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ICT Report for 2019

Board of Governors

Meeting on 15 - 17 April 2020 – Brussels

Approved by written procedure No 2020/31 on 12 May 2020

Content

Introduction

The purpose of this document is to provide a detailed ICT report on the year 2019, namely to give

- a status report on the main objectives defined for the year 2019 in the previous ICT Report[1]: missions accomplished, uncompleted and/or non-initiated missions;

- an overview of the significant events in the year 2019 as part of the information system (IS) of the European Schools and its IT resources.

The report also provides in the chapter 'From 2020 onwards' information about envisaged projects.

The activities presented in this report are imbedded in the '2018-2022 IT Plan of the European Schools'[2] which was approved by the Board of Governors in April 2018.

In line with the revised prioritization of its tasks and projects the ICT Unit focused in 2019 on an improvement of the security and reliability of the IT infrastructure and the continuation of the prioritized key-projects.

Moreover, requests for some new developments were addressed.

In 2020, the ICT Unit will focus on a continuation of the already started projects. A particular attention will have to be given to the envisaged 'Data Governance Concept' that will cover three large scale projects and will be forwarded for approval to the Board of Governors in April 2020[3].

In this context the ICT Unit will take up the recommendation provided by the Internal Audit Service of the EU Commission (IAS) in its 'Consulting Report on human resources allocation and distribution of non-teaching tasks in the European Schools' and will foster the project-approach in the ICT area by starting to develop and implement a tailored project management framework.

This report has been produced by the OSG ICT and Statistics Unit.

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[1] Doc. 2019-02-D-17-en-2.
[2] Doc. 2018-01-D-79-en-4.
[3] For the details see document 2020-02-D-23-en-1.

Note of the Budgetary Committee

The Budgetary Committee took note of the report and invited the Board of Governors to take note of it.

Year 2019

1. ICT Strategy: ICT Governance Group

The ICT Strategy Group met on numerous occasions in 2019, consisting of:

- meetings of the ADMIN Sub-Group (chaired by the acting Head of the ICT Unit) for the administrative, financial and security aspects;

- meetings of the PEDA Sub-Group (chaired by the Head of the Pedagogical Development Unit) for all the pedagogical aspects;

- joint meetings with the two Sub-Groups together (chaired by the Deputy Secretary-General), also for the pedagogical aspects.

The IT ADMIN Sub Group met in 2019 four times. The first meeting was mainly dedicated to an update of the IT priorities, while the other three meetings focused on the main ongoing projects, namely

➢ the establishment of a 'Azure Roadmap',

➢ the migration to the new environment EURSC.EU,

➢ the analysis of a future master data management approach,

➢ the replacement of the current enrolment tool and the creation of an online enrolment platform.

The IT-PEDA Sub-Group (chaired by the Head of the Pedagogical Development Unit), focusing on all the pedagogical aspects, met several times during the year 2019. Whilst taking as its basis the priorities, in pedagogical terms, expressed in the Multi-Annual Plan approved by the Board of

Governors at its April 2018 meeting[4], the IT-PEDA Sub-Group produced several documents, including in particular 'Guidelines for the pedagogical use of mobile devices in the European Schools'.

A more detailed report on the activities of the IT-PEDA Strategy WG will be appended to the Secretary-General's Report.

2. System and Networks Sub-Unit

2019 saw a continuation of strengthening of the pillars on which the organisation is aspiring to converge. Those key pillars are communication, operational efficiency, program effectiveness and the innovative use of technology. This marked a change in comparison with previous years.

Based on the reviewed prioritization of projects the System and Networks Sub-Unit focussed on

➢ the migration to EURESC.EU,

➢ the strengthening of the network security and infrastructure.

Moreover, the Sub-Unit developed together with an external consultant an 'Azure Roadmap'.

2.1 Migration to EURSC.EU

With respect to the migration from EURSC.ORG to EURSC.EU a roadmap describing all essential steps was developed and discussed within the ICT ADMIN Group and with the Directors of the 13 schools. The objective was to migrate all the schools by the end of 2019.

Even though this objective was not achieved in due time, substantial progress could be made due to the improved cooperation between the System and Networks Sub-Group and the IT teams of the schools. This close cooperation should allow the finalization of the project in the first months of 2020.

2.2 Network security and infrastructure

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[4] Doc 2018-01-D-79-en-4.

The second focus was on network security. The availability of, or more precisely, access to information and systems, regardless of their location or role, is a priority. Learning from experience, whereas in 2018, schools saw a cut in services for a total of eight days, in 2019, the System and Networks Sub-Group kept it to zero days. This is considered as a proof that the actions taken at the end of 2018 to mitigate the risks were pertinent.

The data centre audit was followed and the installation of a generator, mitigating the risk of a power cut, is nearly completed. Establishing a stand-by service, combined with the monitoring and alarm system via SMS, allowed the ICT team to respond in time.

Moreover, particular attention was paid to the network infrastructure. Being the focal point of the system, the complete layer three stack was replaced by new devices compatible with the new SD-WAN technology. The network routing was comprehensively reviewed and redesigned, providing greater stability and better performance.

Further areas of improvement were the server infrastructure updates and upgrades of the Central Office and the back-ups. Even though the situation is not yet perfect, the servers are better managed and the Hyper-V 2019 cluster is ready to welcome the virtual machines in 2020. The database cluster, System Centre Data Protection, Virtual Manager and Configuration Manager were also updated. In September 2019, one Exchange archive database, already identified as high risk, was lost as a result of major hardware failure. Thanks to back-ups, the data could be restored without any data loss.

The Microsoft Premier contract and external consultancy played again an important role in 2019, providing expertise and support when it came to incident resolution and in terms of additional human resources, as the System Sub-Unit is still lacking one system engineer.

Cloud services continued to improve efficiencies for all facets of the European Schools, most notably in the area of hosting the SAP infrastructure, the EURSC.EU test environment and the Office 365 service. By building the EURSC.EU test environment, allowing pre-provisioning, simulation and validation, the start in the 2019-2020 school year went by far more smoothly than the start in previous school years.

2.3 'Azure Roadmap'

Finally, the consultations on a 'Azure Roadmap' were started. As a first step, three objectives were defined: Switching Federated Authentication, Azure Back-Up and Cloud Strategy Catalogue.

