Nextgen CLEARING

That's settled!

Clearing the Future

## The evolution of data and financial clearing towards IoT/M2M and 5G

25th September 2019

- Introductions

- Clearing Market Update

- Enhanced IoT / M2M subscriber identification

- Consumer Permanent Roamers

- Operator Management Control Dashboard

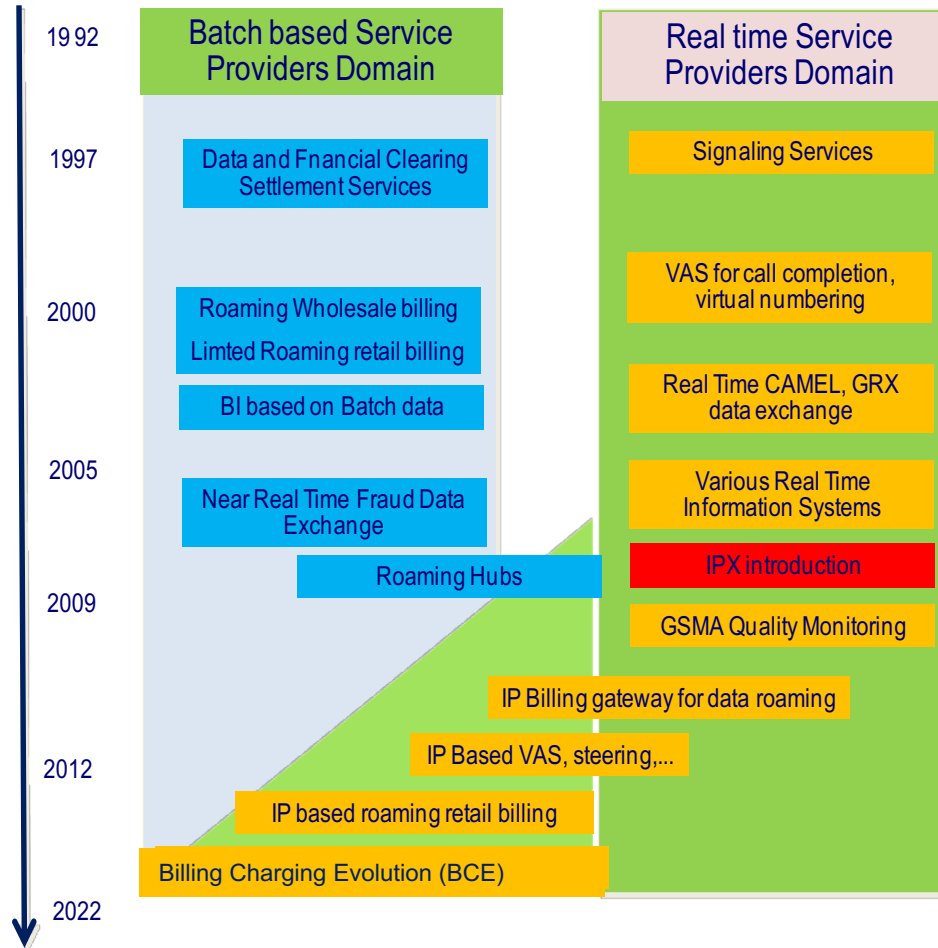- High cost networks alarm

Clearing Market Update

- Complex ecosystem growing exponentially around data explosion
  - ➤ IoT/M2M, introduction of multiple parties such as OEM manufacturers, MVNOs, MVNEs, traffic aggregators
  - ➤ ROI on IoT/M2M low
  - ➤ 5G to bring more IoT/ M2M traffic

Processed Roaming Records (TAP)

