# APPLICATION OF THE SCRUM METHOD IN THE PRODUCT DEVELOPMENT MODULE

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**Abstract**

*Kaunas University of Technology (KTU) has launched an interdisciplinary Product Development module, which can be chosen by students from more than 30 different first-cycle study programs. The goal of this module is to connect researchers, lecturers, social partners, and student teams for joint work, to create a product or service from idea to prototype. As mentors in this module, we applied the SCRUM method for product development. SCRUM is a flexible programming project management method based on the effective collaboration of the team participating in the project. This method is widely used in IT companies during software development projects, but still not in student teaching. The results (we provide example) show that such a method was successful, product created by the students meet the requirements of the customer or the needs of users and provide coordinated desired functionality. Moreover, this method helps to learn not only academic knowledge but also develops students' soft skills.*

**Keywords:** *SCRUM method, product development project, interdisciplinary study course*.

## 1. SCRUM METHOD

SCRUM is an Agile project management methodology for complex projects based on effective team collaboration. This method enables the creation of self-organizing teams that are encouraged to communicate directly during task implementation. The SCRUM method is used for managing the development and evolution of software products (hereinafter referred to as products) [1]. By applying this method, all activities and operational processes are utilized to ensure a smooth product development process. SCRUM defines the relative efficiency of product development approaches and their management, creating conditions for the improvement of these processes [2]. The SCRUM method is easy to understand but quite difficult to master and manage in practice.

The key elements of the SCRUM method include SCRUM teams and their assigned roles, events, artifacts, and rules that define roles, events, artifacts, and their interactions [3]. SCRUM is based on the theory of empirical process control, which assumes that knowledge is gained through experience and that decisions are made based on what is already known [4].

SCRUM team roles can include the Product Owner, the Development Team, and the Scrum Master. The Product Owner is a single person responsible for maximizing the value of the work performed by the development team, which is or will be created for the customer through the product. The Product Owner manages the product backlog. Product Owner key responsibilities are clearly defining and formalizing the product backlog items, setting priorities, determining the order of backlog items, and ensuring that the development team correctly understands the backlog items.

The Development Team is a self-organizing group of individuals needed to design, build, and test a desired product. The team independently decides on the best way to complete assigned tasks. Team members must possess all the necessary skills and competencies to complete the project, and the entire team is collectively responsible for the final product, ensuring it meets customer requirements and user needs.

SCRUM Master is a single person who acts as the team leader, ensuring that the development team follows SCRUM practices and rules while maintaining the use of the SCRUM method throughout the product development process. SCRUM Master facilitates communication between the development

team and non-SCRUM team members and is responsible for organizing SCRUM events and removing obstacles that hinder the development team's progress.

A SCRUM event is a time-limited phase during which a final product development task is completed. Its purpose is to ensure complete transparency in the development process and the adaptability of the result. Figure 1 illustrates the SCRUM activities and artifacts and how they fit together.

