



6th Malaysia Statistics Conference

19 November 2018

Sasana Kijang, Bank Negara Malaysia

2018



Embracing Data Science and Analytics to Strengthen
Evidence-Based Decision Making

Topic of the session

Data Collection Using Big Data Technology

CK Low


infoscape

Business Intelligence . Solution . Consultancy

INFOSCAPE ANALYTICS SDN BHD
10-3A, Oval Damansara,
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Malaysia

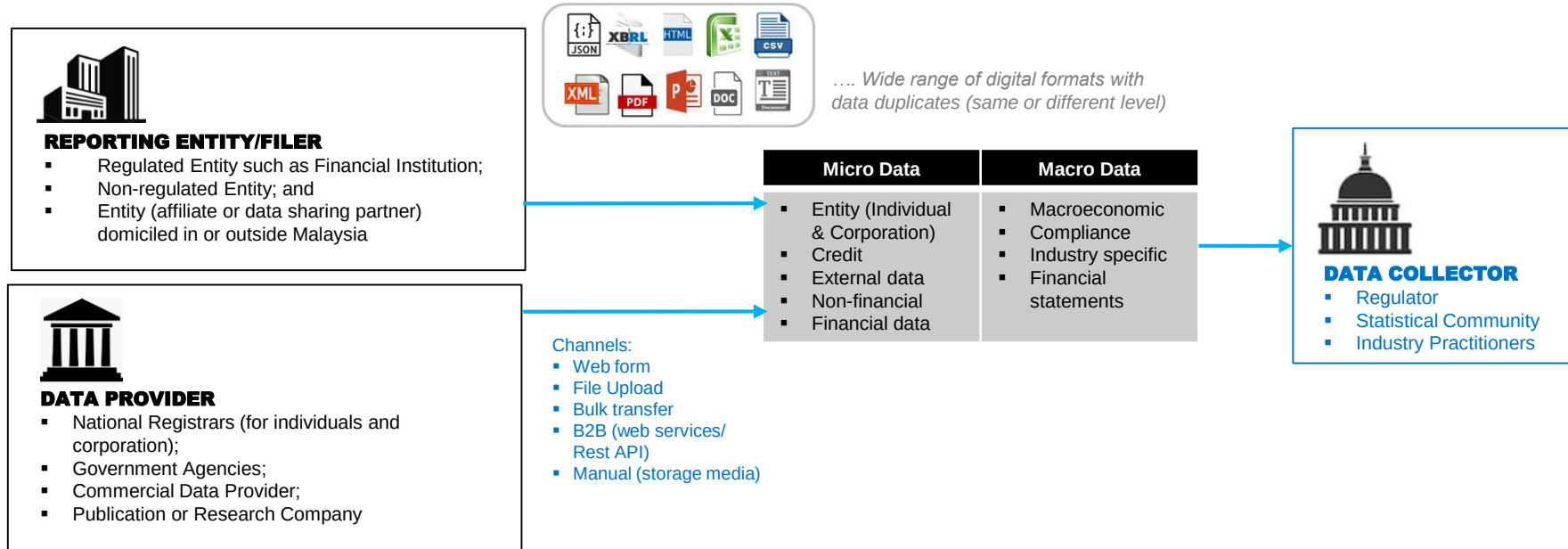


6th Malaysia Statistics Conference

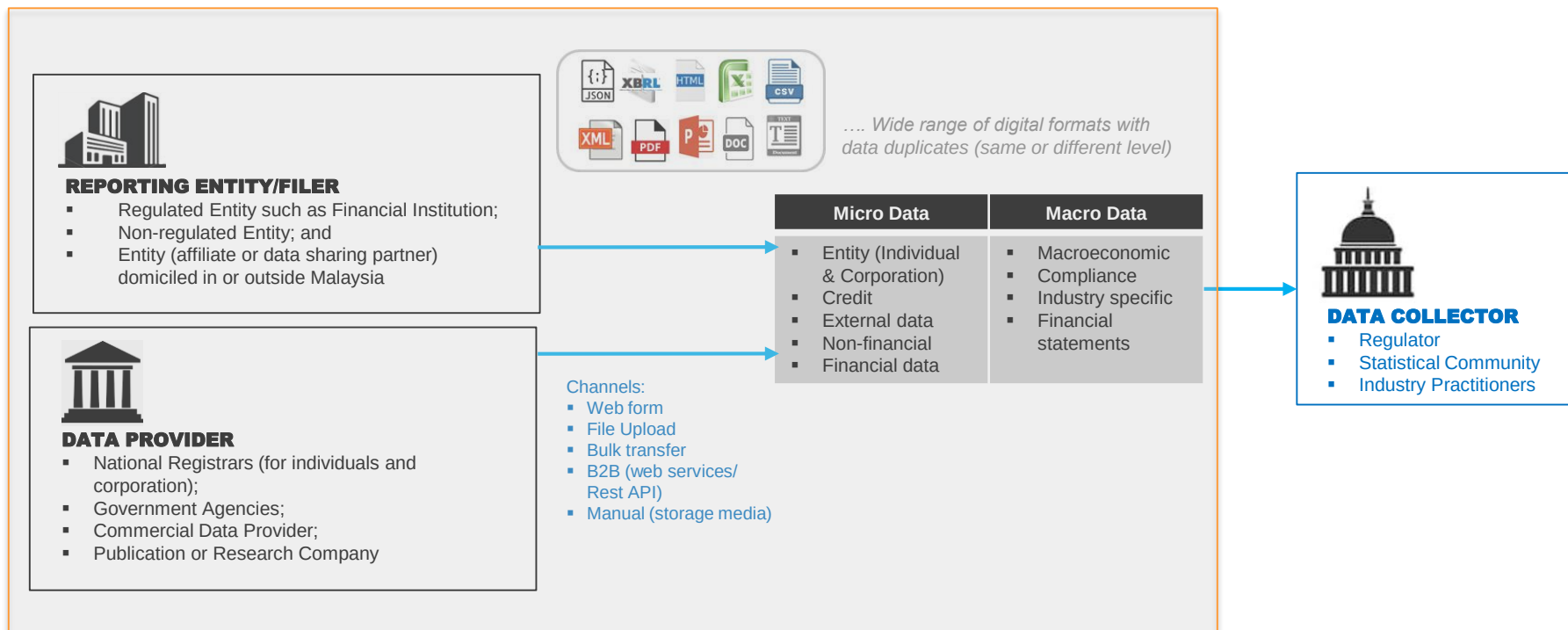
DATA LANDSCAPE

The current data sources and landscape of data collection by regulators and statistical community.

