

Note on Digital Technologies in Africa

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Under the leadership of Alexandre Zapolsky, CEO of LINAGORA, and Thierry Breton, CEO of Atos

Preliminary remarks:

This note was prepared under the direction of Alexandre Zapolsky, CEO of LINAGORA, and Thierry Breton, CEO of Atos.

This draft version is intended to gather feedback and comments.

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This note is the result of 8 meetings, with an average of fifteen participants each. Active participants included French companies (incl. LINAGORA, Atos, Orange, Thomson, Eutelsat, Sofrecom, Africa4Tech) and French institutions (incl. Directorate General for Enterprise, AFNIC). Similarly, the African ecosystem was heavily involved in the drafting of this note.

Background:

The main focus of the members of AfricaFrance's Cluster for Digital Technologies is to develop the African digital economy. In this endeavour, the following issues will be addressed in a concrete and precise manner:

- actively develop access to energy and all necessary infrastructures for the development of digital economy,*
- establish an ambitious e-administration programme,*
- strengthen digital confidence,*
- design and deploy public and private funding,*
- massively increase human capital,*
- implement favourable legislative frameworks,*
- organise effective governance, and*
- initiate accelerated digitisation for the continent.*

For all African countries, these issues are key to a sustainable and virtuous development. By addressing them efficiently, Africa could boost innovation, create new products and services (both public and private), improve organisations efficiency and effectiveness, and boost growth on the continent, while developing employment.

*The potential of the digital economy in Africa is indeed significant. **It is estimated that by 2025, the digital contribution to African GDP would represent 300 billion dollars (10% of GDP),**¹ thanks to online trading and productivity gains in key sectors. However, digital dividends do not grow fast enough in Africa, notably because of a persistent digital divide (accessibility, costs, openness, and security). The Internet's contribution to Africa's GDP currently represents approximately 20 billion dollars annually, while the mobile industry contributes 56 billion dollars to the regional economy, which accounts for 3.5% of total GDP.² Reaping digital benefits means sharing its fruits (inclusion, innovation, efficiency, and ecosystem development), and reducing associated risks (cyber insecurity).*

*Connectivity, and more broadly, African digital economy, will be determined by the ability of States to implement a range of measures: energy, infrastructures, networks and telecoms, healthy market competition, public-private partnerships, and effective regulation of the Internet and of the telecommunications sector. **In other words, the development of African digital economy hinges on a sound business environment (competition, partnerships), strong human capital (skills), and good governance (regulations, institutions).** The ability to design and deploy ambitious digital development plans will set leading countries apart from other economies.*

Before going into greater detail on the suggested recommendations, AfricaFrance's Cluster for Digital Technologies proposes three decisive actions to be taken by governments, whose

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Lions go digital, McKinsey 2013:

http://www.mckinsey.com/~media/McKinsey/Industries/High%20Tech/Our%20Insights/Lions%20go%20digital%20The%20Internets%20transformative%20potential%20in%20Africa/MGI_Lions_go_digital_Full_report_Nov2013.ashx

²

Practical Guide: the digital transition in Sub-Saharan Africa [Guide pratique : passage au numérique en Afrique Sub-Saharienne] 2013:

<http://www.entreprises.gouv.fr/files/files/guides/GuideTNT-FR.pdf> (in French)

implementation would set in motion a virtuous movement under which all the recommendations detailed herein would be optimally applicable.

It entails:

- 1) An open digital government platform that could be used by African countries wishing to have a global e-government infrastructure, and which could be applied to all the public issues that African countries face (e-education, e-agriculture, e-health);*
- 2) A training programme, modelled on existing initiatives (such as OpenDev, #10000 codeurs), dedicated to digital expertise for the massive and rapid training of a large number of young people, women, students, and “dropouts”, to digital jobs, in order to create the conditions for the emergence of a digital ecosystem in each country;*
- 3) An annual tripartite conference which would be the “institutional rendez-vous” for Ministers for Digital Affairs, the private sector (incl. businesses, banks, investments funds), and the ecosystem (incl. incubators, associations, users); it would be held alternately in France and in Africa.*

Implementing these three major actions would have a positive ripple effect on the implementation of the following recommendations.

