

Digital wiring diagrams

Dynamic, on-demand and interactive

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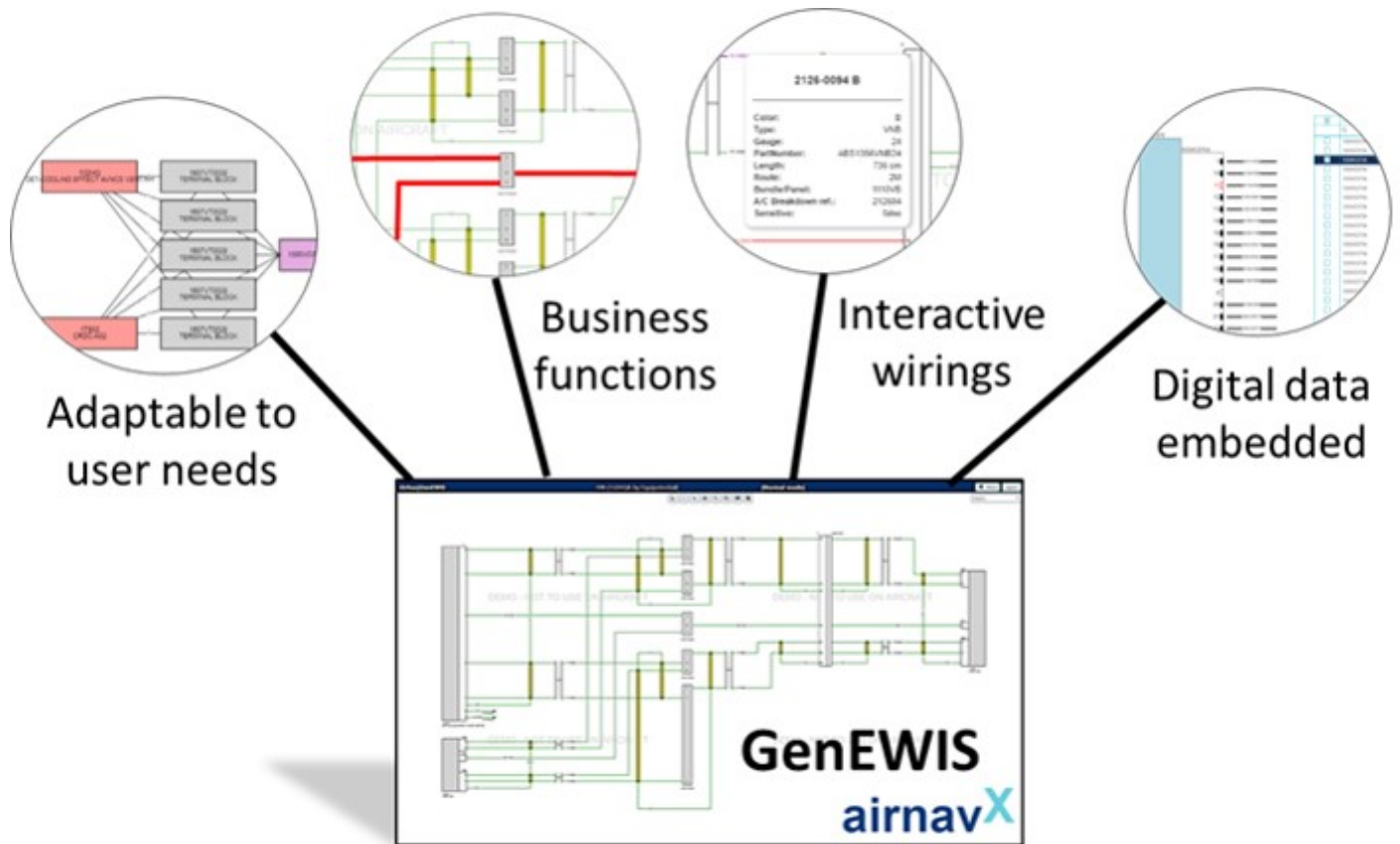
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(Copyright: Airbus - Master Films, Hervé Goussé)

Every A350 aircraft is defined through 6,000 physical wiring drawings and each new customization requires around another thousand to be drawn up or authored. Up until now, it took time to prepare, assemble, print and study these diagrams. This made some maintenance and trouble-shooting tasks long and complicated for technicians.

