

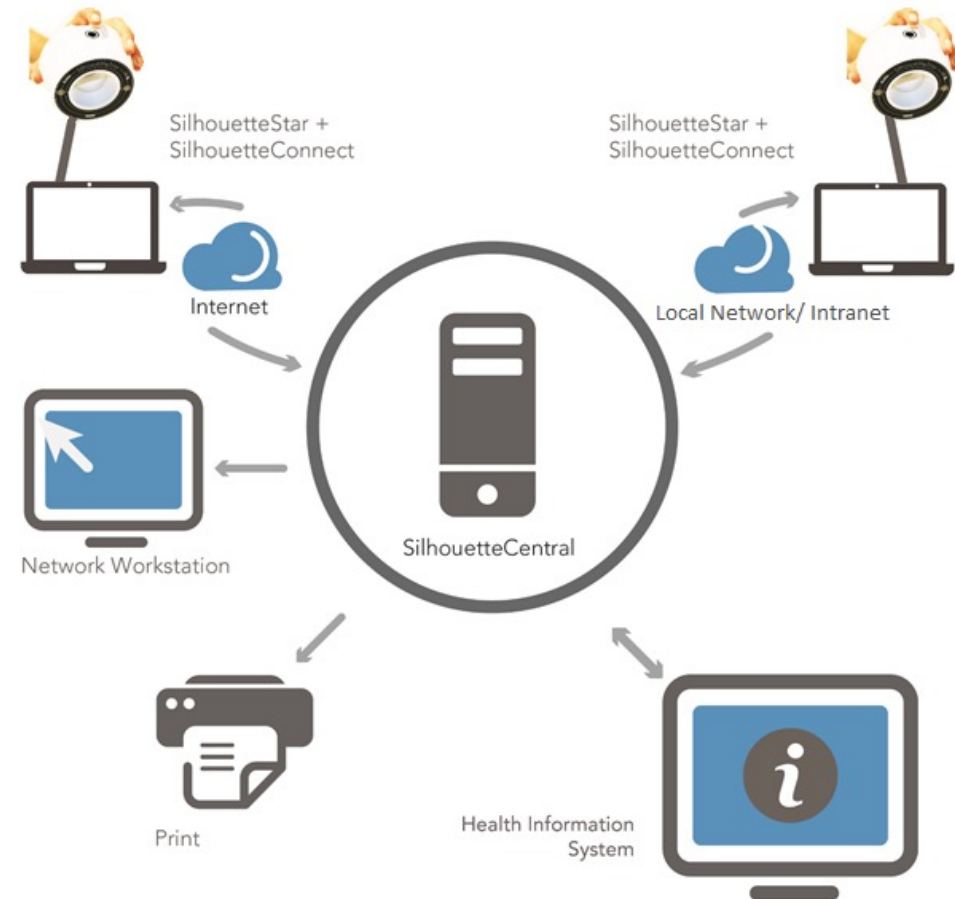
ARANZ Medical

Silhouette Technical Training


Silhouette v3

Recap of Basic Concepts

- SilhouetteStar – the imaging device
- SilhouetteConnect – a software application that runs on a Windows computer
 - Together allows the user to image, measure and document information about a wound, at the point-of-care
- SilhouetteCentral – server-based software product
 - For the storage, collation and viewing of the collected wound information, as well as overall administration of the system
- SilhouetteLink – the interface between SilhouetteCentral and health information systems



Presentation Overview

	Functional	Technical
SilhouetteStar + SilhouetteConnect		3 <i>Senior clinical staff IT services</i>
SilhouetteCentral + SilhouetteLink	2 <i>Senior clinical staff Clinical managers (IT services)</i>	1 <i>IT services</i>
Support	4	All

SilhouetteCentral & SilhouetteLink – Technical

- Introduction to SilhouetteCentral
- Installation
- Data Storage & Security
- Data Maintenance
- User & Password Management
- SilhouetteLink

Introduction to SilhouetteCentral

- A server based product for storing wound information
- An ASP.NET application that runs in IIS (Internet Information Services) on Windows Server
- Uses the Microsoft .NET Framework
- Data is stored in a Microsoft SQL Server database; there are images and reports that lie outside of the database
- Provides a web front-end to review the data and perform system administration
- Minimum specs and software dependencies are on the ARANZ Medical website



Installation

- The installation is provided in a zip file for manual installation
- A blank SQL server database is required, and during setup, it will be populated
- The web application and the SQL Server database can run on different machines if this is a requirement

Data Storage & Security

- Access to the database is controlled by standard SQL server access and control mechanisms, to conform to your IT policies
- SQL Server includes the connection between the database and the SilhouetteCentral web application
- Some SQL Server editions can be configured to encrypt the data at rest
- Images are stored in a compressed, proprietary format with anonymized filenames
- Reports are created and stored in PDF format with anonymized filenames
- It is possible to configure the host server to use drive encryption where required

Data Maintenance

- The SQL Server database for SilhouetteCentral does not have any specific requirements around maintenance, however we recommend the following:
 - The SQL Server database is backed up in line with your organizations backup policies
 - Evaluate and apply released Microsoft patches in line with your organizations policies
 - Update statistics on the database on a regular basis
 - Rebuild and defragment all indexes on a regular basis
- When performing backups of SilhouetteCentral, keep in mind that the SQL Server database, web application, images and PDF reports may be stored on different servers