Recommendations:

a) Developing energy, networks and digital infrastructures (data centres, incubators)

Challenge: to make digital services available to the greatest number possible, through infrastructures that would have coverage of all countries and allow for sovereign data-processing on the continent, in order to reinforce the emergence of the African digital economy.

First and foremost, digital technologies need energy to exist. It is therefore crucial to implement a major programme for the electrification of Africa. Then, in order to develop in a sustainable and geographically-balanced way, digital economy should use sound and diversified grid infrastructures that cover all territories. **Governments should therefore develop national strategies for the deployment of these infrastructures**, with the use of all available access technologies to meet the continent’s exponentially-rising connectivity needs, and avoid the emergence of a digital divide between a connected, urban Africa, and remote rural communities. To this end, the following technologies can be deployed: submarine cables, national and international backbones, access networks, satellite and DTT networks. All in all, **a “technological mix” should be developed in order to expand network access.**

This should be based on the implementation of an economic, legal and tax framework conducive to private investments or innovative public-private partnerships investments in these technologies of the future. The investments in question will spur substantial economic benefits for countries in the medium and long term, as companies are naturally more inclined to settle in countries where they can count on efficient facilities.

Africa should also be equipped with its own data factories. There will be no Digital Africa if African countries and their businesses cannot provide their citizens with data hosting in Africa.

Finally, governments and public authorities should invest directly or indirectly alongside private stakeholders in startup creation, but also in more mature SMEs, destined to become tomorrow’s big companies.

Achievements: with its “Backbone” project, Ivory Coast installed 7,000 km of fibre-optic cables. Other achievement: Cape Verde will have full DTT coverage. Similarly, the ACE cable system brought international connectivity to all coastal countries in West Africa. Mauritius also developed a DTT network.

With regard to incubators, two of many remarkable initiatives deserve mention: CTIC Dakar, and “Jokkolabs”, the incubator network created by Karim Sy. Finally, Orange Côte d’Ivoire installed the West Africa’s largest data centre in VITIB SA, in the free zone of Grand-Bassam, in Ivory Coast.

General recommendations: build and implement national digital development plans that would include the following:

- Fast-track the development of an electricity network, ideally making use of renewable energies;
- Encourage governments to develop national (or regional) strategies on telecom infrastructures for Internet and broadband access. These could be included in regional fora (UEMOA [WAEMU], ECOWAS, SADC);
- Establish a clear, incentive regulatory and tax framework stable over time, that:
 - ensures an appropriate balance between tax revenues and economic development in terms of employment, business creation, etc. (if possible at the regional or international level, for instance through the Conference of Ministers for Digital Affairs of OIF [IOF]). To this end, thinking in terms of sectors and industries is essential to assess the economic impact of internet and telecom rates – more specifically of their tax – on the distribution of revenues between the State and investors;
 - paves the way for alliance strategies between all operators and the public sector (e.g. to develop national data centres).
- Promote an innovative public/private alliance strategy involving development banks where necessary.
- Develop accessibility in remote areas by combining various available and interoperable technologies, with the aim of providing universal service and access (digital inclusion and opening-up).
- Foster inter-State cooperation in Africa to develop synergies and mutualise infrastructure investment.
- Facilitate the establishment of incubators, accelerators, coworking space and fab labs, with a strong element of counselling and support.
- Encourage the establishment of data centres in Africa to develop the digital sovereignty of African countries.

b) Developing an ambitious e-government programme

Challenge: to improve the effectiveness of government and implement leveraging, develop ecosystems and ensure people’s digital confidence.

Africa is the continent where the challenge posed by large numbers is the most significant (population growth, impact on training, health, and agricultural needs). Digital identity solutions allowed by e-government systems are an important opportunity to take this challenge into account.

With their digital identities – and throughout their lives –, citizens can exercise their civic rights, keep and manage their administrative documents and, beyond that, manage their health, or their children’s education. At government level, the digital identity of each citizen means better, more flexible and precise management, while optimising the administrative and managerial work of civil servants.

