

CORPORATE SOCIAL RESPONSIBILITY REPORT



For society, Business always means responsibility



2021

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COMPANY



24/7/365

Customer Support in English, Russian, French and German



Quality and standards (availability of certificates):

- ▶ ISO 9001
- ▶ ISO/IEC 20000
- ▶ ISO/IEC 27001



80 large customers

in 30 countries



Included in the IAOP*

TOP-100

 rating

ICL Services is a Russian company that provides world-class managed IT services to its clients. We are an important member of ICL group of companies and operate on the international market since 2006.

ICL Services provides:

- integrated services for all IT infrastructure components from data centers and user workstation to complex business-critical applications with modern methodologies and flexible service models;
- guaranteed availability of IT infrastructure and applications, as well as full compliance with the SLA;
- minimizing and sharing IT infrastructure management risks with the customer;
- transformation and upgrading of IT infrastructure using effective technologies;
- business performance increase through reliable and stable IT services.

*IAOP – International Association of Outsourcing Professionals.

COMPANY HISTORY

- 1997 Fujitsu acquired ICL company and transformed it into Fujitsu Services. New business model was developed following by formation of a team of qualified managers. From this time point ICL-KME CS had become a part of Fujitsu Limited.
- 2006 Formation of Fujitsu Russia GDC (later ICL Services) as a separate subdivision of ICL-KME CS.
- 2007 Creation of competence center for integrated solutions used in retail automation and logistics. Development of Application Services (AS) and Test and Validation (T&V) - subsequently - Workplace Services (WS).
- 2008 Formation of Infrastructure Services. Beginning of remote administration of IT infrastructure of customers. In 2014 IS and WS formed a single structure called Managed Infrastructure.
- 2013 ICL Group withdraws from Fujitsu Group in order to implement an independent development strategy in the Russian market. At the same time Russia GDC continues to cooperate with companies of the Fujitsu Group with the status "Fujitsu's preferred supplier of Services".
- 2012 The division of Fujitsu Russia GDC was opened in Voronezh.
- 2014 Russia GDC enters the Russian market under the brand ICL Services. The brand's main idea of unique services was based on the Western experience, international standards and highly qualified personnel.
- 2015 ICL Services is now among world top 100 outsourcing companies. Solution developed by ICL Services experts won in the innovation time contest in the category "Technology Innovation of the Year".

- 2016 ICL Services opens its first foreign office in Belgrade (Serbia). For the second time, our company was listed in the TOP 100 of the largest outsourcing providers in the world according to the IAOP. Partnership agreements with the largest IT vendors (Cegid, Omninet and Red Hat) were formed.
- 2017 The Expert Council of the annual award "Innovation Time-2017" named ICL Workspace solution as the "Product of the Year" in the "IT and Digital Technologies" category. For the third year in a row, our company entered the Global Outsourcing top -100 rating, compiled by the IAOP *.
- 2018 Partnership in the Asian region (Japan, Singapore) was expanded. We actively develop competencies in IoT, machine learning and robotization. ICL Services plans to complete 2018 year with 30% service volumes increase.
- 2019 The company became a finalist of the international SDI rating in the nominations "The best automation project" and "The best large managed service provider", and also managed to enter the TOP-7 rating of the European IT & Software Excellence awards. The number of employees of the company exceeded 2000 people. A Vladivostok ICL Services department was opened.
- 2020 In the latest version of The 2020 Global Outsourcing 100 ICL Services became the only Russian company that was ranked among the "Leaders" of the market in all four categories: "Customer reviews", "Achievements in innovation", "Awards and certifications", as well as "Corporate Social Responsibility". Despite the pandemic, the company continued to provide IT services in accordance with its obligations to customers, additionally helping some of them to transfer staff to remote work in a short time.

*Opening new office in
Usady, Kazan*



* International Association of
Outsourcing Professionals

COMPANY FACTS
GEOGRAPHY OF WORK

13 000

servers supported

>2700

employees

250 business applications

>80 large customers in 30 countries

>1000

jobs were created in the Republic of Tatarstan

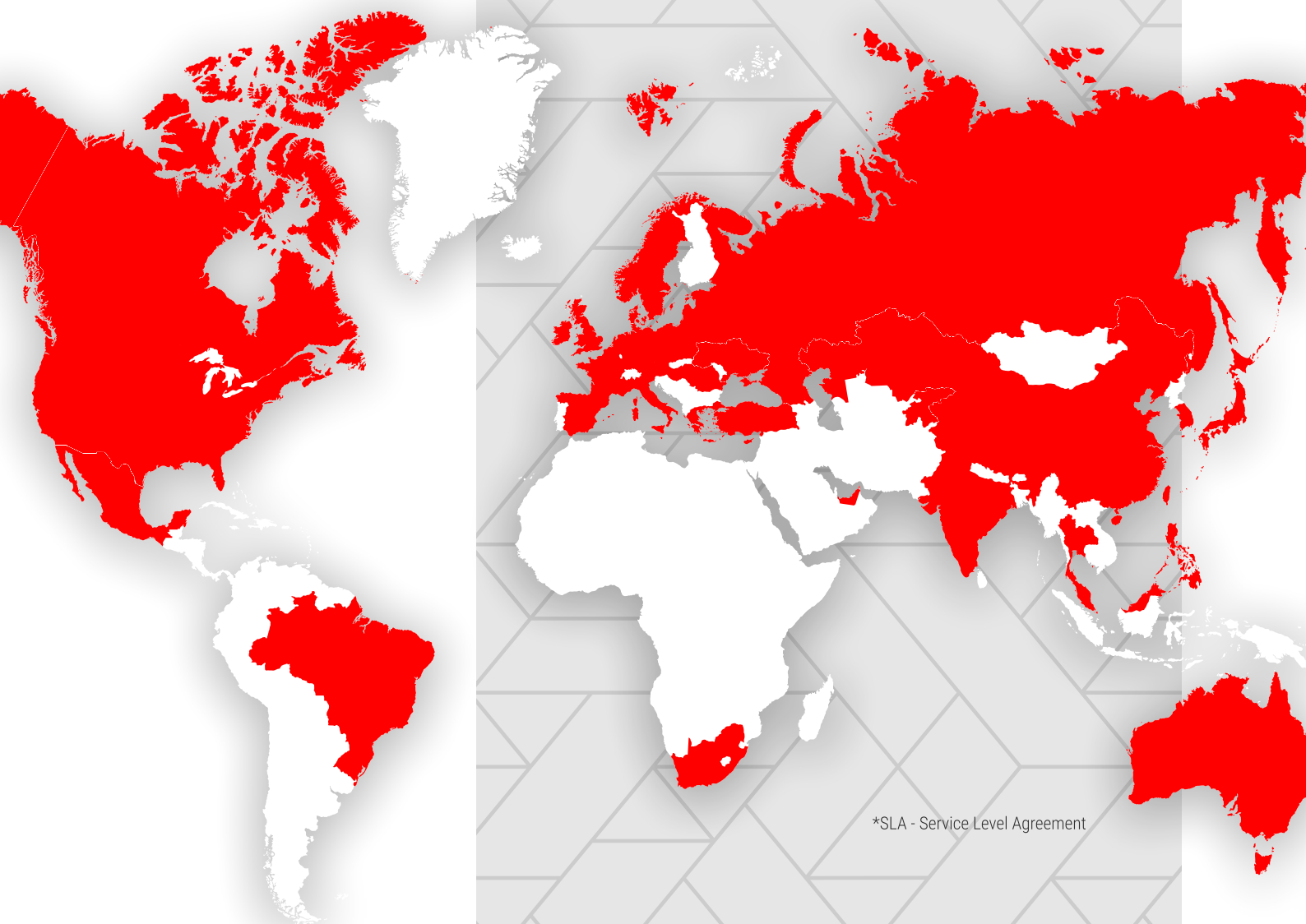
25 PBytes of data warehousing and 8000 DBase with 6,45 PByte in total volume

98,26%

level of compliance the SLA*

88 500

USERS
WORLDWIDE



*SLA - Service Level Agreement

CORPORATE SOCIAL RESPONSIBILITY POLICY



GOALS

ICL Services sets goals in assessment of Social Responsibility:

Increasing Customer loyalty by expanding their involvement in the resolution of socially significant issues;

Consolidating the Company's competitive edge by creating an image in both domestic and global markets;

Promoting the sustainable development of society on the territories where the Company conducts business.

THE MAIN OBJECTIVES

The main objectives in assessment of Social Responsibility:

Using Social Responsibility principles integration into the Company's business activity;

Creating mechanisms for determining and registration of stakeholder's interest in the operations of the Company as well as informing the interested parties on the results of the Company's activities in the area of social responsibility;

Attaining an additional positive effect from social Company's activities and increasing its brand value;

Controlling over management of the Company's reputation risk level as it pertains to Social Responsibility related matters;

Achieving excellent management skills in assessing social responsibility by organizing systematic work. A planning process organization of the activities in assessment of Social Responsibility, attaining cost effectiveness.

The company's principles towards corporate social responsibility

Company recognizes its responsibility in economic, social and environmental implications of undertakings and observes following principles defined by international standard ISO 26000:



TRANSPARENCY

01

The company strives to disclose its policy, decisions and activities in a clear, accurate, complete, reasonable and sufficient form for which it is responsible including the known and likely impacts on society, economy and environment. The principle of transparency does not imply the disclosure of confidential information or information which disclosure may result in a violation of legal, commercial, security and privacy obligations.

ETHICAL
BEHAVIOR

02

The company considers the ethical behavior of its employees, which corresponds to the company's mission and values.

THE PRINCIPLE OF TAKING
STAKEHOLDER'S INTERESTS
INTO CONSIDERATION

03

The company continuously interacts with parties concerned on a regular basis it identifies, assesses and takes into account the expectations and interests of those parties through meetings, interviews, surveys, and analysis of complaints.



RESPECT FOR THE
LAW RULES AND
INTERNATIONAL
BEHAVIOUR NORMS 04

The company complies with all applicable laws and regulations, takes steps to identify and study such applicable laws and regulations, informs employees about the responsibility for compliance and promotes the adoption of appropriate and timely measures to ensure compliance with the law in all company's jurisdictions.

RESPECT FOR THE
HUMAN RIGHTS 05

The company respects human rights, realizing that they are inseparably applicable in the countries where the company operates, in all cultures and circumstances, it takes measures to comply with them, considers it to be unacceptable to benefit from situations where the law or its implementation does not provide commensurate protection of human rights.

ACCOUNTA-
BILITY

06

The company recognizes the need for regular reporting on the impact of its activities on society, economy and environment. It considers constructive criticism of parties concerned as a source of improvement of its activities and will respond to such criticism, which includes measures aimed at preventing the recurrence of negative impacts. The relationships between the Company and its main stakeholders are the area of application and Social Responsibility controlled object. In order to implement the Policy we identify the following stakeholders and their groups (*Table 1*).

To make the relationship management to work with our stakeholders, we focused our activities in assessment of Social Responsibility on following priorities (*Table 2*).