User & Password Management

- SilhouetteCentral can integrate with Active Directory and LDAP servers to obtain user and password information
- Silhouette supports a hybrid model (Automatic and manual sign-on), whereby some user accounts can be managed via Silhouette and others via Active Directory
- Silhouette supports a strict LDAP model (Automatic sign-on only), whereby user accounts managed via Silhouette are not accessible. SilhouetteCentral and SilhouetteConnect both attempt to automatically use the credentials of the current Windows™ user.
 - When setting up a system with Automatic sign-on only, some LDAP groups must be given admin rights before setting Automatic sign-on only.
- Within Silhouette-managed user accounts, there are a number of password control mechanisms built in directly including:
 - Minimum and maximum password length and character type requirements
 - Password life expiration policies
 - Password reuse policies
 - Automatic account locking after a defined number of failed log on attempts

SilhouetteLink (1)

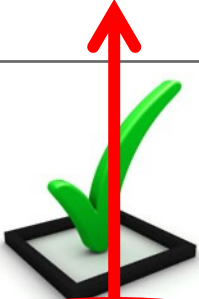
- SilhouetteLink is used to integrate SilhouetteCentral with external third party systems
- It's the interface between SilhouetteCentral and the third party systems and performs any data conversion and data marshaling duties as required



SilhouetteLink (2)

- SilhouetteLink supports the following protocols and functionality:
 - HL7 patient demographic information
 - DICOM image creation and transfer
 - DICOM Encapsulated PDF report creation and transfer
 - Email/file transfer capabilities
- SilhouetteLink is a Windows Service
- SilhouetteLink can be installed on the same computer as SilhouetteCentral or on a separate computer; if installed on a separate computer it is possible to use HTTPS rather than HTTP transport to encrypt the data channel to SilhouetteCentral

Presentation Overview

	Functional	Technical
SilhouetteStar + SilhouetteConnect		<i>Senior clinical staff</i> <i>IT services</i> 3
SilhouetteCentral + SilhouetteLink		<i>Senior clinical staff</i> <i>Clinical managers</i> <i>(IT services)</i> 1 2
Support	4	All

SilhouetteCentral – Functional Aspects

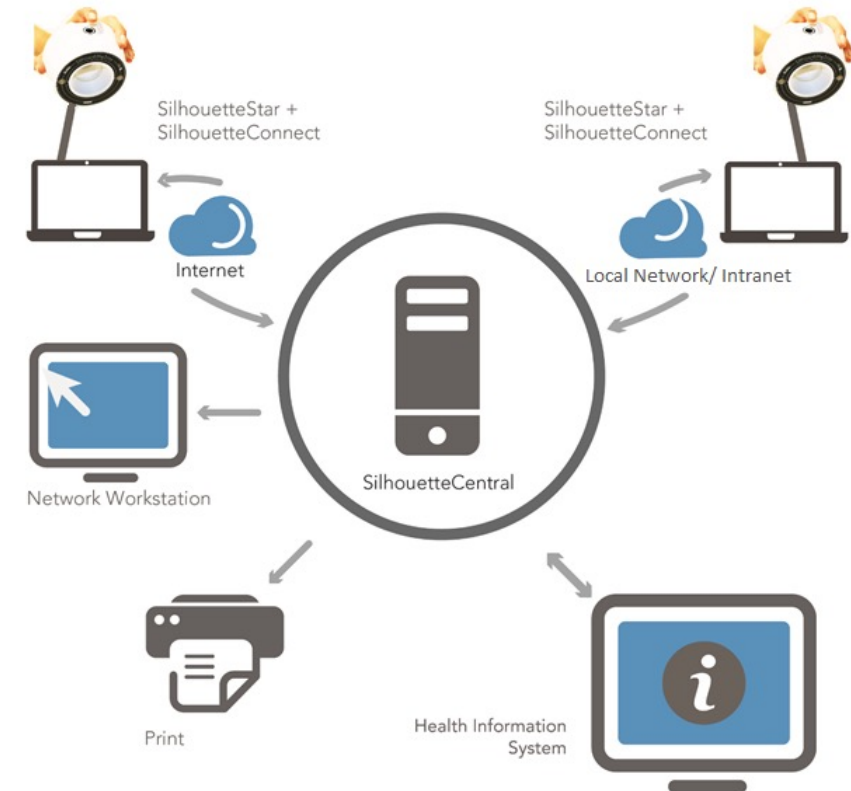
- Overview
- Collation, Synchronization & Data Storage
- Data Review
- Administrative Functions
 - System Configuration
 - Configuring Notes
 - User, Groups & Units
 - Data Management
 - Reviewing Logs
 - SilhouetteConnect Software Updates
 - Miscellaneous

Overview

- Collation and synchronization of the data captured by SilhouetteStar/SilhouetteConnect up to SilhouetteCentral
- Storage and a means of backup for data captured by SilhouetteStar/SilhouetteConnect
- Viewing of the collected wound information, provided through a web front-end
- System configuration and other administrative functions

Collation, Synchronization & Data Storage

- SilhouetteCentral collates and synchronizes the data recorded on one or more SilhouetteConnects
- Synchronization is a two way process whereby new information is exchanged between both SilhouetteConnect and SilhouetteCentral to ensure that the information presented on both is current
- Synchronization occurs in five steps:
 1. SilhouetteConnect uploads the database, image and report files to SilhouetteCentral
 2. A server side process on SilhouetteCentral merges this information into the SilhouetteCentral database; a database for downloading is then prepared, based on the requested list of patients
 3. This new database is downloaded to SilhouetteConnect
 4. Any required images and reports are downloaded next
 5. Any other system files that might be required by SilhouetteConnect are downloaded







Data Review – The ‘Desktop’ Module

- All the collected wound information can be viewed using a web-browser
- All the data review aspects are contained within the ‘Desktop’ module within SilhouetteCentral
- A subset of the data-editing capabilities that is available on SilhouetteConnect is available in the ‘Desktop’ (non administration) module of SilhouetteCentral
- Editing that is available:
 - Assessments can be created
 - The notes documentation can be created or edited
- Editing that is not available
 - The outlines or any of the other measurements cannot be edited
 - New images cannot be collected directly into SilhouetteCentral (needs to be done via SilhouetteConnect)