The Azure Back-up analysis revealed that the OSG is using a better solution than the one proposed by the consultants. Having the reassurance that the already existing back-up solution is a solid one, the next step will be to extend this solution to the Cloud. The realization of the two other objectives, Switching Federated Authentication and Cloud Strategy Catalogue, were delayed and are now envisaged by the end of 2020 at the latest.

3. Development and Statistics Sub-Unit

3.1 School Management Administrative Application (SMS)

In October 2019, the 2nd phase of consent management was implemented. All parents who are defined as 'Main' in SMS, had to enter the consents via the Parents web application. As long as these consents were not encoded, access to the data concerning the children was not possible for the parents concerned.

In September 2019, the contract with MySchool expired. An exception was created in the register of exceptions in order to be able to extend this contract for another four years. This time frame should allow the European Schools to establish a sustainable solution linked to the envisaged master data management tool and in line with the needs of the growing system.

3.2 Statistics Platform - SAP Business Objects

In order to better respond to the needs and requests from the OSG and the schools, the SAP BO (Business Object) statistics platform has been regularly adapted and reports have been updated.

3.3 Datawarehouse

In order to improve the quality of the data used for all statistical reports used by the OSG and the schools, an analysis for the implementation of a Datawarehouse started in 2019.

In addition, to ensuring better data quality, the implementation of a Datawarehouse will reduce the dependency between BO reports and data sources. Instead of retrieving information directly from the databases attached to the applications, an intermediate layer will be created. If later on, it will be decided to change the applications, it will be sufficient to update the scripts that will feed the Datawarehouse and not the reports as it is currently done.

In collaboration with an external expert, the initiation of a POC (Proof of Concept) has been carried out. Currently this analysis is still in progress internally.

3.4 Application of the Brussels Central Enrolment Authority (CEA)

As in previous years, the application has been updated to meet the new enrolment policy rules.

The migration of the application from the old .ORG environment to the .EU environment has been finalized.

3.5 Online enrolment form

A study has been commissioned by an external consultant to provide advice on the choice of tool that will allow the development of a form for online student registration and to redesign the application used for the allocation of places (CEA).

The analysis provided three options:

- A Pure Web App solution.

- A Power Platform solution

- A Hybrid Solution

These three options were presented to the Board of Governors in December 2019[5]. The Board mandated the ICT Admin Group to further analyse these options and to present a final proposal to the Board of Governors in April 2020 for approval.

3.6 Collaboration platform for administrative activities (SharePoint Intranet, SharePoint)

OSG

Existing sites were maintained and updated, such as the DPO site, the BAC unit site, the Pedagogical Development Unit and the SAP site.

Schools

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[5] For the details see doc. 2019-10-D-31-en-2.

A SharePoint Intranet site has been created per school allowing the sharing of administrative resources.

However, a priority has been established for the storage of Administration Board documents.

As a result, all board documents have been migrated from Learning Gateway (LG) to the corresponding intranets.

Training was given to schools to enable them to be autonomous and manage both the loading of future files and the security.

As of September 2019, all schools used this SharePoint Administrative site to make available to the various stakeholders the documents used for the Administrative Board.

A SharePoint site shared between Brussels schools has also been set up for the purposes of sharing language tests of newly enrolled pupils.

3.7 Application NEW ALTEE

New ALTEE is an application that allows to define the different stakeholders in the system of the European Schools who participate in the different meetings organized by the OSG. The maintenance of this application has been taken over by the Development and Statistics Sub-Unit.

3.8 Harmonization of technical payment processes: Isabel – ING Shadow accounts

In the ICT environment of the European Schools, different technical processes exist in order to process payments to staff, providers and others. All payments should be processed via the SAP accountancy software. Once the amounts to pay have been defined and approved in SAP, these payment orders must be transferred to the respective banks of the schools or the OSG. Many different banks are used by the different schools. Each bank has its own online portal in which payments must be approved.

In order to harmonize these technical transfers a project was set-up, Isabel – ING Shadow accounts. The final goal is that all schools will use the same system that the OSG and the Belgian schools already use, namely Isabel.

The Development Sub-Unit took the ownership of the processes and provided support for the technical implementation of this project. A majority of the schools has already been migrated in 2019. The remaining schools will follow in 2020.

3.9 Harmonization of technical payment processes: Net Salary Upload Portal

Salaries are calculated by external providers, social secretaries, but need to be processed via the SAP accountancy software.

In the past, the OSG provided different technical and manual options to the schools in order to upload these files in SAP. This was considered to create an important risk. In order to harmonize the transfer of the net salary-files to SAP, a web portal for salary files of the administrative staff of the schools was created. This new application provides more transparency and security in this sensitive process. Over the course of the year 2019, all schools have been migrated and are now following this harmonized process with respect to the salary of the Administrative and Ancillary Staff (AAS).

3.10 Differential Adjustment Application Analysis & Development

In 2019 the Accountancy Unit addressed the need for a new application for the differential adjustment cell in order to replace a 20 years old Microsoft Access application. Following this request, an in-depth analysis of the business needs was carried out.

As a result of this analysis a web-application was proposed that incorporates the most important and most used features of the old application and adds some new features for ease-of-use and workload reduction.

In this context it was decided to opt for an internal custom development in the form of a web-portal with SSO, where all information (data & documents), which was previously spread over multiple systems, will be harmonized in one place. This will also facilitate the sharing of documents between the differential adjustment cell of the OSG and the administrative staff of the schools, since the administrative staff of the schools will receive access to this application. The application will also provide more transparency to the schools as they can follow the status of each dossier, without having to contact the OSG.

The development should be finalized by mid-2020. It is foreseen to start a pilot phase with one school, yet to be defined. In a second phase, also the seconded staff will receive access to this application, so they themselves can upload the required documents and follow-up their own dossier, saving time to the administrative staff of the schools.

3.11 Identity synchronization (MIM project)

In order to simplify the procedure for the creation of accounts, lists, etc. it was decided in Mai 2019 to work only on the current school year 2019/20. Moreover, the parents' lists have been removed.

In collaboration with an external partner, the MIM AUXILLARY project was realized out. This project consisted in changing the structure of the database used by the robot.

This new structure improved performance and facilitated troubleshooting in case of synchronization problems. The impact of this new structure was a complete change of the logic used when importing data from SMS and PERSEE. The production of MIM AUXILLIARY has been postponed to the beginning of 2020.

