

# Flexible SIM – operator catalyst in digitalization and convergence

*Technological evolution disrupting the traditional retail and wholesale business*



Mobile operators, device manufacturers and standards bodies have been working towards replacing swappable physical SIM cards (classic) with flexible SIM solutions that are provisioned over-the-air. Embedded SIM chips (eSIM) and software-based approaches (SoftSIM) were initially launched by industry players with M2M in mind and are now expanding into the pure consumer segment. We estimate that by 2020 the EU potential for flexible SIM in smartphones and tablets will be 150mn. This drives a rearrangement of the mobile value chain and operators’ strategic position. Ultimately the economics for mobile operators are impacted. Therefore strategic adaptation is recommended for all operators to use flexible SIM as a catalyst for upside potential in digitalization and convergence.

## Establishing new value-chain steps with flexible SIM

The final flexible SIM ecosystem is still being discussed between various parties (i.e. GSMA, MNOs, OEMs) and official standardization is pending. In general, SIMs need to perform two functions: profile generation and profile delivery. Both are critical for authentication of the user (so that the user can be identified and charged), as well as for security reasons (e.g. encryption of transferred information).

### Functions performed by classic and flexible SIM architectures

	Existing		New	
	Profile generation	Profile delivery	Service aggregation	Service discovery
<b>Classic SIM</b>	SIM vendors generate unique network access keys to be stored on SIM, based on operator authentication data	Network access keys stored on SIM enable connection and encryption	No service aggregation (only one MNO or MVNO can be accessed)	No service discovery (user is locked in with MNO/MVNO that issued the SIM)
<b>Flexible SIM</b>	Keys will be digitally stored on a server	Keys will be encrypted and downloaded from profile generation server	Aggregator could buy capacity from MNOs and create multiple profiles	User can select among MNO, MVNO and service aggregators and switch at any time

Emerging flexible SIM solutions are likely to cover existing SIM functionalities while offering additional capabilities such as over-the-air provisioning. Flexible SIM introduces two new steps into

the value chain: service aggregation, which allows for dynamic reconfiguration or bundling of offerings from various network operators; and service discovery, a function that allows a user to select a network operator, service provider or aggregator.

## Enhancing customer experience for commercial breakthrough

New value chain steps require a redesigned user experience. Device OEMs such as Apple could disrupt the mobile industry with novel approaches. While some of the required elements are already in place such as consumer-financing models to lower upfront device cost, more work needs to be done for a customer-friendly experience. In particular, on:

- Aggregation and integration of mobile connectivity services by OEMs (e.g. partner selection during set-up) – which will provide the potential for OEMs to engage as MVNOs
- Porting of existing numbers/subscriptions
- Payment for products and services associated with the device and connectivity in the OEM’s e-store (e.g. iTunes, Google Play)
- Aggregation of profiles and instant switching between them
- Innovative roaming models will overcome local footprint limits by switching to local operators when crossing borders

The initial suggestions for the user experience and the impact on the customer journey implicate that economics of the traditional mobile business for operators will change significantly.

## Improving per-device economics

To evaluate the economic impact of flexible SIMs on an individual smartphone customer, Arthur D. Little has built a business model. In this report the model considers the example of an Apple iPhone with a flexible SIM. Based on current market data, the analysis uses assumptions on customer proposition, business ecosystem, prices and margins, and simulates developments in eight major EU countries.

## Economic assumptions

Customer proposition	Business ecosystem	Pricing & margins
<ul style="list-style-type: none"> <li>■ <b>Connectivity</b> offered by device OEM (Apple, Samsung, etc.)</li> <li>■ <b>Bundled with device</b> at POS, plus consumer financing (APR=5%)</li> <li>■ <b>One (voice) number</b>, but flexible SIM switching for data</li> <li>■ Option to get <b>flexible SIM from MNO(s)</b> hidden in sub-menu</li> </ul>	<ul style="list-style-type: none"> <li>■ Device OEM has <b>MVNO deals</b> with at least one operator per country</li> <li>■ Device OEM covers cost by extra margins from <b>arbitrage</b></li> <li>■ Operator saves subsidy and <b>30% of other OPEX</b> in new model</li> <li>■ <b>Retailers</b> are <b>low-touch</b> on flexible SIM (purely digital UX)</li> </ul>	<ul style="list-style-type: none"> <li>■ Device OEM passes standard <b>30% MVNO margin</b> on to customers</li> <li>■ <b>APR covers cost</b> that device OEM incurs for fraud, unpaid bills, etc.</li> <li>■ <b>Arbitrage benefits</b> cover connectivity cost (e.g. helpline)</li> <li>■ <b>No extra margin</b> for retailers (but higher device sales)</li> </ul>

Customers could save almost one-fifth on iPhone total cost of ownership (over two years), while operator total lifecycle revenues (i.e. total service revenues + recoupment of device subsidy) are expected to decrease by 65%. Although operators lose their device-related revenue as devices are purchased directly from OEMs, operators' service revenue decreases only by about 15%. This is because network operators retain about 70% of their service revenue by acting as wholesale providers in comparison to device OEMs acting as flexible SIM service aggregators.