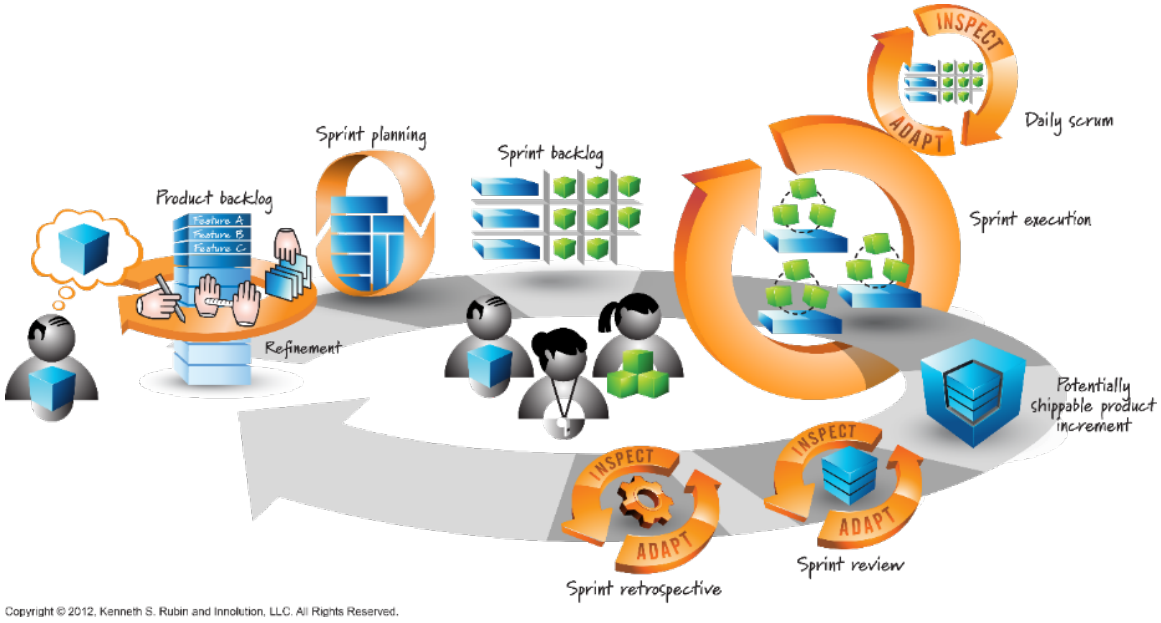


**Fig. 1.** The SCRUM activities and artifacts [5]

Product development begins with a Product Backlog - a prioritized list of the features and other capabilities needed to develop a successful product. Guided by the product backlog, SCRUM teams work on the most important or highest-priority items first. When creating new products, the backlog initially contains only those features required to meet the Product Owner's vision.

The final product result is the completion of individual product development tasks and activities. Each task in the Product Backlog is called a User Story. Each customer request or user need for the final product, its feature, functionality, etc., based on the SCRUM method, must be described in the following format as a sentence [6]:

**As a <*type of user*>, I want <*some goal*> so that <*some reason*>.**

All user stories that can be included in the Product Backlog should be rational and create value for the final product and its users. The most widely used set of criteria for evaluating the quality and suitability of user stories is the **I.N.V.E.S.T.** criteria [7]:

**I** – Independent: A User Story should be as independent as possible from other user stories, so that it can be implemented and delivered separately. This creates distinct features and requirements for the final product.

**N** – Negotiable: A User Story should be open for discussion in the future, leaving room for negotiation. It should reflect the essence of the requirement or need, rather than specifying the methods and detailed requirements for its implementation.

**V** – Valuable: A User Story must create added value, improve the final product, make it more usable, and meet the customer's requirements and the user's justified needs.

**E** – Estimable: A User Story must be clear enough to be broken down into tasks and evaluated. It is typically assessed based on the perspective of what problem it will help the customer or user solve.

**S** – Small: A User Story should not be too large and should be implementable within a few days, basically around 40 work hours.

**T** – Testable: A User Story must have acceptance criteria to determine whether it can be considered complete and meets the customer's requirements and user needs.

Each User Story must have criteria that define when the work associated with it is considered complete. This is called the Definition of Done. The Definition of Done should be documented and agreed upon in advance. It should specify the criteria by which the final product will be tested and what final result will satisfy the customer and user. It is recommended not to start any final product development work until the Definition of Done for a specific User Story has been agreed upon.

A Sprint is the primary SCRUM event during which several major product development tasks are completed, resulting in a specific element of the final product. A specific time is set for the sprint. The maximum duration is 4 weeks, but the recommended and most used duration is 2 weeks. This period is dedicated to creating a completed, functioning, and customer- or user-expectations-compliant increment of the final product [8].

Sprint planning is the first activity in every new sprint. During sprint planning, the team and product owner agree on a sprint goal that defines what needs to be created. Then the team selects a subset of high-priority items from the product backlog that can be completed during a particular sprint (sprint backlog).

Sprint execution is the period during which the task-level work is performed by the development team to complete the features committed to during sprint planning. During a sprint, no changes are allowed that could affect the sprint goal, and the quality objectives and requirements are not to be reduced.

During a sprint SCRUM team has short 15-minute meetings named daily scrums. In each daily scrum meeting, the team members share with each other what they accomplished yesterday, what they are planning to do today, and any obstacles they are facing. This meeting is frequently referred to as the daily stand-up because of the common practice of team members standing up to keep the meeting brief.

During each sprint, an increment of the developing product must be done following the team's agreed-upon definition of done. The definition of done is a checklist of the types of work that the team is expected to successfully complete before it can declare its work to be potentially shippable. That doesn't mean that the product must actually be shipped, but rather that it has been completed to such a degree that was agreed by the team. Therefore, at the end of every sprint, the sprint review occurs. The sprint review is intended to foster conversation about the just-completed functionality among the product owner, SCRUM Master, development team, customers, and anyone else who is interested in the outcome of the particular sprint. After the product inspection, the process inspection has to be done as well. Therefore, the sprint retrospective occurs at the end of every sprint [9]. For continuous process improvement, the SCRUM Master, product owner, and development team come together to discuss what is and is not working with SCRUM and associated technical practices. A schematic representation of the sprint is shown in Figure 2:

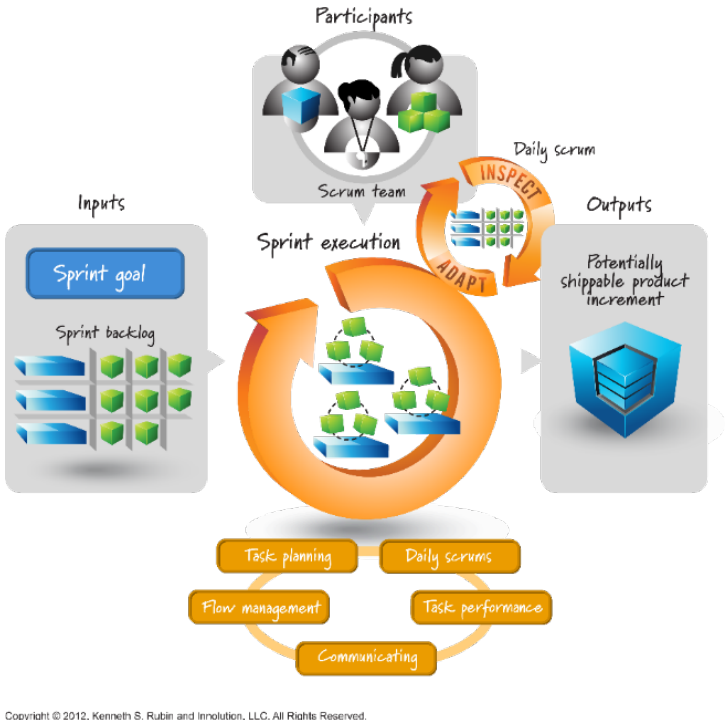


**Fig. 2.** The sprint execution process [5]

## 2. APPLICATION OF THE SCRUM METHOD IN A PRODUCT DEVELOPMENT PROJECT MODULE

At Kaunas University of Technology, the SCRUM methodology is applied in the *Product Development Project* (PDP) course. This course brings together researchers, social partners, and interdisciplinary student teams to collaborate on real-world challenges and foster a productive environment for developing new product ideas relevant to society.

The *Product Development Project* is organized within undergraduate (bachelor's level) study programs. The PDP module is worth 12 ECTS credits (equivalent to 320 hours). Depending on the specific study program, the PDP module can be included as a compulsory or elective module for undergraduate students.

To ensure that students possess the theoretical and practical knowledge as well as teamwork skills necessary to complete the tasks outlined in the module, the course is scheduled in the later years of study. For students enrolled in 3-year programs, the module is taught during the spring semester of their 2$^{nd}$ year. For students in 4-year programs, it takes place in the spring semester of their 3$^{rd}$ year.

During the PDP course, the 20-week spring semester is divided into 16 weeks of academic study and 4 exam weeks. During the 16 study weeks, students attend lectures and/or participate in other academic activities (such as seminars, laboratory work, and consultations), while also independently working on product development tasks. Final module assessments are conducted during the exam weeks.

The implementation of the SCRUM method in the PDP is carried out in the following stages:

1. A SCRUM team is formed: roles of Product Owner, Scrum Master, and Development Team are assigned.
2. A meeting with the customer is organized, and the requirements for the product are assigned.
3. Customer requirements and user needs are transformed into User Stories.
4. User Stories are evaluated based on the I.N.V.E.S.T criteria.
5. A Definition of Done is agreed upon by the SCRUM team for each User Story.

6. Customer requirements and user needs are prioritized.
7. The Product Backlog is created (SCRUM artifacts).
8. SCRUM events are described, including their process, purpose, time, and participants – Sprint Planning, Daily Scrum, Sprint Review, and Sprint Retrospective.
9. The Sprint Backlog is created (SCRUM artifacts).
10. It is decided what will be considered as an Increment of the developing product (SCRUM artifacts).
11. The effectiveness of SCRUM implementation is evaluated.

In the 2025 spring semester, students from seven KTU faculties took the course: the Faculty of Mathematics and Natural Sciences, Faculty of Informatics, Faculty of Electrical and Electronics Engineering, School of Economics and Business, Faculty of Mechanical Engineering and Design, Faculty of Civil Engineering and Architecture, and the Faculty of Social Sciences, Arts and Humanities. As the course is delivered in both Lithuanian and English, a total of 530 students participated in the course—463 Lithuanian students and 67 students studying in English.