➔ Online demonstration

SilhouetteCentral – Functional Aspects

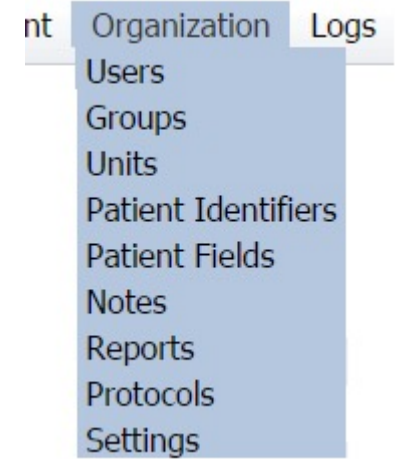
- Overview 
- Collation, Synchronization & Data Storage 
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 - System Configuration
 - Configuring Notes
 - User, Groups & Units
 - Data Management
 - Reviewing Logs
 - SilhouetteConnect Software Updates
 - Miscellaneous
- Population Reporting

System Configuration

The Organization Settings

- Note: These settings will over-ride any historic settings that are present on a (remote) SilhouetteConnect whenever a SilhouetteConnect synchronizes with SilhouetteCentral

➔ Online demonstration



Configuring Patient Fields

The fields displayed on the patient create screen can be altered to suit your needs.

For each field you can specify

- If it is visible (or hidden)
- The label displayed beside it
- If a user is forced to record a value

To make changes first click the Edit button.

Any changes made will automatically flow through to generated PDF wound assessment reports, or CSV data exports etc.

nt

[Organization](#)
[Logs](#)

[Dashboard](#)
[Data Management](#)
[Organization](#)
[Logs](#)
[Server](#)

Patient Field Administration

Details

Name	Label	Visible	Required
Unit	Site		✓
Last Name	Last Initial	✓	✓
First Name	First Initial	✓	✓
Middle Name	Middle Name		
Date of Birth	Date of Birth	✓	✓
Gender	Gender	✓	✓

Address

Name	Label	Visible	Required
Street	Street Address		
Suburb	Suburb		
City	City		
State	State		
Postcode	Postcode		
Country	Country		

Contact

Name	Label	Visible	Required
Home Phone	Home Phone		
Work Phone	Work Phone		
Mobile Phone	Mobile Phone		

 Edit

[Users](#)
[Groups](#)
[Units](#)
[Patient Identifiers](#)
[Patient Fields](#)
[Notes](#)
[Reports](#)
[Protocols](#)
[Settings](#)

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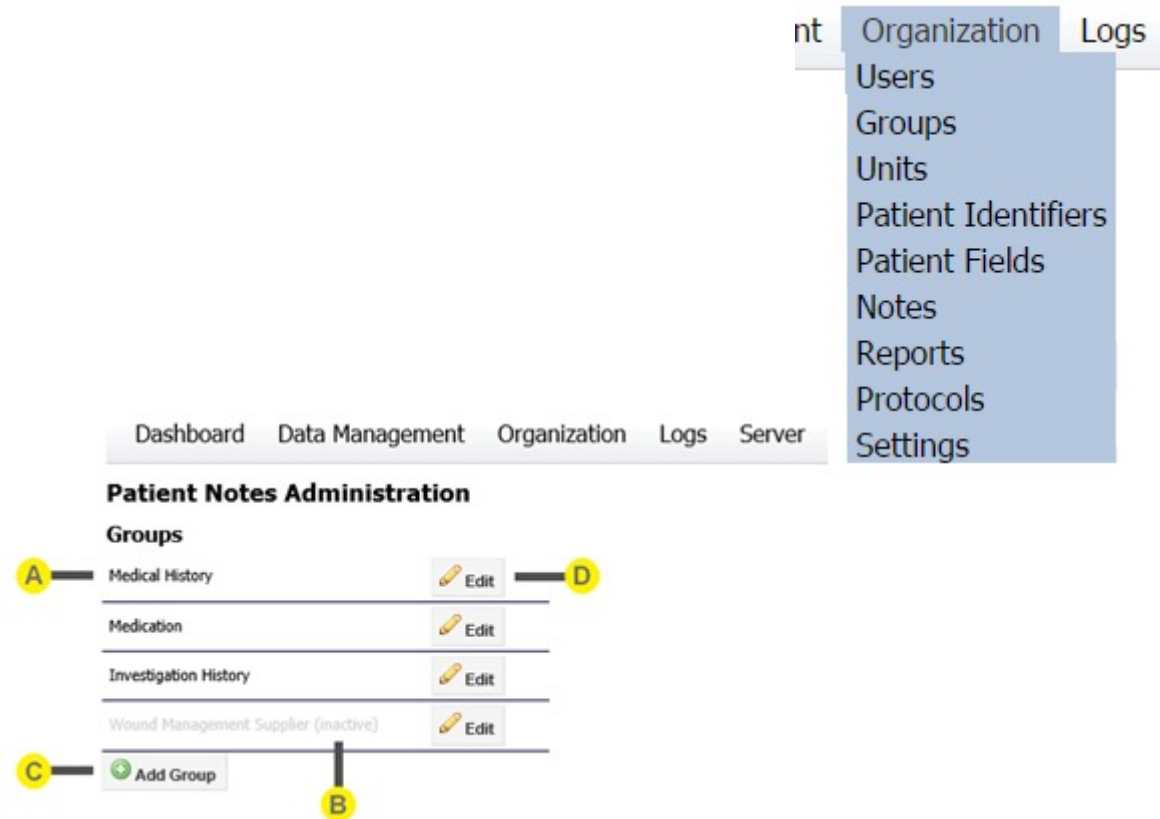
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Configuring Notes (1)

