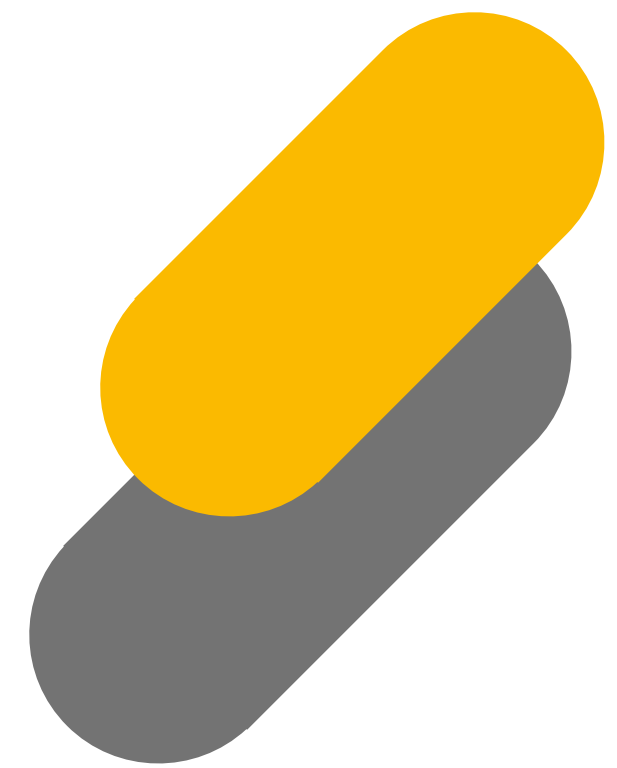




SWEBOOK[®] V3.0

*Guide to the Software
Engineering Body of Knowledge*



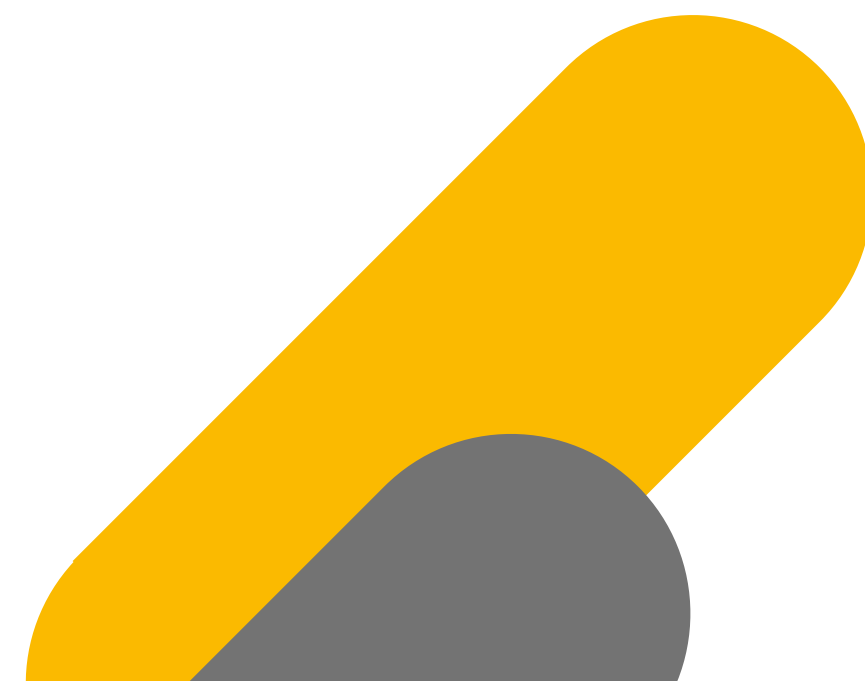
Editors

Pierre Bourque
Richard E. (Dick) Fairley



IEEE  computer society

ALEXANDER BARÓN SALAZAR





FOREWORD

Every profession is based on a body of knowledge, although that knowledge is not always defined in a concise manner. In cases where no formality exists, the body of knowledge is “generally recognized” by practitioners and may be codified in a variety of ways for a variety of different uses. But in many cases, a guide to a body of knowledge is formally documented, usually in a form that permits it to be used for such purposes as development and accreditation of academic and training programs, certification of specialists, or professional licensing. Generally, a professional society or similar body maintains stewardship of the formal definition of a body of knowledge.

WHAT IS SOFTWARE ENGINEERING?

ISO/IEC/IEEE Systems and Software Engineering Vocabulary (SEVOCAB) defines software engineering as “the application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software).”



WHAT ARE THE OBJECTIVES OF THE SWEBOK GUIDE?

The Guide to the Software Engineering Body of Knowledge (SWEBOK Guide) was established with the following five objectives:

1. To promote a consistent view of software engineering worldwide
2. To specify the scope of, and clarify the place of software engineering with respect to other disciplines such as computer science, project management, computer engineering, and mathematics
3. To characterize the contents of the software engineering discipline
4. To provide a topical access to the Software Engineering Body of Knowledge
5. To provide a foundation for curriculum development and for individual certification and licensing material

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The Guide to the Software Engineering Body of Knowledge (SWEBOK Guide) was established with the following five objectives:

- 1.To promote a consistent view of software engineering worldwide.

The first of these objectives, a consistent worldwide view of software engineering, was supported by a development process which engaged approximately 150 reviewers from 33 countries. More information regarding the development process can be found on the website (www.swebok.org).

WHAT ARE THE OBJECTIVES OF THE SWEBOOK GUIDE EDITORS

The Guide to Software Engineering (SWEBOOK Guide) was edited by:

Pierre Bourque, Department of Software and IT Engineering, École de technologie supérieure (ÉTS), Canada, pierre.bourque@etsmtl.ca

Richard E. (Dick) Fairley, Software and Systems Engineering Associates (S2EA), USA, dickfairley@gmail.com

1.To promote

wide.

