



BSI Standards Publication

**Technology enabled care – Assessment
of user needs and risks, system design,
installation and maintenance – Code of
practice**

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Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 September 2024. It was prepared by Subcommittee GW/1/12, *Social alarms*, under the authority of Technical Committee GW/1, *Electronic security systems and products*. A list of organizations represented on this committee can be obtained on request to the committee manager.

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It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the *Shorter Oxford English Dictionary* is used (e.g. “organization” rather than “organisation”).

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Introduction

The development and adoption of technology enabled care (TEC) in the delivery of social care has accelerated in recent years. This growth has exposed issues with workforce development and management systems. In addition, advances in technology, equipment integration, communication pathways and opportunities for TEC usage have brought added complexity to service commissioning and installation design. Other factors, such as contracting of delivery of the service chain to multiple service suppliers, funding pressures and compliance with qualification criteria associated with funding streams, have led to the fragmentation of the delivery of services in this sector.

Fragmentation in delivery shifts oversight and overall responsibility for the performance of the TEC service chain from the service providers to the service commissioner, but without a prime contractor, the service commissioner's role drifts from contract management into managing and co-ordinating service delivery, a change in role that not all service commissioners might have recognized.

Standardization within the TEC sector has focused on product standards (e.g. the [BS EN 50134](#) series), while diversity of service models across Europe has made it difficult to obtain consensus in respect of service chain delivery and performance standards. There is very little consistency in the:

- assessment of the service user's personal risks and needs;
- use of the personal needs assessment to identify and select suitable technology for the service user and to specify the related installation and service design;
- installation practice and documentation;
- equipment maintenance practices; and
- triggering, undertaking and designing of the service user review.

The above safety-critical processes can be further complicated by legislative, regulatory, organizational and cultural factors in respect of information sharing between the service commissioner and/or the various contractors delivering the service. Inefficient information sharing can result in the service user undergoing multiple assessments, being otherwise inconvenienced, experiencing delays, being put at risk or receiving inappropriate technology or service; staff can also be put in risk.

The need for a British Standard covering user assessment, system design, and installation and commissioning of telecare systems has been identified by the UK TEC sector. The consequences of failures arising from the absence of such a document have been identified and led to this British Standard.

TEC is intended to provide safety and security for people living in their own home and can be used to summon assistance. Some service users have no formal or informal support, and these systems are often seen as their only means of support. The use of TEC can enable a person to stay in their own home for longer, facilitate hospital discharge and, in some cases, help to support home-based recovery by augmenting and supporting existing care arrangements.

Although TEC can be designed to provide early detection of changes in service user needs and thereby to prevent further deterioration in an individual's circumstances, there are often simple, non-technology actions that can be taken to prevent the risk from arising, such as decluttering properties, fire-resistant upholstery. The focus of this British Standard is on TEC and not the non-technology preventative actions.

What is now referred to as TEC has previously been referred to as social alarms, community alarms, telecare, dispersed alarms and has also been extended to include telehealth, telemedicine, telecoaching and self-care apps. However, for reasons of user safety, system resilience and reliability, a standards-based approach is required, and the applicable standards are contained within the [BS EN 50134](#) series.

1 Scope

This British Standard gives recommendations for the design and delivery of systems and services to provide technology enabled care (TEC) using connected products.

Note 1 Achievement of the recommendations requires collaborative working between service commissioners and service providers and the willingness of all parties to identify barriers to achieving the desired outcome through review and redesign of services, service specifications and the funding models supported by the provision of TEC.

This British Standard concentrates on identifying and describing the discrete activities within the technology enhanced care service chain along with the required outcomes and outputs from each activity.

This British Standard covers the design, installation and maintenance of TEC services provided to an individual user including:

- the person-centred assessment of risks and needs;
- the identification and selection of connected products to mitigate the risks and manage the needs;
- the correct installation and commissioning of selected product(s);
- the maintenance of the installed product(s);
- the removal and decommissioning of product(s);
- the appropriate sharing of information within the service chain, not least including with the alarm receiving centre (ARC); and
- the use and processing purposes of data and consent by the user to that explicit purpose (data processing and consent).

For the purposes of this standard, a user can include an individual or persons in need of care, support or protection because of age, disability, risk of abuse or neglect and specifically a person unable to perceive or respond, or respond appropriately, to circumstances due to cognitive, sensory or physical impairment and for which a connected and monitored system is designed to mitigate the assessed risks.

NOTE 2 A monitored system is one that conforms to the [EN 50134](#) series of standards.

