TECHNOLOGY ENABLED CARE

CYMRU

Telecare Services in Wales

Telecare Programme Blueprint

For a Target Operating Model

October 2021

Document Control

Version History

Amended By	Version	Status	Date	Summary of Changes
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Aaron Edwards	0.2	Draft	18/10/2021	Content added and revised structure
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Review, Approvals & Distribution

Name	Date	Version	Inform/ Review/ Approve
Sara Khalil	05/01/22	0.4	Review
Alka Ahuja	23/12/22	0.4	Review
Catrin Isaac-Rees			Review
Mike Ogonovsky		1.0	Approve
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The master copy of this document is held at the following location:

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1. Purpose of this document

1.1 Introduction

The TEC Cymru Telecare Programme Brief identified 3 major goals for the programme:

- To ensure Telecare services in Wales are fully 'digitally enabled' comfortably ahead of the 2025 deadline;
- That Welsh Telecare services use common data standards and interoperable protocols allowing for greater opportunities for widespread TEC adoption, shifting the narrative from reactive to proactive care;
- Telecare services across Wales produce consistent business intelligence data, enabling a culture of high performance and measurable outcomes on the importance of Telecare in Wales to its citizens.

TEC Cymru will not have mandatory powers to prescribe how local telecare services are operated and implemented but having a mission to be the National Centre of Excellence for telecare related activity, it is well-positioned to offer dedicated resource to support local initiatives that improve service delivery. Therefore, we will not mandate any particular technical solutions or standards, products or vendors but rather, work in close partnership with service providers to achieve optimum outcomes for the providers themselves and service users. This means promoting verifiable long-term value for money and best-of-breed solutions which have at their heart, open and future-proofed technical standards.

As such, this Blueprint can validly be regarded as a set of recommendations or benchmark for the best possible implementation of a telecare solution, documenting in detail what ***good*** looks like. Furthermore, since adoption of digital infrastructure acts as an enabler for improved integration, joined-up delivery of care, data exchange and business intelligence, it will also describe what ***better*** looks like.

The Blueprint will be a living document that focuses on the end state of telecare services in 2025. The Blueprint will be informed by first-hand experience of specific projects with local telecare services. This document will focus on how we effectively ensure consistent local service delivery, as we lay the foundations for a Welsh Telecare Strategy (since completed in July 2022). This document can also be used to assist local telecare services in the development of their request for proposal (RFP) for a digital Alarm Receiving Centre (ARC), with detailed information contained in Appendix B, Digital ARC Requirements.

1.2 Document Structure

The Blueprint will inform the direction of travel for the Telecare Programme. It will set the objectives for the Telecare Programme, using the POTI model (Processes, Organisation, Technology, and Infrastructure) exploring the impact and changes for TEC Cymru and local telecare services. This document will include the principles that underpin the target operating model for telecare services, also taking into consideration the current landscape in Wales.

This document will also include high level technical specifications for digital telecare equipment (lifeline alarms etc. and ARCs).

2. Quality Control through Consultation

To maximise consensus and ensure this document is robust, relevant, and authoritative, periodic opportunities to provide inputs, refine the detail and align with emerging Wales-wide data and technical strategies will be welcomed from the following specialist individuals and groups:

Contact Type	Who	Description of specialise input
Information architecture	Ann Wrightson	Head of Information Architecture at Aneurin Bevan University Health Board; Technical standards information
TSA	Tim Mulrey	Digital migration of telecare services lead at TSA; Specialist knowledge and expertise relating to the digital migration of telecare services
Consultancy	Richard Parkinson	Director of FarrPoint; Specialist knowledge of TEC programmes
Telehealth	Michelle Cook	National Telehealth Programme Manager; Exploring synergies and dependencies between both programmes

3. Current Telecare Landscape

3.1 Overview

There are 22 local authorities in Wales, all of which offer a version of a telecare service. There are numerous housing associations that also offer telecare to its tenants, and there are multiple private sector businesses offering telecare as well.

The TEC Cymru Telecare Discovery Report identified 7 ARCs in Wales spread across the nation, banded into 3 categories:

- Small ARC's (less than 5,000 telecare connections)
- Medium ARC's (between 5,000-10,000 telecare connections)
- Large ARC's (more than 10,000 telecare connections)

Small ARC's

Local authority name	Number of connections (as of April 2020)	Current platform	Digitally enabled? (as of October 2022)
Vale of Glamorgan Council	2,738	Enovation UMO	Yes
Rhondda Cynon Taf County Borough Council	3,622	Tunstall PNC 8.2	No

Medium ARC's

Local authority name	Number of connections	Current platform	Digitally enabled?

Merthyr Tydfil County Borough Council	5,371	Tunstall PNC 8.2	No
Caerphilly County Borough Council	5,792	Tunstall PNC 8.2	No (out to tender)
Cardiff Council	6,466	Tunstall PNC 8.2	No

Large ARC's

Local authority name	Number of connections	Current platform	Digitally enabled?
Galw Gofal (North Wales partnership)	16,111	Jontek Answerlink	Yes
Delta Wellbeing (local authority trading company)	34,511	Tunstall PNC 8.2	No (out to tender)

3.2 Digital Migration and the role of TEC Cymru

It's imperative that to achieve the desired intermediate and end states described in the Blueprint, the 5 ARC's that use analogue connectivity in Wales are upgraded by the end of 2023. The main driver for this is the planned migration of all equipment in the UK using the Public Switch Telephone Network (PSTN/analogue). This work is scheduled to complete in 2025, but the imperative for an earlier migration of services is driven by the UK-wide decision to serve stop & sell notices on all telephony exchanges by the end of 2023.