In order to facilitate the transition of the school year in the best conditions, the expert partner was provided permanent support during this period by verifying that all the data was well synchronized without errors. In addition, a test environment was created and deployed on the Cloud to refine the data projection.

The combination of these different measures allowed a – in comparison to previous years – by far smoother start in the 2019/20 school year.

3.12 Reference data management (Master data)

The study that had been requested already in 2018 from an external consultancy to provide advice on the choice of the tool that will allow the OSG to manage the baseline data has been completed.

After analysis, thee solutions were provided:

- Purchase an existing MDM tool.

- Use other non-MDM tools such as an MDM solution.

- Develop a solution internally.

These three solutions were presented to the ICT Admin Group.

A final proposal, imbedded in a wider 'Data Governance Concept' will be forwarded to the Board of Governors in April 2020 for approval[6].

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[6] For the details see document 2020-02-D-23-en-1.

4. Service Desk Sub-Unit

Like in previous years, the ICT Service Desk has been in high demand during the year 2019. In total 8124 tickets have been sent by the ICT departments of the schools, the personnel of the OSG, the national inspectors and the heads of delegation:

INCIDENTS 2019
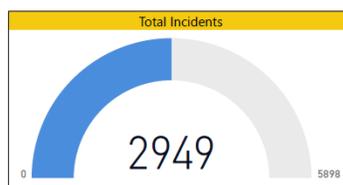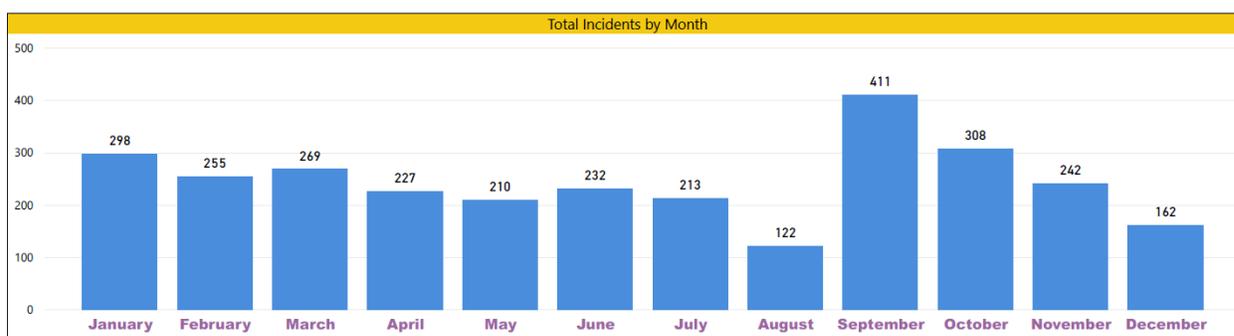
REQUESTS 2019

OSG ICT SERVICE DESK EMAILS 2019

Number of Emails by Month

Number of Emails

1941

ES ICT SERVICEDESK EMAILS 2019

Number of Emails by Month

Number of Emails

2627
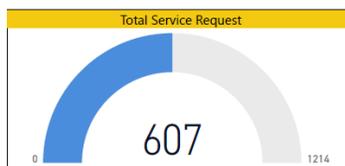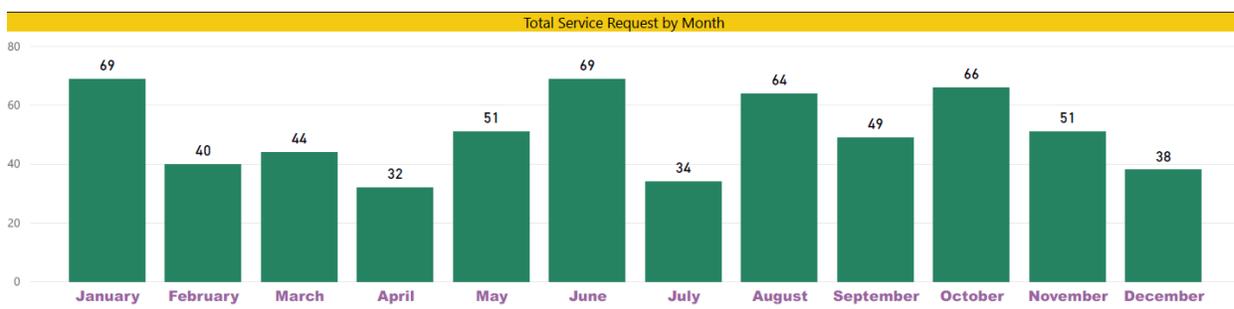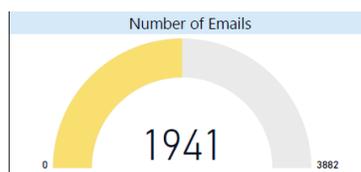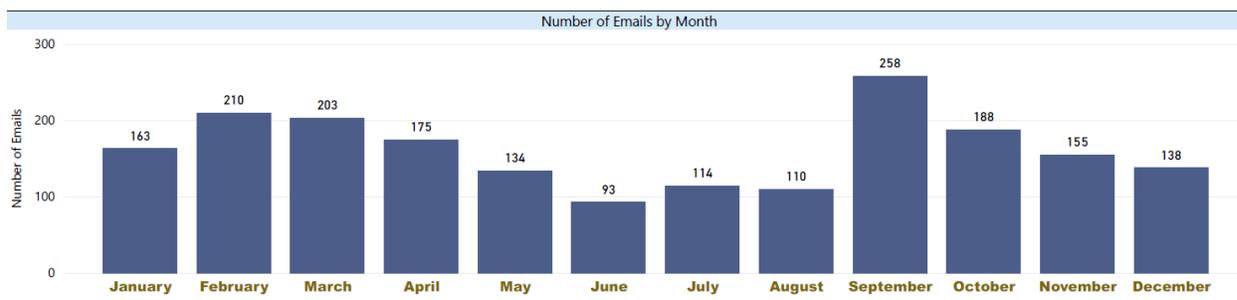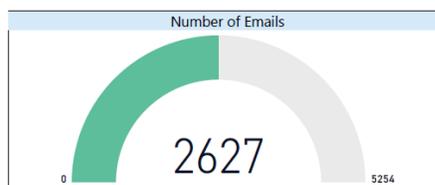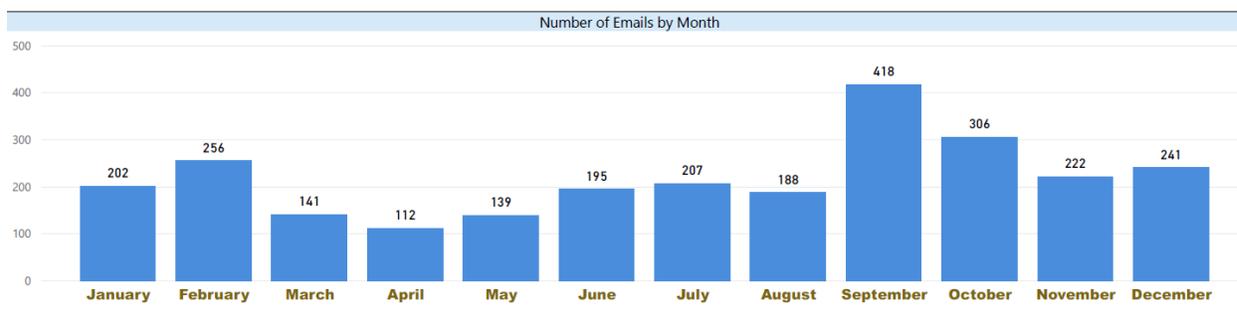
Other than the management of these incidents and requests, the ICT Service Desk was tasked with the migration of the different network disks of the OSG to the EURSC.EU domain.

