

**Progress towards Federated Logistics through the Integration of TEN-T into
A Global Trade Network**

D2.2 Open EGTN Platform Architecture final version

Grant Agreement No		Acronym	Q
Full Title	Q	-	ffb -
Start Date		Duration	
Project URL	_____		
Deliverable	Q ffb		
Work Package			
Contractual due date		Actual submission date	
Nature		Dissemination Level	Q
Lead Beneficiary			
Responsible Author			
Contributions from			



Q

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Q Q

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ffb

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Q

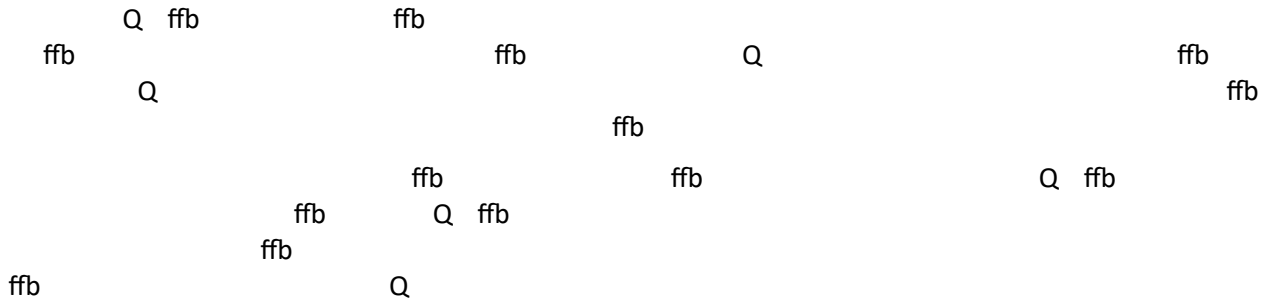
Q

L ffb

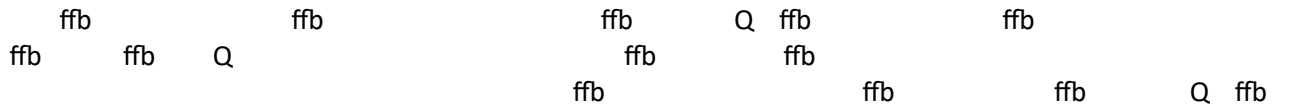
Abbreviation / Term	Description
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K	K
L	L
Q	Q ffb
	ffb

3 The EGTN Cloud-based Platform



3.1 Mapping of Requirements



Business Scenario	ID	Functional Requirement	Respective EGTN Platform functionalities
A. Add / Remove data from the platform		ffb ffb	ffb ffb ffb Q ffb ffb ffb
	Q ffb	ffb	ffb ffb ffb
	Q ffb	ffb	ffb ffb L ffb ffb
		ffb	ffb ffb
			ffb ffb ffb

			ffb
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ffb ffb

Business Scenario	ID	Functional Requirement	Respective EGTN Platform functionalities
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B. Pre-processing data ready for analysis		ffb ffb	ffb ffb found. Error! Reference source not
		ffb	ffb ffb found. Error! Reference source not
		ffb	ffb ffb found. Error! Reference source not
		ffb	ffb ffb
		ffb	ffb ffb ffb ffb
		ffb	ffb ffb
		ffb	L ffb ffb
		ffb	ffb ffb

Q ffb

Business Scenario	ID	Functional Requirement	Respective EGTN Platform functionalities
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C. Visualise and analyse data			ffb ffb ffb
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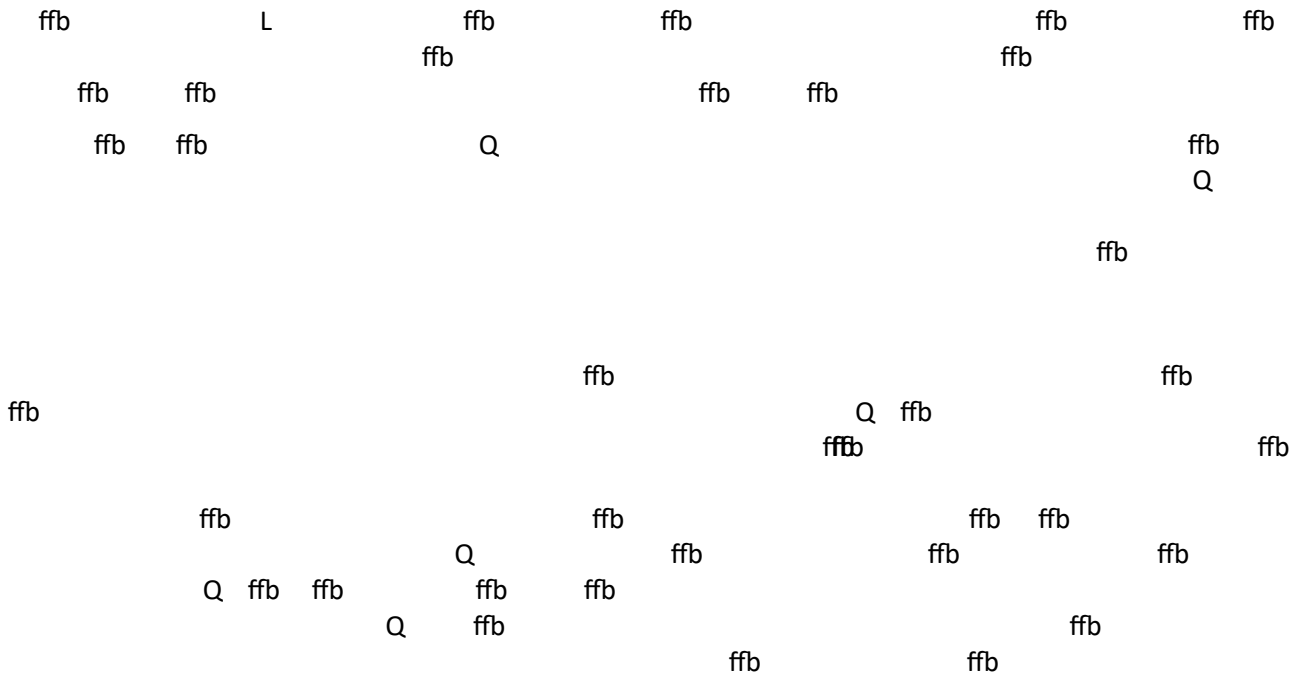
			ffb ffb