COEDITORS

The first of software engineering, approximately 1970, regarding the state of the art (www.swebok

Alain Abran, Department of Software and IT Engineering, École de technologie supérieure (ÉTS), Canada, alain.abran@etsmtl.ca

Juan Garbajosa, Universidad Politecnica de Madrid (Technical University of Madrid, UPM), Spain, juan.garbajosa@upm.es

Gargi Keeni, Tata Consultancy Services, India, gargi@ieee.org

Beijun Shen, School of Software, Shanghai Jiao Tong University, China, bjshen@sjtu.edu.cn

of software engineering, which engaged the information on the website



WHAT ARE THE OBJECTIVES OF THE SWEBOK GUIDE?

The Guide to the Software Engineering Body of Knowledge (SWEBOK Guide) was established with the following five objectives:

2. To specify the scope of, and clarify the place of software engineering with respect to other disciplines such as computer science, project management, computer engineering, and mathematics

The second of the objectives, the desire to specify the scope of software engineering, motivates the fundamental organization of the Guide. The material that is recognized as being within this discipline is organized into the fifteen KAs listed in Table I.1, Each of these KAs is treated in a chapter in this Guide.

WHAT ARE THE OBJECTIVES OF THE SWEBOK GUIDE?

Table I.1. The 15 SWEBOK KAs
Software Requirements
Software Design
Software Construction
Software Testing
Software Maintenance
Software Configuration Management
Software Engineering Management
Software Engineering Process
Software Engineering Models and Methods
Software Quality
Software Engineering Professional Practice
Software Engineering Economics
Computing Foundations
Mathematical Foundations
Engineering Foundations

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Table I.2. Related Disciplines
Computer Engineering
Computer Science
General Management
Mathematics
Project Management
Quality Management
Systems Engineering

WHAT ARE THE OBJECTIVES OF THE SWEBOK GUIDE?

The Guide to the Software Engineering Body of Knowledge (SWEBOK Guide) was established with the following five objectives:

3.To characterize the contents of the software engineering discipline

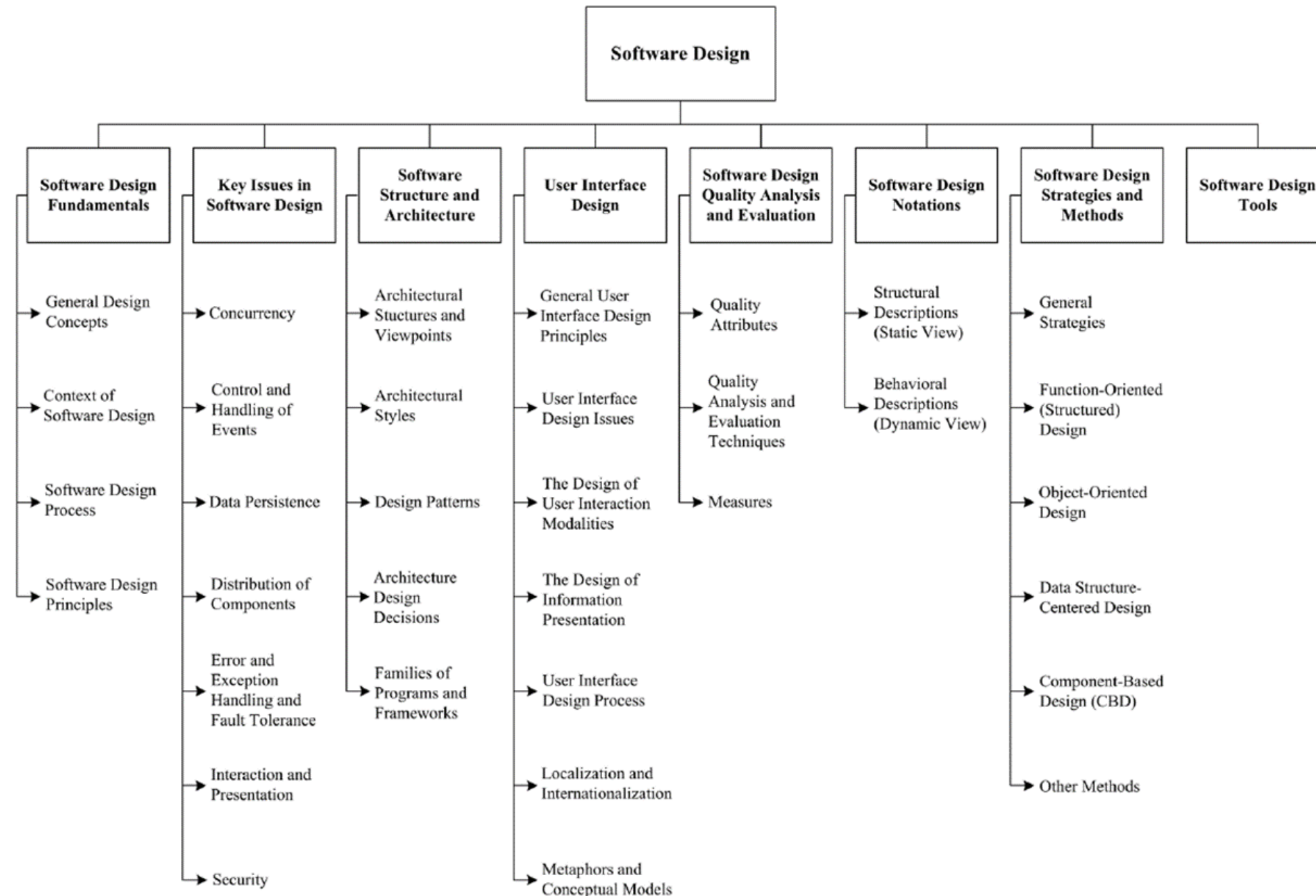
HIERARCHICAL ORGANIZATION: The organization of the KA chapters supports the third of the project's objectives—a characterization of the contents of software engineering. The detailed specifications provided by the project's editorial team to the associate editors regarding the contents of the KA descriptions can be found in Appendix A.

WHAT ARE THE OBJECTIVES OF THE SWEBOOK GUIDE?

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WHAT ARE THE OBJECTIVES OF THE SWEBOK GUIDE?

