4. Objectives

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Define key question; Break down 1 major question to several smaller questions

Describe hypothesis (importance, impact, whether and how challenging

传感器是物联网中的基础组件，是采集数据的关键模块。传感器通常以一定的频率搜集数据，并将数据上传至相应的数据服务器。传感器类型众多，采集的数据格式多样，并且通常具有时空属性。

Sensors are basic components in the Internet of Things. It is the key modules for data acquisition. Sensors typically collect data at a certain frequency, and upload the data to the corresponding data server. Many sensor types, collection of diverse data formats, and usually have spatial and temporal properties.

海量数据查询的低效率，缺乏统一的数据规范，以及支持数据的时空特性的缺点是需要解决的严重问题

Key question:

Low efficiency in massive data query, lack of unified data specification, and short in supporting space-time property of data are serious problems to be solved today. So in this project we are going to design and implement an Internet distributed spatio-temporal data management system.

本项目拟解决的关键问题包括：

1） 扩展性良好的数据规范；

2） 准确率高、误差率低的数据模型（在本项目中为连续函数）。

3)shujuku

Based on this problem, we break it down into several smaller questions.

1. Create extensibility data pattern. (Have good horizontal scalability)

1) What type of database we are going to choose. (NoSQL database)

2) What type of data model we are going to select based on the sensor.

2. Established data model for high accuracy and low error rate. (In this project we use continuous function)

1) How to extract sensor data based on proper data model.

2) How to prevent using traverse methodology in the data search.

3. Design and implement an Internet distributed spatio-temporal data management system.

1) How to speed up the frequency of data collection.

2) Which data system can have a extensibility data pattern.

传感器层

云存储层

数据模型提取层

数据接口层

In short, we are going to design the system architecture in the following parts; system is divided into four levels:

1. Sensor layer

2. Cloud storage tier

3. Data abstraction layer

4. Data access layer

（四） 创新点与项目特色

本项目的创新点包括以下三个方面：

1. 传感器数据类型规范的设计与研制。

2. 数据模式提取。

3. 设计并实现一套分布式时空数据系统。

Innovation and project characteristics:

There are three aspects of innovation in our project:

1. Designing and manufacturing data type specification of sensor

2. Extracting data model

3. Designing and implementing a system of distributed spatial-temporal data