BI4People WP3 :

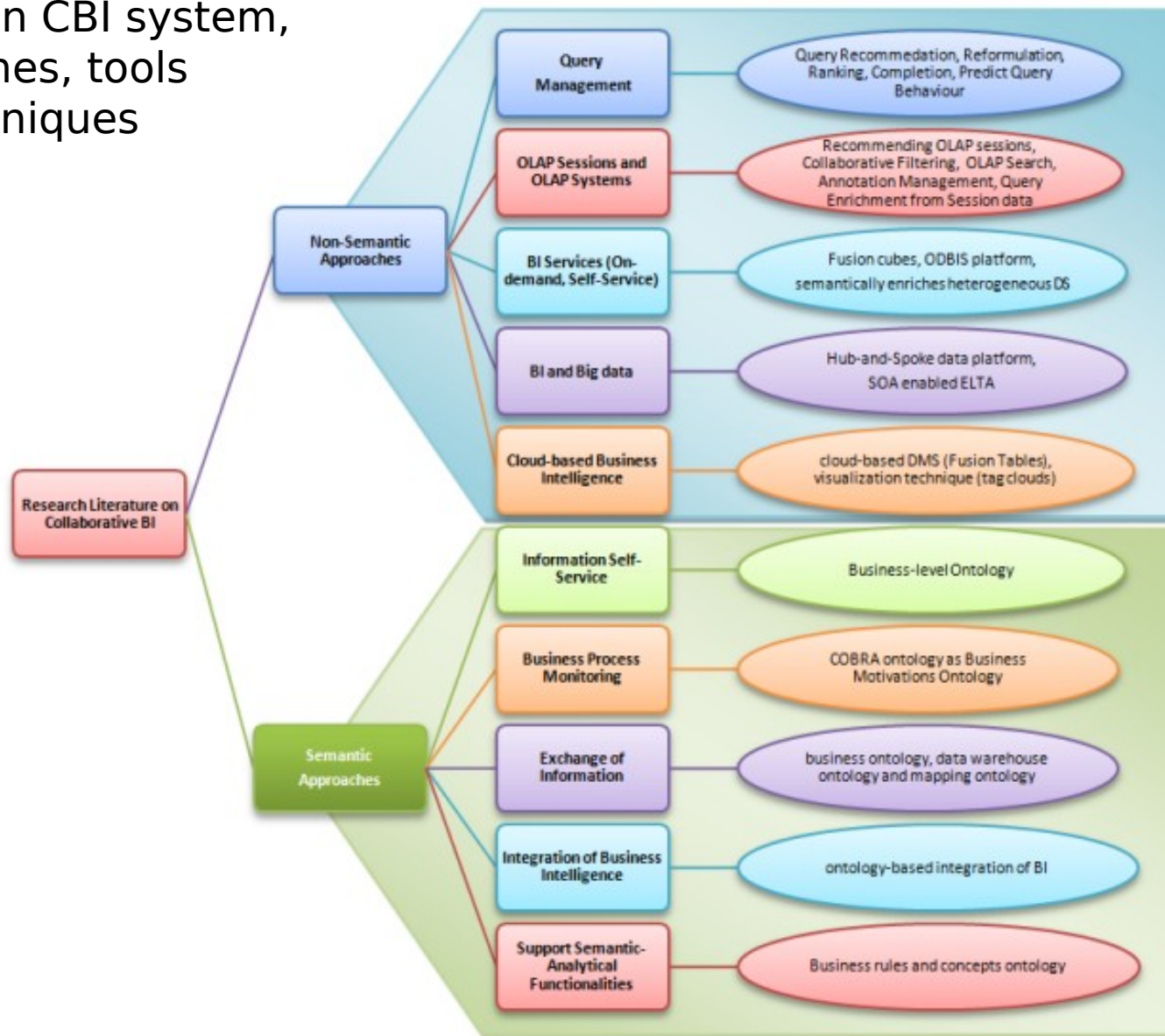**Collaborative Analysis**

Fahad Muhammad

Post-Doc, ERIC, Univ. Lyon2

Outlines

- Topology of CBI approaches
