



**Arthur D Little**  
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TELECOMCOUNCIL  
SILICON VALLEY

# Innovation Quest for Telecom Operators

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*The heat is on!*

October 2016

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# Telecom operators still have ground to cover

The topic of innovation is not new to telecom companies per se, with the industry having cycled through myriad forms of financial and organizational investments. Telecom operators were among the first to introduce corporate accelerators, invest with venture capital and introduce a variety of corresponding managerial roles. They have launched speedboats, innovation labs or Fab Labs, but realizing value from these innovation efforts have proved elusive. A telltale sign is that professional investors shy away today from start-ups whose business models build on telco collaboration, focusing instead on those disrupting the slow-moving giants.

This state of affairs is why we, Match-Maker Ventures, Arthur D. Little and the Telecom Council of Silicon Valley, launched a truly global study of ecosystem leaders from corporates, start-ups and investors. Our joint study exposes the increasing perception divide across stakeholders: On the one hand, telecom operators have furthered their open innovation efforts but face headwinds to achieve meaningful scale or realize value, barring a few isolated examples. On the other hand, start-ups and start-up-like entities continue to shun telecom operators as partners of choice.

We are strongly convinced that there is little time left for telcos to gain back relevance. To do so, telcos need to truly transform – this requires a radical relook from **within** and facing up to the unavoidable transformation challenge that pits core business needs against new-business imperatives. Succeeding with breakthroughs across market spaces and customer shares requires clarity of purpose from the top, engagement models for the long run and co-opting the internal organization to the extent needed. As observed with our clients, this transformation journey is not an option anymore; at the same time, this is easier said than done, and challenges will persist along the way. But change is unavoidable, as the alternative is a slow, painful fading into irrelevance at the innovation table.

We trust this study will bring you up to speed on the current situation and spurs you to revisit current efforts within your organization.

At this stage, we also want to thank the participants in our online survey as well the many senior executives for the time they took to be available for our 1:1 discussions.



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# 1. Executive summary

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## What drives innovation?

A combination of internet- and software-driven companies has triggered a dramatic and sustained value shift in the share of ecosystem capitalization. The total market capitalization for telecom operators has remained almost flat since 2007, whereas for the new internet giants it has increased by five times, while the entire ecosystem has risen by 1.5 times.

It has taken a while for telecom operators to wake up and react – today innovation is a crucial, with 67% of all surveyed telcos stating that innovation is among their top three priorities. At the same time, most operators struggle to translate strategic priorities into action: only 34% of the surveyed telcos are (highly) satisfied with their innovation activities. The legacy and cash flow-rich core business is holding many telcos back, with only a few starting to transform sustainably. Those who embarked on transformation journeys took hits on their free cash-flow generation, but are in a much better shape today. These “growth leaders” managed to outperform their peers by four percentage points in revenue growth and 3.5 points in EBITDA growth – the annual free-cash flow growth-gap was five percentage points between 2012 and 2015.

The existing inefficiencies in the core businesses of telecom operators are still drawing the attention of investors and start-ups. While in 2011 about USD 4 billion in venture capital investments was attributable to telecommunication and mobile, this number increased by a factor of 7 to reach 28bn USD in 2015.

## Where is the heat?

If we were to gauge investment priorities of telcos, there would be no clear focus at an aggregated level. On a more granular level, differences become visible on the basis of a telco's market position through its domain focus. Using the percentage of respondents who state a domain as their top priority, market leaders focus the strongest by far on network (42%), followed by core products and services (21%). Challengers focus on customer interaction (47%) and new core products and services (19%). A cause for concern is the low focus on IT/enabling technologies – as opposed to new Internet giants that make IT their core capability. Telcos are pushing the topic as far away as possible. Overall it is the least important – only 5% of market leaders and 12% of challengers state IT as a top priority, and 26% of all telcos rank IT with lesser or least focus.

On the other hand, start-ups seem to target the core business: 25% of all interviewed start-ups focus on IT/ enabling technologies, 24% on network technologies and still 20% on new core products/services. Most venture-capital money goes into adjacencies, followed by customer interaction. In this mix, telco CVCs are big spenders as well, with investments from 2015 to 2016 year to date exceeding 2.5bn USD. A key investment area is new business & adjacencies (about 50% of all investment).

## How to win?

Agreement on the need to change has never been higher among industry leaders. Stakeholders understand what needs to be done, yet they are missing the recipe on how to do it.

**Where to play?** Top performers and innovation leaders are characterized by higher activity levels and more “progressive” focus areas. Telcos are left with key plays: (1) focusing on the core by laying a growth foundation based on superior products and services, and (2) being digital enablers playing local cards in digital businesses. To do so, telcos need to carefully allocate their resources to develop a new sustainable advantage to provide new reasons for their future existence.

**How to play?** At the heart of the issue is finding the right setup – a common success factor cited is for operators to have solid understanding of both the market ambition and internal challenges. We lay out five archetypes from the “empowered guerrilla troop” to the “incubation unit” help to guide the decision process.

The typical pitfall that most telcos continue to encounter is how to (or not to) leverage the existing organization. To support creating more and wider impact, there is need for a new KPI framework focused on enabling and allowing innovation, not on tracking innovation. A good framework should support organizations in (1) setting and adjusting direction, (2) supporting resource allocation and (3) triggering desired employee activity.

**How to collaborate?** Lastly, this edition of our survey highlights the importance of collaboration on all fronts with diverse sets of players. Ninety percent of telcos consider innovation partnerships with established players relevant or highly relevant, but still, few telcos feel capable of actually executing these kinds of partnerships. Telcos need to develop cultures of collaboration, hone appropriate processes and empower people to do so as well.

Specifically, Telco collaboration with start-ups is highly dependent on the individual domain: the network domain is expected to turn into a fighting grid, as neither are telcos open for collaboration nor are start-ups willing to collaborate. Customer interaction, there again, is the opposite, and shows the potential of becoming the collaboration role model with high need on the telco side and a low disruptiveness on the start-up side.

**How to execute?** Committing and securing appropriate resources is still a challenge for many telcos – different forms of ring-fenced/dedicated budgets exist, but are not really committed to. Our view is that current approaches are in the early stages and will need to be intensified to create the desired impact over a longer time horizon. Telcos need to introduce new methodologies, increase flexibility and drive cultural change by stating positive examples through the leaders, living values end to end and putting higher focus on talent acquisition and retention.

**Outlook: Is another doomsday around the corner?** Three factors stand out as concerns: (1) shareholder expectations leaving little room for telcos to take risks, (2) lack of sufficient attention to domains in which disruption is even more intense and (3) willingness to partner in core domains. If telcos do not face up to the unavoidable transformation challenge, they stand to become irrelevant yet again.

## 2. Evaluating the state of play: approach

This report is primarily the result of our in-depth research carried out from July until September 2016. We conducted two online surveys. The first survey was targeted at telcos. When we refer hereinafter to telcos we are referring to providers of mobile and fixed telecommunication services.

- 80% of survey participants offer mobile communication services, 67% offer fixed communication services, 54% also offer TV services.
- 60% of participants consider themselves market leaders, 40% challengers.

We received 128 responses from 86 corporates, which represented **82% of the worldwide telecom revenues**. 70% of responses came from either C-level executives or heads of commercial, strategy or innovation departments.

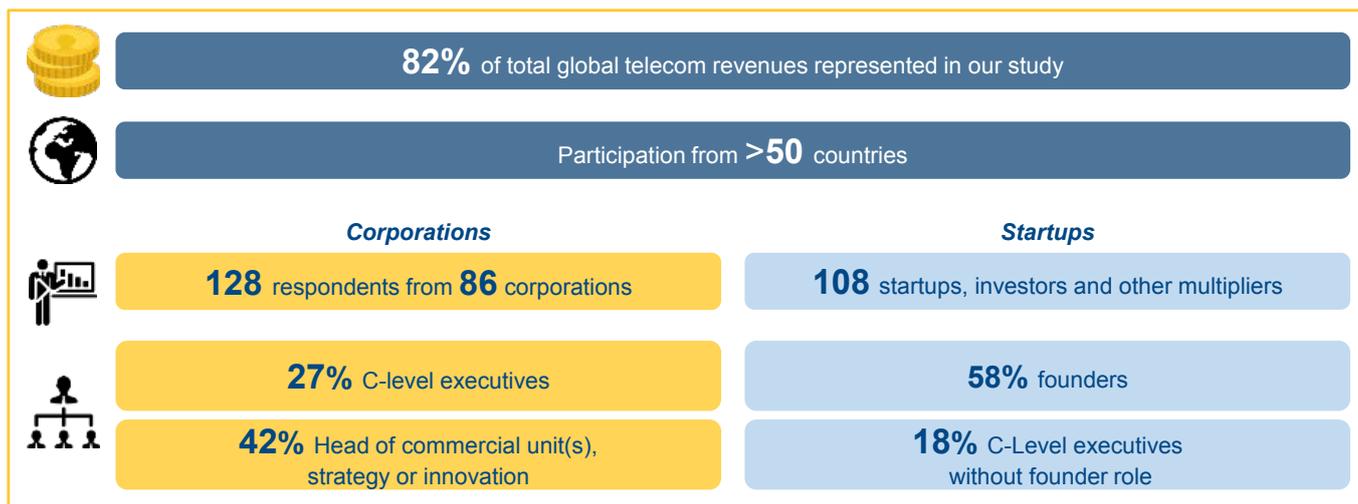
Our second survey was targeted at start-ups with telco-related value propositions as well as investors and third-parties active in the telco domain.

- Out of 108 responses, 32% of the start-ups are “early stage” and 38% “growth stage”.
- On the startup/investor/third-party side, over 75 are founders or have C-level positions.

About 50% of all startup/investor participants are headquartered in North America, 25% in Europe and the remaining 25% equally split between MENA and Asia.

To complement our analysis, we conducted more than 50 1:1 interviews with C-level executives, each lasting between 30 and 60 minutes. We complemented our surveys and interviews with analyses of operators’ financial performance. We included research on market trends and VC investments. Lastly, we enriched the report based on our experience working with clients on their pressing challenges.

Figure 1: Respondents statistics



# 3. What drives innovation?

## 3.1. Value shifts: Facing up to the reality

The telecommunication sector is undoubtedly experiencing turbulent times: the combination of internet-based and software-driven companies has triggered a dramatic and sustained value shift in the share of ecosystem capitalization. While operators have benefited from the added uplift from wireless business models in the past two decades, liberalization of traditionally closed markets and increased competition through technology shifts have voided the license to claim a seat at the innovation table. The playing field today is more open than ever, and new players have managed to grab significant value from incumbents.

Telcos have been reluctant to recognize and accept this value shift in recent years. Many still are in "denial stage" about their losses in customer relevance. The pressure to "do something," combined with the still-cash-flow-rich core businesses often lead to PR- and marketing-driven innovation activities. It would be typical to see initiatives being cut down or resources reallocated at the close of a financial year and the need to meet associated targets approached. Consequently, many of these initiatives cannot be regarded as true innovation efforts.

True to this, when we asked start-ups and investors about their perception of telcos (Figure 3), the result was pretty dull.