But today, all A350 XWB wiring diagrams are moving from paper to digital, enabling huge gains for customers in terms of time and effort. Generation of Electrical Wiring Interconnection Systems (GenEWIS) is a new digital approach to wiring manuals for faster troubleshooting, on-demand customizable wiring and interactive navigation of electrical systems.



GenEWIS overview

Airbus customers receive information about the electrical systems of the aircraft through a customised set of wiring diagrams that provide the electrical definition for each aircraft. This information is stored inside the Wiring Diagram Manual (WDM). Even if the content of the WDM is exhaustive, its content is static and the access to complex electrical information is not adaptable to user needs.



Moving away from paper diagrams (Copyright: Airbus - Sylvian Bonniol)

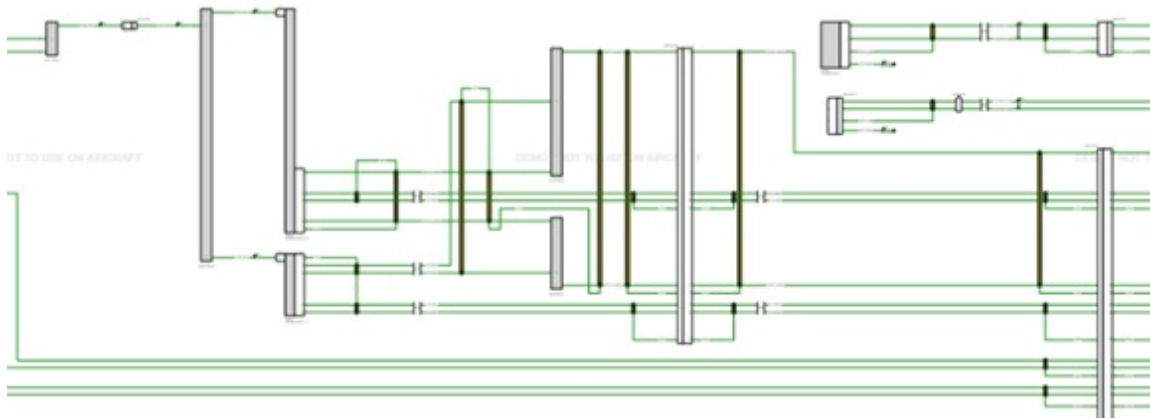
This static and historical format was generating constraints: technicians usually traced the electrical circuit using highlighters on printed copies of the drawings. During electrical troubleshooting on aircraft, the technician had to print out several sheets in A3 format and assemble them together to understand any electrical system. A potential issue with an exit light, for example, meant tracing the fault back through the wiring circuit using a lengthy paper manual.

In a constant effort to increase safety and customer efficiency, Airbus has worked over the past 3 years to propose a leaner way to structure the wiring content. This new application is designed to provide better readability - displaying normative symbols - and increased efficiency for troubleshooting and maintenance activities.

Use GenEWIS to:

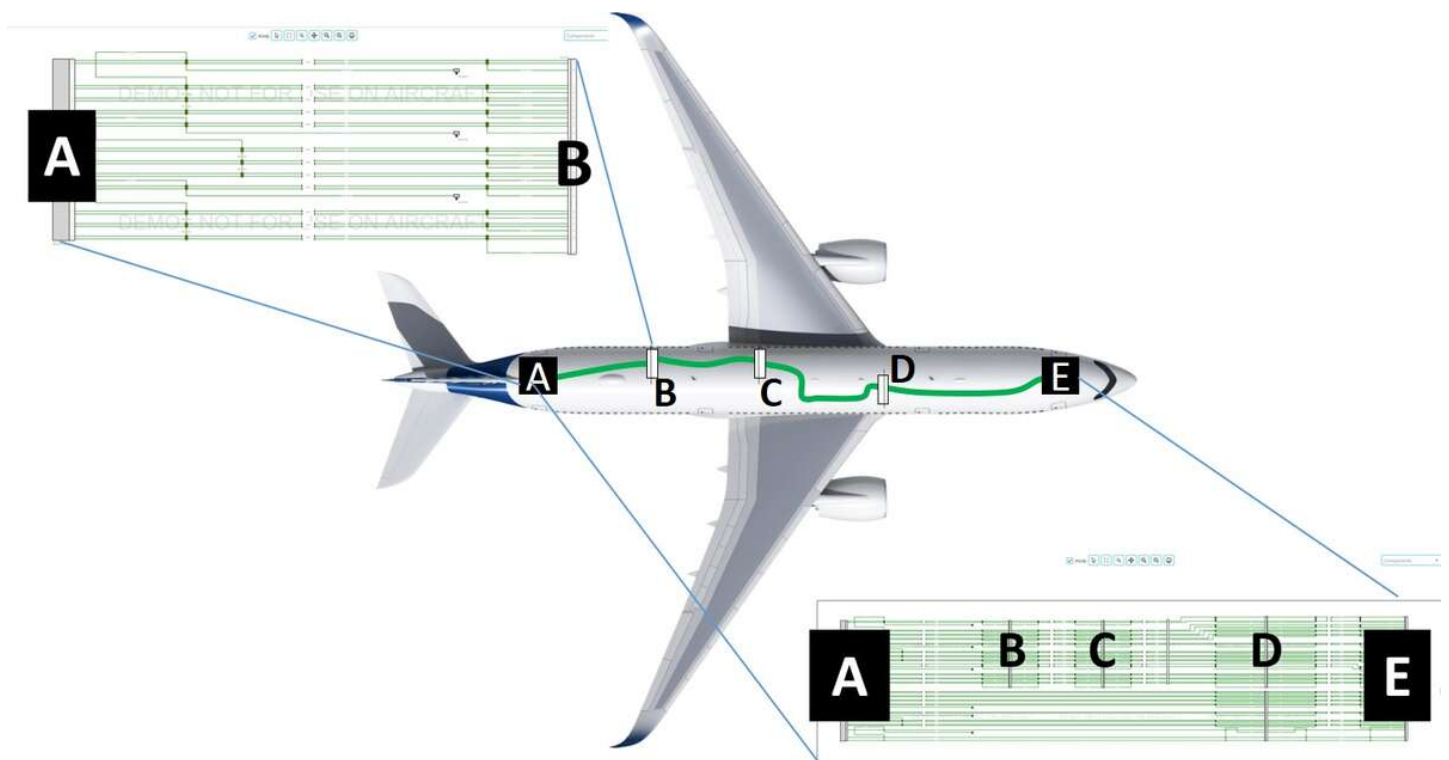
- **Accelerate access to Airbus electrical data during troubleshooting**
 - **Generate on-demand wiring diagrams that can be easily customized**
 - **Compute any electrical path and provides interactive navigation**
-

GenEWIS is a revolution similar to swapping paper maps for a satnav system. It enables technicians to dynamically generate any kind and any size of wiring diagram, following an end-user query. This dynamic interaction is possible using electrical data stored in an Airbus database.



GenEWIS wiring diagram

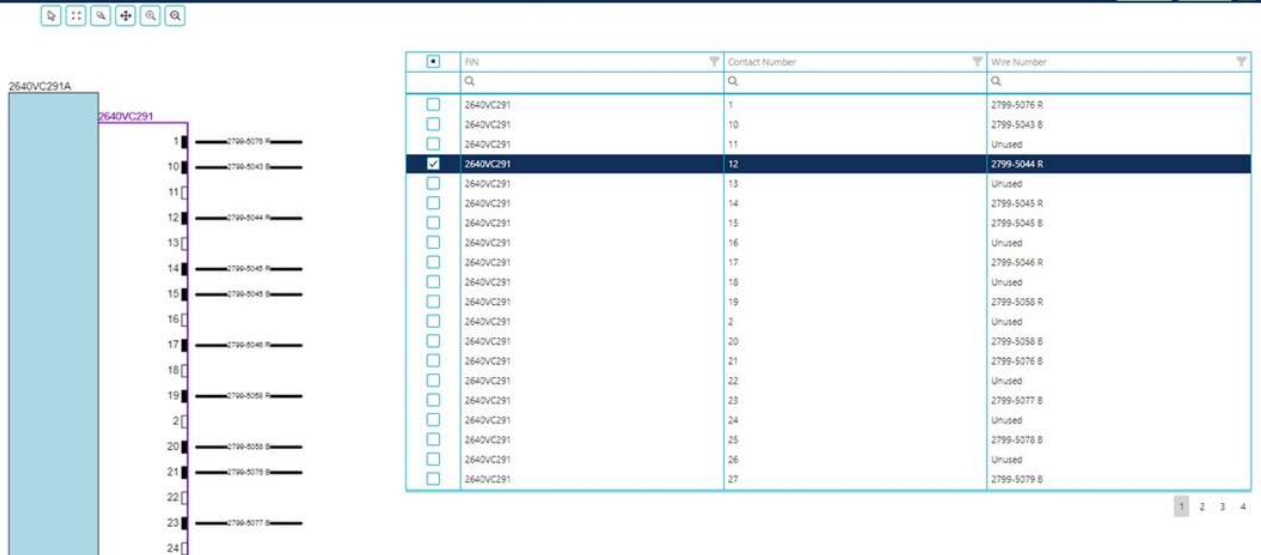
The tool dynamically computes the exhaustive list of electrical paths within the whole aircraft. Technicians can easily view each end-to-end signal continuity.