- Architecture of our CBI platform
- Implementation of CBI platform
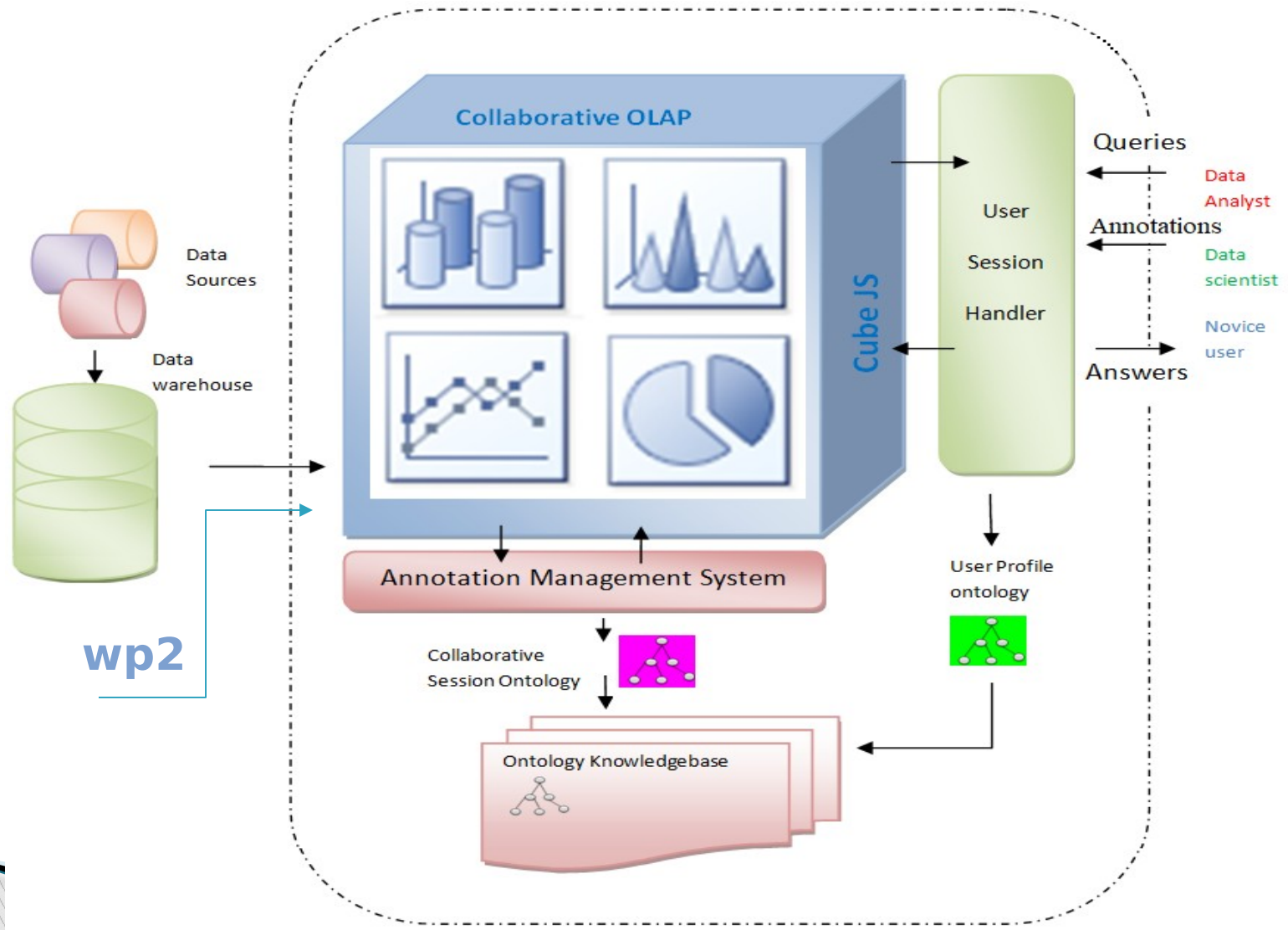- Case Study and Results
- Conclusion