Definition and classification of major stakeholders

TABLE 1

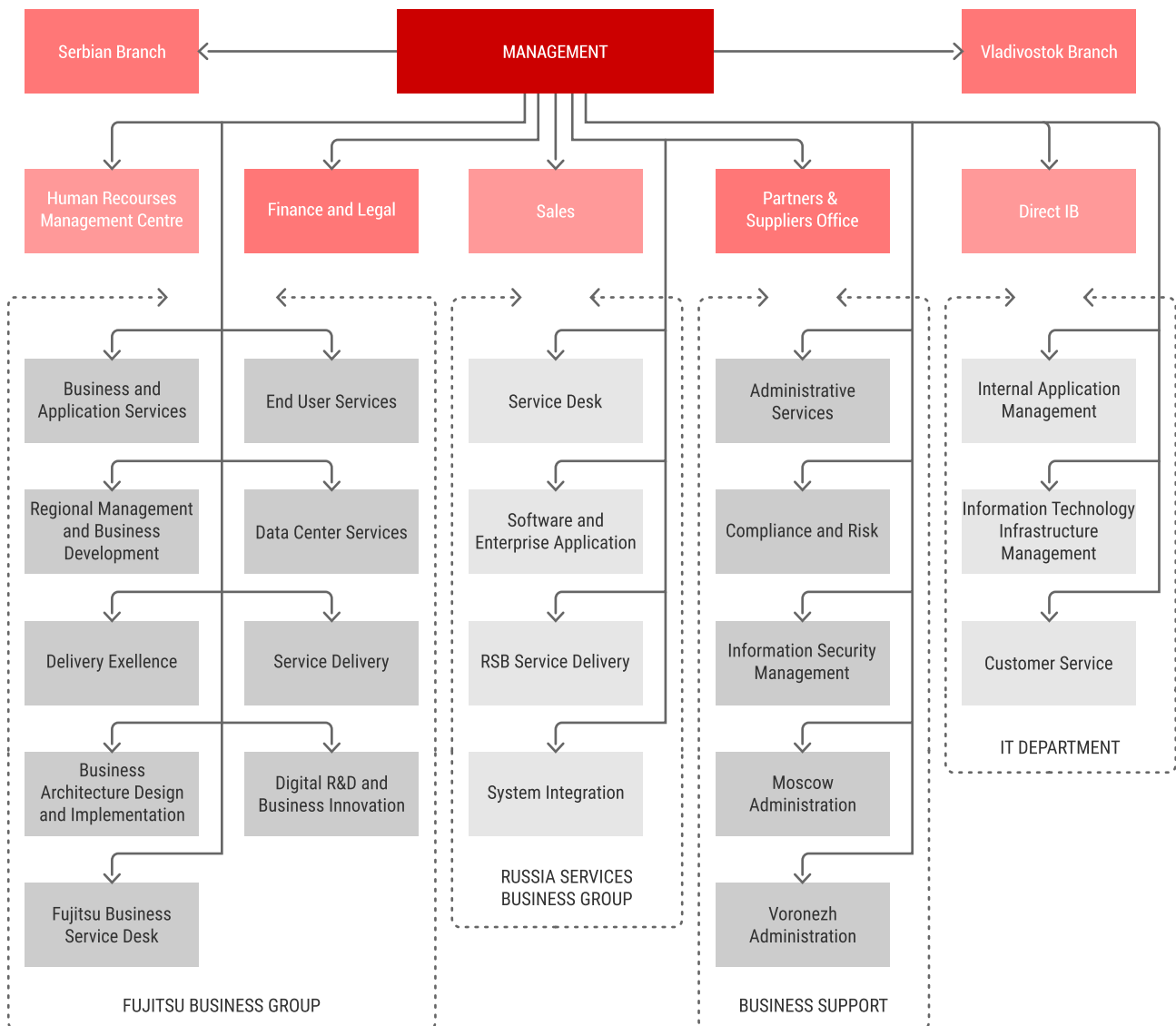
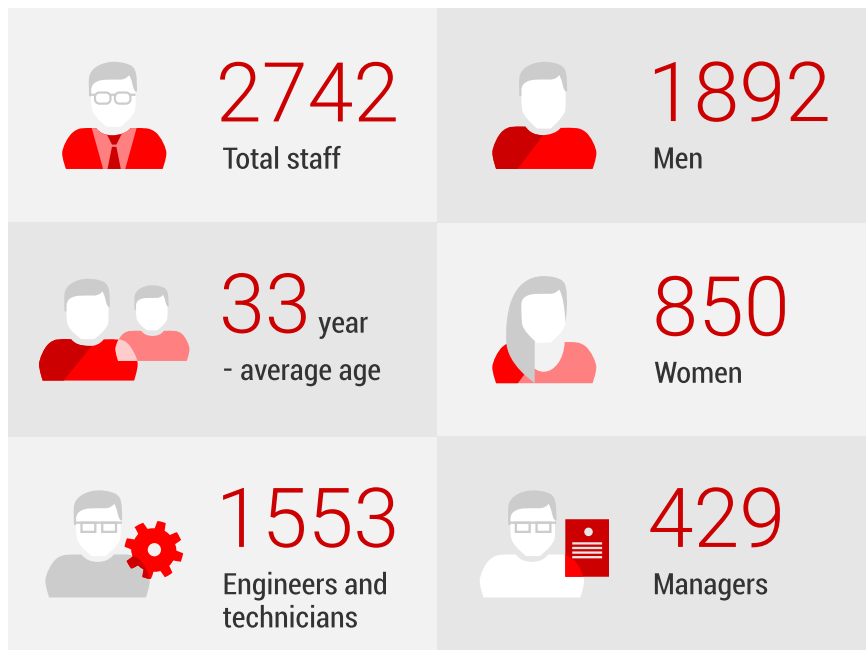
Group	Justification
Customers	Customers are service consumers. Their preferences define the sustainability of the Company's business.
Employees	The Company is a major employer. Employees are the company's main asset; they work with its customers, develop its reputation, and implement the company's strategic and business goals.
Society (local communities)	The Company interacts with society. Its activities are connected to the social and ecological environments in which it is active.
Founders and investors	The Company is interested in maintaining transparent and open relationships with its founders and investors.
State	The Company is a major division of a large tax-payer. The state is an important partner of the company.

The Company's corporate and social responsibility priorities

TABLE 2

Stakeholder group	Corporate and social responsibility priorities
Customers	Quality of products and services. Availability of services.
Employees	Investing into human capital. Supporting the family as a social institution.
Society (local communities)	Charity and sponsorship. Minimization of negative environmental impacts.
Founders and investors	Responsible corporate behavior.
State	Contributing to the economic development of the regions where the company is active.

FACTS ABOUT COMPANY STAFF. CORPORATE STRUCTURE



VALUES

For getting high-effective results, it is equally important to have high professional knowledges and skills and share correct values inside the Company. We share 5 core values in both internal and external relations and interactions:



RULES

01

pooling knowledge and experience which help us in our work and communications

RESULT

02

the outcome of joint efforts which satisfies us and our customers completely

RESPONSIBILITY

03

ability and readiness to be responsible for the result

DEVELOPMENT

04

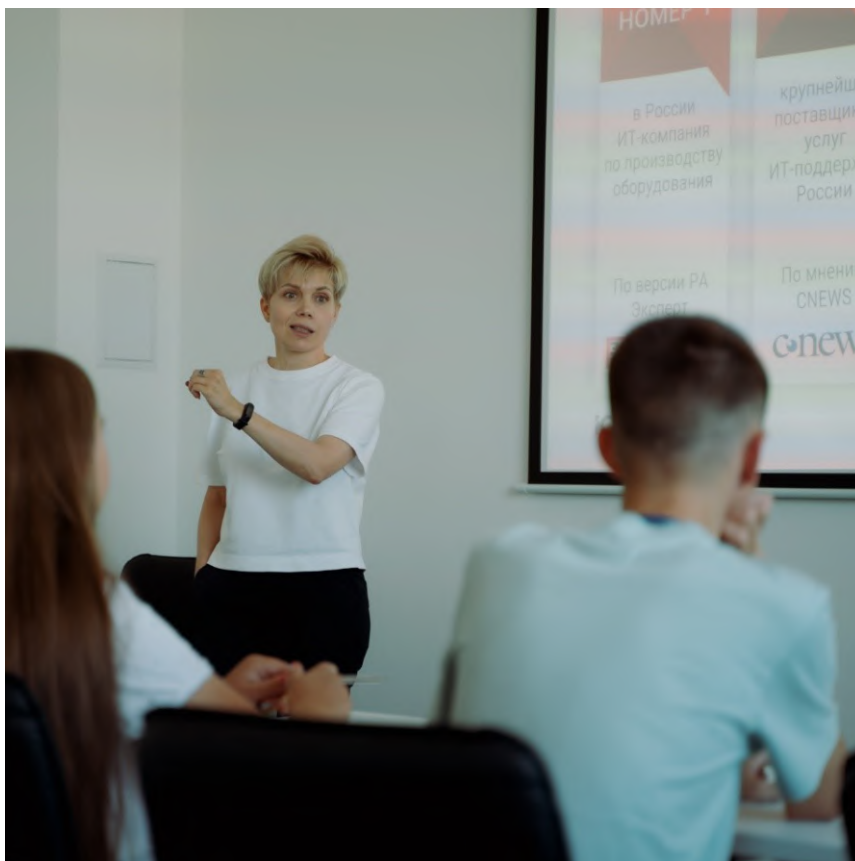
continuous improvement in completing tasks and achieving new goals

TRUST

05

confidence in each other's responsibility and reliability

COMMUNITY INVOLVEMENT AND DEVELOPMENT



DEVELOPING LOCAL COMMUNITIES: WHAT BUSINESSES CAN DO

The role of large companies in the development of local communities can hardly be overestimated. Businesses create new jobs, develop the socio-economic potential of the areas in which they operate and create and support local communities. As a socially responsible company, ICL Services makes its own contribution to this process. This article offers some details about the company's social initiatives.

FREE EDUCATION



Several times a year, ICL Services runs free IT courses: anyone can take a test and, if they pass it, they can learn the basics of specific IT occupations. The best graduates are offered internships and subsequent employment with the company if they're interested. Earlier, these kinds of courses were offered on the premises with students coming to the office to soak up the corporate spirit of the company. After the start of the pandemic, the ICL Services courses went online, which allowed the company to reach far broader audiences. Thus, in 2021, the company organised online courses in project management, the automation of robotic processes and the future of IT engineering that students from all over Russia took part in.

CAREER
ADVICE FROM
AN EARLY AGE

2

This year, Kazan's edutainment centre for children has launched a new ICL Services station. The centre's target audience is children aged 3–12. The centre uses the play-and-learn format to introduce the kids to 80+ occupations in a broad range of fields. The ICL Services station showcases systems for the development of IT services and equipment while the training programme is designed to encourage young developers to take an interest in IT occupations.

INTERACTION
WITH
STUDENTS

3



SUPPORTING
TALENTED
YOUTHS

4

JOB
CREATION

5

ICL Services specialists go around to universities and tell students about opportunities in IT. This is done to make sure the students and graduates know and understand how to get into IT and build a career in it. These kinds of lectures and subsequent Q&A sessions with practising experts help future graduates decide what they want to do next, make an informed choice of a future career track and understand which skills a junior candidate should have for a major IT company to consider hiring them.