Figure 3: Start-ups perception of telcos

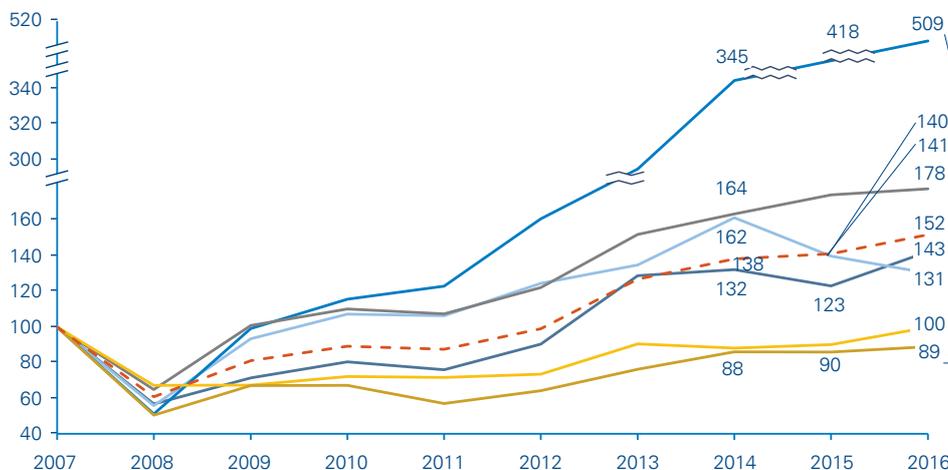


Question asked to startups: "What is the first word coming to your mind when thinking of a telco?"

Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

Figure 2: Market capitalization value by sector<sup>1,2</sup> (world, 2007-2016)

Base 100 in 2007



	Share of ecosystem capitalization	
	2007	2016
Internet	7%	24%
Software and IT services	18%	21%
<b>Total</b>		
Content	9%	8%
Devices	20%	17%
Network operators	37%	24%
Equipment	10%	6%

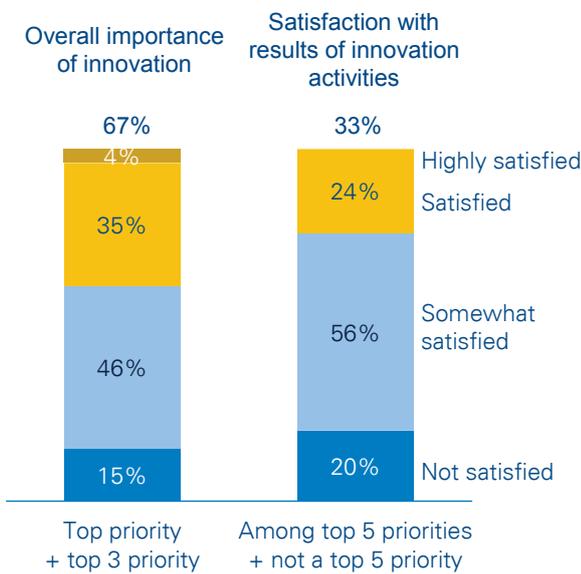
1 Top 30 per category by 2015 revenues; 2 As of May 2016

Source: Thomson Reuters, Arthur D. Little analysis

### 3.2. Telcos – Stuck in their legacy!

Innovation is hot! **67% of all participating telcos ranked innovation as the top or a top-three priority** among their main strategic objectives. The number seems high, but needs to be placed into perspective. Strategic priority does not equal day-to-day business priority. This was not only supported by our 1:1 interviews, but also by the responses from our survey. There is a high level of dissatisfaction with innovation activities. The dissatisfaction also correlates negatively with the priority level – i.e. the less of a strategic priority innovation is, the higher the dissatisfaction level.

Figure 4: Innovation priority and satisfaction level



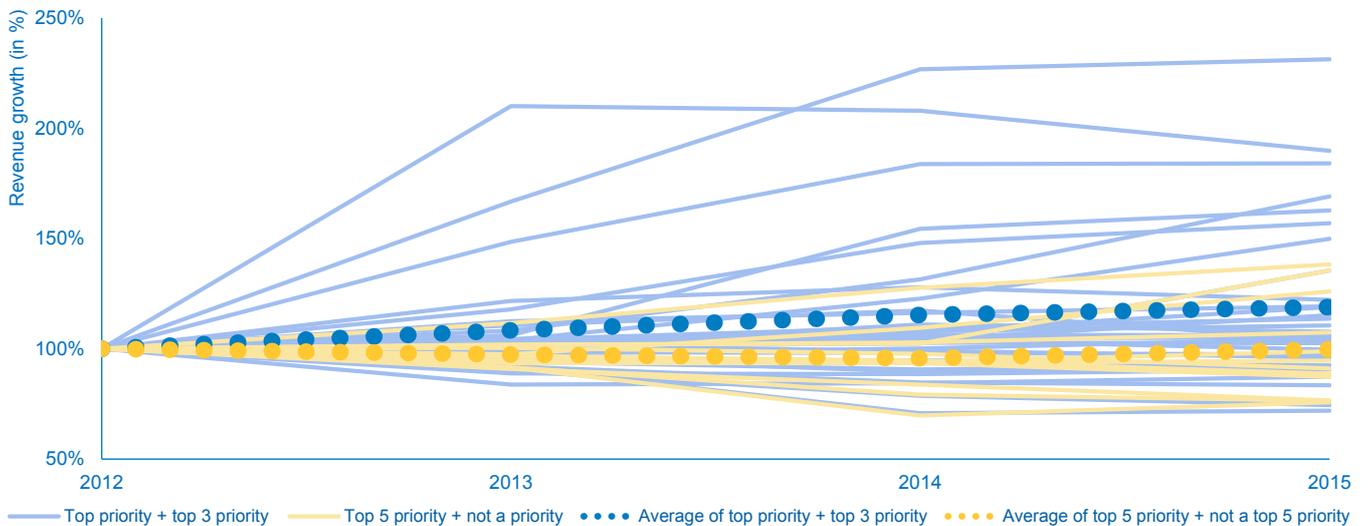
Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

One of the key challenges is the historical breakup of CAPEX, OPEX and FTE budgeting processes. This breakup is creating alignment challenges and often leads to innovation activities drying out. Another challenge is the motivation of telcos to engage in innovation. Often telcos are not driven by the hunger for new, but the desire to protect the status quo. This holds true independently, whether it affects innovation in today's core businesses or into adjacent, new businesses. Telcos' innovation approaches can subsequently often be considered "shallow" and scratching the surface. Observing and mimicking often is the key, instead of true innovative thinking.

A further challenge is the current high-EBITDA business. Any new business is measured against the margins and payback periods of today's core. The slogan, "The core business always wins!" unfortunately holds true too often. Margins and cash flow-richness are the reasons for another encounter: the shareholder challenge. Telco shareholders are used to steady cash flows and are rather risk averse. If they want to go for the upside, they will go with the internet giants. This is very short-term thinking, as shrinking top-line revenue has inevitably led to insignificance.

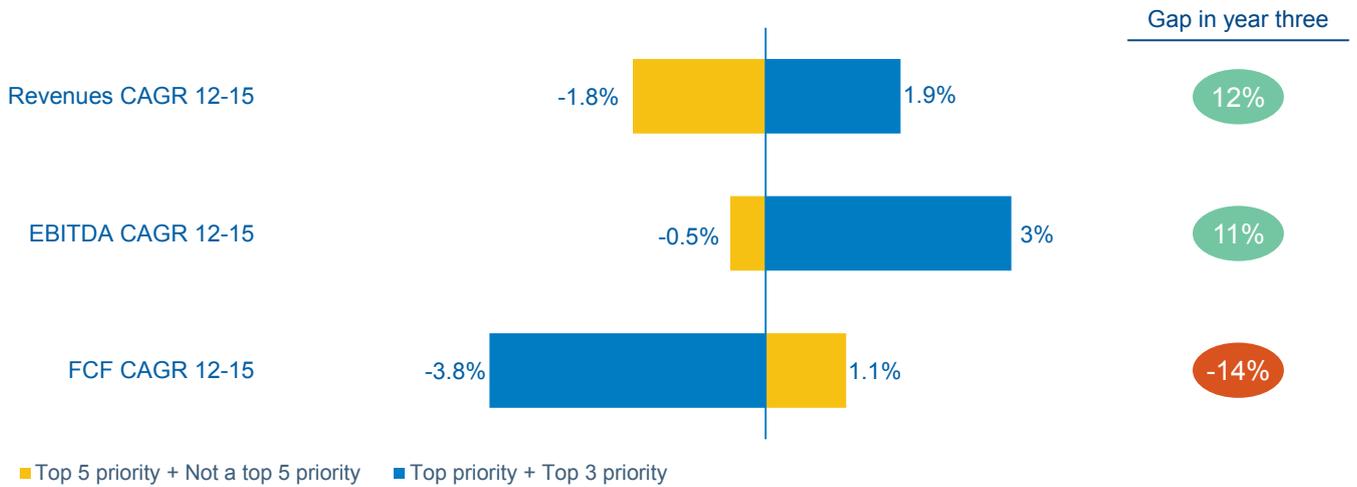
For our analysis, we correlated the financial performance (where available) of all participating telcos with the respective answers on innovation priority. Each line in the chart below represents the revenue development of one telco from 2012 to 2015. The dotted lines represent the average revenue growth (+6% CAGR for top/top-three priority vs. 0% CAGR for top-five/not top-five priority). The picture is surprising, even when excluding the extremes as the majority of telcos' are above the 0% growth curve.

Figure 5: Innovation's impact on top line (revenue growth from 2012 – 2015)



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

Figure 6: Innovation’s impact on financials (Median CAGR from 2012 – 2015)



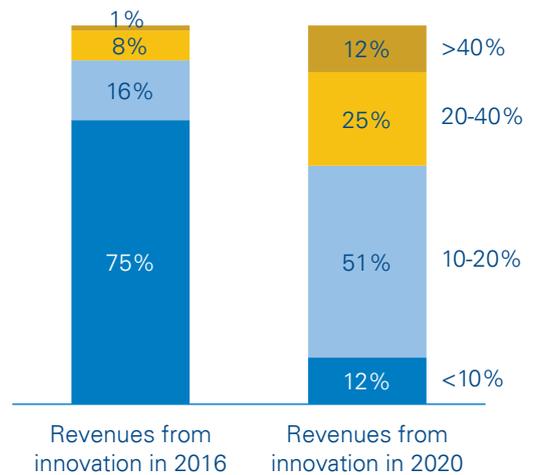
Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

As the averages are highly deferred by the extremes, we calculated the median growth in the chart below. This picture is more than revealing and essentially leaves telcos and shareholders with two options:

- “Truly transform”: Telcos can accept a painful hit on the FCF for the mid-term to return to a path of growth. This is not a short-term activity, but a sustainable mindset shift.
- “Die slowly”: Continuous optimization, cutting of costs and satisfaction of short-term shareholder targets. Essentially, these players will suffer a painful journey and eventually disappear.

We also asked telcos about the revenue contribution from innovation today versus the revenue expectation by 2020 for their companies. For today, 75% of telcos stated that more than 10% of revenues came from innovation. This number is expected to decrease to only 12% by 2020.

