Digital Ecosystem for Children's Rehabilitation with Psychomotor Deficit

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Abstract. Introduction. In this paper we review the change that the psychomotor deficit's children rehabilitation system has had to further adapt due to the COVID-19 pandemic, explaining the importance of early care with the support of computer technologies. Because of the health emergency, many patients with a motor disability couldn't assist to the places that provided therapy services of various kinds, joined to the fact that therapists also had to avoid crowds in their rehabilitation centers and thus not spread the virus in this vulnerable population. **Methodology.** The approach used is a mixed approach, with children of 0 to 5 years old diagnosed with psychomotor deficit due to a development disorder which are coursing initial education as the objects of study. The instruments used have been observation with action research. **Results.** A solution is shown creating a digital ecosystem model that inserts Scrum agile methodology for the children's rehabilitation process, that allows interaction between all the actors in the process, such as children, parents or guardians, therapists, doctors, and specialists. Some related works are mentioned that offer a broader perspective of the scope that this technological approach has been generating. The proposed solution is tested in a study case at the APPAC Association. **Discussion-Conclusion.** The proposed model needs a lot of iterations to consider his value and get more detailed information about user experience and the perceived benefits at psychomotor deficit. It discloses important results with technologies' use to work in the future.

Keywords: Digital ecosystem · Scrum agile methodology · Initial education · Psychomotor deficit · Children's rehabilitation

1 Introduction

The use of virtual meeting platforms accessed from technological means such as desktop or laptop computers, mobile phones and tablets, has begun to be used with great popularity as software that allows communication in real time, especially in the field of distance education and rehabilitation for children with disabilities; This has allowed us to carry out a way of working called teleworking, mostly known worldwide as "telehealth", caused primarily as a result of the COVID-19 pandemic, but above all, it has established a new dynamic, both work and of social relations, achieving that educational

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institutions, business companies and people in general adapt more and more to the use of these technologies. Precisely like the Management Model of a Project for the Insertion of Educational Technology in a Multiple Attention Center [1], which used playful educational applications on devices such as tablets or desktop computers and jointly using m-Learning as a complement in the educational program for children with multiple disabilities in order to support the development of reading and writing skills, software engineering must also create spaces that allow rehabilitation, education, communication, and inclusion of children with disabilities, among which are some psychomotor deficits. It is worth mentioning that especially in European countries, robotic devices are being developed with the help of knowledge in software engineering and technologies that aim to help the rehabilitation of children with this deficit. Most of the children with psychomotor deficits who have access and the opportunity to receive care with rehabilitation therapies in various institutions, especially governmental institutions, civil associations, foundations or in a particular way in private centers, but there was contrasting pattern to the normal way to obtain this type of care a few months after COVID-19 was declared a global pandemic.

This work is made up by seven sections as follows: This first section with an Introduction where is briefly given the research panorama and theoretical framework; Sect. 2 about Problem Outline, explaining the origin of the main problematic, detailing the difficulties detected in the context of investigation; the Methodology in Sect. 3, that explains the study structure, the Sect. 4 defining a Digital Ecosystem Model as a proposed solution with its phases, a Case Study in Sect. 5 developing a scenario where the Digital Ecosystem Model is applied; then a Discussion at Sect. 6, expressing opinion regarding the use of the proposed model; and finally Sect. 7 with Conclusion section, describing what is deduced with the use of the model and possible future work.

1.1 Digital Ecosystem and Scrum Agile Methodology

A digital ecosystem is found in the field of software ecosystems, defined as the interaction of a set of main actors in a common technological platform [2] that gives results in software solutions and services, pointing out as a distributed adapted open sociotechnical system with properties of self-organization, scalability, and sustainability [3]. An agile methodology serves to develop software iteratively and with continuous feedback [4]. The Scrum methodology is based on process management, it assumes the existence of a project, which almost always exists in object-oriented software development [5], is faster and more efficient with regular communication. Each iteration is called a "sprint", the objective of which is to dynamically provide feasible deliverables in the process. In each sprint, the delivery of a work product stands out that adds value to the project and to the users. The outstanding characteristics of the Agile Scrum methodology are empirical feedback, team self-management and the construction of properly tested increments with short iterations.

