

Swisscoding Technologies: in the service of medical coding

The small start-up company, founded in 2018 by Marie and Stefan Stefaniak, has grown significantly. Their ambition to support their customers – initially as consultants – led them to establish Switzerland’s largest medical coding team, now comprising 50 employees. The demand was high, and hospitals lacked the time, skills, and structures to ensure optimal invoicing. In a time when rising healthcare costs seem uncontrollable, Swisscoding manages to optimize complex invoicing processes providing greater clarity on the cost and revenue generation of public and private medical institutions.

A new adventure

This rapid growth has efficiently and professionally addressed the needs of hospitals in Western Switzerland, and over the past two years, in German-speaking Switzerland as well. However, this success is not the end of the fairy tale «and they lived happily ever after,» but rather seems to be the conclusion of the first chapter of the adventures of medical coding.

The medical coding specialists in Switzerland are now ready with a powerful AI-based solution for hospital medical coding. The Swisscoding group, through its new unit Swisscoding Technologies, has introduced an automated service set to transform hospital back offices by freeing medical teams from time-consuming tasks and positively influence the entire invoicing process, from procedure planning to insurance validation.

In the seven years that Swisscoding has been active in hospital back offices, they have acquired comprehensive and global knowledge of the industry’s difficulties and constraints. Thanks to this expertise, and particularly thanks to unique access to a multitude of data, Swisscoding has been able to develop cutting-edge technology based on artificial intelligence. This innovation promises to fundamentally revolutionize the entire invoicing chain by addressing the numerous market challenges: shortage of coders, increasing data volumes to be processed, and constant adaptation to the developments of the DRG system and regulations. This service will also relieve health insurers by eliminating the need to manually check large volumes of invoices. Swisscoding uses its expertise not to grow indefinitely but to better serve its customers and meet their needs with increasingly powerful solutions.



Complete administrative process (back office outsourcing)

- Medical documentation
- Medical coding
- Invoicing
- Insurance management



Analyses and recommendations

- Medical controlling and dashboards
- Continuous performance monitoring (length of stay, costweight, finances)
- Historical and continuous invoicing review
- Direct interactions with medical staff



Training for coders, analysts and physicians

- Further training and specializations for medical coders
- Standard and specific training for medical staff
- Training in Medizincontrolling
- E-learning platforms



Automation of medical coding through AI

- Understanding of clinical documentation
- Immediate complete and automatic medical coding for a portion of the cases, done as if by one person



Swisscoding in 3 dates

Since **2018**, Swisscoding has been helping hospitals and clinics focus on their medical activities by relieving them of administrative tasks, particularly post-hospitalization administrative processes such as medical coding, invoicing, or documentation.

In **2021**, Swisscoding founded the Swisscoding Academy, a training program aimed at addressing the shortage of professionals in this field and making the profession of medical coder more attractive through career plans and certifications.

In **2023**, Swisscoding Technologies was founded as an entity dedicated to innovation and the development of AI-based solutions.

«Today we know that AI can relieve medical coding teams of large volumes of cases.»

Stefan Stefaniak, CEO, founder of Swisscoding

Continue to grow, but not to overwhelm the market and prioritize profit at any cost, but to leverage its achievements to explore new directions and offer even more efficient solutions with the help of AI. A strategy that benefits everyone.

Swisscoding has experienced remarkable growth over the past seven years. How would you describe this development?

Since its founding, Swisscoding has been growing steadily. The company was born out of customer demand that we had in our first company, Paianet, and finally, since 2018, as an independent company. To be solid and credible and to meet the demand, we had to build a large pool of coders. This was a long process because these professionals had to trust us, and the hospitals that did not know us also had to trust us. Four years later, we had the largest medical coding team in Switzerland and worked with almost all hospital institutions in Western Switzerland and several in German-speaking Switzerland.

In what context did you establish the Swisscoding Academy?