Figure 7: Share of revenues from innovation today and in 2020



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

### 3.3. Start-ups racing up

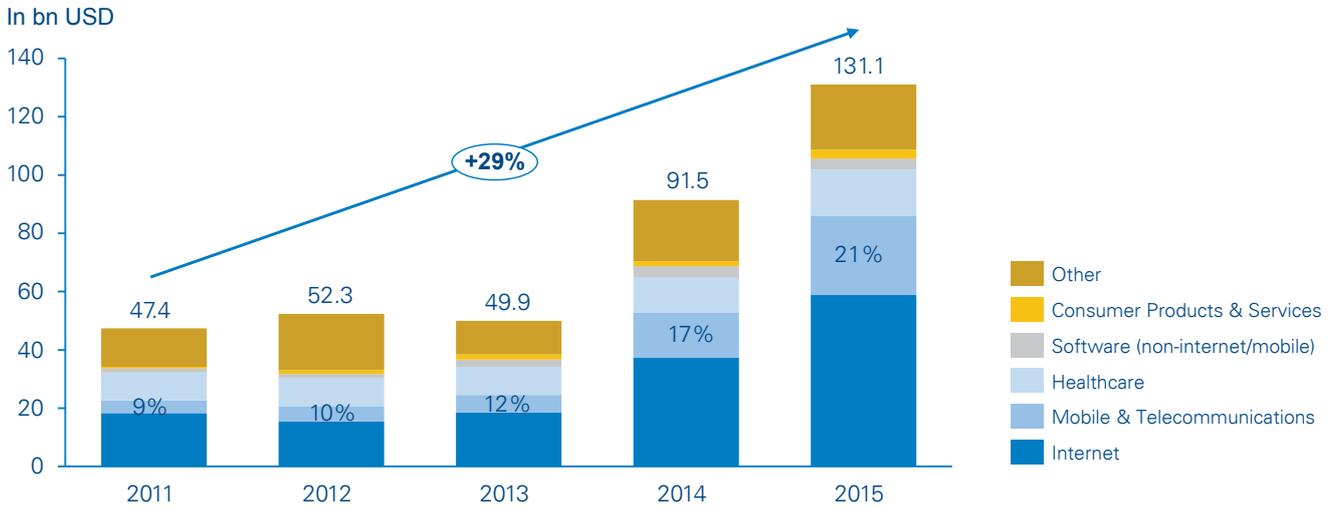
The emergence of innovative start-ups has sustainably changed the world, especially the technology world. Today we see more, better-funded, better-equipped, and finally more innovative start-ups creating ever more impact. Telcos had to face these digital attackers, such as Skype, WhatsApp, Viber, Nest, Google and Facebook, early-on. A lot of the funding came, and is still coming, from the VC world. Today many telcos try to participate and benefit from start-ups by launching their own venturing arms (CVC).

The VC investment going into mobile & telecommunication has increased not only in absolute terms since 2011, but also

in relative terms. High-margin business and slow-moving incumbents, combined with strong technological advancements, lead to this significant increase. In 2011, the investment volume was only slightly more than 4bn USD, while this number increased to close to 28bn in 2015.

Going forward, telcos can anticipate more competition, in particular in their core domains. However, the good news for telcos are that most start-ups are still open 36% of all participating start-ups have stated that collaboration with telcos is “essential” and 41% assess it as “helpful”.

Figure 8: VC and CVC investments per sector (2011 – 2015)

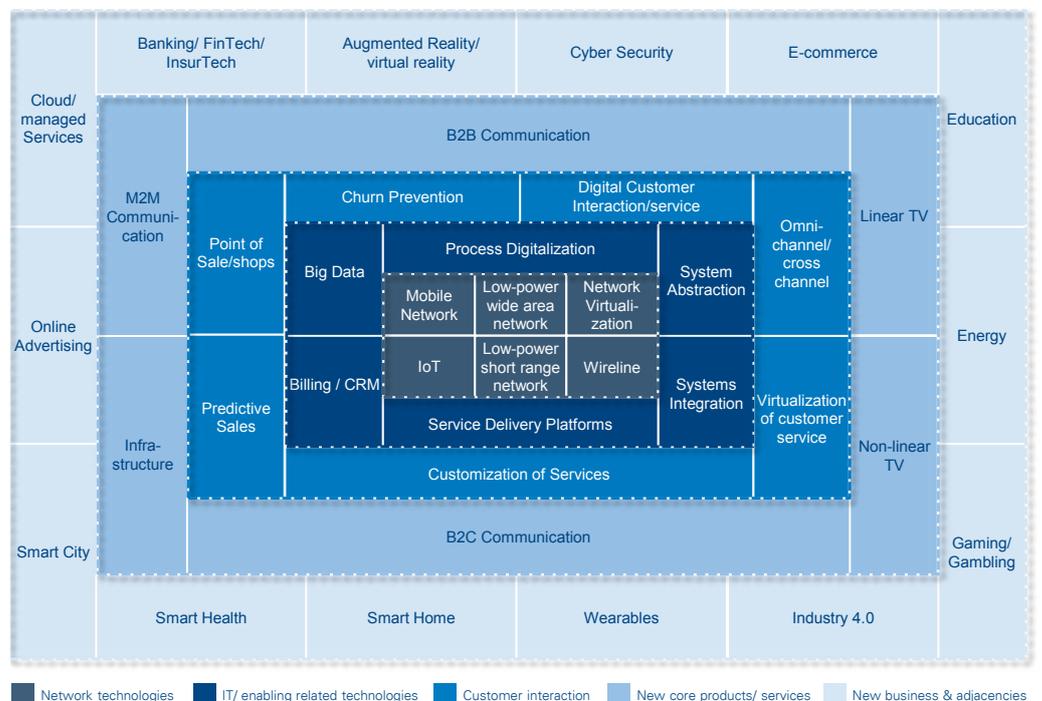


Source: CBInsights, Arthur D. Little analysis

# 4. Where is the heat?

For the scope of our analysis we split the telco playing field into five domains and 36 sub-domains. We started with the inner core of each telco – the network – and moved to the (potentially) new core – the new business activities such as smart health and/or financial services. The five domains from the inside to the outside are: Network, IT/enabling technologies, customer interaction, core products & services and new business & adjacencies.

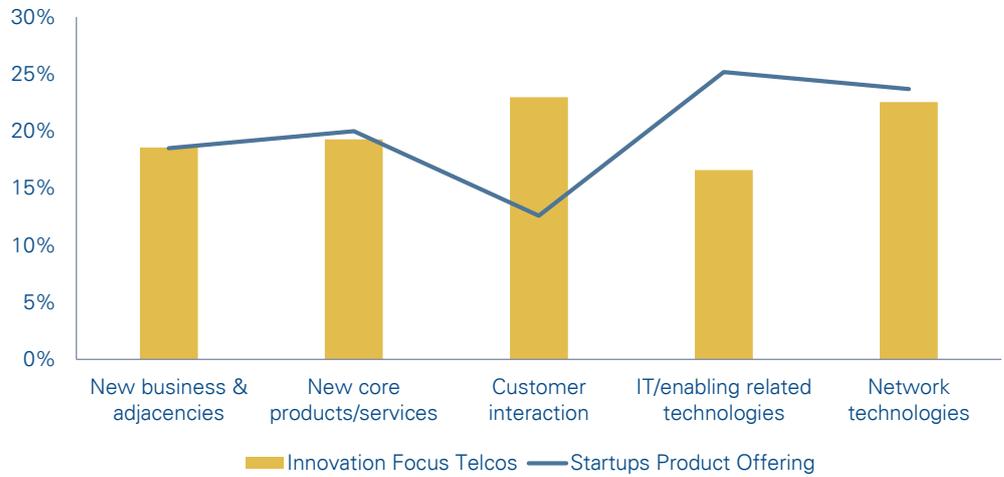
Figure 9: Innovation subdomains



When looking at telcos’ and start-ups’ domain-level focus in figure 10, one can see a fairly equal distribution along the five domains. Still, there are some (surprising) findings. Equal distribution also means that telco players are highly heterogeneous, or – the correct answer – still being searched for. The heterogeneity could though also be explained by the geographic and different market statuses of the participating telcos.

Start-ups’ main focus, reflected by the yellow line in the figure above, focus most strongly on IT/ enabling technologies which comes in handy as telcos do not seem to be very active in this field and (surprisingly) network technologies. Overall, the focus of start-ups shows a strong balance of activities.

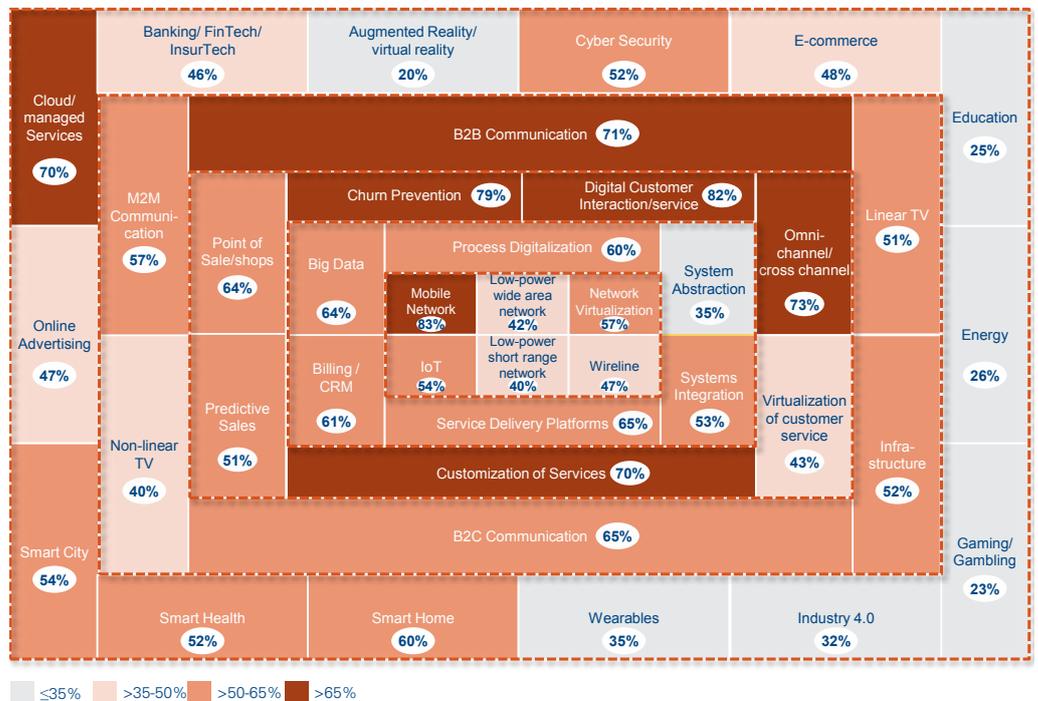
Figure 10: Primary domain focus by startups and telcos



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

At a granular level the heat map becomes more revealing. The overarching importance of customer interaction becomes visible. A lot of players put focus on this domain. Mobile network is, overall, the highest-ranking sub-domain (83%), followed by digital customer interaction/service (82%) and churn prevention (79%). The highest-ranking new business topic is cloud services (70%).