The Patient Notes, Visit Notes, and Wound Notes are edited separately, but how you edit each set of notes is the same:

- (A) Group title
- (B) Inactive group
- (C) Add group button
- (D) Edit group button

- Click the 'Add Group' button (C) to add a group
- Click on the 'Edit' group button (D) to:
 1. Change the group name
 2. Make the group inactive (B)
 3. Add/edit conditional validation rules
- Click and drag on a group title (A) to reorder



Configuring Notes (2)

Group Admission and Discharge

Group Name
Admission and Discharge

Active
☐ No
☒ Yes

Conditional Validation Rules

If an admission status change date is recorded you must specify an admission status

Edit
Remove

If an admission status is recorded the date the status change occurred on must also be recorded

Edit
Remove

If an expected discharge date is recorded the patient must currently be admitted

Edit
Remove

The expected discharge date must be on or after the admission date

Edit
Remove

Add Validation Rule

Save
Cancel

Conditional Validation Rule

Display Item
Expected Discharge Date

Error Message
The expected discharge date must be on or after the

Expression
!(HasValue(expected_discharge_date) && (expected_discharge_date < admission_status_date))

Save
Cancel










- Conditional Validation Rules
- Validation rules are used to ensure that note items within a group are answered in a consistent manor
- Uses of custom validation rules could include scenarios such as:
 - ensuring a set of individual percentages always add to 100%
 - ensuring two values, e.g. dates, have the expected correct order, e.g. the second value is always larger than the first
- The expression specified can only make use of note items within the current group that have been assigned a variable name
- For an explanation of the syntax, logical operators and available functions, please see the online help

Configuring Notes (3)

- Click on the group title to open the group
- Now you can
 - Edit an item
 - Add an item

Dashboard Data Management Organization Logs Server

Patient Notes Administration

Groups	Notes in Group Investigation History
Medical History  Edit	Diagnostic Type: MultiList (Select values from the List Items)  Edit
Medication  Edit	Pathology Type: MultiList (Select values from the List Items)  Edit
Investigation History  Edit	Comments Type: Text (e.g. normal, no problems)  Edit
Wound Management Supplier  Edit	 Add
 Add Group	

Configuring Notes (4)

Adding and editing items

- (A) Item name
- (B) Variable name
- (C) Data type
- (D) Comment
- (E) Units
- (F) Min/Max Value, Step, Min/Max Length
- (G) Availability controls
- (H) Persistence controls
- (I) Save

Note Details

Item Name

Weight

A

Variable Name

B

Data Type

Decimal (e.g 6.7, 4.56)

C

Comment

D

Units

kg

E

Min Value

F

Max Value

F

Step

F

Is Active

☐ No ☒ Yes

G

Is Required

☒ No ☐ Yes

G

Is Visible

☐ No ☒ Yes

G

Is Read-only

☒ No ☐ Yes

G

Persist Value

☒

H

Persist Value Condition

H

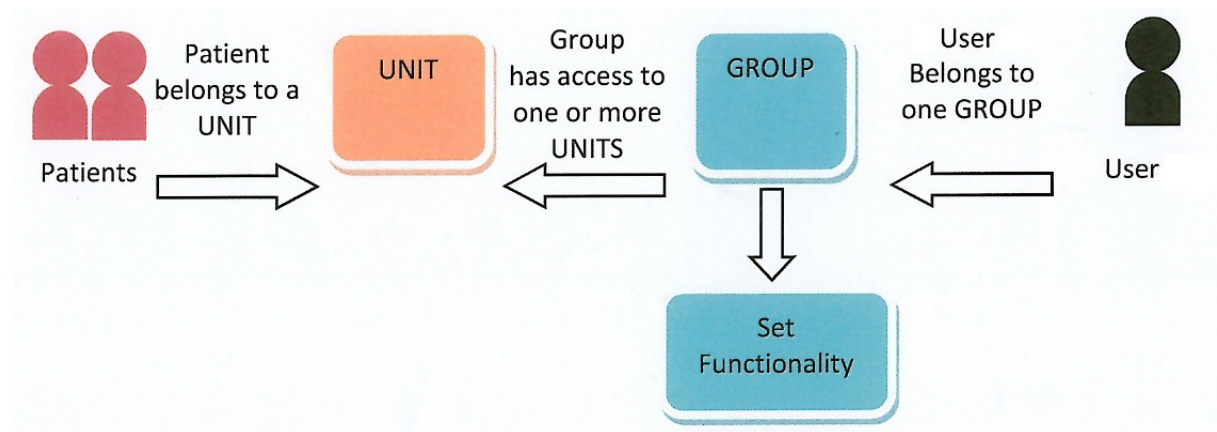
Save

Cancel

I

Users, Groups & Units (1)