1.2 Initial Education Services and Blended Rehabilitation

Initial Education is the educational service that is provided to boys and girls from zero to six years of age, to enhance their integral and harmonious development in an environment of formative, educational and affective experiences, which allows them to acquire skills, habits, values, autonomy, and creativity. This service is also applied to children with disabilities in Multiple Care Centers but must be complemented with appropriate therapies for each child's psychomotor deficit, while in combined interventions, where online treatment and contact with specialized care attention [6] in a physic way with professionals is mixed [7] and coordinated.

1.3 Psychomotor Déficit and Development

Monitoring of psychomotor development is considered an extremely important task in the health supervision of infants and preschoolers [8], since the diagnosis of a psychomotor deficit is largely due to neurological damage, observed mainly after the prenatal period, postnatal and infantile. The timely detection of disorders of psychomotor development offers the possibility of intervening early, correcting most of the alterations and attenuating others. The psychomotor deficit (PD) is the clinical manifestation of pathologies of the Central Nervous System (CNS), either due to genetic alterations and/or environmental factors, which affect the psychomotor development of the child in the first 24 to 36 months of life, what defines the developmental progress in a child in motor, language, manipulation and social areas [9]. Characteristics of a child with a psychomotor deficit may include muscle weakness, abnormal muscle tone, decreased range of motion of the joints, and decreased balance and coordination [10]. Brain or neuronal plasticity refers to the adaptive capacity of the central nervous system (CNS) to reduce the effects of injuries, through changes that modify the structure and function, both in the internal and external environment [11], with which effective rehabilitation procedures are every day. It is a neural reorganization capacity that occurs to try to compensate or restore lost function. It begins in the areas around the lesion and later spreads to other secondary areas belonging to the same hemisphere or analogous areas of the contralateral hemisphere. Rehabilitation therapy-type experiences modify neural circuits, since they are plastic, and in most cases the efficacy and the number of synaptic connections change [12].

1.4 Usable Services with Lean User Experience

Both rehabilitation therapies and initial education are necessary services in the support process of the psychomotor deficit's rehabilitation. Services are a series of interactions between customers and the service system through many different touchpoints during the customer journey [13]. And as such, they are accompanied by the user experience. To measure this, it can be supported by Lean User Experience, or simply Lean UX, which is a design practice centered around validating hypotheses, where instead of thinking of a product as a series of features to be built, Lean UX looks at a product as a set of hypotheses to be validated [14]. Lean UX stands on three important foundations: *user experience design, Agile Software Development,* and *Lean Startup* method. The goal is validating a proposed business solution-a hypotheses using customer feedback [15]. Usability is all about how easy it is to get the offering when using the service [13].

2 Problem Outline

Since 2020, COVID-19 has significantly interrupted rehabilitation treatments such as physical, occupational, language or sensory therapy to children with psychomotor deficits. The main problem is that the processes of brain plasticity of children with psychomotor deficit does not achieve its functions because of the lack of stimuli that the frequency of therapies provides, since with above mentioned, therapies received has been zero or less, affecting stages of development that is required for their recovery and adaptation to daily life and of the highest quality possible. Although this problem directly affects children, parents are undoubtedly also the harmed in several ways, so focusing on parents, the following specific problematics have been detected:

a) Lack of knowledge of elements from contemporary approaches, tools and activities for therapies that could help their children in brain restoration and motor learning [16].
b) Partial or total restriction assisting to institutions where their children used to receive rehabilitation treatments, since many health care services for children with disabilities were canceled [17] because of the pandemic time, which is uncertain to now when it will finish.
c) Lack of support from the government, since access to rehabilitation interventions for patients including those with psychomotor deficits was reduced, as well as elimination of group therapies [18], causing the closure of Rehabilitation Centers such as Integral Development of the Family (DIF for its acronym in Spanish), Center for Rehabilitation and Child Development (CREDI for its acronym in Spanish), Center for Rehabilitation in Special Education (CREE for its acronym in Spanish), and partially closed the Center for Child Rehabilitation Teletón (CRIT for its acronym in Spanish), among others in Mexico, to provide sufficient therapies.
d) The resources offered by the new model of Special and Inclusive Education at distance of the Public Education Secretary (SEP) in Mexico by television do not transmit a personalized way like an individualized program for appropriate therapies at each specific child, and the web page of the institution just have written manuals documents of suggested activities or videos with interviews, but not classes guided by therapists to observe positions and maneuver the kids according to every need [19].
e) Technological limits and barriers in the patients, clinician, organizational and system levels that do not allow implement an effective adoption of telehealth for mild psychomotor deficit children [17].

In summary, the brain plasticity of children with psychomotor deficit does not fulfill the functions of which it is enabled, so children should not be treated with therapies every day, in addition to the earlier the age of attention and rehabilitation, the greater the impact on the benefit to lead a quality of life as satisfactory as possible.

3 Methodology

In this research-action study with a mixed descriptive and exploratory approach, children in an age range of 0 to 5 years from a civil association of an educational and rehabilitation

nature, that are conditioned with a diagnosis of psychomotor deficit condition. Speech and physical therapists who attend to children with psychomotor deficits derived mainly from a diagnosis of cerebral palsy participate. Observation and inquiries to the therapists were carried out to obtain information about the rehabilitation service in order to know the user experience, and also, the instrument developed by Doman (2005) [20] was used, in which the degree of psychomotor deficit of children is measured before starting to use the ecosystem model. This instrument is divided into six areas, which refer to six primary reflexes that each child has at birth, which will gradually become competencies, and these in turn are used in essential life skills. As a child advances in a competition to develop final ability, progress manifests itself in 7 stages of brain growth, beginning with the Early Brainstem and Spinal Cord stage, which is when all six primitive reflexes are present. As a comparison, in a healthy child, as these reflexes progress with rehabilitation and repetition experiences, thanks to plasticity in the brain, it is possible to reach the seventh stage at the average age of 72 months, which would mean achieve a Sophisticated Crust. The procedure that has been followed is to be guided by the ecosystem model during several predetermined iterations in a defined period of time of six months, and then a new measurement is carried out with the same instrument to collect the information, capture it and make the analysis with the comparison of the results obtained.

4 Blended Rehabilitation Digital Ecosystem Model

The earlier the age of educational care and rehabilitation of conditioned children with psychomotor deficits, the greater the impact on the benefit of leading a quality of life that is as satisfactory as possible. Thanks to information and communication technologies, in these circumstances specifically, virtual meeting platforms serve as content management systems to communicate with the main actors: therapists, parents/guardians, children, managers and specialists. It is proposed as a solution the development of a digital ecosystem that includes interaction with personalized programs on practices, exercises and activities designated by specialized therapists for children attending the initial level, which supports in suggesting procedures on how to use technologies to carry out distance therapies, and that, together with the human factor, makes it possible to study and evaluate the implications that the design of a digital ecosystem has on the psychomotor development of initial education, becoming a tool that provides a combined and complete online rehabilitation. Figure 1 shows the design of the digital ecosystem model, based on the agile Scrum methodology [4] creating a combined rehabilitation environment [7], that is, with a mix of both face-to-face and virtual services, to support children from the initial education stage with some psychomotor deficit. This type of combined work already exists in some Children's Rehabilitation Centers (CRIT) in Mexico, called tele-rehabilitation [21].

