Business Process and Business Process Modeling

IF 3141 Sistem Informasi

Teknik Informatika ITB

Semester I 2022/2023

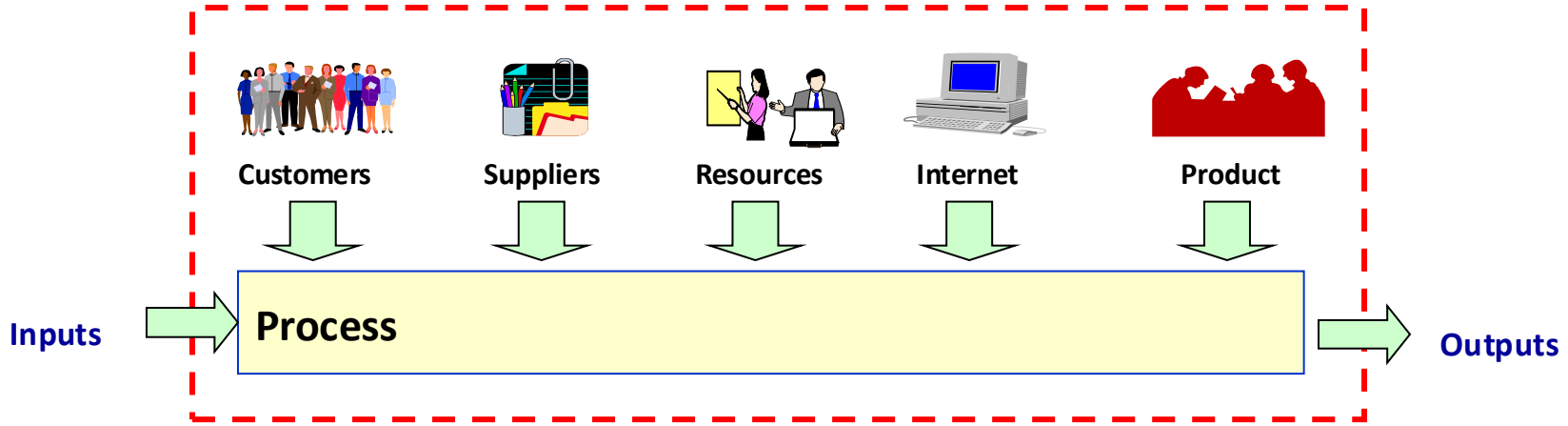
BISNIS

- “… a course of action or a procedure … a series of stages in manufacture or some other operation…” [the concise oxford dictionary]
- Kumpulan aktivitas yang jika dilakukan bersama akan membuat nilai bagi konsumen (misalkan produk baru untuk konsumen). Aktivitas tersebut saling terkait.
- “… a series of actions, changes, or functions bringing about a result.” [dictionary.com]

- Entitas bisnis adalah suatu organiasi yang tujuannya adalah menghasilkan nilai untuk orang yang berkepentingan dengan hasil tersebut.

PROSES

- Sebuah proses adalah kumpulan tugas/ task yang terkait secara logis yang dilakukan untuk mencapai suatu outcome bisnis tertentu
- Suatu proses merupakan kumpulan aksi yang menggunakan masukan, menambahkan nilai untuk mendapatkan output yang diinginkan.