CAREER
ADVICE FROM
AN EARLY AGE

2

ICL Services supports talented youths by taking part in the organisation of competitions and hackathons. The company's employees sit on competition and selection panels, assessing IT projects and providing valuable feedback to the competitors. For example, this summer, ICL Services partnered up with a children's IT camp. Our employees joined the expert panel and evaluated the projects of aspiring IT technicians. After three camps, winning teams were selected and then 15 kids from all over Russia completed one-day internships at our company as a reward. Eight of them attended the internships in person, the rest joined in online. In one day, the kids got to learn a great deal about IT software and hardware, about the corporate culture of the company and about its product lines while also participating in joint meetings with the professional participants of Russian and international projects and even pitching their own projects as part of the camp.

INTERACTION
WITH
STUDENTS

3

SUPPORTING
TALENTED
YOUTHS

4



JOB
CREATION

5

JOB
CREATION

5

ICL Services has 2,500+ staff and new jobs are being created constantly. The company is making a tangible contribution to the socio-economic development of the regions in which it operates and regularly gets commendations from the local governments.

CORPORATE
HOUSING

6



FOSTERING
COMMUNITIES
WITH SHARED
INTERESTS

7

The company commissions affordable housing for its staff, effectively building an entire IT town next to its campus. The first residents moved in back in 2010 and today the town already has new terraced houses, a large apartment block, a sports centre as well as land tracts for the construction of private housing.

JOB
CREATION

5

CORPORATE
HOUSING

6

FOSTERING
COMMUNITIES
WITH SHARED
INTERESTS

7

Not only does ICL Services support the development of the local community as a whole, but the company also takes an active part in fostering smaller communities for people with shared interests.

Sports

Corporate running competitions are held for joggers; the company also organises participation for its employees in mass races in Kazan, Moscow and Voronezh. In 2021, the ICL team finished third in a corporate sports competition. Employees are paid compensation for their sports activities and are given discounts for participating in running clubs.

The company also hosts football, volleyball and ice hockey games. And recently, the company has opened a new sports ground on its campus where staff can play football or volleyball or practise yoga, pilates or gymnastics in their free time. Entire clubs are now emerging that invite professional yoga coaches.

Environmental protection and charity

Environmental protection and charity are two of the most popular topics that bring people together at the company. Employees get together to plant trees, share ideas on how to improve the environmental footprint of the company, set up initiative groups and hold various green events.

Hobbies

The company holds mini-board game competitions and movie nights for which the company buys films for movie festivals and arranges for staff to get together and watch them. As a rule, the films for which the company arranges corporate viewings deal with relevant social issues. After the movie, the viewers discuss the issues raised in it.

The high engagement of the employees who support the company's initiatives helps the company have a positive impact on the local communities, take an active part in developing them and create new initiative groups comprised of local activists.

LABOR PRACTICES



STEP BY STEP: THE COMPANY'S PROCESSES THROUGHOUT THE ENTIRE EMPLOYEE JOURNEY

In 2021, [ICLServices](#) turned 15. In this time, the company has grown from a 2-person startup to a team of 3,000 people, becoming one of the largest IT services companies in Russia, working with clients in more than 30 countries. A key factor in this successful growth has been the use of the best labour relations practices throughout the entire employee journey through the company*.

Going digital

A prospective employee gets their first impression of the company by searching for information about it on the Internet. And ICL Services is completely open and transparent online:

The company maintains social media accounts on [vk.com](#) and [Instagram](#) where people taking an interest in the company can find out some basic facts about what life at the company is like. The company's business accounts on [Facebook](#) and [LinkedIn](#) offer information about its business and performance.

* The employee journey is the time between when an employee joins the company and when they leave the company

And if a job seeker wants to get a feel for the expertise of their possible future colleagues, they can always check out the corporate blog on [Habr](#).

The company always stays in touch: all questions get answered quickly regardless of the communication channel through which they were asked. This makes interaction with ICL Services transparent and easy to understand.

Engagement with students

Students often first learn about the company offline at various events the company organises specifically to engage with students (open house days, vacancy fairs, etc.) Prior to the Covid-19 pandemic, representatives of ICL Services attended such events at universities that offer programmes relevant for the company and the plan now is to resume this practice as soon as it's safe again. HR staff tell students about the company and the working conditions while employees of the engineering units tell them what the work is all about, what kind of tasks they're expected to complete and also share personal stories. Even during the pandemic in 2020, the company held 14 events for students in cities ranging from Kazan to Vladivostok, albeit in online mode, for obvious reasons.

Other ways students can engage with the company are through thesis internships on real projects or through paid internships.

In addition, ICL Services offers free schools for graduates and young professionals. Universities offer good training in fundamentals, but university graduates often lack the practical skills needed in the workplace.

ICL Services schools aim to close that gap: in 3–4 weeks, inexperienced graduates get the key skills to start working in IT as RPA experts, system administrators, service desk operators, project managers and in other positions.

The company uses its own equipped classrooms with classes taught by experienced engineers. In 2018–2019, the company offered 13 schools (attended by more than 200 students with over 50% of them eventually getting a job with the company).

In the spring of 2020, the corporate schools had to be suspended for obvious reasons, but the company soon developed an online platform to teach classes remotely and, by the end of the year, corporate schools were already being offered online.

New hire onboarding

The company makes every effort to make new hire onboarding at the company as smooth and painless as possible.

Every new hire gets a mentor/buddy for the first three months who helps them with work-related issues as well as with socialising in the workplace. The buddy is always ready to answer any questions, whether work-related or not. The Buddy programme at ICL Services received the [IT HR Award](#).



The induction plan exists in digital format and makes the onboarding and adaptation process predictable and transparent for the new hire *.

All new hires receive introductory training in which top managers take part. During this introduction, new hires learn about the company, its corporate culture, the professional growth opportunities it offers and they can also ask questions at the end.

After the lockdown went into effect and the company switched to remote work, the onboarding programme was adapted to the new conditions: all the orientation classes and interaction with the buddy mentor now take place online. The new approaches and solutions help new hires feel their buddy's helping hand even when they can't necessarily meet them face to face.

Safety during the pandemic

When the Covid-19 pandemic began, ICL Services made the health and safety of its staff a top priority. Prior to the pandemic, 90% of the company's staff worked in offices. However, in the spring of 2020, the company's IT infrastructure and business processes were repurposed in record time for 100% remote work.

* The company also has an induction plan for new hires. The goal is to help the new hire better integrate into the company.



By April, 85% of the staff were already working remotely. This allowed the company to protect their lives and health and, luckily, during the pandemic, not a single ICL Services employee has died from Covid-19. A special action plan was put in place to ensure health and safety for those staff members who had to keep coming to the office. It included the frequent disinfection of all surfaces in the offices, free access to antiseptics, masks and gloves as well as measures to ensure social distancing in office spaces. In 2021, the company also offered vaccination in offices and an extra day off after the job.

A number of measures were put into place to reduce the anxiety that people were experiencing as a result of the uncertainty and fears caused by the pandemic. For example, the company organised webinars to which it invited doctors. Company managers held video conferences with staff and sent out newsletters to answer any questions people had and tell them about the actions the company was implementing to preserve its business.

All the business processes such as hiring, documentation process, IT support and many others were redesigned to be done remotely. The company's managers learned to run their teams remotely and learned about ways to prevent their team members from burning out. Meanwhile, the HR department held online events for staff during the lockdown aimed at helping people feel part of the team, such as quizzes, joint exercises and even zoom parties.

As a result, when the company surveyed its staff about how they were doing during the pandemic in June 2020, 90% praised the company's response.

Corporate transparency: corporate communications

The company tries to be as transparent as possible for its staff. Thus, in 2020, the company's news portal published more than 900 news items (12% of them had to do with the pandemic, including safety reminders, personal stories about remote work during the lockdown and much more). More than 700 posts were published on social media. Three times a year the company holds meetings with top management, which, in 2020, were held completely online. During these meet-ups, any employee can learn about the company's plans and ask questions (anonymously if desired). Every department holds similar meetings at their level and any staff member can get in touch with managers at any level.

Performance assessment, professional development and career advancement

Just as with communications, the main principle here is transparency. Performance is assessed using an automated system of key performance indicators that rules out any bias. The KPIs depend on the position and department of each staff member – all staff members know and understand their KPIs in advance. All employees complete an annual assessment during which the focus is helping the employee find ways to grow professionally within the company. This allows staff members to have a clear idea about their career trajectory and understand what skills and knowledge they need to acquire to proceed to the next step.

Staff members move up the career ladder through promotions: any employee can apply for any open vacancy within the company for which they will be considered ahead of any candidates from outside the company. This approach allows employees not only to advance up the career ladder but also change their specialisation within the company and move, for example, from system administration to dev-ops or to project management (naturally, on the condition that they meet the requirements for the vacancy). Every year, 18–20% of the company's staff get promoted.

Employees have a lot of opportunities for training: corporate courses (both technical and soft skills), language instruction, the candidate pool programme, subsidised training outside the company and certification paid for by the company. Nine out of ten staff members complete a training course at least once a year.

Benefits and remuneration

In addition to payment and bonuses, company employees have social benefits. These comprise several key categories.

Sports: the company partially compensates staff for gym memberships, offers corporate discounts for fitness club membership, leases sports grounds for team sports, builds sports facilities next to offices, subsidises employee participation in marathons, the Heroes Race and other similar events.

Financial aid is provided for important events such as weddings, the birth of children, partial compensation of mortgage interest and interest-free loans. In addition, the company also pays for the construction of residential housing for staff, which is then provided to employees at special discounted prices.

Health benefits include corporate health insurance, dental care and emergency hospitalisation, as well as medical check-ups, X-rays and vaccination at the offices (when they're not closed during a lockdown).

Recognition programmes are special award ceremonies held at the end of a year or quarter to recognise the efforts of volunteers and activists taking part in social and environmental programmes, and to award specific teams for positive customer feedback.

Recreation: entertainment, social and family events for staff members, vacation bonuses, extra days off for working mothers and employees with disabilities. What's interesting is that, in 2020, the company held 95 events, 10 more than in 2019. The pandemic had an impact on their format, however – while in the past such events were held in person, during the Covid restrictions they were mostly held online.



Rewarding the best employees in 2021

The last milestone in the employee journey

Having overcome the market pessimism that arose from the pandemic, ICL Services found new opportunities in the current situation. The existing clients expanded cooperation, adapting their IT services to remote work; the company also acquired new clients as today, a reliable IT infrastructure is a must for success in business. As a result, the company kept hiring in 2020, expanding its staff by 19%.

Nevertheless, there are always people who choose to leave the company. Offboarding is an important final step in the employee journey. An HR officer interviews employees who are preparing to leave the company to understand the reasons why they have chosen to leave and, if possible, offer alternatives, such as a transfer to a different department. In addition, the information about why people choose to leave the company offers invaluable insights and can serve as a starting point for subsequent major and minor improvements.

The company also tries to keep in touch with its former staff members, inviting them to corporate events, paying them bonuses for recommending new hires and remains always willing to hire them back (former staff members often return to ICL Services).



Outcomes

The growing turnover and size of the company's workforce are evidence of the effectiveness of the course that the company has chosen to pursue. There are other indicators, however, such as public recognition. As such, in 2018, ICL Services won the official title of Russian Organisation with High Social Effectiveness and in 2019 and 2020 it was [ranked](#) among the best employers in Russia by HeadHunter. And while there were a lot of factors that played a role in these outcomes, our finely tuned HR processes have been some of the most vital among them.

