

PHILIPS

Remote Diagnostic
Technologies

IntelliSpace Corsium



Telemedicine solution

Real-time patient data transfer and two-way communication

IntelliSpace Corsium specifications

Introduction

Philips IntelliSpace Corsium is a web-based software platform that unlocks the power of the Tempus ALS.¹ With the ability to capture rich levels of on-scene clinical and patient data, IntelliSpace Corsium allows Tempus ALS users to quickly share data and collaborate. Using proprietary encryption and data transmission technologies, rich event-driven clinical data can be securely shared in real-time and reviewed for two-way consultation, enabling rapid clinical and transport decision support and seamless electronic Patient Care Record (ePCR) integration.²

Key features

Real-time transmission of rich patient and scene data, even under poor network conditions

Two-way communication enables quick and efficient review of ECGs, resuscitation and patient vital signs. The next level of care can provide diagnosis, clinical decision support and transport instructions directly back to Tempus Pro

A secure web browser allows medical personnel to view live patient data on a web-enabled device. This means that remote medical support can be provided when patients are being seen, treated and transported

Centralized device and user management

Data sharing capability through Web API that allows 3rd. party ePCR companies to integrate with IntelliSpace Corsium

Support Centre accounts that allow separate account management for support centers and EMS agenciesIntelliSpace



Overview

Automated shared data

The Summary Record of Care (SROc) data collected by the Tempus ALS system, consisting of Tempus Pro and Tempus LS, is streamed to IntelliSpace Corsium. The triggers for automatic streaming of SROc data to IntelliSpace Corsium are configurable; the patient data shared includes the following³:

12-Lead ECGs

Tempus LS data such as CPR therapy, shocks/times/energies and waveform snapshots

User entered assessments, events, drugs, therapies, fluids and interventions

20 second waveform snapshots; captured automatically during patient alarms, e.g. arrhythmia detected

Trended history of vital signs

Patient details and notes entered on Tempus Pro

Injury records including body maps for injuries, burns, tourniquets, dressings and GCS scores

Images from the Tempus Pro camera

Intubation images

Reliable data transmission (EDS)

Data is streamed automatically during the initial assessment and transport of the patient using RDTs own patent pending Enhanced Data Service (EDS) protocol.⁴ EDS is designed to ensure effective data transfer even when the underlying connectivity is poor or of low bandwidth. Using EDS Tempus Pro can transmit via Wi-Fi, Ethernet or 2G/3G/4G wireless technologies (via a MiFi or similar tethered device).

Flexible data viewing

Data from multiple Tempus Pro systems can be viewed on IntelliSpace Corsium by medical teams and clinicians supporting the patient transport or preparing to receive the patient on handover. Patient data can be viewed via a standard web browser (Chrome, Safari) on a range of devices including PCs, tablets and smartphones.

Dashboards

Live Device Dashboard displays a list of connected Tempus Pro systems. The list can be filtered to show devices from specific clinical teams. ECG Dashboard displays a list of ECGs that have been sent for expert ECG review. The ECG review details and ETA if known are also shown. The list can be filtered to show ECGs sent to specific support centers. Historic Dashboard: allows users to search and view historic incident data. Resuscitation Dashboard displays a summary of information about all Tempus LS cases on Corsium. Various information is available to the user including Shock number, intervention duration and CPR quality statistics. Within the Resuscitation Dashboard, there is a Code Review tab. It basically allows Tempus LS cases to be reviewed in further detail from the linked Tempus Pro incident.

Live data view

Live patient data including vital signs and waveforms are displayed when a connected Tempus Pro system is selected from the Live Dashboard or an ECG is selected from the ECG Dashboard.

ECG review with feedback

IntelliSpace Corsium enables quick and easy review of ECG with patient management instructions delivered to the care giver at scene:

Whilst monitoring the patient with Tempus Pro the care giver records and sends an ECG to a selected support center or hospital

The ECG clinician, using IntelliSpace Corsium in the selected support center, receives audio and visual notification that a review is required

After reviewing the ECG in IntelliSpace Corsium the reviewer sends diagnosis and transport instructions back to Tempus Pro

Tempus Pro provides audio and visual notification of the incoming ECG review; the care giver at scene then reads and acknowledges the transport instructions

Centralized device management

Using IntelliSpace Corsium, Technical Administrators or Bio-medical Engineers can configure the following:

Triggers for sending data to IntelliSpace Corsium, thereby ensuring that all the required clinical data is appropriately shared

Support / ECG Review Centre List, used when sending ECGs for expert review

Clinical Team List used to provision team-based filtering on the Live and ECG Dashboards

User account security

IntelliSpace Corsium has been designed to ensure that access to the recorded incident data is secure. Key measures include the following:

New accounts can only be created by Technical Administrators

Strong passwords are enforced on all user accounts. Technical Administrators must always use two-factor authentication

Throttling policy to protect against brute force attacks

Field-level validation is performed to ensure data integrity

User sessions are automatically timed out after an inactivity period to prevent persistent authentication.