Year	Value
2016	100
2017	~185
2018	~285
2019	~465
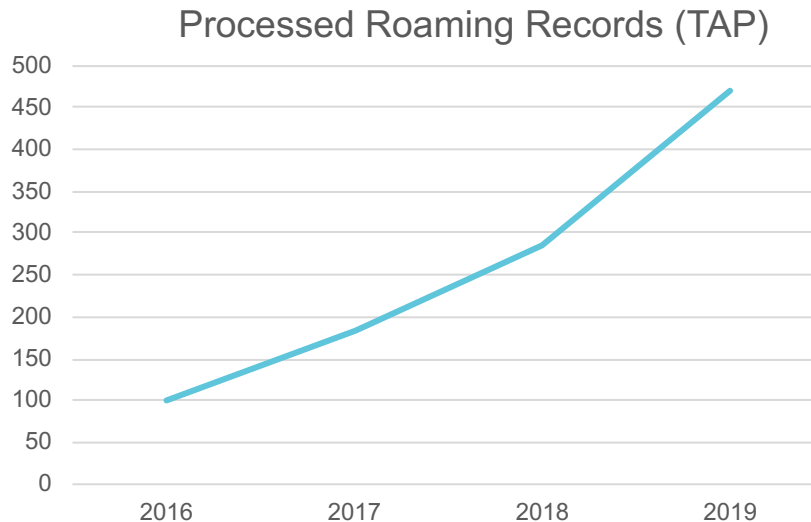
Source: Nextgen

- Processing costs in the billing chain (TAP creation, data clearing, billing system) out of proportion to value of transactions

Current Wholesale Processes

Voice Interconnect

Contracts
Invoices
Unstructured Reconciliation
Bilateral Settlement

MVNO

Contracts
Invoices

MNO

Wholesale

Contracts
Invoices
Bilateral
Settlement

Internat. Roaming

Contracts
Invoicing
TAP
Preferred Roaming monitoring
Structured Reconciliation
Multilateral Settlement