Figure 11: Innovation priority heat map



Source: MMV/ADL/TC3 Telecom Operators' Innovation Quest Survey

We also compared the survey results against publicly stated information (analyzed for 26 of the world's largest operators by revenue). Some questions need to be asked:

**Where is Industry 4.0?** When looking at public statements and investors' presentations, almost all telcos claim to focus on M2M and Industry 4.0 topics. From our survey, 64% of all telcos do not give any priority to Industry 4.0.

**Is non-linear TV still a game telcos can win?** Again, according to public statements, it is, but when reviewing the survey results, at least questions are allowed to be asked. It seems that telcos have moved on to the next opportunity and now focus on "smart home," as this receives significantly higher attention.

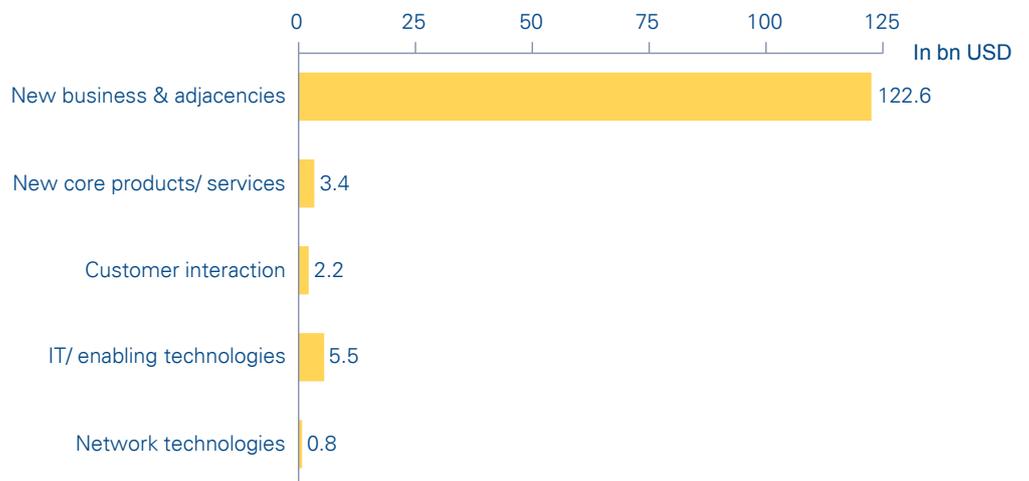
**Are "wearables" done already?** Wearables were "hot" in 2014 and still are in 2016. Officially, there is still a lot of interest in wearables, but in our survey a whopping 70% of executives declared wearables "done." Questions on business models for telcos significantly cooled off the topic.

**AR/VR to become relevant? When?** As much as wearables have cooled off, AR/VR has increased in public news. In particular, investors put significant money into AR/VR start-ups. Telcos seem to be much more reluctant. AR/VR is, overall, the least-priority sub-domain of all 36 domains. Risky? We do believe so.

#### 4.1. Where is the money?

Funding over the period 2015 and H1/2016 was mostly focused on potential adjacencies.

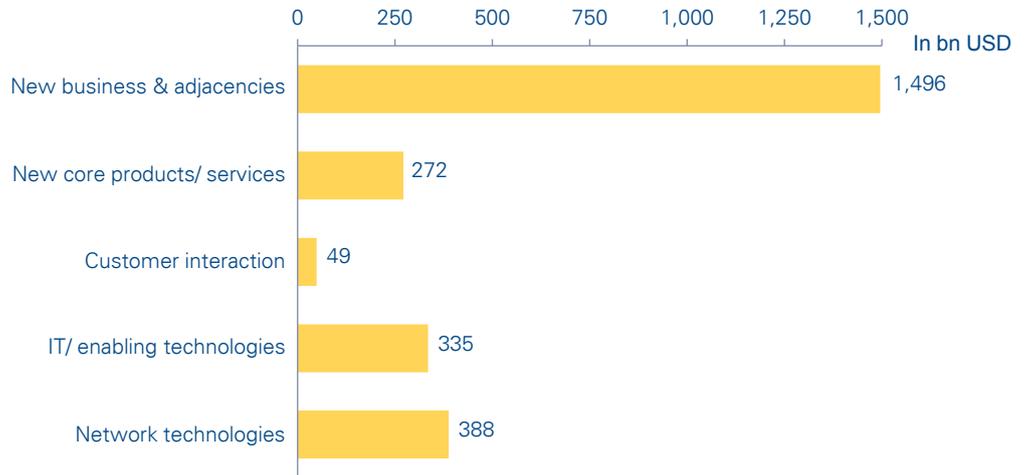
Figure 12: VC and CVC investments (2015 until Q2 2016)



Source: CBInsights, MarketLine, Arthur D. Little analysis

Investment focus on CVC vehicles is not in line with the emphasis areas in the sub-domain heat map. It almost seems as if telcos “push” the new business & adjacencies activities into a CVC vehicle and hope to participate in the value creation by being financial investors.

Figure 13: CVC investments (2015 until Q2 2016)



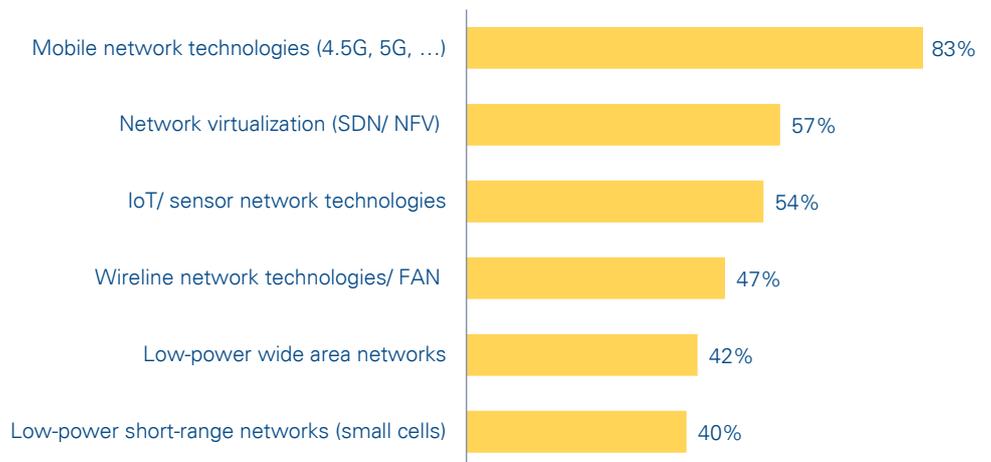
Note: Values represent start-up investments of 17 telco CVCs worldwide in 2015 until Q2 2016. Investment sum represents funding round and not respective investment sum of CVC. Classification has been done on a start-up level according to our survey categories.

Source: Company websites, CBI Insights, MarketLine, Arthur D. Little analysis

#### 4.2. Network: Let’s do mobile!

Mobile network remains the key focus topic for all telcos. With steadily increasing mobile traffic, this does not come as a surprise. However, the overall low focus on wireline technologies needs to be mentioned.

Figure 14: Sub-domain focus within “Network” domain (focus degree in %)



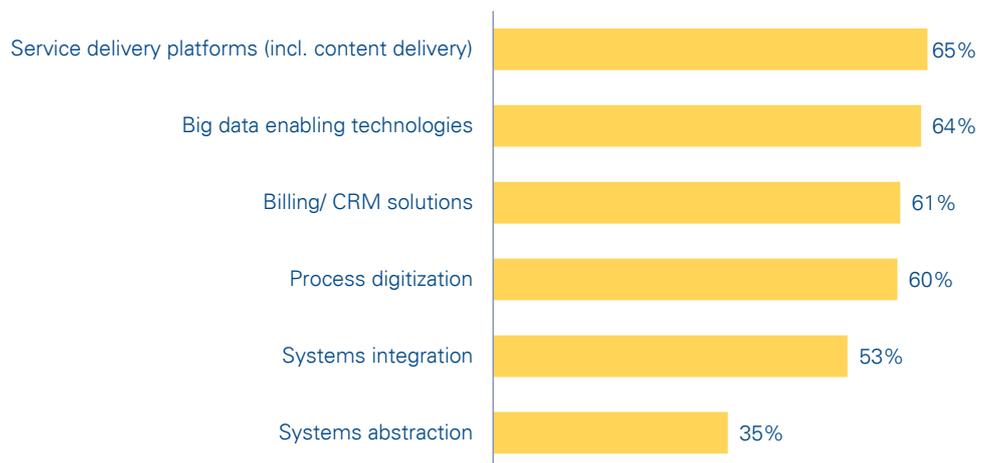
Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

Down the road, network virtualization will need to become a higher-focus topic. As this is where hardware and software meet, and also where we expect a significantly higher impact from start-ups. To be successful, there is higher dependency on collaboration with telcos, but not significantly higher than in other domains (considered essential/helpful by 84%, vs. 73% in other domains). Given the speed challenges of telcos, they would be well advised to put a stronger focus on SDN and NFV to create new services quickly and reduce time to market. When looking at just the top innovators, you can easily see a strong correlation with putting importance on SDN/ NFV. Telcos putting innovation as a top or top-three priority put 63% focus on network virtualization, whereas the rest only put 46% on the same topic.

### 4.3. IT/enabling: Better to have someone else deal with it...

IT has never been perceived as a “sexy” domain. It has been the “painful black box” for many years, and that is most likely the single biggest reason telcos are still suffering from weak IT architecture. Also today, IT/enabling-related technologies are the overall lowest focus of telcos.

Figure 15: Sub-domain focus within “IT/enabling” domain (focus degree in %)



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

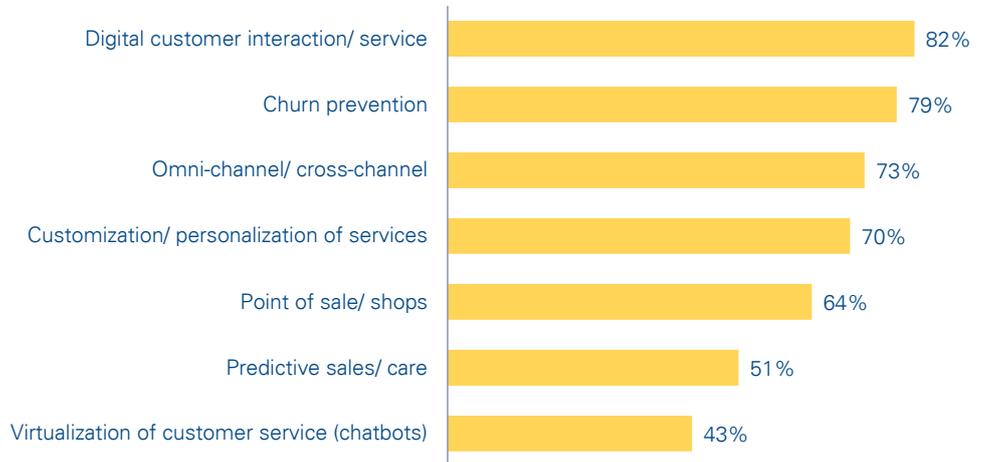
### 4.4. Customer interaction: Still stuck with fixing the basics!