The Discovery Report highlighted the crucial role TEC Cymru should play in supporting the shift to digital telecare across Wales. Therefore, TEC Cymru will provide dedicated help and guidance to local telecare services, ensuring a consistent approach to migration, focusing on the safe transfer to digital telecare, as well as unleashing the countless benefits brought about by the switch over.

Galw Gofal, a North Wales collaboration between 4 local authorities already have approximately 800 true digital connections (using SCAIP). The platform they use is not true SaaS, however we will support their effort to move to the cloud when appropriate. The Vale of Glamorgan migrated their ARC to SaaS, utilising Enovation UMO, and went 'live' in August 2022. TEC Cymru have funded their first 12 month running costs and will work with the Vale on embedding national initiatives such as the Minimum Telecare Dataset and BI Dashboard.

2 telecare service providers are underway in transitioning their ARC, Delta Wellbeing and Caerphilly Council. TEC Cymru will actively engage with both services to build an understanding on how to support other local authorities when they choose to migrate.

Moving from analogue to digital telecare should be about more than just replacing existing technology on a like-for-like basis. Whilst simple replacement is an option, a more fundamental redesign of the TEC on offer has the potential to transform local telecare services, along with health and care systems across Wales to the benefit of those people who rely on them. Understanding the scale of the impact and defining a vision for future state telecare services are the vital first steps in creating a roadmap for the digital transition. The roadmap for local telecare services to adopt needs to enable a rich mixture of technologies and services from multiple suppliers, all within an evolving telecommunications infrastructure.

4. Principles underpinning the Target Operating Model

In this section, consideration will be given to:

- The current conditions in which services are being delivered/operated, as at end of 2021.
- The target state at the end of the last phase of the programme, defined as end of 2025.
- Where appropriate, an optional intermediate state defined as the end of 2023.

Appendix A contains a more granular consideration of elements of this Blueprint which are summarised in the following paragraphs.

4.1 Cloud

4.1.1 Current Challenges

Most Welsh local authorities have already migrated some existing telephony and ICT systems across to the cloud, with widespread adoption of Microsoft 365, Microsoft Azure and Amazon Web Services. However, 6 of the 7 ARCs operate an 'on premise' solution, entailing servers, cabling and other physical hardware on their racks taking up a considerable amount of space, and consuming a lot of power.

4.1.2 Future State

TEC Cymru advocates a principle of ***Cloud by Default*** in the provision of ARC services, utilising Software as a Service (SaaS).

With cloud-based telecare, calls from service users are answered by Control Centre staff connected to the cloud-based telecare solution over the internet or a dedicated network connection. This approach means that there are a lot fewer IT infrastructure changes required to support the migration to digital.

Key benefits of moving to a cloud service include:

- Providing a future-proofed and digital ready telecare solution;
- Telecare is procured as a service, not a system, meaning technical issues are the responsibility of the supplier. The local authority would then monitor the supplier's compliance with agreed service levels;
- A cloud-based solution requires fewer changes to IT infrastructure;
- Local telecare services can take advantage of efficiencies and service improvements offered by digital technology;
- There is an enhanced ability for seamless data extraction;
- Supplier is responsible for ensuring disaster recovery arrangements are in place for the ARC solution;
- Changes to existing operational processes are minimised.

4.1.3 Intermediate State (first-generation 'digital' telecare)

With most ARCs in Wales still operating in an 'analogue' state, and with 'digital ready' telecare equipment already being deployed, an intermediate state is feasible where lifeline alarms utilise GSM/cellular communication (2G, 3G, 4G, and LTE) to send calls to the existing ARCs in operation in Wales. This is considered a short-term solution to remedy any issues with existing analogue service users if they have had digital phone lines installed in their property. TEC Cymru would recommend that local telecare services no longer install analogue equipment, as detailed by the TSA in their latest report Commissioner/Buyer Guidance, Transitioning your Social Alarm Systems from Analogue to Digital[1]. The analogue call failure rates are high (in some areas of Scotland 11%[2]) as differing types of communication methods are utilised on an ageing infrastructure that is not as widely supported as before.

All 'digital/VoIP' ready telecare equipment (lifeline alarms) are capable of using GSM, so in areas of good mobile signal, these must be installed to ensure that the overall costs for migration as local telecare services near the switchover deadline are minimised. All of the main suppliers providing lifeline alarms in the UK using GSM are capable of sending calls to Welsh ARC's operating using analogue infrastructure.

4.2 Open digital protocols

4.2.1 Current Challenges

The 7 analogue ARCs in Wales use a set of protocols to establish the safe transfer of voice and signalling data from the lifeline alarm to the ARC. There are some protocols that are 'proprietary', typically developed by the supplier of the telecare equipment (lifeline alarm), which leads to local telecare services effectively becoming 'locked in' with that supplier.

When procuring new, innovative TEC solutions, local telecare services must check if they can send alarm signals to their ARC platform via open protocol. If the TEC solution is manufactured by a commercial rival to the ARC supplier, then this process can take a significant amount of time and effort, lead to increased development costs passed onto the local telecare service and some ARC suppliers may simply refuse to integrate a particular piece of TEC equipment due to commercial sensitivities.