Future Wholesale Processes
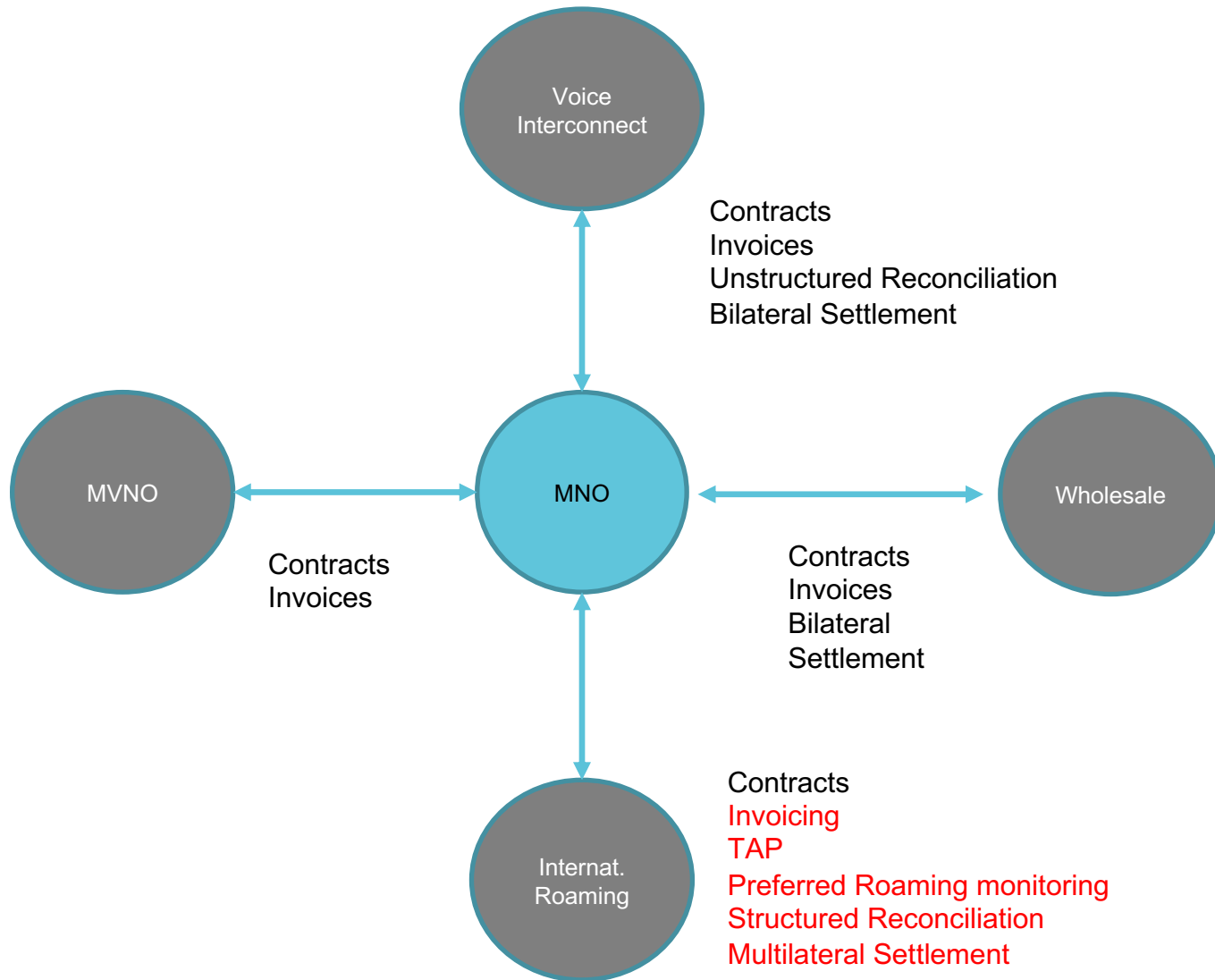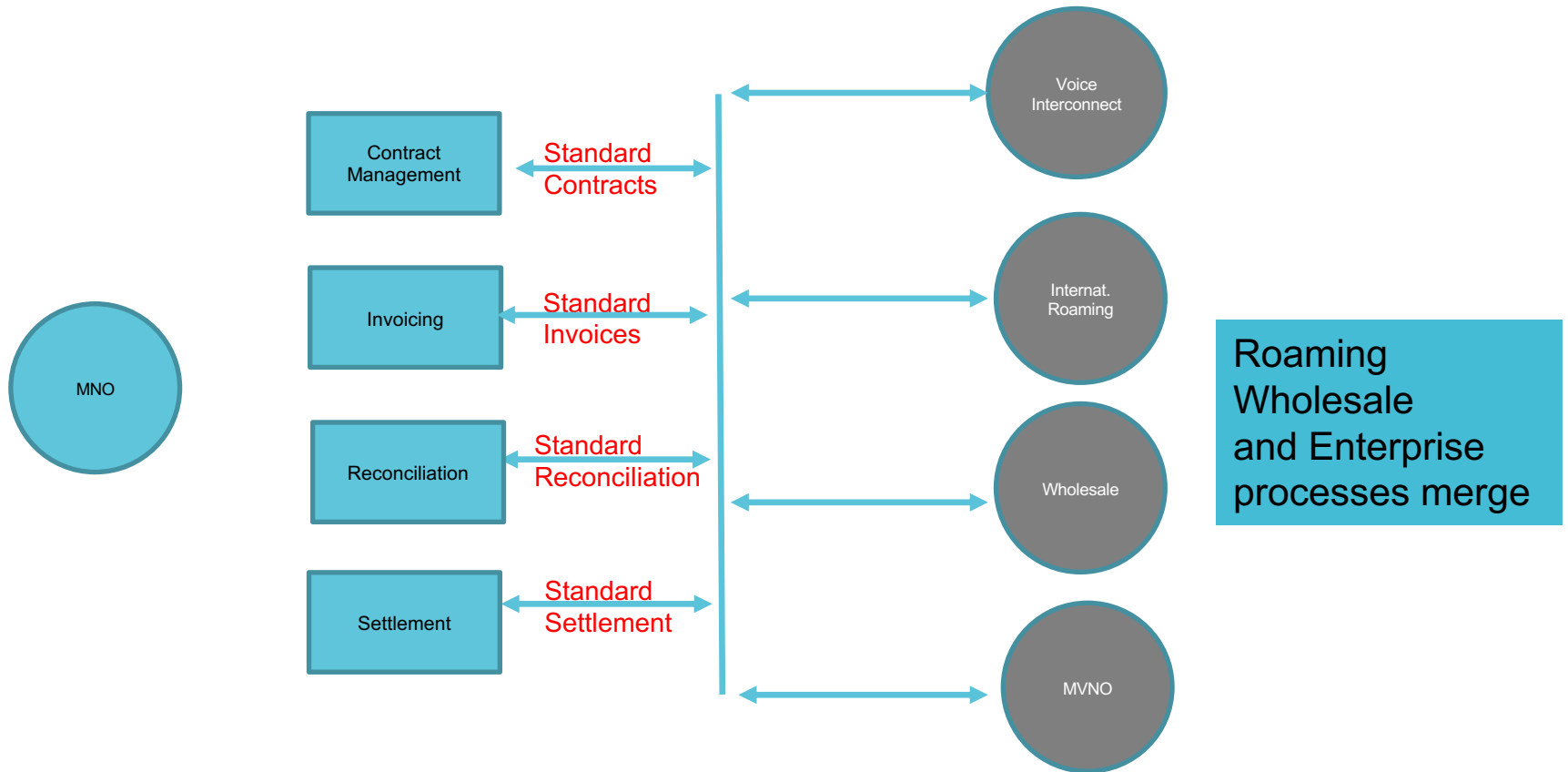
- **More Automation:**
  - Contract Work Flow
  - BCE (Billing Charging Evolution)
  - Reconciliation
- **Full lifecycle support**
  - Contract
  - Price Calculation
  - Reconciliation
  - Settlement