Telcos are trying to build their next strategic advantage, as the pure delivery of communication services is not holding up any longer. Customer intimacy and relevance have been elected as next in strategic importance. This explains the overarching importance of customer interaction topics. Digital customer interaction/service and churn prevention are overall top-2 and top-3 sub-domain. The importance can also be explained by the need to overcome the basic challenges. Providing smart customer interaction – i.e., reflecting who the customer is and communicating in a value-creating way – is still a key challenge. There are still hardly any reasons to interact with your telco digitally unless your service is not working or you want to check your balance.

In light of the protective move, churn prevention has grown incredibly in importance over the based years. As most markets globally are hardly experiencing any subscriber growth any longer, focus has shifted from market-share grabbing to reducing churn rates. This is a classical topic, in which start-ups can deliver clear value-add, as it requires the capability to deal with significant data volumes in almost real time.

Chatbots – i.e., artificial enabled messaging programs that respond to text-based requests – have been receiving a lot of public interest in 2016. New bots are appearing within common messaging

Figure 16: Sub-domain focus within “Customer interaction” domain (focus degree in %)



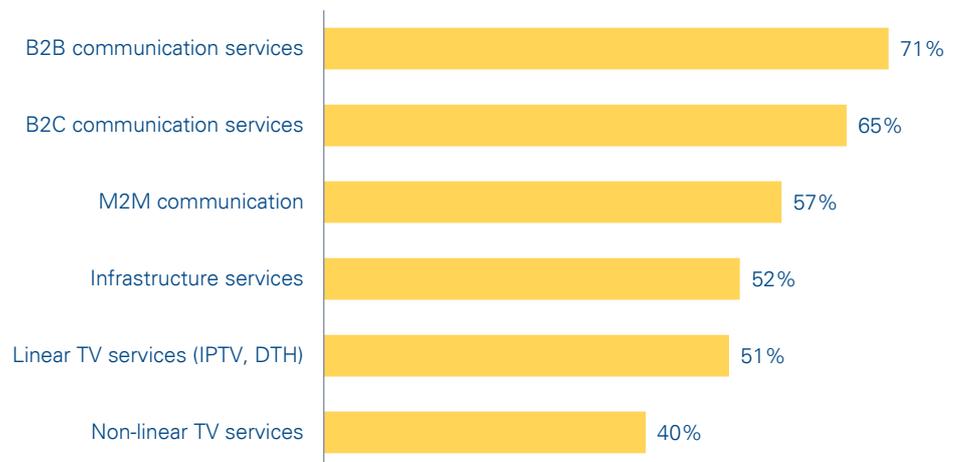
Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

apps as well as stand-alone solutions. There is quite some action in the online food delivery sector as well as in the consumer retail sector, but telcos seem to be slightly reluctant. Some have launched their services, but it is still far from being a “thing” in the telco industry.

#### 4.5. New core services: B2B is hot!

The slowdown of the consumer market has led to the emergence of the B2B segment for telcos. In particular, incumbents with historically stronger footholds in the B2B sector have proclaimed the B2B segment as their future. Therefore, it holds true that the SME segment will be conquered with cloud-marketplace solutions and the large corporate segment will be taken with attractive system integration propositions.

Figure 17: Sub-domain focus within "New core products" domain (focus degree in %)



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

Comparatively low focus on M2M communication came as a surprise to us. B2C and B2B communication services are both experiencing stronger innovation focus.

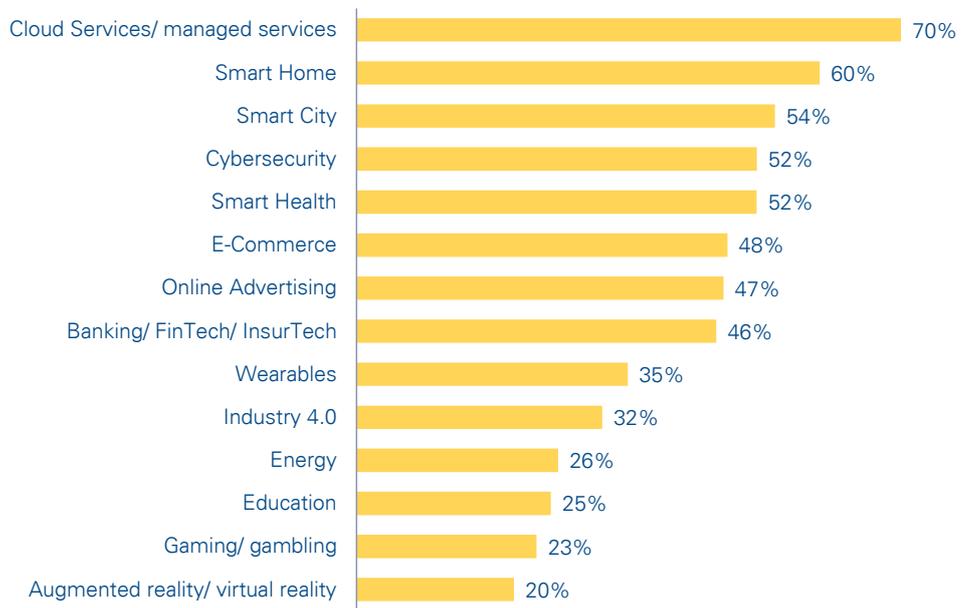
#### 4.6. New business/adjacencies: Conquer the cloud and the home!

The responses in the area of new business/ adjacencies are interesting. Sub-domains, such as wearables, Industry 4.0, energy, education, gaming/ gambling, and augmented reality received relatively low mentions.

There is only one clear winner: cloud services. To understand this better, we discussed this topic in our 1:1 interviews. The high relevance predominantly relates back to the B2B opportunity. Although it has just as much impact on the consumer segment, telcos tend to focus more on the B2B market, as “this is where we have an advantage.” Telcos feel that companies perceive them as a trusted entity, Telcos have the advantage of having an active sales force and an existing billing relationship. The danger lies in the fact to approach a fundamentally new business domain from a heritage position, neglecting that the playing field is open. Not without reason, many of today’s successful cloud companies were yesterday’s start-ups.

“Smart home” has been ranked as the highest consumer topic. It is a domain with a promising future and natural closeness to telcos’ heritage. Smart home draws attention not only from competing telcos, but also all other players within the ecosystem.

Figure 18: Sub-domain focus within “New business & adjacencies” (focus degree in %)



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

## 5. How to win?

We started this report on a critical note reflecting the overall sentiment from survey answers and interviews. At the same time, it is worthwhile to reflect this wealth of real-life experience onto the future, with a view towards “How to win?”. The most positive finding from our work is the high degree of self-critical assessment from telcos on their actions. Telcos, formerly not blessed with humility, are nowadays much more critical and are willing to re-orient their approaches. While, this has mostly not yet translated into the entire organization, we feel it is still an essential and crucial first step.

Reflected in our 1:1 discussions, agreement on key innovation challenges reaches even further and not so surprisingly across the entire innovation activity chain from strategy till execution. To sample a few - Insecurity and risk-averse nature often drives telcos back to their core businesses as a protective mode. Legacy decision-making processes and hierarchies are slowing down efficiencies negatively impacting effectiveness. The focus on short-term targets moves organizational focus away from long-term ambition, often leading to innovation teams being dried out halfway. Most “new” business models do not stack up to comparable investment or return profiles that the core business delivers, and are seen as not accomplishing overly ambitious (or unrealistic) business plans. To top it, innovation leaders within large telcos often run the risk of being branded negatively, which inhibits wider spread of a risk-taking mind-set and internal cooperation. This is also reflected by the identified key challenges from our survey.

To provide a compelling narrative for telco stakeholders, a return to basics is necessary: Knowing **where to play** (identifying the playing field and concrete topics), **how to play** (set-up, alignment with the existing organization and steering going forward), **how to collaborate** (with established players and start-ups alike) and **how to execute** (securing resources and moving ahead in timely manner) is critical for telcos.

Figure 19: Telcos' top 5 key innovation challenges



Note: % of respondents who answered “highly relevant” or “relevant”

Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

## 5.1. Where to play?

The desire to work based on a sustainable and defensible advantage as well as the need to protect the existing revenues often drives telcos back to their core businesses. But without question, the quest is on – telcos are trying to identify their future advantage without being willing to let go their current advantage. Given the heterogeneity reflected by the above heat map, the overarching challenge of “identifying the right topic” becomes understandable.

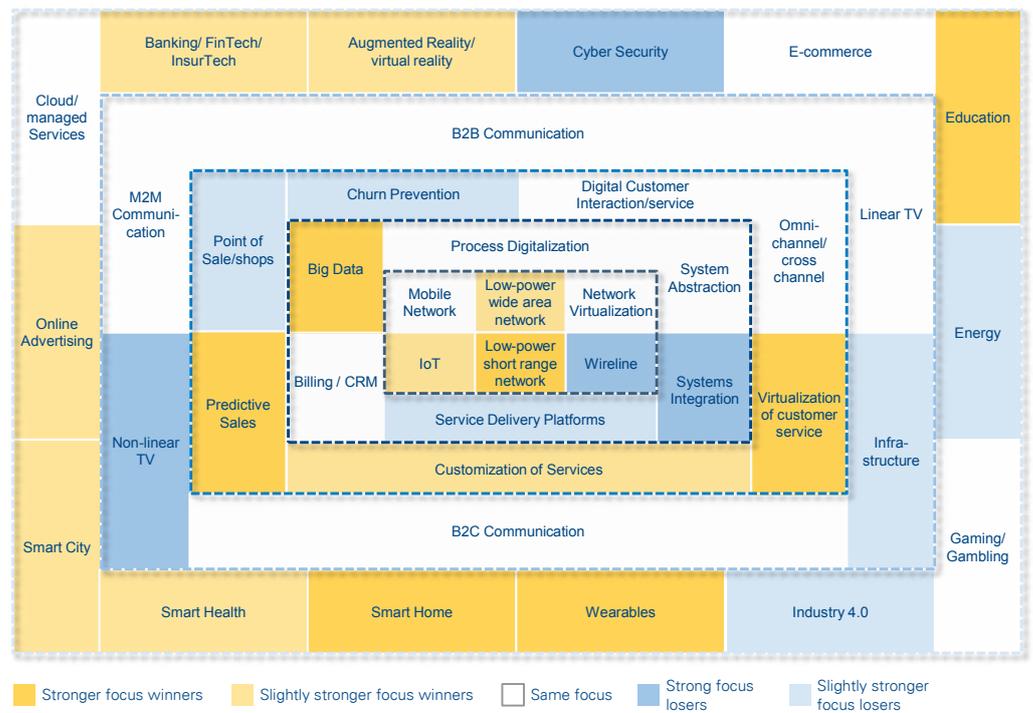
### 5.1.1. Where do performers play?

We looked at the performers – i.e., operators with positive revenue growth CAGR 2012–2015 – and compared them with the non-performers – i.e. operators with negative revenue CAGR 2012–2015. The heat map below indicates where the respective player group has a relatively higher focus. We observed a few patterns (without delving into causation):

1. Performers are more active overall, with particularly higher activity in the new business & adjacencies domain and the customer interaction domain.
2. Performers focus overall on the more “progressive” topics: Wireline vs. IoT and low-power short-area/side-area networks, big data vs. systems integration, or predictive sales and virtualization of customer service vs. point of sales/shops and churn prevention.

