

# Digital interventions for stroke survivors: a Family resilience approach

## WHAT:

This research project focuses on studying the impact of digital rehabilitation on stroke survivors and their families.

## HOW:

It proposes a platform that leverages family resilience as a framework to provide resources and opportunities for community building. This approach addresses the issues identified in the literature and by stroke survivors.

## PRELIMINARY RESULTS:

The platform aims to improve recovery and well-being by empowering survivors to take an active role in their treatment.

### The Value of Addressing Stroke Topics

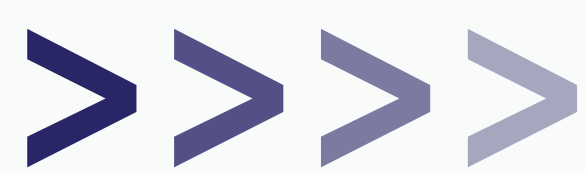
- Stroke is a leading cause of death and severe long-term disability globally.
  - Approximately **15 million people suffer from stroke worldwide each year**.
  - Stroke patients often experience physical limitations, reduced ability to perform daily activities, and decreased work performance.
  - Stroke can lead to psychological issues such as anxiety, depression, and personality changes.
  - The immediate impact of a stroke **also affects the family and social lives of survivors**.
- (Camak, 2015)

### Prioritizing Rehabilitation: A Justification

- Stroke recovery requires a wide range of resources, including specialized medical care, physical, speech, and occupational therapy, psychological assistance, and support networks at home.
- Survivors often need help with daily tasks**, which shifts responsibilities to family or caregivers, reshaping family dynamics and increasing care obligations.
- Caregivers and family members **also experience stress, anxiety, and uncertainty**.
- Support networks, stroke education, and resources for caregivers are crucial in mitigating the immediate impacts of strokes.
- These support systems help nurture family resilience during challenging times.

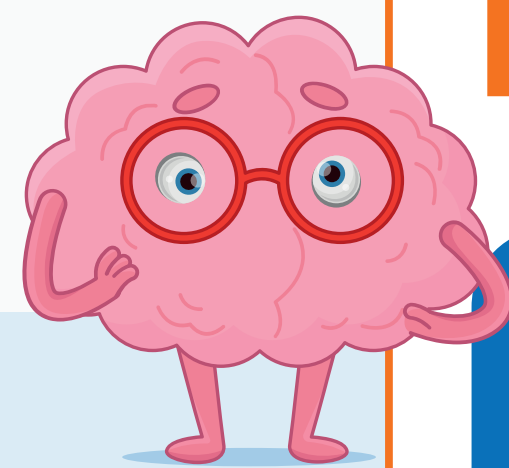
This highlights that a successful intervention for stroke survivors should put their whole social sphere at the center.

## THEORY



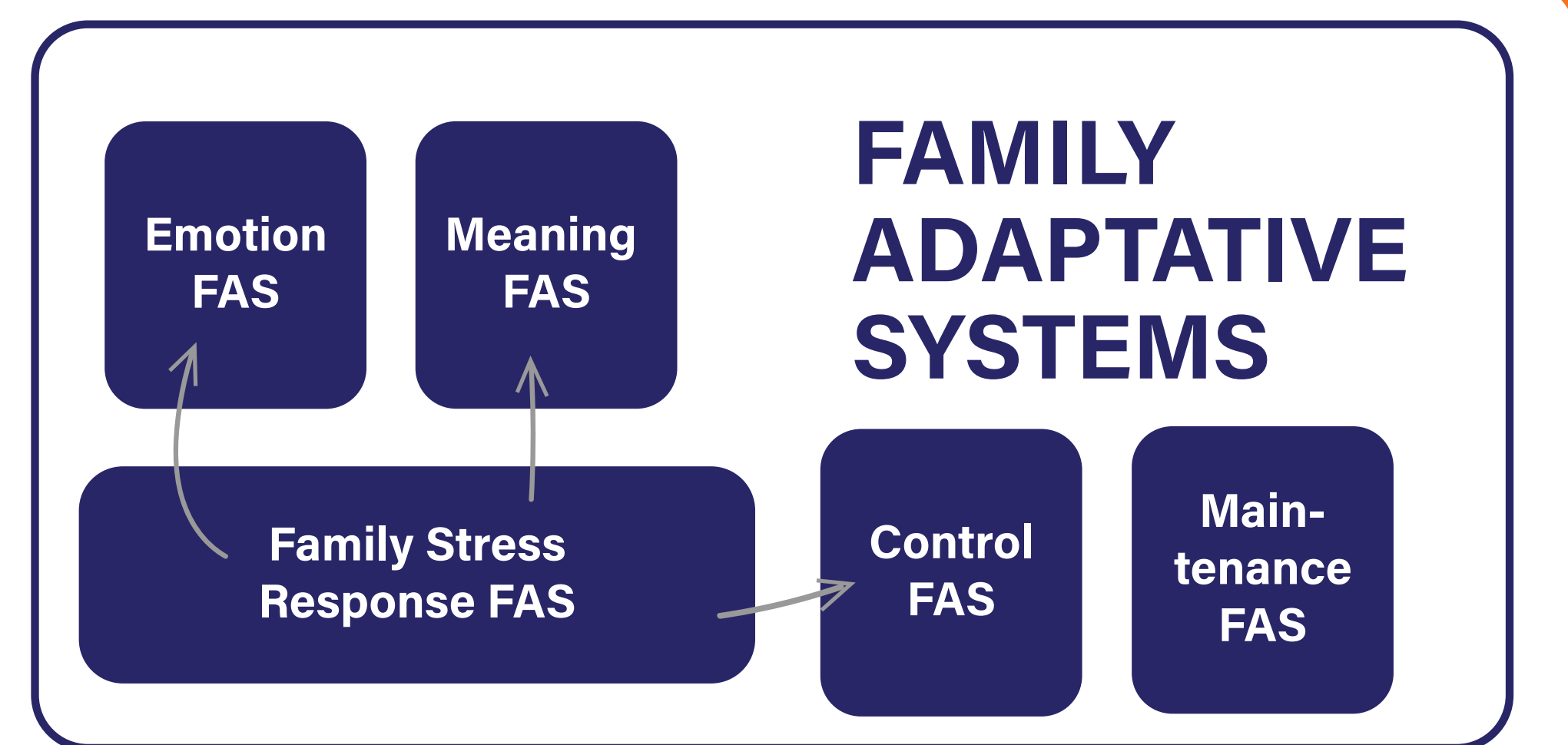
- Theories of Family Resilience from social work and therapy highlight a family's ability to manage stress collectively, providing a framework for understanding family coping mechanisms during crises (Henry et al., 2015, Walsh, 2015).
- Family resilience theory can inform the creation of **collaborative technologies to help families adapt to disruptions caused by strokes and subsequent rehabilitation**.