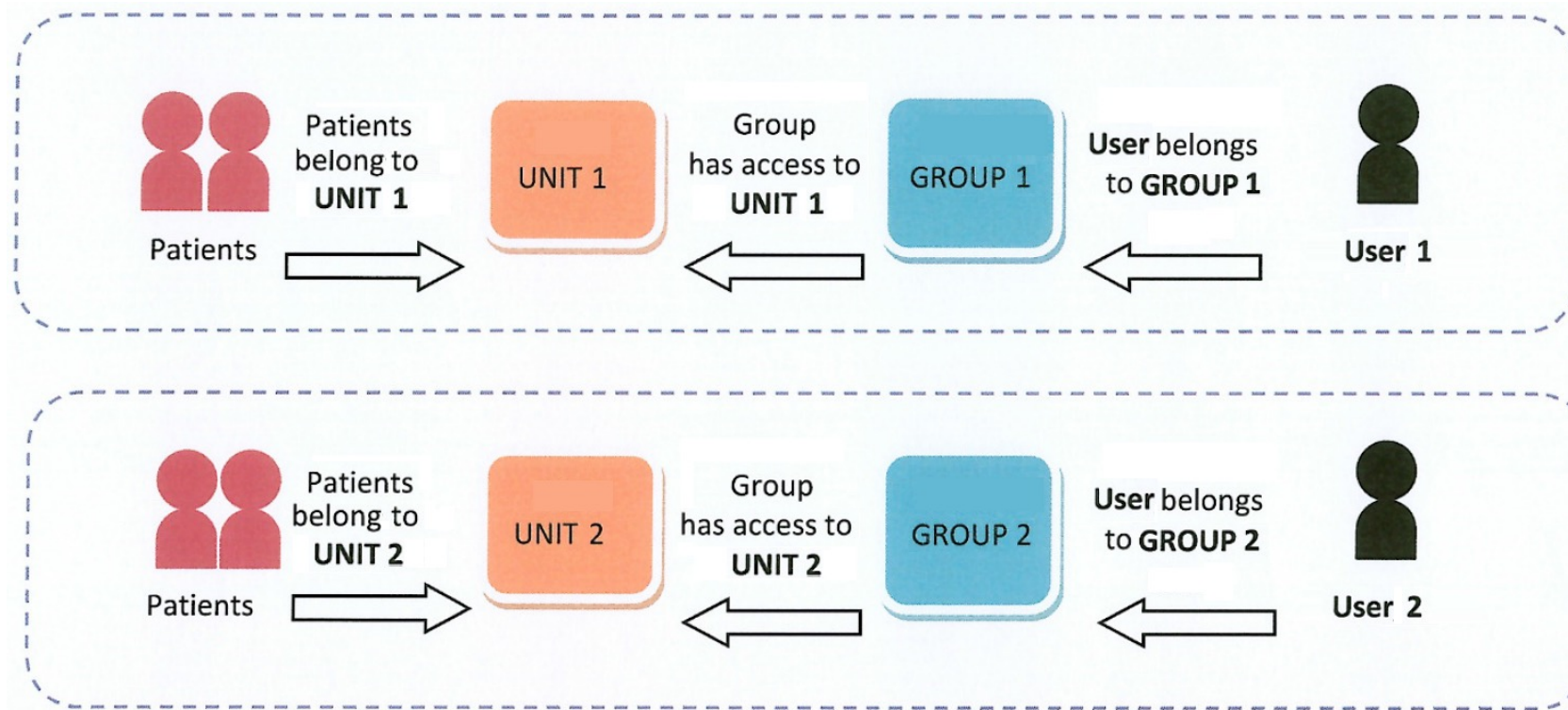
- Access to the Silhouette data is managed through units and groups



- Patients* belong to a single *unit*
- Users* belong to a single *group*
- Groups* control *functionality*; Examples: being able to create and edit patients; being able to access the administration module of SilhouetteCentral
- A group can have access to one, some or all units
- Thus, a user has *access* to those patients that belong to the unit(s) which their group is associated with; the types of *functions* that the user can perform is controlled by the group they belong to

nt	Organization	Logs
	Users	
	Groups	
	Units	
	Patient Identifiers	
	Patient Fields	
	Notes	
	Reports	
	Protocols	
	Settings	

Users, Groups & Units (2): An Example



- User 1 will only be able to access the patients from UNIT 1
- User 2 will only be able to access patients from UNIT 2
- The types of functions that User 1 and User 2 can perform depends the setup of Group 1 and Group 2 respectively

Users, Groups & Units (3): Configuring Groups

aranz_{medical} SilhouetteCentral

Mark Nixon
Downtown Hospital
[My Account](#) | [Log Off](#) | [About](#) | [Help](#)

Desktop Reports Admin

Dashboard Data Management Organization Logs Server

Edit Group

Group Name *

Group Description

Force Password Reset ☒ Force new users added to group to change password at first log on

Permissions

Users belonging to this group can:

- ☐ **SilhouetteConnect**
 - ☒ can log on
 - ☐ can access admin
 - ☒ can synchronize
 - ☒ can add patients
 - ☒ can remove patients
 - ☒ can perform camera calibration checks
- ☐ **SilhouetteCentral**
 - ☒ can log on
 - ☐ can access admin
 - ☒ population reporting
 - ☒ can access population reporting
 - ☒ can access desktop

For the following units
Downtown Hospital
[Change](#)

Users belonging to this group can:

- ☒ **Clinical Data**
 - ☒ can create patients
 - ☒ on SilhouetteConnect
 - ☒ on SilhouetteCentral
 - ☒ can edit patient demographics
 - ☒ can delete patients
 - ☒ can edit patient notes
 - ☒ can create measurements
 - ☒ can capture images
 - ☒ can trace images at time of capture

100%

Users, Groups & Units (4): Configuring Units

aranz_{medical}

SilhouetteCentral

Mark Nixon

Downtown Hospital

[My Account](#) | [Log Off](#) | [About](#) | [Help](#)

Desktop

Reports

Admin

Dashboard

Data Management

Organization

Logs

Server

Unit Administration

Name	Patient Count
Downtown Hospital	110
Mountain Hospital	0
Valley Hospital	87

Create

Edit

Delete

Export

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100%

Users, Groups & Units (5): Different IDs for Different Units (Facilities)

- The system has the capability for a patient to have more than one ID (for example, if different units have different patient identification systems)
- When a user logs on to Silhouette, they will be presented with a list of units they have access to; the unit that is chosen at log on will determine
 1. The initial filtering of the patients (i.e. those patients of the selected unit)
 2. Which patient ID is displayed (i.e. the patient ID used in that unit)
- A patient is assigned to a unit when the patient is created; additional IDs can be recorded for the patient by logging into a unit that makes use of a different patient identifier system.