In addition to spreading “digital habits” among the population, e-government improves the functioning of the State and reduces the cost incurred by the population for using government

services. Installing e-government solutions involves an entry cost, but it is rapidly “self-financed” by productivity gains that have a direct impact on the country’s economy. Therefore, this medium-term reduction in costs naturally comes with better administration, while strengthening the efficient functioning of the State and of administrations.

By developing e-government, States will become more modern, flexible, efficient, and will better serve their constituents and their companies. A more agile government means faster-growing businesses and a more involved civil society. Furthermore, e-government makes it possible to develop new services and to reduce management contingencies (e.g. malfunctions, failures, duplicates).

Moreover, investing in public computer systems has a ripple effect on the local ecosystem, as observed by the Spanish Government Agency CENATIC, who demonstrated that every euro invested in the public sector returns three euros to the private local digital sector.³

Notable achievements:

South Africa invested in the eNaTIS system for motor vehicle registration, thus easing administrative procedures for citizens.

Nigeria implemented a digital ID system for civil servants that revealed 62,000 public sector “ghost workers”, thus saving 1 billion dollars annually.

In Tunisia, a government intranet solution was created and expanded to all administrations, thus enabling collaboration between hitherto compartmentalised administrations.

Rwanda implemented e-government service “Irembo” in 2015, an online portal which allows citizens to renew their passports, marriage certificate, and other official documents.

Senegal established a digital strongbox accessible to all citizens for secure access to all legal acts and paperwork electronically.

UEMOA set up a digital service to easily extract business data, such as Kbis extract, and use electronic signatures for administrative procedures..

Recommendations:

- Encourage governments to adopt national or regional strategies with operational applications for the development of e-government solutions.
- Develop an open government platform for e-government, such as the French “State-platform” initiative, and make provision for e-health, e-agriculture, and e-education applications.
- Mobilise donors to establish adequate financial envelopes for e-government programmes. Too often, donor-funding amounts dedicated to e-government projects are oversized – unlike infrastructure projects, e-government projects do not require such high amounts. Financing vehicles should be available for projects worth between 100,000 and 5 million euros.
- Build digital services according to open and interoperable standards that will further develop pooling and sharing, thus fostering user cost reduction, competition and digital sovereignty.
- Opt for the creation of reusable and shareable data (Open Data), thus promoting strong positive externalities in terms of administration efficiency and transparency, but also of job creation and business creation.

³ <https://joinup.ec.europa.eu/community/osor/case/issues-open-source-procurement-european-public-sector-ii>

- Seize the opportunity to develop and implement e-government solutions in partnership with France during the French Presidency of the Open Government Partnership (a multilateral initiative of 70 participating countries, NGOs and representatives of civil society, committed to promote transparency, effective public action and open governance at the international level). (www.opengovpartnership.org)

c) For a prosperous and secure digital economy

Challenge: The benefits of digital economy are threatened by new risks associated with cybercrime. Developing the digital economy involves trusting technologies, exchange platforms, and the transactions carried out there. Information security is a prerequisite for a country's digital transformation and for the creation of an economy that would benefit all.

Cybercrime is a fast-growing global phenomenon. All organisations are at risk and exposed to attacks. In 2015, the number of cyberattacks rose by 38% worldwide. Africa is particularly affected by cybercrime, which grows and diversifies as the digital economy develops. In 2013, the cost of cybercrime amounted to 26 billion FCFA (39 million euros) in Ivory Coast, and 15 billion FCFA (22.8 million euros) in Senegal. At the global level, cyberattacks could cause economic losses that exceed 2,000 billion euros by 2020 if companies and governments delay action.

The threats faced by all States potentially put into question the infrastructures, safety, and sovereignty of the State, the sustainability of public services, and, more generally, economic activity and the scientific and technical potential of a country (e.g. innovation, intellectual property). The growing use of ICTs to facilitate terrorist attacks in Africa adds another dimension to this issue.

Cybercrime damages countries reputation and hampers potential investments. It impedes social and economic development (by leading to mistrust in the digital space), and is overall a vector for economic and political destabilisation.

