Process families:
modeling variability and generating variants in
Business and Software Processes

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Agenda

- Introduction
- Process families
- Dealing with variants
- Generating variants
- Conclusions and future work

Introduction

- Organizations increasingly need to find new ways, methods and tools to support and continuously improve their operation
  - education in universities, health in hospitals, financial in banks, citizenship in government, software in the software industry, etc.).

- An horizontal vision based on identifying and modeling Business Processes (BPs) helps in showing explicitly the activities to be performed, their sequence and responsible
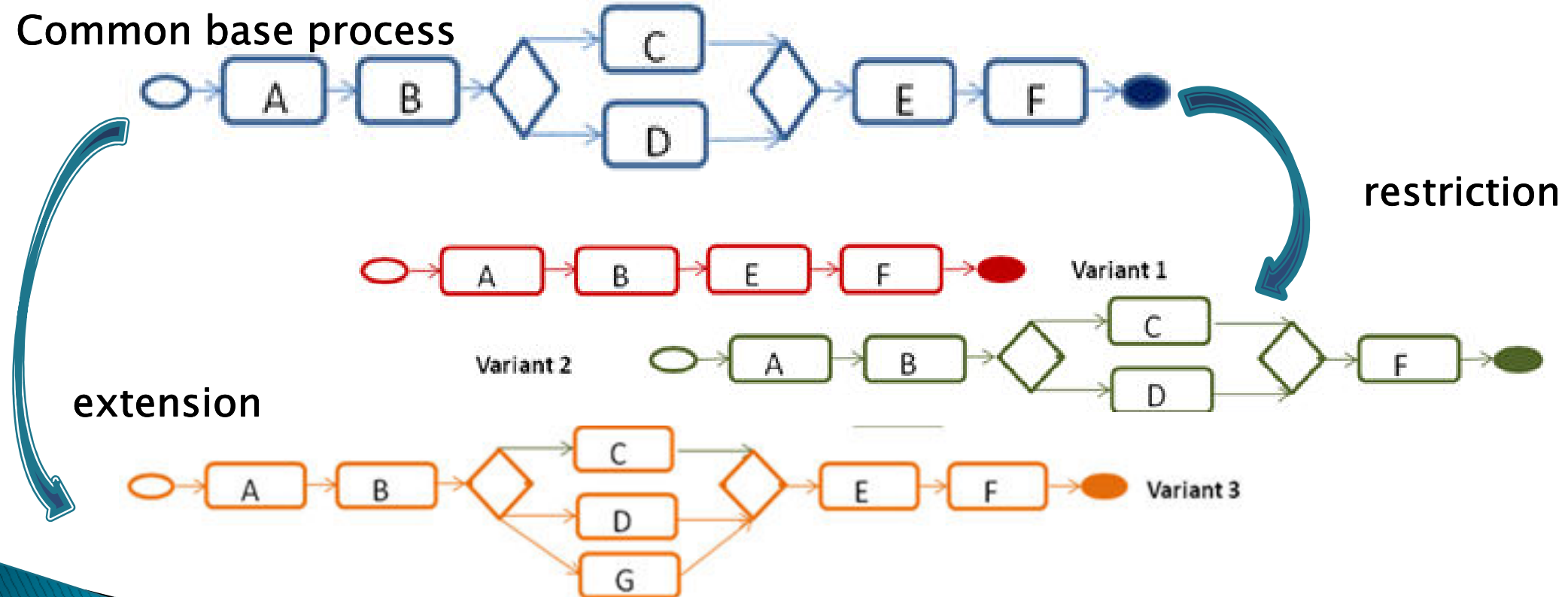
Process families

- BPs can present variability points which define variants of a common general base process
  - selling process for different products, accountability process for different countries, among others.