Other areas of activities of the ICT Service Desk were

➢ The upgrading of the Microsoft Office suite from the 2016 version to the 2019 version,

➢ the logistical support for different trainings offered in the offices of the OSG,

➢ the technical support for the implementation of the new SharePoint sites of the schools, which have been created to facilitate the access to the documents of the Administration Boards of the schools,

➢ the renewal of the network printers in the OSG and

➢ the preparation for the deployment of the plane for the new licenses of Microsoft Office 365.

Finally, the ICT Service Desk furnished the necessary support for the different projects of the other cells of the ICT & Statistics Unit.

From 2020 onwards

1. ICT Strategy: ICT Governance Group

The Strategy Group will continue to give guidance to the OSG and in particular the ICT Unit. It will have to follow closely the implementation of the proposed 'Data Governance Concept' that contains in a first step three different projects that will be presented to the Board of Governors in April 2020.

These projects are

➢ the creation of a Master Data management 'tool',

➢ the replacement of the current enrolment application for the European schools in Brussels and the development of an enrolment platform and

➢ the replacement of the current software used for the calculation of the remuneration of seconded staff members[7].

Moreover, the Strategy Group will have to follow-up the application of the 'Guidelines for the pedagogical use of mobile devices in the European Schools'.

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[7] For the details of the concept see document 2020-02-D-23-en-1.

2. System and Networks Sub-Unit

Also in 2020, the System and Networks Sub-Unit will tackle the projects envisaged, in accordance with the revised list of priorities.

One focus will be on the strengthening of the relationship between ICT and the organisation. The ICT System and Networks Sub-Unit will continue its culture of collaboration and partnership with the schools demonstrated in the ongoing process of the migration to EURSC.EU. This migration process will be completed in 2020 and this will allow to start the work on a disaster recovery plan for each school.

The migration to the Cloud will continue, with the multiplication of services provided by Office 365, which is the European Schools' main collaboration platform for education. In addition to Switching Federated Authentication and Cloud Strategy Catalogue, a proof of concept for a Cloud-based telephony system will be launched.

The system and network infrastructure will continue to evolve, by taking into consideration the option of a rapid redeployment of servers, applications and services in the event of a major issue.

Two services, Risk and Health Assessment Program for System Centre Configuration Manager and Distributed File System, are already planned. These services are proactive and assess the performance, and efficiency of the Configuration Manager hierarchy, including site systems and clients and, in the case of the DFS Health Check, it contains an analysis of the DFS replication and namespace configuration, an improvement in availability by eliminating single points of failure, a reduction in services outages and management and troubleshooting knowledge and skills. Remediation recommendations are also generated and followed up accordingly.

Several other projects with interactions will also be handled and are in the pipeline for 2020. The complete revamping of the on-premises email infrastructure, the strengthening of databases, Active Directory, Hyper-V and back-up servers, all rightly lead to the extension of the second data centre and Cloud strategy.

In addition to the previous projects, the OSG is growing and in June 2020, a new floor of the current building hosting the OSG will have to be equipped and connected. This will provide the opportunity to introduce the new SD-WAN technology at the network level and to redesign the Wi-Fi connectivity.

3. Development and Statistics Sub-Unit

3.1 School Management Administrative Application (SMS)

When negotiating the new contract with MySchool, it was decided to upgrade the current version to SMS version 1.8.

The new version will improve the support by the supplier, address the requirements of the GDPR and allow to evolve the application in line with future needs of the schools.

The migration will be carried out via four phases including data migration, testing and training of the key users in the schools.

The migration process should be terminated by mid-2020.

3.2 Statistics Platform - SAP Business Objects

As the BO tool is essentially linked to the SMS application, the implementation of the new version of SMS will require many adaptations. All official reports will have to be adapted.

In collaboration with the System and Networks Sub-Unit, a new version of the SAP BO reporting tool will be installed. Subsequently, an upgrade will have to be organized for the SKU BO's.

3.3 Application of the Brussels Central Enrolment Authority (CEA)

The existing application will be maintained while an option will have to be chosen for the implementation of its successor.

3.4 Online enrolment form

After an option has been chosen, the project will enter the execution phase.

3.5 Application NEW ALTEE

An update of the code is being considered to correct the problem of slowness and to automate the manual account creation processes.

3.6 Collaboration platform for administrative activities (SharePoint Intranet, SharePoint)

OSG

The development of the various SharePoint collaboration sites at the OSG will continue, in particular that of Procurement and Human Resources.

Schools

On-demand support will also be provided to schools wishing to upgrade their intranet to store more administrative resources.

3.7 Identity synchronization (MIM project)

With the implementation of the new version of SMS, MIM AUXILLARY will have to be adapted to the new structure of the SMS database.

The transition of the school year will be carried out in the same way but will already take place at the end of the previous school year.

3.8 Reference data management (Master data)

Regardless of the solution chosen, the first phase of this project will start in 2020. This phase will take over the identities of students and parents.

In the 2nd phase, other identities such as employees, teachers, inspectors, etc. will be treated.