Other issues include:

- Local telecare services can only procure telecare equipment (lifeline alarms, pendants, etc.) from the supplier of the ARC;
- There are commercial conflicts of interest between the ARC supplier and the provider of the TEC equipment, this undoubtedly leads to slow integration timescales (if the ARC supplier commits to integration in the first place);
- Innovation within the industry is stunted, as the latest innovative TEC solutions may not be able to link to the ARC, therefore local telecare services will not procure at scale (too costly and timely);
- The data being sent by the TEC equipment is limited by the ARC platform, due to the current data import mechanisms in place;

[1] Commissioner/Buyer Guidance, Transitioning your Social Alarm Systems from Analogue to Digital. 2021

[2] https://www.tsa-voice.org.uk/downloads/pdfs/analogue_to_digital_shift_-_10_facts_-_march_2020.pdf

- Data sharing doesn't take place at scale, as most ARC suppliers do not allow access to their database via API's and current data export mechanisms are not fit for purpose;
- There is a lack of innovation from wearables and mass consumer solutions, with them not being interoperable with the ARC platform;
- There is a reduced choice to the citizen, as they are limited to what the 'ARC supplier' sells; telecare/TEC suppliers effectively dictate the direction of the market.

4.2.2 Future State

TEC Cymru advocates a principle of ***Open Digital Protocols*** in the provision of Telecare and TEC services.

This approach means that the telecare solution can make use of equipment from a number of manufacturers, selecting equipment that offers the best features, or the best cost. Using open protocols also avoids the risk of supplier 'lock in'.

The open digital telecare protocols endorsed by TEC Cymru as part of the Target Operating Model for Telecare in Wales are:

- **SCAIP**
- **TS50134-9 (CENELEC);**
- **NOWIP** *(Grouped Housing)*

(Note - these protocols only focus on the connection between the lifeline alarm and the ARC.)

One ARC supplier is advocating the use of their own proprietary protocol. Their platform does cater for SCAIP and CENELEC, however no testing has been completed as of yet. This shows the immaturity of the marketplace, with suppliers vying for an advantageous position amongst themselves. As detailed in the current state above, proprietary protocols were commonplace with analogue telecare services, TEC Cymru would strongly advocate against the use of these types of protocols to avoid 'supplier lock-in'.

As TEC becomes more mainstream, the use of open protocols that are industry standard (British Standard etc.) will allow for greater consumption from citizens and allow greater scope for telehealth and other TEC solutions to be managed by a digital ARC.

4.3 Consistent Business Intelligence (BI) and performance measures

4.3.1 Current Challenges

Data extraction is notoriously difficult using the current telecare ARC systems in operation in Wales.

Telecare platforms typically don't have the relevant data extraction tools required. Most local telecare services have to develop their own suite of data measures required via a 3rd party application provided by the ARC supplier. This presents some issues, most notably system interoperability (being able to view citizen data across multiple software platforms) and exporting to CSV files instead of Excel/Power BI. This is further complicated by most ARC's

sitting outside of corporate ICT networks hosted by the local telecare service (local authority), so data needs to be securely emailed, or saved onto a USB device for further manipulation/interrogation. The data requires a lot of attention to make it relevant, through pivot tables, formulas etc. even the most basic of tasks such as totalling up service user numbers is hard to carry out.

In terms of performance, the current focus for local telecare services is to adhere to key performance indicators (KPI's) detailed by TEC Quality (certification body for the Telecare Services Association, TSA). Local services are subject to annual audits to assess their performance against these KPI's. These KPI's focus on response times to emergency calls, installation timescales and adherence to legislation (adequate First Aid training etc.) More needs to be done to focus on the true value that local telecare services provide to the citizen, their family/friends, primary/secondary care, WAST, Social Care, local authorities, and housing.

Local telecare services are also free to set their own internal KPI's and other performance measures, which leads to further fragmentation of the telecare services in operation in Wales. However, this does lead to innovation, and TEC Cymru will assess what and where performance data exemplars exist in Wales and work to scale good work across the nation.

There are 2 main areas of exploration for the Target Operating Model in respect of BI:

1. Common data standards to facilitate data sharing between a digital telecare ARC and third-party software (health and social care systems);

2. Exploitation of telecare data in a consistent manner, and 'data crunching' at national level.

Currently, there is no agreed 'technical standard' in relation to data collection/structure, sharing, extraction, processing or formal linkage between a telecare ARC and secondary software platforms (health and social care). This is best achieved by an API between the telecare ARC and local authority care platforms (e.g., Carefirst). TEC Cymru will drive this work forward with the Welsh Technical Standards Board (WTSB) on how to achieve a desired technical standard that is mandated within any request for proposal (RFP) specification completed at local level.

As of October 2022, we have developed a first version Minimum Telecare Dataset, 54 metrics that all Welsh services will adopt in the near future.

4.3.2 Future State

Use of common data standards will allow countless benefits to be achieved, not just the safe transfer of alarm call data, but wider benefits of connecting health and social care systems via interoperable solutions.

Common data standards will make data extraction easier and establishing a minimum data standard for the collation of citizen and service data at local level will allow TEC Cymru to demonstrate the efficacy of telecare services at national level. This includes national take-up (connections), total amount of calls (and types), WAST (ambulance) calls, care plans, demographics, and the possibility of telehealth data. By capturing new, relevant data sets, the case for investing in telecare (and the associated return on investment being evidenced)

will allow take-up to be expanded and closer integration between health and social care achieved.

TEC Cymru advocates that digital ARC suppliers have relevant standards-based API's for data synchronisation across platforms. Local telecare services should perform a review of their information architecture to ascertain how these services can tie in together.

Specific actions for the telecare programme include:

- Collaborate with the WTSB on how it would help the telecare programme in respect of business intelligence and technical standards;
- Evidence the importance of consistent data capture across multiple platforms crossing health and social care (efficiencies, sustainability, opportunities etc.) (document examples of this being done elsewhere within health);
- Evidence the importance of a single patient/citizen record and how to achieve a common telecare citizen record;
- Exploring the possibility of aggregated data being sent to and from the NHS Wales app via the ARC platform.

