

# Stream Computing: Real-time Processing of Massive Data

## What does it solve?

The amount of data dealt with in the ubiquitous society will expand explosively by a factor of 200 by 2025

A huge increase in IT devices and amount of data processing will produce a rapid 500% increase in power consumption by 2025



Fine visualization and control by the real-time collection and analysis of huge amounts of time-series data continuously acquired from various sensors

### Use example

- ✓ Very fine traffic congestion data supplied by the real-time processing of floating car sensors on individual vehicles
- ✓ Eco-friendly data center administration by control based on understanding detailed server load

## Visualization of traffic congestion

### Currently



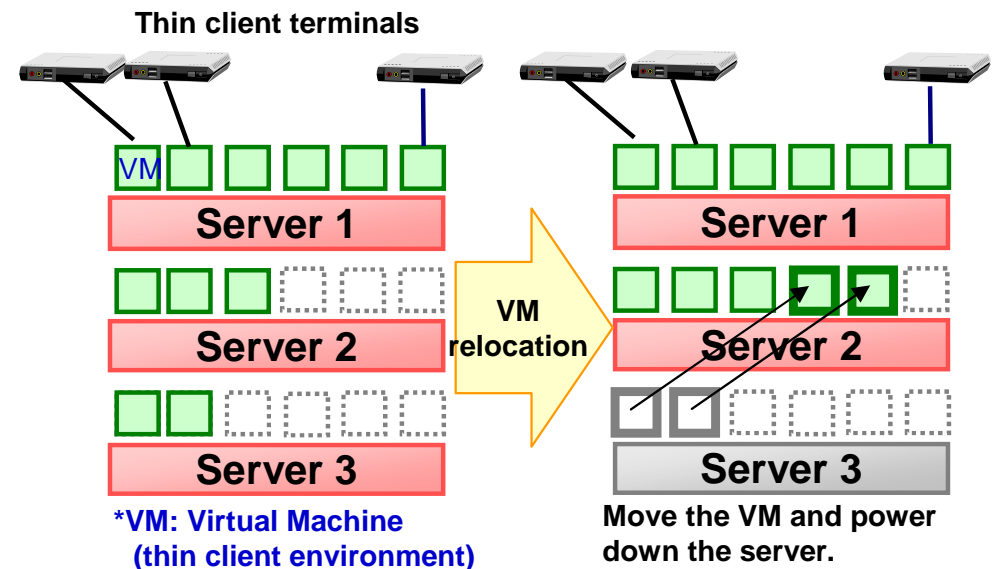
Only main roads; updated every several minutes

### Future (with new NEC technology)



Smaller roads included; updated in less than a minute

## More efficient data center administration



# Real-time Processing of Massive Data

## Features of the technology

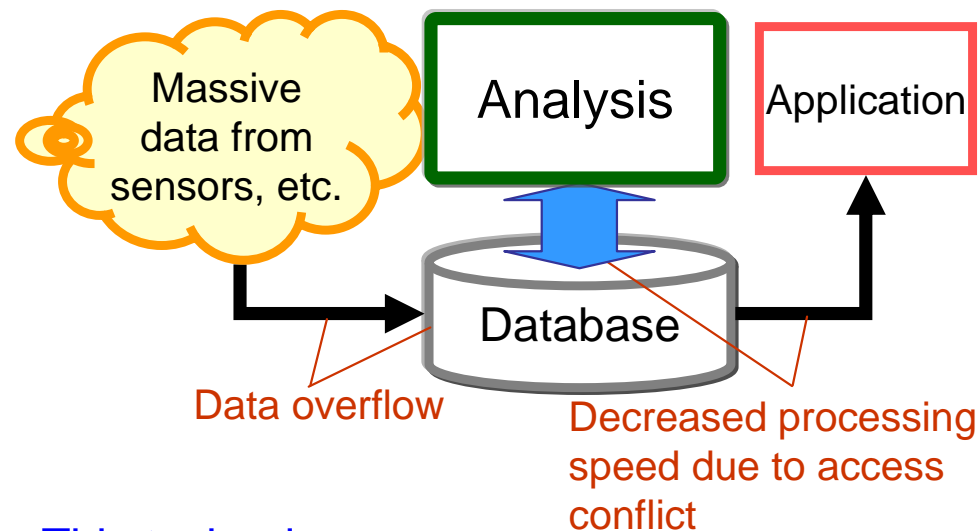
Assembly-line analysis in the process of collecting data

- ✓ Real-time analysis without data stream stagnation by multi-stage partial analysis of data

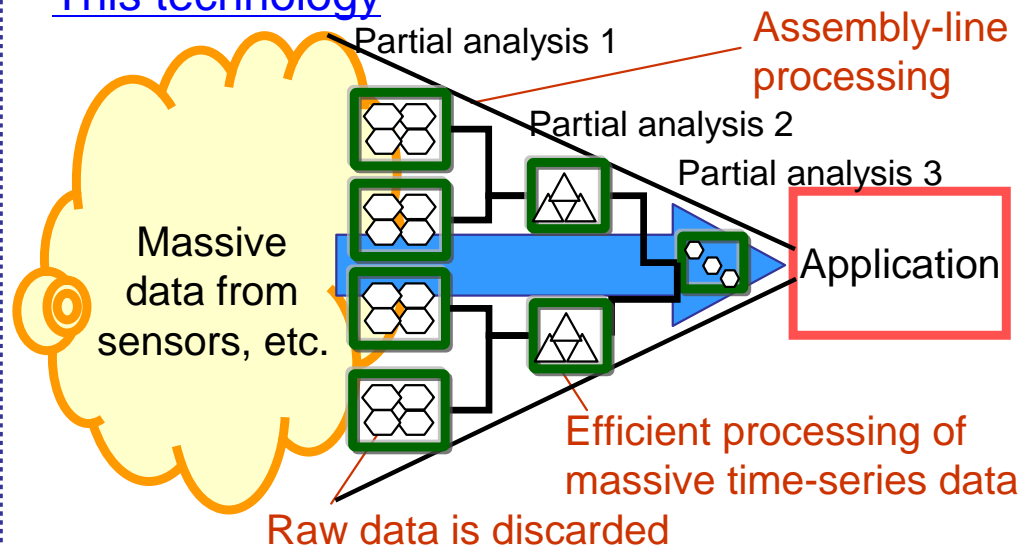
Efficient partial analysis of massive time series data

- ✓ Faster processing through partial analysis execution of an incremental algorithm that re-uses prior results

### Conventional technology (database)



### This technology



# Real-time Processing of Massive Data

## Future development

### Market needs/technical prospects

Utilizing explosively increasing data  
 Discover new value by advanced analysis of massive data

Fusion of real-world data and cyber data

Interworking with ubiquitous sensors  
 Collect and make use of the huge amount of data from sensors embedded in various locations and devices or terminals that anyone can carry (PC or cell phone)

Sensor fusion and sensor networking

New computer architecture  
 Break through limits on processing speed and scale with a new architecture for handling massive data

Stream computing

### R&D roadmap

