

Connecting the dots to shape our future. The exciting journey of an evolving Statistical Programming team

Alberto Montironi, UCB Farchim S.A., Bulle, Switzerland

ABSTRACT

Historically, the recruitment of young professionals in Statistical Programming departments of pharma companies has primarily focused on the creation of the next generation programmers or replacement of existing roles with individuals possessing similar skillsets. In today's landscape, as academic institutions increasingly adopt open-source languages and code hosting collaboration platforms (e.g. GitHub), a mismatch emerges between the programming skills offered by early career candidates and those already present within companies. This could potentially become a critical issue. At UCB, we see the evolving landscape as an opportunity to connect the dots, unlocking the full potential from early career candidates joining our organization and embracing a change in how we support our company. The investment in new junior positions and a diversified student plan became pivotal to guarantee the injection of new skillsets, promote upskilling of the existing work force, and create the new generation of leaders that capable of tackling the increased complexity of statistical programming tasks. A proper knowledge transfer programme was also required to guarantee efficient onboarding, strengthen existing internal skills to support newcomers, and enable the internal team to get the best from the company effort.

INTRODUCTION

The pharmaceutical industry, like many others, has traditionally relied on the consistent development of skills within specialized roles, such as those in statistical programming departments. However, with the rapidly evolving technologies and academic landscape, which emphasizes open-source languages and collaborative code development platforms, there emerges a potential skills mismatch between new entrants to the field and the established workforce. At UCB, we recognized both the challenges and the invaluable opportunities this shift brings. This paper delves into how the organization revamped its people strategies and the cultural changes related, ensuring continued excellence in statistical programming.

FIRST STEP: BUILDING THE VISION

To connect the dots properly and shape our future, the first required step was to spend time creating the statistical programming vision. This is the picture of the group in the next five to ten years, that involves several aspects, including understanding the evolving technological landscape, addressing any necessary cultural change for transformation, and finally the evolution of the company's pipeline.

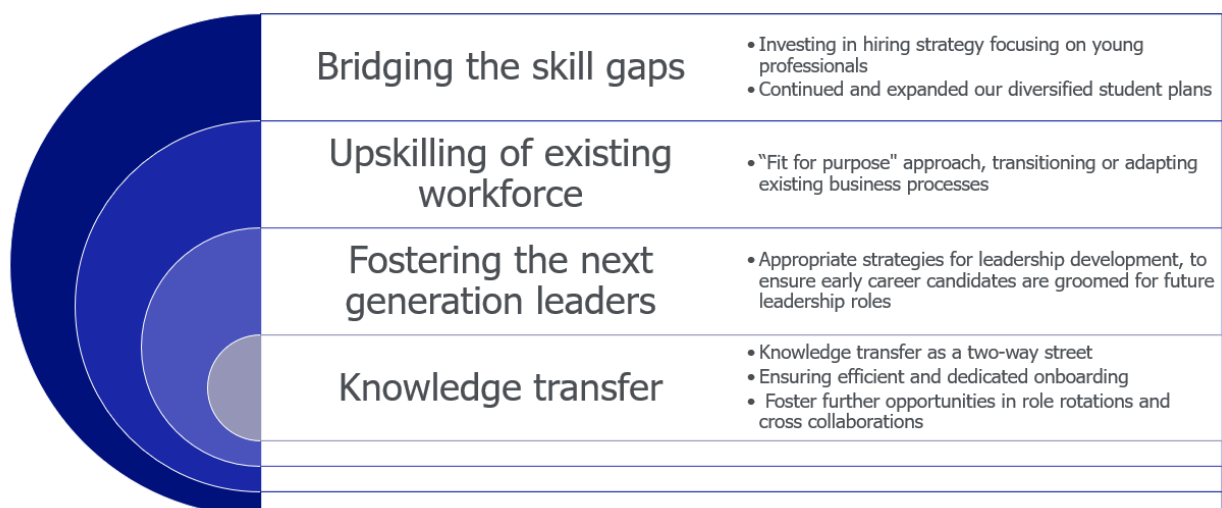
Understanding the strengths, opportunities, and threats of the current statistical programming environment provided a comprehensive view of where the organization was standing. The following step was to clearly state what the Research and Development (R&D) group aimed to achieve with statistical programming support and how the team was going to work with other departments.