4.4 Telehealth Integration

4.4.1 Current Challenges

The Discovery Report highlighted that 4 local authorities offer some version of 'telehealth' within their telecare service. This shows that adoption is not widespread when being used in a telecare environment which mirrors the early stage of implementation of telehealth monitoring platforms in NHS Wales services. There are currently multiple pilots of different technologies and platforms happening across social care, primary and secondary care in different specialities, all seeking to understanding and identify the potential benefits of telehealth technologies in wellbeing and chronic condition management. There is not yet a consistent approach to where, when, and how telehealth technologies can be best implemented to help patients take more control of their wellbeing or provide clinicians with the right information to enable them to target their support to the patients in the most need. Reasons for the slow implementation of telehealth technologies are explored in the TEC Cymru Telehealth Discovery Report (available on request).

There is an increasing interest in the potential for using a telecare system to also deliver health information as both rely on the monitoring of the citizen/patient in their home. Many telecare suppliers see this as a commercial opportunity as telecare products are more common in homes in Wales. An assumption can be made that some telehealth products and solutions can/should be provided by local telecare services due to their economies of scale and access to large pockets of the local population. However, formal links into their local health boards would need to be established to build a stronger picture of the 'citizen journey'.

Some of the current issues for telecare and telehealth becoming more integrated include:

- **Non-clinical staff monitoring data**
  Concerns about the clinical safety implications of telehealth platforms are still being explored, so any proposal where data is gathered and monitored by non-clinical staff (being delivered by a local telecare service) would cause concern. The current best

use of this technology is to identify where patients could benefit from intervention, treatment changes etc. ahead of a potential deterioration in condition leads to needing acute services. This requires the clinical review of incoming data to ensure appropriate treatment and intervention decisions are actioned.

- **Regulation of devices**
  There is a potential need for telecare products wanting to move into telehealth requiring MHRA regulatory approval as a medical device.

- **Budget Responsibility**
  Who pays for this service and who benefits is a real barrier and more evidence is required to understand and inform commissioners. If local telecare services are paying for telehealth, the financial beneficiary will be the NHS as the technology can lead to reduced demand for healthcare services. Under current funding infrastructures this would create no incentive for the local telecare service to invest.

- **Integration**
  How telehealth platforms will integrate with existing NHS systems is still not clear, as well as future developments such as the forthcoming NHS Wales App and National Data Resource. What social care services or telecare products would be able to access these systems is also unknown.

- **Interoperability**
  As purchase of telehealth remote monitoring platforms starts, it is likely that there will be multiple platforms purchased within one local health board or even one speciality, to ensure that the right products are provided to the right patients to obtain the right information. Most current telehealth platforms do provide multiple modules to support different conditions and so local health boards and health services will make the right procurement decisions for their needs and are unlikely to consult with social care services or providers in that process.

4.4.2 Future State

As TEC Cymru has a dedicated telehealth programme, synergies can be explored as new, innovative products and services arrive on the marketplace.

Telecare services are offered via local authority, and telehealth is predominantly delivered via local health board. For true efficiencies to be realised, an element of shared/integrated health and local authority workforces would be required, with dedicated clinical teams on hand to keep citizens in their own home for longer, supplemented with a telecare team to respond to crisis moments.

The digital migration of the telecare industry provides a unique opportunity for more widespread adoption of telehealth products and solutions. Interoperability and established open protocols driven by defined technical standards are therefore crucial. The current analogue set up of telecare equipment and ARC's limits telehealth to 'sitting outside' on separate software platforms; integration to a cloud based digital telecare ARC ensures data is not held in silo and the integration of health and social care is driven, supported by TEC.

4.5 Response Services

4.5.1 Current Challenges

There are 8 local authority areas in Wales covered by a Response Service (physical response to someone who has alerted their telecare ARC via an alarm). Response Services are offered in a varied fashion across Wales, with one being provided by a private domiciliary care agency, and others are funded by payments from service users. Providing a physical response to citizens opens possibilities for wider collaboration opportunities with existing community services and possibly the third sector. Some Response Services have Care Inspectorate Wales accreditation, which allows them to carry out care duties in the home. An assumption can be made that this helps reduce bed blocking in hospitals and ensures people are supported in their own home, driving down the likelihood of readmission. Some Response Services also 'bridge' the gap between a citizen being discharged from hospital and having a care plan commencing with a chosen agency. Currently, in the local authority areas where there is not CIW accredited Response Services in place, citizens will remain in hospital post discharge assessment until a care agency has been commissioned.

Most Response Services will only respond to falls, with staff being trained in first aid-at-work and manual handling. They will also receive training for auto external defibrillator use. These services are a vital lifeline for citizens, with an average response time for someone who has fallen in Cardiff being 17 minutes in 2020-21.

4.5.2 Future State

The aim for TEC Cymru is for the entirety of Wales to be covered by Response Services by the end of 2025, provided by health, social care, and third sector. The intention is for Response Services to be operated via formal partnership arrangements across allied sectors, ideally endorsed and ratified by the Regional Partnership Boards in each area.

Response Services have the potential to gather powerful data and add true value to telecare services. However, a 'national' Response Service model requires consistency in service delivery approach. Consistent business intelligence data being exported out of interoperable solutions (ARC) is crucial, linking with other health and care records (possibly the NHS Wales app) will supplement the reporting to ensure a 'citizen journey' can be plotted. Savings and avoidance costs to those involved in the Response Service partnerships should be presented as well as quality of life year (QOLY) measurements for the citizen.