Collaborative Analysis

- Collaborative OLAP
- enables exploration of data where users uncover hidden truths in data and present their findings via compelling and beautiful visualizations
- supports and assists information sharing, collaborative decision-making and annotation management beyond the boundaries of individuals and enterprises.
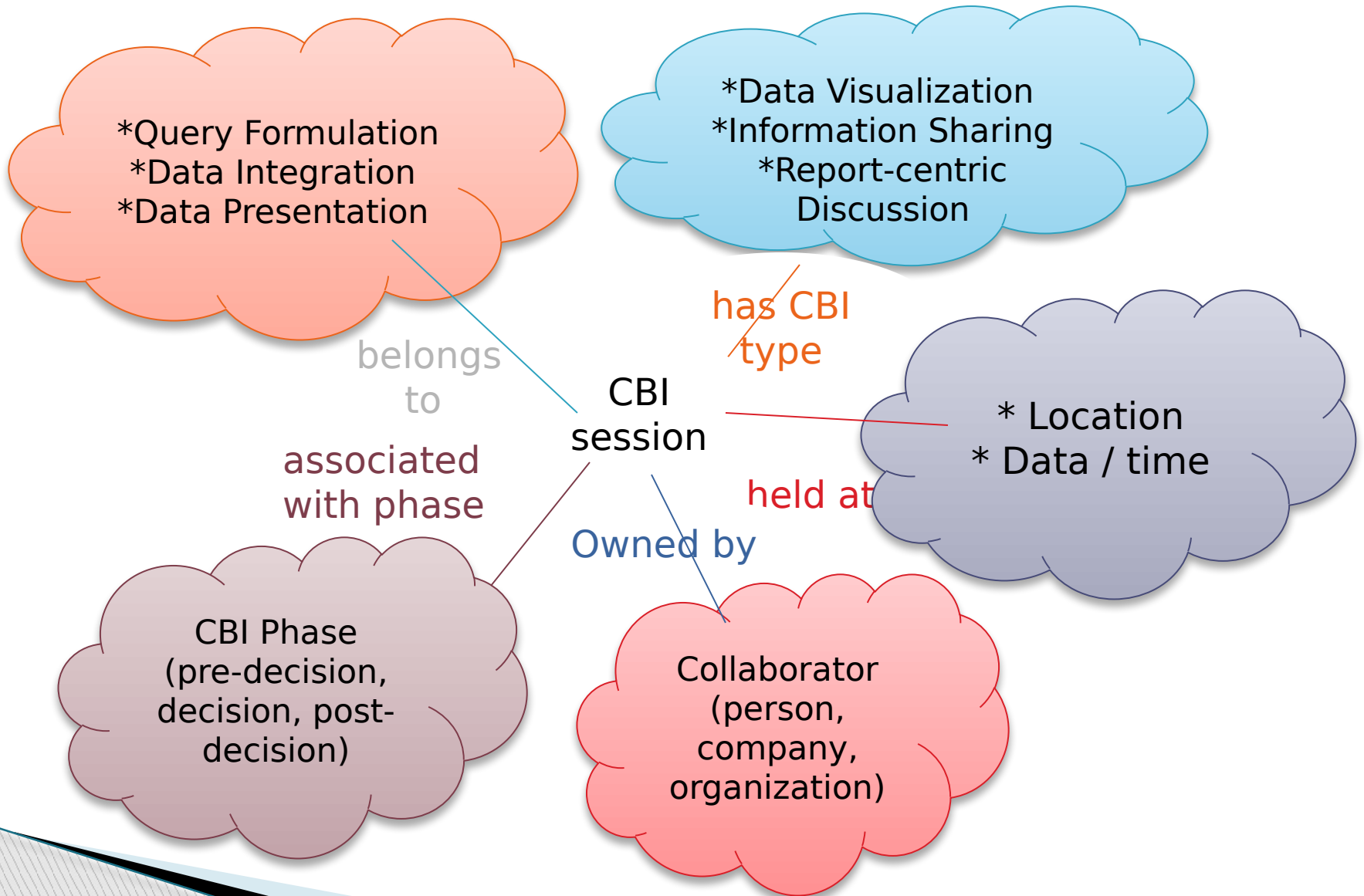
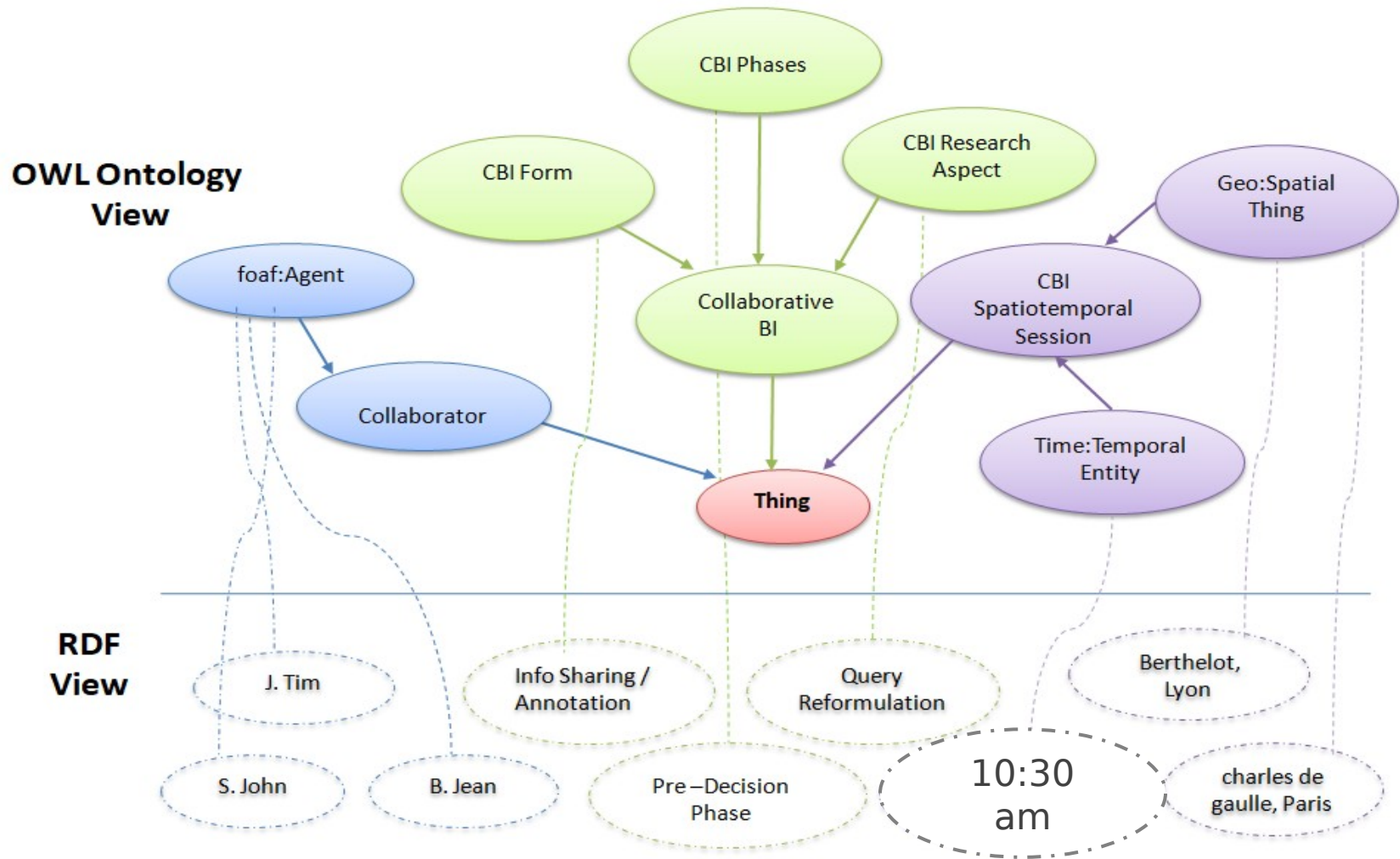# Survey on CBI system, approaches, tools and techniques