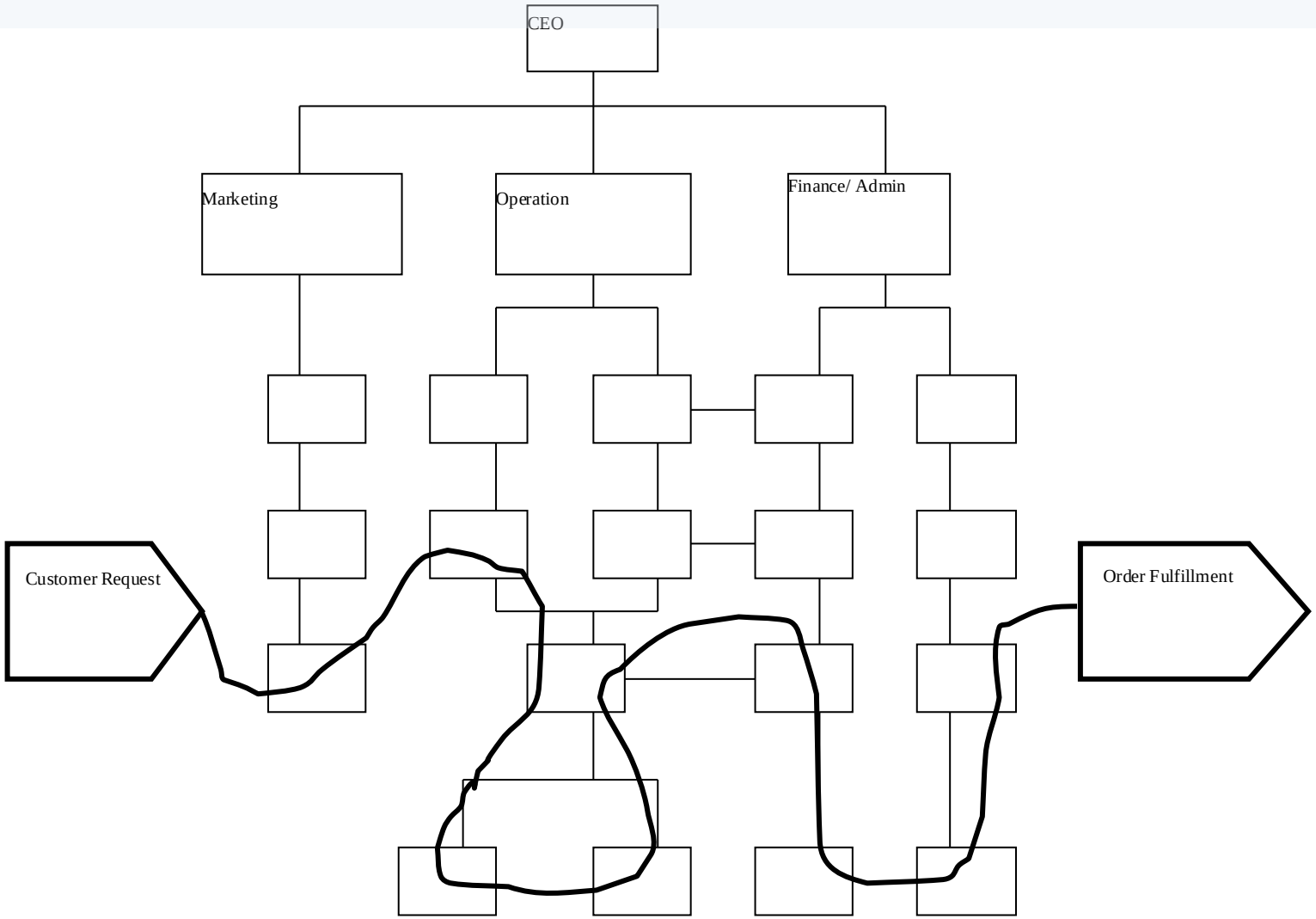
PROSES BISNIS

- Kumpulan task atau aktivitas untuk mendapatkan satu tujuan atau goal, yang akan dilakukan secara sekuensial maupun paralel oleh orang maupun sistem, baik di dalam ataupun di luar organisasi. [Butler Group]
- Task tersebut terdefiniskansebelumnya dan proses dapat dilakukan berulang.
- Urutan task biasanya sangat penting.

PROSES BISNIS

- Suatu *proses bisnis yang baik* harus memiliki tujuan-tujuan seperti mengefektifkan, mengefisienkan dan membuat mudah untuk beradaptasi pada proses-proses didalamnya.
- Artinya proses bisnis tersebut harus merupakan proses bisnis yang berorientasikan pada jumlah dan kualitas *produk output*, minimal dalam menggunakan *sumber daya* dan dapat beradaptasi sesuai dengan *kebutuhan bisnis dan pasar*.

ALUR PROSES BISNIS



KEUNTUNGAN

- Organisasi dapat *memonitor secara sistematik aktifitas-aktifitas* pada setiap proses pada bisnis prosesnya.
- Organisasi dapat dengan *mudah menemukan kesalahan dalam proses* dan memperbaikinya secepat mungkin.
- Organisasi dapat *memahami proses setiap perubahan input* menjadi output pada bisnis prosesnya.
- Organisasi mampu *melakukan pengukuran pada setiap perubahan* pada kondisi perusahaan.
- Organisasi dapat *memahami setiap proses dan metode* dari proses yang benar.

