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| BRR | February 10  2016 | |
| Making Facility Management more intelligent and efficient. | | System Definition Review |

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| 1.0 | 07.03.16 | Arshad Shakil,  Badis Madani,  [Håkon Hedlund](https://www.facebook.com/hakon.hedlund)**,**  Zhili Shao |  |

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# Stakeholders requirement

# Identification of design concepts

## No Internet

This concept is quite simple, controllers and sensors are working separately. They do not connect with server. Users set the value of temperature, humidity, air quality they prefer through controller. The controller will send signal to HVAC system directly, then the HVAC system start to work. When sensors detect that the values of environment match with setting, controller will send signal to stop HVAC system.

## Standalone server

Standalone server solution means there is a centralized server for HVAC control system in one building. All the data collected by sensors will be transmitted to this server. The facility manager will be able to monitor the HVAC system through this server. Users of this building can adjust their environment through local control panel or visit this server though software.

## Could computing

In this concept, we want to combine IoT and cloud computing as one solution, every parts of HVAC control system will be connect with cloud server through Internet. The sensors of HVAC system will upload their data about temperature, humility, air quality, energy cost, equipment status, etc. to cloud server. The data will be record and analyzed, then the results will be accessible to users, they can get the information about their environment at website, software or app. Also they will be able to adjust their environment through these media. Associated with outside temperature of weather forecast, they can set environment changing automatically.

# Selection of preferred design concept

## Criteria

Based on the stakeholders’ requirements and references of former projects, we decided crucial criteria for our design concepts.

Initial cost - Cost of implementation and deployment of the solution

Stability - The time of the solution can work without problems happen

Efficiency - Is the solution energy saving

Compatibility – The solution can work with HVAC system well or not

Easiness of use - Is solution user friendly for all possible users

## Pugh matrix

## AHP　matrix

## Preferred design concept