AN ONTOLOGY-BASED CBI FRAMEWORK

Brain Storming about CBI session

*Query Formulation
*Data Integration
*Data Presentation

*Data Visualization
*Information Sharing
*Report-centric Discussion

has CBI type

belongs to

CBI session

* Location
* Data / time

associated with phase

held at

Owned by

CBI Phase (pre-decision, decision, post-decision)

Collaborator (person, company, organization)

CBI Ontology

The Collaborative Business Intelligence Ontology (CBIOnt)

CBI Ontology

https://webprotege.stanford.edu/#projects/

Towards Collaborative BI... M. Fahad

Case Study: SSB Data Set

- Attribute **lo_orderpriority** { URGENT, HIGH, MEDIUM, NOT SPECIFIED, and LOW} .
- Attribute **lo_shipmode** { AIR, SHIP, MAIL, FOB, TRUCK, RIG AIR, and RAIL }.
- Attribute **lo_ordertotalprice** stores pre-calculated values based on the price and quantity
- Attribute **lo_revenue** stores pre-calculated values of revenue

PART
- **p_partkey**
- p_name
- p_mfgr
- p_category
- p_color
- p_type
- p_size
- p_container

SUPPLIER
- **s_suppkey**
- s_address
- s_city
- s_nation
- s_region
- s_phone

LINEORDER
- **lo_orderkey**
- lo_linenumber
- **lo_custkey**
- **lo_partkey**
- **lo_suppkey**
- **lo_orderdate**
- lo_orderpriority
- lo_quantity
- lo_extendedprice
- **lo_commdate**
- lo_discount
- lo_revenue
- lo_supplycost
- lo_tax
- lo_ordertotalprice
- lo_shipmode

CUSTOMER
- **c_custkey**
- c_name
- c_address
- c_city
- c_nation
- c_region
- **c_mktsegment**

DWDATE
- **d_datekey**
- d_date
- d_dayofweek
- d_month
- d_year
- d_yearmonthnum
- d_yearmonth
- d_daynuminweek
- d_daynuminyear
- d_monthnuminyear
- d_weeknuminyear
- d_sellingseason
- d_lastdayinweekfl
- d_lastdayinmonthfl
- d_holidayfl
- d_weekdayfl

Fact Table:	LINEORDER
Dimension Tables:	CUSTOMER, SUPPLIER, PART, DWDATE

Star Schema of modified TPCH

Towards Collaborative BI... M. Fahad

Case Study: CubeJS Schema

```
cube(`Lineorder`, {

  sql: `SELECT * FROM
        ssb.lineorder`

  measures: {
    count: {
      type: `count`,
      drillMembers:
[loOrderdate, loCommitdate,
loOrderpriority, loShipmode]
    },
    loOrdtotalprice: {
      sql:
`${CUBE}.\`lo_ordtotalprice\``,
      type: `sum`,
      format: `currency`,
      drillMembers:
[loOrderdate, loCommitdate]
    },
    loExtendedprice: {
      sql:
`${CUBE}.\`lo_Extendedprice\``,
      type: `sum`,
      drillMembers:
[loOrderdate, loCommitdate]
    },
    loQuantity: {
        sql:
`${CUBE}.\`lo_quantity\``,
        type: `sum`,
        drillMembers:
[loOrderdate, loCommitdate]
    },
    loRevenue: {
        sql:
`${CUBE}.\`lo_Revenue\``,
        type: `sum`,
        drillMembers:
[loOrderdate, loCommitdate]
    },  },

  dimensions: {
    loLinenumber: {
      sql: `lo linenumber`,
      type: `string`
    },
    loOrderdate: {
      sql: `lo orderdate`,
      type: `time`
    },
    loCommitdate: {
      sql: `lo commitdate`,
      type: `time`
    },
    loOrderpriority: {
      sql: `lo orderpriority`,
      type: `string`
    },
    loShipmode: {
      sql: `lo shipmode`,
      type: `string`
    },
    loShippriority: {
      sql: `lo shippriority`,
      type: `string`
    },
    loDiscount: {
      sql: `lo discount`,
      type: `number`
    },
    loSupplycost: {
      sql: `lo supplycost`,
      type: `number`
    },
    loTax: {
      sql: `lo tax`,
      type: `number`
    },
  },

  dataSource: `default`
});
```