Technical Administrators only have a limited visibility of patient data

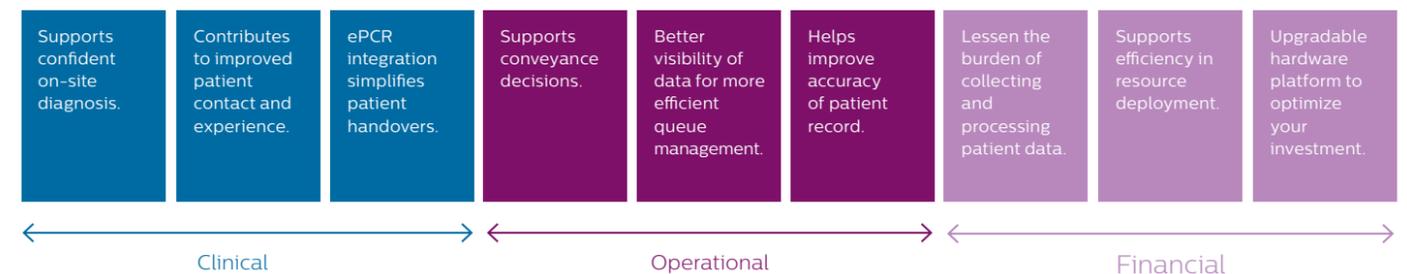
Audit history

IntelliSpace Corsium provides an extensive audit of user activity including full details of any failed logon attempts, details of the viewed incident data and details of attempts to access unauthorized data.

Patient de-identification

Technical administrators will be able to configure patient de-identification automatically at a configured time interval. Additionally, in response to a request to delete data for a specific patient, Technical Administrators will be able to search and then de-identify the requested data set incidents.

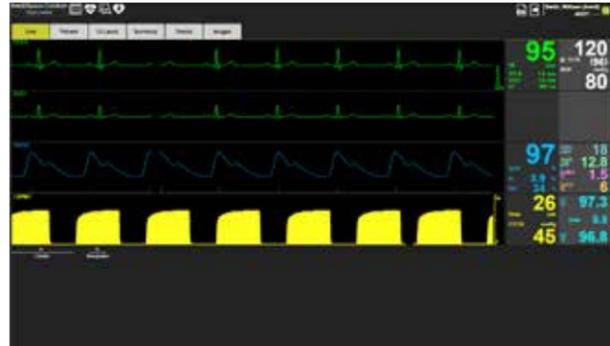
Benefits



Live data view

Live patient data including vital signs and waveforms are displayed when a connected Tempus Pro system is selected from the Live Dashboard or an ECG is selected from the ECG Dashboard.

Incident View



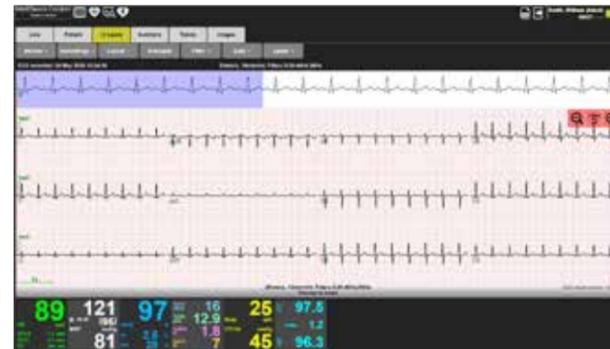
Patient body maps



Trends



12-Lead ECG



Security and Compliance

Cloud infrastructure

The cloud-based infrastructure used to deploy IntelliSpace Corsium utilizes:

- Hardened machine images
- Enterprise-grade Antivirus software
- Intrusion Detection Systems
- Automated Backups
- Event log management
- Scheduled application and OS-level patching
- Multi-zone hardware redundancy
- 24x7 System Health and Security monitoring

Data security

Tempus Pro systems cannot communicate with IntelliSpace Corsium until encrypted authentication settings in a bespoke RDT format have been imported onto Tempus Pro

Patient data is not exchanged until Tempus Pro and Corsium have performed authentication. As part of authentication a dynamically generated secret is exchanged

All data at rest exchanged between the Tempus Pro system and IntelliSpace Corsium is AES-256 encrypted using FIPS compliant technology. To provide an additional layer of security the AES-256 encrypted data is then shared using secure (DTLS) sockets

All data containing personal health information (PHI), is AES-256 bit encrypted using a security key that is unique for each customer. Note that the storage key is different to the transport key. The AES-256 encrypted data is then stored in an encrypted database

Data exchanged between internal IntelliSpace Corsium servers is encrypted

Web browser access to IntelliSpace Corsium is via Secure HTTP

Data exchanged between internal servers is encrypted

Cyber security

The design of IntelliSpace Corsium has been evaluated against the following cyber-security standards: ISO 80001-2-2:2012

Software Development

All elements of IntelliSpace Corsium have been developed in compliance with IEC 62304:2006 AMD1:2015 as a part of RDT's quality system.