As we expanded our team, we realized that there was a significant shortage of coders in the market. This is why we established a team in Canada and later the Swisscoding Academy for further training. Despite everything, coders are rare, and there are no signs that this will change in the near future.

Can this situation related to hiring personnel jeopardize your growth?

Certainly, but our goal is not to grow excessively or prioritize profit at all costs. What we want is to help hospitals in managing their administrative burden. So we ask ourselves how we can best manage this development to take the responsibility that our size in the medical coding market brings seriously.

Does Swisscoding Technologies address the question of growth at a certain point?

Yes, in a way. We recognize today that AI can alleviate coding teams of large volumes of files, from simple and repetitive cases, so they can devote more time to complex cases. The reduction in overall workload is partly an answer to the shortage of personnel. By developing new technologies that offer even better service to hospitals, Swisscoding continues to grow in the right direction.



The Swisscoding team has grown. Coders, medical controllers, computer scientists, AI engineers and cyber security experts work together to continue to meet the challenges of the hospital back office.

How did you embark on the AI adventure?

The topic of AI in the field of medical coding has been around for a long time, but the development of these technologies was very expensive, and the results were not very convincing. So, we waited. Last year, IBM approached us because the introduction of LLMs (Large Language Models) like ChatGPT enabled a new understanding of text. They needed a partner to develop it with, and it seems that Swisscoding has the most complex coding team, as we code in German and French, in a highly regulated environment and with a demanding DRG system that evolves every year. Thanks to one of our clients, we were able to obtain the complete documentation for 50,000 patients, which allowed us to develop a first product.

Did this first step convince you?

Yes, the results were very promising, and we founded Swisscoding Technologies to further develop the solution. We facilitated our partnership with IBM and hired six employees, including several engineers. Since September 1, 2024, we have been ready with a highly developed product that is perfectly tailored to our needs and those of our customers.

The evolution of this technology is progressing rapidly, where do you stand at the beginning of 2025?

Cody is a solution that goes beyond existing tools. Thanks to the hundreds of thousands of documents and codes we were able to use, it is now capable of coding independently with the same quality as a human coder. Today, Cody can handle 15% of the cases of a regional hospital and up to 60% of the patient cases of some specialized clinics, with reliable results from the perspective of insurance supervision and annual external audits.

AI : The gentle revolution

Over the last 15 years, medical coding has established itself as an effective means of containing rising healthcare costs. However, this solution is administratively very complex and requires a lot of documentation, time, and money. While this type of control and invoicing provides some insight into the medical activities of hospitals, it places an additional burden on institutions that were looking for funding and more resources rather than the other way around.

How can hospitals be relieved of this administrative burden, which also places a heavy burden on medical staff?

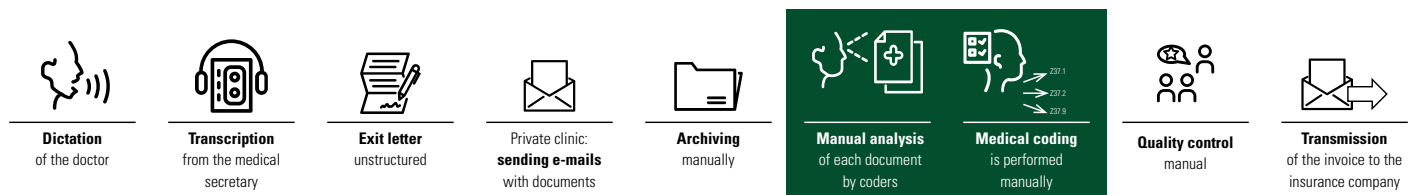
Swisscoding has developed a fully AI-based solution based on its expertise.

Given the complexity of the tariffs structure and the shortage of coders, artificial intelligence presents itself as an efficient solution. Medical and administrative teams gain valuable time back, costs decrease, and invoicing is optimized. AI is more than just a tool; it builds innovative bridges between the medical and administrative worlds.