Digital technology modes and uses – such as Cloud computing, network interconnections, mobility, and digital identifier management – constitute drivers for growth and effectiveness if the conditions for trust are set out (regulatory, legal, and technological).

The security market is a source of economic impetus. It progresses rapidly, at +20.5% per annum in Africa. It is forecast to reach 2.32 billion dollars by 2019.⁴

The World Bank reiterated the fundamental importance of Internet access, and of a regulation that would ensure the good use of digital technologies. The African Union recommends strengthening cooperation between governments on the question of cybersecurity.

The profusion of data being gathered online brings numerous benefits to users, but also creates new risks (e.g. cybercrime, invasion of privacy). Beyond technical considerations, it is therefore necessary to adapt legal systems to digital tools.

Notable achievements: Senegal and France signed a cooperation programme in early 2016 between their two cybersecurity agencies, ADIE and ANSSI, aimed at sharing experience, and at pooling their understanding of approaches, know-how, and good practices in terms of network and information security.

Other initiatives bring together public stakeholders (such as the Association Francophone des Autorités de Protection des Données Personnelles (AFAPDP) [Association of Francophone Data Protection Authorities]), and it would be interesting to involve private stakeholders.

Recommendations :

- Set up a regional working party under the auspices of UEMOA to strengthen the regulatory framework of Internet space and digital practices in order to build and create the confidence and security necessary in cyberspace.
- Establish an African Network and Information Security Agency (ANISA) [Agence Africaine pour la Sécurité des Systèmes d'Information (AASSI)] at the regional or continental level, which would have the same tasks as that of French Agency ANSSI (sovereignty, consultancy, industrial policy, regulation, and training). The Agency could provide expertise to create a veritable African Task Force to counter cybercrime.
- Develop competency in digital security and data protection across the continent (e.g. education, training, expertise, technology sector). Cooperation between private digital content stakeholders and public stakeholders will be essential.
- Raise awareness among and provide training to civil society stakeholders on cyber risks, in order to control the spread of risks, in particular in the postal network, which has a dense territorial coverage.
- Involve private stakeholders in the development of national data protection strategies.
- Develop measures on confidence in cyberspace and participate in UN negotiations on the establishment of a strategic framework for the security and stability of cyberspace.

d) Developing public and private digital financing

Challenge: to increase investment levels in digital startups, VSEs/SMEs and MMEs to develop innovation and employment, and speed up the digital transition of the economy and of society.

The complexity and lack of availability of international public funds allocated to African startups, VSEs/SMEs and MMEs for projects worth between 50,000 and 500,000 euros lead to an increase in private sector investment to offset this deficit. However, these are not sufficient and debt- and capital-financing vehicles, as well as public funding windows, should be established to ensure the good development of digital ecosystems. To stimulate innovation and R&D, Africa should not only consume, but also produce digital content. The African software and services of the future will require public-private financing and tax incentives to develop African R&D (similar to French research tax credit "Crédit d'Impôt Recherche").

It should also be noted that, in a restricted context, the optimisation of resource allocation should lead decision-makers to carefully analyse offers on related funding, which often come with hidden costs.

Finally, the African diaspora is clearly an asset, in particular for fundraising at the early stages of a company's life, and can be subject to initiatives with a view to federating Business Angels networks.

Achievements:

Several investment funds and schemes have already been created in Africa, such as Sinergi Niger, Sinergi Burkina, Teranga Capital, I&P Développement, VC4Africa, among others. Co-development initiatives may be cited by way of example, such as the ones carried out by the French Development Agency (AFD) and Bpifrance (Banque Publique d'Investissement).

Recommendations:

- Develop the regulatory framework for the emergence of capital investment funds.
- Create a sovereign investment fund intended for businesses and infrastructures in African countries, and a public investment bank at the African level modelled on Bpifrance, with a digital focus.
- Propose incentives such as research tax credit to attract R&D centres and develop a local ecosystem as well as large investment programmes akin to French "Investment for the Future" programme (<http://www.gouvernement.fr/investissements-d-avenir-cgi>).
- Promote the emergence of crowdfunding, crowdlending (i.e. peer-to-peer lending) and crowdinvesting (i.e. equity crowdfunding) stakeholders through a major conference on new forms of financing.
- Encourage the creation of capital funds for seed amounts below 500,000 euros with strong project support.

e) Developing human skills to consolidate African digital expertise

Challenge:

To increase the number of digital professionals in order to develop African ecosystems and create African champions who produce exportable products and services.