Based on that we figured out the vision based on three main areas: people, processes, and systems.

Processes and systems will not be covered into the paper, but we will focus on the area of people and the cultural shifts required.

The areas of our cultural changes impacting people were bridging the skill gaps, upskilling of existing workforce, fostering the next generation leaders, knowledge transfer.

FIGURE 1 The cultural change areas impacting people



STEP TWO: THE CULTURAL CHANGES

The global academic landscape, like many other industries too, is undergoing significant transformation, especially in the realm of computing and programming. At the heart of this metamorphosis lies a shift towards open-source languages (such as R or Python) and an emphasis on collaborative platforms, with the consequential impact on the broader programming community.

Open-source projects are those whose source code is made available to the public, enabling anyone to view, use, modify, and distribute the software. Platforms for software development and version control are revolutionizing the way programmers and data scientists collaborate, develop codes, share knowledge, and learn.

The organization perceived the shift to different ways of programming not as a challenge but an opportunity to enrich the company's talent pool and foster innovation.

BRIDGING THE SKILLS GAP

Young data science professionals are inherently familiar with modernized ways of programming, so we thought one important action was for the company to invest in skills development for next generation programmers. To form a solid new generation of programmers, we pursued a dual approach by refining our hiring strategy to focus on graduates and young professionals, tailoring it to capitalize on the contemporary skills bring to the table. In addition, we continued to expand our diversified student plans, aimed at embracing a diverse set of skills and talents from early career candidates across several geographies.

UPSKILLING THE EXISTING WORKFORCE

Upskilling the existing workforce in statistical programming was crucial for our organization to keep pace with evolving industry demands in new business areas (data science, visualization, etc.) and to harmonize the skills across different groups. Internal business needs had forced resources to evolve on different programming trends. The teams working on regulatory reports such as the clinical study report, regular safety updates, etc. were mainly running tasks using legacy internal standards and libraries. The programming teams supporting business areas, where data visualization capabilities were a main demand, had naturally evolved to embrace open source languages and packages (for example R and R shiny applications), developing different skills sets across programming groups.

After conducting internal assessments, we decided to shape our upskilling plan, convinced that a well-thought-out strategy ensures employees remain competitive and flexible, ultimately benefiting the organization through their enhanced capabilities.

While business continuity was the priority, we discovered that our upskilling effort could be approached with in two contrasting ways. The approach involved a systematic training plan for the entire programming population, followed by the adoption of adapted processes using new programming languages and technologies. The second option was a "fit for purpose" approach, which focused on transitioning or adapting existing business processes that could quickly benefit from the new technologies and languages. This gradual approach appeared the most suitable option for our statistical programming team, allowing programmers to start using new skills on specific tasks and gradually

increase the confidence on being more language agnostic. The real-world problem solving was also supported from internal subject matter experts (SMEs) as agents of change.

In preparation for these gradual changes, several actions were required. In particular: Specifically: identify the gap between the skills we already had developed and those we needed for the future evolution; prioritize development of new skills using business requirements and industry best practices; curate or create courses that programmers could complete in their own time; identify an internal network of SMEs as change advocates, exerting their influence to foster acceptance and enthusiasm; and pilot internal projects.

Another important element to support our upskilling strategy was to incorporate new ways of working that could help our existing programming workforce to quickly adapt to changes or shifting processes. Agile and SCRUM methodology have been identified as the most appropriate ones. Agile emphasizes flexibility and adaptability, while Scrum promotes the delivery of small, incremental updates. This ensures that programmers can see tangible progress regularly, facilitating feedback, drive a better communication and making sure that the development is aligned with new project goals. These methodologies were already present into our organization however we promoted the adoption in all important streams of changes impacting the programming team (for example reviewing programming processes). This effort created a virtuous loop where agile and scrum became the favorite option to manage projects internally in our biometric group, above and beyond the programming team and the initial scope.