Some benefits of a national Response Service include:

- Timely response to moments of crisis;
- Timely response to maintenance/technical issues with the telecare equipment;
- Timely installation of TEC equipment to help alleviate pressures of safe discharge from hospital;
- Reduction in elected and emergency admission to the emergency department;
- Stronger signposting links between health, care and housing are established;
- Better experience for the citizen;
- Significant cost avoidance for stakeholders.

5. The role of TEC Cymru in delivering the Target Operating Model

In this section, the role of the Telecare Centre of Excellence in delivering the TOM is described in the context of the current and future landscapes in Wales under the following headings:

Element	Description
Processes	The changes to processes and operational business models because of the work delivered by the programme (e.g., introduction of new ways of working)
Organisation	The people changes that arise from the programme from organisational culture to specific roles/capability that an organisation may require
Technology	The technology requirements for the programme, including systems, tools and infrastructure (e.g., new computer systems)
Information	The information required at the different phases of the programme (e.g., changes to reports and data requirements)

Current State	Intermediate State	Future State
Processes		
We currently have 4 members of staff working on the TEC Cymru Telecare Programme: • Programme Manager (100% FTE) • Business Change Manager (100% FTE) • Data Advocate (20% FTE) • Business Intelligence Analyst (20% FTE) Local telecare services have limited or no access to specialist project management staff (Project Managers, Business Analysts etc.)	As the Programme evolves, with local telecare services requiring dedicated project management resource, more staff dedicated to the Telecare Programme will be recruited. TEC Cymru will have a process for reviewing submissions for dedicated help and support from local telecare services. We will provide an approval process for selecting local telecare services to partner with and provide dedicated resource to.	TEC Cymru Telecare Project Managers will be working across multiple local telecare services to achieve the desired target operating model for the digital migration and the 'Beyond Digital' initiatives.

Currently, there is no central repository for documentary assets relating to telecare provision.	A Resource Centre will be developed to catalogue telecare related documentation, for use by local telecare services. Processes will be created for the retention and review periods of said documentation, to ensure it remains relevant and up to date. The website will have access to documentation via the Resource Centre. Also, an Implementation Support section will be available for local telecare services. There will be other information such as a telecare services directory, products and vendor's information and case studies/citizen stories on the important role telecare plays in their lives.	Ongoing enrichment.
Organisation		
There are 8 local authority areas that are covered by a Response Service within their local telecare service.	TEC Cymru will help support a regional Response Service in a chosen local health board area. TEC Cymru will commission a research and evaluation exercise to understand the importance of a Response Service. This will be sent to key stakeholders and Regional Partnership Boards (RPB's).	All 22 local authorities and multiple housing associations will have a Response Service in place. Partnerships will be formed with WAST and the third sector to deliver a collaborative approach to delivery, with input from RPB's.
Once a local telecare service has migrated to a digitally enabled cloud platform, new processes will be required to achieve optimum service efficiencies for their organisation. New processes will be completed by the local telecare service but aided by TEC Cymru.	All new processes will be documented on the TEC Cymru Telecare Resource Centre and kept generic and not specific to one organisation or ARC supplier. Some of these new processes will include, but are not limited to:	Achieved by the 2023 interim state.

	• Remote/agile working; • Referral and assessment process; • Stock management; • Performance reporting/business intelligence (BI) data; • Responding to emergency call outs (physical response) via Responder application; • Scheduling ad-hoc jobs to field operatives (TEC installation etc.); • Telehealth modules may be utilised and would therefore require additional processes for triage/signposting purposes.	
There isn't a Telecare Strategy for Wales, so projects are created in a siloed manner as described above, with limited strategic links back to national policy laid out by Welsh Government.	A Telecare Strategy for Wales is completed to manage the migration of local telecare services, establishing new, recommended processes that will be stored on the TEC Cymru Resource Centre website.	The Telecare Strategy will be updated periodically to reflect the changes. Ultimate long-term aspiration is the creation of a Business Case to Welsh Government to provide ring-fenced funding for telecare services.
Technology		
There are no technical standards relating to telecare systems that are widely adopted across Wales. These technical standards relate to the ARC linking with third party health and social care systems.	Technical standards will be ratified by the Welsh Technical Standards Board (WTSB) and are routinely used across the telecare sector in Wales.	Review of existing technical standards and the addition of new relevant technical standards will be completed routinely by TEC Cymru, via WTSB and the Telecare Programme Board to assess if they are still relevant. This information will be held on the Telecare Resource Centre.
All current ARC platforms and the majority of TEC equipment use proprietary protocols for communication between lifeline alarm and ARC.	As above, the telecare technical standards will relate to interoperability and promote the use of open protocols as outlined in this document; *4.2 Open Digital Protocols*.	New protocols will need to be assessed via the Telecare Programme Board and WTSB for relevance and to ensure they conform to the required technical standards outlined above.

