

PEOPLE.  
TECHNOLOGY.



Telecom big data monetization

# Credit scoring solution based on telecom data

CRDP & K-Telco Score™

# # Value Proposition

## What is K-Telco Score™

K-Telco Score™ and CRDP(Credit Rating Delivery Platform) are KT financial intelligence solutions for alternative credit scoring that estimates individual's willingness and ability to repay credit services like loan based on telecom big data analysis. As a highly probable business case of telecom data monetization, since 2016 KT has commercialized and delivered K-Telco Score™ information services to banks, card companies, insurance companies, and other lending companies and expanded the business into overseas emerging markets.

## Benefits of K-Telco Score™

Financial institutions like banks, card companies, and micro lenders can increase customer base with lower risk of default  
The credit underserved who were previously excluded from credit services can increase the chance to access credit services, e.g. loan  
Telecom can realize data monetization by selling credit scoring information to banks and non-bank financial institutions

## How to implement K-Telco Score™

To implement telecom data based credit scoring, a telecom partner needs 3 core capacities :

- Financial intelligence analysis of telecom big data to derive the best candidate data for credit score modeling
- Credit score modeling technologies and models that estimate the possibility of default risk
- Application platform that implements big data analysis, credit score modeling, and delivery of credit information

## Why KT

Since 1885, KT has been leading Korea telecommunication market as strong leader with over 55 millions of wireless and wired service users. Combined with big data technologies specialized for telecom, KT's vast expertise and experience can support telecom partners to achieve successful business case of data monetization in financial sector by providing :

- Licensed solutions and implementation service in delivery model of supplier
- Solutions as in-kind investment for revenue sharing in delivery model of partnership
- Supplemental consulting for business, regulation, and telecom bid data utilization

# # KT overview



A3 Moody's  
A- S&P  
A Fitch

Company name	KT Corp.
Date of establishment	10 December 1981
CEO	Chang-Gyu Hwang
Headquarters	90, Bulljeong-ro, Bundang-gu, Seongnam City, Gyeonggi-do, Korea
Number of employees	23,909
Revenue	KRW 23,387.30 billion
Homepage	<a href="https://corp.kt.com/eng/">https://corp.kt.com/eng/</a>

## 36 affiliates

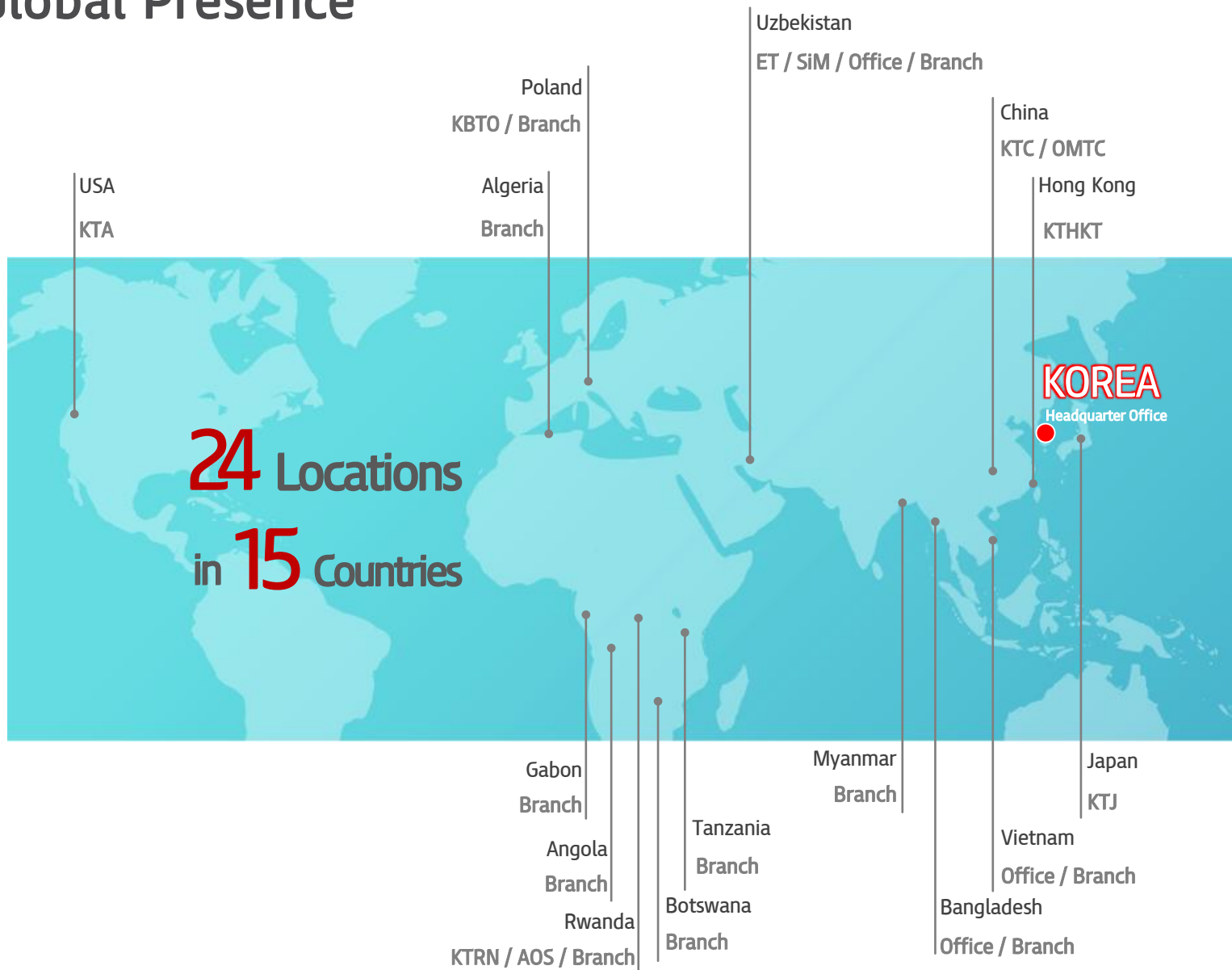
ICT / Real estate	20
Media / Contents	7
Financial	6
Other	3