- Process families are defined with a base process and all the possible variants derived from it
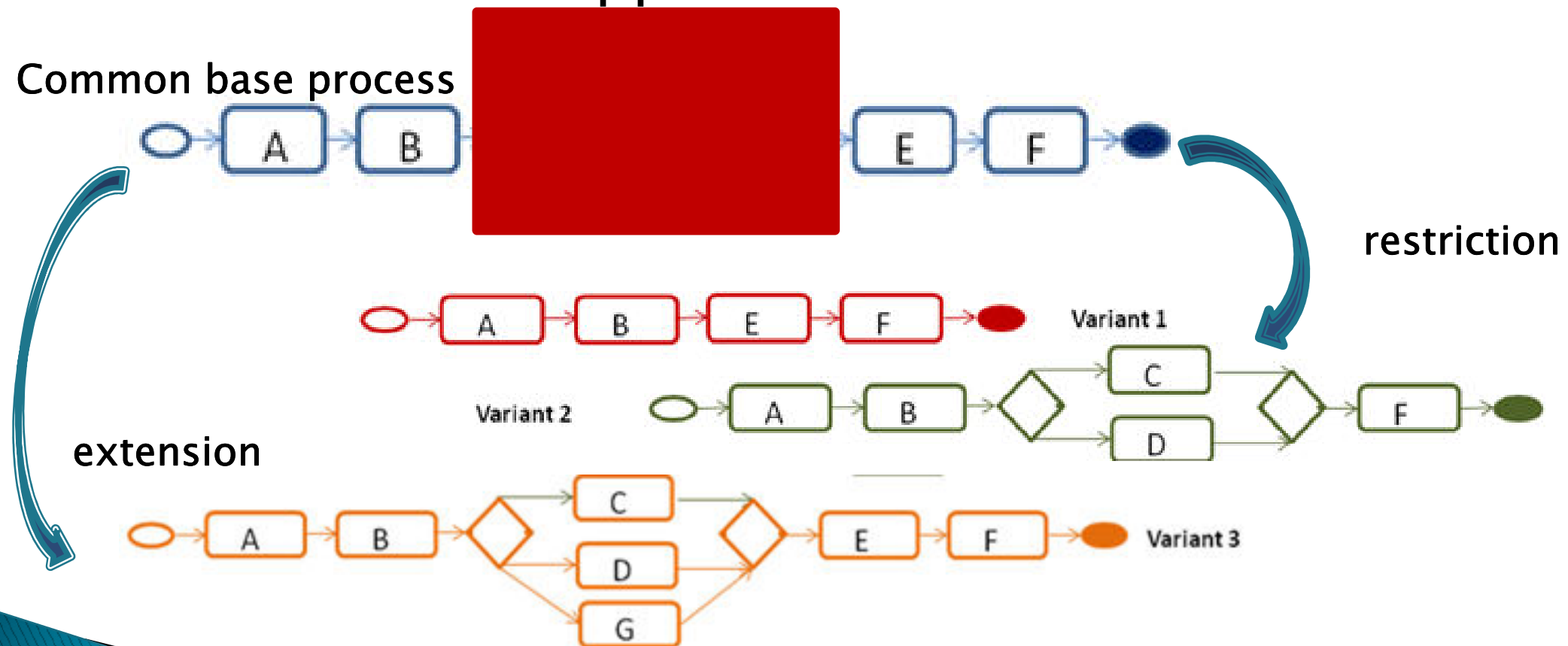 - extension, restriction, primitives, languages ….
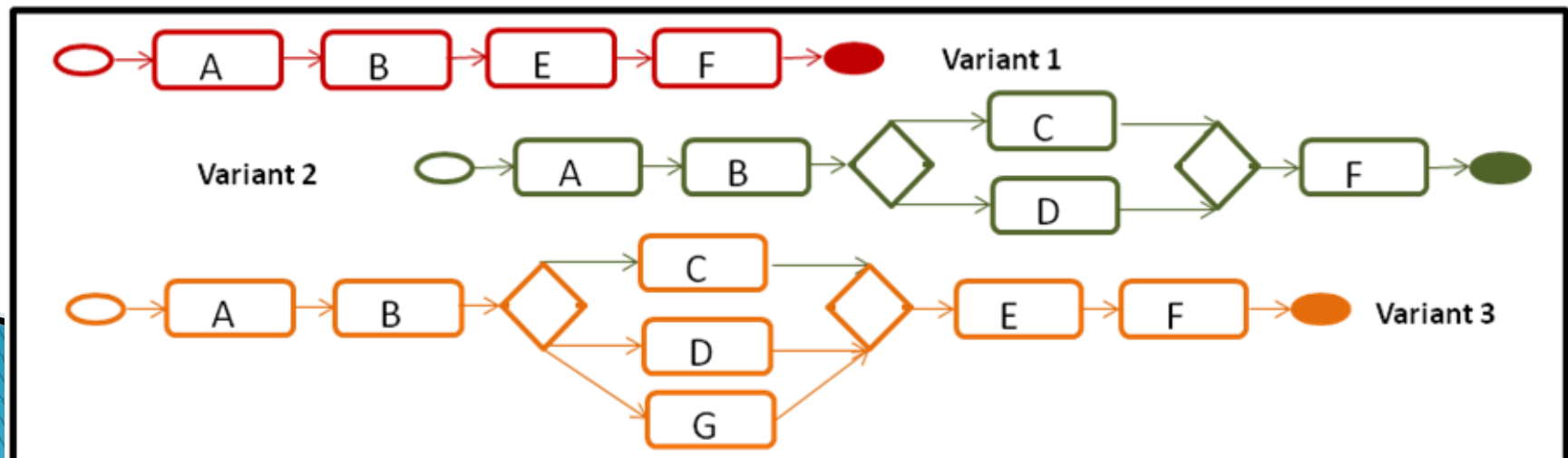
Process families (2)