Data Management



Mistakes do happen:

- Changing the date / creating / renaming / combining / moving / deleting / undeleting / checking ...

... patients / visits / assessments / wound / images

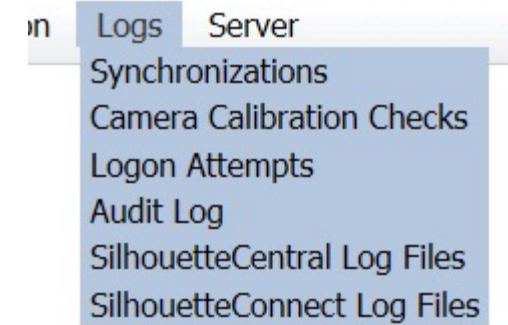
	Changing the date	Creating	Renaming	Combining	Moving	Deleting	Undeleting	Checking
Patient							X	X
Visit	X	X		X	X	X		
Assessment	X	X		X	X	X		
Wounds			X	X		X	X	
Images					X			

➔ Online demonstration

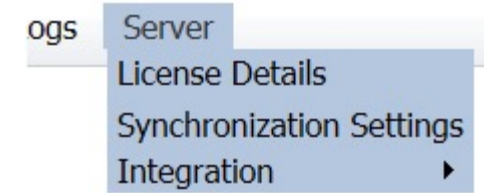
Reviewing Logs

- Synchronizations
- Camera calibration checks
- Logon attempts
- Audit log (views and changes)
- System log files (SilhouetteCentral & SilhouetteConnect)

➔ Online demonstration



Client Software

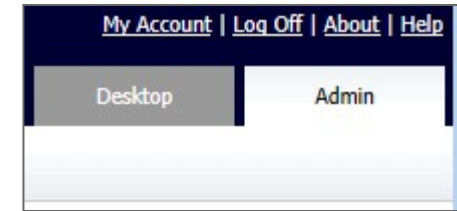


- Whenever a SilhouetteConnect synchronizes to SilhouetteCentral, it checks to see if there is a new version of SilhouetteConnect available.
 - If there is, the user is given the option to download and install the new version.
 - If the user refuses to upgrade they will not be able to synchronize.
- At any stage the installer for SilhouetteConnect can be obtained by accessing the Download Page link on the about page of SilhouetteCentral



The download page can also be accessed directly by accessing the Install page's URL (useful to send out via email etc).