## Major financial affiliates

<b>K bank</b> 1st internet-only bank
<b>BCard</b> Payment leader
<b>Smartro</b> VAN and smart card

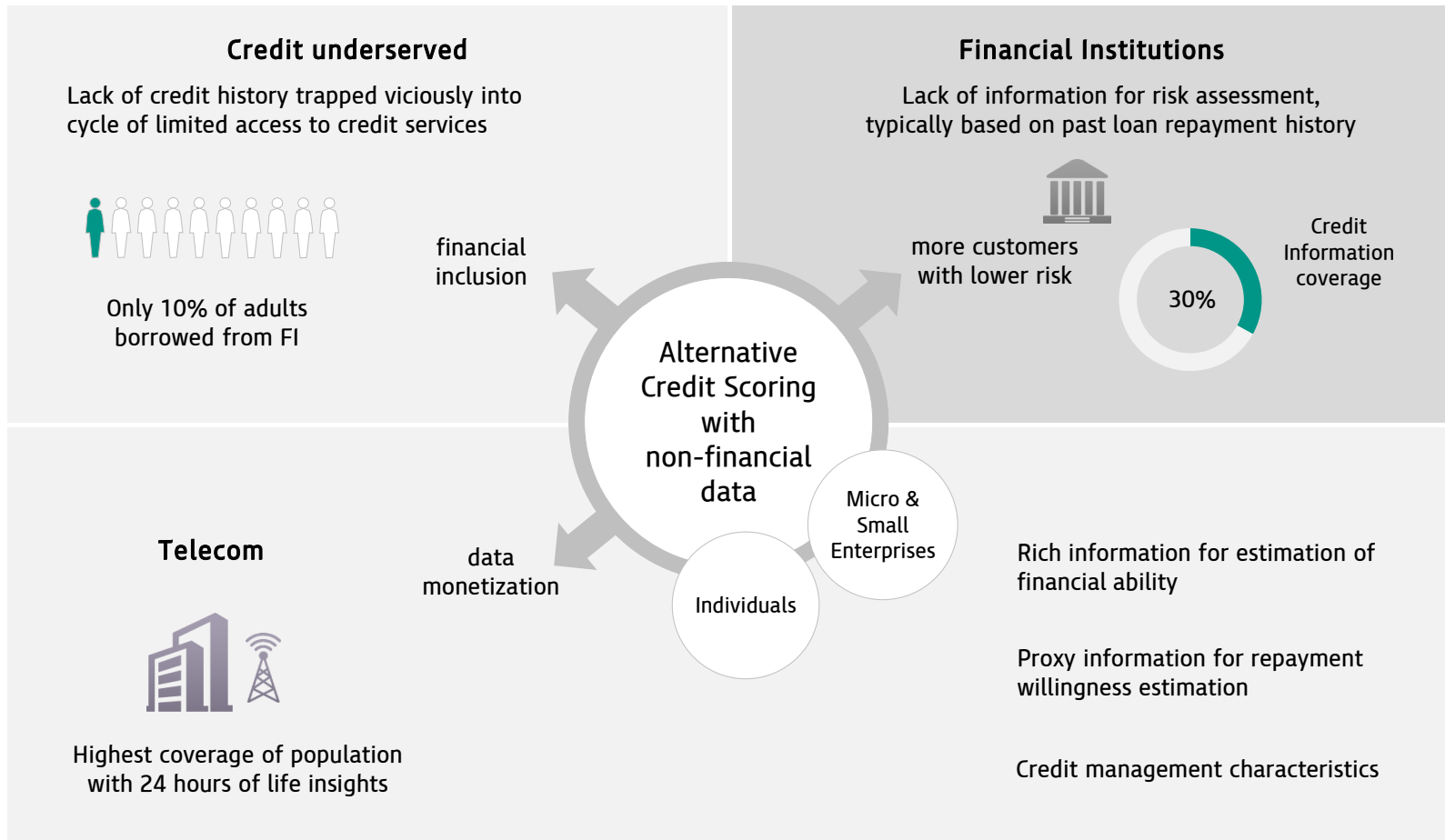
FY	Unit	2015	2016	2017	
Wireless Communications*		18,038	18,892	20,015	M/S 31% 2 <sup>nd</sup>
Wire Telephone-PSTN**		13,268	12,791	12,201	M/S 81% 1 <sup>st</sup>
Wire Telephone-VoIP	Thousand persons	3,413	3,436	3,409	
High-speed Internet		8,328	8,516	8,758	M/S 41% 1 <sup>st</sup>
IPTV		6,552	7,042	7,472	M/S 30% 1 <sup>st</sup>
<b>Total</b>		<b>49,599</b>	<b>50,677</b>	<b>51,855</b>	