By having computers and using Zoom's virtual meeting platform, they schedule with some parents of children with psychomotor deficits being beneficiaries of their services and guiding online therapies from their workplace to their homes, following the program rehabilitation according to the goals and progress of the child. From the houses where they receive this type of therapy, parents must also have devices such as computers or their cell phones, in addition to the Zoom platform installed and the

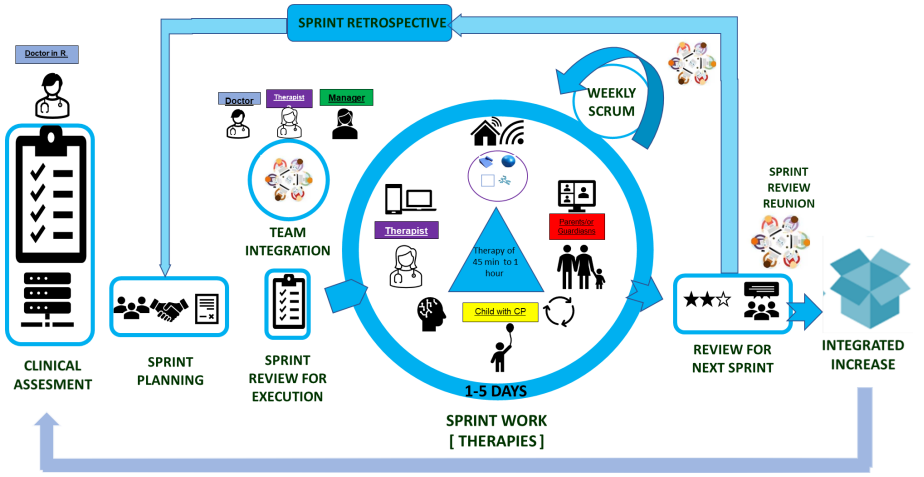

Fig. 1. Digital Ecosystem for Blended Rehabilitation Model for Children Development Centers inspired by [4].

WhatsApp platform to receive the access links to each therapy in Zoom. That is why the three pillars considered in this study that make up the model of the proposed solution are: *Digital ecosystem*, which allows working in a hybrid combination both in person for certain cases, and virtually offering data, resources and information concerning the rehabilitation of each particular child with psychomotor deficit, although it is aimed at parents or main caregivers of the families of children in the initial education stage, the ecosystem can be adapted to children of any age who require this service; the *Human part* made up of parents or caregivers, children in initial education with psychomotor deficits requesting therapy services for their development, therapists, doctors and specialists who monitor the progress in the development of infants, as well as managers who support ecosystem stewardship; and the *Technology* made up of both the physical resources that will favor communication between the parties, and the knowledge of digital skills.

The model is made up for six phases that create a re-feeding cycle:

1. **Clinical Assessment**. First phase the team of doctors and rehabilitation specialists examine the child and place him at his detected levels of the developmental areas according to the Glenn Doman instrument [20].
2. **Sprint Planning.** Second phase the team of doctors, rehabilitation specialists communicate with therapists and manager to plan the sprint, wich will consist of a week of various therapies that will support the progress of the child to reach the levels in the corresponding areas of development according to their age. The prescription of the amount and frequency of therapies is carried out at this stage.
3. **Sprint Review for Execution.** Third phase,the managers inform parents about the prescription of therapies for their children and always remind them days in advance of their work schedule so that the family prepares on the specified days and times.
4. **Sprint Work.** Fourth phase, the most important stage in the model, this is where therapists, children and parents come into play, this part give us crucial information

to make changes and improve the planning, the training to the professionals, so it could be better communicated to parents for a better preparation of the parents at the time of receiving instructions on the realization of the therapy. These examples of aspects and much more can be obtained from this moment.

5. **Review for next Sprint.** Fifth phase, there is a second team reunion to discuss about how all the work was performed including the activities in first phases; as well as the information and results of the fourth phase, the Sprint Work.
6. **Integrated Increase.** In base to the reunion of the sprint review in the past phase, parents and therapists coincide in a result that can be considered an "increase" in the advance of the child's psychomotor development. This increase is taken like a characteristic that can be integrated in the new next sprint, or as an outstanding information for necessary changes.