Training for digital professions should include coding, but also data analysis, cybersecurity, digital content creation, graphic design, webmastering, and moderation of virtual communities.

Digital technology is a powerful means of bringing together civil society, and associations in particular. Furthermore, digital technology paves the way for the Social and Solidarity Economy, and universal access to knowledge. Finally, it opens access to new professions for women and young people.

While AfricaFrance's Cluster for Training proposes solutions, we propose a few recommendations that take into account the particular features of digital training.

Achievements:

The “Grande Ecole du Numérique” and other French schools specialising in the digital industry (e.g. Simplon, 42, Webforce3) are actively developing partnerships with African countries. Similarly, engineering schools (such as the Institut Mines-Télécom network of schools), business schools (HEC), and design schools (Gobelins) are developing agreements with African schools. Finally, initiatives developed by ecosystems are worth noting, such as Tunisia’s OpenDev programme, training 10,000 young Tunisians to digital professions.

The Badge programme that involves Burkina Faso’s ARCEP, French ARCEP, schools of the Institut Mines-Télécom network, the French Frequency Agency (Agence Nationale des Fréquences) and the francophone telecommunications regulation network (réseau Francophone de la Régulation des Télécommunications) also trains African telecoms regulators.

Douglas Mbiandou’s 10,000 coders programme aims to teach 10,000 young African people to code. Other private initiatives, such as Alain Capo Chichi’s, are also worth noting. They offer quality training to thousands of students.

Recommendations:

- Implement large short-term training programmes in partnership with France, similar to MOOC and in partnership with local ecosystems, that lead to employment, subcontracting proposals, or business creation opportunities, as is being proposed by the OpenDev programme developed in Tunisia.
- Set up ambitious African training projects, potentially inspired by France’s “Grande Ecole du Numérique”, and establish scholarships and exchange grants in the digital industry for students, teachers and industry partners, in partnership with France and European countries.
- Encourage the exchange of teachers in the digital field between African countries and France. This could for instance be funded by UEMOA and France.
- Organise diploma recognition and equivalence between France and African countries.
- Facilitate visa procedures for students, teachers and entrepreneurs (with an entrepreneur visa based on the French Tech Ticket model, implemented for the first time in 2016, with 1,372 candidates from 90 countries, and which offers visa facilitation to come to France for a 6- to 12-month stay, with a mentoring programme and a 25,000 euros grant for successful applicants), and develop digital systems to facilitate visa processing.

f) Coordinating A Digital Africa

Challenge: to foster the development of the digital economy by sharing experience, knowledge, and policies.

Governments should pool their efforts and experience, in a similar fashion to that of the European Union. Legal texts and regulation of the industry could be shared in a common toolbox. Ministers for Digital Affairs should be able to rely on public and private providers to implement the digital transition. Annual meetings with associations and private stakeholders would be useful to coordinate digital public policies, and so would organising thematic workshops between meetings.

Finally, Africa should be better represented in Internet global governance, which should be more open to the diversity of Internet users (although 75% of Internet users lived in developed

countries in 1998, 66% of them live in developing countries today). Currently, two thirds of ICANN members are native speakers of English, 40% live in North America, and 26% are women.

Notable achievements:

UEMOA countries have created a regional ICT Commission. The International Organisation of La Francophonie is also developing a Digital Action Programme, notably in African countries. The Government Action Plan for Development and Digital Economy was elaborated in December 2015 by Annick Girardin, Secretary of State for Development and Francophony, and Axelle Lemaire, Secretary of State for Digital Affairs, and provides models of bilateral and multilateral alliances for digital affairs.

