Business from technology

RECOCAPE
REinforcing COoperation CAPacity of Egypt

Information Security and Smart Spaces

RECOCAPE
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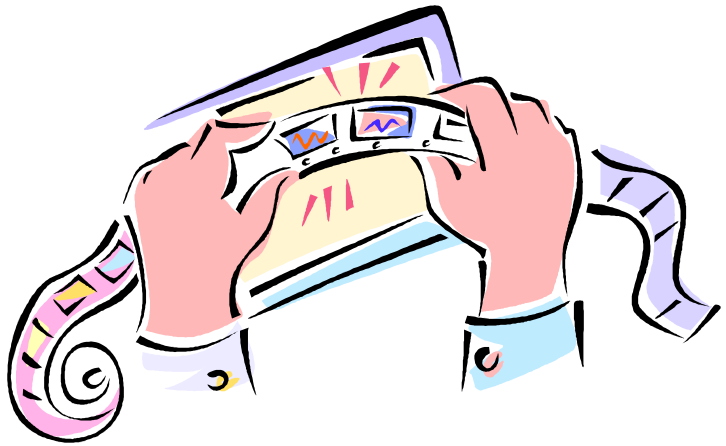
SEVENTH FRAMEWORK
PROGRAMME

Introduction

- Examples of smart spaces
  - Smart homes, smart buildings, and smart cities.
- Security challenges relate to the main philosophy of smart spaces:
  - The freedom to use available devices easily and without human-intervention.
- How smart space owners, device manufacturers, and application developers are able to promote security in smart environments?
- Security requires solutions for balancing user friendliness and trustworthy behaviour of smart spaces.

Video based demonstration.



Definition for Security

- ISO / IEC 9126-1 Software engineering - Product quality gives the following definition:

"The capability of the software product to protect information and data so that unauthorised persons or systems cannot read or modify them and authorised persons or systems are not denied access to them."

Security Objectives

- **Confidentiality**
- **Integrity**
- **Availability**

- Authentication
- Authorization
- Non repudiation

- Identification
- Privacy
- Anonymity
- Secrecy
- Trust

Security Design

Assets
- Value
- Protection need

Security Objectives
- Required securities
- Based on forthcoming environment and assets.

Security Mechanisms
- Means to achieve required objectives.
- Environment and platform restrictions.

Security Design

Changes

Assets

- Value
- Protection need

Security Objectives

- Required securities
- Based on forthcoming environment and assets.

Security Mechanisms

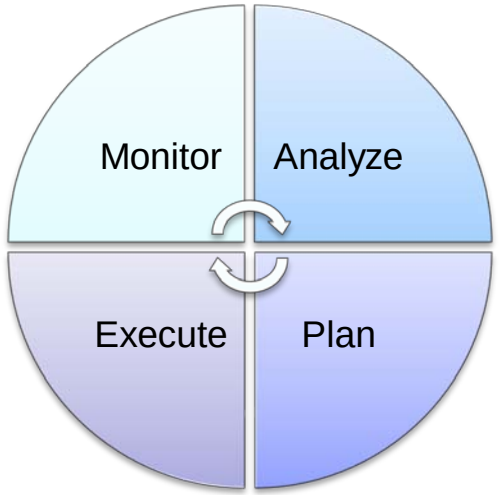
- Means to achieve required objectives.
- Environment and platform restrictions.

Context

- Smart spaces are dynamic and heterogeneous.
  - The Smart space application has to know its situation.
- Context monitoring makes it possible to react environmental changes.
- Context information in the video:
  - Number of persons.
  - Gardener's actions.

Security adaptation

- It is not possible to derive all security objectives at design-time.
  - Security adaptation selects appropriate mechanisms at runtime.
- Context information dictates required securities.
- In the video, the number of persons decreases risk level.
  - Communication risks are reduced by means of encryption.



Use case (1/3)

1. Gardener's application does not use security mechanisms by default.

Use case (2/3)

1. Gardener's application does not use security mechanisms by default.

2. Monitoring application recognises arrived customers (based on camera data) and customers' devices joined in the smart space.

Use case (3/3)

1. Gardener's application does not use security mechanisms by default.

3. Gardener's device starts to use an encryption based on information from the Monitoring application.

2. Monitoring application recognises arrived customers (based on camera data) and customers' devices joined in the smart space.

Wrap-up

- Dynamicity and heterogeneity of smart spaces causes challenges for security.
- It is mandatory to recognise changes that affect to security.
- Security has to be adapted at runtime – in order to respond changing situations.
  - Increases users' trust and usability.

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