Enhanced IoT / M2M subscriber identification

The number of cellular IoT connections is expected to reach 4.1 billion in 2024 – increasing with an annual growth rate of 27 percent

Source: Ericsson Mobiltiy report 2018

- M2M devices roaming permanently and using network resources for minimal data volumes –> low, or no revenue

- Roaming devices compete with local operators M2M services

Unrealised Revenue Potential

Components of an M2M end to end solution

- Traffic source
- Identify M2M traffic
- Calculate charges based on roaming agreement
- Monitor financials (accruals, etc.)
- Integrate with roaming invoicing
- Reconcile with Roaming Partner/ Enterprises
- Settle
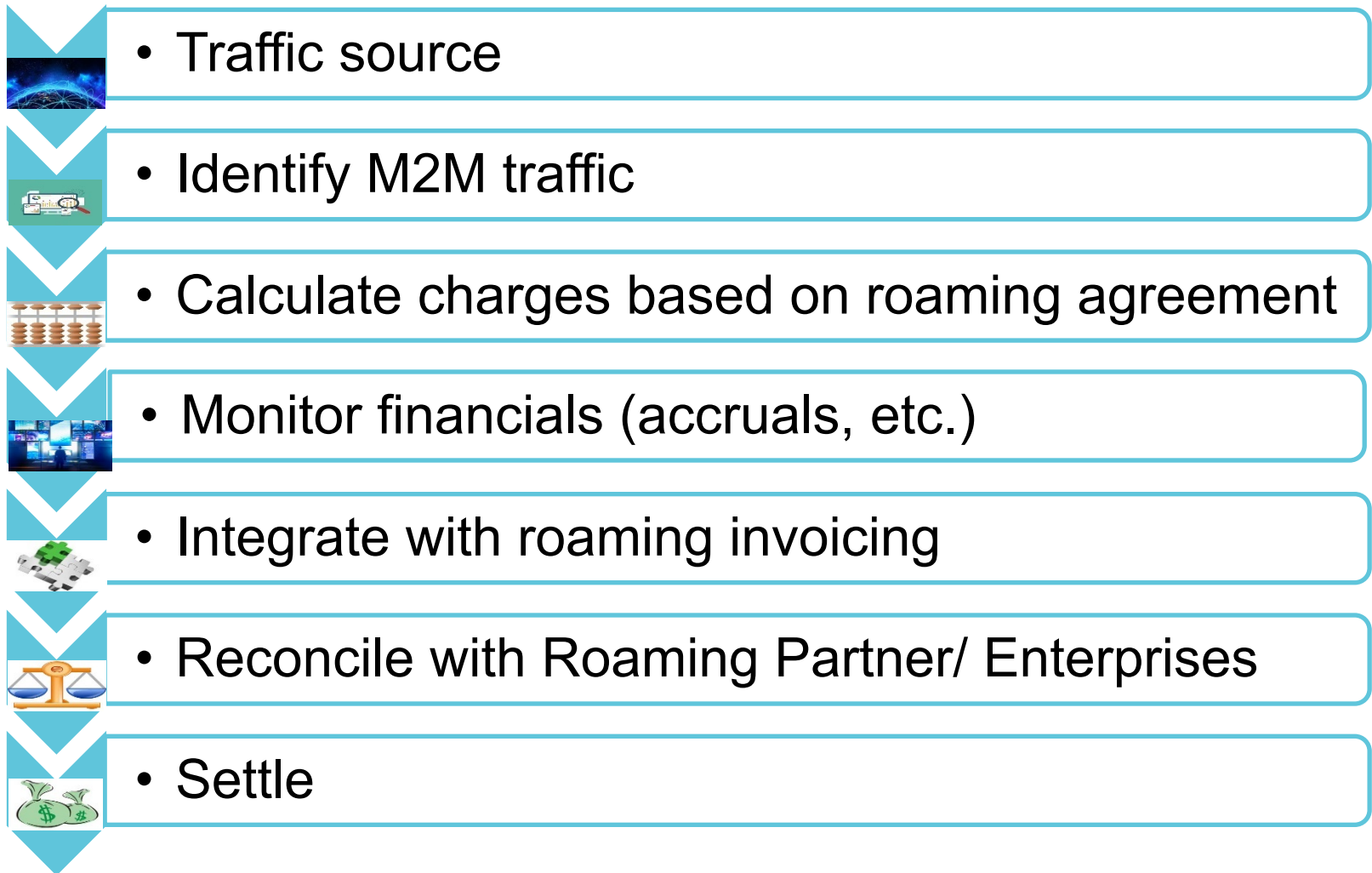
- From TAP files:
  - ✓ IMSI range
  - ✓ Permanent Roaming
  - ✓ Multiple combination of qualifying KPIs (average data per day, repetitive and identical data sessions, IMEI, average duration/stay etc.)