For seven years, Swisscoding has been working to support medical institutions with their medical coding tasks and faced three major problems:

1. The shortage of coders on the market.
2. The difficulty in obtaining comprehensive medical documentation that would allow for the most accurate coding of the actual costs of hospitals.
3. The high financial burden that this labor-intensive administrative work brings.

In this context, an automated solution seemed ideal: a development that saves time and money and at the same time while simultaneously providing optimized invoicing.



Medical coding is a crucial step in the creation of a hospital invoice.

AI revolutionizes medical coding by intervening at several points in the chain:

1. Automation of coding at the end of the process

Today, AI is capable of handling large volumes of documents to be coded, with the accuracy of the coding ensured by powerful intelligent controls.

2. Optimization of medical documentation

AI assists doctors even when drafting discharge letters. While dictating, it suggests pre-filled elements and relevant questions to avoid omissions or inaccuracies. This eliminates the back-and-forth between medical coders and doctors, speeding up the process and simultaneously improving the quality of the coding.

3. Saving time

As they are relieved from handling a significant number of dossiers, coders can spend more time on complex cases and collaborate with medical staff to complete the information.

4. Continuous further training

The main innovation is the combination of several AIs: one AI replicates the historical results of human medical coding (with its strengths and weaknesses), while the other detects errors and opportunities for improvement by incorporating the expertise of Swisscoding's medical controlling team and the tools to pinpoint weaknesses in the coding. This method allows more accurate coding than ever before, surpassing what humans alone could achieve.

5 seconds

This is how long it takes the AI trained by Swisscoding Technologies to code a medical file, that would take a trained coder 25 minutes.

«This technology improves the quality
of administrative care for patients
and reduces costs at the same time»

Robert Derendinger, Director GAP, Swiss Medical Network

Swiss Medical Network is the first hospital group to voluntarily participate in the development of an AI-based solution that can code medical records. Statement from a pioneer who believes in a forwardlooking solution.

Since when have you been working with Swisscoding and why?

We began our collaboration with Swisscoding around four years ago driven by the increasing shortage of medical coders and the ever more complex tariff requirements of the Confederation, such as SwissDRG or ST-Reha. It seemed appropriate to have a backup partner. This collaboration allows us to ensure the continuity of coding, which remains the most important foundation for generating invoices for insurance companies.

How did you come to think of AI to support your medical coding process?

For several years, we have been looking for solutions to automate medical coding. In many complex cases, coders do not always receive sufficient documentation or information from doctors. And we face a real difficulty when the result of the coding does not cover the costs of the institutions. In this context, the automation of medical coding could take on part of the workload of coders, giving them more time to collaborate with doctors and achieve a coding result that fully corresponds to the treatment.

And how did your AI adventure with Swisscoding begin?

I had shared my search for a solution to automate coding with Mr. Stefaniak. One day, he approached me and suggested a solution based on artificial intelligence. For it to work, he needed to «feed» the machine with medical documents, teaching it to read and code them. He needed a large amount of data. Thanks to a data anonymization system installed at our end, we were able to securely transfer anonymized orthopaedics data, along with the existing human coding documentation, allowing the machine to learn through comparisons. The results were impressive: in the field of orthopaedics, the machine can achieve an accuracy of 98%, which corresponds to the accuracy of a human medical coder. This is very promising for the future.



How is the implementation in your systems, is it complicated? Do you need to train personnel?

Absolutely not. The machine directly «interprets» the documents in the patient files and automatically places the codes in the correct location in the file, ready for invoicing.

Have you discussed this with your coding teams?

Of course, from the very beginning. Naturally, the technology raises concerns. No one wants to be replaced by a machine. But in this case, I am convinced that the profession of medical coders is not at risk from AI; they can focus on control tasks and supporting doctors, with the aim of ensuring the quality of the files. We need qualified individuals who can bridge the gap between the medical and financial worlds, and I believe that medical coding teams can play a real role in this function.