HUMAN RIGHTS



During the pandemic, businesses never cease to protect their employees' right to health

The Covid-19 pandemic has posed a significant threat to one of the fundamental human rights: the right to physical and mental health. Protecting this right was the job of not just the WHO and the state but also of every single company capable of taking concrete steps in protecting the health and well-being of its staff.

The UN international covenant on human rights [states](#) that every human being has the right to the maximum possible level of physical and mental health they're capable of achieving. From 2019 to 2021, this fundamental human right was dealt the most severe blow it had seen in decades in the form of the Covid-19 pandemic.

[According to the WHO](#), as of early August 2021, almost 200 million people had contracted Covid-19 and almost 4 million of them had died. WHO Director-General Dr Tedros Adhanom Ghebreyesus [believes](#) that the actual numbers are far more serious as the pandemic has had a major negative impact on the mental health of millions of people. Meanwhile, other WHO representatives note that the world was not ready for the pandemic.

In this situation, the task of protecting the life and health of the public fell to every state, region and business. And this is how the issue was handled by ICL Services, an IT outsourcing company with more than 3,000 employees.

Protecting the company's staff: ICL Services, a case study

Prior to the pandemic, the vast majority of the company's staff worked out of the 5 offices in several Russian cities and in Belgrade, Serbia. Remote work was offered as an extra option to:

staff who didn't live in any of the cities in which the company has offices;

By early 2020, about 10% of the company's staff were working remotely. Everything changed when the novel coronavirus started spreading around the world.

staff who couldn't go to the office for some personal or business-related reasons.

Since ICL Services has foreign customers, the company's management knew from the get-go what the worst-case scenario for the pandemic might be like. As early as February 2020, the company upgraded its plan for ensuring business continuity for a possible global pandemic and had considered several scenarios for how the situation might unfold.

The first step the company took to protect the health of its staff was to impose a quarantine for all employees who had come back from a business trip or vacation: the new rule was introduced in early March 2020. Meanwhile, the company's own IT department was working 24/7 prepping for the worst-case scenario: a total lockdown. Employees of the business departments were also working hard: ICL Services' clients wanted to protect their staff by having them work remotely but a lot of them didn't have the requisite IT infrastructure to do so. ICL Services' engineers were quickly rolling it out.

As soon as mid-May ICL Services staff began transitioning to remote work. By April, more than 85% of the company's staff were working remotely. This allowed the company to protect their lives and health and, luckily, during the pandemic not a single ICL Services employee died from Covid-19.

Dozens of technicians continued to work from the offices; these comprised those who supported customer IT systems or were monitoring customer IT infrastructure in a 24/7 mode. These technicians were taking a calculated risk to ensure the company's customers could carry on their operations so that pharmaceutical companies could carry on making medications, retailers could continue supplying people with groceries and consumer goods, energy companies could carry on supplying energy to households, etc. ICL Services put a special action plan in place to protect these employees. The plan emphasises effectiveness over simplicity, the idea being to ensure social distancing and disinfection. All surfaces such as door handles, elevator buttons, desks and even the handrails in the corporate buses that bring people to the office are disinfected as often as possible. Antiseptic, mask and glove dispensers were set up in the halls. Access to conference rooms and cafeterias were organised in such a way as to automatically ensure social distancing. Meanwhile, employees were being constantly reminded about the rules of safe conduct.

Taking care of mental health

In 2021, the company also began promoting vaccination in addition to everything mentioned above. Employees were able to get both components of the vaccine at the office along with medical consultation. Employees who got a vaccine jab were given a day off afterwards in case they might experience side effects such as fever or fatigue.

The atmosphere of fear and uncertainty brought about by the pandemic took a serious toll on people's mental health. And the company tried to address that by inviting doctors to conduct webinars for employees and answer questions about the new virus. The company's management regularly held video calls with staff, sharing the latest news with them and telling them about the measures the company was taking to protect its staff and preserve its business. In 2020, every tenth item in the corporate newsfeed (and in March through May 2020 every other one) was about Covid, reminding people of the recommended safety measures, sharing stories about personal experiences of working remotely during the lockdown and offering other similar stories.

In June 2020, after the first wave of the pandemic, employees were surveyed about their general health. About 90% of the respondents praised the company's response to the pandemic and noted that the communications they received from the company were quite relevant and useful.

In addition, the support service staff completely redesigned all their internal processes. Recruitment and assessment, documentation processing, IT support and many other processes were redesigned to accommodate remote work. Managers got pointers on remote interaction in order to safeguard their staff against burning out. Meanwhile, the HR department held online events for staff during the lockdown aimed at helping people feel part of the team, such as quizzes, joint exercises and even Zoom parties.



FAIR OPERATING PRACTICES

Safety as an extension of corporate traditions

In pre-Covid times, physical and mental health and safety were always a priority at ICL Services. Employees were always able to work from home if necessary or work on a flexible schedule: the company had the requisite business processes and IT resources in place for that. The corporate medical insurance was sufficiently broad, including dental care and emergency hospitalisation; even before the lockdown, medical check-ups were offered at the offices along with vaccinations against seasonal diseases; in addition, staff also received compensation when they joined a gym and had access to various fitness facilities. These well-established health and safety traditions made it a lot easier for the company to quickly transition to remote work and offer remote support to staff during the lockdown.

ICL Services' anti-corruption policy is key to its corporate success

Statistics confirm that the number of corruption-related violations is growing every year and globalisation only exacerbates this problem. Corruption has become the main stumbling block for the economies of both the western nations and the former USSR (Russia and the CIS). Numbers speak louder than words: in Russia, RUB 46 billion was lost to corruption in 2018 and in 2019 this number was up by RUB 9 billion, only to then set a new record reaching a high of RUB 63 billion in Covid-stricken 2020. <https://www.kommersant.ru/doc/4721363> It is noted that this accounted for 11.4% of the total financial damages caused by all crimes in Russia last year. Unfortunately, few people were surprised: according to Transparency, in terms of the perception of corruption, Russians are in 129th place out of 180, which essentially means that people in this country have come to regard corruption as the new normal. <https://www.transparency.org/en/cpi/2020/index/rus>

The most common crimes of corruption around the world are fraud, appropriation, embezzlement and abuse of power, all of which throw a wrench in the economic growth both at the global and national levels. It should therefore come as no surprise that more and more measures are being introduced every year at the political, economic and corporate levels to combat corruption.

In the case of corporate regulations, the measures included in them must be followed by both rank and file employees and top management alike. It is only on the condition that this principle is followed to the letter that corporate equality of rights and prosperity can be achieved.

This practise is a key principle of business conduct at ICL Services, which is ranked among the top 25 participants in the Russian IT market according to Tadviser. <https://goo.su/7aDS> The company leads by example in demonstrating how implementing an anti-corruption policy can help a business grow in the market.

As a key global IT services company, ICL Services follows the leading business practices as it goes about setting its strategic goals. The company has clients in more than 30 countries around the world and it has adapted to each one of them while being guided exclusively by honesty and transparency. The huge experience in providing IT services on international markets has helped the company develop a special anti-corruption policy as part of its social responsibility agenda. The anti-corruption policy was developed as a policy the precepts of which must be followed by every employee and the main goal of which is combatting corruption every step of the way.

ICL Services' anti-corruption policy comprises standards, principles and procedures for interacting with government organisations, political parties and movements as well as provisions for how the company should engage in charitable activities. It's important that, when the policy was developed, the experience of colleagues from other countries was taken into account, countries where a zero-tolerance of corruption is practised at the corporate level.

The process of abiding by the policy is as follows: a special compliance officer tracks efforts to combat corruption at the internal corporate portal of the company and supports the functioning of the corruption risk management system from within. The compliance officer's job description includes protecting all company employees against threats and risks. In their turn, staff must undergo special anti-corruption training.

Corruption and fraud may cause significant damage to the company's reputation and result in a lot of internal conflicts as well as a deterioration of the corporate climate within the company. Therefore, whenever a contract with a customer or a partner is being entered into, ICL Services will always include a clause about the abidance by the applicable anti-corruption laws in Russia and the countries the customer or partner operates in so as to reduce the risks of corruption and minimize potential losses.

Besides, ICL Services interacts with its partners within the framework of the company's active adherence to its anti-corruption policy. Thus, to create conditions conducive to fair competition in the IT services market, ICL Services conducts an annual analysis of prospective suppliers to verify that such partners display the required level of compliance with the conditions that are vital for productive cooperation.

Thus, by carrying out anti-corruption activities on a number of fronts, both within the company and when working with partners and contractors, ICL Services prevents conflicts of interest and ensures adherence with all Russian and foreign anti-corruption regulations at all times. Setting standard rules and regulations for all staff is key to transparent and fair communication at all levels of cooperation.

ENVIRONMENTAL IMPACTS

ICL Services and the environment

Protecting the environment is no longer a fashionable trend but rather a pressing need without which our planet, or rather, our species, may not be able to cope with climate and environmental disasters. It's good to know that more and more companies are joining environmental protection initiatives and making their contribution to environmental protection efforts. ICL Services and its staff are at the forefront of environmental initiatives and are adopting green practices at work and at home in earnest.



ON THE WAY TO ACHIEVING SUSTAINABLE DEVELOPMENT GOALS

Environmental protection at the global level is carefully coordinated strategic work. On 25 September 2015, the UN General Assembly identified 17 sustainable development goals to transform our planet, 5 of which directly aim to protect the environment.

ICL Services employees actively support the implementation of such goals as responsible production and consumption, combatting climate change, preservation of land ecosystems and others. The company's corporate portal and social media pages feature educational publications about what these goals are and what contribution every employee can make.

Activists are increasingly getting together into initiative groups, sharing success stories and ideas about new environmental initiatives. After the start of the Covid-19 pandemic, most communications went online, but that only added more activists to existing communities.

The company has issued special pass ribbons featuring the symbols of one of the sustainable development goals to raise awareness of sustainable development among staff. An employee can pick which sustainable development goal they like better and choose a ribbon representative of that goal so that then they can tell their colleagues about it when they ask.



ENVIRONMENTAL INITIATIVES AND EVENTS

As a socially responsible company, ICL Services holds environmental events. Employees often volunteer to participate in major environmental events or invite interested colleagues to take part in more environmental activities.

One such initiative was participation in the Cycling to Work campaign. Bicycle parking facilities were set up outside the office and many employees are now opting to use this mode of transport to commute to work.

In addition to the benefits for the environment (or rather the lack of harm from cycling) cycling also has many health benefits for the rider.

It has become a tradition to plant trees on the campus grounds.

20 trees and bushes have been planted this year, including such species as thuja, pears, apple trees and hydrangeas. One positive development is that the initiative is transforming from a corporate campaign into a family activity: employees are increasingly turning up with their kids, teaching them to care for the environment from an early age.

Trips to the arboretum of the Volzhsko-Kamsky State Reserve enable people to learn more about the biodiversity of the region and its fragility. Meanwhile, efforts to collect clothes to donate to social organisations that support the poor help popularise smart consumption.

Major campaigns with participants from all over the world remain relevant as well. As part of Earth Hour, colleagues share recommendations on how to save energy at home and in the office, develop checklists and inform each other of environmental problems.