- Challenges:
  - Additional interface for TAP file sending
  - IMEI not always available
  - Silent roamer not visible

- From IPX/Signaling
  - ✓ All parameters available
  - ✓ IMEI always present
  - ✓ Silent roamer detection
  - ✓ Standardised interface iBasis/ Nextgen

+ £ ⟵ | **Identify, monitor and settle** | ⟶ **- $**

iBasis	Standard Turnkey Interface	RTIS	IOTRON	FCH
Signaling IPX		Identify Segment	Calculate Monitor Integrate with roaming	invoice reconcile Settle
NGC				
TAP feed CDR				

Reliable Turnkey end to end solution for identifying and billing M2M traffic
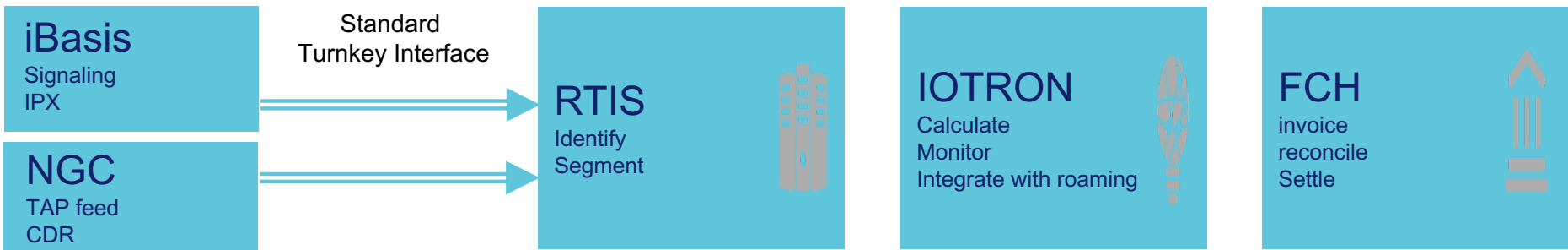
Business Intelligence

Consumer Permanent Roamers

Operator Management Control Dashboard

High cost networks alarm

Roaming BI and Dashboards

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IOTRON/FCH Insight

TAP

NRTRDE

Financial Information

Real Time Network Data

Traffic
Fraud Alarms
Agreement performance
Financial reporting/settlement status
Permanent Roamer