# # Global Presence



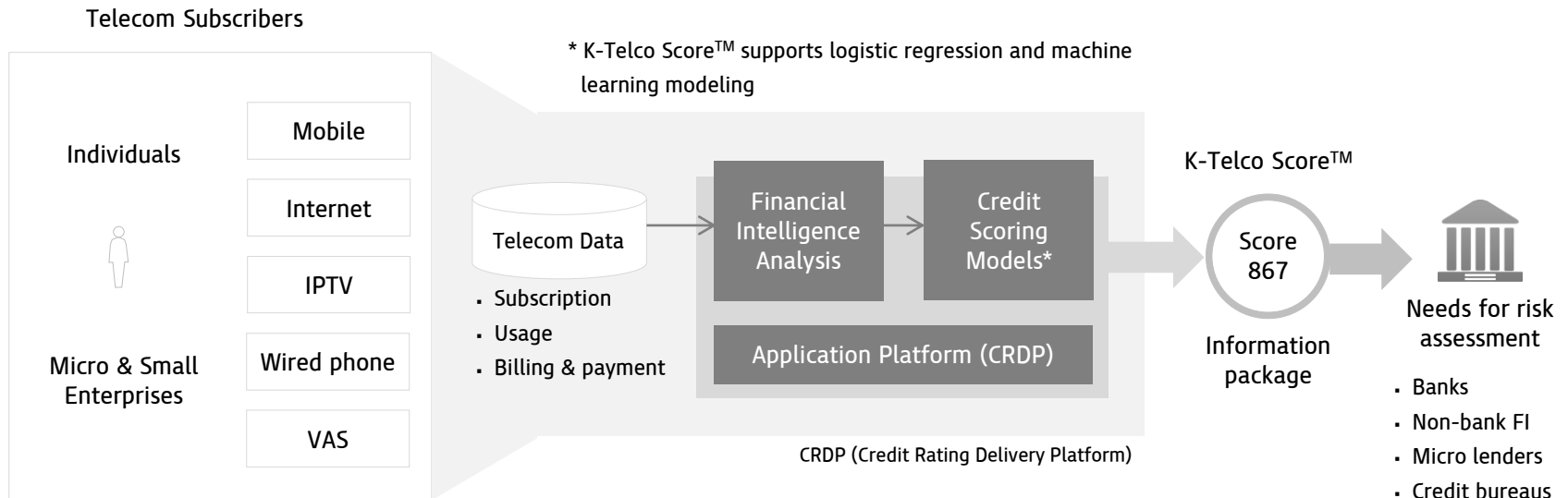
# # Why Telecom Data

Telecom data is the best non-financial information for alternative credit scoring

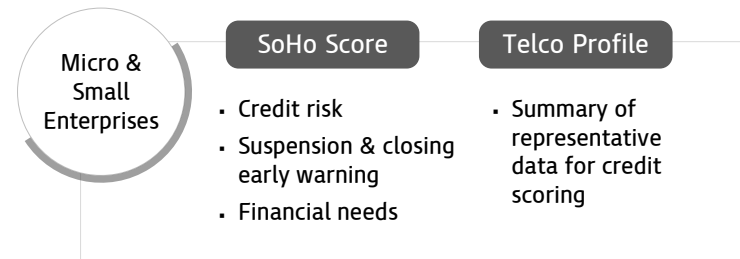
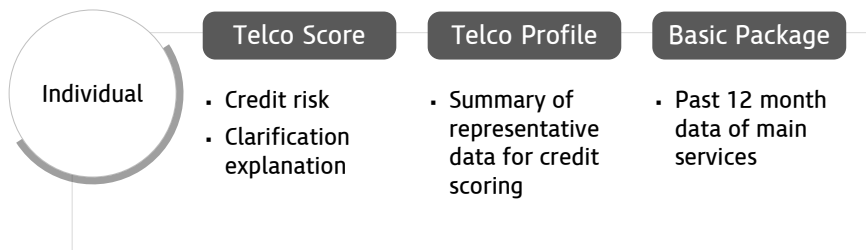


# # K-Telco Score™

K-Telco Score™ is alternative credit scoring modeling and delivery solution using telecom data

