Iranian Internet Infrastructure
and Policy Report

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smallmedia.org.uk
Last month we launched a series of features looking at the current state of Iran’s tech startup scene, and its future prospects. Having received so much fanfare, one could be forgiven for thinking that the country’s tech sector was a Silicon Valley-in-waiting. But for all its immense promise, its burgeoning talent, and boundless creativity, the industry finds its progress hampered by a number of very challenging obstacles. This month’s report looks to cut through the hype, and paint a more sober picture of Iran’s high-tech scene.

In addition to this, our report keeps track of the latest developments in Iran’s censorship processes, including fresh details about the deployment of the ‘intelligent filtering’ system. On top of that, we’ve got new information about private Basiji networks, ongoing tensions between the judiciary and the ICT Ministry, and the latest internet penetration statistics.
CUTTING THROUGH THE HYPE

IRAN’S STARTUP ISSUES
Despite a great deal of excitement about the prospects of tech entrepreneurship in Iran, a series of problems continue to plague the Islamic Republic’s startup scene. Small Media’s investigation uncovered four main issues Iranian entrepreneurs are facing that create risks for their startups:

POOR INFRASTRUCTURE
Iran continues to suffer from a lack of sufficient bandwidth. The country needed 10 Tbps in Esfand 1392 (February/March 2014) while the available bandwidth stood at a paltry 130 Gbps. In addition, the cost of Internet is very high because the Telecommunication Infrastructure Company (TIC), which has a monopoly on bandwidth in the country, and Internet Service Providers (ISPs) are profiteering massively. Small Media published a full review of the price and quality of internet access in Iran in September 2014.

Although Information and Communication Technology (ICT) Minister Mahmood Vaezi has announced that his ministry will offer free bandwidth to Iran’s startups, the combination of limited bandwidth and exorbitant prices continue to render the Internet in Iran unreliable and unsuited to the development of a vibrant tech sector.

TIGHT CENSORSHIP
The harsh and sophisticated system of Internet censorship in Iran creates an unsustainable situation for online businesses.

Such practices have been problematic for the Iranian tech sector for years. In June 2010, at the height of blogging’s popularity in Iran, the popular Iranian blogging platform Blogfa was blocked without any explanation. According to Alireza Shirazi, founder of Blogfa, this incident was catastrophic for his business, causing massive financial losses, and blackening Blogfa’s reputation amongst users and potential advertisers.

Iran aggressively combats sites that are deemed to contain ‘immoral’ content, though such a nebulous classification means that many ordinary websites end up facing censorship as well. Online gambling and gaming sites are a particularly frequent target of the government’s ire, with around 300 ‘gambling’ websites closed down in 2013/14 alone.

The largely ad hoc nature of the filtering system leaves entrepreneurs unsure as to where the red lines are, or what triggers the blocking of a website, ensuring a constant fear of falling victim to the country’s sprawling censorship apparatus.

INTERNATIONAL SANCTIONS
International sanctions constitute another considerable obstacle to the development of Iran’s startup ecosystem. Sanctions preclude Iranians from making use of common international payment systems such as Visa or Mastercard. This makes transferring money from Iran to other countries (and vice versa) expensive and risky, as Iranians must do so through brokers rather than banks.

Additionally, Iranians are unable to make use of popular internet advertising tools such as Google Adwords or Facebook’s built-in system. Iranian startups aiming to target Iranian consumers cannot do so via Facebook, as Iran is not listed as ‘targetable’ on the platform’s advertising tool.
Perhaps the worst effect of the sanctions regime is psychological. Sanctions create the impression in global markets that Iran is a risky country to invest in. Even if Iran can reach a nuclear agreement with the P5+1, and gets sanctions lifted, it may continue to face difficulties in changing the attitudes of Western-based companies.

**LACK OF INVESTMENT**

Transferring money into Iran is risky and in some cases impossible due to international sanctions. This makes finding foreign investors for Iranian startups nearly impossible because foreigners do not want to put themselves at risk.

In conversation with Small Media, anonymous Iran-based entrepreneurs have claimed that securing foreign investment carries a number of personal security risks. Even if Iranians are able to find investors from overseas, they must be mindful of the threat posed by the security services, who may accuse investors of working for the US government or other Western countries, and arrest the entrepreneur on charges of espionage, and receiving money from Iran's enemies.