What is your future vision for your hospital group with this technology?

In the first phase, I hope to optimize our coding processes through the improved quality of medical documentation, which will be achieved by coders who are relieved of a significant workload. Additionally, by coding standardized cases faster, we will also be able to issue our invoices more quickly. One must consider that the machine codes in 5 seconds, whereas a person takes 25 minutes.

What about the healthcare sector in Switzerland overall?

I hope that in the long term, other hospitals will also embrace the AI revolution, as the potential is enormous. This technology will allow us to improve the quality of administrative care for patients while reducing costs. By standardizing coding, deviations in human interpretation will be eliminated, making it easier to compare institutions to determine best practices. Everyone benefits from this standard: hospitals, patients, and even insurers, who can reduce their control costs, which may impact insurance premiums. The dynamic of continuous improvement has only just begun.

Data protection: The prerequisite for innovation

To realize its full potential, artificial intelligence requires an environment and resources that often go beyond current requirements or the safety regulations of hospitals. This includes, for example, access to large amounts of data in real time, a flexible technological infrastructure, and powerful processing systems:

1. To become efficient, AI needs large amounts of data that are as comprehensive as possible in order to learn medical coding and be able to train with specific treatment protocols and practice of individual hospitals or clinics.
2. It also requires a robust technological infrastructure with specialized graphics processors capable of handling large volumes of data efficiently and are constantly evolving to meet the increasing demands of models and applications.

«With these new technologies based on LLMs, the required GPUs are highly specialized, expensive, and rapidly evolving. Keeping a local infrastructure up to date has become impossible.

Therefore, we have decided to use Microsoft data centers in Switzerland, which offer the latest technological advancements while ensuring that the models operate in a secure, isolated, and reliable environment, compliant with all certifications. In summary, it is like having your own computer, but with capabilities that are always up to date.»

Christophe Rosso, CIO of Swisscoding Technologies

AI emerges as a forward-looking solution to support all individuals involved in medical coding, from doctors to insurers, as well as hospital back offices and medical coding teams. The benefits are numerous, bringing new advantages at all levels of the coding chain. The only prerequisite for this revolution is ensuring data security, as data protection is a top priority for hospitals.

To develop its own coding technology, Swisscoding Technologies had to face the great challenge of meeting the requirements for a powerful AI while respecting the security standards of hospitals. The solutions found are innovative:

1. Swisscoding Technologies has developed a powerful data anonymization software Data anonymization: that is installed locally on a small computer directly in hospitals. This ensures that the data is fully anonymized before being transferred to the coding servers.
2. Data processing: By using the cloud, particularly Microsoft servers in Switzerland, Swisscoding Technologies guarantees maximum security. The data does not leave this controlled and internet-disconnected environment, which complies with the strictest certifications. This choice combines performance, security, and scalability, in contrast to data processing on hospital servers, which would be expensive, not powerful enough, and not as quickly scalable.

Data valuable only for coding

Since its inception in 2018, Swisscoding has developed a solution for anonymizing patient data to ensure secure processing that meets the requirements of the medical sector. This advanced software, installed directly in hospitals, allows for the control of various criteria such as names, dates, locations, and other information that is not relevant to the medical coding process. The data is anonymized directly on the institution's servers, so it leaves the hospital infrastructure completely free of identifiable elements. As it is impossible to compare the data with the original patients, this technology ensures absolute confidentiality. Even if the data were to be compromised, it would be unusable.

«Our IT security measures are stricter than the applicable regulations. We apply maximum security requirements that also comply with the rules of the IT parks of Swiss hospitals.»

Colin Chaleon, Swisscoding DPO & ISMS Manager

«The ISO 27001 certification ensures
that our processes comply with
international best practices.»