- **Configuration** of variants from the base process with two main approaches

Common base process

restriction

extension

Variant 1

Variant 2

Variant 3

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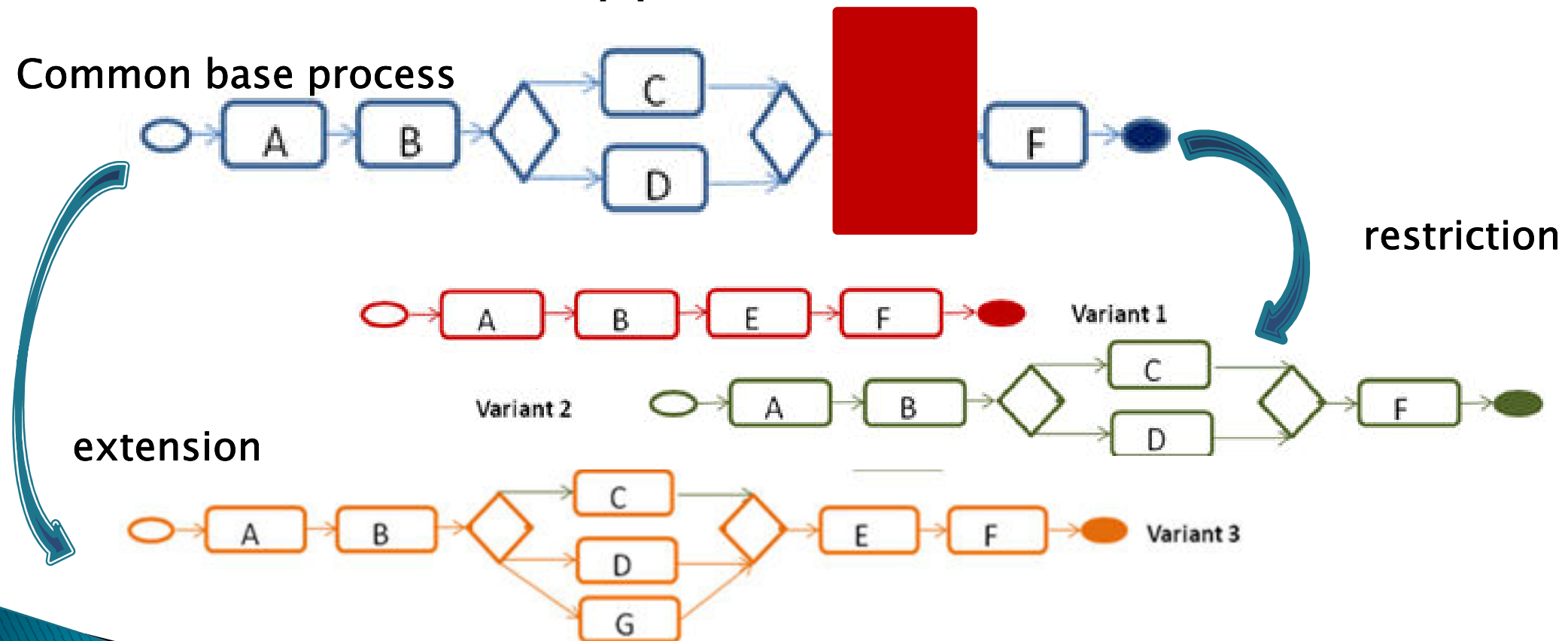
Variant 1
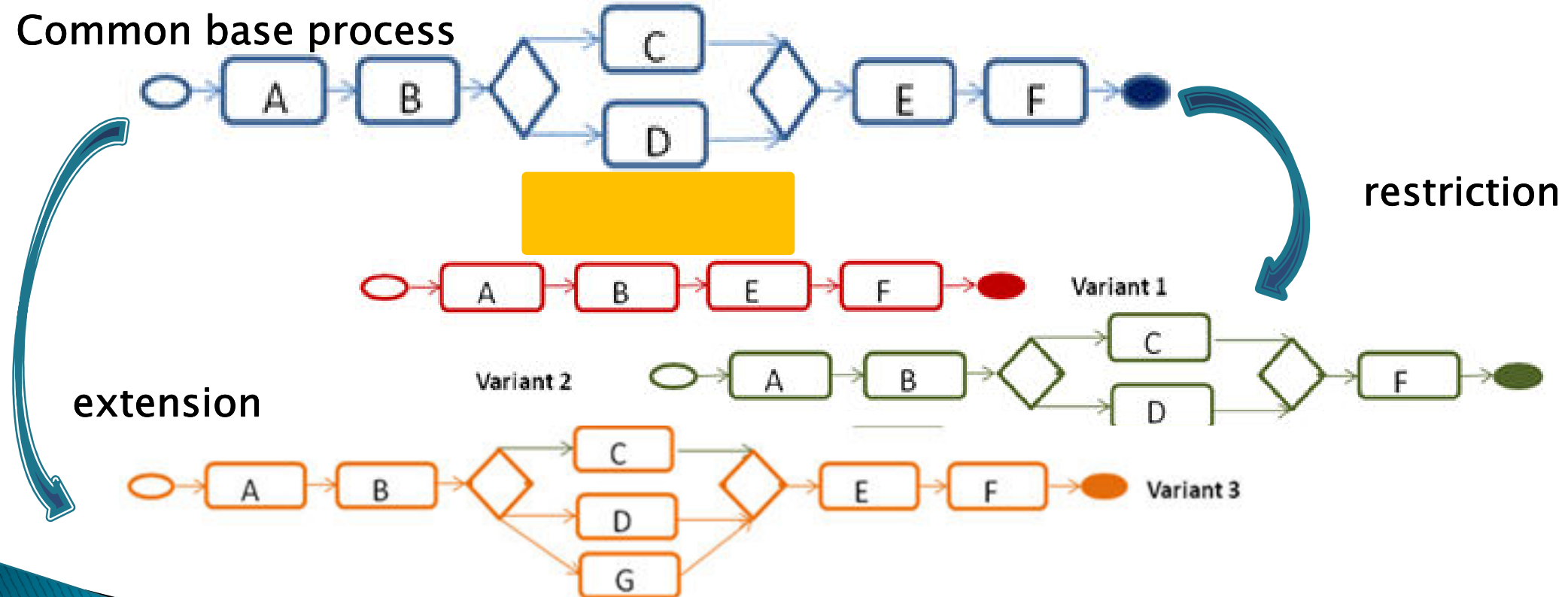
Variant 2