Ideas for potential student-developed products are collected from both university social partners and the academic community (teachers and researchers). The goal is to gather at least 100 topics so that students have a wide range of choices for the product they would like to develop. Each of the aforementioned faculties has a designated course coordinator responsible for gathering the topics. Based on the number of students, each faculty also appoints mentors who supervise students in the course. These mentors choose to support product development topics proposed either by social partners or by themselves. In the Faculty of Mathematics and Natural Sciences, 5 mentors are working with student teams.

The main course coordinator organizes a competition for students, in which students select the product they would like to develop. Interdisciplinary teams of 4–6 students are then formed. In 2025, there were 89 such teams. Typically, each team supervised by a mentor includes 2–3 students from the primary field of study (in our case, Applied Mathematics), and the rest from other study fields. Depending on the nature of the product being developed, each team's mentor selects one of the product development methods—either Agile SCRUM or Design Thinking—for the team to use.

### 2.1 Course Structure and Student Activities

Throughout the semester, students attend theoretical and practical lectures, as well as meetings with mentors. The theoretical lectures cover topics such as teamwork dynamics, product development methodologies, market segmentation and analysis, competitor and supplier assessment, financial analysis for both business and public sector products, start-up development opportunities, and intellectual property rights. Each of these topics is supported by practical sessions. Both theoretical and practical components are delivered by subject lecturers.

Each student team meets with their mentor twice per week, with each session lasting two academic hours. In the initial weeks of the semester, student teams define individual roles and responsibilities, explore product development methodologies, generate ideas, and identify challenges based on the chosen topic.

### 2.2 SCRUM Methodology in Practice

The product development process in the course follows the SCRUM methodology and is carried out in two-week sprints. After each sprint, the team must present a meaningful product increment. At all times, the team is expected to maintain a functional version of the product, regardless of the level of functionality.

#### 2.2.1 SCRUM Roles in the Course

- Product Owner – Responsible for ensuring the development team's effective work, primarily through managing the product backlog. In the *Product Development Project*, the Product Owner

is the mentor, though responsibility for managing the backlog can be partially delegated to students.

- Development Team – A cross-functional student team responsible for delivering sprint backlog tasks and presenting a product increment at the end of each sprint. In SCRUM, the team is self-organizing and collectively responsible for outcomes. In PDP, each development team consists of students working on a mentor-provided topic and is fully responsible for the sprint backlog and overall product development.
- SCRUM Master – Ensures that the team adheres to SCRUM methodology, helping participants understand the theory, rules, and values. The SCRUM Master is typically not a subject-matter expert for the project. Business professionals with SCRUM experience are often invited to take on this role.

### 2.2.2 SCRUM Events and Evaluation

Progress is tracked through standard SCRUM events:

- Sprint Preparation – Conducted once, collecting *User Stories* (requirements) from clients (social partners).
- Sprint Planning – Tasks are selected from the product backlog and transferred to the sprint backlog. Students estimate task complexity using points and explain how they will achieve the sprint goal.
- Daily SCRUM – 15-minute meetings held every working day to plan daily activities. Each team member answers: "What did I do yesterday?", "What will I do today?", "Are there any obstacles?" Product Owners do not attend daily SCRUM meetings.
- Sprint Review – Held at the end of each sprint (2 academic hours). The team presents the product increment, and the Product Owner decides whether to accept or reject the results. Rejected work may be returned to the backlog.
- Sprint Retrospective – Up to one academic hour. Focused on reflection, process improvement, and clarifying the team's shared understanding of what "done" means.

### 2.2.3 SCRUM Artifacts

When applying the SCRUM methodology, certain artifacts and other tools are defined to help organize the work and evaluate the results.

- Product Backlog – A prioritized list of work to be completed. This is the only source of requirements and is constantly evolving.
- Sprint Goal – A clearly defined objective for each sprint that guides the team toward a tangible outcome.
- Sprint Backlog – Selected items from the product backlog, along with a plan for achieving the sprint goal. It is continuously updated by the development team throughout the sprint.

## 2.3 Progress Assessment and Peer Evaluation

Progress is evaluated multiple times during the semester:

- Peer evaluations: Weeks 7, 11, and 15;
- Presentations and reports: Weeks 8, 12, and 16;
- Final evaluations: Week 15 (peer and mentor assessment of teamwork and individual contribution) and Week 16 (final product presentation and report).