Since the start of the Covid-19 pandemic, we have revised the way we organise environmental events and have adapted to the online format. For example, an online seminar was organised on how to sort waste during which the attendees learned about the various categories of solid domestic waste, where to take it for recycling and the key principles of waste sorting. Meanwhile, the one-week online environmental marathon on Earth Day, during which the participants tried to save water and electricity and learned how to sort waste and tell those around them about environmental problems, has since evolved into an online community of employees that remains active to this day. They publish advice articles, relevant news and share ideas on how to organise new activities.

GREEN HABITS IN THE OFFICE

Environmental events target specific issues, but the daily routine is here to stay, so we must develop green habits. Some of them have become part of our daily office activities:

- We don't print more than we need. We've only got several printers per floor and that greatly reduces the likelihood that unnecessary documents get printed out.
- We don't use the elevators unless we have to. We climb the stairs to at least the first four floors;
- We try to take the shuttle bus to work rather than drive in our personal cars. We save on petrol, we reduce car emissions, and we fraternise with colleagues from the moment we step onto the shuttle bus, becoming immersed in the corporate culture on our way to work.
- We sort waste using waste sorting containers that have been installed in the canteens and halls;
- We collect spent batteries as they can do great harm to the environment if discarded improperly.



WE INTRODUCE NEW
HIRES TO OUR
ENVIRONMENTAL
FRIENDLY CULTURE
DURING ONBOARDING

When a new hire first joins the company, we try to immerse them in a green environment. Few new hires bring their own dishes on the first day, and to discourage them from using disposable utensils, the new hire's package comes with a ceramic cup and a metal spoon. The welcome package is issued in a paper rather than a plastic bag. We try to use packaging as little as possible. Employees' old cups don't get discarded either, instead, they get reused as pots for office plants.

Thus, even if someone may not have been particularly aware of environmental issues, our corporate culture teaches them green habits and, before long, they start participating in environmental events and revise their attitudes towards environmental protection.

The 7 Pillars of Lean practices: the experience of ICL Services

Every year, more and more information technologies emerge and the number of ways to manage business processes grows accordingly. Services are constantly becoming more and more complex and people can hardly be surprised anymore: drones are delivering groceries while car-sharing and autonomous vehicles are becoming increasingly common sights on the streets of major cities. In reality, though, the more companies offer, the more customers demand: more and more customers are talking about the need to modernise and innovate services that have already been provided.

It's vital that IT service companies learn the art of adapting to the changing reality by getting feedback from customers and providing top-notch services while keeping track of economic performance. In order to boost flexibility and efficiency, companies are constantly on the lookout for new management methodologies, digital solutions and frameworks for their business process.

One such methodology is lean manufacturing, which focuses on goal setting and the creation of value for the customer while ensuring continuous improvement of the quality of service and minimisation of risks and waste. As an IT outsourcing company, ICL Services has adopted the following Lean principles for the provision of a full range of IT services to its clients:

01

Standardisation, documentation of the most optimal method with a view to maintaining performance at least at the current level.

02

Employee engagement in the company's efforts to continuously optimise processes and the creation of an environment of trust and transparency. Management is deeply engaged in comprehensive improvement efforts while goals are set within each team in accordance with customer requirements.

03

Experience-based learning within a team through case studies and the sharing of practical experience. Recognition of personal success and an emphasis on learning from errors.

04

Recognition of the customer requirements and selecting team performance indicators that are aligned with them. Efforts should be made to promote among employees an understanding of the value they create for the customer.

05

Visualisation with an emphasis on the aspects of the service that are key to the customer. Visual presentation of the outcomes of teamwork and timely identification of deviations from the standard.

06

Eliminating the waste of time and resources. Increasing customer satisfaction by eliminating superfluous steps in business processes and cutting costs.

07

Re-engineering business processes. Focus on the performance indicators that the team is responsible for. Emphasis on the link between what customers want and the outcomes from what the team does.

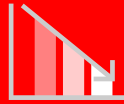
It is fairly obvious that using these principles in day-to-day work allows the company to strengthen its culture of continuous improvement. Let's consider three scenarios of how Lean practices can be applied and use real-life cases to describe what steps would be taken and in what kind of outcomes the process would result.

There are some constants in all the scenarios. These include:

- the company has first- or second-line tech support in place;
- the company has an ITSM system that can export support ticket statistics.

It's important to stress that the examples we look at here come from the IT services domain, however, the most important lessons offered in this article can be used in any kind of business.

SCENARIO № 1



Reducing the number of routine operations

Goal:

Support requests received by the second-line tech support team result in an increase in the routine operations and tasks tackled by technicians. Support technicians end up spending a significant amount of time tackling these tasks so it's important that these processes should be optimised.

How do we go about achieving this goal: use visualisation at work, get every team member engaged with the process and measure the results that are achieved.

Steps:

- 1 Prepare statistics for support tickets, categorise and sort data for the number of support requests in each category.
- 2 Get the team to optimise how they tackle the categories for which the largest number of support requests are received.
- 3 Write down any ideas and conclusions that emerged during the brainstorming session, publish them somewhere the entire team can access and track their subsequent implementation.

Example:

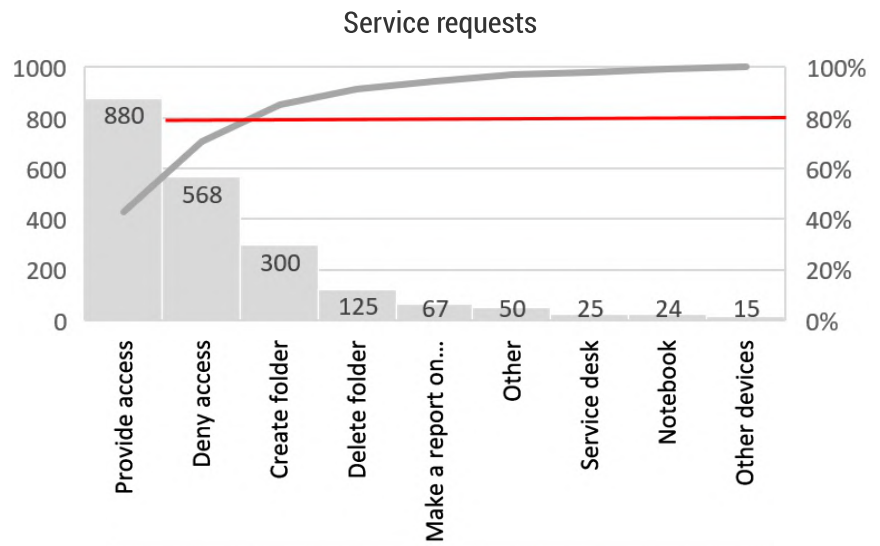
Request ID	Owned By	Category	Owned By Team	Priority	Status	Team Assignment Time
IN378736	*****	Create folder	AD Support	4	Closed	06.12.2019 10:13
IN392282	*****	Delete folder	AD Support	4	Closed	09.12.2019 11:31
IN403831	*****	Provide access	AD Support	5	Closed	26.12.2019 7:35
IN416557	*****	Remove access	AD Support	4	Reopened	19.12.2019 9:24
IN418513	*****	Laptop	AD Support	4	Closed	31.12.2019 6:59
IN418528	*****	Service desk	AD Support	4	Closed	31.12.2019 6:58
IN418676	*****	Other	AD Support	4	Closed	12.12.2019 11:26
IN418986	*****	Permission report	AD Support	4	Closed	20.12.2019 13:32
IN419044	*****	Other peripheral	AD Support	5	Closed	10.12.2019 14:24
IN419858	*****	Create folder	AD Support	4	Closed	04.12.2019 8:53
IN420125	*****	Delete folder	AD Support	4	Closed	05.12.2019 19:27
IN420373	*****	Provide access	AD Support	4	Closed	02.12.2019 1:02
IN420493	*****	Remove access	AD Support	5	Closed	12.12.2019 13:03
IN420512	*****	Laptop	AD Support	4	Closed	09.12.2019 9:35
IN420518	*****	Service desk	AD Support	4	Closed	09.12.2019 9:35
IN420522	*****	Other	AD Support	4	Rejected	02.12.2019 11:14
IN420544	*****	Permission report	AD Support	4	Closed	02.12.2019 3:49
IN420876	*****	Other peripheral	AD Support	4	Rejected	02.12.2019 11:14
IN421217	*****	Create folder	AD Support	3	Closed	09.12.2019 9:51
IN421430	*****	Delete folder	AD Support	5	Closed	01.12.2019 21:18
IN421438	*****	Provide access	AD Support	5	Closed	02.12.2019 1:22
IN421590	*****	Remove access	AD Support	4	Closed	04.12.2019 9:49
IN421664	*****	Laptop	AD Support	4	Closed	12.12.2019 18:31
IN421708	*****	Service desk	AD Support	4	Closed	09.12.2019 9:38
IN421709	*****	Other	AD Support	4	Closed	09.12.2019 9:39
IN4218101	*****	Permission report	AD Support	4	Closed	22.12.2019 3:08
IN4222947	*****	Other peripheral	AD Support	5	Closed	01.12.2019 15:31

Category	Quantity
Create a folder	300
Delete a folder	125
Provide access	880
Deny access	568
Make out a report on current user rights	67
Laptop	24
Other devices	15
Service Desk	25
Other	50

1. Export data from ITSM into a spreadsheet

2. Categorize the requests

Category	Quantity
Provide access	880
Deny access	568
Create a folder	300
Delete a folder	125
Make out a report on current user rights	67
Other	50
Service Desk	25
Laptop	24
Other devices	15



3. Sort the categories by number of requests. The grant access category is in the first place. Conclude that this is the category in which we need to start optimising.

4. Using an identical table in the form of a Pareto chart, we can easily identify the 20% of request categories that produce 80% of the work. Focus on the Grant Access and Block Access categories.

Outcomes:

- we get optimisation priorities;
- we find new areas for optimisation;
- we know the requests that can be passed on to the first line support team. If this step is implemented, the team will get rid of a portion of routine operations and free up time for other tasks;
- we expedite the business process by using visualisation in the form of charts and tables.

The implemented case: optimisation of incoming requests

While analysing incoming requests, our technicians identified that the leading category was Other. The team analysed the content of the requests in detail to try and find out why so many support requests ended up in this category. To optimise time expenditure, instructions were developed for the first line support engineers on how to handle support tickets without getting second-line support involved. The Other category was reduced by 85%, thereby significantly reducing the work time technicians spend on handling and closing support tickets.

SCENARIO №2



Improving the quality of service

Goal:

The bulk of support requests on both the first and second lines are comprised of incidents. The goal is to establish their causes and set up a process for eliminating them.

How do we go about achieving this goal: learn from experience and measure the results.

Steps:

- 1 Gather incident statistics and determine the most popular category.
- 2 Identify what actions should be taken to eliminate the category as a whole or to reduce the number of incidents.
- 3 If no solution can be found to reduce the number of incidents, hold a problem resolution session to discuss the situation.
https://habr.com/ru/company/icl_services/blog/444200/
- 4 Write down the ideas and conclusions and break them down into specific tasks, deciding who's going to be doing what. Track the progress of every task and measure the number of incidents. An effective solution is a key to reducing incidents.

Outcomes:

- we free up time to deal with other issues by reducing the number of incidents;
- we prevent potential incidents by identifying their causes, and that generates positive user feedback;
- we get more technicians engaged in the efforts to optimise the support-ticket-handling process.