The Guide to the Software Engineering Body of Knowledge (SWEBOK Guide) was established with the following five objectives:

4.To provide a topical access to the Software Engineering Body of Knowledge

REFERENCE MATERIAL AND MATRIX: To provide topical access to the knowledge—the fourth of the project's objectives—the Guide identifies authoritative reference material for each KA. Appendix C provides a Consolidated Reference List for the Guide. Each KA includes relevant references from the Consolidated Reference List and also includes a matrix relating the reference material to the included topics. It should be noted that the Guide does not attempt to be comprehensive in its citations. Much material that is both suitable and excellent is not referenced. Material included in the Consolidated Reference List provides coverage of the topics described.

WHAT ARE THE OBJECTIVES OF THE SWEBOK GUIDE?

The Guide to the Software Engineering Body of Knowledge (SWEBOK Guide) was established with

MATRIX OF TOPICS VS. REFERENCE MATERIAL

4.To provide a topical

REFERENCE MATERIAL
knowledge—the four authoritative reference Consolidated Reference references from the relating the reference the Guide does not a that is both suitable Consolidated Reference

	Budgen 2003 [4*]	Sommerville 2011 [5*]	Page-Jones 1999 [6*]	Brookshear 2008 [12*]	Allen 2008 [13*]	Clements et al. 2010 [14*]	Gamma et al. 1994 [15*]	Nielsen 1993 [17*]
1. Software Design Fundamentals								
1.1. General Design Concepts	c1							
1.2. The Context of Software Design	c3							
1.3. The Software Design Process	c2							
1.4. Software Design Principles	c1	c6, c7, c21	c1, c8, c9					
2. Key Issues in Software Design								
2.1. Concurrency		c18						
2.2. Control and Handling of Events		c21						
2.3. Data Persistence				c9				

Body of Knowledge

pical access to the ie Guide identifies ndix C provides a A includes relevant so includes a matrix should be noted that ations. Much material erial included in the cs described.



WHAT ARE THE OBJECTIVES OF THE SWEBOK GUIDE?

The Guide to the Software Engineering Body of Knowledge (SWEBOK Guide) was established with the following five objectives:

5.To provide a foundation for curriculum development and for individual certification and licensing material

DEPTH OF TREATMENT: To achieve the SWEBOK fifth objective—providing a foundation for curriculum development, certification, and licensing, the criterion of generally accepted knowledge has been applied, to be distinguished from advanced and research knowledge (on the grounds of maturity) and from specialized knowledge (on the grounds of generality of application).

The equivalent term generally recognized comes from the Project Management Institute: “Generally recognized means the knowledge and practices described are applicable to most projects most of the time, and there is consensus about their value and usefulness.”

A Guide to the Project Management Body of Knowledge, 5th ed., Project Management Institute, 2013; www.pmi.org.