All assessments are graded on a 10-point scale. In peer evaluations, each student assesses their teammates across four criteria:

1. Engagement (25%) – Involvement in team tasks and decision-making.

(0 – not involved, 1 – involved, 2 – most engaged and motivating others; only one team member can receive a "2")

2. Adaptability (25%) – Willingness to work outside their area.

(0 – stayed within own tasks, 1 – helped with other tasks, 2 – most adaptable; only one team member can receive a "2")

3. Commitment (25%) – Fulfilling responsibilities and supporting the team.

(0 – didn't fulfill tasks, 1 – fulfilled tasks, 2 – always fulfilled tasks and helped others; only one "2")

4. Efficiency (25%) – Use of time and resources.

(0 – inefficient, 1 – efficient, 2 – most efficient, and helped others plan; only one "2")

Self-assessment is not permitted.

### 2.4 Product Reporting and Presentations

The product development report is updated throughout the semester and evaluated by the subject lecturer and mentor in weeks 8, 12, and 16. Interim product progress presentations are held in weeks 8 and 12. For SCRUM teams, informal biweekly presentations may also be held to track progress and improve both the report and final presentation. The final presentation takes place in Week 16 and is delivered to the mentor. It includes a 7-minute product demonstration and an 8-minute Q&A session.

At the end of the semester, during the exam, students present their products. A schedule is created for the team product presentations. Each team is allocated 15 minutes: 7 minutes for the presentation and product demonstration, and 8 minutes for questions. The examination committee consists of at least 3 mentors, 2 course lecturers, and a social partner (or partners).

During the product presentation, emphasis is placed on the product itself, its funding opportunities, impact, and potential for improvement. Students use the NABC model to present their product idea [10]. This model can help students define the idea and think through what really makes the idea valuable to their potential customers. It is also an excellent tool to use when preparing a presentation or a pitch. The model was developed at the Stanford Research Institute. N stands for need, A stands for approach, B stands for benefit, and C stands for competition. A need should relate to an important and specific client or market opportunity, with market size and end customers clearly stated. The market should be large enough to merit the necessary investment and development time. As the approach develops through iterations, it becomes a full proposal or business plan, which can include market positioning, cost, staffing, partnering, deliverables, a timetable, and intellectual property protection. Each approach to a client's need results in unique client benefits, such as low cost, high performance, or quick response (better, faster, cheaper). Success requires that the benefits be quantitative and substantially better, not just different. As everyone has alternatives, therefore students must be able to tell their client or partner why their solution represents the best value. To do this, they must clearly understand their competition and the client's alternatives.

## 3 EXAMPLE OF 2025 STUDENT PROJECT GIJA

The challenge was to develop a system that supports monitoring emotional and/or physical well-being. As more and more people want to look after their health, this can be difficult without support. Research shows that apps that allow users to track their emotions are effective in helping adolescents cope with emotional challenges.

An innovative solution has been proposed to simplify and improve monitoring of both physical and emotional health. In today's fast-paced world, self-care is often neglected, making such a system extremely important. With modern technology, health monitoring is becoming more personalized, and this tool can help users to better understand their bodies, develop healthier habits, and improve emotional well-being. The project aimed to promote a more mindful and healthier society.

**Goal of the project:** To develop a mobile app *Gija*, that helps users, especially young women, to improve their emotional and physical health through a playful and simple user interface.

**Objectives:**

1. Create a development plan and identify the necessary tools.
2. Design appealing visual material aimed at young women.
3. Conduct market research to determine the demand for an app among young women.
4. Carry out a financial and competitive analysis.
5. Create a prototype with playful elements that help users track their habits and goals.

### 3.1 Product Idea

The concept of the app was refined using the NABC method. This innovative mobile app was developed for girls aged 12+ who want to improve their emotional and physical well-being while developing healthy habits.

In today's fast-paced, over-stimulated world, it's often hard to stay focused, motivated, and committed to personal goals. The app provides a simple, visually appealing way to track habits and support health.

At the heart of the app is a unique plant growth concept: a virtual plant will grow and bloom only if the user maintains their goals and habits. This playful element increases motivation, provides visual feedback on progress, and makes self-improvement fun and rewarding.

The app also includes reminders and motivational messages to help users stay consistent and engaged.

The key benefits of the app are encouraging responsibility and goal setting, improving self-esteem and confidence, and making habit tracking enjoyable and visually engaging. Compared to other habit-tracking apps, the project stands out through its motivating visual concept - most alternatives lack this kind of gamified, interactive feedback.

In parallel to the project software development, students performed different types of analysis: Macro Environment analysis, Target Market Segmentation analysis, Competitor analysis, and Financial analysis.