		This information will be held on the Telecare Resource Centre.
The vast majority (over 98%) of telecare lifeline alarms installed in Wales currently use analogue communications to send a voice signal to the ARC.	At least 60% of lifeline alarms to be using VoIP or GSM and associated open protocols (outlined above). Data will be sourced via members of the Telecare Working Group and presented in the first version BI Dashboard.	100% of lifeline alarms to be using VoIP and associated open protocols (outlined above). Wales to be the first nation in the UK to have 100% digital local telecare services (all 22 local authorities)
Information		
The Assistive Technology Learning Improvement Network (AT LIN) is the only forum for information exchange dedicated to Welsh telecare services.	The AT LIN, Telecare Working Group and Telecare Programme Board are all established forums for information exchange, promoting consistency in service delivery. Telecare Community of Practice events are delivered quarterly.	TEC Cymru will also closely align with the WLGA, ADSS Cymru, TSA and other key social care, health, and industry stakeholder networks to ensure ongoing engagement is paramount.
The Discovery Report is the only relevant, up to date, document specific to Welsh telecare.	More key strategic documents relating to telecare in Wales are co-produced by TEC Cymru and our consultancy partner(s).	Key strategic documents are routinely created and held on the Resource Centre on the TEC Cymru website.
There is no collective understanding of current projects/initiatives underway and being delivered by local telecare services and their respective health boards to inform adoption elsewhere in Wales.	A Project Register will have the necessary information relating to current projects at different phases of their project life cycle, hosted on the TEC Cymru Telecare website. TEC Cymru will actively support these projects if the local telecare services require help/support via the Implementation Support section of the website.	The Project Register will be routinely updated, with 6 monthly reviews, information will be collated via the Telecare Working Group.

There is no collective understanding of the current technology in operation by local telecare services.	A technology map will be created (using the Project Register) to drive understanding of the types of TEC being consumed by citizens across Wales. The Technology Map will be updated every 6 weeks via the Telecare Working Group.	Achieved by the 2023 interim state.
Each local telecare service currently makes their own decisions on procurement of ARC solutions and TEC equipment.	Local telecare services will still be responsible for the procurement process, but TEC Cymru will be available to provide impartial advice on which products/solutions sit on which frameworks.	TEC Cymru will have its own 'preferred supplier' programme, where prospective TEC suppliers are vetted accordingly and assessed against strict criteria (technical standards etc.) TEC Cymru to house their preferred suppliers on its own dedicated TEC framework.
Communication and marketing campaigns are not delivered nationally, most local telecare services do not have dedicated marketing or communications staffing to drive awareness of their service.	A national telecare campaign for Wales is planned for 2023. This will be routinely refreshed via social media channels, communities of practice events. We will have published an Engagement Strategy outlining our plans for stakeholder relationship management in 2022/23.	Achieved by the 2023 interim state.

Appendix A; Assumptions

ID	Category	Description of Assumption	Owner	Review Date	Actions to ensure ongoing validity of assumption	Status
1	Engagement	TEC Cymru continues to keep track of technical developments and industry trends	Aaron	25/10/2022	Participation in industry and care sector forums	Open
2	Engagement	TEC Cymru rapidly establishes itself as the authoritative voice of Telecare in Wales and has the means/opportunities to realise the BP	Aaron	25/10/2022	The Programme Board matures as a body that owns and promotes the BP and Strategy and is informed by the inputs and guidance from the LIN and Working Group.	Open
3	Collaboration	TEC Cymru is able to draw on the expertise of specialists to inform the evolving BP and its strategy	Aaron	25/10/2022	Specialists are available to contribute to and review outputs from the Telecare workstream	Open
4	Finance	Funding, whether of TEC-C or of providers, is not an impediment to realising the BP	Aaron	25/10/2022	Forward budget plans need to be robust, reviewed and kept up to date	Open
5	Collaboration	TEC Cymru is able to work constructively and in collaboration with Wales-wide organisations with an interest in TC rather than in competition	Aaron	25/10/2022	The Engagement Strategy needs to offer relevant and up to date mechanisms for enabling all forms of collaboration	Open

Appendix A: Detailed Technical considerations

Digital ARC requirements

(Intermediate state of Blueprint; all Welsh based ARC's to be fully VoIP enabled by the end of 2023)

This appendix contains further detailed technical considerations that underpin the Blueprint, and which would form the basis of any future RFP.

Digital protocols

As a minimum, all digital telecare ARCs shall support all of the following:

- **SCAIP**
  The Social Care Alarm over IP (SCAIP) protocol was developed in Sweden in 2014 to support the country's move to digital telecare. It is published by the Swedish Standards Institute as SS91100:2014. For several years SCAIP was the only open digital telecare protocol available for telecare lifeline alarms, and so it has been used widely for the digital telecare rollouts completed worldwide to date and is supported by a range of manufacturers' equipment.

- **TS50134-9 (CENELEC);**
  The standard is very similar to SCAIP (which was used as the starting point for the standard's development). TS50134-9 is also backwards compatible with SCAIP, meaning that devices using both protocols can be supported at the same time by an ARC. The main difference between TS50134-9 and SCAIP is security. TS50134-9 states that personal and sensitive data should only be transmitted over a secure connection.

- **NOWIP**
  NOWIP is a digital protocol originally developed by several telecare manufacturers for use in grouped schemes. NOWIP has now been adopted as a British Standard, and so is also known as BS8521-2 (not to be confused with BS8521, which is an analogue telecare standard).

Failover capabilities
Digital ARC's (and associated lifeline alarms) must be able to failover from using digital protocols to analogue, in the event of a power cut/outage of the digital network connection. The default position should be to utilise the GSM network, providing there is sufficient signal strength within the property.

Simultaneous support of analogue and digital protocols
Digital ARC suppliers must offer a solution that can simultaneously support alarm devices using digital alarm protocols and analogue alarm protocols. There are some digital ARC suppliers that only cater for digital protocols, with 98% of Welsh telecare lifeline alarms still using analogue protocols, local telecare services in Wales when upgrading, should adopt a supplier that can cater for both. If they don't, then they would effectively be paying for 2 ARCs, their current analogue set-up, and the new digital ARC.