By the purpose, a case study has been carried out completing all the phases of the model explained in the next section of the work.

5 Case Study

The model explained on the previous section in Fig. 2 is applied with a case study research method at the Pro Paralytic Association (APPAC for the acronym in Spanish) a Civil Association of the city of Zacatecas that works to improve the quality of life of children with cerebral palsy [22] who in turn have psychomotor deficits due to certain disorders in development, among other diagnoses such as encephalopathies, intellectual disability, autism, among others. Two iterations are shown applying the model.

5.1 Case 1. Iteration 1

Alexander is a 3-year-old chronic boy, with different neurological ages in manual, language and tactile areas, demonstrating competencies in visual and auditory areas according to his chronic age. His diagnosis is that of a developmental disorder with symptoms of athetosic infantile cerebral palsy. The combined rehabilitation digital ecosystem model is applied in the Asociación Pro Paralítico Cerebral A.C. (APPAC) of the city of Zacatecas, Mexico as described below.

5.1.1 Clinical Assessment

The first stage consists of an assessment carried out by specialists in neuropediatrics and rehabilitation medicine, who rely on previous studies and clinical analyzes to specifically diagnose the degree of psychomotor deficit, carrying out a questionnaire to parents or guardians and previously requesting specific studies to review them, and also carrying out movement and posture tests to measure gross and fine motor skills, positioning case 1 on a scale within each area of development. Figure 2 shows the Development Profile of this case based on the instrument developed by Glenn Doman [20], according to the qualification and assessment of the specialists. This instrument is divided into six areas, which at birth refer to six primordial reflexes that gradually become competencies,

and these in turn become essential life skills. As a child advances through his age in a competition to develop the final ability, progress manifests in 7 stages, beginning in the first stage of development with the early brainstem and spinal cord presenting all six primitive reflexes, and that as they grow with the rehabilitation and repetition experiences that your brain has, thanks to brain plasticity, you can reach the seventh stage in the average age of 72 months, your brain reaching a sophisticated cortex.

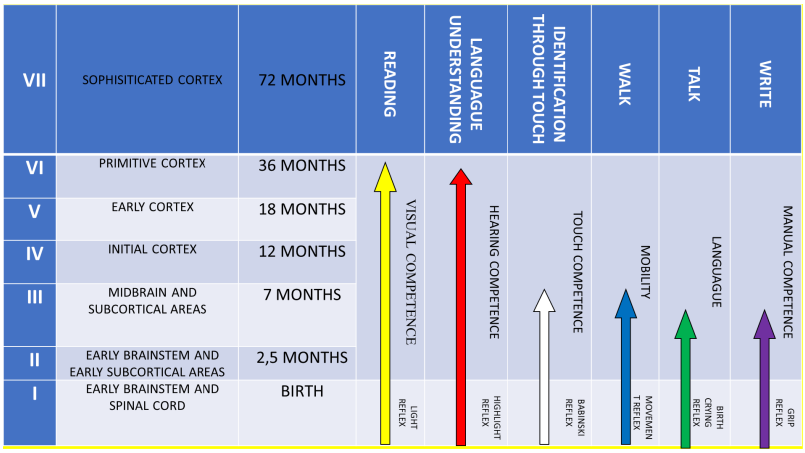

Fig. 2. Iteration 1. Development Profile for initial assessment. Inspired by [20].

The figure shows case 1 with visual and auditory skills according to their age, while the skills of touch, mobility, language and manual are in various stages not according to their age, diagnosing a mild psychomotor deficit.

5.1.2 Sprint Planning

Based on the previous assessment of psychomotor development, together with his diagnosis, the specialists and managers of the institution meet to define the necessary therapy program for case 1. They have decided to prescribe several therapies for his rehabilitation in the areas with deficit. Table 1 shows the therapies, days and times that have been prescribed.

Table 1. Therapy schedule.

