

## Business Process Discovery

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### Discovery Goals

Processes are hidden in organizations, waiting to be found

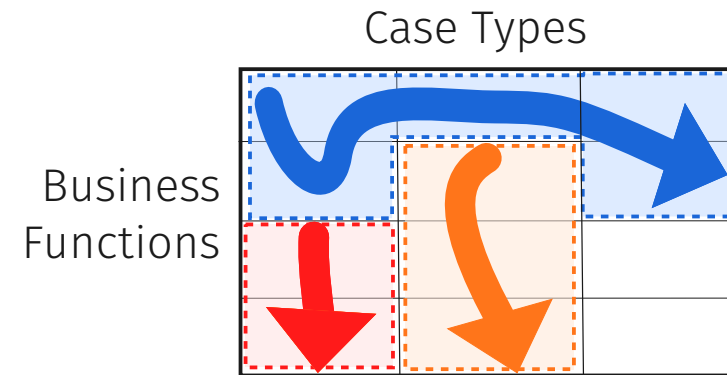
**Identify Processes:** distinguish processes, select the important ones

**Represent Processes:** gather knowledge about processes so that they can be modeled

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# Scoping: Case/Function Matrix



Define process boundaries depending on organizational aspects (which business functions are involved) and a classification of cases (which way different products/services are handled)

### Scoping Guidelines

Aggregate or split the cells of the matrix depending on:

1. Common flow object
2. Multiplicity (1:1, 1:N, N:M)
3. State Transitions
4. Time Frequency (daily, monthly, yearly)
5. Location Specificity
6. Functional Uniformity

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### Common Flow Object

Look for shared artifacts or data objects

Example: loan application, research grant proposal, support request, purchase order

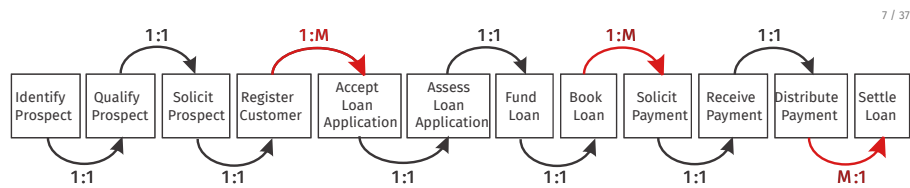
Guideline: each process should flow around the same object

### Multiplicity Discontinuity

Look for cardinality changes in flow objects

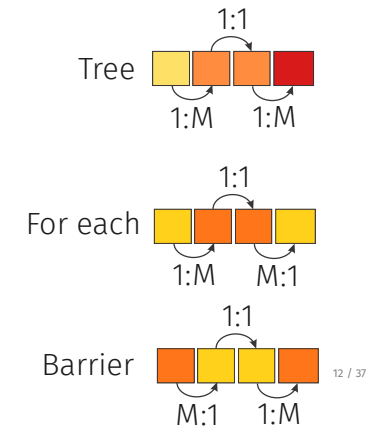
Example: individual vs. batched processing, students apply individually but graduate together

Guideline: split processes along multiplicity discontinuities (1:N, N:M)



### Multiplicity Patterns

Processes may be reassembled following the nested structure of multiplicity discontinuities



### State Transitions

Look for state changes in flow objects

Example: in preparation, under review, published, out of print

Guideline: focus processes on each state

### Time Frequency Change

Look for time-dependent events

Example: monthly releases, quarterly reports, yearly tax returns

Guideline: separate processes with different time triggers

## Location Specificity

Look for location dependent behaviors

Example: privacy regulations, cultural norms, localized products

Guideline: processes may have to be performed differently to comply with different local customs and constraints

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## Functional Uniformity

Ensure the same functions are involved for different case types

Example: vip customers, fast-track processing

Guideline: split processes between case types if these involve a different subset of business functions

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## Functional Uniformity

Case Types

		X
Business Functions	X	X
	X	X
	X	X

## Process Portfolio

Evaluate the identified processes to determine:

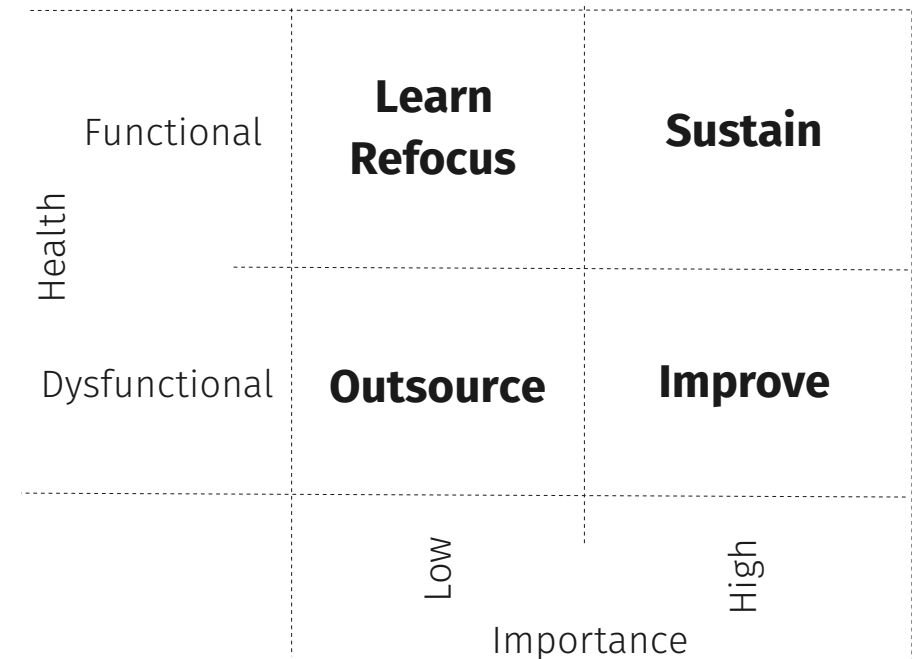
- **Importance** - which processes have the largest impact on the organization bottom line?
- **Dysfunction** - which processes are underperforming or problematic?
- **Automation** - which processes are already (partially) automated?

## Process Importance

Weigh the importance of processes based on:

- **Frequency of Execution** - e.g., number of process instances/month
- **Organizational Impact** - how many people are involved?
- **Effort** - how much time is spent on the process (person months)?
- **Customer Impact** - which process is the most visible to customers and error prone?

## Process Portfolio Actions



## Representing Processes

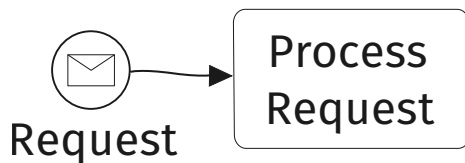
1. Boundaries
2. Activities and Events
3. Roles and Resources
4. Handovers
5. Control and Data Flow (Happy Path)
6. Exceptions and Deadlines

## Process Boundaries

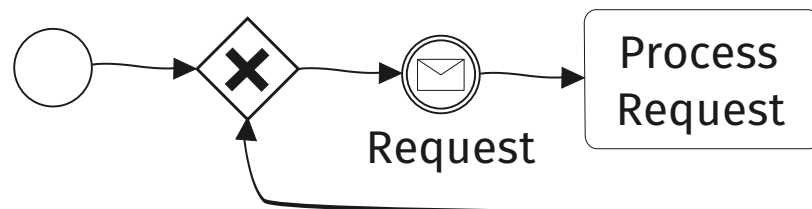
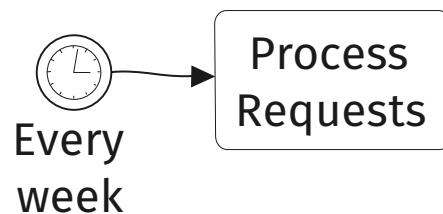
1. Starting Conditions
2. Ending Results
3. Participants and Partners
4. Input/Output Data

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## Starting a Process



1. Instance per Request
2. Periodic Batched Processing
3. Singleton, One Token Per Request



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## Activities and Events

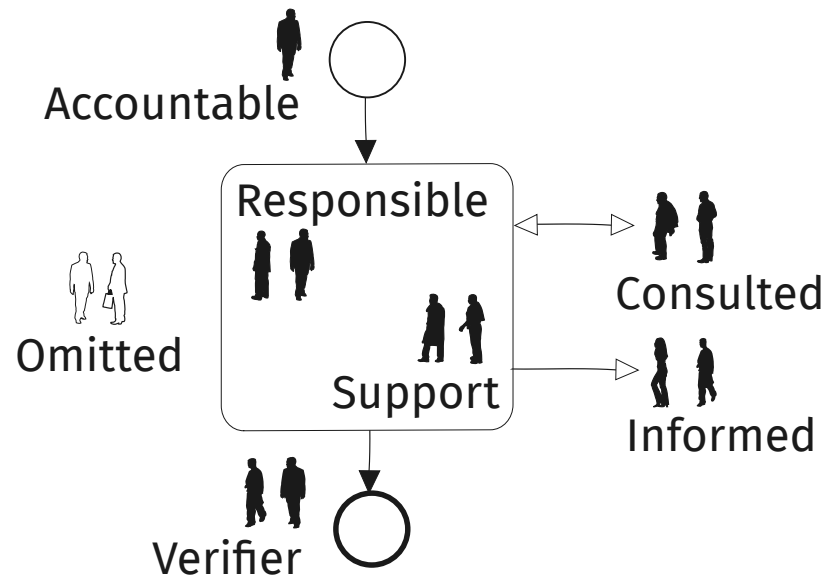
- Define the **goal** of the activity and describe what needs to be done
- Activities are collected **in any order**
- **Data** input and output: where is it recorded? who transfers it along the data flow?
- Break down complex activities and aggregate too simple activities to ensure a uniform level of abstraction
- Define milestones as intermediate events