Users choose the diagram size according to their needs

By removing the need to sift through hundreds of design-to-print wiring diagrams, the search time is drastically reduced in supporting operators to really focus on troubleshooting tasks. GenEWIS is delivered with powerful search functions. Customers can find both the graphic and digital data in one place.

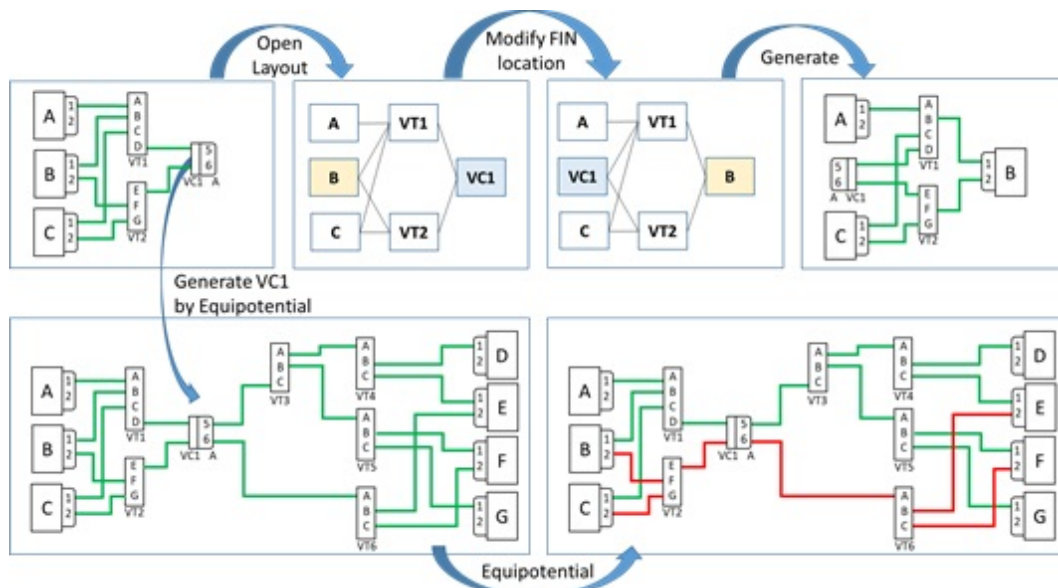
GenEWIS gives customers the drawing they need, when they need it. Technicians can see both the graphic and digital data in the same wiring environment without opening several tools or panels. The tool provides new data sorting and new functionalities to fully customize each wiring diagram.



FIN	Contact Number	Wire Number
Q1	Q1	Q1
<input type="checkbox"/> 2640VC291	1	2799-5076 R
<input type="checkbox"/> 2640VC291	10	2799-5043 B
<input type="checkbox"/> 2640VC291	11	Unused
<input checked="" type="checkbox"/> 2640VC291	12	2799-5044 R
<input type="checkbox"/> 2640VC291	13	Unused
<input type="checkbox"/> 2640VC291	14	2799-5045 R
<input type="checkbox"/> 2640VC291	15	2799-5045 B
<input type="checkbox"/> 2640VC291	16	Unused
<input type="checkbox"/> 2640VC291	17	2799-5046 R
<input type="checkbox"/> 2640VC291	18	Unused
<input type="checkbox"/> 2640VC291	19	2799-5058 R
<input type="checkbox"/> 2640VC291	2	Unused
<input type="checkbox"/> 2640VC291	20	2799-5058 B
<input type="checkbox"/> 2640VC291	21	2799-5076 B
<input type="checkbox"/> 2640VC291	22	Unused
<input type="checkbox"/> 2640VC291	23	2799-5077 B
<input type="checkbox"/> 2640VC291	24	Unused
<input type="checkbox"/> 2640VC291	25	2799-5078 B
<input type="checkbox"/> 2640VC291	26	Unused
<input type="checkbox"/> 2640VC291	27	2799-5079 B

Example of numerical data displayed in GenEWIS (equipment hook-up list)

Technicians can generate an infinite combination of wiring diagrams. GenEWIS enables them to modify the appearance using the layout function, to expand any wiring by generating all end-to-end equipotentials and to highlight one equipotential when double-clicking on a wire.