Therapy	Days	Schedule	Times per week
Physic	2–6 Aug	9:00 am	5
Occupational	2, 4 y 6 Aug	11:00 am	3
Language	2,3,5 Aug	12:00 pm	3

5.1.3 Sprint Review for Execution

The project managers make a review at least two days before the therapy session to confirm the online assistance of the parents or guardians, the advice in case of ignorance regarding the use of the technologies and send links to the virtual family reunion via social network. Parents are notified of the days and times that they have been scheduled to connect to the Zoom platform to carry out online therapy.

5.1.4 Sprint Work

The parents connect daily to physical therapy, and to the other therapies on the corresponding days by entering the link previously sent by the managers of the institution. An example of the first iteration of physical therapy is shown in Fig. 3. The left column are the work moments according to the time established for the session, the second column are the exercises performed at each moment, the top row indicates the objectives set by the specialists, and the marked "Xs" indicate the objective to which each exercise carried out in therapy contributes.

Physic Therapy 9:00 am Case 1	Objective /Excercise	Head Control	Spasticity Absence	Four Points	Sitting	Turns	Drag
9:05	Calisthenics		X				
9:15	Bobath Movilizations		X	X	X		
9:25	Parachute	X		X			X
9:30	Opening hands		X	X	X	X	X
9:35	Got up sitting	X	X		X		X
9:45	Crawling	X	X	X	X	X	X

Fig. 3. Iteration 1. Physical therapy exercises

5.1.5 Review for Next Sprint

The sprint has provided the necessary information to learn more about needs in the ecosystem, relevant changes and more efficient application dynamics. After this first week, specialists and managers discuss the details of the sprint doing a retrospective, to improve aspects that have been obstacles, as well as check the progress observed in iteration 1, among any other matter of interest to the project stakeholders. creating feedback for each team member. This meeting defines what is called an "increment," which is a significant achievement achieved during this sprint.

5.1.6 Integrated Increase

In this first iteration, the increment has been the most accurate evaluation of the movements that the patient of case 1 manages to perform. This information is passed as information for the return to the first stage of the next iteration.

5.2 Case 1. Iteration 2

5.2.1 Clinical Assesment

For this second iteration, the evaluation of the pediatric neurologist is not necessary. This will be a review for progress assessment by a rehabilitation physician and therapists. Reports on the first iteration are gathered with information from the first sprint and the increment. The development profile instrument is filled out again as Fig. 4 shows, which has continued at the same levels, since it has only been the first week of work.

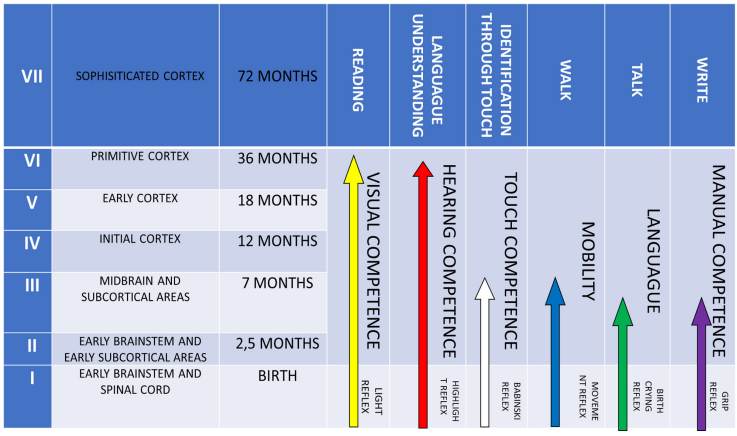

Fig. 4. Iteration 2. Development Profile. Inspired by [20].

5.2.2 Sprint Planning

Based on the documentation collected from the first sprint and the increase for this iteration, specialists and managers meet in person or online and discuss the implementation of the second sprint and other topics of interest for this case. They decide to continue with the same number of physical, occupational, and speech therapy sessions per week.