The focus of this standard is on TEC and not the non-technology preventative actions, which might also be identified in the service user's risk assessment.

This British Standard is intended to be applied to connected TEC signalling to a staffed ARC, the outcome of which might include alerting emergency services.

This British Standard is intended to assist those involved in the provision of care, specifying, designing, installing, carrying out assessments, decommissioning and maintenance, to support independent living at home.

This British Standard is primarily for use by professional organizations and stakeholders in the provision of care and/or assistive technology, e.g. those commissioning or providing care, organizations designing, assessing, installing, monitoring and/or maintaining TEC. Additionally, this British Standard would be of interest to those involved in the education and training of personnel within the sector.

This British Standard is not intended to be applied to the overall design and commissioning of a grouped living system but can be used to tailor solutions for an individual's needs within a specialized grouped living environment.

This British Standard is not intended to be applied to remote patient monitoring products and services.

This British Standard is not intended to be applied to individuals who purchase components directly from a supplier without an assessment being provided or sought.

This British Standard is not intended to address the range of non-technology enabled risk control measures which are too wide, too varied and too individual.

NOTE 3 Where trigger devices are selected, e.g. fire detection, these are for the additional needs of an individual over and above those requirements specified in the building fire risk assessment.

NOTE 4 Individuals resident in blocks of flats fitted with an evacuation alarm in accordance with BS 8629 might require interconnection between the evacuation alarm and their personal TEC.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions, or limits the application, of this document¹⁾. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[BS 5446-2](#), *Fire detection and fire alarm devices for dwellings – Part 2: Specification for heat alarms*

[BS 5839-6:2019+A1:2020](#), *Fire detection and fire alarm systems for buildings – Part 6: Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises*

[BS 9518](#), *Processing of alarm signals by an alarm receiving centre – Code of practice*²⁾

[BS EN 54-5](#), *Fire detection and fire alarm systems – Part 5: Heat detectors – Point heat detectors*

[BS EN 54-7](#), *Fire detection and fire alarm systems – Part 7: Smoke detectors – Point smoke detectors that operate using scattered light, transmitted light or ionization*

[BS EN 54-29](#), *Fire detection and fire alarm systems – Part 29: Multi-sensor fire detectors – Point detectors using a combination of smoke and heat sensors*

[BS EN 14604](#), *Smoke alarm devices*

[BS EN 50134-1](#), *Alarm systems – Social alarm systems – Part 1: System requirements*³⁾

[BS EN 50134-2](#), *Alarm systems – Social alarm systems – Part 2: Trigger devices*

[BS EN 50134-5:2021](#), *Alarm systems – Social alarm systems – Part 5: Interconnections and communications*

[BS EN 50134-7:2017](#), *Alarm systems – Social alarm systems – Part 7: Application guidelines*

[BS EN 50244:2016](#), *Electrical apparatus for the detection of combustible gases in domestic premises – Guide on the selection, installation, use and maintenance*

[BS EN 50292:2023](#), *Electrical apparatus for the detection of carbon monoxide in domestic premises, caravans and boats – Guide on the selection, installation, use and maintenance*

[BS EN 50518](#), *Monitoring and Alarm Receiving Centre*⁴⁾

¹⁾ Documents that are referred to solely in an informative manner are listed in the Bibliography.

²⁾ This British Standard also gives an informative reference to [BS 9518:2021](#).

³⁾ This British Standard also gives informative references to [BS EN 50134-1:2002](#).

⁴⁾ This British Standard also gives informative references to [BS EN 50518:2019+A1:2023](#).

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1 adverse incident

event in which the service user is harmed or put at risk of harm

NOTE 1 An adverse incident might arise as the result of an assessed risk being precipitated and being identified by the correct operation of the TEC system in response to circumstances that were known and being monitored.

Alternatively, an adverse incident might arise as a result of a failure of the:

- *assessment to identify the risks that manifested in the incident;*
- *installed system to detect circumstances, correctly, on a timely basis or at all;*
- *installed system to transmit status signals to the ARC;*
- *ARC to receive and correctly act on received status signals;*
- *mobilized responder service to attend on a timely basis;*
- *mobilized responder service to identify, render or request appropriate assistance for the service user; or*
- *correct operation of a process delivering an inappropriate outcome.*

NOTE 2 The above list is not definitive and a range of human, technical or process factors might contribute to, or be causative in, an adverse incident.

NOTE 3 The threshold for an adverse incident might be determined by whether a professional response service was mobilized, e.g. police, fire, ambulance, general practitioner (GP) or emergency mental health services.