Speaking of **Macro Environment Analysis**, from an economic perspective, it was obtained that Lithuania's growing GDP (Gross Domestic Product) and rising wages suggest favourable conditions for launching a paid app. However, geopolitical instability (e.g., the war in Ukraine) may impact investor confidence and economic stability. From the socio-cultural point of view, though the number of teenage girls is slightly declining, youth spend significant time online and are increasingly interested in personal growth and wellness, making this habit-tracking app relevant and timely. The app must also comply with EU regulations on digital services and data protection (e.g., Digital Services Act). Of course, digital tools like this project support sustainability by reducing paper use. As eco-awareness grows, this can be a positive selling point for users who value environmental responsibility.

The next step was to check the information about possible users. The goal was to understand the needs and challenges of teenage girls in tracking their emotional and physical health. For this goal, the quantitative survey (Google Forms) with 12 questions was distributed in schools and universities. 224 valid responses from girls aged 12+ between February 14 and February 28, 2025, were collected. The key findings of this investigation were that most girls care about their health regularly, many face challenges to stay consistent with habits, some already use apps but want more engaging features, and users are open to paying for useful features. The results confirm interest in a fun and supportive habit tracking app for teens. The app addresses these with a fun and simple habit tracker, including a visual of the growth of flowers to boost motivation.

The app's typical users are girls aged 12 to 22 who are interested in self-development, a healthy lifestyle, and improving their quality of life. They also use smart technologies and social networks daily, are ambitious, motivated, active, demanding, and creative, appreciate aesthetics, enjoy using innovative and

engaging mobile apps, and are geographically spread across all of Lithuania. The **target market segment** is girls aged 15–17. This group is highly interested in emotional and physical well-being and is starting to explore habit tracking. The app meets their needs by helping them manage school stress, maintain routines, and follow the growing trend for healthy lifestyles. Although funded by parents, they have the autonomy to choose how to spend money, making affordable paid features accessible.

**Main Competitors** on the market are:

- **Apple Health / Samsung Health:** Indirect competitors focused on physical health of a broad audience (steps, sleep, calories); strong integration, but lack emotional well-being and habit tracking features. Free but rely on paid hardware (e.g., smartwatches).
- **The Fit Collective:** Direct competitor targeting young girls, focuses on emotional and physical health, habits, and motivation through community support. Charges for premium features.
- **Daylio:** Direct competitor for emotional tracking via journaling; less focus on physical activity.

The app can stand out by addressing competitors' weaknesses, such as adding visual motivation, interactive features, and personal communication, especially tailored to young girls. These strengths can give the product a competitive edge.

**The financial analysis** indicates that the *Gija* app has strong potential for profitability. In the first year, it expects around €48.4K in costs and €49.1K in revenue, resulting in a small net profit of €285.22. By Q4, the app becomes profitable. With users' growth and paid subscriptions, the second year is expected to be more profitable, making *Gija* financially attractive in the near future.

*Gija* uses modern technologies:

- **Flutter**: Enables fast cross-platform app development for iOS and Android with a smooth user interface.
- **Google Firebase**: Handles user authentication, real-time data storage, and analytics.
- **Google Drive**: Stores media files and backups.
- **Figma**: Used for designing and testing the user interface and the app flow in early development.

Together, these technologies provide an efficient, scalable, and cost-effective foundation for the app's development and future growth.

### 3.2 The Design of the Application *Gija*

Since users often look for apps on their phones by their icon, a clear and recognizable logo helps them find it quickly. A well-designed logo becomes the app’s business card. That is why the students also created a logo for this app in development (Fig.3).

**Fig. 3.** *Gija* logo

As it was mentioned, at the heart of the app is a unique plant growth concept. Users can grow virtual plants that will only grow and bloom if the user maintains their goals and habits. Figure 4 shows possible examples of plants growing.

**Fig. 4.** Visualization of different plants to grow

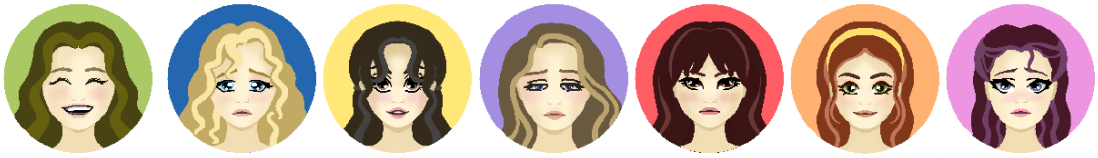

**Fig. 5.** Visualization of possible emotions

The visualisations above (Fig. 5) show emotion illustrations that were used in the app's functionality. Each image represents a different emotional state: happy, sad, motivated, tired, angry, determined, and confused. In the app, girls can also choose their avatar (Fig. 6).