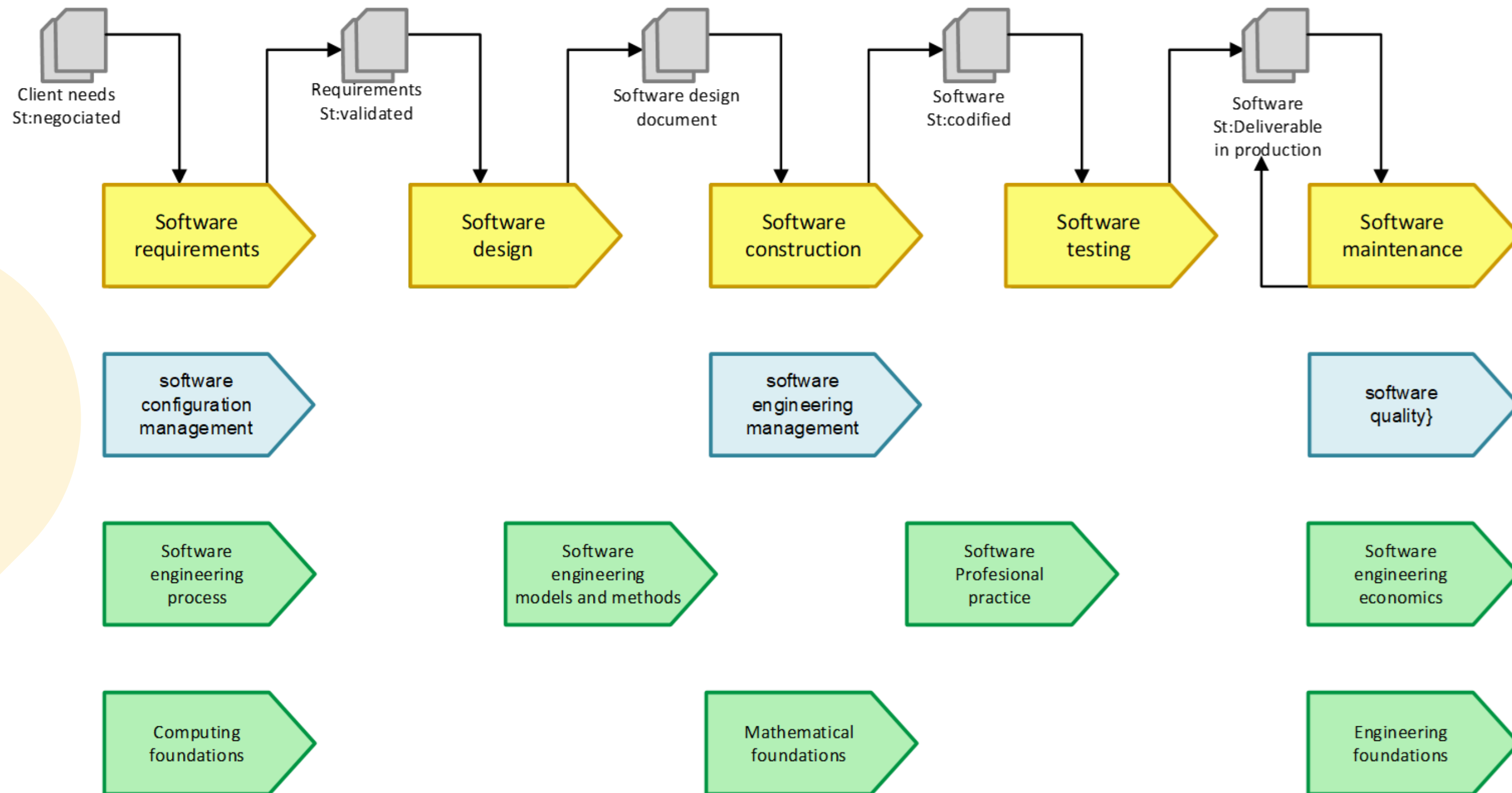


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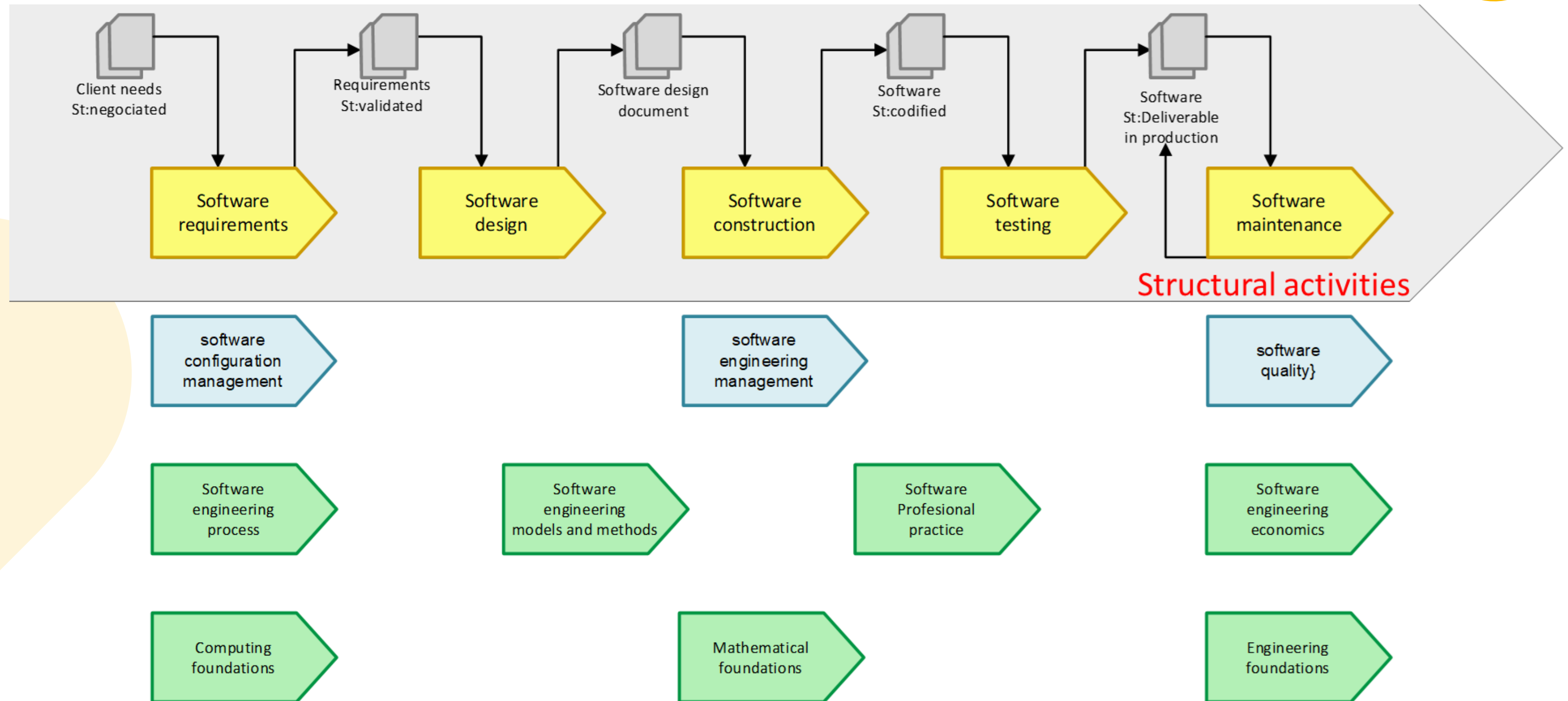
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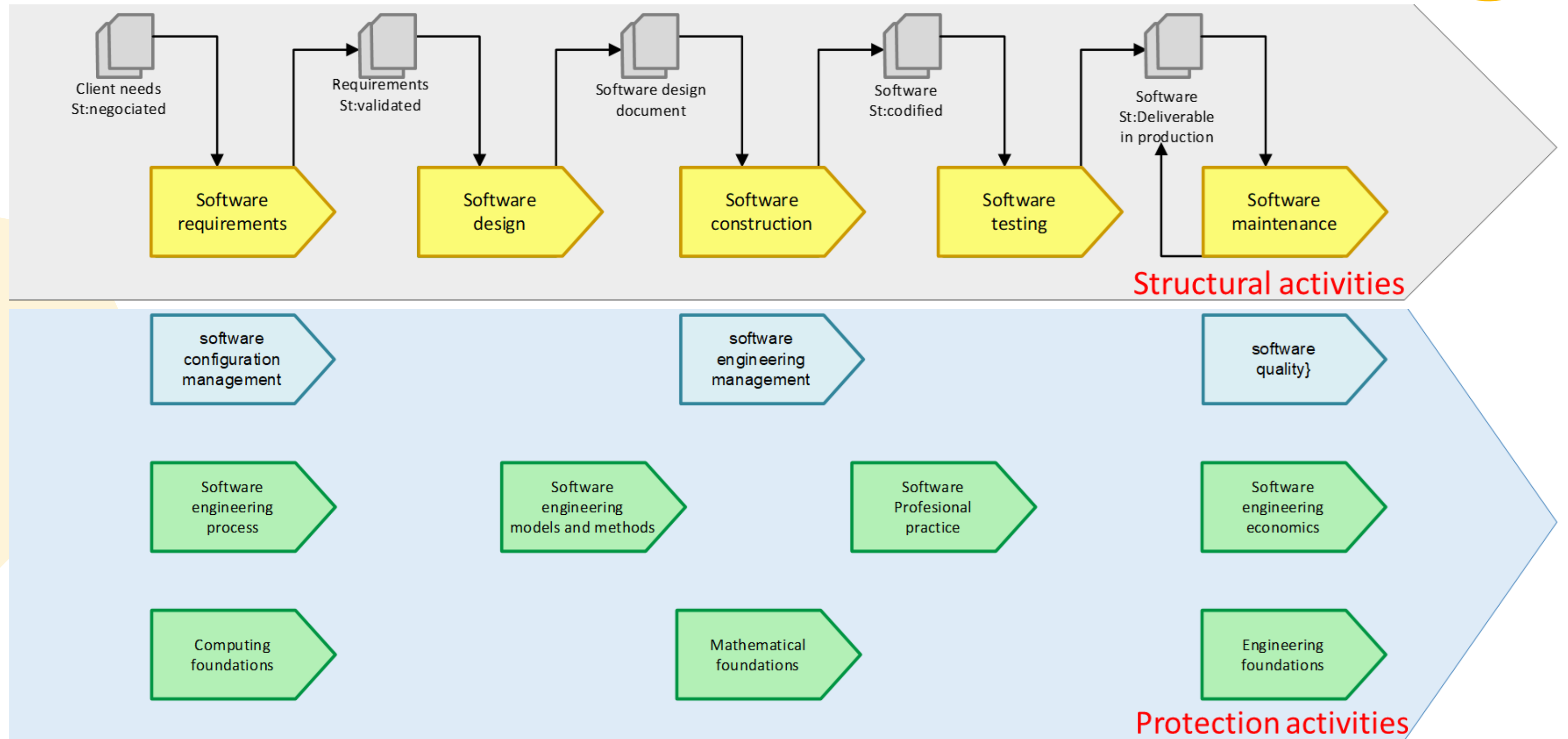
SWEBOK PROCESS