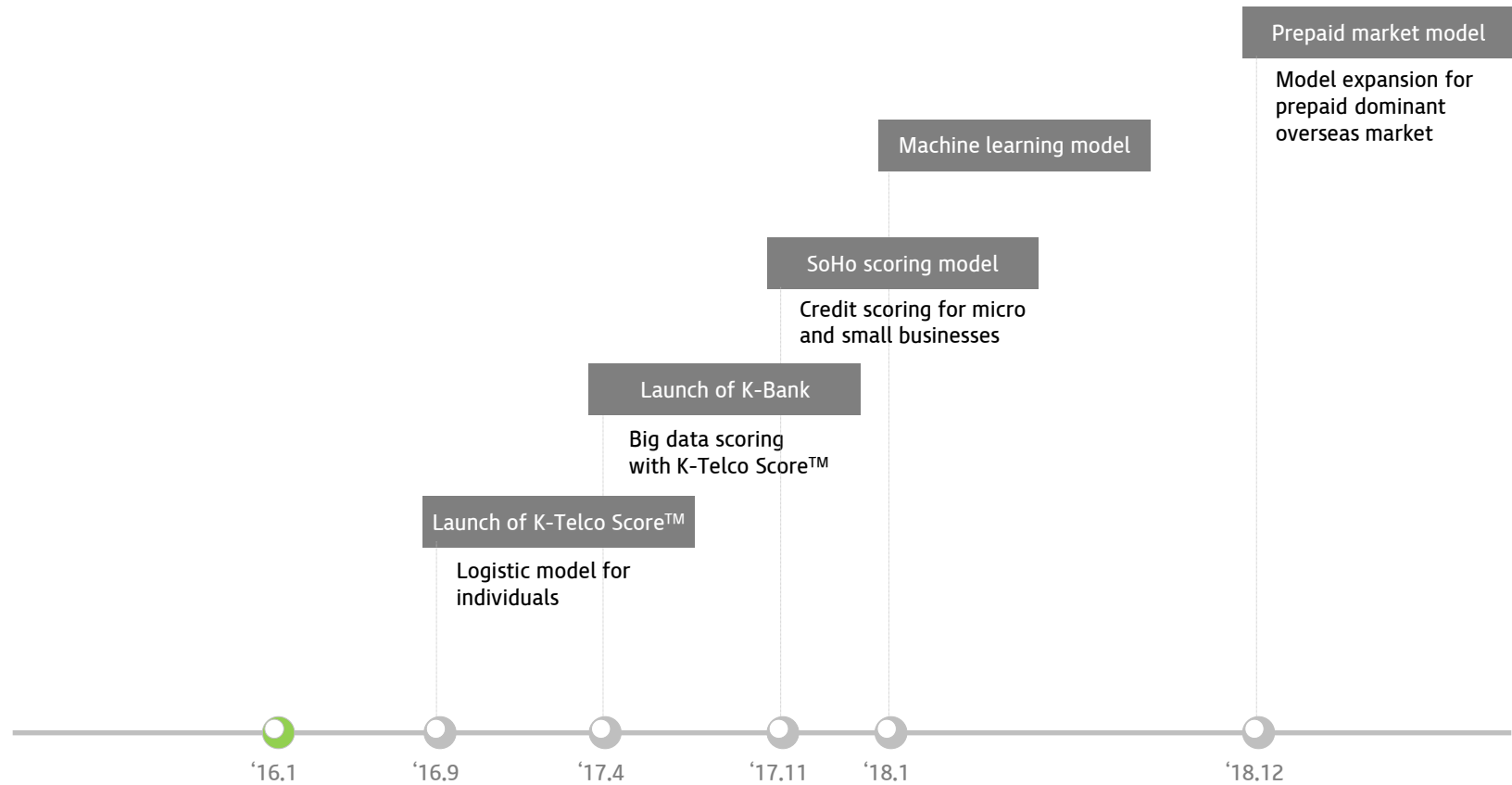


## Information package



# # Progress

KT launched the first telecom originated credit scoring model in Korea in 2016



Government support

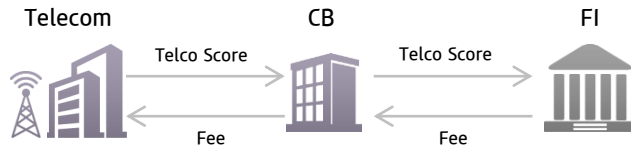
Positive credit scoring

Bonus points with proof of duly payment of utility and telecom bills

# # Business Model

K-Telco Score™ service provides paid information of credit scoring to FIs as customers