Colin Chateau. Swisscoding DP0 & ISMS Manager

Swisscoding has been ISO 27001 certified for almost three years. Why is this certification important?

The ISO 27001 certification is one of the highest standards for information security. It encompasses a variety of requirements, from personnel security to the security of applications used, and the security of subcontractors. For us, it means that our processes comply with the best international practices, and it builds trust with our partners and customers. This is particularly crucial in an industry like ours, where we handle sensitive data and where security is our top priority.

How do you, as an information security expert, assess Swisscoding's commitment in this area?

At Swisscoding, security has always been a high priority since the company's founding. This culture has been built around ISO 27001. Everything we do, from technical measures to internal policies, is designed to meet these requirements. Additionally, management plays a key role by actively participating in these processes and leading by example, which is very stimulating.

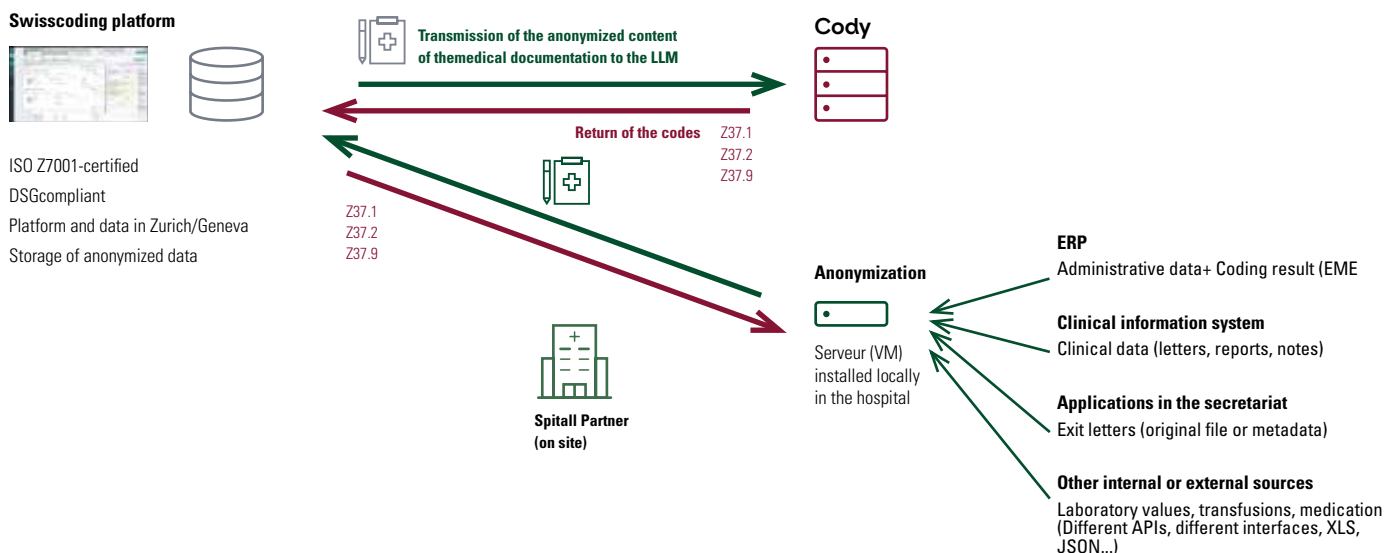


What are the biggest challenges related to the development of AI and legislation?

The introduction of a new European legislation, the AI Act, raises some questions for us as a Swiss company. So far, we are not directly affected by this law, as we operate exclusively in Switzerland. However, since Swisscoding Technologies plans to expand into Europe, we should comply with these regulations. Therefore, we are working proactively to ensure that our solutions meet the highest standards beyond our borders. Currently, we are in the process of additionally obtaining ISO 27701 certification for Swisscoding Technologies, a standard specifically focused on handling personal data (PII).