Under the above assumptions, operators could save almost 73% of device-related OPEX (over two years), primarily due to device subsidies that are no longer incurred. Non-subsidy OPEX (e.g. sales & marketing) would decrease by roughly EUR 100 (per device), or 30%, during the same time frame (i.e. twice the rate of service revenue decrease). As a result, absolute operator EBITDA decreases by 30% (or about EUR70 per device) overall compared to the traditional SIM model. EBITDA margins increase from 20% (in current model) to 40% (with flexible SIM) since the canceled device revenues are essentially zero margin.

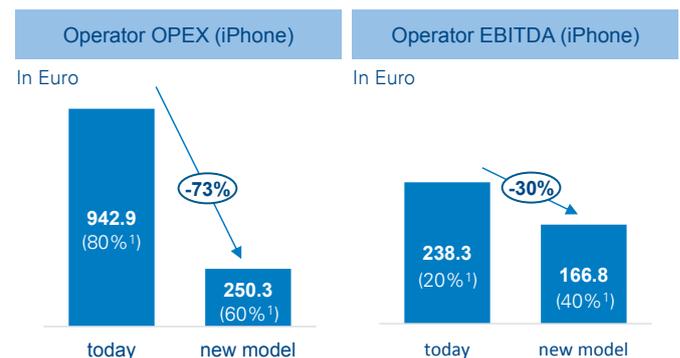
Network OPEX will remain the same as in the classic SIM scenario, unless operators move to consolidate their networks. This approach could further strengthen their negotiation position with aggregators, which would have fewer carriers to choose from. Arthur D. Little has analyzed the benefits of network

consolidation in previous studies. We see flexible SIMs as an additional driver for network consolidation, as well as a delayer of operator activities in network, product and sales/marketing.

## Financial impact for operators

It is expected that more than 100mn smartphone subscribers (within EU 8) will have switched to flexible SIM devices by 2020, using service aggregators other than mobile network operators (e.g. device OEMs). This will translate into a loss of more than €6bn in annual revenues, mainly due to a decrease of premiums as wholesale and retail compete directly.

EBITDA impact on operators is limited to €2.5bn annual EBITDA loss by 2020 due to the fact that operators save device subsidies. However, since network investments have to be maintained at roughly the same level, operating free cash flow (opFCF) reduction equals EBITDA reduction. This implies that operators will lose up to one-third of their projected cash contribution from smartphones.



<sup>1</sup> Of revenues; Scope: Big 8 countries Europe (D, UK, F, I, E, NL, BE, PO)  
Source: ADL Exane, Delta Partners, ITU, Statista, Ovum, own analysis



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## Agreeing on a strategic option to play flexible SIMs is beneficial for your organization

Clearly, the most extreme case where the ability to switch operators at a moment's notice will lead to increased competition among network operators. However, the situation where operators compete for customer selection in a single list in direct comparison with key competitors and MVNOs is worrying. Furthermore, operators might not appreciate parties such as device OEMs being in control of service selection

<sup>1</sup> Germany, UK, France, Italy, Spain, Netherlands, Belgium, Portugal

menus, or even acting as aggregators that arbitrage capacity across network providers. In the past similar battles have been witnessed over Internet search results (e.g. PageRank).

We identify four basic strategic options for operators: (1) block, (2) contain, (3) embrace and (4) transform.

## Operator strategic options

	Block	Contain	Embrace	Transform
Retail (B2C)	Don't support / flexible SIM standard	Lock flex SIM subs, e.g. with upgrade plans, quad-play	Push own flexible SIM proposition e.g. through own apps	Singular focus on network quality
	Delist devices from OEMs that launch flexible SIM MVNOs	Invest in retail (e.g. commissions) to secure market share	Entice MVNO/competitor subs to switch (e.g. cashback)	Massive cost reduction at customer interface
Wholesale (B2B)	Don't allow third-party flexible SIMs to connect	Punitive terms & process hurdles for OEM MVNO plays	Harmonize wholesale terms for OEM & other MVNO	Max network share with OEM plays (e.g. rebate schemes)
	Anti-M&A "poison pill" for existing MVNO agreements	Minimize arbitrage (e.g. activation fees, roaming detector)	Implement seamless flexible SIM processes (e.g. activation)	Become preferred partner for "other" devices (e.g. IoT)

### Option 1: "Block"

Proponents of this option usually start from two assumptions:

- Flexible SIM has a net negative impact on mobile operators
- Mobile operators have sufficient market power to prevent flexible SIM

While assumption (a) is indeed supported by our analysis, assumption (b) simply states that it is an operator's choice whether to allow flexible SIM to connect to its network.