We also carefully evaluated the risks related to any upskill strategy, such as:

- resistance to change: not all employees may be receptive to new learning, especially if they feel that their current skills are being devalued.
- time constraints: taking employees away from their usual tasks for training or involving them in new processes can affect short-term productivity, as acquiring new competencies involve a learning curve.
- financial implications: investing in upskilling without seeing immediate tangible returns can strain an organization's budget.

FOSTERING NEXT-GEN LEADERS

We believe nurturing the next generation leaders should not be limited to a one-off recruiting strategy. Companies should regularly invest in having young professionals or students as part of their teams, even for temporary periods. UCB has several locations where the Statistical Programming Group has historically maintained connections with universities and implemented student placement plans. These programs ensure a continuous influx of fresh professionals into our group, involving them in structured plan that enable their active contributions to our projects and being visible within the department. In addition, we expanded our external network with universities and academic departments in other hubs. This involves programmer representatives attending career fairs and other network opportunities within academia, presenting the role of data science and statistical programming. Finally, while designing our young professional strategy, we looked more broadly to entire STEM disciplines (Science, Technology, Engineering, and Mathematics) and ex-STEM disciplines to further diversify our skill sets.

Following the onboarding of young new talents, our programming leadership team aimed to address other important questions. We explored how new entrants with diverse skill sets can reshape leadership roles in statistical programming. Additionally, we crafted strategies for leadership development, to ensure early career candidates are prepared for future leadership roles, given the increasing complexity of tasks in the domain.

In order to support the development process of our talents, we identified, small, framed projects with short durations (1-2 quarter), where the young talents could start immediately to bring their skills, get familiar with enterprise and pharma standards and work with Agile methodology. The early career programmers were placed to face challenging work but mitigating the stretch by placing them in a collaborative environment where they were also supported.

KNOWLEDGE TRANSFER: A TWO-WAY STREET

Knowledge transfer is a holistic process. It recognizes the value of every individual, whether they are a newcomer or an established professional programmer. By ensuring efficient onboarding while continuously enriching internal skills across entire statistical programming group, we envisaged the knowledge transfer as a two-way street – one that leads to mutual growth, innovation, and sustained success. Yet, an effective onboarding process reduces time-to-productivity, fosters positive attitudes, and establishes a strong foundation for future learning and collaboration. Onboarding was not intended as just an introductory phase but a strategic period to shape newcomer's perspective, engagement level, and contribution potential.

We identified several gaps in our onboarding process. The existing one, while very comprehensive, had been tailored to statistical programmers with prior experience in the pharmaceutical professional world. We shifted focus towards identifying and integrating the missing elements into the onboarding process, looking for opportunities across the enterprise and externally.

While bringing in fresh talent provides new perspectives and skills, it was equally crucial to continuously nurture and enhance the skills of the existing workforce. This ensures that the seasoned professionals can both support newcomers and learn from them, leading to collective growth. We wanted to invest in dedicated soft skill training sessions across entire biometric department and foster further opportunities in role rotations and cross-collaborations.

All the steps and actions described required much internal effort and coordination. To approach opportunities efficiently and capitalize on the evolving landscape, our leadership team defined various areas of expertise. This framework was designed to accommodate both junior and senior roles, ensuring everyone could benefit. Leaders could focus on specific topics, for example the structured onboarding plan, the support of hiring strategy, the definition of innovative projects for new talents, etc. This leadership team's effort became another opportunity to further strengthen specific skills for senior leaders and establish a network of points of contact within our organization.

CONCLUSION

Building a vision in statistical programming is a complex but necessary endeavor that requires technological foresight, strategic planning, and cultural alignment. By methodically laying down a vision and assessing the cultural changes needed, organizations can set themselves up for a future where statistical programming significantly contributes to achieving business goals and organizational excellence.

The evolving academic and technological environment poses both challenges and opportunities for our programming departments. By adapting recruitment and training strategies, organizations can not only bridge the skills gap, but also harness the full potential of their workforce, ensuring continued success in statistical programming while nurturing the next generation leaders.

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CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

Alberto Montironi

UCB Farchim S.A.

Ch. De La Croix-blanche 10, Z.i. De Planchy

Bulle /1630

Work Phone: +41 79 675 87 99

Email: alberto.montironi@ucb.com

Web: www.ucb.com

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