Business Model



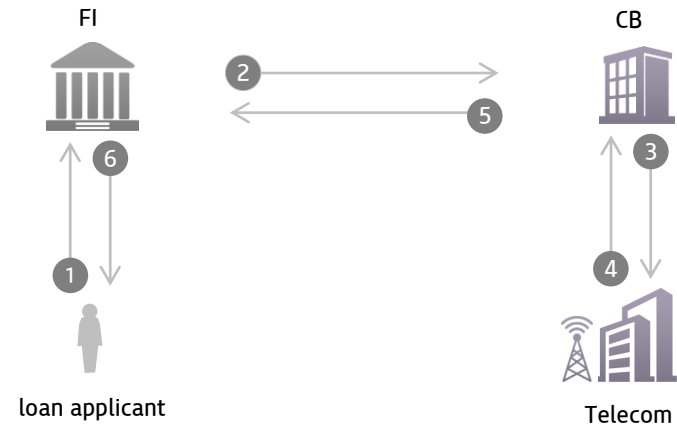
- Telecom provides Telco Score and relevant information package to FI as target customer
- Telecom gets back information service fee from FI

\* In Korea, credit information can be delivered only by registered credit bureau by law

## Information Fee

- Pay by use with unit fee per transaction
- Fixed prices for tiered ranges of transaction volume
- Annual price for unlimited use

Service Flow



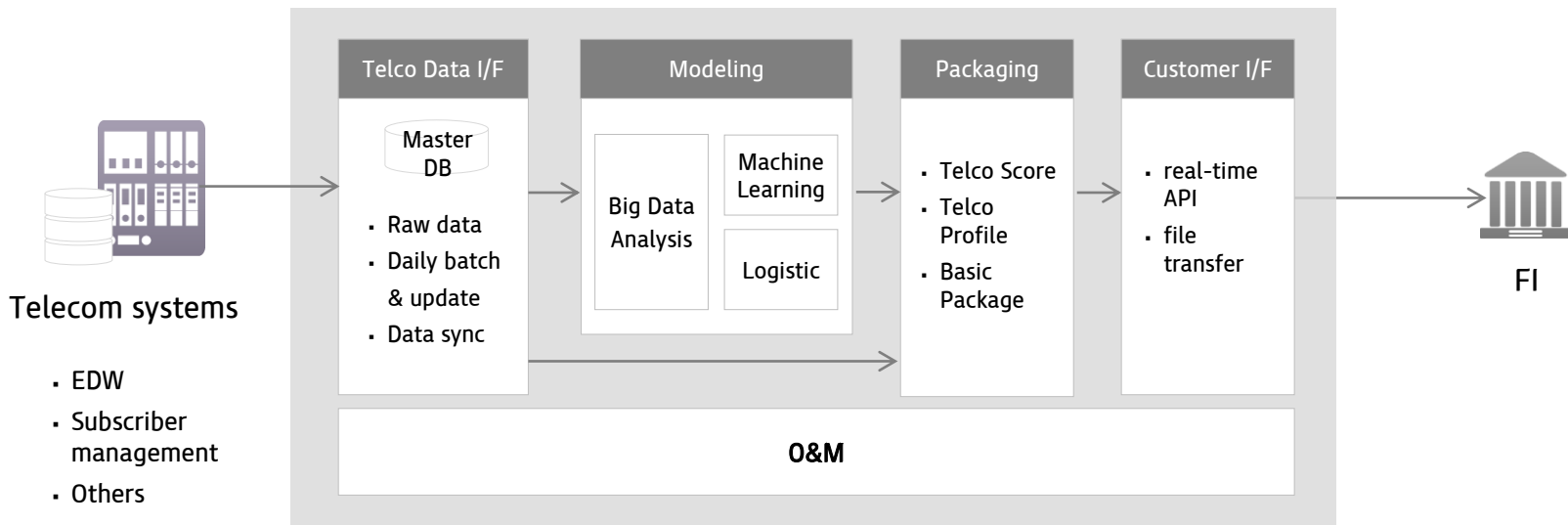
- ① An applicant applies for loan with providing explicit consent for personal data utilization
- ② FI requests for credit information to CB
- ③ CB requests for Telco Score to telecom
- ④ Telecom sends back Telco Score and relevant information package to CB
- ⑤ CB delivers Telco Score and relevant information to FI
- ⑥ FI provide loan with proper limit and interest rate



# # CRDP

CRDP is telecom-oriented application platform for K-Telco Score™ implementation and its service delivery

## Credit Rating Delivery Platform



### Data Management

- Real-time and periodic synchronization of telecom data
- Optimized architecture and management of high volume of raw data