ICT and Data Protection

As from May 2018, the GDPR had to be applied. Obviously, compliance with the GDPR remained also in 2019 an objective of utmost importance in the ICT area and will continue to do so in 2020.

The ICT Unit involves the Data Protection Officer (DPO) of the OSGES in new projects from the outset, in order to design new applications in line with the requirements of the GDPR.

Moreover, in the context of the renewal of existing contracts and the drawing up of new contracts with external suppliers, it needs to be ensured, in cooperation with the DPO and the Procurement Sub-Unit, that these contracts foresee the data protection standards required by the GDPR.

This approach was followed in 2019 in the process of the renewal of the contract with MySchool and will be continued in 2020 in particular with respect to the proposed development of a new 'Data Governance Concept'.

Staff situation of the OSG ICT and Statistics Unit

Head of Unit ICT

The function of Head of Unit ICT is vacant since November 2018. Since then, the position is held ad-interim by the Deputy Secretary-General, who has delegated a number of tasks to the heads of the three sub-units. Moreover, a lot of coordinating tasks have been overtaken by the two secretaries. The function of Head of Unit had been published for secondment twice. The first call remained without candidatures. The deadline of the second call will end on 28 February 2020.

The Board of Governors has agreed in December 2019 that in case no suitable for secondment can be found, that the function will be published for a local recruitment.

System and Networks Sub-Unit

The System and Network Sub-Unit is composed of one Head of Sub-Group and three functions of System Engineer.

One of these three functions is vacant for more than one year.

Despite various efforts, it was not possible to fill the post in 2019. Potentially, the new salary scales for Administrative and Ancillary Staff, which entered into force in January 2020, should attract potential candidates.

Development Sub-Unit

The Development Sub-Unit is composed of one Head of Sub-Group and in total four functions of Developer.

Out of these four functions two were created in 2018 on a temporary basis. In April 2019 the Board of Governors decided that these positions are permanent functions as of 1 January 2020.

Service Desk Sub-Unit

The Service Desk is composed of one Head of Sub-Unit and three ICT technicians. The function of head of Sub-Unit was filled in spring 2019.

One of the three technician posts was created as a temporary post by the Board of Governors in April 2017 and converted to a permanent post as of 1 January 2020 based on a decision of the Board of Governors in April 2019.

ICT Secretariat

The ICT Secretariat is composed of two secretaries (1.5 FTE) who - besides their ordinary tasks - took over a lot of coordinating tasks due to the absence of a fully dedicated Head of Unit and who are moreover deeply involved in the establishment and execution of the annual ICT budget.

The following table gives an overview on the current staffing of the ICT Unit:

Function	Organogram 01.01.2019	Effectives 31.12.2019	Remarks
Head of Unit	1.0	0	DSG acting HoU
ICT Assistant to the SG	2.0	2.0	Head of Sub-Unit
ICT Assistant System	3.0	2.0	
ICT Assistant Development	4.0	4.0	
ICT Assistant Service Desk	1.0	1.0	Head of Sub-Unit
ICT Technician Service Desk	3.0	3.0	
Secretary	1.5	1.5	
Total	15.5	13.5	

Team approach and delegation of power to the IT-teams in the schools

Bearing in mind the still high number of small, medium and large-scale IT projects, it is important to reinforce the cooperation with the 13 schools and their IT teams and to create synergies.

As already mentioned, the migration to EURSC.EU was and is a good example of a successful 'team approach' between the ICT Unit and the IT experts in the schools. As soon as this process will be finalized the OSG will look together with the Directors and their IT experts in further possibilities of team work and also delegation of powers towards the schools to allow the schools to provide the environment for a successful teaching and learning in a more and more digitalized world.

Distribution of ICT hardware in the schools on 31/12/2019

PC = number of personal computers; BEA. = number of beamers; IAW = number of interactive whiteboards

Ecole	Niveau	Matériel dans les classes			Matériel dans les classes ICT			Matériel hors classes			Pédagogique			Administratif			TOTAL		
		PC	BEA	TBI	PC	BEA	TBI	PC	BEA	TBI	PC	BEA	TBI	PC	BEA	TBI	PC	BEA	TBI
Alicante	Mat. & Prim.	41	26	24	43	2	24	11	0	0	95	28	48	37	2	1	285	81	93
	Secondaire	46	43	42	78	3	2	29	5	0	153	51	44						
	Total	87	69	66	121	5	26	40	5	0	248	79	92	37	2	1			
Bergen	Mat. & Prim.	106	0	16	0	0	0	2	0	0	108	0	16	24	0	0	293	19	48
	Secondaire	47	16	30	51	2	1	63	1	1	161	19	32						
	Total	153	16	46	51	2	1	65	1	1	269	19	48	24	0	0			
Brussels I	Mat. & Prim.	155	127	93	54	3	3	28	1	0	237	131	96	92	1	0	675	282	162
	Secondaire	202	140	61	90	5	5	54	5	0	346	150	66						
	Total	357	267	154	144	8	8	82	6	0	583	281	162	92	1	0			
Brussels II	Mat. & Prim.	140	105	70	100	2	2	15	2	1	255	109	73	54	2	3	649	225	135
	Secondaire	120	110	59	165	3	0	55	1	0	340	114	59						
	Total	260	215	129	265	5	2	70	3	1	595	223	132	54	2	3			
Brussels III	Mat. & Prim.	85	45	56	29	0	0	9	0	4	123	45	60	42	0	0	479	153	106
	Secondaire	124	103	41	132	5	5	58	0	0	314	108	46						
	Total	209	148	97	161	5	5	67	0	4	437	153	106	42	0	0			
Brussels IV	Mat. & Prim.	195	51	75	0	0	0	0	0	0	195	51	75	54	2	0	555	170	80
	Secondaire	182	108	0	78	4	2	46	5	3	306	117	5						
	Total	377	159	75	78	4	2	46	5	3	501	168	80	54	2	0			
Francfort	Mat. & Prim.	103	19	13	43	1	1	9	1	0	155	21	14	40	1	0	433	64	50
	Secondaire	102	37	34	71	3	2	65	2	0	238	42	36						
	Total	205	56	47	114	4	3	74	3	0	393	63	50	40	1	0			
Karlsruhe	Mat. & Prim.	73	22	24	30	1	1	5	0	0	108	23	25	55	3	0	346	76	47
	Secondaire	105	42	20	56	3	2	22	5	0	183	50	22						
	Total	178	64	44	86	4	3	27	5	0	291	73	47	55	3	0			
Luxembourg I	Mat. & Prim.	113	78	78	56	2	2	26	7	5	195	87	85	74	4	2	629	292	218
	Secondaire	158	191	130	146	7	1	56	3	0	360	201	131						
	Total	271	269	208	202	9	3	82	10	5	555	288	216	74	4	2			
Luxembourg II	Mat. & Prim.	127	78	78	99	4	4	11	12	12	237	94	94	132	11	1	732	239	227
	Secondaire	135	122	122	184	8	8	44	4	2	363	134	132						
	Total	262	200	200	283	12	12	55	16	14	600	228	226	132	11	1			
Mol	Mat. & Prim.	52	29	26	31	1	1	8	2	1	91	32	28	43	2	2	289	86	66
	Secondaire	56	48	34	74	2	2	25	2	0	155	52	36						
	Total	108	77	60	105	3	3	33	4	1	246	84	64	43	2	2			
Munich	Mat. & Prim.	0	0	0	0	0	0	0	0	0	0	0	0	29	4	1	445	147	109
	Secondaire	131	122	102	118	6	5	167	15	1	416	143	108						
	Total	131	122	102	118	6	5	167	15	1	416	143	108	29	4	1			
Varese	Mat. & Prim.	60	38	45	15	1	0	7	1	2	82	40	47	34	0	1	299	115	86
	Secondaire	80	71	37	63	3	0	40	1	1	183	75	38						
	Total	140	109	82	78	4	0	47	2	3	265	115	85	34	0	1			
Totals	Mat. & Prim.	1250	618	598	500	17	38	131	26	25	1881	661	661	1420	64	11	6109	1949	1427
	Secondaire	1488	1153	712	1.306	54	35	724	49	8	3518	1256	755						
	Total	2738	1771	1310	1806	71	73	855	75	33	5399	1917	1416						

