



# Design Principles for Efficient Services in Smart Cities

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## Gap Analysis in Responding Stakeholders' Needs

**WHO (Stakeholders)**

- Citizens
- Government
- Service Developers

**WHAT (Needs)**

- Facilitated daily activities + Low cost
- Realization of Smart City + Quality of Services
- Financial benefits + Broader market share

**HOW (Addressed)**

How smart city services are being assessed for the ability to address stakeholders' needs? **?**

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## Methodology to Develop Assessment Principles for Design of Smart Services

Following **TOGAF ADM** to Develop an Ideal Architecture for Smart Services

Developing Architecture Vision for an Artificial Case

Specify Stakeholders needs (Citiz., Gov., Ser.) → Setting Objectives → Define Processes → Identify Roles & Responsibilities → Developing Architecture Model

Developing Questions regarding **Architecture Vision** requirements

Developing an Ideal **Artificial Case** by answering the questions | Interviewing IT Professionals to explore their Approach to Design

Comparing Interview Results with Ideal Artificial Case

Concluding **Shortcomings** for Current Approaches to Design

Proposing an **Assessment & Development Principles** for Smart Services

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## Principles for Assessment and Development of Effective Smart City Services

**10 Principles for Assessment and Guideline for Development:**

1. Clarification of the problem in terms of specifying **stakeholders' concerns**;
2. Specifying the **issues** as the stem of the stated problems;
3. Defining detailed and achievable **objectives** to address the issues;
4. Define the **processes** to address the issues and achieve the objectives as well;
5. Specifying **responsibilities** and **roles** for actors involved in the processes;
6. Specifying all the **requirements** for the proposed solution;
7. Specifying the **constraints**, e.g. what are excluded due to time or budget limitations;
8. Providing evidences for considering all the **IT principles**;
9. Visualizing final proposed **architectural model** which support the defined processes;
10. All the above mentioned items should be **documented**.

**These principles could be useful for:**

- An **Assessment Tool** for **Authorities** to assess innovative proposals in terms of complying with citizens needs and smart city priorities for investment;
- A **Guideline** for **Service Developers** to develop more efficient services.

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## Further Steps of this Research

More work is required for these principles in terms of elaborating stakeholders needs as below:

**Citizens**

- How can measure if citizens are **satisfied**?
- How efficient services can be provided with **lowest costs**?

**Government**

- What are practical means of **smart realization**?
- What are the exact means of **quality of services**?

**Service Developers**

- How service developers can gain more **market share** and **financial benefits**?

**Publications:**

- Pourzolfaghar, Z. & Helfert, M. (2016). Investigating HCI challenges for Designing Smart Environments. Human Computer Interactions International Conference, Toronto.
- Pourzolfaghar, Z. & Helfert, M. Vision Development for Designing Smart Environments. Submitted to Enterprise Modelling and Information Systems Architecture Journal.
- Pourzolfaghar, Z., Bezbradica, M. & Helfert, M. Types of IT Architectures in Smart Cities - A review from a Business Model and Enterprise Architecture point. Submitted to CONFENIS 2016
- Pourzolfaghar, Z., Bezbradica, M. & Helfert, M. 10 Principles for Development of Effective Smart Services. Ongoing paper.