Business Scenario	ID	Functional Requirement	Respective EGTN Platform functionalities
D. Building algorithms and analytical workflows		ffb Q ffb	ffb ffb
		ffb ffb	ffb ffb ffb
		ffb	ffb
		ffb	L ffb
		ffb	ffb ffb
		ffb	ffb ffb
		ffb	ffb ffb
		ffb ffb	ffb
		ffb ffb	ffb ffb

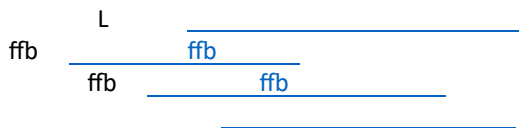
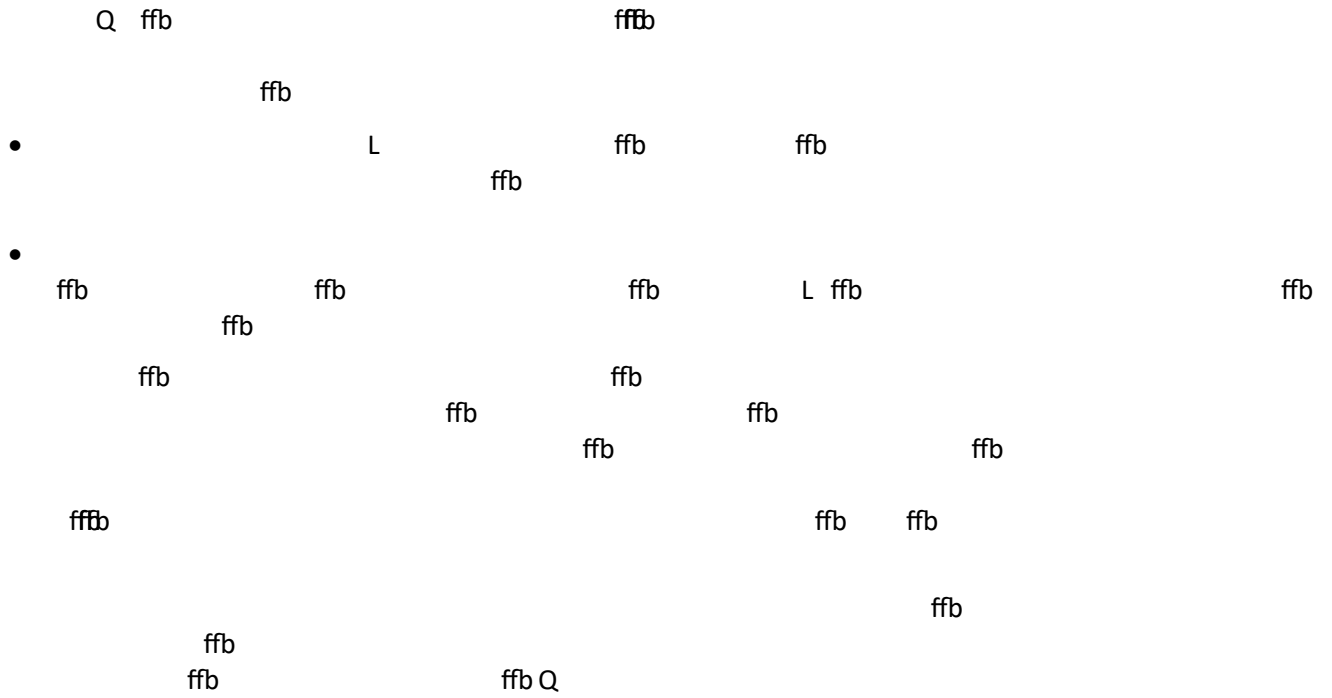
ffb