The implemented case: reduced amount of routine work

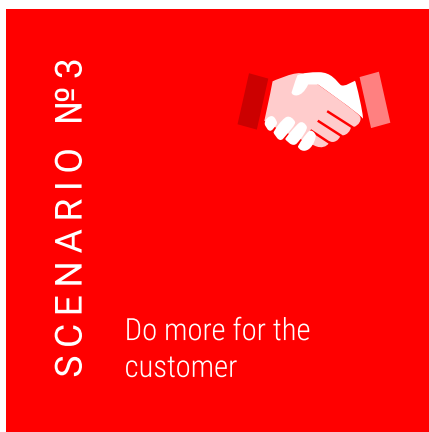
The second-line support team analysed the stack of monitoring incidents. The most popular ones include:

- High CPU load – **600** incidents per month.
- High memory usage – **350** incidents per month,
- Low disk space – **50** incidents per month.



It takes about 5 minutes on average to process one support ticket in each of the categories presented. The team then started looking for the root causes of the incidents: a script was developed that eventually tracked down the process that was overloading the CPU and hogging memory during off-hours. In the end, for 3 months, the number of incidents in the categories presented was halved and the team freed up 40 work hours per month.

	Number of incidents (incidents/month)	Incident resolution time (minutes)	Total incident management time (person-hours)
Before	1,000	5	83.3
After	500	5	41.6
		Saving	41.6



Goal:

Resolving incidents and support tickets take a lot of time. The process needs optimisation.

How do we go about achieving this goal: eliminate waste, standardise, understand the customer's needs.

Steps:

- 1 Gather statistics.
- 2 Standards should be developed to describe the most effective way to handle support tickets.
- 3 Where the number of support tickets cannot be reduced, the focus should be shifted to optimising how they are processed. One option here is to analyse how each support ticket gets processed. For example, the process of granting access to work folders can be analysed to identify possible waste and find answers to the questions that get asked most often.

Outcomes:

- we identify wasteful steps and reduce the time we spend completing them;
- we optimise teamwork by standardising the support ticket handling process;
- we find ways to scale up operations by moving ticket handling from one support line to another or by making use of online services to process support tickets;
- we identify growth areas in the support ticket handling process for support tickets that are not included in the list of services the company offers at the moment. For example, these can include support tickets grouped in a separate category that could be included in the scope of delivery under the contract.

The implemented case: new opportunities to provide services.

The number of support requests submitted over the phone and registered by the first line tech support team turned out to be less than the number of phone calls fielded. Apparently, not all support requests are covered by the service. Analysis of all the phone calls received allowed us to identify popular new categories of requests that were not included in the original contract in effect. We discussed the issue with the customer regarding the inclusion of the new categories in the scope of the service.

Thus, based on the current terms and conditions of the contract, only registered requests were billed and the project's margin increased by 8%. In turn, the users received an optimised service: their support requests were now handled along with all the incoming messages.

Conclusion:

The scenarios we've identified demonstrate how lean practices can significantly improve and standardise the way that tech support tickets are handled, optimise the service and its performance indicators (time, financial etc.), and identify the potential for more services to be provided under an existing project.

A large range of tools can be used in these scenarios such as Excel, Power BI dashboards as well as various software systems for machine learning-powered analysis of quantitative indicators, etc. At the same time, it's important to bear in mind the vital principles outlined in this article that allow the effect to be maximised:

- 1** Visualisation of teamwork: correctly designed charts help people better understand the current performance of the team and identify the ideal areas for optimisation.
- 2** Understanding customer needs: identifying the factors that create value for the customer and those that expend excess resources.
- 3** Engagement of all team members to track the process and its outcomes, learn lessons and standardise processes.

REAL WORLD AI: WAREHOUSE RECOGNITION SYSTEM

One of the Projects I recently had the opportunity to work on as a Team Lead of Rapid AI Solutions Prototyping Group was implementing a Warehouse System for Recognition of Stored Factory Parts. The Problem is easy to understand - Warehouse Workers (especially newbies) often can't recognize new incoming items and aren't able to find their storage locations fast enough. When you have tens of thousands different item types the task becomes nontrivial and turns into flipping through catalogs and exploring warehouse rows in hope to come across the item you are interested in, which might take up to half an hour and is a clear waste of time.

Solution that immediately comes to mind is building a system that's driven by Computer Vision and tells you the name of the item of interest and shows the location in a warehouse where similar items are stored.

Direct Solution is to take tens of photos of each part (out of about 10 thousand) and use those to train a parts classifier. And then as new parts will continue being added into the catalog take more photos and retrain the system. Solution would work, but... creation of such a training dataset would take several months of labor and thereafter will need permanent control over the growing dataset. But Customers usually want to get results faster, cheaper and without necessity to regularly pay for expensive manual retraining of the system.

Is there anything we can do about it?

We were lucky and the answer in our case was yes. A nuance that allowed us to significantly reduce the cost and duration of the project is that in our case we deal with a factory warehouse, and stored parts are all flat, although they are made from steel sheets of different thicknesses. And more importantly, there are CAD models for all the parts.



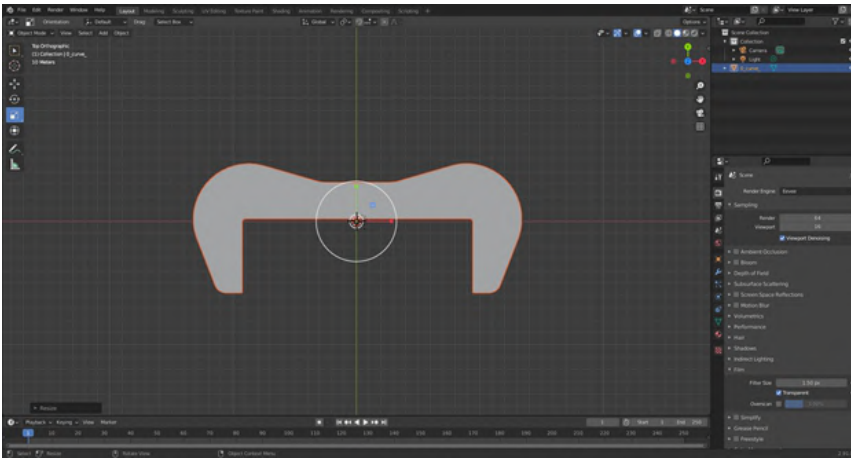


Fig. 1. An example of a CAD model in Blender [1]

Accordingly, the optimal solution we came up with is to train the system on synthetic images generated from CAD models, but then use it on real photos. Such an approach eliminates the necessity to collect a huge dataset from photographs of real objects. In our case, this becomes possible, given that all the parts are flat.

To make this happen we use a pipeline of 2 models:

- 1 Segmentation Model, which will give a mask for an input photo of an object (the mask of a flat object uniquely defines a part; examples of masks can be found below in Fig. 5);
- 2 The Classification Model, which is looking at the mask of the object that is fed as the input and recognizes the part.

The Classification Model is the classic ResNet-50 [2], pre-trained on ImageNet [3]. The dataset is created in a rather straightforward way. Using the available CAD models and scripts for Blender [1], we render our parts with a variety of offsets from the center of the scene and at different Camera angles relative to the vertical (this is necessary, because despite the parts are flat, Camera can shoot them under different angles; we allowed a deviation of up to 30 degrees from the vertical). The number of classes is equal to the number of parts in the catalog. When new parts are being added to the catalog (which is when new CAD models are detected on the special network share), the model is being automatically re-trained, which takes several hours and takes place on the same on-premise GPU that in parallel is being used for inference.

The Segmentation Model is a bit more complicated. It is necessary to train the model to segment the parts using synthetic data so that thereafter segmentation will accurately work on real photographs at different illumination levels, being tolerant to changes in the material texture of the parts, to the changes in the background, to the shadows.

The Segmentation Model comprises a classic U-Net [4] (a binary segmenter, where for each pixel of the image we determine whether it belongs to a part or not, trained with Dice Loss [5]) based on the same ResNet-50 [2], pre-trained on ImageNet [3]. While nontrivial, such a synthetic dataset for training to segment images was built by simulating the variety of possible appearances of parts that we compose from a random combination of:

- parts masks (strictly speaking, any masks will work, not only the masks of factory parts)

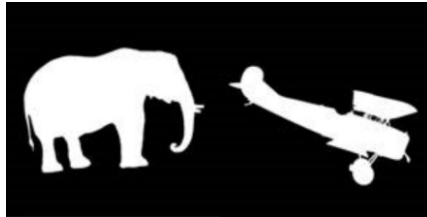


Fig. 2. Examples of masks for generating synthetic images of parts

- background textures (from any free Clip Art collections)

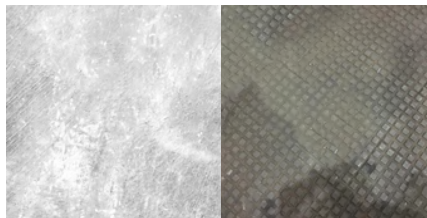


Fig. 3. Examples of background textures for generating synthetic images of parts

- part material textures (from any free Clip Art collections)

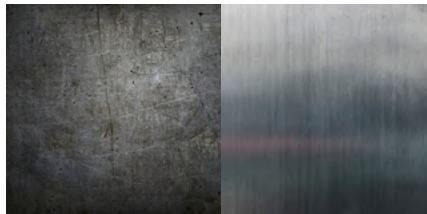


Fig. 4. Examples of material textures for generating synthetic images of parts

- how glares on edges might look like (Fig. 6)
- how part edges might cast shadows onto a background (Fig. 6)
- how shadows might be casted onto the whole scene (Fig. 6)

The topic is quite complex, but a decent computer graphics specialist will easily solve the problem of generating synthetic examples for segmentation in a reasonable time. I'm not going to present the formulas here and will only give the examples of masks (Fig. 5), which are relatively easy to obtain from CAD models, and examples of procedurally generated pseudo-photographs from such masks (Fig. 6).