Case Study: Prototype

Towards Collaborative BI... M. Fahad
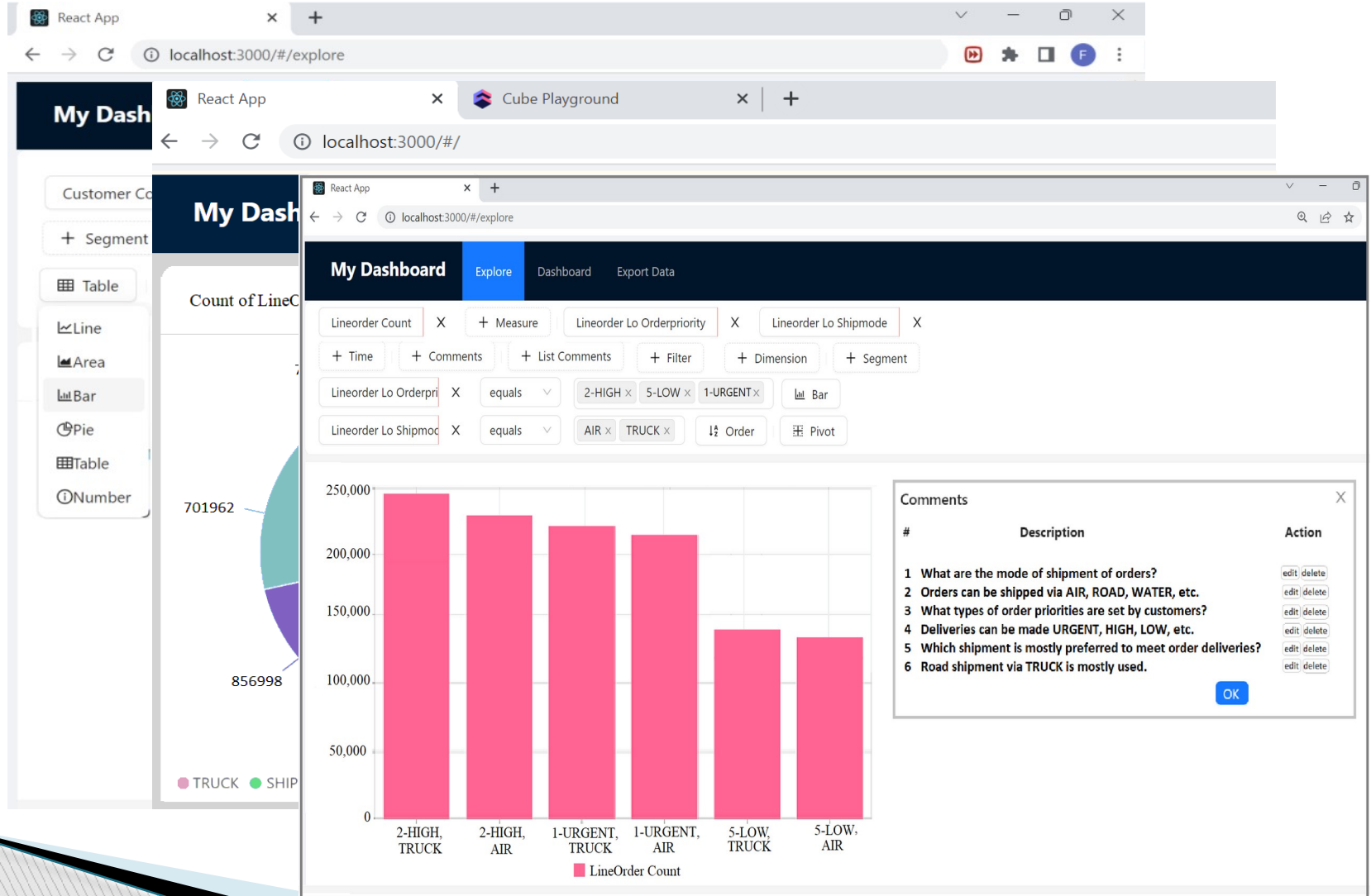
Conclusion

- CBI plays a significant role
  - targeting a common goal among various companies
  - requires them to connect, organize and coordinate with each other
  - respecting their own autonomy and heterogeneity.
- Our CBI platform enables
  - Easy of information searching and retrieval
  - collaborative decision-making
  - annotation management
- Ontology based Platform
  - store session knowledge as open, smart, machine-interoperable and machine-processable data

References

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- An ontology-based collaborative business intelligence framework, Data 2023
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- The Star Schema Benchmark and Augmented Fact Table Indexing, Technology Conference on Performance Evaluation and Benchmarking
- Cubejs : https://cube.dev/