We also compared the relative sub-domain-level focus of telcos that had innovation as a top / top-three priority vs. those with innovation as a top-five or lower priority. Classifying these stated innovators, the activity level is even higher with a significantly higher focus on the inner core, in particular IT, but also the network.

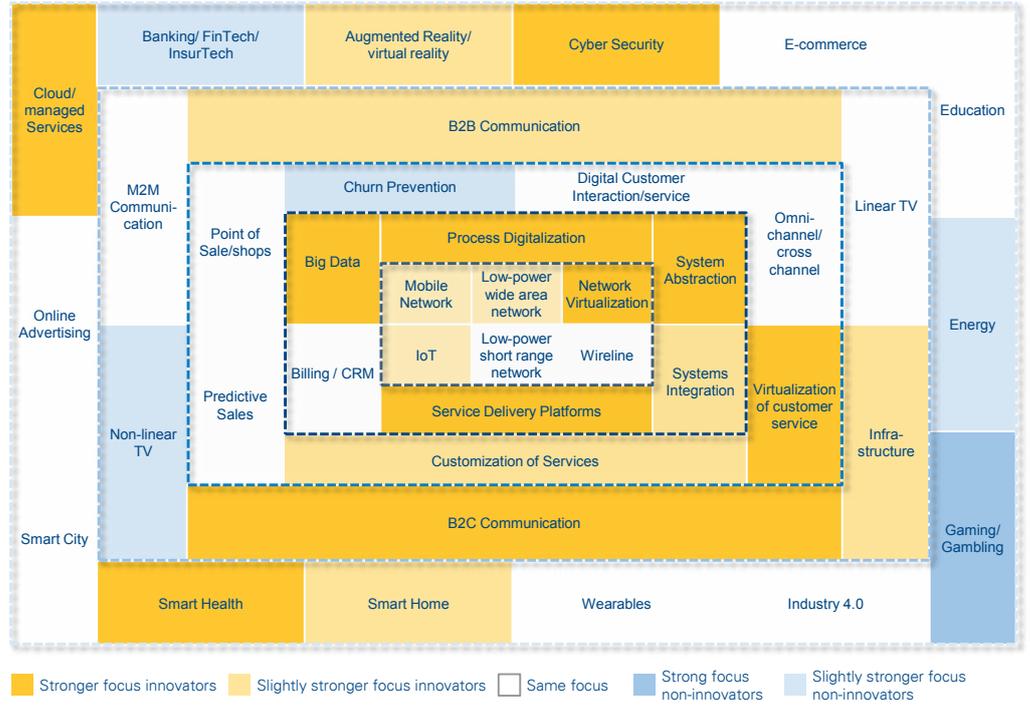
Figure 20: Where do the “top and “worst” revenue generators focus



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

Based on provided answers on domain and sub-domain level, we identified four player groups differing by overall approach and focus. While these groups are likely to be too black and white for a specific telco, they help form indicative basis to define subsequent priorities as well as better understand key success factors during execution: Firstly, each player needs to develop its own blend. The subsequent key challenge, though, is to be consistent and to make a conscious decision on focus topics, balancing existing capabilities with market opportunities and risk appetite.

Figure 21: Where do the “top” innovators focus



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

It certainly is too early to call a verdict on which play will bring the biggest value to specific telcos and in which markets. Most certainly though, the more telcos move to the right towards becoming digital enablers, the bigger the stretch and the bigger the change required.

	Strengthen the base	Niche/ segment players	Customer delight	Digital enablers
<b>Definition</b>	Defend and transform existing revenues. Focus on fixing the basics by understanding that without proper core services, any venturing into new domains is doomed to fail	Achieve advantageous positioning in specific verticals and even segments. Usually B2B-focused or a TV/content-focused play	Trying to strengthen access to existing and new customers as the future competitive advantage	Trying to localize digital business and combine local access with digital products, with an eventual ambition to expand regionally or globally in select areas
<b>Future advantage</b>	Not defined yet – build trust in core and expand afterwards	Deep vertical/ segment-specific know-how	Customer intimacy	Combination of reach and speed

	Strengthen the base	Niche/ segment players	Customer delight	Digital enablers
<b>Main focus</b>	Network and core products as stated priority	Around B2B and/or specific focus on IoT verticals	Customer interaction	New business & adjacencies

### 5.1.2. How to validate opportunities?

Once the playing field and individual players’ ambitions are roughly defined, concrete business opportunities need to be identified and prioritized. Investment outlays / budgets need to be allocated and success criteria / KPIs set. The more telcos enter into new businesses and adjacencies without any direct impact on their current core business, the more challenging the prioritization effort. Approaches Telcos use are classical (top-down from strategy to priorities and focus topics; bottom-up, opportunity-driven tactics; hybrid approaches combining the best of both).

The key observed difference is the higher stringency of the prioritization efforts. Few leading telcos are very strict about which opportunities are followed by whom. Overall, telcos tend to pursue too many opportunities (ref: our heat maps earlier). In this landscape, Telcos not only have a serious challenge in shutting down existing initiatives, products or services as required, but also in following too many opportunities across too many different departments. This relates to the alignment challenge between innovation activities. While it is normal to allow for innovation ideas to germinate across the organization, it is often unclear which unit has the clear mandate and accountability to see it till execution.

Another element of legacy is the way most telcos still look at business cases even at opportunity prioritization stages, often having to deliver against the following two criteria: (a) Create revenues in the first year and (b) deliver payback in a short timeframe (e.g. 2-3 years). If real innovation is expected, our discussions reveal that the need to have a differentiated opportunity assessment framework for core and new core domains needs to be enforced. This approach doesn’t necessarily have to be against shareholder / board mandates, but to the contrary, requires convincing stakeholders of the appropriate opportunity vs. risk-reward at play.

## 5.2. How to play?

Once the ambition is set and the playing field defined, telcos need to decide on their overarching innovation approaches. This relates to the organizational setup as well as the governing approach involving the relationship with the existing organization. More than the challenge of deploying and redeploying financial resources, the biggest area of failure for telcos is in how this gets executed – be it through external vehicles / partnerships or through completely internally rooted approach.

### 5.2.1. How to set up?

From our discussions and research, it is clear that the industry has cycled through a wide range of options in terms of centralization / decentralization, internal efforts vs. external efforts and so on. For example, many telcos have installed multiple vehicles and organizational options vs. others focusing on specific vehicles. To gauge the state of play, we asked telcos to state their innovation centralization/ decentralization on a scale from 0 (highly distributed) to 100 (highly centralized). Average comes out at 54, median at 50 with 25% of all telcos either being highly decentralized/ highly centralized. The level of innovation centralization/ distribution reflects this heterogeneity. When correlating with revenue growth or satisfaction level, no correlation was identified meaning there is no golden nugget working for all, unfortunately.

	The "internal diplomats"	The "process guys"	The "empowered guerrilla troop"	The "ivory tower"	The "incubation units"
<b>Description</b>	Small group of trusted (well experienced) employees with a critical mind-set who want to get things done; usually work on very concrete topics and close to market	Central unit pulling the innovation strings. Activity is based on clearly defined processes. They often also hold the scouting responsibility. They usually act rather detached from core business units	Empowered unit working with considerable freedom and acting like an "underground company" - usually directly reporting to the CEO or other top-level exec	Long-standing employees are transferred to this unit alongside new hires to focus on something "new" and to create the future. Operations are detached from core units, but often possesses considerably budget	Units created outside of today's organization to ensure freedom to go for new topics – highly detached from existing businesses. Strong variety in actual design of the units
<b>Ambition / Focus</b>	Get things done – deliver impact	Bring order and structure to innovation and increase efficiencies	Develop concrete segment/line of business fast	Do not interfere with the core business	Create a new business unit/ line of business
<b>Dedicated sales</b>	No	No	Sometimes	Sometimes	Yes
<b>Dedicated development</b>	No	No	Sometimes	Yes	Yes
<b>Dedicated operations</b>	No	No	Sometimes	Sometimes	Yes
<b>Innovation budget</b>	No	Yes	Yes	Yes	Yes
<b>Assessment</b>	These teams face a constant uphill battle. The winning ingredient is the strength of the network of the team. Advisable only when very concrete topics have been identified requiring specific execution focus.	Act as facilitators of innovation rather than drivers of innovation. The key challenge is to get buy-in and trust from core business units and also 3rd party collaborators to maximize innovation impact	Strong argument to break up old structures and processes. The key risk is to create confusion and mistrust internally. This should only be a temporary solution, and a clear scale-up phase should be developed with a clear path to spin-off or re-integration as the "new business as usual"	Unfortunately, still observed; usually these units are highly equipped with regards to resources and budgets (front-loaded), but they work without clear KPIs – however, becoming significantly less common	Telcos almost operate as financial investors, as they provide resources and capital to develop something new – the key challenge is to leverage synergies where possible to create an additional advantage

Our preferred principle, is to ground the set-up on the playing fields prioritized, as innovation in the core requires something fundamentally different than innovation in new domains. A core business innovation is predominantly focused on increasing the efficiencies of the production engine and thus needs to work much more intensively with the current units, while not following the trap of working within existing telco silos. Innovation in new domains needs to be able to think more long-term and is focused on creating or enabling step-changes. We perceived that telcos are more consciously factoring in this distinction and are empowering different teams differently – this naturally creates other cultural or governance challenges. Excluding dedicated R&D units, overall we identified and clustered five different setup options of which a telco typically deploys one or many of these combinations:

### 5.2.2. How to involve the existing organization?

Involving the existing organization can be classified as the “high art of innovation” – The idea of being able to play the existing advantages to bring an idea to scale, to bolster trust to a value proposition or to bring efficiencies to value delivery. Being able to leverage the existing sales channels, piggy-back on existing billing relationships or the brand is certainly a valuable asset. Unfortunately, it is also an art incredibly hard to master.

To get restarted, telcos acknowledge that they need to be brutally honest about their current capabilities instead of taking their natural advantages at face value. Honesty will often lead to the understanding that current teams or infrastructure are of limited value for new businesses. This is also reflected by the changes happening in many telcos’ innovation teams. While initially new-business teams consisted predominantly of project/innovation managers responsible for identifying, assessing and outlining opportunities, today we see more and more resources being shifted to/recruited for these units. This involves technical experts to assess whether to develop/operate internally or externally, as well as sales enablers to push internal sales teams. We even see entire development teams being onboarded to new business units.

We also believe that telcos should spend more time on critically challenging their overall sales approaches. Telcos treat their sales teams as assets and burdens at the same time. They are considered burdens because they are not capable of selling new propositions but considered assets because they hold the critical relationship with the customer (relevant particularly in the B2B setting). The emerging truth however is that anything can be sold digitally or at least with an efficiency / scale brought about using digital in the consumer segment and in the B2B segment. The sales mantra of having to be on the street and visiting two clients a day is becoming more and more obsolete, as digital attackers are proving every day.