Table 1 – IT inventory of the schools on 31/12/2019

Ecole	Niveau	Nombre d'élèves 2019	Equipement pédagogique 2019			Nombre d'élèves par appareil 2019		
			PCs	Beam.	TBI	PCs	Beam.	TBI
Alicante	Mat. & Prim.	448	95	28	48	4,7	16,0	9,3
	Secondaire	591	153	51	44	3,9	11,6	13,4
	Total	1039	248	79	92	4,2	13,2	11,3
Bergen	Mat. & Prim.	256	108	0	16	2,4		16,0
	Secondaire	334	161	19	32	2,1	17,6	10,4
	Total	590	269	19	48	2,2	31,1	12,3
Brussels I	Mat. & Prim.	2085	237	131	96	8,8	15,9	21,7
	Secondaire	1994	346	150	66	5,8	13,3	30,2
	Total	4079	583	281	162	7,0	14,5	25,2
Brussels II	Mat. & Prim.	1361	255	109	73	5,3	12,5	18,6
	Secondaire	1813	340	114	59	5,3	15,9	30,7
	Total	3174	595	223	132	5,3	14,2	24,0
Brussels III	Mat. & Prim.	1354	123	45	60	11,0	30,1	22,6
	Secondaire	1847	314	108	46	5,9	17,1	40,2
	Total	3201	437	153	106	7,3	20,9	30,2
Brussels IV	Mat. & Prim.	1299	195	51	75	6,7	25,5	17,3
	Secondaire	1674	306	117	5	5,5	14,3	0,0
	Total	2973	501	168	80	5,9	17,7	37,2
Francfort	Mat. & Prim.	779	155	21	14	5,0	37,1	55,6
	Secondaire	810	238	42	36	3,4	19,3	22,5
	Total	1589	393	63	50	4,0	25,2	31,8
Karlsruhe	Mat. & Prim.	447	108	23	25	4,1	19,4	17,9
	Secondaire	444	183	50	22	2,4	8,9	20,2
	Total	891	291	73	47	3,1	12,2	19,0
Luxembourg I	Mat. & Prim.	1665	195	87	85	8,5	19,1	19,6
	Secondaire	1675	360	201	131	4,7	8,3	12,8
	Total	3340	555	288	216	6,0	11,6	15,5
Luxembourg II	Mat. & Prim.	1257	237	94	94	5,3	13,4	13,4
	Secondaire	1395	363	134	132	3,8	10,4	10,6
	Total	2652	600	228	226	4,4	11,6	11,7
Mol	Mat. & Prim.	279	91	32	28	3,1	8,7	10,0
	Secondaire	401	155	52	36	2,6	7,7	11,1
	Total	680	246	84	64	2,8	8,1	10,6
Münich	Mat. & Prim.	849	0	0	0			
	Secondaire	1342	416	143	108	3,2	9,4	12,4
	Total	2191	416	143	108	5,3	15,3	20,3
Varese	Mat. & Prim.	599	82	40	47	7,3	15,0	12,7
	Secondaire	757	183	75	38	4,1	10,1	19,9
	Total	1356	265	115	85	5,1	11,8	16,0
Totals	Mat. & Prim.	12678	1881	661	661	6,7	19,2	19,18
	Secondaire	15077	3518	1256	755	4,3	12,0	19,97
	Total	27755	5399	1917	1416	5,1	14,5	19,6

Table 2 - Pedagogical hardware rates on 31/12/2019

Table 3 (schools classified according to the number of pupils per device) classifies the schools according to their pupils per PC, pupils per beamer and pupils per interactive whiteboard ratios.