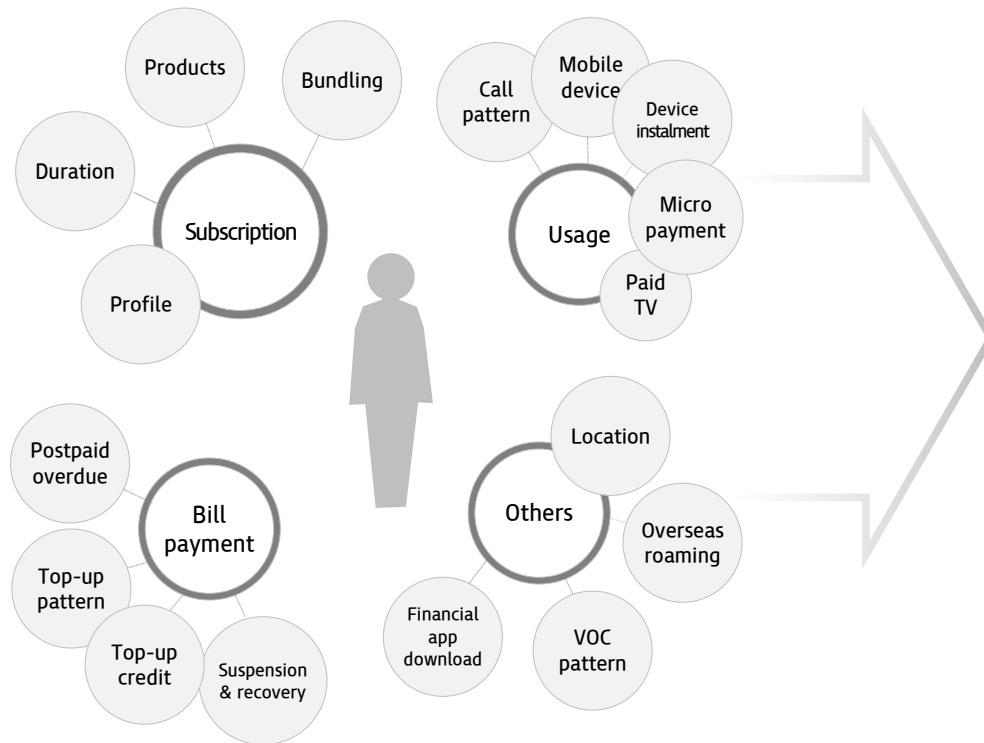
### Service Delivery

- Selective packaging of data tailored to customer needs through O&M
- Strong security with dedicated lines and KT encryption technologies
- Real-time delivery of information

# # Target Data

Telecom has rich data to estimate individual's ability and willingness to repay credit services

Candidate data for credit scoring  
(exemplary)



Financial Intelligence Analysis

Financial ability for repayment

- Income level, stability of life, consumption pattern

Credit management characteristics

- Repayment behavior, suspension management

Life pattern estimation

- Residence stability, employment, call networks

Financial interest

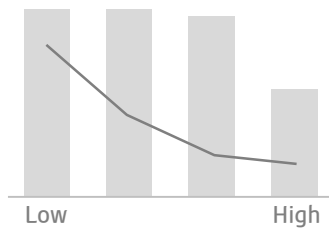
- Sensitivity to interest, demand for finance

# # Target Data

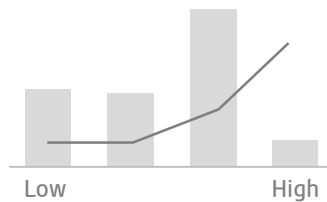
Telecom data have good correlation with credit risk estimation of future's possible default

correlation between telecom data and bad rates  
(exemplary)

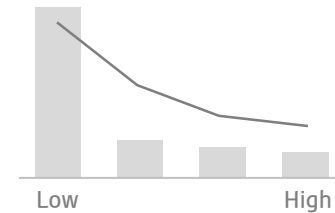
■ distribution of instances — bad rate



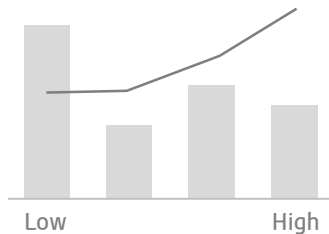
frequency of top-up gift



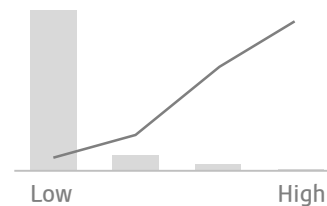
frequency of VOC



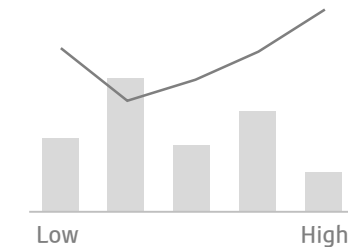
family bundling



balance of instalment



Overdue repetition



call volume

# # Performance

K-Telco Score™ is one of the best override strategy to increase approval with less overdue

CB score only



Good Bad

**C1** CB score

**T1** Telco Score

Override With Telco Score



Inherent bads

CB and Telco Score combined



Approval	Overdue	K-S
11.3%p▲	0.1%p▼	8.0%p▲

# # Performance

Telco Score itself shows good separation and can be maximized when combined with CB score

## Telco Score only

**Market**

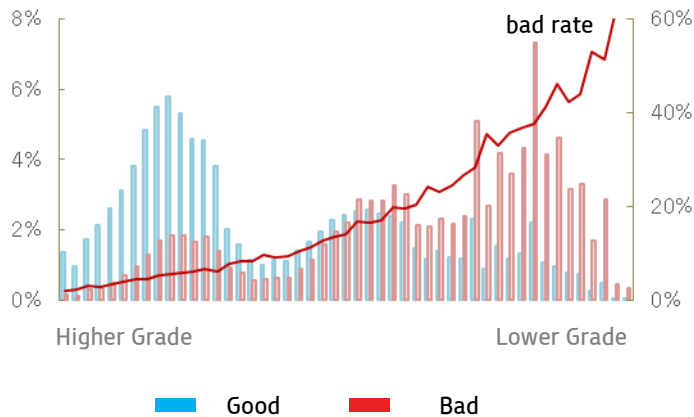
- Prepaid dominant
- Only PCR with limited coverage
- Manual evaluation of loan application