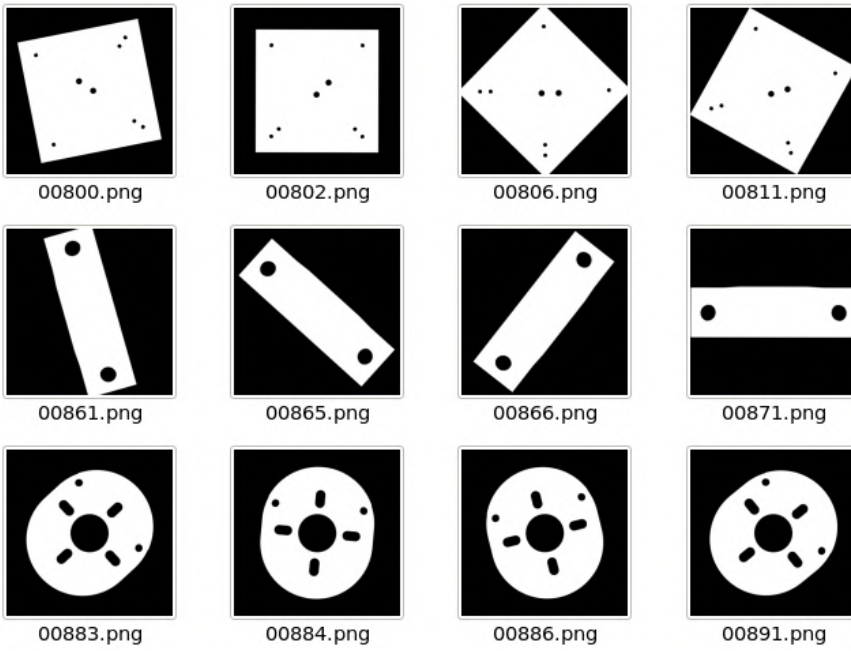


Fig. 5. Examples of part masks for generating synthetic images of parts

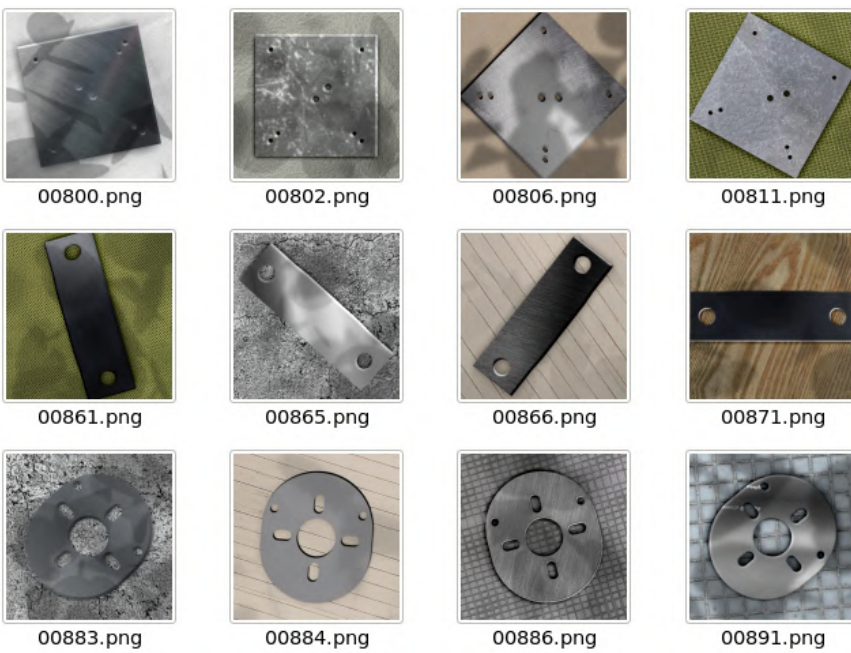


Fig. 6. Examples of synthetic images of parts generated from masks

Let's add some augmentation [6]. Now examples for training the segmenter look like this.

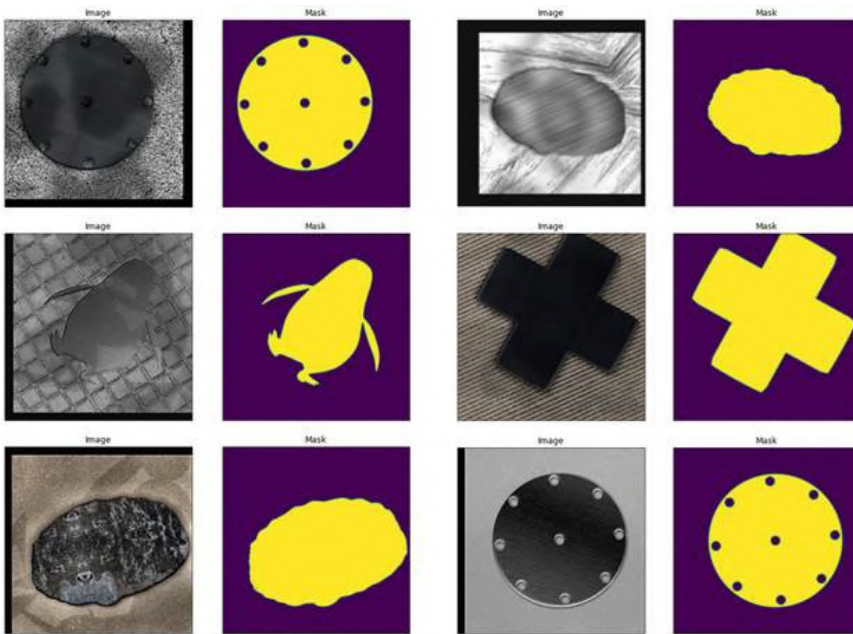


Fig. 7. Augmented examples for training the Segmentation Model

After train data is ready the rest is straightforward. We train the Segmentation Model to segment images and train the Classifier Model to classify the part masks. And then we check the classification accuracy on a test set (in our case, we had 177 real parts photos).

And we get: Correct predictions: 100.00% (177 out of 177).

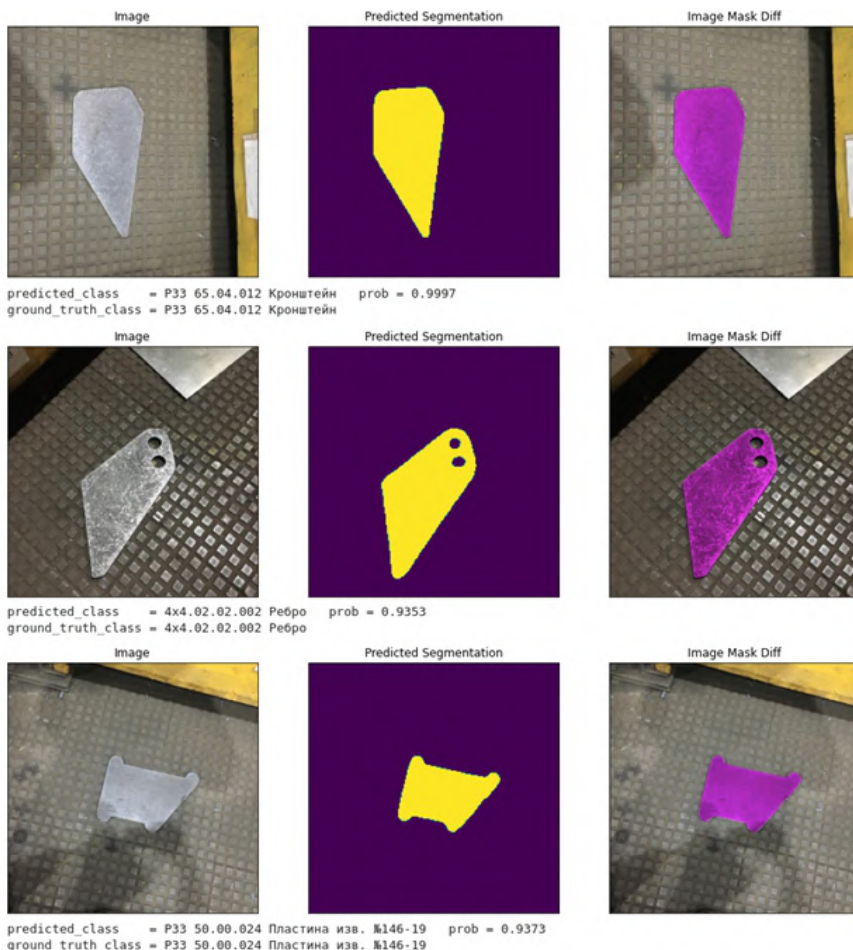


Fig. 8. Results of classification on several examples of the test set

Well, here we were just lucky, and the entire test set was recognized correctly 100%, although the results may differ slightly from run to run. Randomness comes from the Test Time Augmentation (TTA) [7] technique that we use for both segmentation and classification, since

TTA can reduce the error by about 10%. Therefore, the classification process is non-deterministic and depends on the random seed of TTA. If we look at the average accuracy over 10 runs, then it turns out to be about 99% (we will get more objective figures later, when we'll get access to a large number of real images and compose a full-scale test set).

It remains to wrap it all up in a simple user interface, which looked like this in the first version.

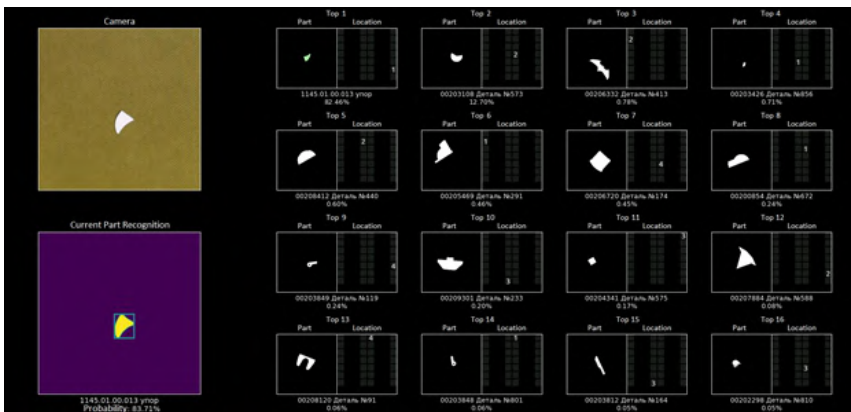


Fig. 9. User interface of the first version of the system

Here we see the image from the Camera (in this case, the test bench Camera), the result of processing the part by the Segmentation Model and top 16 model predictions (if the model occasionally makes a mistake in the top 1 prediction, then with a probability greater than 99.9% correct part will be found in the top 16 list). For the predicted part, we see its name and a position on the warehouse map, with additional indication of the shelf number.

Thus, the warehouse workers now always have means to quickly understand what kind of part they came across and where such parts are stored. To do this, they just need to place the part in the field of view of the Video Camera at the entrance to the warehouse.

References

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TOC-AUTOMATION – A NEW TOOL FOR IT SUPPORT AT THE HIGHEST LEVEL

Automating the routine tasks of supporting IT infrastructure is an important area that allows IT companies to offer businesses better quality of service. Automation systems take over a number of routine tasks and free up the time and resources of human technicians so they can attend to more important issues.

One good example of such an automation tool is the TOC-automation system that ICL Services uses to support the IT infrastructure of its customers. We talked to the head of the Enterprise Management Group, Vladislav Mukhametzyanov, about how the system was developed and how it is used now.



What is a TOC and what sort of work do they do at the company?

A TOC is a technician on call. Essentially, it's a highly qualified engineer who supports a customer's IT infrastructure outside the standard business hours, in the evenings, during holidays or at weekends. A technician on call doesn't have to come into the office but they have to be on call at their business phone number at all times. If there is a problem with the IT infrastructure of a customer, the technician on call gets a call from the on-call engineer of the monitoring service, which operates in 24/7 mode. After the technician on call gets the call, they connect to the customer's system remotely and fix the issue.

What's the main idea behind the TOC automation project?

TOC-automation is a system that is directly integrated into the customer's IT service management and monitoring systems and, whenever there is an incident, the system automatically notifies the technician on call. The kind of incidents we're talking about here are IT infrastructure issues that can affect the customer's business processes and cause serious damage to their business.

Essentially, a TOC automation system allows us to eliminate the need for a monitoring service operator to manually call the technician on call because the notification will be automatically sent by the TOC-automation system. The system is programmed in such a way that if the call to the technician on call fails to go through, it automatically escalates it to the project manager. All relevant information about the incident is simultaneously sent to the technician on call by text.