Recommendations:

- ICT Ministers could meet during an annual tripartite conference between Ministers, funders and the ecosystem (businesses, associations, users, incubators) to coordinate digital public policies, similar to what Arab Ministers for Digital Affairs do in the context of the “Council of Arab Ministers for ICT” (Conseil des Ministres Arabes des TIC). This conference could take place alternately in France and in Africa, and could be established as part of the “Journées de l’Ambition Afrique” (The Digital Ambition Africa Days), that will be held in Paris in October 2016.
- Establish an institution for public-private dialogue on digital affairs between France and African countries. A monitoring authority could prefigure this institution and follow-up on the successful realisation of proposals and actions of Bamako 2017.
- Create institutions for dialogue and regulation similar to French CNIL (National Commission on Informatics and Liberty), and coordinate them at the regional level.
- Propose a Euro-African alliance for ICANN negotiations in defense of our common interests.
- Establish a cultural diversity observatory within ICANN to collect and analyse data on diversity within ICANN and propose concrete actions to improve cultural, linguistic and gender diversity within ICANN. Measures to support diversity should also be undertaken by ISOC.
- With the support of French AFNIC, assist the work of AfTLD (African Top Level Domains), the association that brings together all management bodies of African national domain names (referred to as “Country Code Top-Level Domains”, or CCTLD), including through training activities for local teams of CCTLD’s management bodies, and through the promotion of national extensions to contribute to their effective marketing. Developing national domains requires financial and technical support for the automation and handling of domain names, with a view to reducing national domain costs and thus stimulating local ecosystems. Another advantage is that CCTLD’s management bodies are veritable knowledge centres that develop strong expertise, notably in cybersecurity, at the service of the local digital ecosystem. Finally, in a fluid, stimulated market, the proceeds from the sale of domain names can be used to finance foundations for the development and social support of local digital ecosystems, as French AFNIC does with its Fondation AFNIC, which has a budget of over 2 million euros.
- Request that the digital strand of the Europe-Mediterranean countries programme be extended to the whole continent.

- Create an African digital observatory.
- Develop bilateral and multilateral alliances for digital affairs as part of Digital Ambition Africa and of the Action Plan for Development and Digital Economy (modelled on the Franco-Tunisian Alliance for Digital Affairs, [Alliance Franco-Tunisienne pour le Numérique]). These alliances would foster the emergence of local ecosystems and of new African stakeholders and jobs in a digital vertical approach for the Europe-the Mediterranean-Africa region, and of co-development with France.

g) Encouraging the digitisation of African economic actors

Challenge: The digitisation of African economic actors tackles a number of fundamental economic issues (e.g. competitiveness, employment, access to international markets) but is also of particular significance in Africa where it would meet the challenge of promoting the informal economy (which would represent 55% of Sub-Saharan Africa's GDP and 38% of North Africa's, according to the latest OECD figures).

Services for African economic actors are developing rapidly. E-commerce, e-banking, e-agriculture platforms and other applications are multiplying. For sovereignty and ecosystem development reasons, digital giants should not be the only ones in charge of the digitisation of all African companies.

A secure regulatory network and the involvement of professional streams providing digital access to VSEs/SMEs are needed to perform even better and create the millions of jobs that Africa needs. Digitising services significantly stimulates modernisation for delivery and logistical services to cover the last mile. Physical delivery of products and customs clearance still need further improvements.

Achievements:

In Morocco, the Infitah programme has helped several thousands of VSEs in their digital transition. Private initiatives, such as that of entrepreneur Tony Smith, are also worth noting. Low-cost terminals are also being developed in Africa, in particular by Alain Capo-Chichi's initiative.

Recommendations

- Establish a technical and regulatory framework, ideally at the regional level, to:
 - recognise electronic invoicing;
 - develop e-commerce.
- Mobilise CPCCAF (Standing Conference of African and Francophone Local Chambers), CCIs and professional organisations to develop and implement support programmes in digitisation by professional sector.
- Secure delivery systems for e-commerce, in terms of shipping and secure storage spaces.
- Promote national and regional interconnection of e-banking systems (Internet and mobile services).
- In connection with e-government programmes, facilitate paperless processes, especially in international trade (e-customs).
- Integrate the informal economy through the digitisation of payment solutions (e.g. smart cash registers, m-payment, barcode scanners) and encourage merchants to invest in these integrated tools.