In addition, Iran's government does not have a comprehensive plan to support domestic entrepreneurs, and it is often difficult for Iranians to get loans to finance their startups. However, Vaezi said the ICT Ministry aims to support Iranian entrepreneurs by offering to host their platforms, as well as to provide free bandwidth for their services.

**INTERNATIONAL SANCTIONS VS. LOCAL CREATIVITY**

As mentioned above, international sanctions against Iran have created many difficulties for the country's nascent startup ecosystem. However one positive result of the sanctions regime is that it has shielded Iranian startups from the obligation to compete with large multinational companies. In practice, this means entrepreneurs in Iran have a good opportunity to run their startups without pressure from gigantic tech companies such as Amazon and Google. The best example of a domestic startup success story is DigiKala, which is an Iranian version of Amazon.

DigiKala was founded on February 23, 2007, and began as an online vendor of digital products. After seven years of activity, it became the most valuable startup in Iran, currently valued at 150 million USD according to The Economist. It has recently expanded its market beyond digital products, to clothes and accessories, among other items.

Another example which illustrates the opportunity sanctions can provide for Iranian entrepreneurs is Cafe Bazaar, an Iranian version of Google Play. Due to American sanctions, Iranians cannot access Google Play unless they change their IP addresses.

Cafe Bazaar was launched in December 2010 by Hessam Armandehi and became the most popular app store in Iran after less than three years in business. According to the Mahmood Liyaei, Advisor at the ICT Ministry, Iranians use around 2% of Iran’s total Internet bandwidth for Cafe Bazaar, illustrating the popularity of this app store.

Despite the opportunities furnished by the sanctions regimes, there remains the possibility of liberalisation, which would allow tech giants such as Amazon and Google to enter the Iranian market. If this happens, domestic startups may find it very difficult to remain competitive.
THE FILTERING SYSTEM VS. STARTUPS
As with the international sanctions, Iran’s internet filtering system has pros and cons for the startup ecosystem.

On the plus side, high demand for platforms such as Facebook, Twitter, and YouTube - all blocked in Iran - has created an opportunity for Iranian entrepreneurs to develop domestic replicas of these popular American platforms.

The financial success of Aparat Group provides one of the best examples of the positive impact of filtering for tech sector development in Iran. The group’s eponymous platform Aparat, an Iranian version of YouTube, is currently among the top 5 websites in the country and has become the main platform Iranians use to watch videos online. In addition, when the news broke about possible blocking of Instagram, Aparat Group launched an Iranian version of the social networking service, known as Lenzor. In July 2014, The Economist valued this group at 30 million USD.

While the filtering system has created some brilliant opportunities for the startup ecosystem, it is also plagued by uncertainty. As mentioned previously, the criteria for blocking a website or service is not clear and there is always a chance that Iranian authorities will block a website or service due to a user’s online activity. This uncertainty can make entrepreneurs anxious about the possibility that arbitrary government filtering decisions may adversely affect their businesses.

MAKING MONEY VS. STARTUPS
One of the most important questions about Iran’s startup ecosystem concerns profitability. Are Iranian startups making money? And if so, how much?
Answering this question isn’t easy, because all of Iran’s successful tech companies are private and they are reluctant to share their financial spreadsheets. The only public data available on the topic is a chart from The Economist listing the top three Iranian startups in terms of valuation:
1. DigiKala (150 million USD)
2. Aparat Group (30 million USD)
3. Cafe Bazaar (20 million USD)

Small Media spoke with a series of entrepreneurs inside the country and asked them what they think about startup profitability. The responses were very polarised, with one group of people saying there is no chance of making money, and other very excited about market prospects, claiming that good startups can earn substantial profits.

This ambiguity leads Small Media to conclude that the financial side of Iran’s startup ecosystem is like a black box: it is very difficult to know what is really going on.

IRAN’S STARTUP HYPE
In recent months, many Western media outlets such as the Washington Post, TechCrunch, CNBC have published celebratory articles about the potential of Iran’s startup ecosystem. But do these articles tell the whole story, or are they simply examples of media hype?