How did the project come about and how much time was spent on it?

The history of TOC-automation began with the establishment of an initiative research group. The group started its work in July 2019 and had completed it by September of that year as it had achieved all its goals.

Over a period of two months, the team studied and analysed foreign notification solutions. The SaaS solutions currently available in the market were scrutinised, such as PagerDuty and Voximplant. These solutions have very good tools for notifying staff of IT incidents but they are extremely expensive. The group decided to develop an in-house system and soon had a prototype up and running. Then a proof-of-concept system was implemented for one of the accounts, which demonstrated the viability of the solution*.

Once the project management approved the project and it was confirmed that a minimum viable product was ready for deployment, the business case for the project was successfully pitched for deployment on 4 accounts**.

The results of the deployment of the minimum viable product once again demonstrated that the solutions selected were correct and that there was a demand for this kind of system and it could potentially save the company a lot of money.

What functions does the TOC-automation system offer and how have they changed over time?

Since 2019, a lot of new functions have been added to the system. Today, in addition to calling and texting technicians on call, the TOC automation system can also email them and send messages to a pre-selected Telegram channel. Furthermore, the security policy has been improved, a reporting module has been developed and, in order to abide by the Service Level Agreement, functionality has been added to notify the technician on call only after the expiration of a pre-set waiting period***.

A special algorithm has also been developed to prevent technicians on call and management from getting spammed with messages in the event that a customer's IT infrastructure experiences a series of recurring incidents of the same type.

What are the competitive advantages of the TOC-automation system?

One tangible advantage of TOC-automation lies in how flexible and customisable the system is so that it can be easily adapted to the needs of specific customers. Thus, the original solution was used to develop an automatic notification system for field engineers for the 1C Snaryad system (by phone and text). In the context of the deployment of specific solutions, one important benefit is the close integration of TOC-Automation with the popular 1C platform, allowing the system to be set up to make use of the on-duty schedules of the technicians on-call, the service time of engineering teams and make calls, if need be, to personal phone numbers of the engineers retrieved from their employee records in 1C.



* Proof of Concept

** Minimum Viable Product

*** Service Level Agreement

In which projects has the system already been used and what results have been achieved?

We've already deployed TOC-automation for 17 customers and for 2 in-house projects at ICL Services. The main effect of the deployment of TOC-automation has been in improved efficiency of our 24/7 monitoring engineers and dispatchers as a result of the automation of phone notifications. Current estimates suggest that, at the moment, TOC-automation is saving us 6.81 full-time equivalents, allowing us to significantly boost the efficiency of our monitoring stations. Prior to the deployment of the system, every monitoring station was handling 4 projects. Now, each is handling 6–7 projects. In addition, the system drastically reduces human error and thereby improves the quality of service.

The automatic smart assistant developed by ICL Services to optimise the provision of IT services has undergone a number of innovative changes in 2021. Making use of modern machine learning technologies, the automatic smart assistant offers a broad range of functions today, but as time and use in practical applications have demonstrated, there is always room for improvement.

Done before

The ASA is a multifunctional solution that today can analyze the text of support requests, classify requests and assign them to the teams that are best equipped to handle them, route requests to the most competent engineer available, notify engineers of events in the ITSM system, new assignments and other events, monitor the quality of service and adherence to the SLA, as well as suggest solutions based on the history of how similar requests have been handled in the past.

How has the ASA evolved over the past year?

In the past year, we've continued improving the functions of the smart assistant in accordance with the approach the company had previously developed for it. Just like before, we get proposals from end users – our staff who provide services to customers. In 2021, this has allowed us to add new functionality to the assistant in the following areas:

- Automatic resolution of support requests (auto-resolve). The auto-resolve tool was designed and tested in late 2020. The platform is based on the following principles: security, efficiency and versatility of the solution at a minimal cost of deployment and subsequent support. Therefore, it was decided to implement the platform as a native Windows application. The platform has been undergoing trials since early 2021 in one of the service projects (O365 support, 2nd and 3rd lines of support): in this time, 350 support requests have been resolved automatically (the average resolution time per request is under two hours). Next, we plan to increase the number of projects that use ART as well as Azure DevOps for the development, testing and delivery of automated services and the ART platform to automate the delivery of software through MS Intune.
- -Assessing the complexity of an incident. While in the past, when working with ITSM systems, we tracked the number of requests resolved by an engineer, now, the goal is to make a qualitative assessment of every support ticket resolved. There are several criteria used for that. For example, how unique the ticket was, how many comments were made about the proposed solution and the number of teams that took part in resolving it.

- In addition, we also analyze how the ticket was received: if it was submitted by a user, we assign it one weight, if the ticket was submitted by the monitoring system, different weight is assigned to it. Such analytical data are used to determine a complexity score for the ticket, which can be high, medium or low. This allows us to assess the performance of support engineers not only by looking at how many tickets they resolved in a given period but also by assessing the complexity of the tickets they dealt with. For example, John resolved 10 tickets and Peter only resolved 5. At first glance, it might appear that John's performance is twice as high as that of Peter's. But if we look at the complexity of the tickets they were dealing with, it may well turn out that all the 10 tickets that John resolved were low complexity tickets and our model assigned them a total score of 50, while Peter was dealing with high complexity tickets and our model assigned them a total score of 100. We're already using this functionality on one project but the plan is to start testing it on other projects as well.
- Automatic demand and trend analysis on unstructured data. For example, we've got several teams that don't have classifiers in the ITSM system and so users just type in some text comments. Analyzing such text comments is a very labour-intensive task: when there are a lot of events like that, it's very difficult to assess their parameters, such as degree of recurrence, etc. So, a solution powered by machine learning has been developed which makes use of unsupervised learning and natural language processing to analyze such unstructured data. The model analyzes the text of customer requests and groups them into clusters: the larger a cluster is, the more relevant and popular the problem is judged to be, and that means we need to focus on it first.

- Additional technician notification scripts (the notification bot). To build these, we considered what other events could be monitored automatically. We decided to use an escalation algorithm: if some event happened and there was no response from the assigned technician within the allotted time, the notification gets passed on to their team leader. A bot is a unit that monitors ITSM processes based on such parameters as timeframes, tasks, assignees and event triggers.

With the expanded functionality and all the innovations implemented so far, the automated smart assistant allows us to save over 5,200 work hours for our staff, coordinate more than 170,000 support requests and incidents per year and making more than 130 recommendations on how to resolve support tickets every day.



Next steps

The company plans to link up the smart assistant with the corporate knowledge base of ICL Services. The goal is not only to suggest a solution based on how identical incidents have been resolved before but also to direct the support technician to a relevant article in the knowledge base that might help them resolve the ticket better and in less time.

Furthermore, we plan to improve the ITSM interaction subsystem to manage it via the chatbot and implement automated incident resolution using machine learning. The new system will decide whether a ticket should be routed to the auto-resolve system or a human technician and classify tickets to pick an auto-resolve process that a specific incident can be routed to and the solution that should be launched for it.

ORGANIZATIONAL GOVERNANCE

It's the second year that we've been working remotely: how are we doing on information security?

One of the most important factors in ensuring corporate information security is the level of digital literacy among the staff. The importance of this factor became especially salient in 2020. As the Covid pandemic spread, most companies had to transition to remote working within a very short timeframe and today, some employees have been working remotely or in a hybrid mode for two years. Because of this, a number of information security attacks shifted their focus towards such staff members. And while ordinary mistakes and negligence had often led to information security breaches in the past, there is a lot more at stake now, so proactive steps are called for. Consequently, improving the information security literacy of staff is fast becoming a priority for ensuring data security. Furthermore, staff who are well-versed in information security are bound to be more likely to identify risks and incidents, optimise processes both within the company and on the customer's end, which, in turn, will help pre-empt information security threats.

ICL Services has customers both in Russia and abroad and we pay a great deal of attention to boosting digital hygiene among our staff. Since March 2020, more than 80% of our staff have been working remotely or in a hybrid format, so it is especially important that they should know and understand general and specific requirements for the processing, storage and transmission of information as well as the specific information security requirements of some of our customers and partners.

Immediately after being hired, all new employees are introduced to the corporate requirements for information security. All new hires who choose to work remotely, as well as existing staff members who decide to start working remotely, undergo an information security risks assessment during which their remote workstation is analysed for information security risks and an action plan is developed for what the employee should do in unforeseen circumstances.

All ICL Services staff, regardless of their position, experience or the format in which they work, must abide by the following rules:



01

notify the company of any phishing messages or information security incidents as quickly as possible;

02

ensure information security in accordance with applicable laws and regulations;

03

get access to confidential information and corporate equipment strictly on a need-to-know/need-to-use basis;

04

notify customers of any business continuity incidents in a timely manner;

05

in the event of the theft/loss of hardware that contains confidential information, an employee must immediately contact the appropriate services;

06

in order to prevent any leak of information stored on desktops or on physical media sitting on open surfaces in the office or elsewhere, all employees are to follow an empty desk/empty screen policy;

07

irrevocably destroy any confidential documents if such documents need to be disposed of;

09

refrain from repairing corporate equipment on their own.

ICL Services has introduced a policy of holding corporate events during which it is explained to every team member that it is vital and necessary to abide by the information security requirements designed to ensure the confidentiality, integrity and accessibility of data. Such information security seminars look at specific information security incidents that happened at the company or highly publicised information security breaches that happened somewhere else (for example the script for Star Wars Episode 9 that was put up for sale on eBay or the conflict between Rambler and the developer of Nginx).

Security induction is a corporate information security procedure that all new hires must complete as part of their probationary period. As part of the security induction, new hires independently identify the link between specific cases and information security rules and then go on to offer their own solutions. This allows them to understand the requirements of the company's information security policies in practice and see how they apply to their own duties. During the security induction, a new hire answers questions such as what the correct way to destroy confidential information is, why is it important to transmit information over secure channels, how information about partners can damage stakeholders if it gets disclosed to third parties or others – allowing them to identify the relevant cause and [causal](#) relationships on their own. At the end of the security induction, all the participants are sent an email with links to corporate resources with useful information and a request for feedback to help update and improve the contents of the procedure to improve its effectiveness in the future.

After the company transitioned to remote work en masse, some changes were made to the security induction procedure. First, a section has been added on why it is vital that information security rules be followed while working remotely, which emphasises that corporate information security is the responsibility of all the staff with no exceptions. Second, the format in which the security induction is conducted has changed. While in the past, the number of participants was limited by the capacity of the conference room where the induction was held, it is now held as an online seminar with far more participants connecting to it in the ways that are most convenient for them (from a PC, a smartphone etc.). The online training features interactive sessions with staff such as surveys, discussions, stories told by the participants and others. In order to increase the engagement of the online participants, the content used for security induction has been revised: the presentation now features memes and short videos, which work very well in the context of the mostly visual presentation delivered as a sequence of slides.

New hires also complete information security courses, learn about the rules of using passes to access company premises, complete a test of their knowledge of the passwords policy and media interaction policy, as well as the policy for handling confidential information, the non-disclosure agreement and various workarounds.

Having completed all the stages of the security induction by the end of their probationary period, the new hire is able to join the company's business processes as a full-fledged team member and identify potential information security incidents in both work-related and day-to-day activities. Meanwhile, our customers can rest assured that their data are handled by staff who are well-versed in information security.

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