Native digital players are characterized by: (1) Having integrated sales approaches, from marketing to sales to customer care, that reflect the customer journey end-to-end, (2) having continuous and fast-paced improvement processes implemented and (3) strongly leveraging digital insight throughout the entire journey. This fast-paced improvement is reflected in very short-term objectives (highly KPI driven) to instantly and continuously adjust the sales approach. Digital is becoming the backbone of the entire sales process, which also is critical to grow accounts. Some telcos have successfully experimented with creating dedicated sales teams within the current sales organization. This has the advantage of (a) a clear team responsible and knowledgeable in selling new propositions, and (b) the ability to scale to the entire sales organization if proven successful more quickly.

### 5.2.3. How to steer?

Our notion of steering innovation is rooted still in a KPI framework which is rather focused on enabling and allowing innovation, not tracking it. Telcos need to understand that KPI tracking is not about creating status reports, but enabling the organization to do the right things. Innovation KPIs should support in (1) setting and adjusting direction, (2) resource allocation and (3) triggering desired employee activity. This includes financial, non-financial and progress KPIs.

One of the other key observations coming back from telco experiences is the need to have a KPI framework that reflects the innovation ambition but more importantly the telco's stage in the journey and the ambition. The KPI framework should evolve over time – i.e., depending on the stage, different KPIs are increasing in importance (not replacing, as usually additional KPIs are in the later stages of an idea/product/etc.). This is something inherently common in the start-up world: when starting out, we begin with progress KPIs, achievement KPIs, engagement KPIs, financial KPIs and, later, bring in governance KPIs. Very so often, in a large corporate environment – governance metrics kick in faster that stifle progress KPIs.

The observations above should sound natural to telcos as even for core business, KPI frameworks have already evolved: From market share and ARPU to margin and RGUs (revenue generating units), and lastly to revenue growth from innovation or time to launch. Most progressive players in the industry have already reworked their steering approaches, allowing, in particular, consideration of the year-end financial targets. This progressive approach is not necessarily applied when considering the business case and KPIs for innovation ventures.

This is in contrast to the steering approach of investors or even telco holding companies. Yes, the business case is important, but from a fundamentally different angle. Team and traction are more important. If investors had applied telcos' business-case logic to most innovation leaders of today, we might all still be sending paper letters.

### 5.3. How to collaborate?

The increasing importance of all sorts of collaborative partnerships in an open innovation setting is the reason we call today's times "The age of collaboration." Others refer to this as the "age of the APIs," as many believe telcos need to extract their capabilities in standardized form so third parties can build on these capabilities to create new value. Some outsourcing partnerships that started as efficiency arrangements have developed into true innovation/product partnerships, and more recently sales partnerships increased in importance for telcos. In keeping up with the innovation momentum, even partnerships with start-ups are becoming truly relevant for telcos.

Consequently, telcos are well advised to develop collaboration capabilities ranging from setting up collaborations (partner screening, valuation and selection, and setting up the collaboration) to managing the collaboration (collaboration steering internally and externally).

#### 5.3.1. How to collaborate with established players?

Telcos have longstanding relationships with large players, usually suppliers, but only a few have developed into product/innovation partnerships. The IoT ChallengeUp! Accelerator run by Deutsche Telekom, Cisco and Intel, focused on identifying new opportunities in the IoT space, serves as an example in which three value-chain partners collaborate to create new value.

In our survey, the increasing importance is also reflected by almost 50% of telcos stating innovation partnerships with established players as "highly relevant" and another 40% "relevant." There certainly is an openness towards partnering, which goes as far as collaborating with current

competitors in new areas (such as mobile advertising, strong authentication or identification). This is still new to the entire industry and raises a lot of discomfort with respect to the established way of doing things. As we strongly believe these kinds of collaborations will increase in importance, telcos are advised to develop frameworks under which they can execute partnerships with today's competitors and disruptors. The regulatory challenge and customer concerns that will emerge out of new business models is omnipresent and, needs to be addressed proactively.

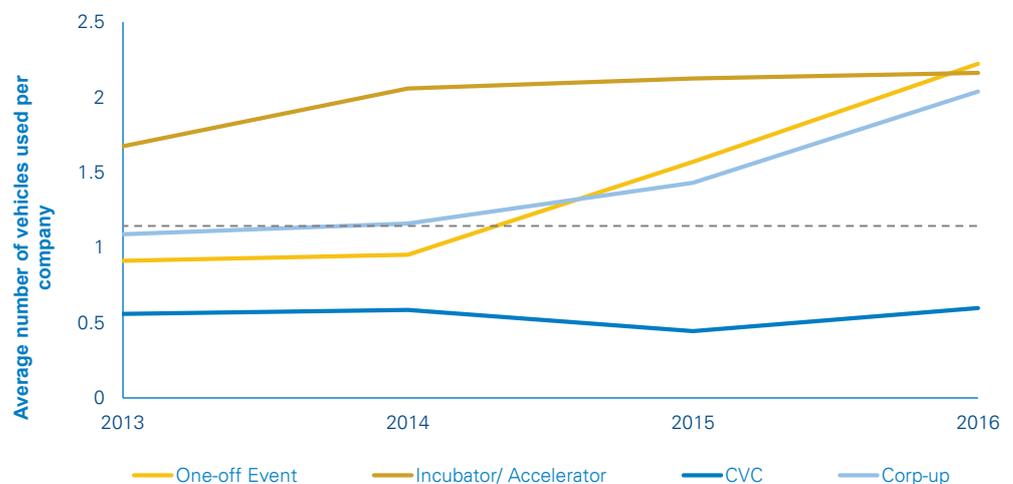
So far, collaboration success is still limited. Often the reason can be found in poor partnership management capabilities on the telco side, leading to time delays and budget excesses. The experience with efforts related to Rich Communication Service (RCS) should serve as a warning example - internal alignment challenges (everyone wanted to be a leader) led to time delays and a launch date when the opportunity already had passed.

To be successful, telcos should focus on developing flexible partnership frameworks that incorporate the different partnership forms with clearly articulated "cans" and "cannots" to speed up decision and execution processes. If one wanted to understand the status of a sales collaboration, we would be highly surprised if this information was easily available in today's organization. It is likely that one has to get data from at least four different departments: product management to learn about the actual scope of the partnership; sales to understand the sales approach, agreement and incentive system; accounting to understand financial flows to date; and only the legal team will truly know what has actually been signed. Given the pace of today's organizational changes, the person who concluded the partnership has most likely transferred, leaving many questions unanswered. To overcome this, telcos should establish (or assign) the role of an empowered partnership manager with clear end-to-end responsibilities.

### 5.3.2. How to collaborate with start-ups?

In our previous report in Q2 2016 - "The Age of Collaboration: Startups and Corporates need each other," we asked executives the first word that came to their minds when thinking about start-ups. Corporates answered: "Innovation," "Future" and "Agility," as well as "Opportunity" and "Partner." The increasing importance of collaborating with start-ups also becomes visible when looking at our engagement tracker of the 26 largest telcos from 2013 to H2/2016. On average, the largest telcos run more than two incubators/accelerators and host several one-off events.

Figure 22: Startup vehicles used by biggest 26 telcos over time (average per player from 2013 to 2016)



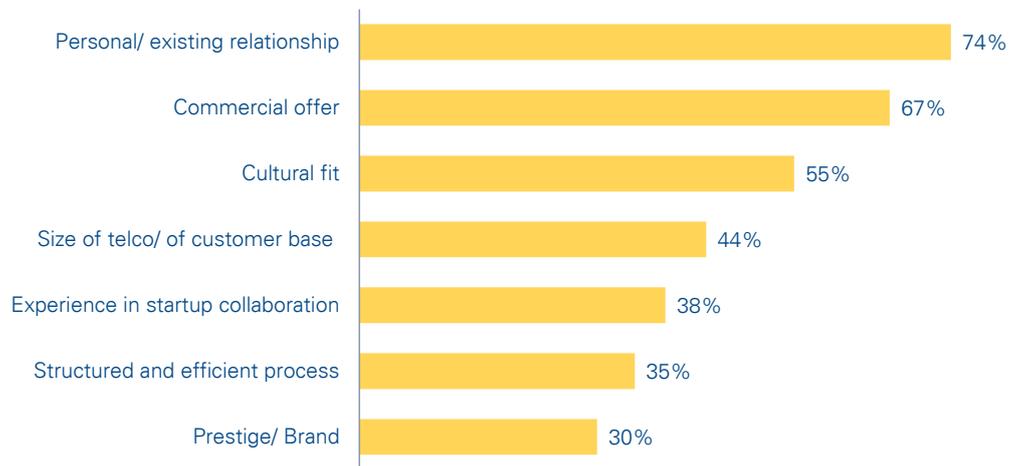
Source: MMV analysis

We strongly believe that these collaborations will be a key ingredient in telcos' long-term success. Being able to partner will also grow more important, as leading start-ups are becoming more selective about their collaboration partners. Today, telcos are still seen as desired partners (essential for 38% of start-ups, helpful for 40%), but this will not hold for long. As shown below, actions already count more (commercial offer, cultural fit) than who one is (size, prestige, brand).

In a refreshing change, telcos have started to engage more forcefully in "corp-ups" (collaborations between corporates and start-ups that focus on creating impact for the core business without a special engagement form), which indicates that we will see less marketing-focused initiatives going forward, as seen in our analysis of innovation vehicles below.

We strongly believe that these collaborations will be a key ingredient in telcos' long-term success. Being able to partner will also grow more important, as leading start-ups are becoming more selective about their collaboration partners. Today, telcos are still seen as desired partners

Figure 23: Key priorities from startups' perspective in approaching a telco



Note: % of respondents who answered 1st or 2nd priority

Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

(essential for 38% of start-ups, helpful for 40%), but this will not hold for long. As shown below, actions already count more (commercial offer, cultural fit) than who one is (size, prestige, brand).

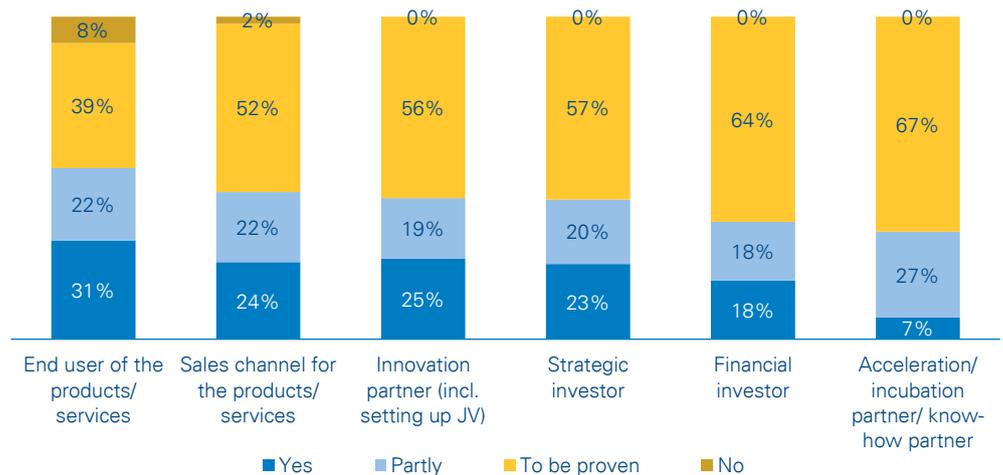
For a telco, a good understanding and honesty about one's own capabilities are critical to benefiting from the innovative power of start-ups. Once achieved, a collaboration framework should be developed to address the subsequent questions.