By looking at domestic coverage, it becomes clear that Iranian media are much less concerned about the Islamic Republic’s startup prospects than their Western counterparts. For instance, it is very difficult to find news about Iranian startup in domestic newspapers. This dearth of coverage likely stems from a variety of factors. One possible explanation lies in the fact that Iranian entrepreneurs prefer to discuss their ideas and experiences with foreign journalists rather than domestic ones, because they believe this approach will attract more interest to Iran’s startup scene in the long term. Moreover, while Western media claim that Iran presents a golden investment opportunity because
of its young and educated population, they often overlook the issues inhibiting development of Iran’s tech sector.

One issue is that Iran lacks infrastructure that is vital for a startup ecosystem. For example, intellectual property regulations are unclear, as are relevant tax laws. In addition, Yahya Tabesh, who is currently a Visiting Scholar at Stanford University, gave a speech at Bridge 2014 in which he discussed a series of durable obstacles Iranian startups are facing. According to Tabesh, these problems are:

• **Thinking locally:** Most IT companies in the country have been successful in local markets, but have little experience regionally (let alone in national or international markets).

• **Isolation from global economy:** Economy and technology are global and it is not possible to develop a viable economic system when it is isolated from the world.

• **Lack of infrastructure:** As mentioned above, there is a lack of crucial infrastructure such as Internet bandwidth.

One of the most intractable problem facing Iran’s startup ecosystem is facing concerns the fickle and uncertain nature of Iranian Internet governance policies; changes in government can bring about unexpected changes in policies and regulations. This uncertainty prompted Eyad Alkassar, Manager of the Middle East branch of Rocket Internet, to remark that in terms of doing business online, Iran is “definitely more difficult than any other country”.

Given the drawbacks discussed above, it seems that the optimistic articles in Western media may have slightly overstated the case. This hype may stem in part from the fact that Iran is not particularly well understood by mainstream Western audiences, and the prospect of a burgeoning startup scene adds a new and exciting angle to coverage of the Islamic Republic.
CONTENT FILTERING AND BLOCKED SITES

- **November 10:** Some operators have imposed a series of restrictions for mobile communication apps such as Viber, Tango and WhatsApp. One of the operators blocked SMS confirmation and another operator has not allowed users to make calls. In response to this incident, Vaezi said the government remains opposed to blocking mobile apps. ([Source])

- **November 19:** According to some users, Aparat, an Iranian version of YouTube was blocked. However, the website became available a few hours later. The reason behind this incident is not clear. ([Source])

- **November 23:** Clash of Clans, a popular game amongst Iranians has been blocked without explanation. According to Iran Clash, users have seen connection error message when they tried to play it on their phones and tablets. ([Source])

- **November 29:** A number of people complained that they could not see some images on Instagram. This incident occurred as a result of the images being hosted on a Facebook server blocked in Iran. This video illustrates how censorship currently affects Instagram in Iran.
**STATEMENTS FROM MINISTRIES AND POLITICIANS**

- **November 1:** The 19th meeting of the Supreme Council of Cyberspace (SCC) was held, with all members in attendance. The agenda focused primarily on regulating bulk SMS messages, though according to authorities a series of other topics were discussed. The previous meeting was postponed on 17 October 2014 due to a lack of attendees. ([Source](#))

- **November 5:** Hojatoleslam Hossein Shahmoradi, Secretary of the Public Cultural Council (PCC) said that the blocking of social networks is a simplistic solution incapable of solving the problem posed by ‘immoral’ web content. Shahmoradi believes that the best solution would be to promote Iranian and Islamic content on social networks. ([Source](#))

- **November 5:** Vaezi announced that Iran has launched ‘several’ social networks in the last two months, and claimed that they have been popular with users. He also conceded that the ‘intelligent filtering’ system has not yet been launched. ([Source](#))

- **November 6:** German intelligence services discovered a cyberattack from Iran that had started in 2013. According to their statement, hackers were interested in documents related to missiles, satellites, and drones. ([Source](#))

- **November 9:** Vaezi said the current Internet speed restrictions for domestic users will remain in place until the National Information Network (SHOMA) is launched. ([Source](#))

- **November 9:** According to the latest official statistics, Iran’s Internet penetration rate is 53.29% and as of the end of Spring 2014, ADSL is the most popular Internet connection. The Internet penetration rate stood at 49.13% in the last Iranian year. The five provinces with the highest Internet penetration are:
  - Mazandaran (92.64%)
  - Tehran (76.93%)
  - Isfahan (63.29%)
  - Khuzestan (59.01%)
  - Semnan (57.43%)