SWEBOK PROCESS



SWEBOK PROCESS



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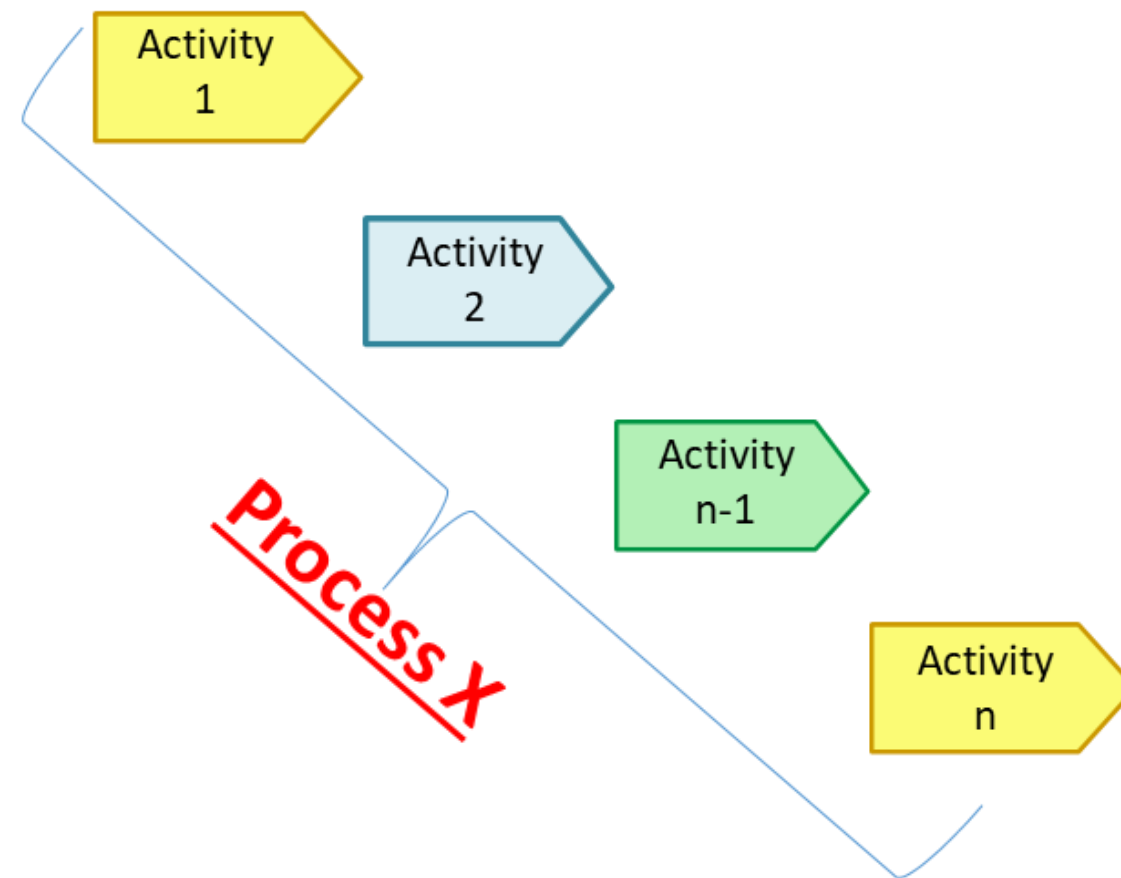
- Activity
- Task
- Step
- Work product
- Entry Criteria
- Completion Criteria
- Roles
- Competency
- Resources