**What is the search grid/ start-up profile?** What are the capabilities being looked for? What is the minimum development status of the start-up (which stage should it be at) to deliver joint value? The earlier in the lifecycle one engages with a start-up, the higher the likeliness of failure (which is obvious, as less than 50% of start-ups make it from seed to growth). The stage one wants to engage with start-ups also has implications on the engagement form (e.g. an early-stage start-up likely needs a special form of "protection," while a start-up that has reached Series-B financing is already an established company).

**How to get in contact?** There is nothing more annoying than having to conduct 10 meetings throughout an organization to reach the right people. We also believe that in today's world, there is no excuse for corporates not to provide information about what they are looking for and how to get in contact. Defining an entry gate also ensures that start-ups are looked at from the same angle, prevents their being introduced to the same corporate again and again. As the personal relationship is most important in choosing the telco partner for a start-up, telcos are advised to invest in building and developing these relationships.

**What to get out of the collaboration?** Telcos and start-ups are advised to be specific about the expected results of the collaboration. Although not always easy to define upfront (e.g. when start-ups participate in accelerator programs), telcos should develop an initial hypothesis early on and continuously validate that hypothesis. The clearer telcos and start-ups are, the higher the success rate of any collaboration. Supplier/vendor-like collaborations or sales partnerships have very clear objectives and, as such, have a higher share of successful collaborations. The chart below also highlights that we are talking about a new phenomenon, as 40–70% of all collaborations are still in the “to-be-proven” phase.

**Figure 24: Impact of telco's role in collaboration results (satisfaction of innovation results by role in %)**



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

One area of concern for many telcos is exclusivity. In short, exclusivity should not be a pre-condition for collaboration, whereas in certain (few) instances this exclusivity might make sense.

**How to make decisions?**

Moving ahead in a timely manner is critical for telcos but never has been their strength. This is even more true for the relationship with start-ups. Any collaboration framework should subsequently specify a rapid decision-making process as far as possible. Accountabilities and responsibilities should be clearly assigned in order to avoid going around in circles.

### 5.3.3. Start-ups: Fight or partner?

While there is a clear and strong rationale for both player groups to collaborate, there are very strong differences in actual willingness to collaborate by domain.

Figure 25: Disrupt- collaborate matrix



Source: MMV/ADL/TC3 Innovation Quest for Telecom Operators Survey

Four highly interesting areas emerge, with core products and services emerging right at the center:

1. **Painful journey:** Start-ups need to collaborate with telcos, but telcos remain closed boxes, making it hard for start-ups to collaborate. IT/enabling technologies usually represent a painful journey.
2. **Fighting grid:** Neither side is willing or interested in collaborating. Telcos show a “kingdom” mentality and start-ups a “conquer-the-world” mentality. This is a very interesting field, as Network is placed in the top-left, indicating exciting times ahead!
3. **Perfect match:** Telcos and start-ups are interested and willing to collaborate. Customer interaction fits just right in. Given telcos’ poor customer interaction capabilities, this might prove to be a very fruitful field of collaboration.
4. **Reversed game:** Telcos strongly want to collaborate with start-ups to venture into new business, but start-ups are not willing (anymore) to partner with telcos. The game is thus reversed; telcos need to “dress to impress” to attract the best start-ups. The above-mentioned point has already become a reality for new business/adjacencies.

### 5.4. How to execute?

The execution challenges for telcos remain admittedly the biggest issue - translating strategic priorities into day-to-day business results require that timely decisions and actions are taken.

#### 5.4.1. How to secure resources over time?

In spite of well-defined setups, one of the key reasons for poor execution is the weak resource allocation process, which is often split into a CAPEX, OPEX and FTE allocation process. This historical break-up is causing many troubles.

Most progressive telcos today allocate about 30% of all resources top-down to new business/innovation. This certainly is the extreme, but the question of securing resources and ring-fencing budgets was one of the most discussed topics in our interviews.

Different approaches are being followed today for resource allocation: There is the direct CEO approach: a small, dedicated team (often relating back to the “empowered guerrilla troop”) has immediate access to the CEO and gets direct funding (either ad hoc or annually). The other extreme is the allocation of an innovation budget during the normal budget process (usually less than 1%). We also identified initiative-specific allocated budgets, or the concept of “corporate crowdfunding.” Departments are hereby allowed to fund an idea, even if it is not clear what the product will deliver. This comes very close to dispersed budgets – i.e., every unit has a small budget to play with, and only when it becomes larger does it need to go to certain committees. Again, this budget is dedicated upfront.

The most interesting discussion we had was with an operator from an economically troubled country. Budget scarcity and intensified pressure on financials led to the emergence of a small, start-up-like innovation team. The essence here is that there is no budget. FTE costs and basics are covered, but any additional budget needs to be won on the “free markets.” This might relate to securing governmental funding, funding from internal business units that are convinced of the positive impact (and therefore are highly engaged from the beginning) and external funding.

The creativity is certainly engaging, but it does not lead to industrial scale akin to digital leaders. Digital leaders officially and publicly allocate certain parts of their budgets to innovation, and when it fails, it is accepted practice.

#### 5.4.2. How to move ahead in a timely manner?

Long sales cycles and inability to unequivocally decide yes or no decidedly reduce the overall attractiveness of telcos as the preferred partner of choice. Trying to break out of this vicious cycle, telcos should have answers to the following questions:

**How to enable decision-making?** To overcome the slow and tedious decision-making processes, empowerment is the keyword. For us it is not a question of just delegation (e.g. from the board level to an operating unit) or assigning directly responsible individuals (thus reducing committee structures). It is rather the question of being able to decide on behalf of the company under the optimal accountability framework. Very often, telcos have too many units available to say “No” rather than to say “Yes” – start-ups indicate today’s nightmare of moving from meeting to meeting with many “decision-makers” without any decision being made is harming telcos considerably.

**How to introduce new working methodologies?** Agile is “en vogue” in the telco world. Agile started initially with agile IT development; today agile is much broader, and has even reached project management. It is a great and essential methodology as such, but it also needs to be treated carefully and implemented correctly. Otherwise, the risk increases of sprinting in one direction without the objectives having been defined. Beyond agile, telcos are certainly behind the start-up world in applying new innovation methodologies (lean start-up, minimum viable product – MVP – or “Trial fast, fail fast”).

However, not all methodologies are universally applicable as they need to be implemented carefully and selectively. In our work, we observe key areas for improvement: Telcos should certainly implement approaches to: (a) receive market feedback quickly (b) Priority test with customers and partners – allowing for creativity with new methodologies has to fit the respective purpose. One operator introduced a sub-brand to get market feedback as well as to gain a break with corporate processes.

**How to increase flexibility?** Flexibility is required throughout the innovation journey. This relates to the means and form of collaborating with partners. The flexibility bottleneck is no more evident with a typical contracting / procurement process within a telco that may last longer than the partner selection, product development and go-to-market activities combined. Applying strict processes and rules to the core business might make sense, but applying the same rules to new-business initiatives often leads to painful experiences for innovation partners and internal staff alike.

**How to enable a cultural change?** This is the last mentioned aspect in our research, but certainly not the least important. To the contrary, almost all telcos interviewed stressed the overarching importance of transforming the internal culture towards intrapreneurship, a digital mind-set, a risk-taking environment. Unfortunately, no telco so far has identified the golden nugget to trigger this cultural change. Many have introduced innovation days, formulated internal intrapreneurship KPIs as part of bonus schemes and tried to involve employees more strongly in the innovation journey. Still, success is limited. Three aspects should be considered.

***Talent acquisition and retention:*** The power to trigger change comes from nurturing the right talent in the right setting - unfortunately, telcos have not yet adapted their approaches towards talent acquisition and/or retention, with much more to do than establishing an outpost in an attractive location or a relaxed dress code. Few telcos have created different hiring practices and the establishing the actual enablement of the talent. Telcos need to work hard to become the workplaces they would want to be!

***Live what you preach:*** As the third aspect, innovation values need to be lived end-to-end. Our discussions reveal the tendency to conflate accountability for results with blame-gaming for dealing with failure. As an example, Many innovation projects could and should be ended, but often are not due to expected negative consequences. Telcos need to learn to kill unsuccessful projects/ initiatives, but NOT kill the team at all instances. We by no means advocate the dispensing of accountability but establishing a fear of failure will not take telcos anywhere either.

***Set an example:*** On the other hand, existing Telco employees are in a tricky situation. They are being told that they do not have the right mind-set, their executives are constantly complaining about internal challenges, and they too often have had to face direction changes towards the end of the year due to target achievement constraints. So far, few leaders have managed to break out of the dilemma, provide direction and build trust with their employees by not changing direction at the first or second headwind. Persistence is required, and the management team needs to show a positive example. Fun needs to come back to telco floors!

## 6. Outlook: Is another doomsday around the corner?

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Telcos undoubtedly have a lot on their plates in their quest for innovation. Persistent concerns remain across the industry that time is running out for telcos (yet again), to participate in and realize returns commensurate beyond a pure infrastructure services play.

**Building digital capabilities:** Telcos need to build digital capabilities across the organization to survive. This also relates to making IT a priority for enabling transformation. Today, this is far from happening as digital reverts to a “Get it done for me!” mantra, with a sole reliance on 3rd parties without complementary enablement within the organization.

**Partnership willingness:** “Bring me something where I do not know what it is or how to do it!” This is how one could summarize telcos’ pull-based approach to collaborate with partners of any type. In addition to addressing the approach to partnering, telcos also need to revisit their focus areas not just on new businesses and improving customer interaction, but also address disruption coming into their very core as part of network and IT domains.

**Shareholder expectations:** “While managers at telcos have arguably been constrained to invest adequately into innovation in the face of increased competition and increased infrastructure investment – at the same time, not focusing on innovation efforts and demonstrating transformative proof will only exacerbate the push towards a more risk-averse legacy business operator from shareholders.



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Match-Maker Ventures accelerates innovation by fundamentally changing the way corporates and startups work together. We drive collaboration from beginning to end and are measured against actual impact created. Our unique network approach enables startups to scale fast by connecting them to the global market and corporates to profit from pre-selected, globally scouted innovation.

For further information please visit  
**[www.match-maker.ventures](http://www.match-maker.ventures)**

### **Telecom Council of Silicon Valley**

The Telecom Council of Silicon Valley connects companies and individuals involved in the region's communications technology industry with one another for business development, collaboration, and education. Using our network, tools, framework, and meetings to bring together the local telecom industry's critical mass of businesses, research, ideas, capital, and human expertise – the Council is a hub for telecom professionals.

For further information please visit  
**[www.telecomcouncil.com](http://www.telecomcouncil.com)**

### **Arthur D. Little**

Arthur D. Little has been at the forefront of innovation since 1886. We are an acknowledged thought leader in linking strategy, innovation and transformation in technology-intensive and converging industries. We navigate our clients through changing business ecosystems to uncover new growth opportunities. We enable our clients to build innovation capabilities and transform their organizations.

Our consultants have strong practical industry experience combined with excellent knowledge of key trends and dynamics. Arthur D. Little is present in the most important business centers around the world. We are proud to serve most of the Fortune 1000 companies, in addition to other leading firms and public sector organizations.

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