The province with the lowest penetration rate is North Khorasan, with 29.04%. The penetration rate for broadband connections is 31.16%, up from 17.77% in the last Iranian year. The following table shows popular types of Internet connection and the corresponding penetration rate: ([Source](#))

<table>
<thead>
<tr>
<th>Type of connection</th>
<th>Number of users</th>
<th>Penetration rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADSL</td>
<td>13,170,418</td>
<td>17.53</td>
</tr>
<tr>
<td>Mobile broadband</td>
<td>11,690,130</td>
<td>14.73</td>
</tr>
<tr>
<td>Dial-up</td>
<td>6,934,760</td>
<td>9.23</td>
</tr>
<tr>
<td>Fiber optic</td>
<td>6,106,000</td>
<td>8.13</td>
</tr>
<tr>
<td>WIMAX</td>
<td>2,766,478</td>
<td>3.68</td>
</tr>
</tbody>
</table>
November 9: In an interview with Fars News Agency, Vaezi announced that intelligent filtering will proceed in three phases: the first in December, the second in March 2015, and the final phase, including the programme’s launch, in September 2015. (Source)

November 9: Nasrollah Jahangard, Deputy of the ICT Minister said Iran will start requiring authentication for users of social networks and mobile internet. According to Jahangard, this authentication requirement will start when Iran switches from IPv4 to IPv6. (Source)

November 10: Iran’s General Prosecutor, Gholam Hossein Mohseni-Ejei announced the ICT Minister promised to stop distribution of criminal content on social networks and if the ministry cannot do it, Iran’s Judicial System will intervene. On 20 September 2014, Mohseni-Ejei sent a letter to the ICT Minister setting a one month deadline for the blocking of WhatsApp, Viber and Tango. The deadline expired at the end of October. (Source)

November 11: Alireza Beheshti, son of Seyyed Mohammad Hosseini Beheshti, one of the main architects of the constitution of the Islamic Republic of Iran, said he does not know why his father’s website has been blocked. (Source)

November 11: Ramezanali Sobhanifar, a member of the Commission to Determine the Instances of Criminal Content (CDICC) said the CDICC would like to collaborate with Instagram to block criminal content and if Instagram does not cooperate, the platform will be blocked. (Source)

November 12: Mohammad Reza Sadegh, media advisor to President Hassan Rouhani said the blocking of Viber had not been passed in the last meeting of the CDICC. (Source)

November 12: Vaezi denied his ministry has attempted to decrease the speed of the Internet for Viber and insisted that all operators must allow Iranians to use these mobile apps freely. (Source)

November 13: Reza Taghipour, former ICT Minister in Ahmadinejad’s government said the main reason for speed restrictions on domestic users is the lack of international bandwidth. (Source)

November 13: In the response to a US court ruling that ordered ICANN to pass ownership of Iran's top-level domain (TLD) names to a group of American victims of terror and their family members, a federal judge in Washington, DC has overturned this decision, ruling that domain names are not property and are not subject to attachment under District of Columbia law. (Source)

November 14: Vaezi announced the national bandwidth will be 2,000 GBps by the end of this Iranian year (March 2015). The current bandwidth is 1,300 GBps. (Source)

November 15: Sobhanifar said the CDICC does not want to block Viber and Instagram, they just want to ‘filter’ criminal content. (Source)

November 16: Mohammad Ali Esfanani, a member of CDICC announced:
- A majority of the CDICC believes it should focus on blocking criminal content as opposed to entire platforms.
- The chance that Iran will be granted access to Instagram’s server is essentially nil. The CDICC had previously requested access to Instagram’s servers, saying it would block the platform if this request was refused.
- Iranian users do not have faith in Iranian apps and social networks because they think they are not secure.
- An intelligent filtering system can block just 80-85% of criminal content in some countries and they cannot control the remaining part. (Source)

November 16: Mohammad Hassan Entezari, Secretary of the SCC said SHOMA will not disconnect Iranians from the international web. Iranians will still be able to access the global internet once SHOMA is launched. (Source)