WORKSHOP

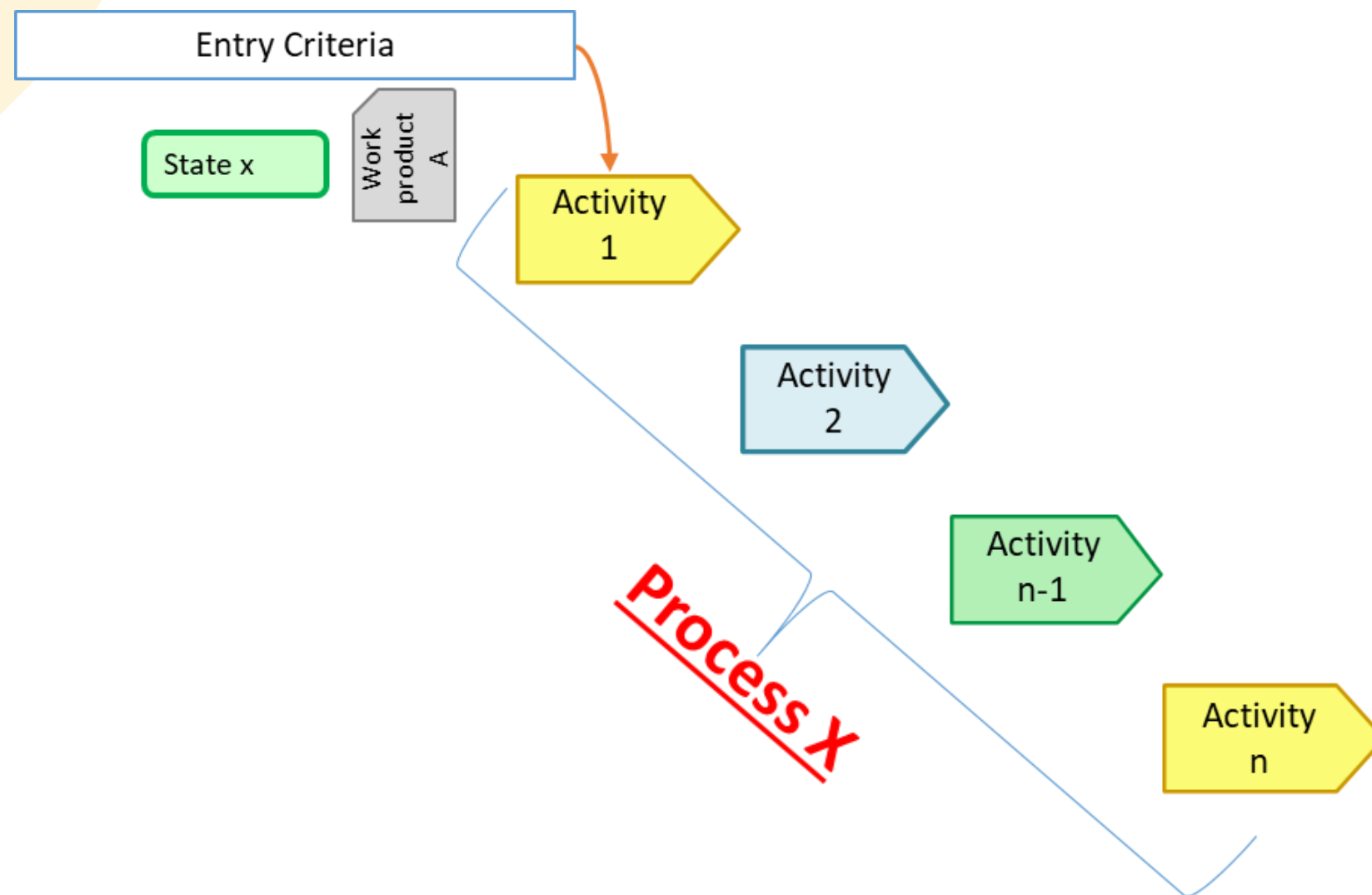
WORKSHOP

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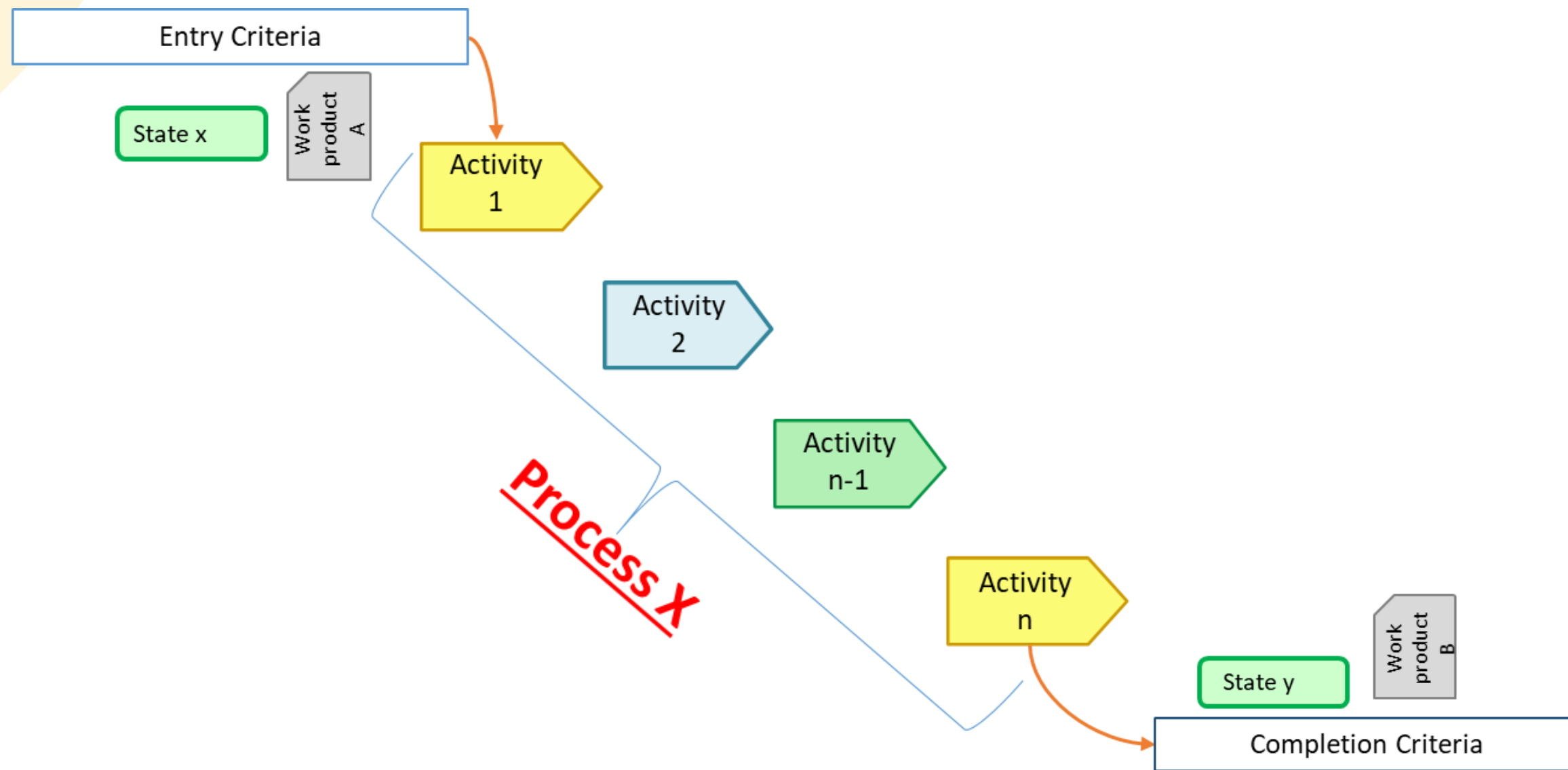
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