By procuring a digital ARC that can simultaneously support both, there is greater flexibility for local telecare services when upgrading their citizens TEC equipment, prioritising those that have 'legacy' equipment in their homes. This keeps the cost of migration down, but also ensures that safe communication methods are embedded regardless of what piece of TEC equipment is in-situ.

Voice options
A digital ARC solution must be capable of receiving calls via 'dial-up' and 'VoIP'. This ties in with the above point on simultaneous support of analogue and digital protocols. The digital ARC solution must be able to support both forms of voice traffic being used simultaneously (i.e., some alarms being configured to use VoIP, some dial up).

Connectivity
TEC Cymru advocates ***Cloud by Default*** when procuring a digital ARC. As such, a dedicated internet connection provided by the local telecare service would be sufficient for call handling traffic. If the call handling staff are working remotely (at home etc.) then a minimum 10mbps connection would be required, preferably via Ethernet, however Wi-Fi can be used. We would advocate that there is sufficient cover when remote working, with back-up plans in place embedded into the local telecare services Business Continuity Plan.

ICT infrastructure
Cloud by default means infrastructure impact is minimal. The only hardware required would be laptops/CPU, headsets, an internet connection, softphone, and SIP trunks (potentially). This is dependent on what digital ARC supplier is chosen for the upgrade.

Telecare providers need to ensure that they understand which elements of the IT solution they are responsible for providing and the support arrangements in place for these. If required, a DR plan should be developed that ensures services continue in the event of a failure of the IT infrastructure (for example, out of hours when IT support is not available).

We would also advocate a digital ARC platform that can effectively 'tap into' other systems used by the local authority, or in the local health board. This would ensure citizen data is updated routinely and the issues currently experienced in an analogue setting (data silo) do not happen in a 'post-digital' telecare set-up.

Business Continuity Planning (Disaster Recovery)
With cloud based digital ARC platforms, the expectation is that disaster recovery is built into the cloud infrastructure supplied, with multiple levels of redundant components and paths.

Service Level Uptime (SLA) is the amount of time that a service is online, available, and operational. The target availability level should be between 99.7 and 99.99%, due to the 'life critical' nature of a telecare service.

Support desk provision
TEC Cymru would recommend a full 24/7 UK based support desk with very high levels of responsiveness. Support desk staff should be called/accessed directly, or tickets raised via email or web portal (CMS). Multi-level support structure and extremely high levels of customer satisfaction must be provided. Local telecare services should be able to customise a Service Level Agreement to enquire about bespoke support arrangements. Other areas such as patch management should be considered, with local telecare services adopting the principles outlined in the ITIL framework.

Cyber security
Cloud based digital ARC suppliers must have robust measures in place to ensure that data is protected at all times.

The digital ARC supplier must provide evidence of being certified to Cyber Essentials Plus and ISO27001 as a minimum. Customer data must be held in the UK and backed-up within the UK as well. The supplier must provide information on risk management (e.g., Information Security Management System (ISMS)).

Other cyber security measures include network security, malware prevention, service configuration, managing user privileges and monitoring.

Local telecare services will be responsible for sending their own documented 'Cloud Impact Assessment' / 'Security Questionnaire' to potential digital ARC suppliers via their ICT service. Each response will be graded for risks associated with implementation of the software, with these managed and documented in the project plan overseen by the local telecare service.

Product Development roadmap

ARC suppliers will be expected to share their Product Development roadmap for their solution if asked. This will ensure that TEC Cymru and the local telecare service involved in the upgrade are made aware of products, features and solutions that will become available in the future, and more importantly what is not available at the point of purchase and implementation.

Also, considerations need to be considered for capacity of users, as most digital ARC suppliers favour a 'licencing' approach for payment, where the number of telecare connections are banded into an appropriate pricing structure. Digital ARC suppliers must provide details of any limitations due to technology, licencing, or other factors, that restricts the capacity of the solution to support digital operation, for example, in terms of the number of digital alarms/service users connected, or the number of call takers able to receive digital alarm calls.

Where limitations do exist, digital ARC suppliers must provide full details of the capacity supported by their proposed solution. They must also provide full details of how additional capacity is provided, and associated costs.

Call handling considerations

Call handling requirements will need to be defined by local telecare services. Minimum standards such as audible call notifications, the type of TEC equipment sending the alarm and the ability to toggle between simplex and duplex once a call is 'live' should be deemed mandatory for digital ARC platforms. Other key considerations such as call prioritisation (e.g., fire equipment taking top priority) should also be a feature that can be provided. There are non-mandatory factors to take into consideration, including conference calling, skills-based routing and operator assistance.

Database considerations

All digital ARC systems must be capable of including and safely storing the following information as a minimum:

- Unique Unit ID;
- Unit phone number, where applicable (IP only device will not have a phone number);
- Client full name;
- Client "known as" name;
- Client DoB;
- Client address;
- Client landline/mobile number;
- Any 'risk' associated with the client or property;
- Tailored protocols and guidance;
- Health information;

- Professional contacts;
- Personal contacts;
- General free type notes, to log general and administration information;
- Any other ID required by the service, for example account number and Social Care Reference number.

Other data fields required within a digital ARC are highlighted within the Minimum Telecare Dataset document.

Other considerations for the database include having configurable characteristics for service users, being able to redact service user data in accordance with GDPR (right to be forgotten) and having enhanced call history logs for the auditing of calls.

Equipment inventory
Digital ARC solutions must be able to keep accurate records of TEC equipment and its location (stock room, vehicle in transit, service users' home).

With the advent of new digital telecare equipment, it's imperative that accurate records of SIM contract length are provided. This allows local telecare services to plan their finances accordingly.

