# The Rapid Application Development (RAD) in Digital Transformation Era

**Jolanta Miliauskaitė, Diana Kalibatienė, Asta Slotkienė**

Information Systems Department, Vilnius Gediminas Technical University, jolanta.miliauskaite@vilniustech.lt, diana.kalibatiene@vilniustech.lt , asta.slotkiene@vilniustech.lt

## INTRODUCTION

- The needs of business and society are changing rapidly → the development of software systems should be quickly with the ability to adapt to continuous change of expectations.
- The Rapid Application Development (RAD) methodology was proposed in 1991 by J. Martin (1991), emphasizing rapid prototyping and iterative feedback over extensive up-front planning.
- It is important to understand the original concept of RAD and how it has changed over time in order to address the digital transformation of society by developing the digital readiness of higher education institutions (HE) and increasing employment opportunities for students.
- This research focuses on the RAD concept evolution analysis applying bibliometric analysis of scientific publications taken from Web of Science (WOS).

## RAD APPROACH




**Figure 1**. Phases of the RAD process

## RQ1: WHAT IS THE PERIOD COVERED BY RAD?

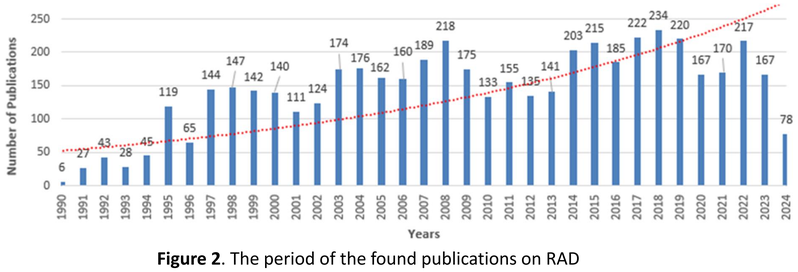


**Figure 2**. The period of the found publications on RAD

## BIBLIOMETRIC ANALYSIS

***What is the intellectual structure of RAD in Computer Science?***

**Searching Query (WoS database):**

*("rapid application develop*" OR "rapid prototyping" OR "iterative develop*" OR "fast track develop*" OR "low-code develop*" OR "accelerated develop*" OR "speedy application creation" OR "quick app develop*" OR "incremental develop*")*