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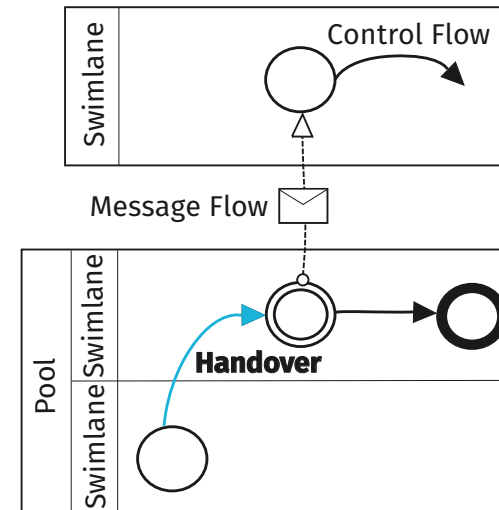
## Roles and Resources

- **Who is responsible** for executing activities?
- Classify activities based on the associated roles (human) and assigned execution resources (automated)

## Activities and Resources



## Handovers



Handovers: **transfers of responsibility** between roles (initial control flow sketch)

*Are participants aware of who is picking up their work and where it comes from?*

## Control and Data Flow

- Complete the control flow graph: *when is each activity started?* **what happens next?**
- Include gateways where needed to represent branches and merges in the flow
- Control flow may be implied by activities that exchange data objects
- *Are there optional activities that can be skipped?*

## Exceptions and Deadlines

- *What happens if activities fail? How are failures detected?*
- Collect samples of correct and incorrect execution results and statistics about how often exceptions occur
- *Are there some cancellation or termination conditions?*
- *Are there any **deadlines**? What happens if work is delayed?*

## Modeling Recommendations

- **Small** - Minimize number of nodes and edges
- **Single Entry, Single Exit** - Only one Start event and only one End event
- **Structured** - prefer pairs of similar gateways, prefer XOR and AND instead of OR gateways
- **Decomposition** - If the model has too many elements (30+), consider nesting and aggregating them into sub processes

## Naming Recommendations

Processes, their subprocesses and activities should be named following the **action verb – optional qualifier – noun** format to clearly identify their result

Example: Take Order, Develop New Product, Pay Invoice, Record Customer Name

Bad Example: Handle Application

Better Example: Accept Application, Check Application, Reject Application

**Avoid unclear verbs:** Maintain, Manage, Administer, Handle, Process, Do, Improve, Support, Facilitate, Drive, Track, Review, Analyze, Monitor, Coordinate.

## Quality Assurance

How can you trust a process model?

- **Validation** - Semantic Correctness, Completeness (Domain Expertise Required)
- **Verification** - Structural and Syntactic Correctness (Modeling Expertise)
- **Certification** - Compliance, Pragmatic Understandability and Maintainability (Evidence)

### Feedback

To ensure the quality of the outcome of the process of process identification and discovery:

- Ask and listen to all stakeholder feedback
- Methodically document paying attention to details and inconsistencies
- Formally review the validity, accuracy and completeness of the portfolio



## Interview Tips

Successful interviews require:

- **Good preparation:** gather all available evidence, read documentation, diligently prepare questions
- **Listen:** They are the expert, not you
- **Appreciation:** They are devoting time away from work to talk to you
- **Open Mind:** Avoid criticism and do not make suggestions while gathering input, listen to their own suggestions instead
- **Gain Trust:** or people will never share complete information about failure scenarios (and worry that your process improvements will result in them being fired)
- **Access:** management support is required to meet all key people that have knowledge about processes
- **Culture:** group workshops work best in an open culture, interviews may be more suitable with closed, hierarchical organizations

## References

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- M. Rosemann, "Process Portfolio Management", BPTrends, April 2006
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