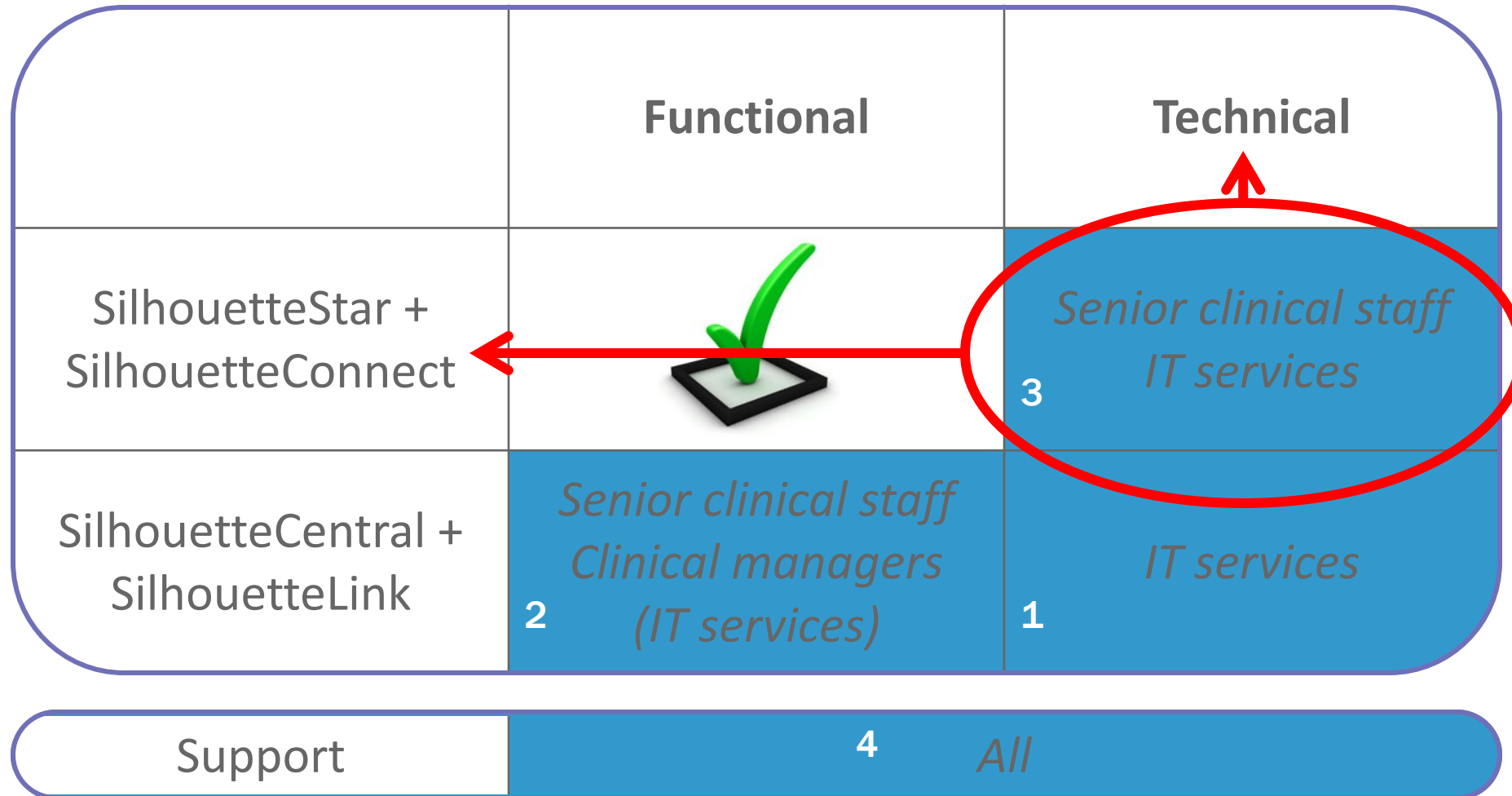
Miscellaneous



- The following screens are common to both the Desktop and Administrator modules, and are accessed via the top right of the SilhouetteCentral screen
- My Account: which includes changing ones' password
- About: Version details and download link to the SilhouetteConnect installation software
- Help: Online help

➔ Online demonstration

Presentation Overview



SilhouetteStar + SilhouetteConnect – Technical

- Overview
- Application Security, Logging & Synchronization
- How does Silhouette Make Measurements?

Overview

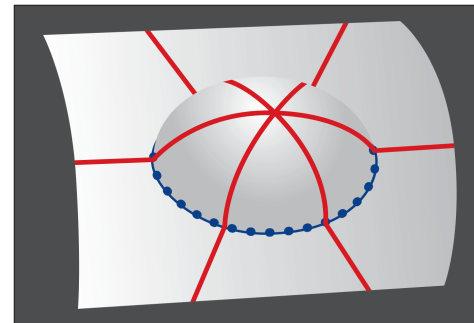
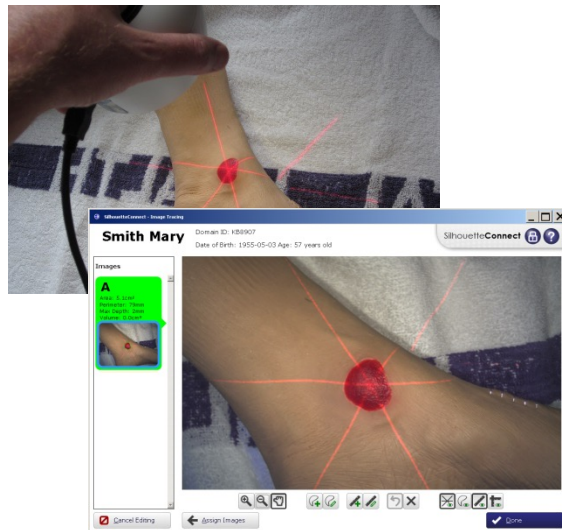
- SilhouetteStar is a hand held imaging device and connects to a Windows computer via USB (2.0 or 3.0). SilhouetteStar connects via a USB port.
- SilhouetteConnect software runs on Windows using the Microsoft .NET Framework
- SilhouetteConnect stores the data in two different ways
 1. *Database*: Patient demographic information and associated measurement data is stored in a Microsoft SQL Server Compact Edition v4.0 database
 2. *Files*: wound images are stored in a compressed format with anonymized filenames; Reports generated on SilhouetteConnect are created in PDF format
- Where there is a requirement to do so, the underlying operating system can be configured to encrypt the storage partition used to house the data
- The SilhouetteConnect minimum requirements are available on the ARANZ medical website.

Application Security, Logging & Syncing

- Access to SilhouetteConnect is password protected, and the database is encrypted using SHA-256 and AES128
- Silhouette provides detailed audit logging of various events including the creation, viewing, modifying or deleting patient information, including who, when and what change was made
- Synchronization can occur over any IP based network such as a LAN, WAN, the Internet or most commercial mobile phone networks; the underlying connectivity of the host computer is used for communication and any encryption methods supported can be leveraged
- During synchronization the encrypted database and anonymized images are transferred to SilhouetteCentral; ARANZ Medical recommends that as a minimum HTTPS rather than HTTP be used

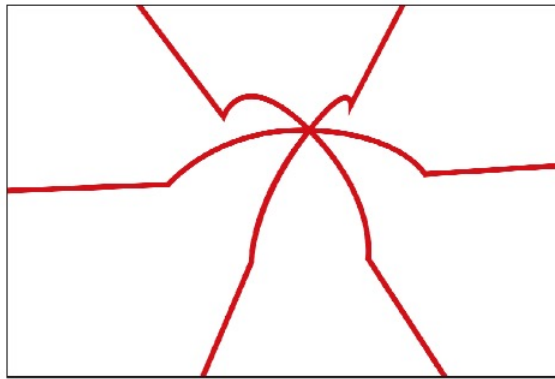
How Does Silhouette Make Measurements?