## RQ2: WHAT IS CHRONOLOGICAL EVOLUTION OF RAD?

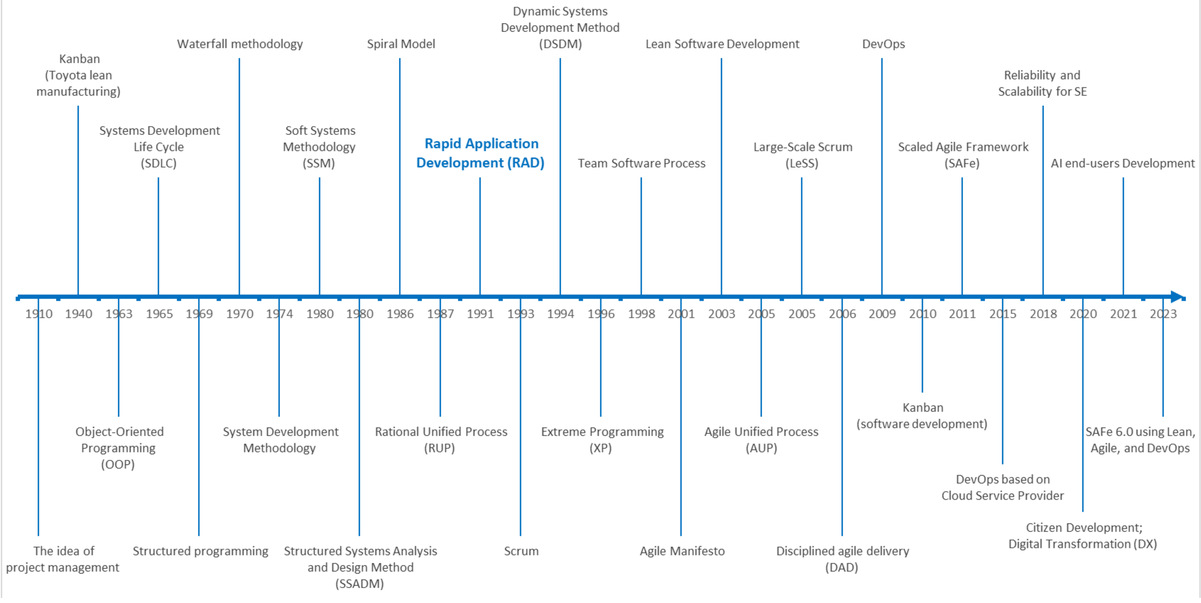


**Figure 3**. Chronological analysis of software systems development methodologies

## RQ3: WHAT ARE THE MAIN TOPICS IN RAD?

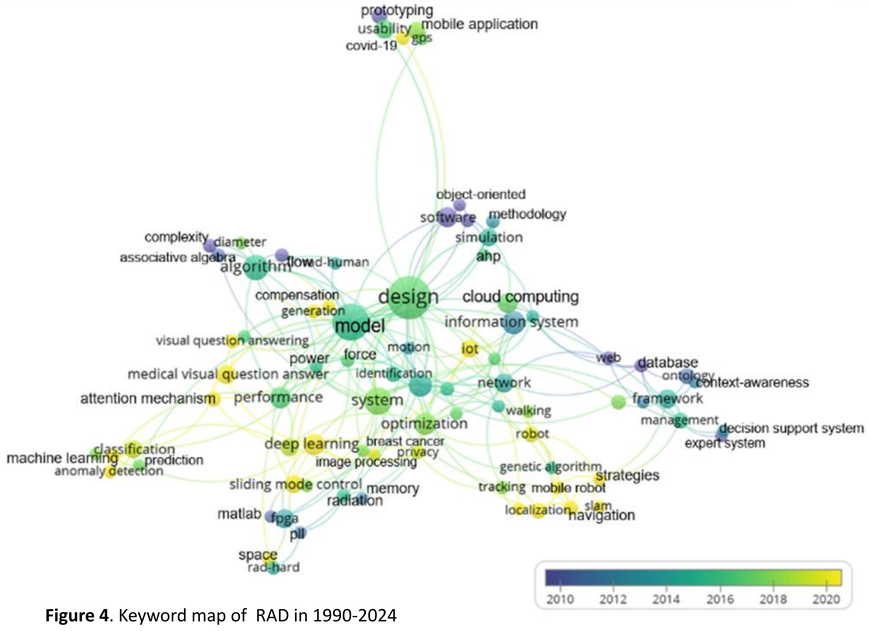


**Figure 4**. Keyword map of RAD in 1990-2024

## RQ4: WHAT ARE WOS CATEGORIES ABOUT RAD?

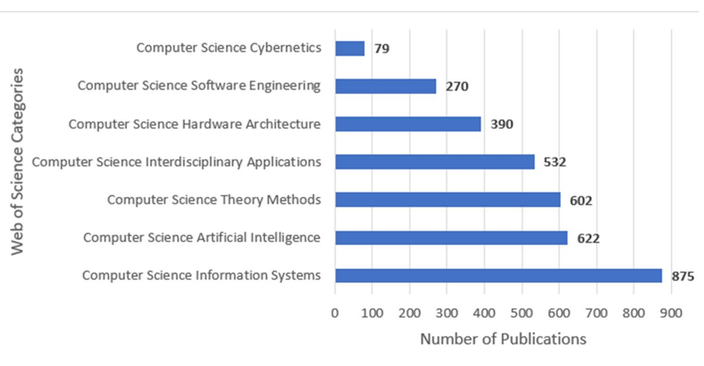


**Figure 5**. The distribution of the scientifical publications on RAD among WoS categories

## CONCLUSIONS

1. RAD was originated in 1991 and is still relevant.
2. Each period contributes to and influence RAD, adapting it to contemporary BizDevOps challenges.
3. Bibliometric analysis indicates an increase of publications on RAD [1990; 2024], reflecting the growing interest and application in various fields.
4. RAD Topics in Computer Science → the most common: design, model, and algorithm. Newer topics: DL, IoT, and mobile robots → emerging, but not yet deeply explored.
5. RAD processes continue to evolve → sub-processes and activities change depending on the main business goals and application.




**Figure 6**. Phases of RAD (https://nix-united.com/blog/the-ultimate-guide-to-rapid-application-development/)

## REFERENCES

Martin, J. (1991). Rapid application development. Macmillan Publishing Co., Inc.

Aveiro, D., Freitas, V., Cunha, E., Quintal, F., & Almeida, Y. (2023). Traditional vs. low-code development: comparing needed effort and system complexity in the NexusBRaNT experiment. In 2023 IEEE 25th Conference on Business Informatics (CBI) (pp. 1-10). IEEE.

Robal, T., Reinsalu, U., Leoste, J., Jürimägi, L., & Heinsar, R. (2024). Teaching Rapid Application Development Skills for Digitalisation Challenges. In International Baltic Conference on Digital Business and Intelligent Systems (pp. 177-192). Cham: Springer Nature Switzerland.

Agarwal, R., Prasad, J., Tanniru, M., & Lynch, J. (2000). Risks of rapid application development. Communications of the ACM, 43(11es), 1-es.