Supported Hardware

Monitor: Tempus Pro, Defibrillator: Tempus LS, Tempus LS-Manual

IntelliSpace Corsium licence options

IntelliSpace Corsium ReachBak licence:

All medical monitoring data, vital signs, ECGs, Summary Record of Care and images are transmitted in real time

Transmits 12-Lead ECG in real time and acquires 10 seconds of all 12-Leads

Provides 12-Lead ECG analysis and measurement tools on the transmitted ECG

ECG review results can be sent back to the Tempus Pro

Tempus Pro operator can acknowledge ECG results and provide estimated time of arrival

IntelliSpace Corsium ECG licence:

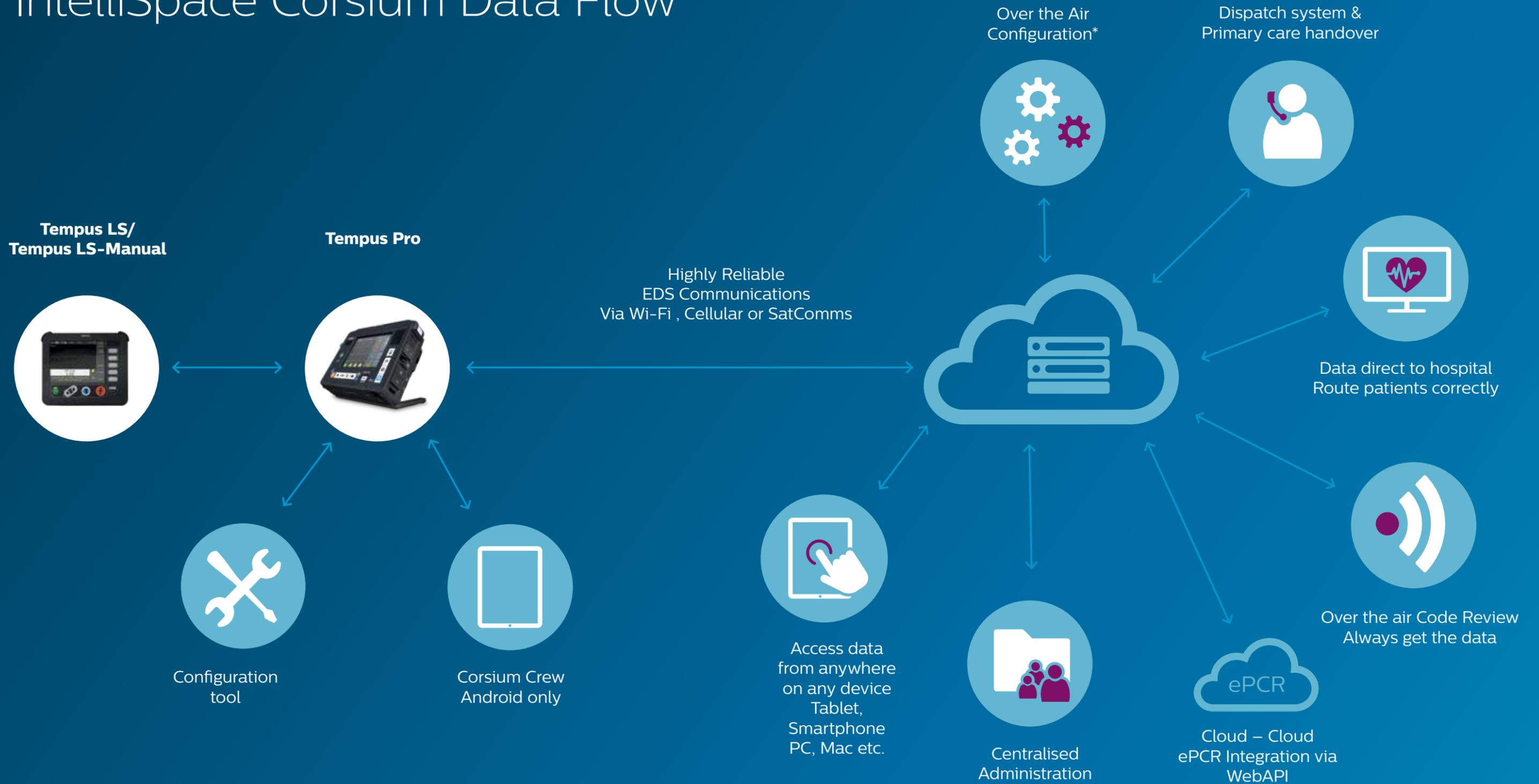
Tempus Pro user can transmit 12-Lead ECGs

Provides 12-Lead ECG analysis and measurement tools on the transmitted ECG

Also transmits basic vitals recorded at the time of the transmitted ECG

- Tempus ALS is a system comprised by Tempus Pro monitor and Tempus LS or Tempus LS-Manual professional defibrillator. Tempus LS is not available for sale in the US. Tempus LS-Manual is 510 (k) cleared and available for sale in the US
- Depending on network availability there may be a 2-3 second delay between display of the data on the Tempus Pro and display of the same data on IntelliSpace Corsium
- The SRoC data set is fully configurable by the user's organization
- UK patent application no. 1817817.8

IntelliSpace Corsium Data Flow



* Connection to device management



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