3.1.2 alarm management system (AMS)

system which stores, organizes, controls, manages and allows retrieval of client data and is interfaced to alarm receiving equipment for automatic annunciation for each alarm system

[SOURCE: [BS EN 50518:2019+A1:2023](#), 3.1.4]

3.1.3 alarm receiving centre (ARC)

continuously manned remote centre to which information concerning the status of one or more alarm systems is reported

[SOURCE: [BS EN 50518:2019+A1:2023](#), 3.1.5]

3.1.4 alarm signal

signal which, upon being received by an ARC, identifies a signalled alarm condition

[SOURCE: [BS 9518:2021](#), 3.1.7]

3.1.5 alarm transmission path (ATP)

route an alarm message travels between an individual alarm system and its associated annunciation equipment

[SOURCE: [BS EN 50134-5:2021](#), 3.1.12]

3.1.6 alarm transmission system (ATS)

alarm transmission equipment and networks used to transfer information concerned with the state of one or more local units and controllers to the annunciation equipment at one or more ARCs or an alarm recipient

[SOURCE: [BS EN 50134-5:2021](#), 3.1.11]

3.1.7 competent person

person, suitably trained and qualified by knowledge and practical experience, and provided with the necessary instructions, to enable the required task(s) to be carried out correctly

NOTE A typical route to achieving skills and knowledge comprises appropriate training, and maintenance of competence is likely to require continuing professional development (CPD).

3.1.8 connected product

electronic device that is designed to generate and transmit a defined status signal upon detection of designated events, where such a device is connected to a telecommunications system linked to an alarm receiving service

NOTE 1 A TEC system and its connected trigger devices (e.g. smoke detector and manual trigger) are examples of connected products.

NOTE 2 In the context of this definition, an alarm receiving service might include a staffed ARC, a personal receiver system or a device provisioning and management system.

3.1.9 controller

interface between one or more local units and the alarm transmission system or alarm recipient

[SOURCE: BS EN 50134-1:2002, 3.3]

3.1.10 device provisioning and management system

system for the technical administration of the equipment estate and capable of generating alarms in response to events

[SOURCE: BS EN 50134-5:2021, 3.1.9, modified, “in response to events” added]

3.1.11 false alarm event

circumstances in which a TEC product enters the alarm condition as a result of an equipment fault

3.1.12 false alarm signal

alarm signal resulting from a false alarm event

3.1.13 formal assessment

structured assessment undertaken by a competent person

NOTE This person might be a social worker, an occupational therapist or a trained representative of the TEC service provider.

3.1.14 local unit

interface between the user and the controller which enables 2-way speech

[SOURCE: BS EN 50134-1:2002, 3.4]

3.1.15 output signal

signal characterized by a standby state and an activated state by which actions can be initiated

[SOURCE: BS EN 50194-1:2023, 3.10, modified, term changed from “transmittable output signal”, to “output signal”]

3.1.16 person-centred

way of organizing and conducting a service that promotes the provision of the service centred on a specific person's needs and preferences, identity, and their engagement in the service process

NOTE Person-centred service usually relies on concepts such as individualization, personalization, autonomy, participation, and engagement to achieve its goals.

[SOURCE: [BS ISO 25552:2022](#), 3.21, modified, "care" replaced by "service"]

3.1.17 service provider

individual or organization having an agreement with a user to provide a TEC

NOTE TEC might include:

- a) assessment of user needs for TEC;
- b) specification of products and service in the context of personalized assessments;
- c) supply, installation and maintenance of TEC equipment; and
- d) monitoring and response to signals and alarms from connected equipment.

[SOURCE: [BS EN 50134-7:2017](#), 3.6, modified, "social alarm" replaced by "TEC", Note added]

3.1.18 service user

person who utilizes the TEC service

[SOURCE: [PD CEN/TS 17470:2020](#), 3.22]

3.1.19 status signal

signal transmitted by the local unit and controller indicating the current status of the TEC system

NOTE Status signal messages can identify that the system is in the normal condition, the pre-alarm condition, the alarm condition, a fault condition, a pre-fault condition (e.g. low battery warning) or has returned to the normal condition. Status signals might also convey data that is used by equipment external to the service user's premises to trigger logical alarms.

3.1.20 technology enabled care (TEC)

use of technologies to provide care and/or support for people that is convenient and accessible

NOTE The requirements for TEC are given in the [BS EN 50134](#) series.