Data Submission/Collection Landscape



Data Submission/Collection Landscape

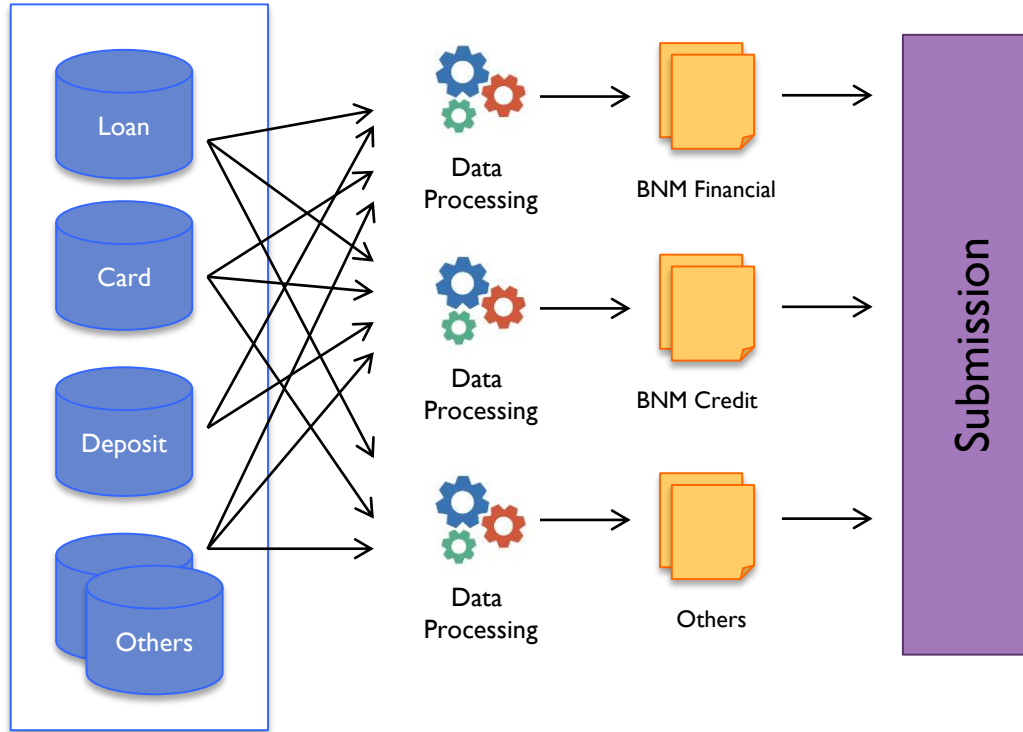


DATA COLLECTION DATA FLOWS

Common Data Collection Data Flows at the Reporting Entities

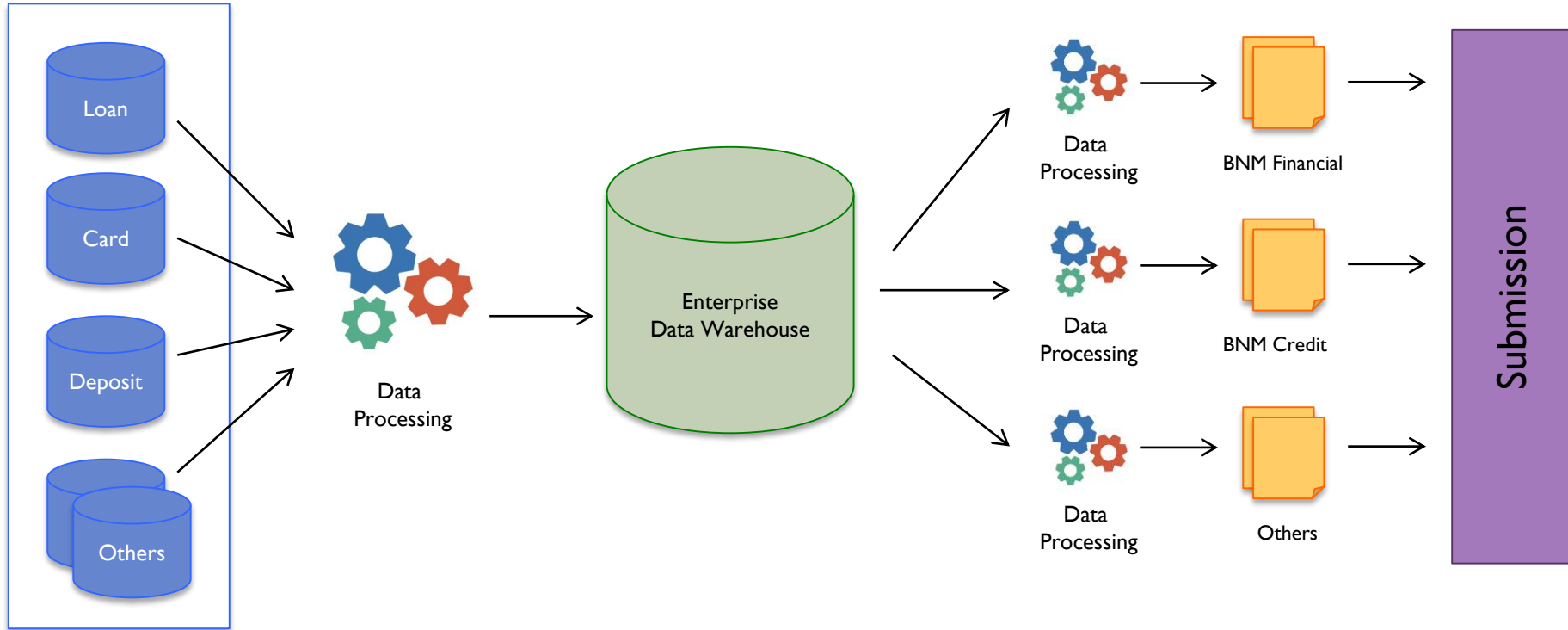
Data Collection Data Flow

Data Sources



Data Collection Data Flow

Data Sources



DATA COLLECTION USING BIG DATA TECHNOLOGY

Data Collection Architecture for reporting entities, participating members and data providers/suppliers.