Ecole	Elèves par PC
Bergen	2,2
Mol	2,8
Karlsruhe	3,1
Francfort	4,0
Alicante	4,2
Luxembourg II	4,4
Average	**4,8**
Varese	5,1
Munich	5,3
Bruxelles II	5,3
Bruxelles IV	5,9
Luxembourg I	6,0
Bruxelles I	7,0
Bruxelles III	7,3

Ecole	Elèves par beamer
Mol	8,1
Luxembourg I	11,6
Luxembourg II	11,6
Varese	11,8
Karlsruhe	12,2
Alicante	13,2
Bruxelles II	14,2
Bruxelles I	14,5
Munich	15,3
Average	**16,0**
Bruxelles IV	17,7
Bruxelles III	20,9
Francfort	25,2
Bergen	31,1

Ecole	Elèves par TBI
Bergen	11,1
Alicante	11,2
Luxembourg II	11,5
Mol	11,6
Varese	16,7
Karlsruhe	17,9
Luxembourg I	18,9
Average	**19,4**
Munich	20,4
Bruxelles I	21,0
Bruxelles II	23,9
Francfort	24,1
Bruxelles III	28,3
Bruxelles IV	35,6

Table 3 - Schools classified according to the number of pupils per device

Table No 4 shows the development of pupils per PC ratio over the last few years

Ecole	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Alicante	5,4	5,2	4,8	4,7	4,4	4,1	4,1	4,2	4,3	4,5	4,2
Bergen	3,7	3,5	3,2	3,8	5,1	2,6	3,1	2,6	2,5	2,9	2,2
Bruxelles I	7,6	7,1	7,0	6,8	3,1	7,4	7,5	7,2	7,0	6,9	7,0
Bruxelles II	7,4	7,5	6,6	6,8	6,5	5,7	5,7	5,6	7,2	5,7	5,3
Bruxelles III	9	8,4	8,3	8,2	6,3	7,9	8,2	8,1	7,2	6,7	7,3
Bruxelles IV	7,8	6,1	6,4	6,5	8,1	6,8	6,9	9,8	5,4	6,6	5,9
Francfort	6,4	6,5	6,8	6,4	4,2	5,9	5,9	4,8	4,5	4,3	4,0
Karlsruhe	3,8	3,2	3,6	3,1	6,0	2,6	2,3	2,4	3,1	3,0	3,1
Luxembourg I	7	6,6	6,7	5,1	3,0	5,9	6,1	6,5	6,4	6,3	6,0
Luxembourg II	8,1	8,3	16,2	3,5	5,1	3,8	4,0	4,0	4,3	4,4	4,4
Mol	4,5	4,5	4,7	4,0	3,4	3,2	4,3	3,5	3,5	3,7	2,8
Munich	3,7	6,6	6,1	5,4	4,0	4,7	4,8	5,0	5,3	4,7	5,3
Varese	6,6	6,3	6,6	6,1	4,8	6,2	5,8	5,4	5,3	5,2	5,1
Average	6,2	6,2	6,5	5,3	5,1	5,0	5,1	5,2	4,7	4,6	4,8

Table 4 - Development of the pupils/PC ratio

Table No 5 shows the development of ICT hardware since 2006.

| Inventaire de décembre	PCs	Beam.	TBI
2006	3074	300	95
2007	3100	482	209
2008	3196	615	330
2009	3630	907	417
2010	3652	1126	587
2011	3812	1317	721
2012	4553	1535	945
2013	4689	1837	1149
2014	4862	1866	1300
2015	4822	1877	1367
2016	4894	1909	1350
2017	4974	1853	1401
2018	5125	1854	1468
2019	6109	1949	1427
Augmentation 2006-2019	98,7%	549,7%	1402,1%
Augmentation annuelle moyenne sur 2006-2019	7,6%	42,3%	107,9%

Evolution de l'équipement ICT
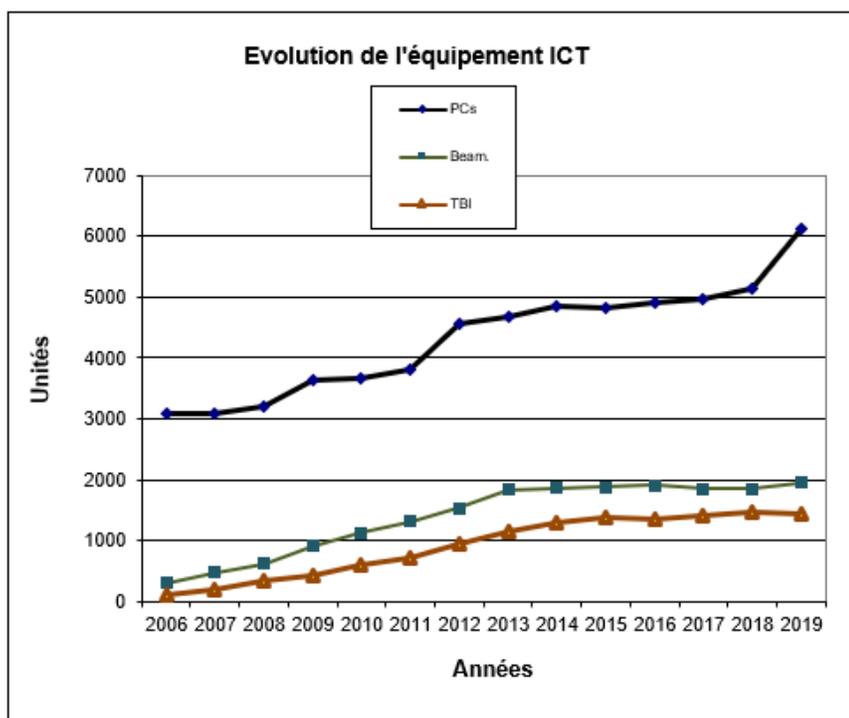
Table 5 - Development of the number of computers, beamers and interactive whiteboards

Table No 6 shows the availability of tablets per school and cycle and for the administration of the schools.