- Challenges and practices are categorized across four key subsystems: **Emotion, Control, Meaning, and Maintenance, using the FAS framework**.



## ECOSYSTEM

Stressor Events, Ongoing vulnerabilities



## APPROACH

- While digital contributions to stroke prevention, treatment, and rehabilitation are common, most of this literature is centered on the patient or stroke survivor and does not consider their families.
- Furthermore, this family support network is a sine qua non for a successful rehabilitation process.

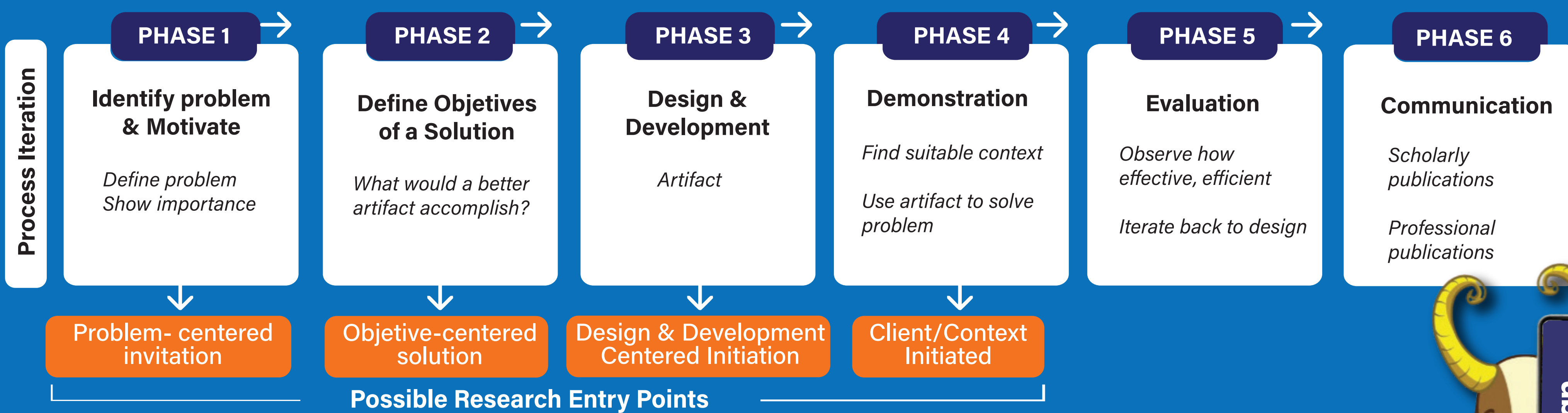
- While digital contributions to stroke prevention, treatment, and rehabilitation are common, most of this literature is centered on the patient or stroke survivor and does not consider their families.
- The aim study is to explore the challenges of designing, implementing, and scaling a digital intervention for stroke survivors and their families in Bogotá, Colombia, while understanding how digital artifacts interact with the FAS subsystems to inform future technology designs.

## METHODOLOGY

This project employs the Design Science Research (DSR) methodology using a six-step DSRM process: problem identification, objective definition, design and development, demonstration, evaluation, and communication. During the initial steps, focus groups with stroke survivors and caregivers and online surveys with medical professionals are conducted. A prototype of a digital platform is developed and tested with the **Afasia Vital community\***, with results evaluated against objectives.

\*Founded in Bogotá, Colombia, by stroke survivors with the purpose of building a support network for the physical, speech, and occupational rehabilitation of its members.

The platform, aimed at stroke survivors and their support groups, offers rehabilitation resources and community engagement through a Spanish-language website. It features cross-device accessibility, usability for users with aphasia, organized resources, and community-building spaces.



### Designing for Stroke survivors: Family Adaptive Systems Insights

#### Family Meaning System:

Successful rehabilitation involves multiple family members, redefining roles, and fostering unity. **The platform should help each member understand their role, focusing on the survivor's needs.** It must aid caregivers by providing information and emphasizing their commitment.

#### Family Emotion System:

**The platform should promote family interaction, demonstrating support, affection, and cooperation.**

#### Family Maintenance and Family Control systems:

Rehabilitation can disrupt routines and cause economic challenges.

**The platform should support home-based activities to reduce economic stress and time investment for families.**

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We have validated the UI/UX with users from **both groups** and are iterating on the interface design to better meet the specific needs of stroke survivors, particularly those with aphasia.

- Devices and interaction methods: smartphones, scroll
- Short texts and simple icons
- Familiar layouts: similar to those of other popular applications
- Very simple screen flow organization

## REFERENCES

- Camak, D. J. 2015. Addressing the burden of stroke caregivers: a literature review. Journal of clinical nursing, 24, 2376-2382
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