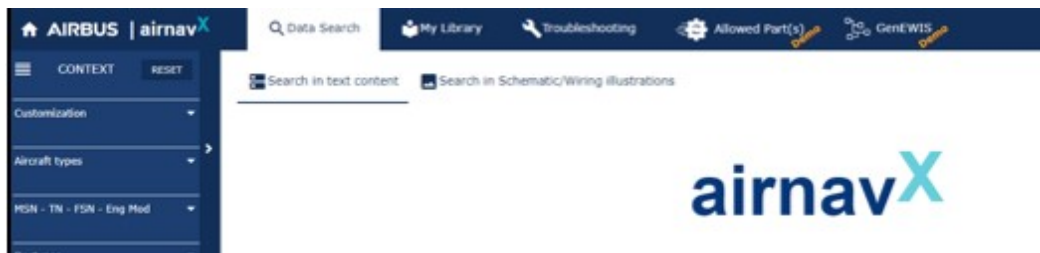
GenEWIS example of layout and equipotential functions

Wiring sizing is possible thanks to dedicated business functions designed to accelerate access to all electrical data. Within each wiring, technicians can zoom in and out, choosing between anything from a drawing of a single connection to a wide view of the whole aircraft.

Quick access, intuitive navigation

The official Airbus browser to access all Technical Data is airnavX* which is accessible through AirbusWorld, the Airbus customer portal. GenEWIS is by nature fully embedded within airnavX, which allows efficient navigation between electrical data and all maintenance information such as maintenance tasks or fault isolation tasks.

*[click here](#) for airnavX access - for customers via the AirbusWorld portal



Access GenEWIS from Airbus airnavX application (top right).

The GenEWIS homepage provides quick and intuitive access to any electrical object installed on the aircraft such as FINs, wires and harnesses. Technicians can also select the data by ATA (6-digit level) to generate the wiring suited to their needs.

FIN	Designation	Number of Wires
Q, 100VC	Q,	Q,
1100VC001	CONNECTOR	5
1100VC001A	CONNECTOR	5
1100VC003	CONNECTOR	42
1100VC003A	CONNECTOR	42
1100VC005	CONNECTOR	16
1100VC005A	CONNECTOR	16
1100VC021	CONNECTOR	30
1100VC021A	CONNECTOR	28
1100VC023	CONNECTOR	23
1100VC023A	CONNECTOR	22
1100VC025	CONNECTOR	5
1100VC025A	CONNECTOR	4
1100VC027	CONNECTOR	5
1100VC027A	CONNECTOR	4
1100VC029	CONNECTOR	2
1100VC029A	CONNECTOR	2
1100VC031	CONNECTOR	42
1100VC031A	CONNECTOR	39
1100VC033	CONNECTOR	18
1100VC033A	CONNECTOR	16

GenEWIS display in airnavX

Deployment of GenEWIS

The beta version* of GenEWIS was rolled out for all A350 customers in February 2020, with the official A350 entry-into-service planned in the fourth quarter of 2021. Other aircraft programmes should follow in 2022.

*All data currently displayed in the GenEWIS diagrams is for test purposes only. It shall NOT be used to ensure aircraft continuing airworthiness.

Learning how to use it

Although some training sessions and webinars already took place in the past, new users can find guides and videos embedded within the airnavX help centre. Further webinars will also be done to prepare customers for the entry-into-service (EIS). An OIT is also on the way to complement this coming EIS.

Ultimately, when the data becomes fully digital, it will open the door to even more ergonomic solutions, such as the mixing of wiring data and augmented reality technology.

Long-term vision

- Transparent aircraft: maximum use of digital data; electrical view of any system using 3D
- Electrical analysis: signal tracing improving equipotential vision; ELA* analysis and display

*ELA Electrical Load Analysis: computation of electrical load during new system installation in each aircraft

With GenEWIS, technical data is moving from a static format (or digital 'books') to a digital on-line application generating interactive, on-demand diagrams enabling huge savings in time and effort. Technicians are able to simply launch an online request instead of having to manually search, consult and analyse the results from hundreds of design-to-print wiring diagrams.

This is the first on-demand application for technical data, paving the way for a digital technical data ecosystem with further on-demand developments planned in the future.

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