Business Scenario	ID	Functional Requirement	Respective EGTN Platform functionalities
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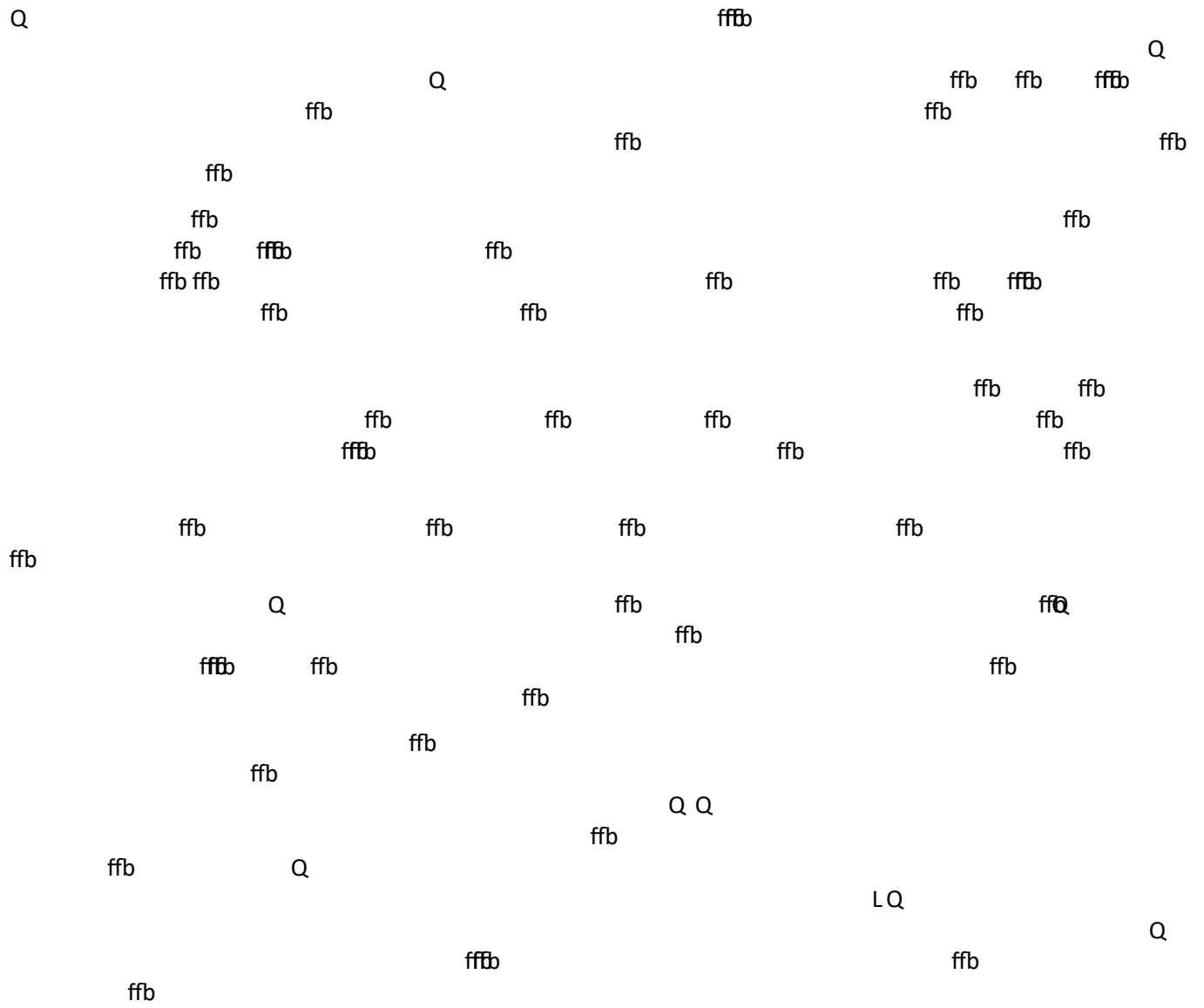


