

# WP2 – Triple Space Knowledge Representation

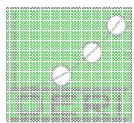
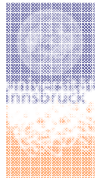
TripCom Kick Off Meeting

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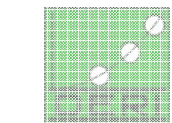
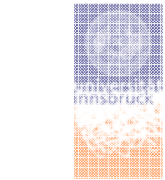
# Overview

<b>WP number</b>	2	<b>Start date or starting event:</b>			M0
<b>Activity type</b>	RTD/Innovation activities				
<b>Participant id</b>	Telefonica	<b>FUB</b>	TUW	UIBK	ONTO
<b>PM per participant</b>	2	<b>22</b>	6	15	18

## Objectives

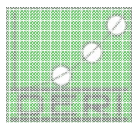
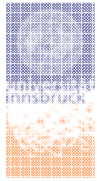
Deals with the issues of representing semantic data models such as RDF and OWL / WSML efficiently and consistently within a tuplespace:

- semantic modeling for tuples and tuplespaces
- distribution scheme for sub-spaces



# Representatives

FUB	Elena Paslaru (WP leader)
UIBK	Francisco Martin-Recuerda
TUW	Martin Murth
Onto	Vassil Momchev
Telefonica	



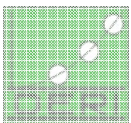
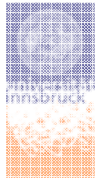
# Task 2.1 Representation of semantics in tuples

- Conventional tuplespaces
    - data ~ tuples ~ ordered lists of values
  - **Semantic tuplespaces**
    - **semantic** data ~ tuples ~ ordered lists of values
- Semantic data models (RDF, OWL, WSML etc.) need a (semantics preserving) **tuple representation**



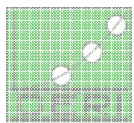
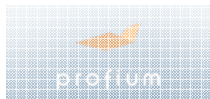
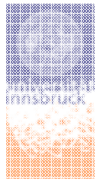
# Task 2.1 (cont).

- **First task:** RDF representation as tuples
  - How do we want to handle e.g.
    - Blank nodes?
    - Reification?
    - Collections and containers?
    - ...
- **Milestone M12:** Deliverable D2.1 „Specification of how RDF would be represented in tuples“



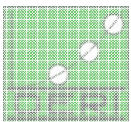
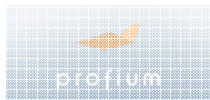
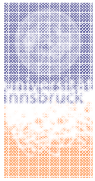
## Task 2.1 (cont.)

- **Next tasks:** OWL, WSML and rules representation as tuples
  - How will tuples of different representations interact within the space?
  - At what level can we model these representations in a tuple?
  - How do we reason about the tuplespace data?
- **Milestone M24:** Evaluation of our model for representing ontologies and rules
- **Milestone M24:** Deliverable D2.3 „Specification of OWL, WSML and rules representation in Triple Space“



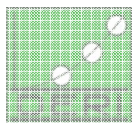
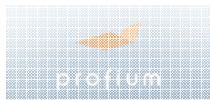
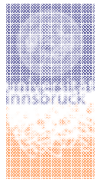
# Task 2.2 Representation of Triple Spaces through an ontology

- **Task:** Enable reasoning **about the tuplespace**
  - Develop an **ontology** for expressing
    - metadata about the tuplespace
    - a meta-model of the current state of the tuplespace
- **Milestone M12:** Deliverable D2.2 „Specification of Triple Space Ontology“



# Task 2.3 Implementation of Highly Scalable Triple Spaces

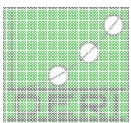
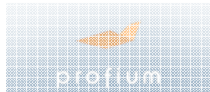
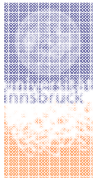
- Global scalability requirements on triple spaces
  - Highly scalable **tuplespaces & Linda coordination**
    - Efficient large scale matching mechanism
  - Highly scalable **triple stores & logical reasoning**
    - Feasible large scale reasoning performance





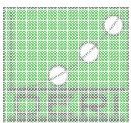
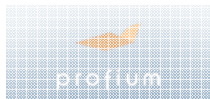
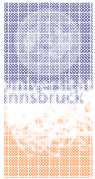
## Task 2.3 (cont.)

- **First task: research on semantic clustering**
  - Mechanism to group statements of „related“ meaning closer together within the distributed tuplespace
  - Integrate semantic clustering to tuplespace matching component
- **Milestone M18: Implementation of a semantic clustering solution**



## Task 2.3 (cont.)

- **Next tasks:** research on **self-organization** for a global scale solution
  - Tuples organize **themselves** in the distributed tuplespace according to their content, metadata and history
  - Integrate self-organization to tuplespace matching component
- **Milestone M28:** Implementation of a self-organization solution
- **Milestone M28:** D2.4 “Semantic clustering and self-organization in Triple Space”



# Deliverables overview

Del.	Title	Lead Partner	PMs	Nature	Diss.	Mo.
D2.1	Representing RDF semantics in tuples	FUB	16	R	PU	12
D2.2	Specification of Triple Space ontology	UIBK	16	R	PU	12
D2.3	Ontology and rule representation in a tuplespace	ONTO	13	R	PU	24
D2.4	Semantic clustering and self-organization in a tuplespace	FUB	18	P	PU	28