Variant 3

Dealing with variants

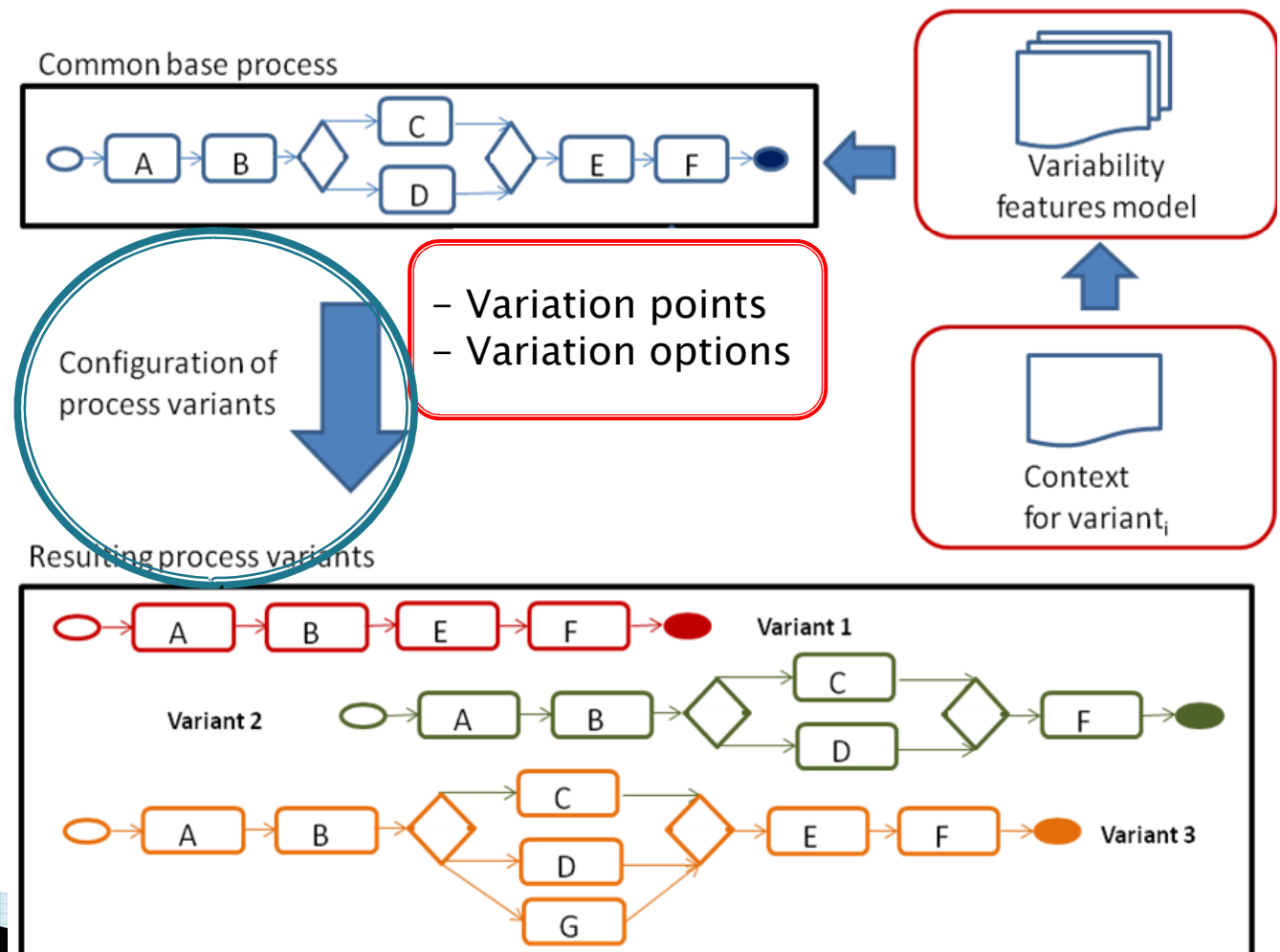- Modeling process families with variants (based on product lines) helps

  ◦ avoiding modeling each variant separately eliminating duplication and maintenance problems of the common parts