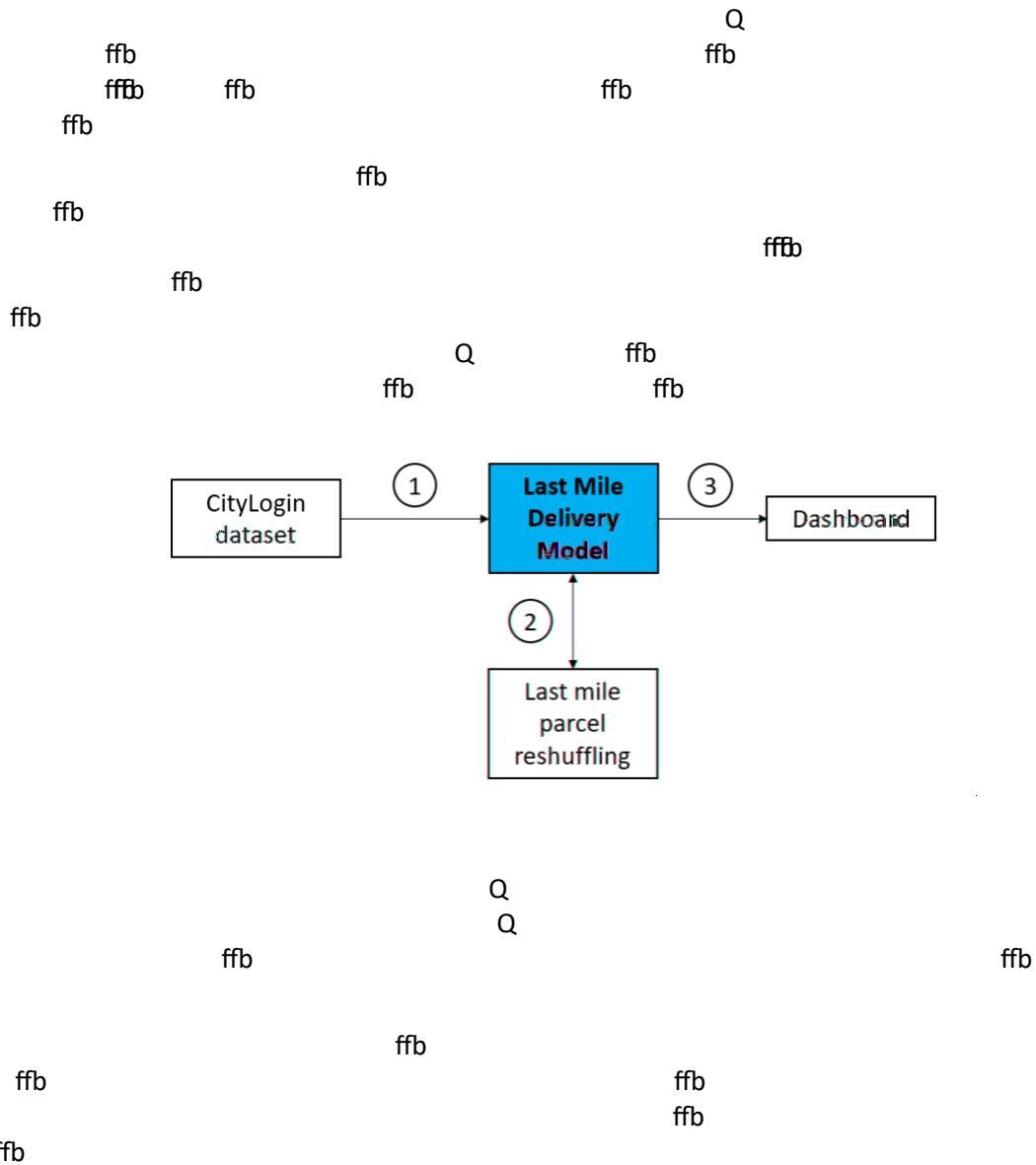
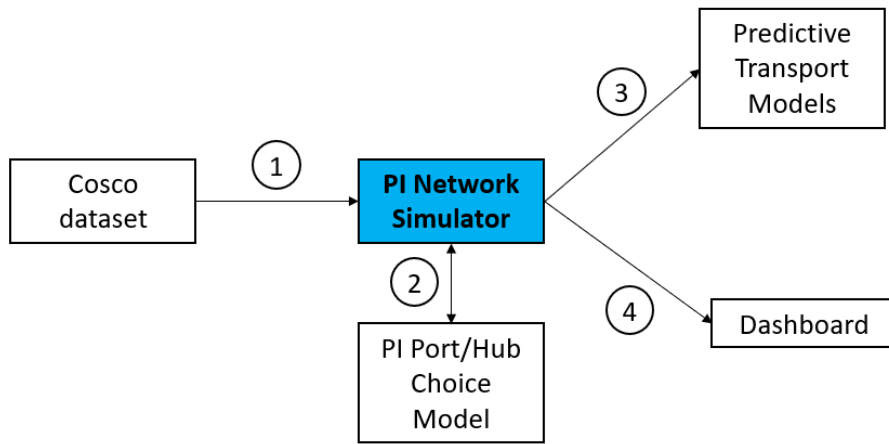


