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Integration of Wireless Sensor Node in the Area of Industrial Informatics

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Abstract: Service oriented architecture is a client/server design approach in which an application consists of software services and software service consumers. The soa architecture has been embraced with the wireless sensor and actuator networks in the enterprise application of IT industry.SOA helps customers increase the flexibility of their business processes underlying IT infrastructure. Without using gateway protocol message transaction is speed than before. Sleep scheduling algorithm (EC-CKN) is handling the sensor node's energy consumption.Save energy while sensor node sleepsEC-KCN is rising the lifetime of sensor node and battery life.

Index Terms: Energy Consumed uniformly-Connected K-Neighborhood (EC-CKN), BDC -Binary data conversion, EXI- Efficient XML Interchange.

I.INTRODUCTION

Service Oriented Architecture enables the client and server infrastructure without using gateways providing integrate systems. SOA differs from the more general client/server model in its definitive emphasis on loose coupling. The promising technique of SOA , provides middleware software system between the enterprice device in the gateway network. Thus different way has been approached in Web Services.

Application components communicate only through services and can be plugged in to any infrastructure that implements the standardized service. Web Services software system that provide interaction between machines over the network. Web services perform functions, which can be anything from simple requests to complicated business processes. SOAP provides a simple and lightweight mechanism for exchanging structured and typed information between peers in a decentralized, distributed environment using XML. amount of individual business services (and their compositions) grows, the easier it becomes to implement new enterprise solutions. The main drivers for the creation of composite-services, as defined in toward a pattern language for Service-Oriented Architecture and Integration, are:Usage simplicity. When several business services are used together by multiple consumers, exposing knowledge about all participating services and their coordination rules to every consumer can make consumer implementation more complex. Creation of composite service, both encapsulating participating services and enforcing the rules of their invocation can significantly simplify their usage.

Solution partitioning, visibility, control and change management. Composite services can serve as a partitioning mechanism for overall solution. Similar to the case of local and remote interfaces in EJBs, introducing composite services and exposing only some of their interfaces to external users allows controlling what is visible to the consumer. This supports the ability of underlying software architectures (composite services implementations) to rapidly respond to changing requirements by changing the implementations of its subordinate services, as well as the interconnection between them with minimal or no impact to the consumers.

The existing technique used an intermediate gateway protocol for the exchange of data over the network devices, and thus it in inable to support heterogeneity at node level. It undergoes the major drawback in term of power consumption, latency, RAM,CPU usage related to serialization, transmitting , parsing of XML messages. In this paper we over the drawback of power consumption, by SOA. SOA interfaces allow high-level business applications to interact without any intermediary protocol gateways. Using SOA, increased compatibility where auto-configuration and plug-and-play capabilities can be modeled as services. Save energy while sensor node sleeps. In this case we use EC-CKN sleep Schedule Algorithm for scheduling the sleep/wake of sensor. Bulk amount of data will be transmitting to the controller while sensor node is idle. In this situation sensor can transmit over 10Mbs by translate into binary data. Controller can achieve data without any losing of information.

II. EXISTING SYSTEM

Service-oriented architecture is a way of organize the software which will produces an inventory of modular, loosely coupled, interoperable units called services. The ability of a system to work with or use the parts or equipment of another system. Services can be independently evolved, moved, scaled even in runtime environment. Services are autonomous, discrete and

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reusable units of business functionality exposing its capabilities in a form of contracts.

It is used to exchange messages via HTTP, SMTP, and SIP (Session Initiation Protocol) for Internet telephony. Inefficient due to character, not binary, data and largeheaders. Web Services Description Language (WSDL). It describes a programmatic interface to a Web service including Protocol bindings. UDDI is a Web service that is based on SOAP and XML. The main goal of Web services standards is to provide necessary functionality for interoperation. The most Web services expect their Web methods to be invoked using HTTP requests containing SOAP messages. A communication network is composed of nodes, each of which has computing power and can transmit and receive messages over communication links, wireless or cabled.

DRAWBACK

1. A single point of failure, it is not able to support heterogeneity on the node level.

2. Interactions between the sensor node and the PC performs without any compatibility is more complicated to proceed.

3. It should be possible to aggregate the sensor data before its dissemination that should happen at long intervals.

4. Very high cost of power consuming.

5. The memory should be needed is very high and the requirements will produce a result from large buffers.

6. The large amount of data could not be able to transmit from one node to another node .

III. PROPOSED SYSTEM

Service oriented architecture is enables the portable actuators wired /wireless community. Here we developed to overcome expenditure of power consumption and large data losing while transmission by two ways of techniques: binary data conversion (BDC) and Energy Consumed uniformly-Connected K-Neighborhood (EC-CKN)Algorithm.

BDC Technique is help to transmit the bulk data, which means greater than 10Mbs.EC-KCN algorithm is scheduling sensor node's tivation when it is in non ransmission time.