Common base process

Configuration of process variants

– Variation points
– Variation options

Variability features model

Context for variant$_i$

Resulting process variants

Variant 1

Variant 2

Variant 3

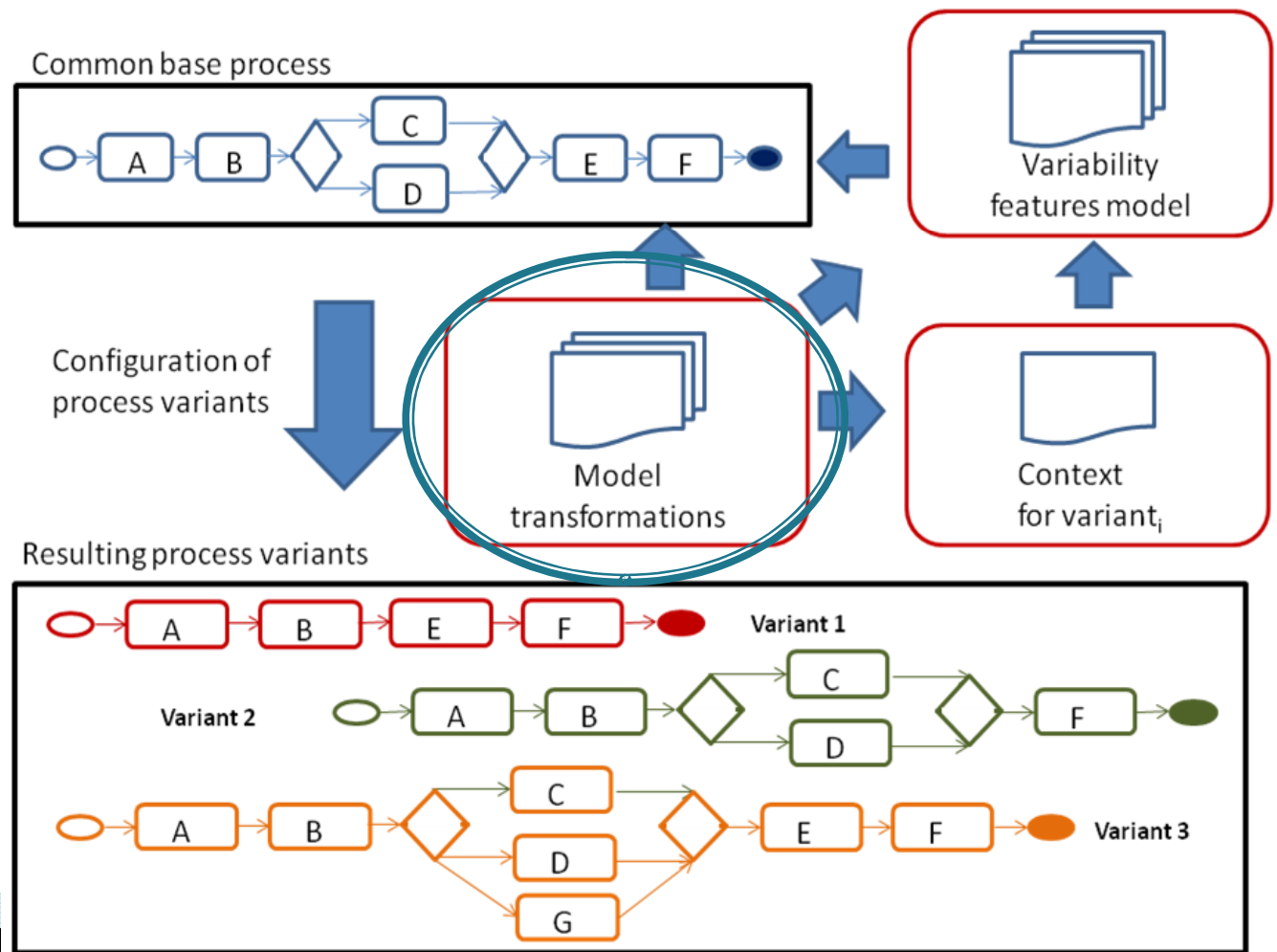# Generating variants

- Manually configuring variants can be costly and error prone

  ◦ Generating variants automatically helps users to obtain the process they need in each context without much effort

Common base process

Configuration of process variants

Model transformations

Variability features model

Context for variant$_i$

Resulting process variants

Variant 1

Variant 2

Variant 3

Dealing with variants (2)

- ▸ Business Process variability approaches

Elements	CVL	Provop	BPMNt	vBPMN	C–EPC	C–BPMN	PESOA	BPMN*
Activities				x		x		
Tasks	x	x	x		x		x	x
Process / SubProcess	x	x	x		x		x	x
Steps								
Roles					x			
Data					x		x	x
Flow control (gateways)			x		x	x		x
Events			x	x				x
Language	ANY	ANY	BPMN2	BPMN2	EPC	BPMN2	ANY	BPMN2

EXTENSION   RESTRICTION

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Dealing with variants (3)

- ▸ Software Process variability approaches

Elements	vSPEM	SmartySPEM	BPMNt	CASPER
Activities	x	x		x
Tasks	x	x	x	x
Process / SubProcess			x	
Steps		x		
Roles	x	x		x
Artifacts (work products)	x	x		x
Flow control (gateways)			x	
Events			x	
Sequence flow			x	

Automatic generation

Generating variants (2)

- Work from a research group in Chile to automate the generation of variants.

MDD-based Strategy

Family process

model transformation

Variant 1

Variant 2