Taxonomy

Domestic-Monthly

		CB						
		Total	CB-C			CB-I		
		Reporting Value	Reporting Value			Reporting Value		
Items		0000	0010	0020	FCI(InRM Equivalent)	0040	0050	FCI(InRM Equivalent)
TOTAL ASSETS	0000	790000	395000	200000	195000	395000	200000	195000
Cash and Cash Equivalents	0010	172400	92200	46100	46100	80200	40100	40100
Cash and Balances with Banks and Other Financial Institutions	0020	120000	60000	30000	30000	60000	30000	30000
Short Term Deposits	0030	43600	27800	13900	13900	15800	7900	7900
Money at Call	0040	8000	4000	2000	2000	4000	2000	2000
Money Market	0050	12000	6000	3000	3000	6000	3000	3000
Fixed Deposits Placed with Remaining Maturity Less Than or Equal to 3 Months	0060	12000	12000	6000	6000			
Specific Investment Accounts Placed with Remaining Maturity Less Than or Equal to 3 Months	0070	6000	3000	1500	1500	3000	1500	1500
General Investment Accounts Placed with Remaining Maturity Less Than or Equal to 3 Months	0080	1600	800	400	400	800	400	400
Other Short Term Deposits with Remaining Maturity Less Than or Equal to 3 Months	0100	4000	2000	1000	1000	2000	1000	1000
Other Cash and Cash Equivalents	0110	8800	4400	2200	2200	4400	2200	2200
Deposits Placed and Reverse Repurchase Agreement	0120	130000	70000	35000	35000	60000	30000	30000
Deposits Placed	0130	120000	60000	30000	30000	60000	30000	30000

Sample Submission Form

Taxonomy

Domestic-Monthly

Items		Context (Dimensions)							
		CB				CB-L			
		Total Reporting Value	CB-C Reporting Value	RM	FCI(In RM Equivalent)	Total Reporting Value	RM	FCI(In RM Equivalent)	
		0000	0010	0020	0030	0040	0050	0060	
TOTAL ASSETS	0000	790000	395000	200000	195000	395000	200000	195000	
Cash and Cash Equivalents	0010	172400	92200	46100	46100	80200	40100	40100	
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Sample Submission Form

Taxonomy

Domestic-Monthly

Items		CB						
		Total	CB-C			CB-I		
		Reporting Value	Reporting Value			Reporting Value		
		0000	0010	0020	0030	0040	0050	0060
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Short Term Deposits	0030	39000	15800	7900	7900	39000	15800	7900
Money at Call	0040	8000	4000	2000	2000	4000	2000	2000
Money Market	0050	12000	6000	3000	3000	6000	3000	3000
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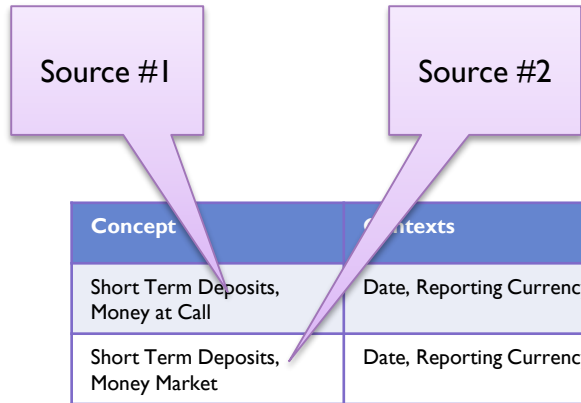
Convert Reporting Form into Taxonomy



Concept	Contexts	Fact
Short Term Deposits, Money at Call	Date, Reporting Currency, Business Type	Decimal
Short Term Deposits, Money Market	Date, Reporting Currency, Business Type, Bank Type	Decimal

Taxonomy

Now, we can identify the data source for each concept



Concept	Contexts	Value
Short Term Deposits, Money at Call	Date, Reporting Currency, Business Type	Decimal
Short Term Deposits, Money Market	Date, Reporting Currency, Business Type, Bank Type	Decimal

Master Data Mapping

Domestic-Monthly

Items		Context (Dimensions)						
		CB			CB-L			
		Total	CB-C		Reporting Value	CB-L		Reporting Value
		Reporting Value	Total	RM	FCI(In RM Equivalent)	Total	RM	FCI(In RM Equivalent)
		0000	0010	0020	0030	0040	0050	0060
TOTAL ASSETS	0000	790000	395000	200000	195000	395000	200000	195000
Cash and Cash Equivalents	0010	172400	92200	46100	46100	80200	40100	40100
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Deposits Placed	0130	120000	60000	30000	30000	60000	30000	30000

Sample Submission Form

Master Data Mapping

		Domestic-Monthly							
		01				02			
		MYR				FC			
		CB				CB-I			
		Total	Reporting Value			Total	Reporting Value		
		Value	Total	RM	FC(InRM Equivalent)	Value	Total	RM	FC(InRM Equivalent)
Items		0000	0010	0020	0030	0040	0050	0060	
TOTAL ASSETS	0000	790000	395000	200000	195000	395000	200000	195000	
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Deposits Placed	0130	120000	60000	30000	30000	60000	30000	30000	

Sample Submission Form

Master Data Mapping

From	To
01	CB-C
02	CB-I

Mapping table 1

From	To
R	Resident
NR	Non Resident

Mapping table 2

From	To
01	XXX
02	YYY

Mapping table N

Data Store

Reporting Forms keep changing almost every year

- Add new concept
- Add more context into existing concept
- And etc.