- SilhouetteStar captures a series of images with and without laser lines
- From these it creates a 3D mathematical model of the wound
- From this model, and together with the user-drawn outline, the wound dimensions are determined

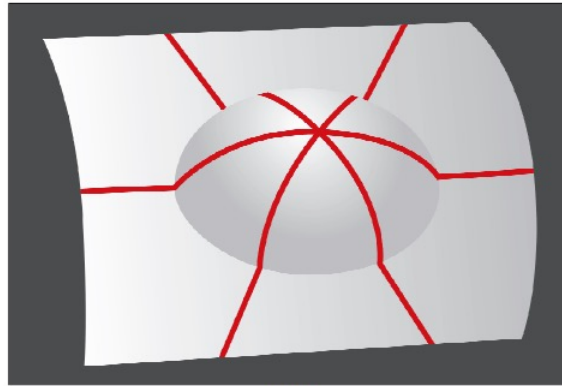


Area
Perimeter
Maximum depth
Mean depth
Volume

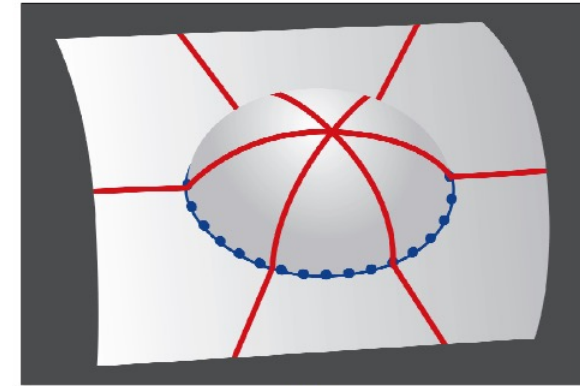
Wound Model Creation – Convex Surface



(a)



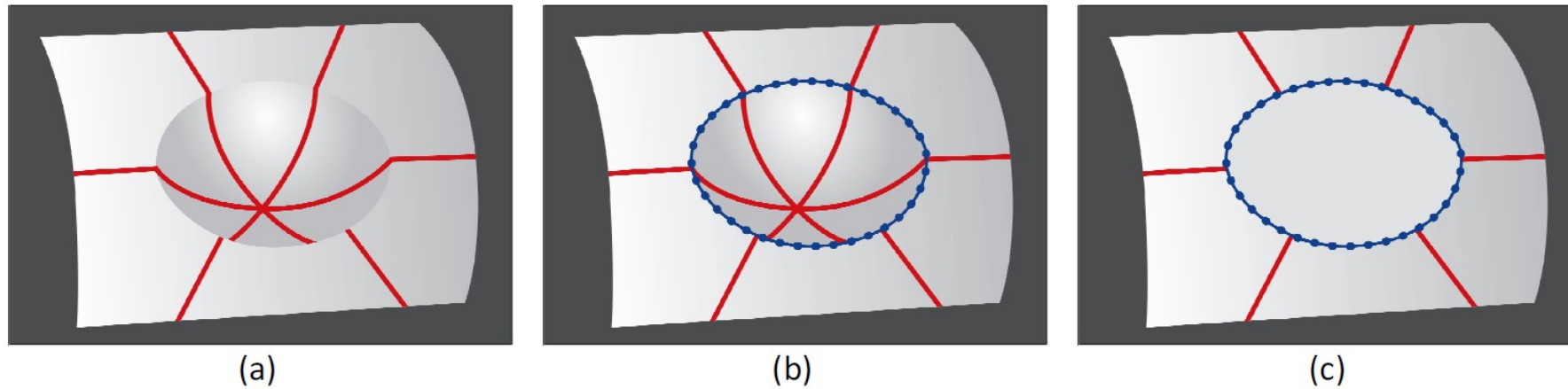
(b)



(c)


- a) the laser lines in three dimensional space
- b) a surface is stretched over the three laser lines
- c) the user drawn outline (blue dotted line) is added to the wound model

Wound Model Creation – Concave Surface



- a) a surface is stretched over the three laser lines
- b) the user-drawn outline (blue dotted line) is added to the wound model
- c) a cap is stretched across the user-drawn outline, over the concavity

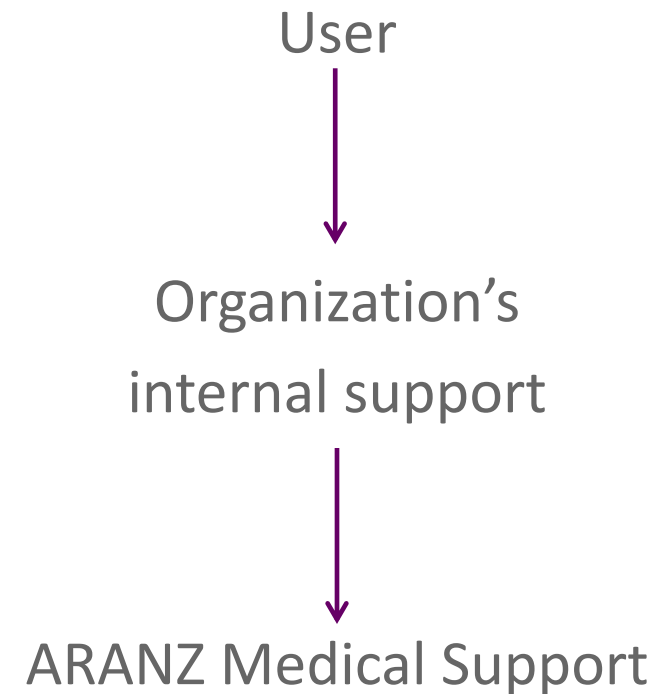
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SilhouetteCentral + SilhouetteLink	<i>Senior clinical staff</i> <i>Clinical managers</i> <i>(IT services)</i> 2	<i>IT services</i> 1
Support	4	All

Product Support

The Support Tree

- Users seek support via the organization's designated support person or team
- If the problem cannot be resolved, then the issue can be elevated to ARANZ Medical Support



Contact Details

Support Hours:

- Monday to Friday, 0800 to 2000 (8am to 10pm), NZ time

Contacts:

- Email: support@aranzmedical.com
- Phone: +64 3 961 1988 (International)
855 272 0341 (North America Toll Free)
0800 011 9628 (UK Toll Free)

(If your phone call is not answered within these hours, expect a reply call within 60 minutes)



Training Complete