3.3 Infrastructure Components Description

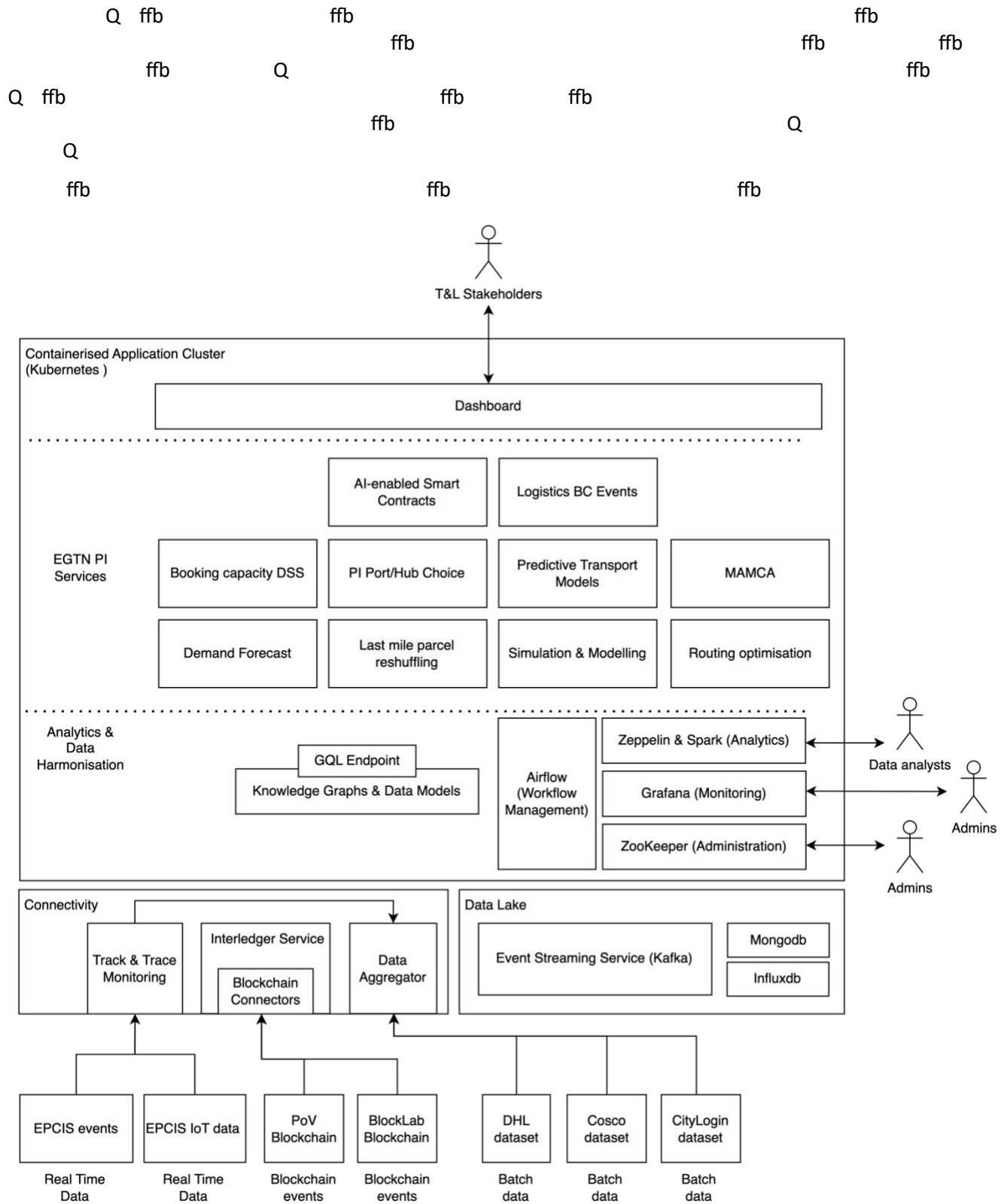


3.4 Modelling and Simulation





4 EGTN infrastructure and Services



Stakeholders	ffb
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Container Orchestration (Kubernetes)

Task Mapping	
Description/Added Value	ffb ffb
Stakeholders	Q ffb

Monitoring and Visualisation (Grafana)

Task Mapping	
Description/Added Value	ffb ffb ffb ffb
Stakeholders	L ffb

4.2 Logistics Services for Multimodal Freight Transport

ffb ffb ffb ffb ffb Q ffb
ffb ffb ffb ffb Q ffb
ffb

4.2.1 Track & Trace Monitoring

Track & Trace Monitoring

Task Mapping	
Description/Added Value	ffb ffb
Data Input	
Data Output	ffb L ffb ffb ffb Q ffb

4.2.2 Metadata & Statistics

Metadata & Statistics

Task Mapping	
Description/Added Value	ffb
Data Input	ffb
Data Output	ffb

4.2.3 Events Generation

Events Generation

Task Mapping	
Description/Added Value	ffb ffb
Data Input	ffb
Data Output	ffb ffb Q ffb

4.2.4 Consolidation & Deconsolidation

Consolidation & Deconsolidation

Task Mapping	
Description/Added Value	
Data Input	ffb ffb
Data Output	

4.2.5 KG Query: Weather

KG Query: Weather

Task Mapping	
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Description/Added Value	ffb		L	Q	Q	ffb
Data Input						
Data Output	ffb			ffb		ffb

4.2.6 KG Query: IoT Readings

KG Query: IoT Readings

Task Mapping						
Description/Added Value					ffb	
Data Input		ffb				L ffb
Data Output	ffb		ffb	ffb	ffb	ffb

4.2.7 KG Query: IoT Events

KG Query: IoT Events

Task Mapping						
Description/Added Value		ffb		Q	ffb	
	ffb			ffb		
Data Input		ffb				L ffb
Data Output			Q			

4.2.8 KG Query: Route Data

KG Query: Route Data

Task Mapping	
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4.2.11 Predictive Transport Models

Predictive Transport Models

Task Mapping				
Description/Added Value		ffb	ffb	
		ffb		
Data Input	ffb	ffb	ffb	ffb
Data Output	ffb		ffb	
	ffb		ffb	

4.2.12 PI Port/Hub Choice

PI Port/Hub Choice

Task Mapping				
Description/Added Value	Q	Q		ffb
		ffb	ffb	
Data Input	ffb			
Data Output				

4.2.13 Last Mile Parcel Reshuffling

Last Mile Parcel Reshuffling

Task Mapping				
Description/Added Value	Q	ffb	ffb	ffb
	ffb		ffb	ffb
	ffb			

Data Input	ffb	
Data Output	ffb	ffb

4.2.14 MAMCA

MAMCA

Task Mapping					
Description/Added Value	ffb	ffb	ffb	ffb	ffb
Data Input					
Data Output	ffb	ffb			

4.2.15 Booking Capacity DSS

Booking Capacity DSS

Task Mapping				
Description/Added Value	ffb	ffb	ffb	ffb
Data Input	ffb	ffb		
Data Output	ffb	ffb		

4.2.16 Logistics Events

Logistics Events

Task Mapping			
Description/Added Value	ffb	ffb	ffb

IoT EPCIS v2 Data Description

Topic Name	
Description	ffb
Data Input	Q
Topic Event	

Events EPCIS v1 Data Description

Topic Name	
Description	Q ffb Q
Data Input	Q
Topic Event	

Blockchain Events Data Description

Topic Name	
Description	ffb
Data Input	ffb
Topic Event	

Weather Data Description

Topic Name	
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Description	ffb
Data Input	K
Topic Event	

