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## Security and resilience — Protective security — Guidelines for crime prevention through environmental design

*Sécurité et résilience — Sécurité préventive — Lignes directrices pour la prévention de la criminalité par la conception environnementale*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 292, *Security and resilience*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

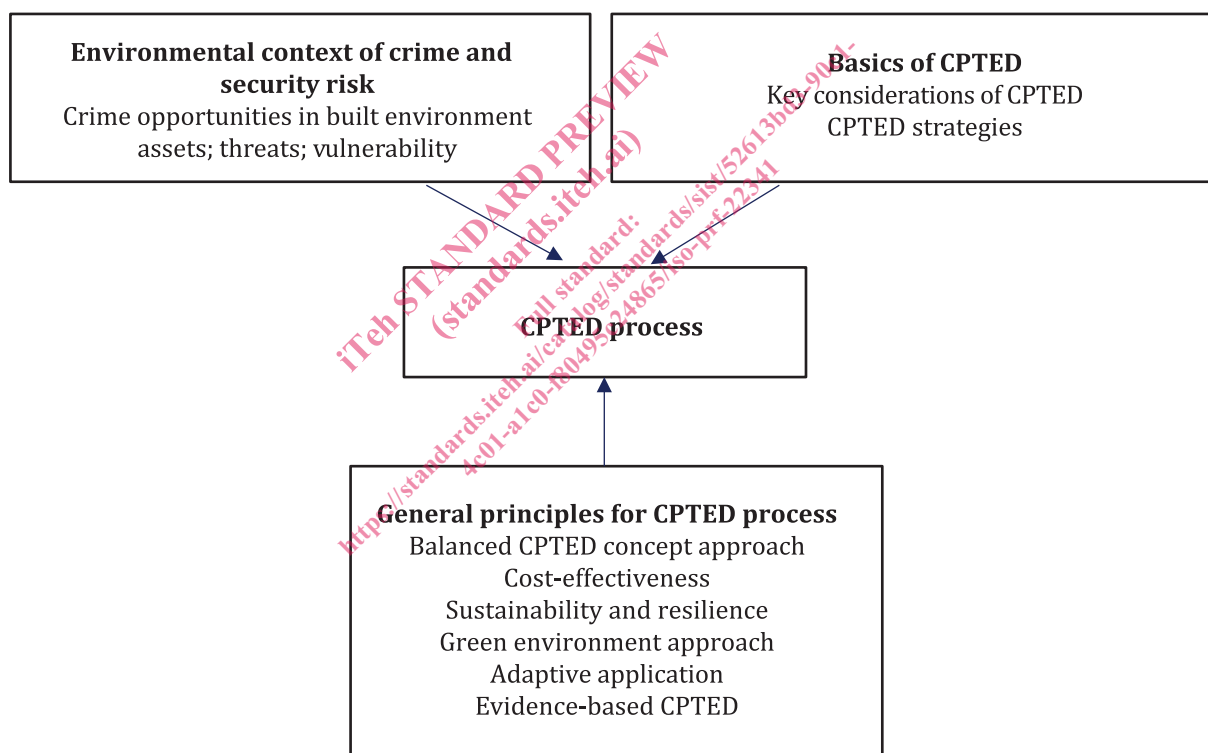
## Introduction

This document is intended to promote a common understanding of crime prevention through environmental design (CPTED) in the field of security, law enforcement and related risks, and their preventive measures, through environmental design and management.

CPTED concepts have been used since the 1970s and CPTED-style security measures can be traced to early human settlements. The term CPTED was first introduced in 1971 by C. Ray Jeffery, see Reference[5]. CPTED concepts originated from criminology and crime opportunity theories and studies. Since then, it has been included as part of many other crime prevention strategies that are utilized today. These include, but are not limited to, defensible space, broken windows theory, routine activity theory, rational choice, situational crime prevention and crime free housing.