Such an operator could refuse to accept decisions of standard-setting organizations such as GSMA, or participate in such bodies only with the intent to delay their conclusions taking effect. The operator could involve regulators, e.g., by citing concerns that flexible SIM might not adhere to stringent security standards.

On the retail side, the operator could instruct its own channels and dealers to focus on selling devices not equipped with flexible SIM. Even when flexible SIM ultimately arrives, the operator could simply delist manufacturers of flexible SIM devices, thereby potentially reducing their market share.

On the wholesale side, the operator could refuse to cooperate with MVNOs that want to launch flexible SIM. Existing MVNO agreements could be amended to exclude it. There could also be clauses in MVNO contracts that would sever the relationship if a party that is perceived as hostile (e.g. Apple) acquired the MVNO.

### Option 2: "Contain"

Advocates of this option usually base their argument on two assumptions:

- Flexible SIM has a net negative impact on mobile operators
- Mobile operators cannot prevent flexible SIM, but can reduce its negative impact

While assumption (a) is indeed supported by our analysis, assumption (b) depends on the operator's market power and the commercial execution of retail and wholesale business.

On the retail side, additional investments could strengthen the operator's retail footprint and proposition (e.g. higher handset subsidies, more aggressive sales commissions). Quad-play bundle contracts might be particularly effective, since they decrease sensitivity to bundle components.

On the wholesale side, while being open to flexible SIM MVNO deals, the operator could make these contingent on less favorable commercial terms or subject to process hurdles (e.g. flexible SIM activation). In particular, deal terms would discourage arbitrage (e.g. through a one-off activation fee).

### Option 3: "Embrace"

Supporters of this option usually rely on two assumptions:

- Flexible SIM could have a positive financial impact on some operators
- These operators could outperform competitors through adoption of flexible SIM

While assumption (a) is not consistent with our analysis, it is possible that some operators will gain so much market share from high-value flexible SIM adopters that the resulting ARPU reduction will be compensated. Assumption (b) depends on the operator's commercial execution and agreements with MVNOs.

On the retail side, the operator could push its proposition (e.g. apps, landing pages) and incentives (e.g. cashback) to lure flexible SIM device owners to switch to their service and commit to longer term contracts.

On the wholesale side, the operator would be open to partnering with MVNOs that control service discovery for flexible SIM devices. Wholesale terms would not be disadvantageous compared to classic SIM. Wholesale processes would be smoothed so as to not antagonize potential partners, while keeping arbitrage in check.

### Option 4: "Transform"

Promoters of this option generally put forward two assumptions:

- Flexible SIM could be a competitive advantage for a particular type of operator
- Such an operator dramatically reduces cost through focusing on flexible SIM

Assumption (a) requires a certain operator to become so dominant among flexible SIM customers that ARPU loss would be compensated by market-share gain. Assumption (b) depends on the operator's ability to reduce fixed OPEX.

On the retail side, the operator would dramatically reduce expenses in sales, marketing and customer care and yield the customer interface to service aggregators (e.g. device OEMs). The operator would aim for “best-network” and/or “best-price” positioning in order to be attractive to end customers as well as service aggregators.

On the wholesale side, the operator might desire to become the preferred partner of MVNOs that control service discovery for flexible SIM devices. Wholesale terms would be more attractive than the offerings of competing operators. Wholesale processes would be (re-)designed specifically around flexible SIM.

## Conclusion

We recommend that each party analyzes its situation in light of the upcoming changes and develops a plan of action through a cross-departmental project team.

- Establish baseline business plan 2020 by device type/OS (smartphones, feature phones, etc.) and service type (mobile voice vs. data, etc.)
- Quantify flexible SIM impact based on locally tuned assumptions (e.g. device/OS penetration, MVNO landscape, competitor market share, etc.)
- Evaluate and quantify mitigation options based on local characteristics (e.g. operator retail share, acceptance of digital-only sales & service, etc.)
- Prepare right-sizing of customer interface based on chosen strategic option and prepare a transformation program towards digital channels
- Adjust proposition portfolio in consumer, business and wholesale segments based on chosen strategic option (e.g. B2B2C services)
- Review existing MVNO agreements and check M&A implications; establish an early-warning system for OEM approaches towards MNVOs and competitors
- Establish senior-level negotiation task force towards device OEMs; position “obstructive” MVNO clauses, but gradually withdraw in return for better rates
- Evaluate strategic moves, e.g. products/services and sales/marketing beyond connectivity, taking into account the constraints and opportunities of flexible SIM (e.g. value added services)
- Consolidate networks in Joint Ventures with other operators and across fixed-mobile to improve connectivity-based bargaining position
- Explore de-layering into a network-centric, product/service-centric and sales/marketing-centric organization to enhance market power on each layer

The evolution of SIMs will change the playing field for mobile markets with new value chain steps and shifting powers. Ideally, flexible SIM is just another catalyst for a company-

wide transformation program that is already under way, driven by existing industry trends such as data volume explosion, digitalization, and convergence.

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## Arthur D. Little

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