Ecole	Niveau	2017				2018				2019			
		Matériel dans les classes	Matériel dans les classes ICT	Matériel hors classes	Admini-stration	Matériel dans les classes	Matériel dans les classes ICT	Matériel hors classes	Admini-stration	Matériel dans les classes	Matériel dans les classes ICT	Matériel hors classes	Admini-stration
		TABL	TABL	TABL	TABL	TABL	TABL	TABL	TABL	TABL	TABL	TABL	TABL
Alicante	Mat. & Prim.	90	0	0	0	90	0	0	0	90	0	0	0
	Secondaire	90	0	0		90	0	0		90	0	0	
	Total	**180**	**0**	**0**	**0**	**180**	**0**	**0**	**0**	**180**	**0**	**0**	**0**
Bergen	Mat. & Prim.	16	0	0	3	42	0	0	0	50	0	0	0
	Secondaire	0	0	0		0	0	1		2	0	1	
	Total	**16**	**0**	**0**	**3**	**42**	**0**	**0**	**0**	**52**	**0**	**1**	**0**
Brussels I	Mat. & Prim.	1	0	2	2	1	0	2	5	0	0	0	2
	Secondaire	0	2	2		0	2	0		0	0	0	
	Total	**1**	**2**	**4**	**2**	**1**	**2**	**2**	**5**	**0**	**0**	**0**	**2**
Brussels II	Mat. & Prim.	5	15	0	8	30	0	0	0	30	0	0	1
	Secondaire	5	0	15		0	0	30		0	0	37	
	Total	**10**	**15**	**15**	**8**	**30**	**0**	**30**	**0**	**30**	**0**	**37**	**1**
Brussels III	Mat. & Prim.	0	0	35	0	80	0	0	0	73	0	0	0
	Secondaire	0	31	21		21	0	0		22	0	0	
	Total	**0**	**31**	**56**	**0**	**101**	**0**	**0**	**0**	**95**	**0**	**0**	**0**
Brussels IV	Mat. & Prim.	89	0	0	5	86	0	0	0	107	0	0	2
	Secondaire	0	0	0		117	0	0		0	0	0	
	Total	**89**	**0**	**0**	**5**	**203**	**0**	**0**	**0**	**107**	**0**	**0**	**2**
Francfort	Mat. & Prim.	16	0	0	0	16	0	0	0	40	0	0	2
	Secondaire	0	20	20		0	20	20		0	0	0	
	Total	**16**	**20**	**20**	**0**	**16**	**20**	**20**	**0**	**16**	**20**	**20**	**2**
Karlsruhe	Mat. & Prim.	0	38	0	10	0	38	0	9	5	85	0	10
	Secondaire	25	0	0		25	0	0		117	0	0	
	Total	**25**	**38**	**0**	**10**	**25**	**38**	**0**	**9**	**122**	**85**	**0**	**10**
Luxembourg I	Mat. & Prim.	106	0	0	0	140	0	0	0	140	0	0	0
	Secondaire	292	1	0		272	12	0		272	12	0	
	Total	**398**	**1**	**0**	**0**	**412**	**12**	**0**	**0**	**412**	**12**	**0**	**0**
Luxembourg II	Mat. & Prim.	0	0	40	2	0	0	40	1	0	0	40	6
	Secondaire	0	0	30		0	0	30		90	0	10	
	Total	**0**	**0**	**70**	**2**	**0**	**0**	**70**	**1**	**90**	**0**	**50**	**6**
Mol	Mat. & Prim.	0	0	0	5	0	0	1	3	0	0	1	3
	Secondaire	0	0	5		0	0	4		4	0	0	
	Total	**0**	**0**	**5**	**5**	**0**	**0**	**5**	**3**	**4**	**0**	**5**	**3**
Münich	Mat. & Prim.	0	0	0	0	0	0	0	0	0	0	0	4
	Secondaire	0	0	16		0	0	34		0	0	34	
	Total	**0**	**0**	**16**	**5**	**0**	**0**	**34**	**0**	**0**	**0**	**34**	**4**
Varese	Mat. & Prim.	1	0	0	3	1	0	0	3	5	0	0	3
	Secondaire	0	0	5		0	0	5		0	0	5	
	Total	**1**	**0**	**5**	**3**	**1**	**0**	**5**	**3**	**5**	**0**	**5**	**3**
Totals	Mat. & Prim.	324	53	77	38	486	38	43	21	540	85	41	33
	Secondaire	412	54	114		525	34	124		597	12	87	
	Total	**736**	**107**	**191**	**38**	**1.011**	**72**	**167**	**21**	**1.137**	**97**	**128**	**33**

Table 6 – Number of tablets-PCs per school from 2017 to 2019

Table 7 – Graph showing the development of the number of tablets per school from 2015 to 2019

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Evolution Tablettes 2015 - 2019
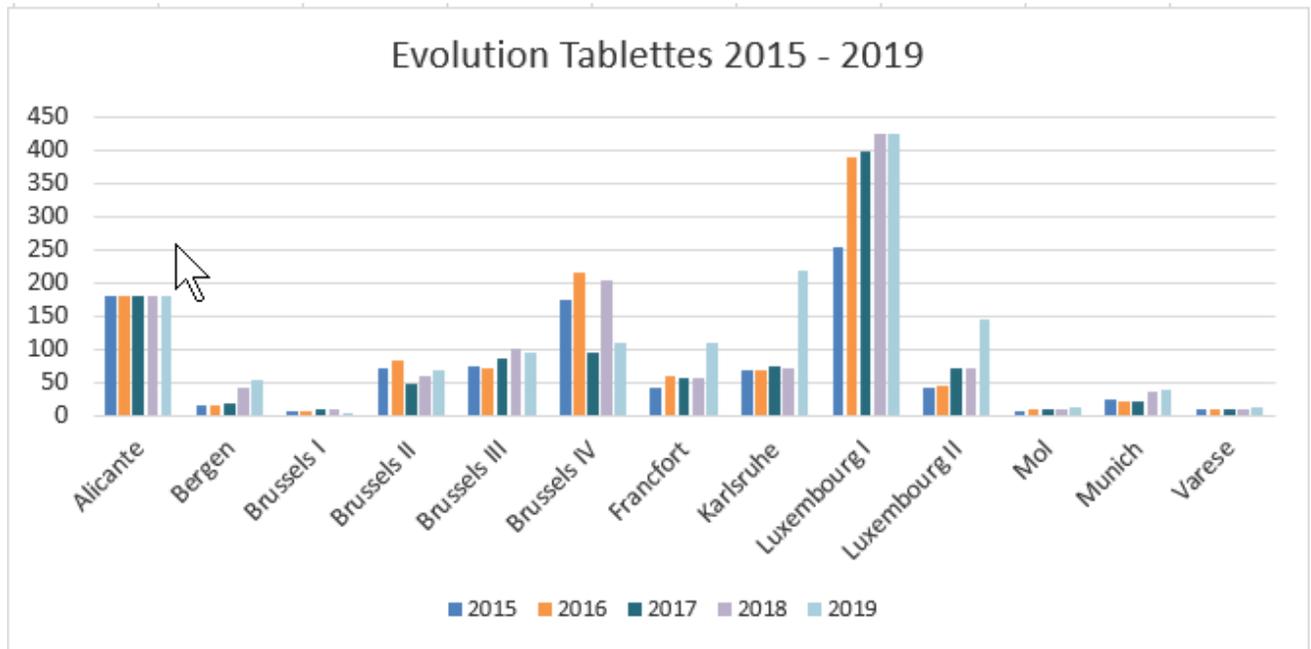
Proposal

The Board of Governors is invited to express an opinion on document 'ICT Report for 2019'.