CPTED has an increasingly sound theoretical foundation based on firm evidence of significant crime and fear reduction gained from a series of formal and rigorous evaluations in the field of environmental psychology, criminology and crime science. When well-planned and wisely implemented, CPTED improves community safety and industrial security in a cost-effective manner.

Figure 1 illustrates the framework of CPTED for crime prevention and security.



**Figure 1 — Framework of CPTED for crime prevention and security**

This document starts with understanding the environmental context of crime and security risk factors, causes of vulnerabilities and risk levels. This is followed by the basics of CPTED through its historical background, four key considerations of CPTED (places generating crime, types and causes of the risk, CPTED interested parties and countermeasures) and CPTED strategies. Better understanding of the risk and CPTED considerations leads to a better selection of tailored countermeasures. The process of CPTED begins with the establishment of an oversight body, performance target settings and organizing a project team, risk assessment and risk treatment, evaluation of treatment, corrective actions and feedback to the initial stage of CPTED for continual improvement. It is followed by the fundamental principles for CPTED process, such as balanced conceptual approach, cost-effectiveness, sustainability and resilience, green environment (ecological) approach, adaptive application and an evidence-based approach.

The use of CPTED should be applied universally in an equal manner and should not be applied with any prejudice (whether cultural, racial, religious or any other bias).

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# Security and resilience — Protective security — Guidelines for crime prevention through environmental design

## 1 Scope

This document provides guidelines to organizations for establishing the basic elements, strategies and processes for preventing and reducing crime and the fear of crime at a new or existing built environment. It recommends the establishment of countermeasures and actions to treat crime and security risks in an effective and efficient manner by leveraging environmental design.

Within this document, the term “security” is used in a broad manner to include all crime, safety and security-specific applications, so it is applicable to public and private organizations, regardless of type, size or nature.

While this document provides general examples of implementation strategies and best practices, it is not intended to provide an exhaustive listing of detailed design, architectural or physical security crime prevention through environmental design (CPTED) implementation strategies or restrict the potential applications to only those examples provided in this document.

## 2 Normative references

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

ISO 22300, *Security and resilience — Vocabulary*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 22300 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1 crime prevention through environmental design CPTED

process for analysing and assessing crime and security risks to guide development, urban design, site management and the use of the built environment in order to prevent and reduce crime and the fear of crime, and to promote and improve public health, quality of life and sustainability

Note 1 to entry: Environmental design refers to the applied arts and sciences dealing with creating the human-designed environment.

### 3.2 capable guardianship

willingness to supervise, detect and take action to prevent or discourage the occurrence of crime

#### 4 Understanding environmental context of crime and security risk

There are numerous ways of defining the elements of risk.

NOTE ISO 31000 defines risk as the effect of uncertainty on objectives.

In a security context and in this document, risk is composed of three elements: assets, threats and vulnerabilities. Crime and security risks are based upon the value of the asset in relation to the threats and vulnerabilities associated with it. This approach can be viewed as an operational implementation of ISO 31000 with a specific focus on crime and security risks. Threats and vulnerabilities influence the likelihood dimension, and assets influence the consequences of a risk.

Assets can be the current state of the physical built environment and items of financial value. Assets can also be intangible with soft values.