**Fig. 6.** Visualization of possible avatars

During the project, the plant growth stages were also prepared. Each plant grows depending on the difficulty of the set goal, so the number of growth stages varies. Below is the growth process of a clover, which consists of four stages and lasts one week. Since the growth stages of other plants are more complex and take longer, clover is shown here as the plant with the fewest growth stages. If there are several tasks, the plants can grow on the plant island (Fig. 7).

**Fig. 7.** Visualization of a growing plant and an example of a plant island

The students had to complete 8 sprints, during which their team consistently completed planned tasks, aiming to maximize capacity and maintain a development pace. The project development process was

controlled in Jira software [11]. According to the last sprint burndown chart (Fig. 8), 74-85 story points were planned at the beginning of the sprint and steadily decreased to 0 by the end. Work progress remained consistent throughout the sprint, although some days showed slower progress. The team's average velocity was around 5 story points per day, aligning with the work plan. No significant delays were recorded, and all tasks were completed on time.

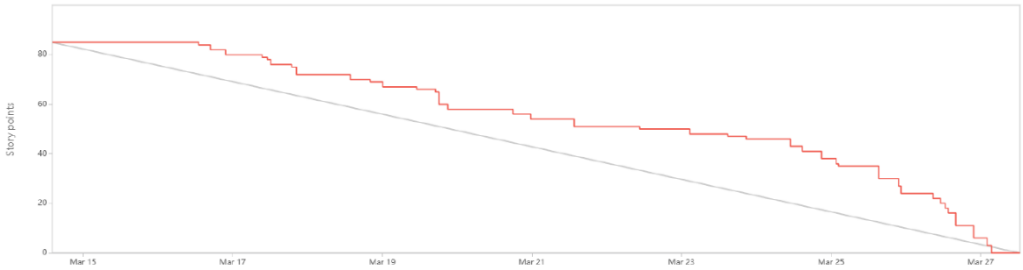


**Fig. 8.** Last sprint burndown chart from Jira

Finally, the different examples of the app (as screenshots) were proposed. At the top of the main screen (Fig. 9), the avatar and name of the user profile are displayed. Tapping the profile takes the user to the profile screen, where they can see their profile icon, name, and username. Below that, the email, the registration date, and the app version are shown. From this screen, users can edit their profile, change settings, and log out. On the settings page, users can switch between light and dark modes, set the duration of their menstrual cycle, and delete their account. In the premium version, users also have access to a friend list, where they can add or remove friends.

