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| Title | Distributed Event Based System |
| Project | [Product] WAMAS-C Event System |
| Category | intern |
| Document-Version | 1.0 |
| Status | In progress |
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Document-Status

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| Status | Description |
| **in progress** | The document is under construction. |
| **draft** | The document reached a status ready for review (against a given topic). |
| **reviewed** | The document includes all modifications caused by a review (against a given topic). |
| **accepted** | The document is accepted by the customer (only for documents which require customer acceptance). |

Revision History

| Revision | Date | Author | Comments | Status |
| --- | --- | --- | --- | --- |
| **1.0** | 16.06.2014 | DI Christian Trummer | Initial Version includes collection of requirements and a first design draft. | in progress |
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Stakeholder

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| Stakeholder | Domain | Comments |
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# Introduction

Up to now WAMAS-C uses a direct addressing messaging system for the inter-process communication. This document should collect ideas, requirements and design proposals for a switch to an event based inter-process communication architecture.

## Document Scope

This document should be a living document during the whole process. Therefore it includes the following topics:

* Description of basic concepts for a distributed event based system
* Requirements for a WAMAS-C event based inter-process communication
* Criteria for selection of a third-party library/framework
* Evaluation report of the evaluated third-party libraries/frameworks
* Design decision report for a third-party library/framework or an own solution
* Description of the implementation design
* How-to-use the implemented distributed event based system solution in WAMAS-C

Whiteboard:

* Event Pub/Sub auf Type
* Persistence, Recovery (Service-Clients) – k.o. criteria
* Monitoring/Administration
* Load/Balancing (more than one broker) (low priority)
* Durchsatz Gesamtsystem (BOSS -> Zahlen!!!, JMS könnte schlechter als BOSS sein)
* Plattformunabhänig (Betriebssysteme)
* Client Technology unabhängig (z.B. Java, C/C++, Shell Skripte)
* Skalierung
* Wartung/Erweiterbarkeit
* Verfügbarkeit
* Risc-Management
* Request aus IT-Dev (zumindest Teamleiter)
* Kommunikation (Inter-Process vs. Intra-Process) (WAMAS-C in Services aufbauen, jetzt async BOSS/JMS, Prinziep Fire and Forgett)

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| Technisch  Functional  Nicht functional  Anbieter Kriterien | Definition der Kriterien  Glossar | Wie messen!  (qualitative, quantitative, scalar, ja/nein | Kriterien-Gewichtung  KO Kriterien |

Technichse

# Structure

## Collection of ideas

### Periodically messages

Currently same parts of WAMAS-C are periodically sending messages. This could be either a kind of keep-alive signal or a repeated query message. In the case a consumer was done for some time for this specific kind of events a “fast-forward” should be possible.

## Basic concepts

### Advantages BOSS

#### Programming language independent

Socket communication (e.g. Java, Perl)

#### Independencies to foreign systems

BOSS has no dependencies to other systems, libraries and frameworks.

#### Maintenance free

BOSS is over teen years in operative systems in use.

### Disadvantages BOSS

Problems of the BOSS message system are:

#### Architecture

One big functional block

Weaknesses of the design are compensate by the clients.

#### Algorithm for de-queuing

Fixed number of named queues

Dynamic number of anonymous queues

Round-Robin-> no priority for queues or for messages

#### Acknowledge

BOSS clients have to acknowledge the receiving of any message. BOSS message does not support any kind of binding of message and acknowledge message. The system guess that an acknowledge message belongs to the oldest message in the queue. This behavior leads to errors. The messages header already includes message identification.

#### Handling of message header information

Unused information in the message header: message ID, used protocol.

#### Queues

* tree structure for managing the queues
* queues with fixed names (permanent queues)
* dynamic queues (closed with the last client)
* parent/child concept
* defined numbers of messages per queue
* if maximum of messages is reached no further messages are accepted
* coupling of client/message-system

#### Throughput

10.000 Messages each with 100KB result in 280sec.

Average Message with 200Byte – up to 600 messages/sec.

#### Reconnect

Reconnection not able until the message server realize that connection was lost.

#### Persistence

## Requirements

## Criteria

## Evaluation

## Decision

## Design

## Documentation

## Glossar

Leistungsfähigkeit Performance

Zuverlässigkeit Reliability

Konfigurierbarkeit Configurability

Integartionsfähigkeit ability to integrate

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# Heading 1

Maintextformat: Standard

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Figure 1 - This is the description of figure one

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Table Variant 1

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Bulletpoints with CrossHeading

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# Appendix

## Table of Abbreviations

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| --- | --- |
| Term/Abbrev. | Description |
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