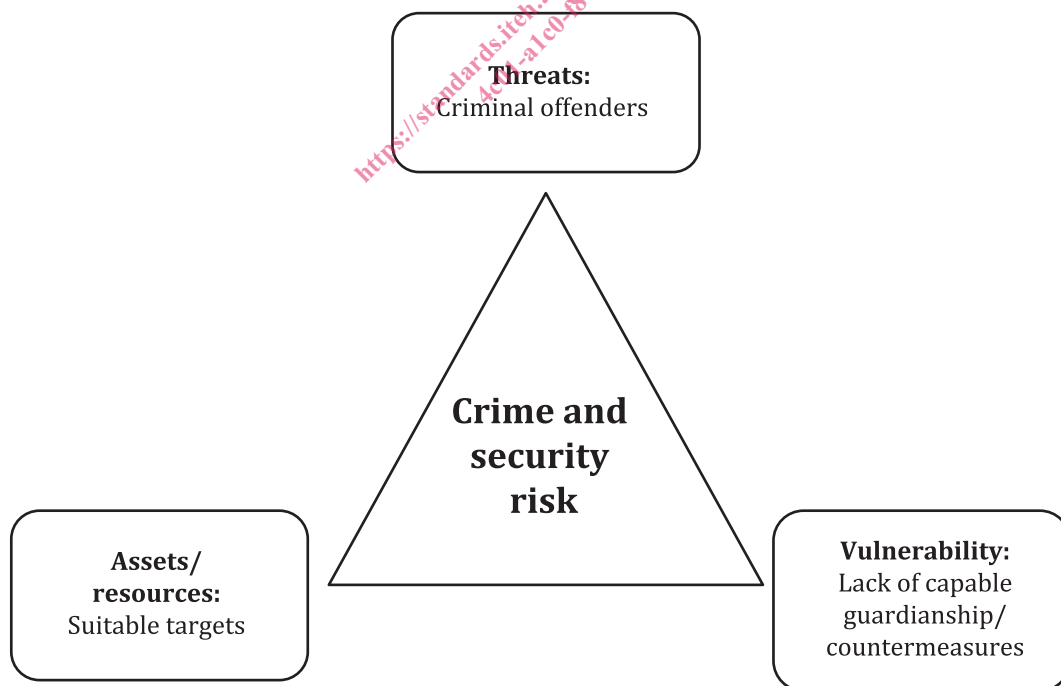
Threats are the potential offenders or hazards and should be addressed by identifying the nature of the threat. This can be done by:

- focusing on the most likely scenarios addressed as a narrative;
- describing the subject of the scenario;
- describing the who (the offenders), where (the place of the offence) and how (what means used).

Vulnerabilities are the opportunities for negative effects and the lack of maturity related to the effectiveness of the associated countermeasures.

The crime and security risks are greater when a motivated offender and suitable target come together in time and place, without appropriate countermeasures present.

To mitigate the opportunity for a crime to occur, the conventional approach is to remove one or more of the factors expressed in the crime and security risk triangle in [Figure 2](#). Crime events require these three factors (at a minimum) to all be present at the same time.



**Figure 2 — Crime and security risk triangle for crime opportunities in the built environment**

## 5 Basics of CPTED

### 5.1 Key considerations of CPTED

The organization should:

- base its crime prevention and security strategies on understanding crime opportunities;
- identify the following four considerations at the beginning stage of a project:
  - where: the exact location and the type of area;
  - what: the crime problems occurring in the area now or in the future;
  - who: the interested parties involved in the area;
  - how: the treatment of crime and security risks (e.g. countermeasures) in an effective and efficient manner.

NOTE [Annex A](#) provides additional information on the key considerations of CPTED.

### 5.2 CPTED strategies

#### 5.2.1 General

The organization should:

- understand that there are two different CPTED concepts:
  - physical CPTED (or first generation CPTED) concept;
  - social CPTED (or second generation CPTED) concept;
- consider physical CPTED strategies as well as social CPTED strategies.

The organization should consider the six strategies for physical CPTED:

- natural surveillance;
- natural access control;
- territorial reinforcement;
- image and management/maintenance;
- activity support;
- site hardening/target hardening.

The organization should consider the four strategies for social CPTED:

- social cohesion;
- social connectivity;
- community culture;
- threshold capacity.

NOTE [Annex B](#) provides additional information about physical and social CPTED concepts and strategies.

The organization should consider three stages in order to use the physical and social CPTED strategies: planning (see [5.2.2](#)), design (see [5.2.3](#)), and site and social management (see [5.2.4](#)).

Environmental planning and design stages are most relevant for proposed new areas and neighbourhoods. Management stages are more relevant in existing areas. Planning and design adaptations are relevant in existing areas to a certain degree, but the feasible adaptations are modest and small in existing areas compared to the designs for new areas.