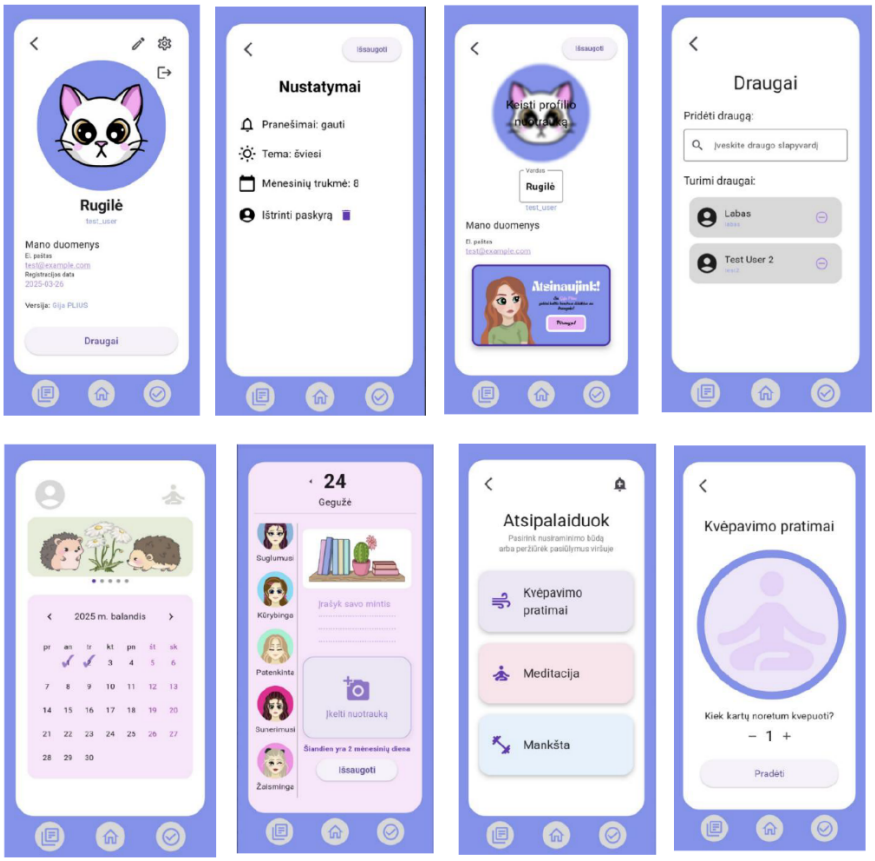


**Fig. 9.** Visualization of the application

When tapping the journal entry button, the user is taken to the journal screen. At the top, the avatar of the user's profile and a “Meditation Corner” icon are visible. In the Meditation Corner, the user can choose relaxation categories such as breathing exercises or meditation.

On the journal screen, users can select their mood for the day, upload a photo, write down thoughts or daily events, and mark the days of the menstrual cycle. At the bottom, a monthly calendar is shown, allowing girls to navigate between days of the month.

From the main screen, the user can access their Habits and Goals Garden. Here, they see the habits and goals that they are currently working on. Swiping to the side shows their personal goals, and in the premium version, a shared garden with friends' goals is also displayed (Fig. 10).

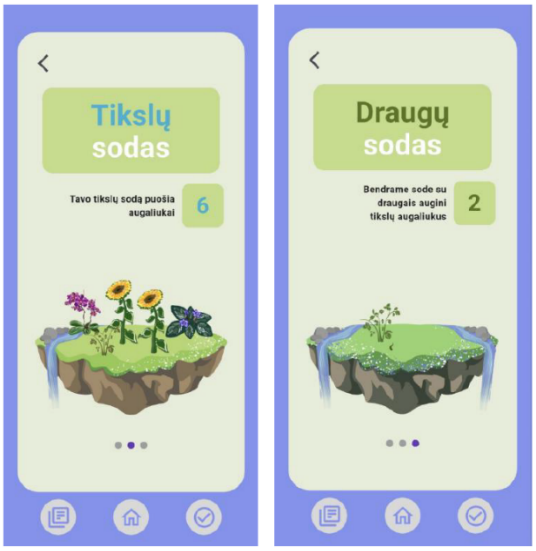


**Fig. 10.** App visualisation

The design of the app was designed for teenagers, using playful visuals of growing plants to represent progress, [12]. A functional prototype of the *Gija* mobile app has been developed, allowing young girls to track their goals and habits through a gamified system where actions grow a virtual plant. Built with Flutter for Android and iOS, the app includes key features like goal tracking, visual progress, and daily reminders. Initial questioning and tests confirmed that it is user-friendly and motivating.

## 4 CONCLUSIONS AND DISCUSSION

The SCRUM method can be easily applied in the *Product Development module* at Kaunas University of Technology. However, this method requires greater motivation from all parties interested in the best possible result to consistently develop the final product and maintain constant communication, than the usual approach, where requirements are agreed at the beginning and the final product is presented after 4 months. Collaborative software such as Jira or a virtual learning environment such as Moodle Activities can be used for product development teamwork, information sharing, and note-taking.

The SCRUM method enables the efficient creation and development of the final product through effective communication within the whole team (the SCRUM team – including mentors, students, customers/social partners, or future users) who are all interested in achieving the best possible result of the product.

Dividing the product development into smaller phases and frequently discussing the phases of the product to be developed, as well as agreeing and checking the clarity of concepts, tasks, and deadlines,

enables the creation of a high-quality final product that meets the requirements of the customer and the needs of future users.

The introduction of SCRUM in a project-based learning environment has been shown to improve students' soft skills, including communication, leadership and collaboration. Students reported better teamwork, better time management and a greater sense of responsibility when participating in SCRUM-based projects. The iterative nature of SCRUM encourages students to reflect on their learning processes, promoting self-regulation and metacognitive skills. This approach helps students to set learning goals, monitor their progress, and adjust their strategies as needed.

The iterative nature of SCRUM, including regular meetings, such as daily stand-ups and sprint reviews, can be time-consuming. Educators may find it challenging to allocate enough time within tight curricular schedules. The success of SCRUM depends on the motivation of all team members to work consistently and achieve the best final product. In an academic environment, this can be a challenge due to different interests, time constraints, or a lower sense of responsibility. Teams in a *Product Development Project* module are made up of students from different study programmes, so working in interdisciplinary teams is not always easy.

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