## CB and Telco Score combined

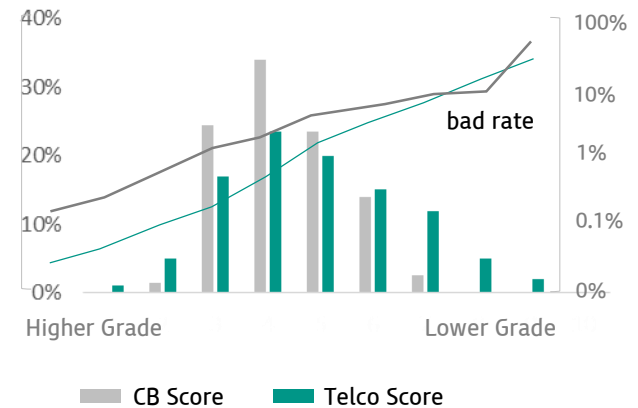
**Market**

- Postpaid dominant
- PCR and CB with moderate to high coverage
- Underserved like thin filers

Good and bad discrimination



Thin filer rank ordering




# # Competitive Difference

Telecom has unequalled competitive edge in the range of data and telecom data utilization

	Alternative credit scoring providers	KT K-Telco Score™
data source	typically user's mobile device (possibly from telecom as partner)	Internal database
target service	mainly mobile	mobile, wired, internet, IPTV, VAS, IoT, etc.
data access	limited to mainly usage data	unlimited to subscription, usage, and payment
data update	delayed update of change due to batched delivery	can apply any change in real-time
credit proxies	n.a.	bill payment, suspension, instalment
others	combined with other non-financial information (e.g. SNS)	Telecom specialized expertise and experiences (e.g. telecom services and systems, data utilization and monetization, telecom big data infrastructure)

# # Reference



Customer	context	Application of K-Telco Score™	Benefits
 K bank	1 <sup>st</sup> internet-only bank in Korea	Big data scoring for thin filer and mid-range loan	Overdue of mid interest range loan of 0.028% vs commercial banks of 0.43%
Telecom	1 <sup>st</sup> telecom in M/S of prepaid dominant market	Microloan for no or thin filers with no proof of income (CRDP on-site)	Overcome of lack of information and securing competitive advantage of credit scoring compared to existing banks

# # Implementation

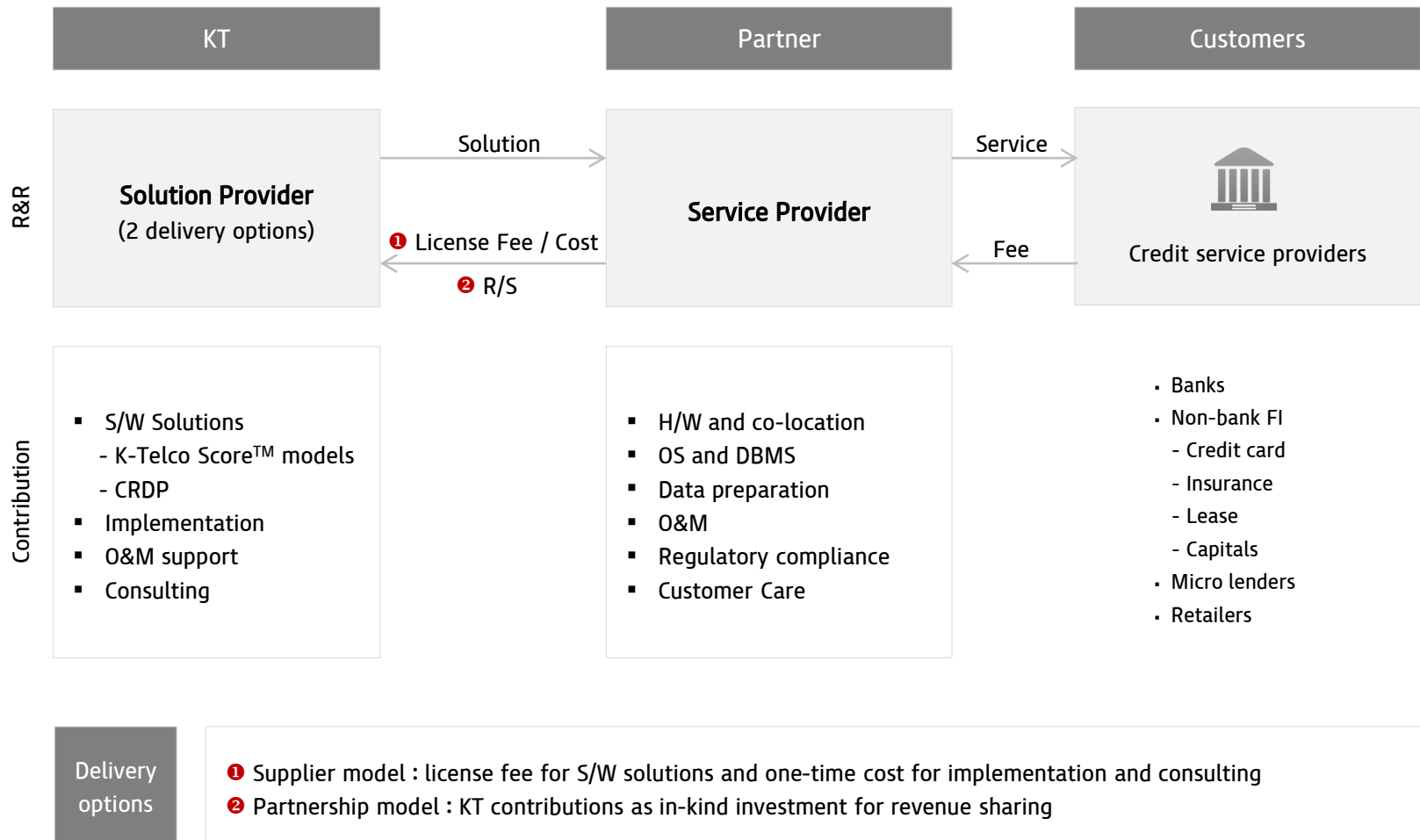
KT Financial intelligence analysis solutions specialized for telecom big data and preparation of data by partner are key to successful implementation of K-Telco Score™