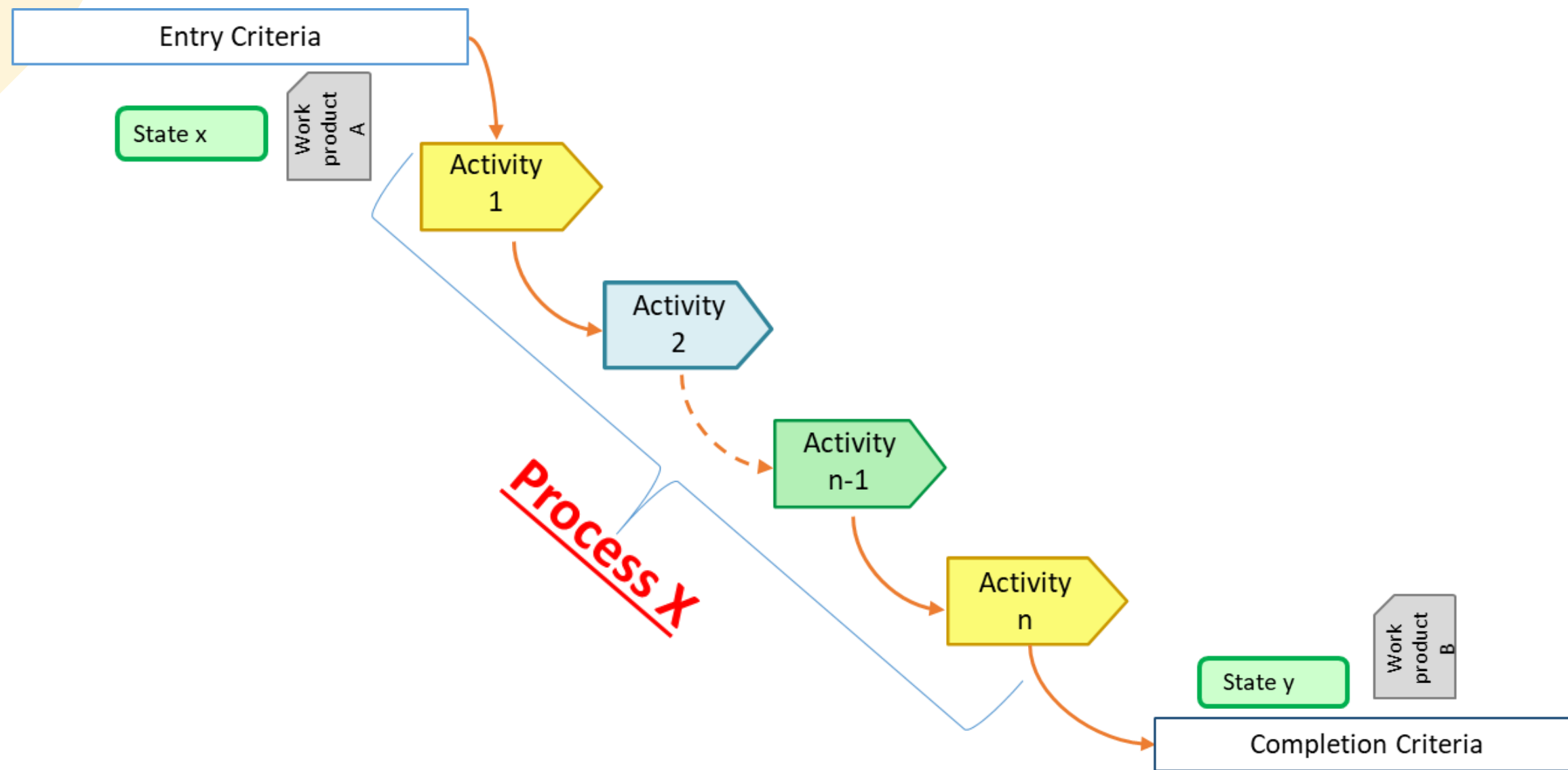
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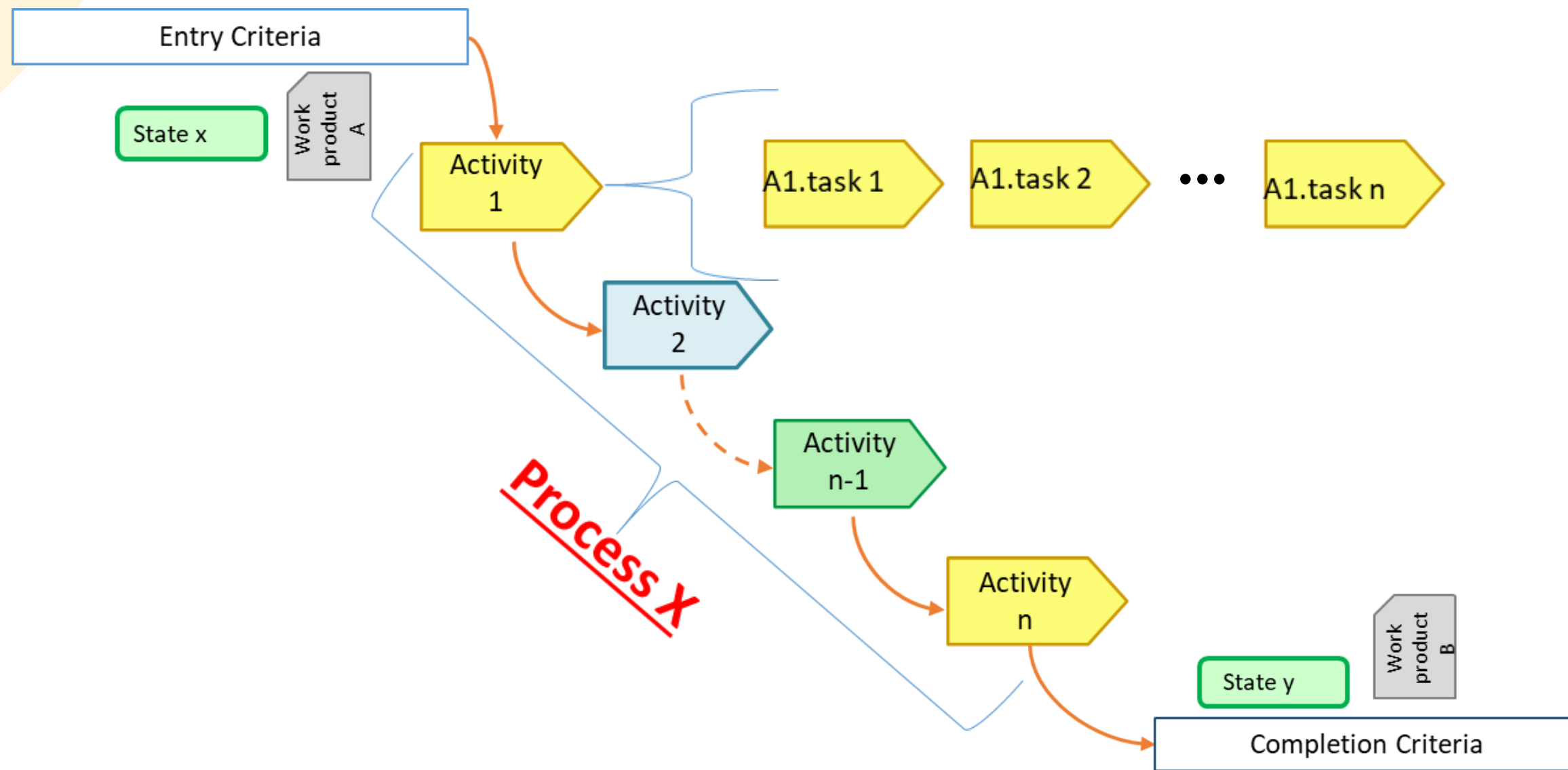