The Highest Security Standard

The ISO 27001 certification is an international standard that ensures the implementation of a strict system for managing information security. It covers all processes that enable the effective protection of sensitive data from internal or external threats. This standard requires the continuous improvement of practices and mandates that organizations stay up to date with the latest technologies and regulations by undergoing two external audits per year. Obtaining this certification demonstrates a continuous investment in data protection and fulfils the strictest security expectations.



Cody: The miracle coder

Cody is a tool that evolves rapidly thanks to its technical SaaS design («software as a service»), which is improved almost daily. Swisscoding has the largest medical coding team in Switzerland, reinforced by AI developers and engineers, making it ideally positioned to develop a fully automated coding service based on AI. Through six years of collaboration with numerous clinics and hospitals, the company understands the specific needs of institutions and coders and possesses - thanks to the collaboration of selected clients - large amounts of data to effectively train the AI. This unique combination of expertise ensures that the designed solution fully meets the industry's requirements.

Scalable Learning

Cody learns like a young medical coder. It learns by coding, being corrected, and comparing its results with the «correct» results. Swisscoding has access to hundreds of thousands of cases that have been correctly coded, reviewed by external auditors, incorrectly coded, corrected, and supplemented. This learning ability allows Cody to adapt and improve by identifying recurring errors and optimization opportunities. A particularly innovative approach by Swisscoding involves pitting two AI systems against each other: one that reproduces previous results and another that identifies areas for improvement. This strategy leads to more reliable and accurate coding results than those achieved exclusively through human methods or other tools available on the market, while also preparing for significant developments in the coming years.

After a year of development, based on its own expertise in medical coding and hundreds of thousands of coded documents, Swisscoding Technologies is launching Cody, a new, fully integrated technology product capable of independently handling the medical coding of patient records. But how can a machine understand a medical record and, more importantly, how can its results be trusted?

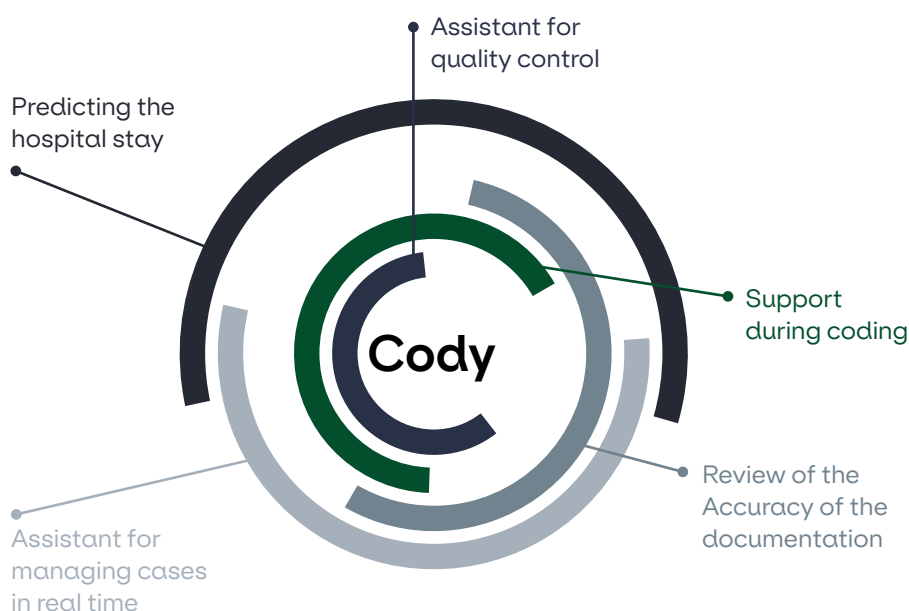
Self-Evaluation as a Guarantee of Reliability

A key aspect of AI learning is its ability to self-evaluate. From the very beginning of the tool development, Swisscoding decided to go beyond simple code suggestions, as these solutions extend coding time and require human intervention. The idea is to produce a final result that can be used directly for invoicing without requiring revision.