5.2.3 Sprint Review for Execution

Project managers do a review at least two days before the therapy session for the next sprint and confirm attendance online from parents or guardians. They send links to the virtual meeting to the family via social network to inform them that the days and hours remain the same.

5.2.4 Sprint Work

The actors are connected via the links sent by the managers of the institution. An example of second iteration of physical therapy is shown in Fig. 5.

5.2.5 Review for Next Sprint

The sprint of second iteration has given information that case 1 does not control his anxiety in exercises for dragging, showing high degree of discomfort, which prevented the parents from exercising in the correct way while receiving the indications from the therapist. In addition, there were lapses of internet disconnection from the APPAC, so indications were received in a short form and time was lost to follow-up therapy.

5.2.6 Integrated Increase

The increase detected has been to alternate dragging exercises when anxiety is shown, so that it decreases and gradually gets used to this movement.

Physic Therapy 9:00 am Case 1	Objective/ Excercise	Head Control	Spasticity Absence	Four Points	Sitting	Turns	Drag
9:05	Calisthenics		X	X	X	X	X
9:15	Bobath Movilizations		X	X	X		
9:25	Bridges			X	X	X	X
9:30	Got up sitting	X	X		X		
9:35	Sitting to upside down	X	X	X	X	X	X
9:45	Rehab Ball	X	X	X	X	X	X

Fig. 5. Case 1. Physical therapy exercises in iteration 2.

6 Discussion

The application of various disciplines and methodologies for the study has shown certain impressions. By combining software engineering, agile Scrum methodology, interaction design for the digital ecosystem model, and Lean UX, with the use of virtual meeting platforms and connectivity tools, several aspects highlighted a lot of things to consider. Naming the perceived obstacles, first, presents a considerable challenge in involving all stakeholders in carrying out all the stages within a methodology unknown to them, especially in compliance with it, although it has facilitated a very meticulous communication at many moments of the process, which allows looking for the appropriate ways to use

the tools, the times for every rehabilitation service, planning, etc. Scrum methodology in the process of the digital ecosystem model is faster and efficient, there is regular communication with full releases that allows actors and interested parties to participate in the application of the model. There are reviews for each release done in look-back meetings and each sprint highlights the delivery of a work product that adds value to the project and users. That's why it could adapt to the rehabilitation process of psychomotor deficit's children because it is very similar to the process taken by therapists and specialists, but this one gives them more valuable information not only about the therapy service itself, also about the attention, the user experience, or the service design.

On the other hand, the optimization with the operation of the technologies is not always good, it goes through dilemmas such as failures with the internet connection or fall of the web platforms. And there was also lack of commitment by the parts, parents or guardians mostly, but also sometimes the specialists.

A frame of reference that details an important change in the health dynamic of rehabilitation services for children with psychomotor deficits is shown in Fig. 6, where it seems a scenario before the COVID pandemic and a scenario after, within a new roles and resources has been set because of the health situation.