The organization should:

- implement the CPTED strategies in order to coordinate its actions and measures;
- consider local context, cultural tradition and past experience for the actions and measures;
- select the measures in anticipation of their expected effectiveness in certain types of environments and against the prevailing types of crime.

[Table 1](#) provides detailed information with examples on the CPTED strategies by stage.

**Table 1 — CPTED strategies and examples by stage**

Stage	Strategies	Examples
Planning	Avoiding blind/entrapment spots	Minimizing isolated areas; avoiding blind spots of buildings and planted areas
	Socio-demographic character	Considering social structure of areas
	Vitality of public spaces	Adequate density and activity; proper land use; human scale
	Well-connected/ integrated plan	Connected streets; proper mixed uses; good street pattern
	Green spaces (urban greenery)	Controlled green spaces and parks
	Proper placement of lighting and security cameras	Good placement of street lighting and security cameras
	Anti-terrorist planning	Anti-terrorism planning for target: a temporary or permanent site or building that is sensitive to terrorism (e.g. fan zone, multi-activity hall type arena, courthouse, government building, headquarters of an iconic company)
Design	Visibility	Landscape; planting; lighting illumination/colour rendering/ uniformity; large glass windows
	Access control	Entry barriers, walls and fences, gates certified by relevant performance standards
	Site/target hardening	Soft target building/street hardening through security equipment (e.g. vehicle security barriers, windows and doors, locks, mesh and grilles) certified by relevant security performance standards
	Territoriality	Clear demarcation of space; sense of ownership/responsibility; buffer zone
	Attractive design	Positive area image; attractive lighting and public art
	Robust materials	Vandal-resistant street furniture; convenient maintenance; integrity of devices used for networks (e.g. data, sensors, energy, water, gas, high pressure steam, air intakes)

Table 1 (continued)

Stage	Strategies	Examples
Site and social management	Maintenance	Clean streets and alleys; emptied garbage bins; greenery and vegetation on public land
	Surveillance	Security cameras for vulnerable spots; police/security guards targeted patrols
	Public rules enforcement	No drinking zone signs; substantial enforcement
	Swift repairs	One day fixing policy
	Treating vulnerable groups	Providing shelters for homeless people, alcohol/drug addicts, youths
	Publicity activities	Active communications with the public; preventive messages and rules of conduct for the public

### 5.2.2 CPTED strategies for planning stage

The organization should:

- choose the scale, function and blending of functions to provide an incentive for liveability, social control, involvement and sense of ownership for CPTED strategies in the planning stage;
- implement planning stage strategies to prevent the existing urban environment from being harmed and, in the case of an emerging threat such as a vehicle bomb threat flexibly adopt this strategy;
- create strategies for the conditions for the formation of social networks and making a new development part of the existing surrounding urban environment as much as possible;
- minimize isolated places and avoid blind/entrapment spots of buildings and planted areas that have low visibility from nearby.

The organization should:

- consider the social structure, such as socio-economic and demographic characters of a site in order to reflect its specific context;
- enhance the vitality of public space for the site by considering active land use, density and (human) scale;
- consider properly connected street segments and integrated land uses (rather than disconnected and segregated patterns);
- consider cautious ecological placement of green spaces and parks for an area;
- consider cautious placement of lighting and, if necessary, security cameras for an area;
- consider anti-terrorism building and landscape planning for particular target sites;
- consider the security and crime prevention of the construction site against attacks (e.g. the misuse of land and building for grouping of offenders, drug trafficking or stolen goods, prostitution, theft of tools, material and building machines, trucks.) during the CPTED planning stage as construction development often lasts for a few years until building completion.

NOTE [Table 1](#) provides additional and detailed information with examples on CPTED strategies for the planning stage.

### 5.2.3 CPTED strategies for design stage

The organization should:

- evaluate the external and internal situational context of CPTED-related risks;