		KT	Partner
H/W	Servers		●
	Co-location		●
S/W	Credit scoring models	●	
	Application platform	●	
	OS and DBMS		●
Implementation	Data preparation	●	●
	Model and application customization	●	
	Platform implementation	●	
O&M	On-site operation and maintenance		●
	Off-site support for O&M (remote with site visit if needed)	●	
	Customer care		●
	Regulatory compliance		●
Consulting (if required)	Business plan	●	
	Regulation	●	
	Data utilization and infrastructure	●	



# # KT offerings

KT supports 2 delivery options of supplier model and partnership model for revenue sharing



\* Scope of contribution by KT and partner can be changed through negotiation

## # Partner's Benefits

With K-Telco Score™, partner can realize data monetization and strengthen its own telecom and financial businesses

### Data Monetization

New opportunities of telecom data monetization businesses

- Building up successful business cases of telecom big data monetization
- Expanding big data utilization to other businesses, e.g. target marketing

### Risk Control

Enhanced risk control for partner's services that have possibility of default risk

- Big data based risk estimation can be applied to top-up credit service and postpaid micropayment service to minimize loss of repayment

### Financial Business

Consolidating competitive advantage for partner's own financial services

- Advanced credit scoring that provides competitive advantage for partner's financial businesses , e.g. micro lending, internet-only bank, and etc.

# # Prerequisites

Mandatory or key conditions for successful implementation and full benefits of Telco Score

**M1** Partner shall keep subscriber identification information that can be matched with government recognized proof of identity for both of prepaid and postpaid subscribers

**M2** Partner shall have data warehouse that collects and stores data from systems of target services

**K1** Partner shall support real-time checking of subscriber's status of subscription : e.g. suspension, deregistration

**K2** Partner shall acquire comprehensive consent from all subscribers for collection, analysis, and utilization of subscriber information

# # Glossary

K-Telco Score™	financial credit scoring modeling solution based on telco big data with logistic regression and machine learning technologies
CRDP	Credit Rating Delivery Platform that is an application platform to deliver K-Telco Score™ services to customers
credit	financial services that provide monetary values requiring beneficiary's future repayment, e.g. loan, credit cards, etc.
credit score	numerical value that represents the possibility of risk of 60 or 90 days overdue within the next 1 year
credit scoring model	statistical predictive model that calculates credit scores of a loan applicant
cut-off	separation of loan applicants into approval or reject using their credit scores with pre-determined threshold
default	unpaid bad loan resulting in financial loss of the lender
expansion	enlarging candidates of loan acceptance by modifying the credit score threshold for loan approval
good and bad	status of credit repayment of a borrower with good as of duly repayment and bad as of override
K-S value	Kolmogorov-Smimov Statistics value that measures discrimination performance of a credit scoring model (0~100)
logistic regression model	statistical models that extract estimators, typically 10~20, based on the past repayment data analysis
machine learning model	models that use machine learning algorithms with typically 100~1,000 variables
NBFI	Non Bank Financial Institutions, e.g. credit card companies, micro lending companies, lease, and capitals, etc.
overdue	status of delayed and unduly repayment, typically 60 or 90 days overdue is recognized to be bad loan
override	fine selection of loan acceptance after cut-off with internal policies for loan business operation
ROC value	Receiver Operating Characteristic that measures discrimination performance of a credit scoring model (0~100)
strategy	internal policies of loan operation, typically to maximize loan approvals while minimize risk of default

Thank you