November 18: Vaezi announced Iran’s government monitors all Iranian and non-Iranian mobile communication apps. He did not mention how the government does it. (Source)

November 18: Jahangard said Iran has 10,000,300 IPv4 but the country needs 4 times the current number. In addition, he announced that 85% of total SIM cards are active. (Source)

November 19: Vaezi joined three mobile communication apps: BisPhone, Syna and Call Yar. While the ICT Minister announced them as Iranian app, it is clear that BisPhone is not an Iranian app: its headquarters are located in Switzerland. (Source)

November 21: Hamidreza Taghdi, Head of The Organization for Mobilization of the Oppressed or
Basij announced that the organisation has launched the first national network in the country that is completely separate from the Internet. According to Taghdi, this network is designed for Basijis to communicate together without any security issues. (Source)

- **November 23:** The price of mobile data has been decreased from 2.5 IRR to 0.5 IRR per Kb. (Source)
- **November 25:** Vaezi announced that Iranians sent 400 million SMS messages to wish Ayatollah Seyyed Ali Khamenei, Iran’s Supreme Leader, good health when he was in hospital for prostate surgery. In addition, he claimed that there are 7 Iranian social networks that the government wants to support and maintain all of their servers in the country. He also asked the Basij to become active on these networks to decrease the amount of corrupt content. (Source)
- **November 25:** Vaezi held a press conference. The highlighted points are listed below:

  - The number of Internet users reached 7 million. However the method of calculation is not clear, because MATMA announced that the number of the Internet users in Iran is more than 40 million.
  - The ICT Ministry did not have any news about Regin and the ministry is working on it. Iran launched Security Operations Center (SOC) three months ago, which aims to help the country protect itself against cyber threats.
  - The networks that the Basij recently launched is totally different from SHOMA. It seems to be a social network for Basijis to communication with each other around the country. (Source)
- **November 26:** Vaezi claimed that several thousand cyberattacks have been launched against Iran in the past year, with authorities having identified a number of responsible states. Previously, Iran announced that 5-8 million attacks per day had be launched against its network. (Source)
- **November 28:** Vaezi announced the ICT Ministry received just 6 trillion IRR (222 million USD) while the ICT budget for the current financial year is 15 trillion IRR (555 million USD). In January 2014, Small Media did a comprehensive report on the ICT budget for the current financial year, which is available here. (Source)
- **November 29:** Hossein Madanipour, Director of Network Management at the TIC said Iranians spent 2,200,000,000 minutes talking on the phone with people outside the country last year. (Source)
- **November 29:** Mohammad Reza Farajipour, ICT Deputy of Iran’s Passive Defence Organisation (IPDO) announced that the organisation had sent an alert to all government bodies, warning them about the Regin malware. He stated that if this malware begins to attack and destroy data in the country, Iran will respond to it seriously. It seems Iran is not presently worried about Regin because it just gathers information. (Source)
- **November 30:** Sobhanifar claimed his Viber account was hacked from a server outside the country. However, he did not mention how he reached this conclusion. (Source)
- **November 30:** Entezari announced 0.8% of the Internet is in Farsi while this percentage is 56% for English. (Source)
**CIVIL SOCIETY, PROFESSIONAL ORGANIZATION STATEMENTS**

- **November 17:** According to the latest statistics, Iranian people registered 575,180 domains, with `.ir` still the most popular. ([Source](#))

<table>
<thead>
<tr>
<th>Domain</th>
<th>The number of registered</th>
</tr>
</thead>
<tbody>
<tr>
<td>.ir</td>
<td>566,162</td>
</tr>
<tr>
<td>co.ir</td>
<td>3,378</td>
</tr>
<tr>
<td>ناریا</td>
<td>2,644</td>
</tr>
<tr>
<td>ac.ir</td>
<td>1,604</td>
</tr>
<tr>
<td>sch.ir</td>
<td>386</td>
</tr>
<tr>
<td>gov.ir</td>
<td>342</td>
</tr>
<tr>
<td>id.ir</td>
<td>315</td>
</tr>
<tr>
<td>org.ir</td>
<td>308</td>
</tr>
<tr>
<td>net.ir</td>
<td>41</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>575,180</strong></td>
</tr>
</tbody>
</table>

- **November 21:** `.رازای (bazaar)` becomes available for purchase in Iran. ([Source](#))