Data Store

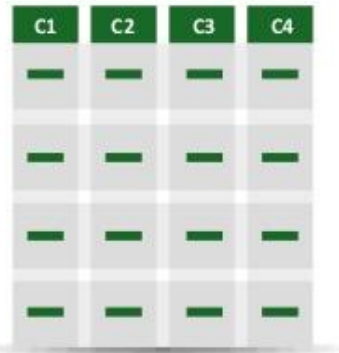
Reporting Forms keep changing almost every year

- Add new concepts
- Add more dimensions into existing concept
- And etc.

It means, we can't have fixed schema

Data Store

Relational vs Document data model



C1	C2	C3	C4
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

Relational data model

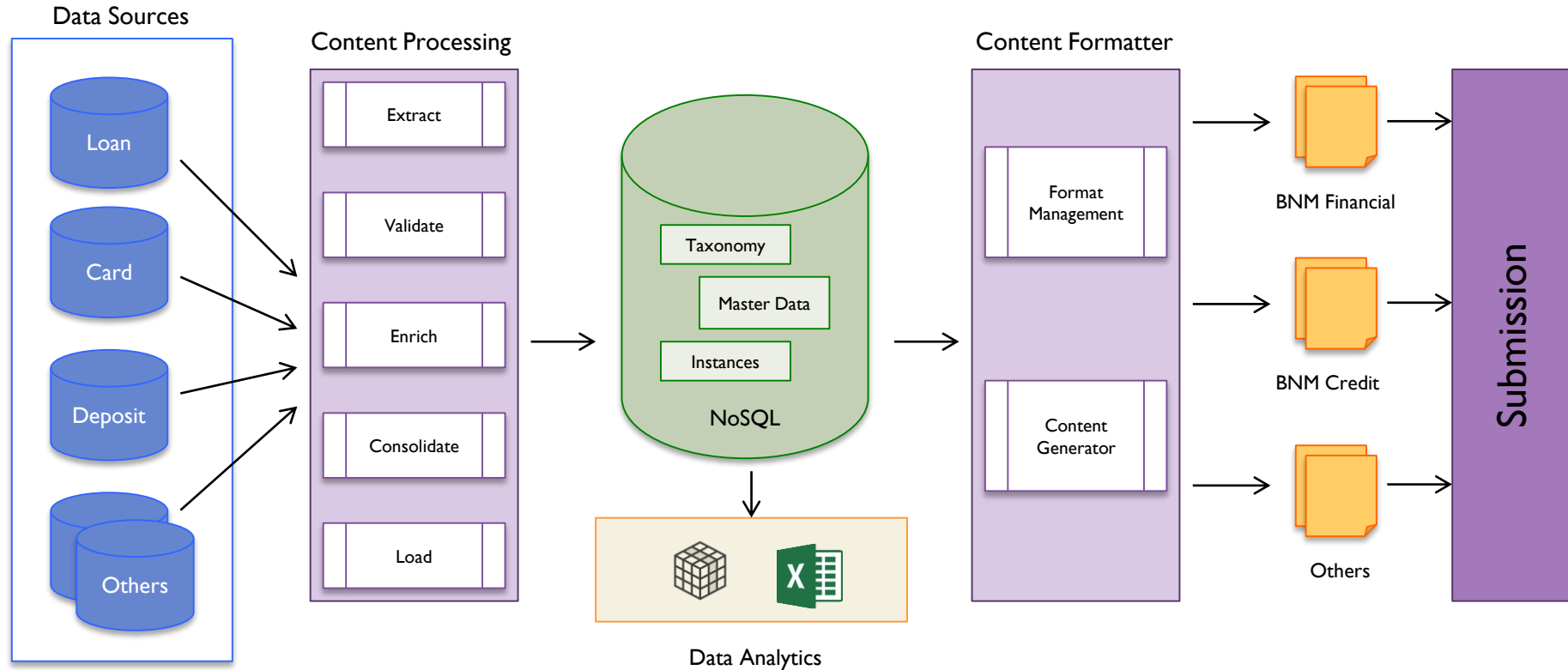
Highly-structured table organization with rigidly-defined data formats and record structure.



Document data model

Collection of complex documents with arbitrary, nested data formats and varying "record" format.

Data Collection Using Big Data Technology





THANK YOU

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