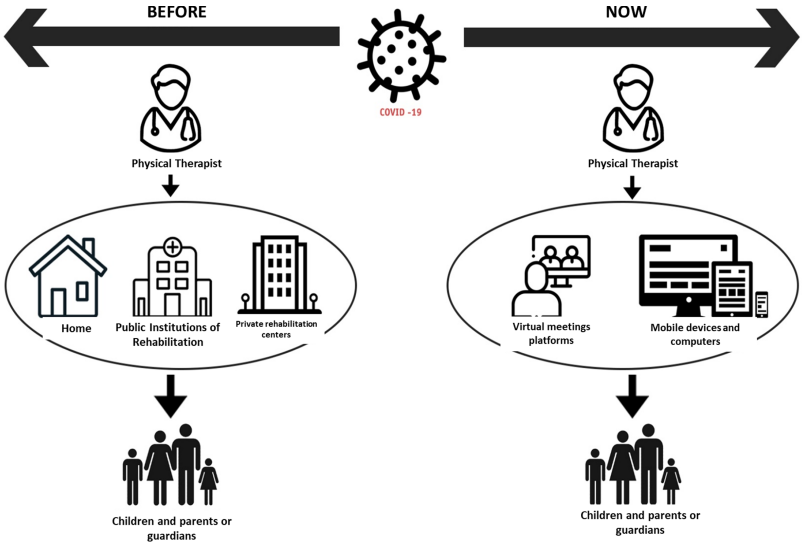

Fig. 6. Frame of reference for the disability's children's care such as psychomotor deficits before and after COVID-19. Based on [23].

The digital ecosystem model for a blended rehabilitation of psychomotor deficit of initial education's children has collaborated with the following attributes:

- It allows to communicate to actors such as parents, children, therapists, managers, doctors and other specialists in the process of therapy services for children with psychomotor deficits.

- Assists parents or guardians to manage comprehensive care with therapies for their children.
- Covers the role of guidance in rehabilitation issues and important issues in diagnosing conditioned children with psychomotor deficits.
- It makes it possible to carry out distance therapies using virtual meeting platforms and interactive computer systems to achieve a mirror or synchronous effect for parents to follow the instructions.
- Provides agendas to mix periodic evaluations and face-to-face therapies, being a type of combined rehabilitation.

7 Conclusion

The relevant data that the study has given is that it can be adapted to the parent's needs with children who have psychomotor deficits in many ways, offering communication viability regardless of the distance or the health circumstances of the world, also facilitating access to information that previously took longer to obtain, is undoubtedly useful for the treatment of patients who need rehabilitation at all early ages and as training for parents or guardians.

The proposed digital ecosystem model has visualized deficiencies in rehabilitation services, but also may consider improving these services through a user-centered design approach, with precise measurements on the user experience that offers additional information for the search in solutions at specific moments of the service, in order to improve the process in the model. It needs a lot of iterations to know exactly the impact of providing advances in the psychomotor development of each child with a mixt rehabilitation. Although mostly the advances depend on the intervention of specialists with parents or guardians, access to mobile devices and the generation of positive interaction in the virtual meeting platforms will bring a better user experience, so parents could be taken account to maintain most satisfaction as possible in the process every time. The agile scrum methodology helps to demonstrate functionality, reviewing the way the actors interact, including aspects of behavior or technical skills, plus the strengths and weaknesses of the team are better known until once the iterations are carried out and this is important for creating knowledge and best practices.

Some limitations on the study is that there are still many institutions that do not have the economic privilege of technological resources or do not understand how to operate within a system supported by technologies of this nature and must be assisted with instruction and teaching of basic issues.

The management of a digital ecosystem about disability situations such as psychomotor deficit is extremely helpful for various aspects of rehabilitation, inclusion and feasibility. The instruments that allow this exploration to be carried out from a more technological perspective should have the purpose of creating a closer commitment between parents or guardians with specialists and therapists that leads to a result of a more personalized accompaniment. In this sense, technologies such as robotics, artificial intelligence, augmented or virtual reality are other clear examples of disciplines that will evolve independently in this matter to serve as complements to the broad field of psychomotor deficit disability. A digital ecosystem must be designed in accordance with

the environment where it will develop, creating relationships of inclusion, cooperation and equality.

All this can be enriched with digital skills, the securing of internet contracts and formal virtual meeting platforms, optimizing the space that ensures a connection that allows good audio and video, exploring ideas and perspectives of the stakeholders involved who will have important things for contribute in order to achieve better virtual relations, a good development in a digital ecosystem and the contribution to the psychomotor development of children and their family environment, as well as that of knowledge.

The technologies came to favor health processes in the care and rehabilitation of infants, remaining as practical tools in the face of the new normal with a not yet controlled or completely stopped pandemic. And although technologies are offering us autonomy and deeper digital skills, issues must be prioritized to find problems, understand them, and propose realistic solutions with the support of technological resources.

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