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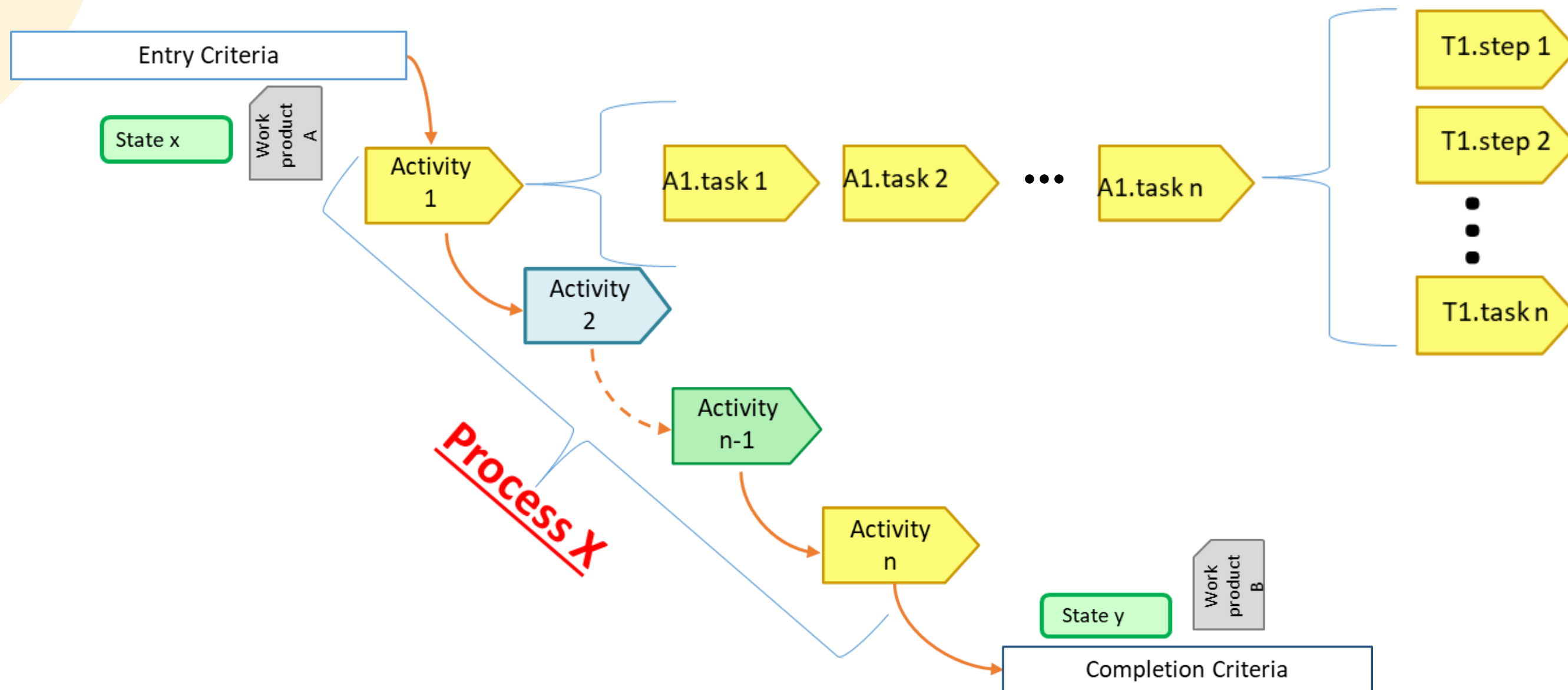
WORKSHOP



WORKSHOP



WORKSHOP





LET'S DO IT

ALEXANDER BARÓN SALAZAR, PHD
PROFESOR DEPARTAMENTO DE SISTEMAS