Finance, Commercial Roaming Department
Monitor Financial Performance

iBASIS
POWERED BY TOFANE

InVision

Signaling

IPX

Traffic
Network Quality
High Costs Network Alarm
Permanent Roamer

Network Department
Monitor Real Time Network

High cost network alarm

iBASIS
POWERED BY TOFANE

Financial Information

Real Time Network Data

InVision

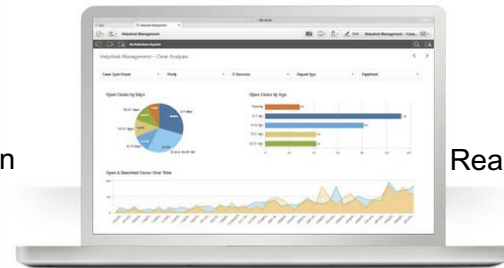| Time Date Hour	Visited Country	Visited MNO Name	Visited MCC/MNC	Transactions	Roamers	Allowed Roamers
9/18/19	Argentina	Telecom Personal S.A.	722/34	64	33	33
9/18/19	Austria	T-Mobile Austria GmbH	232/03	3,399	679	679
9/18/19	Brazil	Brasil Telecom	724/31	39	17	17
9/18/19	Bulgaria	MobilTel EAD	284/01	150	52	52
9/18/19	Congo (DR)	Congo-Chine Telecom s.a.r.l.	630/86	13	6	6
9/18/19	Congo (DR)	OASIS SPRL (SAIT Telecom)	630/89	17	8	8
9/18/19	Costa Rica	I.C.E. (Instituto Costarricense de Electricidad)	712/01	17	13	13
9/18/19	Croatia	Hrvatski Telekom d.d.	219/01	3,132	87	87
9/18/19	Denmark	Hi3G Denmark ApS (3 DK)	238/06	238	154	154
9/18/19	Denmark	TDC AS (TDC Mobil)	238/01	188	163	163
9/18/19	Estonia	Elisa Eesti AS	248/02	19	5	5
9/18/19	Finland	Elisa Corporation	244/05	252	177	177
9/18/19	Hong Kong	Hutchison Telecommunication HK Ltd.	454/04	14	9	9
9/18/19	Indonesia	PT Telekomunikasi Selular (TELKOMSEL)	510/10	8,211	751	750

- A network operator sees increasing traffic to a certain network in Country A
- Via the network iBasis has real time traffic info
- Via the financial information any overall increase in payments to a network can be monitored
- An alarm is sent to the operator about increased costs in country A

High Cost Network Alarm based on precise and updated financial information

Preferred agreement negotiation – 5G

IOTRON
Insight

Financial Information

Real Time Network Data

ADD NETWORK QUALITY

Agreement Reference	Traffic Volume	TAP Charge	Post Discounted Charges	Discount Achieved
Puerto Rico: Claro	926.47	40.54	39.80	0.74
INDIA: AIRCEL	0.00	0.00	0.00	0.00
Sri Lanka: Airtel	8.00	0.43	0.36	0.07
Altice Group	1,764,026.71	21,223.60	21,238.50	-14.90
Bangladesh: Robi Axiata	52,949.30	2,404.82	3,550.96	-1,146.13
Bahrain: Batelco	253.93	25.97	3.74	22.23
RENEWED_2018_DTAG GROUP (T-Mobile) Europe	11,306,564.64	82,032.34	117,240.53	-35,208.19
Digicel Pacific	7,238,942.11	43,189.72	40,508.26	2,681.46
RENEWED_2018_EVERYTHING EVERYWHERE 2018	12,391,615.23	68,569.67	51,679.37	16,890.30
Taiwan: FarEasTone	5.55	0.05	0.05	-0.00
Hong Kong: HKT	850,933.21	5,523.03	6,561.65	-1,038.63
HUTCH HK & Macau	14.36	18.32	0.13	18.19
Sudan: MTN	429.59	138.40	139.19	-0.79
Morocco: Orange Maroc JUL17 JUN18	25,719.15	6,412.52	6,427.56	-15.04
Sri Lanka: Mobitel	77,684.30	2,152.41	3,220.14	-1,067.72
Kenya:Telkom MAY19 APR20	515.32	43.56	41.04	2.52
MTN Cyprus (no longer part of MTN group from 1st Jan 19)	133,298.29	1,937.48	5,627.50	-3,690.02
East Timor: Telkomcel	9,152.14	1,040.02	893.78	146.25

- Negotiator wants to select a roaming partner in a country for preferred roaming
- Via the financial information he sees all price information and settlement status
- Via the network information he sees the different network qualities