The tool must be able to decide for each individual case whether it can code independently with the expected quality or whether it is better for a human to intervene. Using the technology employed by Swisscoding, confidence intervals - or «confidence levels» - were incorporated. These levels allow Cody to measure in real-time how confident it is in each case. This system enables it to self-assess and adjust its interventions to the complexity and requirements of each situation.

«If the coding is deemed unreliable by the AI, the file is managed manually. Only error-free codings are directly integrated into the hospital's system. The goal is to reduce the workload of coders, not to burden them with new tasks such as validations or additional checks»

Christophe Rosso, CIO of Swisscoding Technologies



No Interface, No Additional Work

Cody has no user interface. Unlike other solutions that require the addition of new software and implementation processes, this tool integrates directly into the existing systems of hospitals. It retrieves the data where it is stored and automatically feeds it into the invoicing tools without requiring human management or control. This eases coders without burdening them with additional tasks. If Cody cannot guarantee flawless quality in a case, it does not intervene, thereby avoiding double work. This invisible but efficient way of working ensures a smooth and integrated automatic workflow.

Towards Iterative Coding During Hospital Stay

Cody not only revolutionizes medical coding for invoicing but can also be used during the hospital stay. With Cody, the information collected in the clinical information system (CIS) can be used throughout the stay to anticipate and correct inaccuracies in medical documentation. For example, thanks to the automatically updated coding after each new entry into the CIS, Cody predicts the most relevant DRG based on the existing data and can thus identify if information is incomplete for optimal coding. In this case, the tool asks targeted questions to document it immediately. This helps not only the coders but also the medical and nursing staff with administrative care.

At the same time, AI offers powerful forecasting tools, such as the ability to predict the patient's discharge time. Upon admission, it analyzes the first available data, such as the type of procedure or the initial diagnosis, to make a preliminary estimate of the length of stay. This prediction is refined as new information flows in throughout the stay. This not only facilitates the planning of hospital resources but also helps the case manager anticipate logistical and administrative requirements.

Benefits Across the Board

The integration of AI in medical coding could also mean relief for insurers. Through more transparent and objective invoicing and optimized controls in advance, insurers would need to conduct fewer checks, significantly reducing administrative costs that increase premiums without adding value to patient care. Swisscoding Technologies is working on developing certified and auditable processes that would ultimately not replace legal processes but would allow certain invoices to be validated directly by insurers without further checks. Although this model still needs time to be fully implemented, it offers a promising vision for simplifying interactions between hospitals and insurers.

«It's not just about trusting AI, but about engaging in a dialog to understand fears, adapt solutions and collaboratively create tools that truly meet the needs of hospitals.»

Stefan Stefaniak, CEO of Swisscoding

A near future

The vision remains the same: to transform the organization of the hospital by drastically reducing administrative burdens, allowing doctors and nursing staff to fully focus on their patients. We envision a hospital where most of the time is spent on treatment rather than filling out paperwork. With the help of AI, Swisscoding has found an effective ally that promises to put patients back at the center of hospital priorities.

Robot Portrait

Cody is an innovative solution for medical coding, powered by AI and developed by Swisscoding Technologies. The result of a unique synergy between medical coding experts and AI engineers, it stands out with its numerous features:

- It codes simple cases with the same or even higher reliability than human coders.
- It is multilingual and geographically unlimited, allowing it to adapt to all environments.
- It seamlessly integrates the advancements of SwissDRG, ensuring continuous compliance.
- Without visible interfaces, it integrates into existing systems, making itself unobtrusive and autonomous.
- Thanks to its ability to learn and self-evaluate, it delivers only flawless results.
- It can be used during the hospital stay before coding to support medical staff and case managers.
- It adheres to the highest security standards to ensure data protection.
- It supports a transformative vision of the hospital administration system.
- Finally, it also simplifies the work of insurance companies by reducing their control burden.