SIRMA Timeseries Data Description

Topic Name	
Description	ffb
Data Input	
Topic Event	

5.1.2 Database

ffb ffb ffb ffb ffb ffb ffb

Q Q ffb ffb ffb ffb ffb ffb

ffb ffb ffb ffb ffb ffb ffb ffb

ffb

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Database: info
ffb

Collection	
Description	ffb
Sample	
Collection	
Description	ffb ffb
Sample	
Collection	
Description	ffb
Sample	
Collection	

Description	
Sample	
Collection	
Description	ffb
Sample	
Collection	
Description	
Sample	
Collection	

Description	ffb	ffb
Sample		

Database: container

ffb

Collection			
Description	ffb	ffb	ffb
Sample			
Collection			
Description	ffb	ffb	ffb
Sample			

Database: pallet

ffb

ffb

Collection			
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Description	ffb	ffb	ffb
Sample			
Collection			
Description		ffb	ffb
Sample			

Database: last_mile_delivery_routing_jobs
ffb ffb

Collection			
Description	ffb	ffb	ffb
Sample			

Database: last_mile_delivery_routing_routes
ffb Q ffb

Collection			
Description	ffb	ffb	ffb
Sample			

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Database: PredictiveTP

ffb Q

Collection	Q Q
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Description	Q
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Sample	
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Collection	
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Description	Q
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Sample	
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Collection	
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Description	Q
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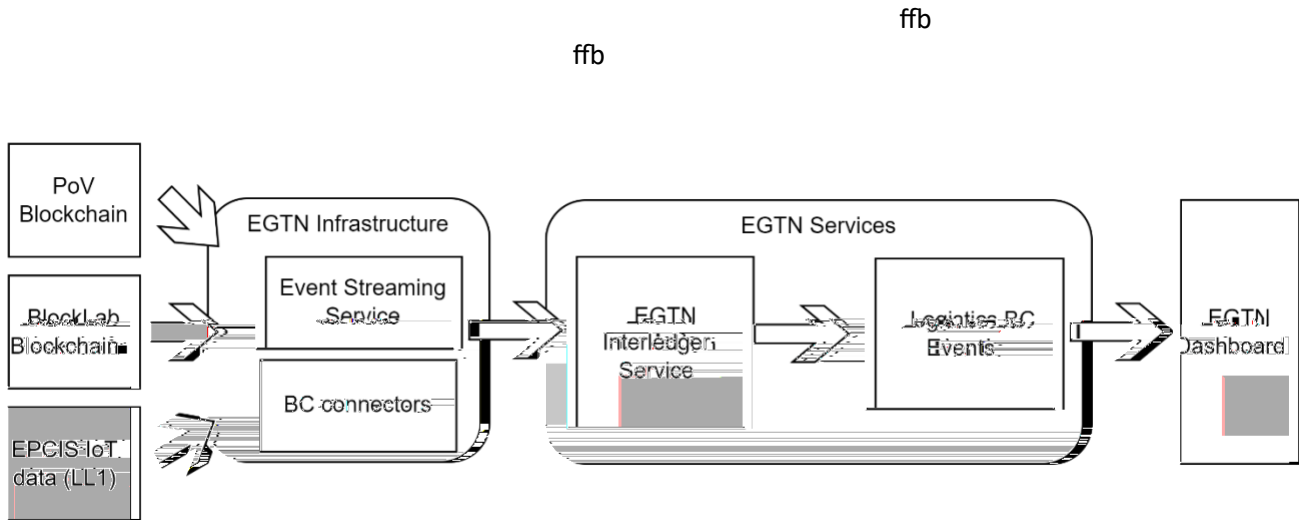
Sample	
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Collection	
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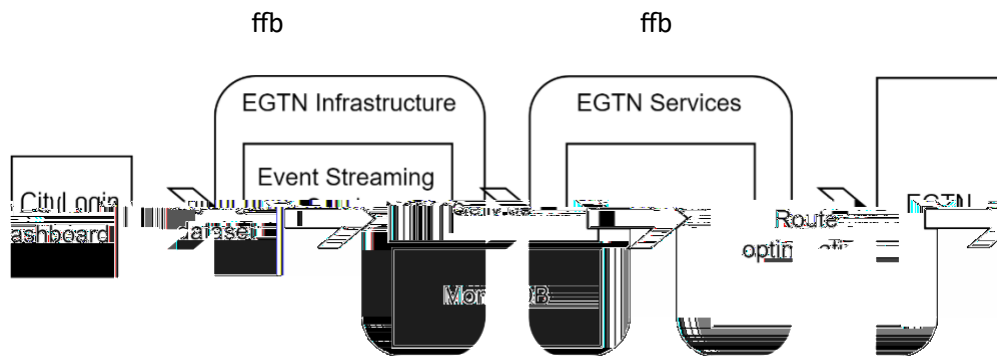
Description	Q
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Sample	
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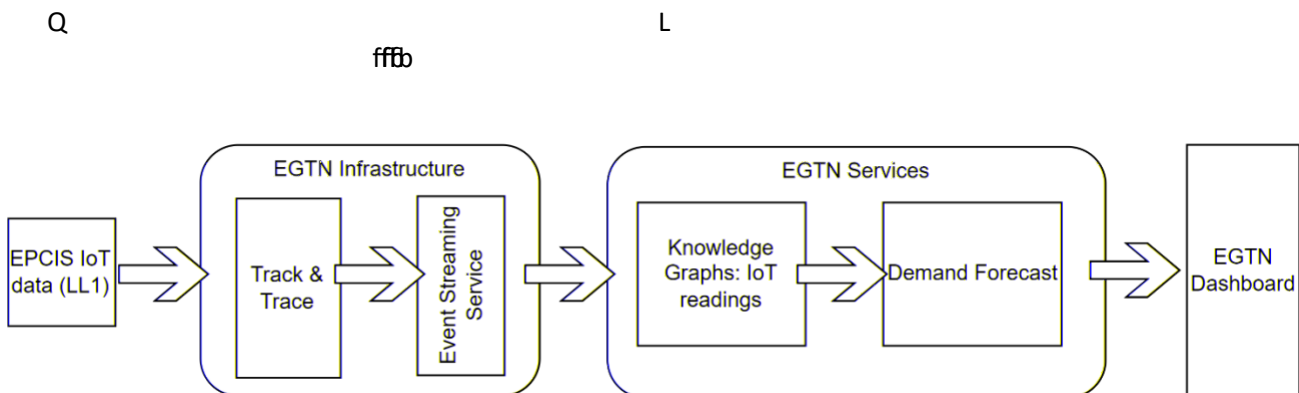
5.2.2 Logistics Events