Preferred Roaming Negotiation taking into account settlement status as well as network quality,

Combining Key Traffic visualisation

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IOTRON Insight

iBASIS
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InVision

TAP →

NRTRDE →

Financial Information →

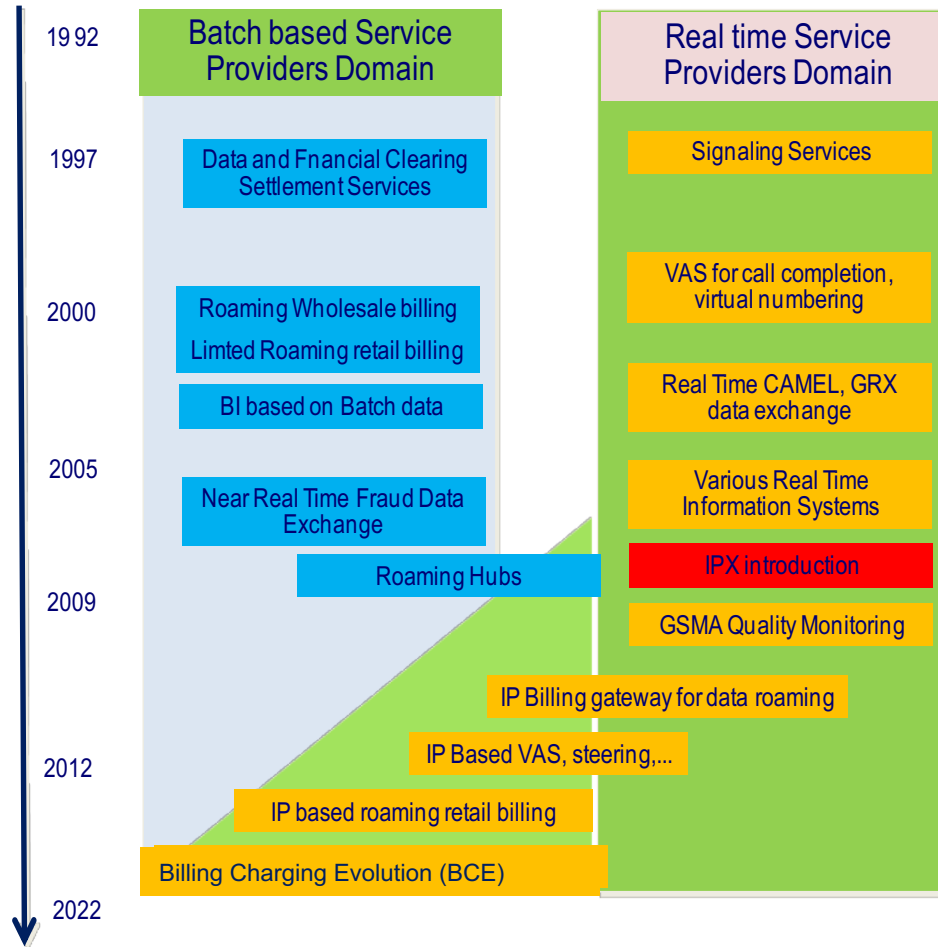← Real Time Network Data

← Signaling

← IPX

Improved Use Cases:

- Deviations from expected traffic distribution in real time
- Steering alarms if roaming partner deviates from expected volumes in real time
- Fraud Alarms in real time

- Traffic information combined with financial impact
- Steering planning with financial information

History of Roaming Interworking

From Batch to Real Time

1992	**Batch based Service Providers Domain**	**Real time Service Providers Domain**
1997	Data and Fnancial Clearing Settlement Services	Signaling Services
2000	Roaming Wholesale billing / Limted Roaming retail billing / BI based on Batch data	VAS for call completion, virtual numbering / Real Time CAMEL, GRX data exchange
2005	Near Real Time Fraud Data Exchange	Various Real Time Information Systems / IPX introduction
2009	Roaming Hubs	GSMA Quality Monitoring
2012	IP Billing gateway for data roaming / IP Based VAS, steering,... / IP based roaming retail billing	
2022	Billing Charging Evolution (BCE)	

Is M2M, IoT monetisation and procedural handling an issue for you and can you see areas where iBasis and Nextgen could assist you?