3.1.21 undetected event

event which takes place at the service user's premises that is either not detected by the TEC system or is detected but not signalled to the alarm receiving service

NOTE An undetected event might arise as a result of an equipment fault; the use of inappropriate equipment, or incorrectly installed or configured equipment; or because the system was not designed to detect such an event.

3.1.22 unwanted alarm

operation of the TEC system in response to circumstances that it is designed to detect but where that operation is a result of poor choice of equipment or inappropriate siting of equipment

NOTE Examples of unwanted alarms include:

- a) a smoke detector sited in a kitchen being activated by steam; and
- b) the unintended operation of a portable manual trigger as a result of accidental contact between the trigger device and another object.

3.1.23 vulnerable person

persons in need of care, support or protection because of age, disability, risk of abuse or neglect and specifically a person unable to perceive or respond, or respond appropriately, to circumstances due to cognitive, sensory or physical impairment

3.2 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply.

AMS	alarm management system
ARC	alarm receiving centre
KPI	key performance indicators
LUC	local unit and controller
PSTN	public switched telephone network
TEC	technology enabled care

4 General

COMMENTARY ON CLAUSE 4

The current environment for delivery of TEC often involves many stakeholders to deliver the appropriate service to the service user.

Often these delivery elements of commissioning, assessment, design, installation, monitoring and review are delivered by different parties despite the necessity for integration of these services.

It is essential therefore that there is an overall agreement understood by all parties to co-ordinate the delivery of TEC for the service user which incorporates reporting, recording, feedback and review.

This section therefore covers points related to overall management, responsibility and co-ordination for the service delivery.

Service providers should have a management system using standardized written processes to deliver and manage their services in accordance with this British Standard.

The service provider should obtain consent from the service user or their carer/advocate to record and store personal data prior to undertaking the assessment and inform the service user that their data might be shared with other agencies in order to perform the service.

NOTE Attention is drawn to the Data Protection Act 2018 [1] with respect to the legal requirements of personal identifiable information (PII).

Monitoring should be delivered by an ARC designed, equipped and managed in accordance with [BS EN 50518](#) and [BS EN 50134-7:2017](#). Signals should be processed in accordance with [BS EN 50134-7:2017](#) and [BS 9518](#).

There should be a document in which the roles and responsibilities of every party in the service chain are defined.

TEC equipment should be configured to use communication protocols engineered for packet-based transmission environments. Equipment configured for connection solely to PSTN analogue transmission paths should not be used.

5 Staff recruitment, training and competence

COMMENTARY ON CLAUSE 5

The commissioning, assessment, design, installation, maintenance and review aspects of TEC provision can involve numerous organizations with specialist skills and functions, therefore each organization involved in the delivery of the service need staff that are suitable and competent for their role. Whether an individual performs one or multiple roles within the service delivery chain it is essential that they have the right skills, equipment and training to perform the tasks and, where applicable to their role, an appreciation of the legislative and regulatory requirements. For example, a formal assessment of user needs might be carried out for a commissioner of services by, say, an occupational therapist as part of a technology/non-technology (aids and adaptations) assessment, the skills and training required differ from other elements of the delivery of services, such as those individuals carrying out installation activities.

5.1 Recruitment of staff

Recruitment processes should be developed to meet the specific role requirements. Roles might be specific to a particular discipline: for example, assessment, equipment supply, installation, maintenance, re-assessment, or might be combined; therefore, as a minimum, the recruitment process should:

- a) utilize a role specific current job description and person specification;
- b) have a process to assess the suitability of the candidate to the role, this might include specific assessment tools; and
- c) undertake, as appropriate to the role, vetting and screening of the appointees in accordance with the service provider's organizational policies and requirements in the person specification.

5.2 Training

Anyone involved in the delivery of services should be trained to attain competence to undertake the role.

Training and record keeping should include, but is not limited to:

- a) a clear outline of the expectations for the role;
 - b) organizational policies and procedures;
 - c) data management;
 - d) role specific skills and knowledge development which might include, dependent on the specific role, training in:
 - 1) the interaction and engagement with vulnerable people;
- NOTE Attention is drawn to the Data Protection Act (2018) [1] with respect to the legal requirements of personal identifiable information (PII) and the legislative and regulatory context pertinent to the roles.*
- 2) conducting an assessment of needs;
 - 3) the installation of TEC;
 - 4) the design of TEC; and
 - 5) the maintenance of TEC;
 - e) operational policies and procedures; and
 - f) health and safety relevant to the role.