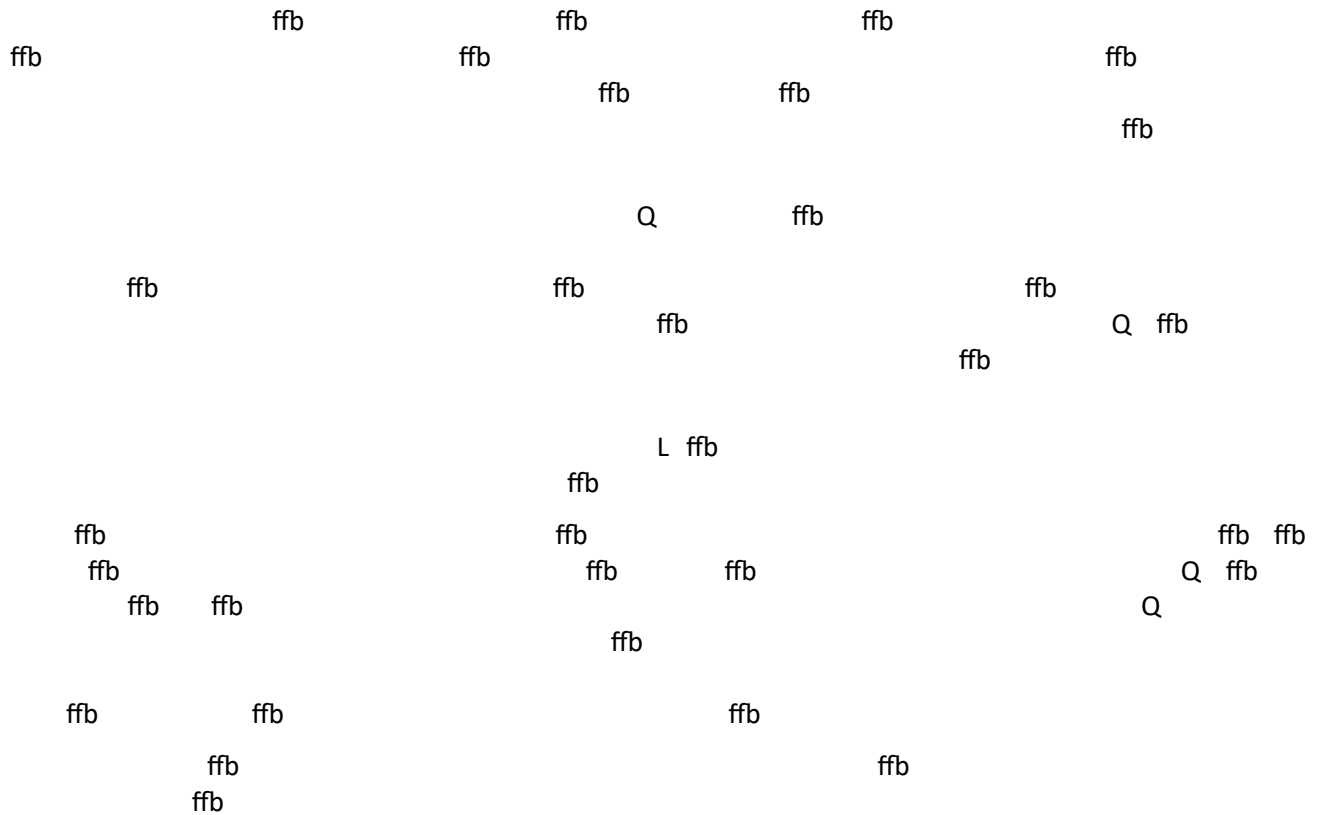
5.2.3 Routing Optimisation



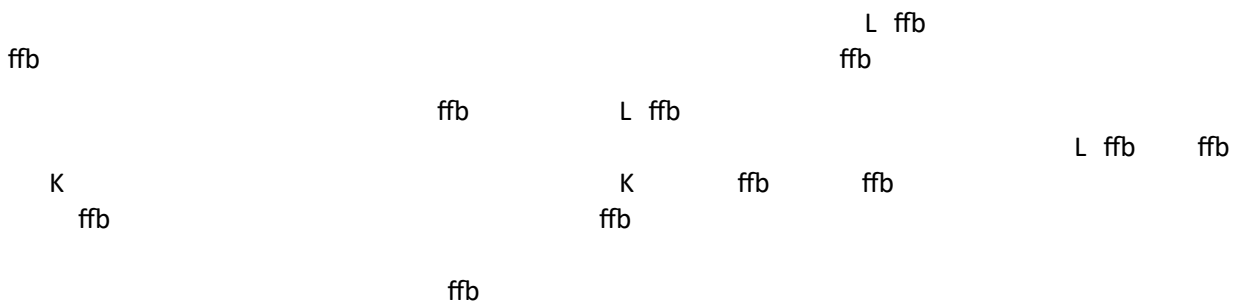
5.2.4 Predictive Analytics based on Knowledge Graphs



6 Privacy and Security Considerations



6.1 Kafka Topics ACL protection



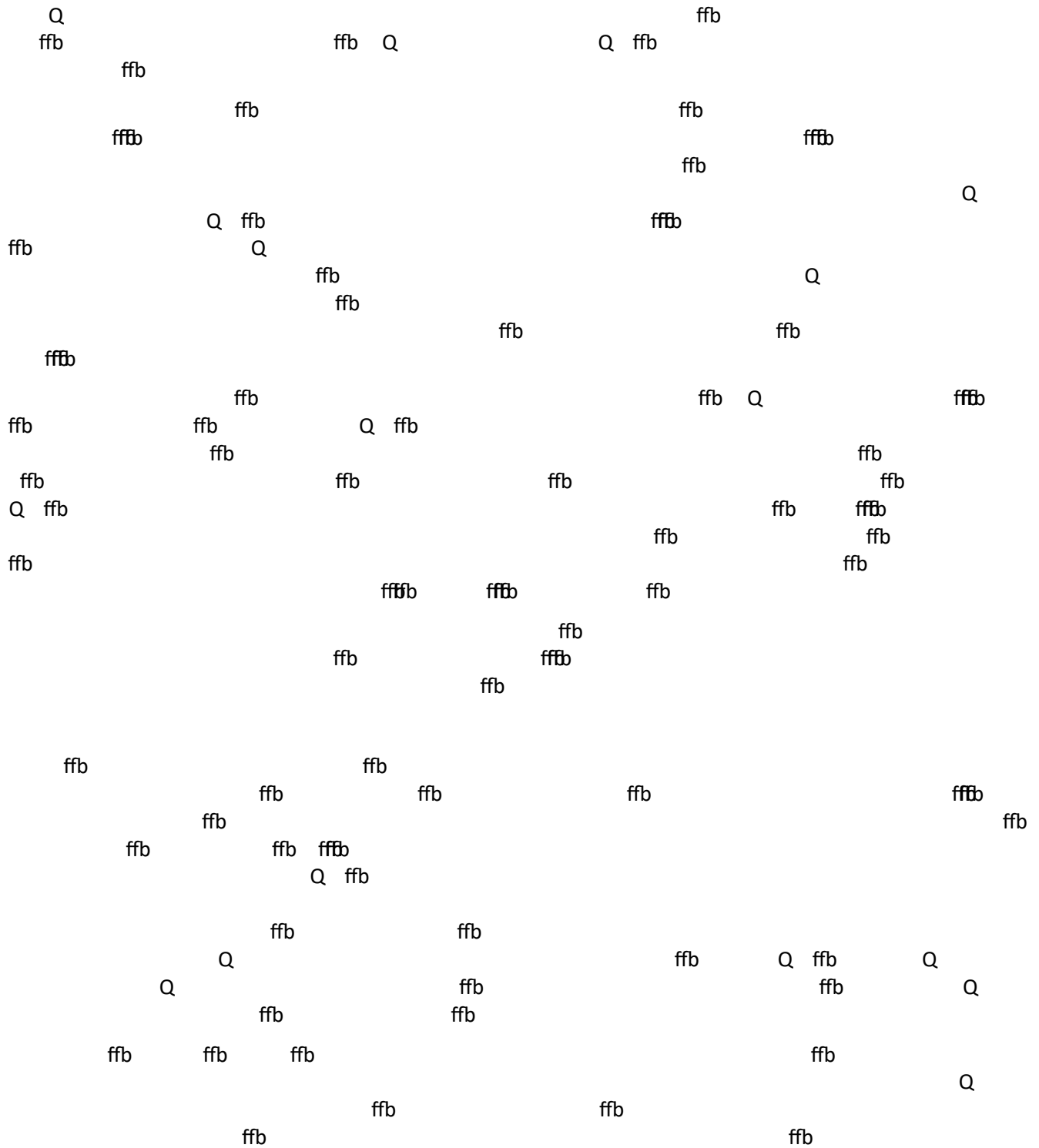
Users/Topics	bc-events	ll1-iot	ll3-events	dhl-metrics	citylogin-deliveries	weather-ingestion	timeseries-ingest
	(R)W	R					
		R	RW		R	RW	RW
			R			R	

	RW				R	
R	R	R	R	R	R	R
			R	R	R	
			RW		R	
					R	



7 An Open-Source Blueprint for the EGTN Network

7.1 The EGTN Platform Functionalities and Innovation



9 References

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Information Systems Research,

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