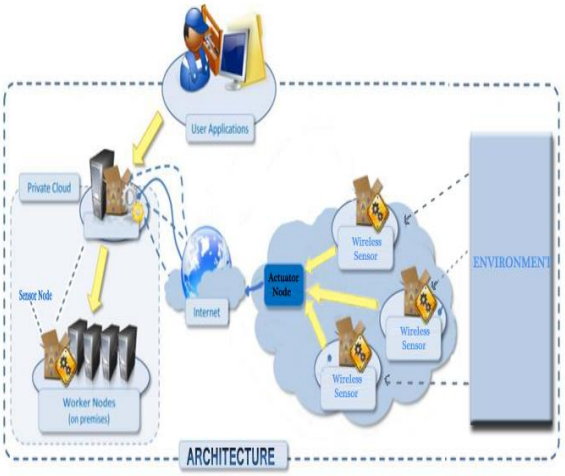

Fig 1: ARCHITECTURE

ADVANTAGES

1.Transmission time will be reduced while file transmitting to concern controller

2.Component heating reduced and giving more life time to hardware components

3.Battery backup will be increased and help to battery loss.

IV. MODULES

- Transaction
- Loose Coupling
- Integration
- Composability

Transaction

stateless services with high degree of reusability. Services within the same service inventory are in compliance with the same contract design standards. Service contracts contain appropriate meta data for discovery which also communicates purpose and capabilities to humans.

Loose coupling

Service contracts impose low consumer coupling requirements and are themselves decoupled from their surrounding environment.Create specific types of relationships within and outside of service boundaries with a constant emphasis on reducing ("loosening") dependencies between Service contract, Service implementation and Service consumers .

Integration

Service contracts only contain essential information and information about services is limited to what is published in service contracts. Avoid the proliferation of unnecessary service information, meta-data. Services contain and express agnostic logic and can be positioned

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as reusable enterprise resources. Integration of sensor nodes into Manufacturing Execution Systems (MES), Enterprise Resource Planning (ERP), accounting and distribution systems. The support for cross-layer integration between the shop floor and enterprise systems was also a main objective for the SOCRADES project. The ERP and MES systems together with shop floor devices are integrated using web services.

Composability

Services are effective composition participants, regardless of the size and complexity of the composition. Ensures services are able to participate in multiple compositions to solve multiple larger problems. Service execution should efficient in that individual processing should be highly tuned. Flexible service contracts to allow different types of data exchange requirements for similar functions.

V. FLOW DIAGRAM

SERVER

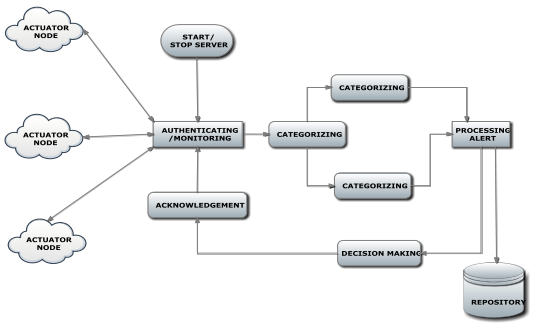

Fig 2 Server

ACTUATOR

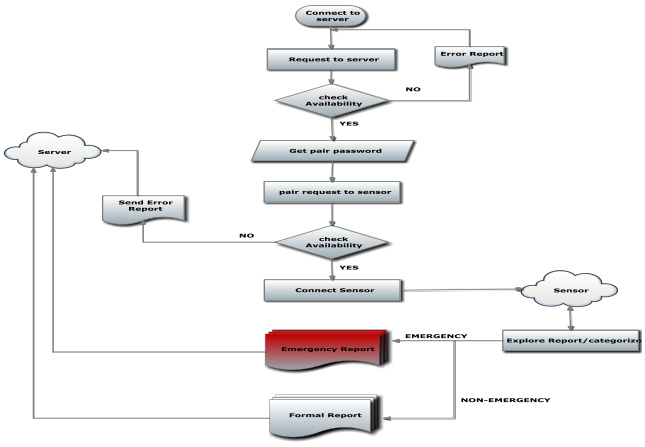

Fig 3 Actuator

SENSOR NODE

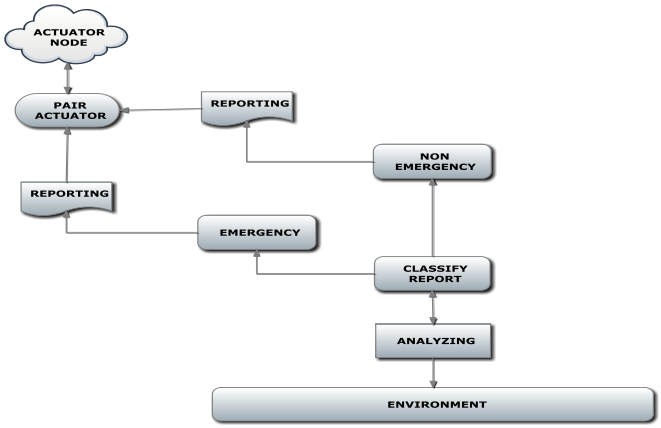

Fig 4 Sensor Node

VI. CONCLUSION

Service Oriented Architecture is mainly framed for IT Infrastructure, proposed system efficiently manage the time and power consumption by EC-CKN algorithm. Controller able to collect reliable information from the actuator and sensor nodes using SOA. At the same time controller will collect crucial information without any losing from the wireless community. In this project assist less time and energy management more than before.

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