based) or over a certain stretch of

DEUTA-WERKE				Q	Φ	C DENN +
🛉 НОМЕ	Safety > Events					
REET	Detail			C ARCHIVE	COPORT	O view rut
SCHEDULE	Zwai	ngsb	remsung	J	IN MULE	
X MAINTENANCE		0		>		
SAFETY	Dute	23 Dec 2019	18:22:00:00	Speed	45kmph	
OVERVIEW	Event Type	PZB		Duration	Imin 22s	
ARCHIVE	Vehicle Name	V60852	VIEW ALL FOR VEHICLE (3)			
RULES	Driver #	A2345	VIEW ALL FOR DRIVER (2)			
	Location	U-BM Rosa- Luxemburg, Berlin	VIEW ALL FOR LOCATION (2)			
	SIGNAL DATA	NOTE	S AND ATTACHMENTS			
A HOME	Signals over 1	lime and files				

»Customizable Dashboard«

View all your important information in a single dashboard with one click access to fleet, maintenance and

»Other Modules«

The Energy Management module provides a view of total energy (and fuel) consumption across the whole fleet for both electric and diesel locomotives.

DEUTA AMERICA

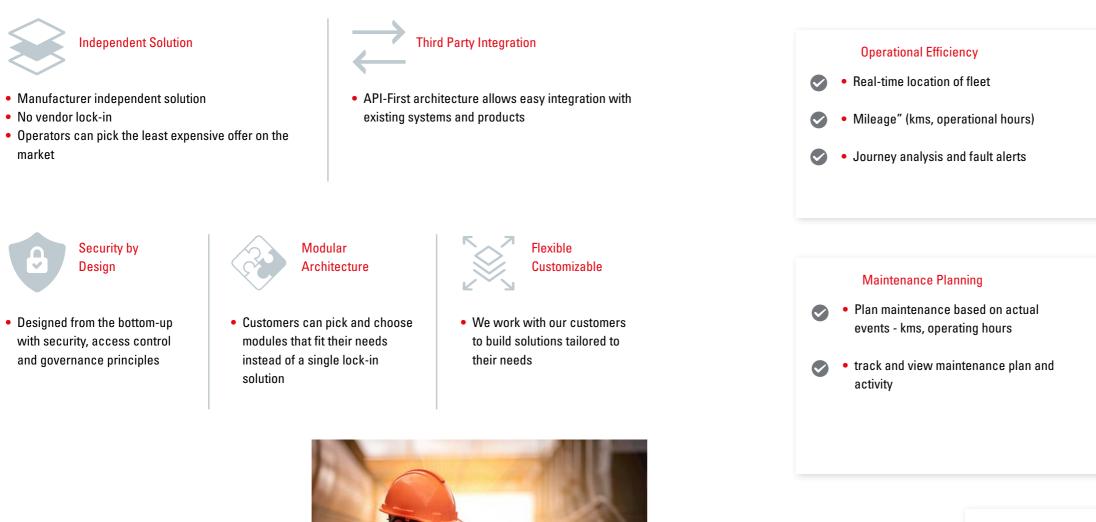
the track (route based). The table display shows decoded signals and messages chronologically. Additional items of information such as vehicle number, owner and data scope are also provided.

safety information. The Dashboard integrates alerts and notifications and is customizable by employee role.

It allows setting thresholds for consumption, tracking differences by location, locomotive and driver, and monitoring variances from "ideal profiles."



»Advantages«

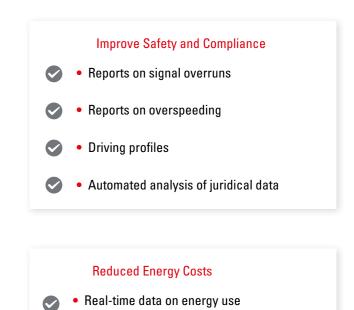


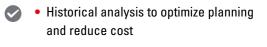


- Detailed insights into performance of variables
- information









• Machine Learning algorithms to derive "ideal" driving profile

vehicles and compare across multiple

• Rich visualizations of analysis and trend



Case Study: Maintenance Schedules

Railway operators with maintenance schedules based on "mileage" (operating hours, kilometres, running hours) lack the capability to determine exact mileage across their fleet in real time. Using a manual process does not scale across large fleets. Using 'rough' estimates results in rolling stock sent for maintenance too soon or too late. It can also result in congestion at the

maintenance depot. DEUTA RedCloud[®] addresses this pain through its fleet management module. The module will provide operators with real time view of mileage across their fleet along with estimated date when maintenance will be required (based on algorithmic analysis), ensuring rolling stock is sent for maintenance check at the right interval.

Case Study: Fleet Status

Fleet status is a recurring problem for both operators and leasing companies. Which locomotives are available? Which ones are at standstill? Where (in what location) is spare capacity? Are there any locomotives out of operation due to high severity actionable faults / errors? What percentage of the fleet is in maintenance? When will locomotives be back from maintenance.



RedCloud answers these questions by integrating data from a veriety of sources into a single, unified view of a railway operator or leasing company's fleet. The fleet status allows drill-down into individual locomotive detail and provides comparison over past time periods to see trends on availability, standstill, actionable faults and errors.

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