Digital IP Telecare equipment requirements

(Future state of Blueprint; all Welsh telecare service users to be using digital (IP) telecare/TEC devices by the end of 2025)

TEC Cymru have taken the below stance on each of the key elements when specifying the requirements for procuring 'digital' telecare lifeline alarms. This can help local telecare services in their procurement of these devices, in anticipation for the migration to digital telecare.

Key functionality of IP enabled telecare equipment
The following should be regarded as minimum requirements:

- To be able raise an alarm call from the lifeline alarm, pendant and/or range of telecare sensors;
- To have access to devices via a Device Management System *(broken down further below),* to configure remotely, thereby avoiding unnecessary engineer visits;
- Remote reprogramming, which may require the ability to upgrade software 'over the air';
- Remote programming of batches of alarms, making it possible to change selected alarm settings at the same time. This can be a huge cost saving to the local telecare service. This would be more relevant post 2023 when Welsh ARC's will be digital telecare ready. Any IP ready telecare alarms currently installed in service users homes can remotely have their protocols changed from GSM/analogue to a digital protocol (SCAIP/CENELEC);
- To constantly monitor equipment and raise notifications if they fail to respond via email.

Key communication options for IP Telecare equipment
Some immediate considerations for communication options for IP enabled telecare equipment include:

- Giving preference to the use of TEC Cymru agreed digital protocols rather than proprietary protocols;

- Methods for connection and transmission for lifeline alarms that use various communication path options, to tailor the installation to the service user's home connectivity. Possible communication paths include:
  - Mobile Data/GSM (SIM)
  - Fixed/wired (Ethernet)
  - Wireless (Wi-Fi)
  - Telephone line (for service users not relying on voice band signalling);
- Options for switching automatically to alternative communication paths *(broken down further below):* The ability to have a Primary and Secondary voice communication paths are essential. Examples include:
  - Primary: Mobile Voice (SIM/GSM) and Secondary: Fixed (Ethernet/Voice Over Broadband VoBB)
  - Primary: Fixed (Ethernet/VoBB) and Secondary: Mobile Voice (SIM/GSM).
  - Primary: Mobile Voice (SIM/GSM) and Secondary: Mobile Voice (SIM/GSM) – 2 SIM ports

Device Management Systems (DMS)
All IP digital telecare equipment must be capable of sending routine heartbeats to their suppliers' DMS. This will ensure that Control Centre staff can view any issues with the connection, ensuring that any potential issues with connectivity are mitigated and appropriate Business Continuity Plans can be invoked.

Connectivity of IP Telecare equipment
TEC Cymru will favour a 'dual' method of communication. This would mean a more robust method of communication, with a communication back-up in place. Primary signalling can be hardwired Ethernet connection into the broadband router, or an IP enabled SIM or GSM. Failover capability should ideally be the opposite of the primary; however, one IP telecare equipment supplier has got 'dual SIM' capability.

For IP telecare devices that use the GSM network there are some key considerations. Some of the below considerations are based on future assumptions on how Wales will look in terms of digital connection infrastructure post 2023, when the move towards IP telecare equipment becomes a priority for the programme. They include:

- The most obvious consideration is signal strength; the device must have a suitable signal to be able to make a reliable call to the ARC and to have a good digital speech channel;
- 2G and 3G networks will be decommissioned at some point, with 3G likely to be decommissioned from 2023 and 2G by 2033. Some telecare alarms only support 2G/3G connections and so the lifespan of this equipment should be considered when procuring. 4G capable telecare alarms are becoming increasingly available but can have a cost premium. 5G capable alarms will be developed in time but are not available at present;
- Where GSM is used as either a Primary or Secondary path, it is recommended that the alarm has "roaming capability", so in the event of failed calls/heartbeats, the best mobile network option is available to the alarm;
- Selection of an alarm where signal strength can be checked means that the alarm can be placed for best network coverage. A mobile network coverage meter can also be used as an installer moves around a property, to determine the best location by viewing a Received Signal Strength Indication (RSSI);
- Extended range aerials should be considered if the alarm is in an area where there is poor mobile connectivity;
- Low Power networks have emerged in recent years, paving the way to a range of connected devices and with extended battery life (up to 10-15years). Devices from car parking sensors

to water meters and sealed GPS trackers are now possible without the need for line-powering. A benefit of these technologies is their geographic coverage, where they are targeted to cover "not-spots". There are restrictions though, as data speeds are slower and intended for small snapshots of information, such as GPS location. These Low Power technologies are relatively new, often employing proprietary technologies (e.g., Sigfox, LoRa), and require the build of network infrastructure ('base stations'). This type of system may be optimal for a constrained environment in a town or city;

- Narrowband Internet of Things (NB-IoT) provide other options. These systems are based on 4G cellular technology and are currently favoured by the major Mobile Network Operators, as they present opportunities for upgrading mobile infrastructure to support the technology. This could present a mass coverage option, as we would expect from a mobile service today, and without the need to build a separate network.

For those IP telecare devices not connected to the cellular network, and are hardwired to a service user's broadband via Ethernet, the below considerations must be considered:

- Cyber security measures must be put in place to ensure the sensitive data (including the voice traffic) carried over the internet is secured appropriately. Mobile network-based connectivity can rely on the security offered by the SIM provider – this is not available if fixed broadband is used;
- An IP enabled telecare lifeline alarm that has a wired connection will be limited to installation at locations close to where the broadband router is positioned. Wi-Fi connectivity will provide more flexibility in this respect but currently there has been no widespread testing on the reliability of Wi-Fi;
- A back-up communication path is essential (SIM/Ethernet/Dual SIM failover) to ensure operation if the mains power fails;