PROSES BISNIS: CONTOH

- Pengadaan material dari pemasok
- Pembuatan dan pengiriman produk akhir
- Pencarian kustomer (pemasaran)
- Penyusunan laporan laporan keuangan
- Pembayaran pegawai
- Pengelolaan proyek
- Dan banyak lainnya

PROSES BISNIS: ELEMEN KUNCI

- **Kustomer** adalah orang yang menerima dan menggunakan manfaat secara langsung dari produk atau layanan
- **Produk** dan **layanan** secara esensial adalah keluaran yang dihasilkan dari proses untuk kustomer
- **Proses bisnis** adalah kumpulan langkah atau aktivitas yang dibangun dalam sistem
- **Partisipan** adalah orang yang melakukan langkah kerja dalam proses

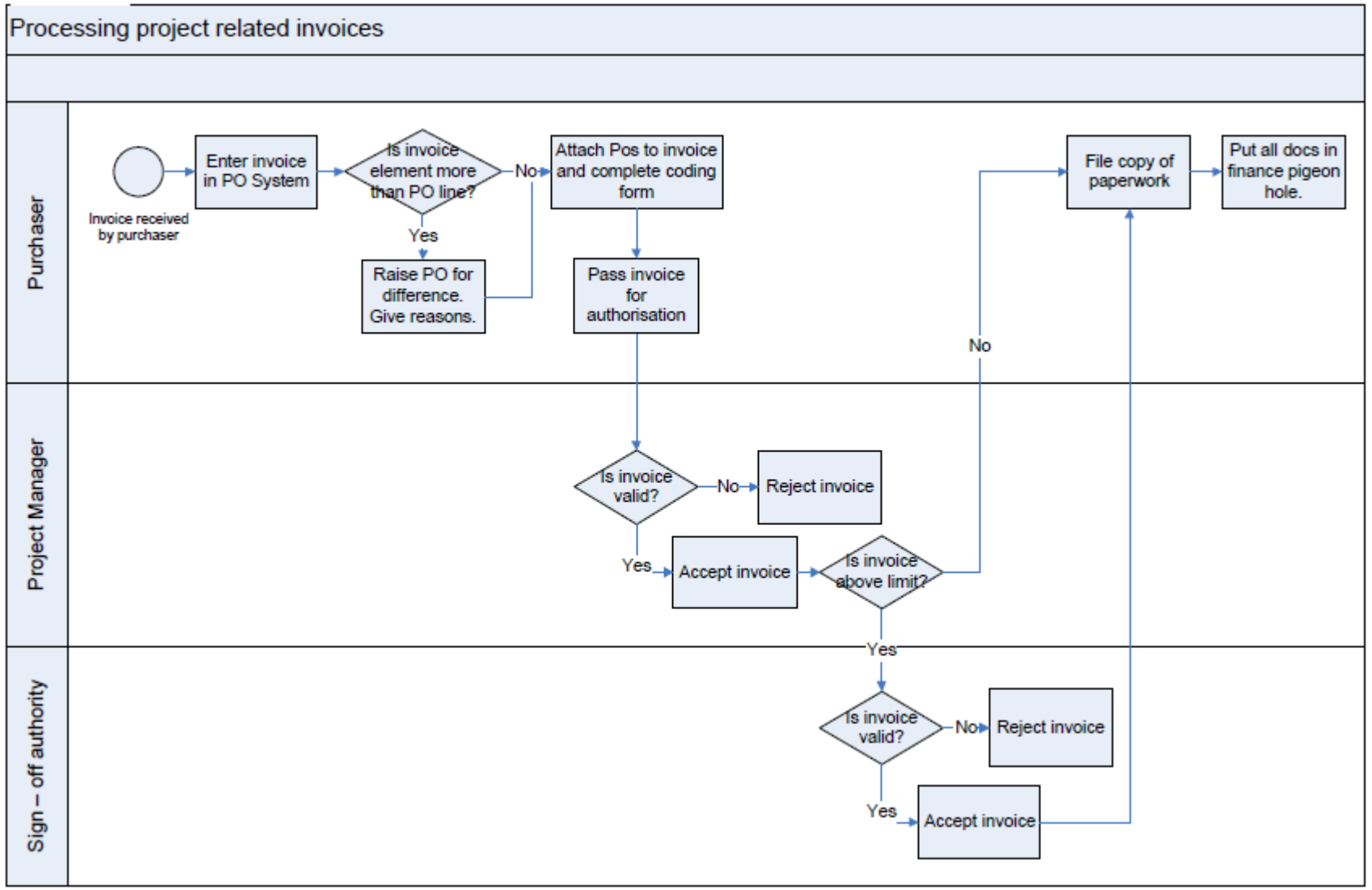
PROSES BISNIS: ELEMEN KUNCI

- Informasi yang akan digunakan partisipan untuk melakukan pekerjaannya
- Teknologi adalah TI dan perangkat lainnya dan peralatan yang digunakan partisipan selama mengerjakan pekerjaan
- Kontek adalah organisasi, kompetitif, teknikal dan pengaturan yang dioperasikan dalam sistem kerja (dalam terminologi sistem disebut lingkungan)
- Infrastruktur adalah sumberdaya orang dan teknikal yang terkait sistem baik sumberdaya yang ada atau yang dikelola diluar sistem

CONTOH: PEMBAYARAN PEGAWAI (BILLING)

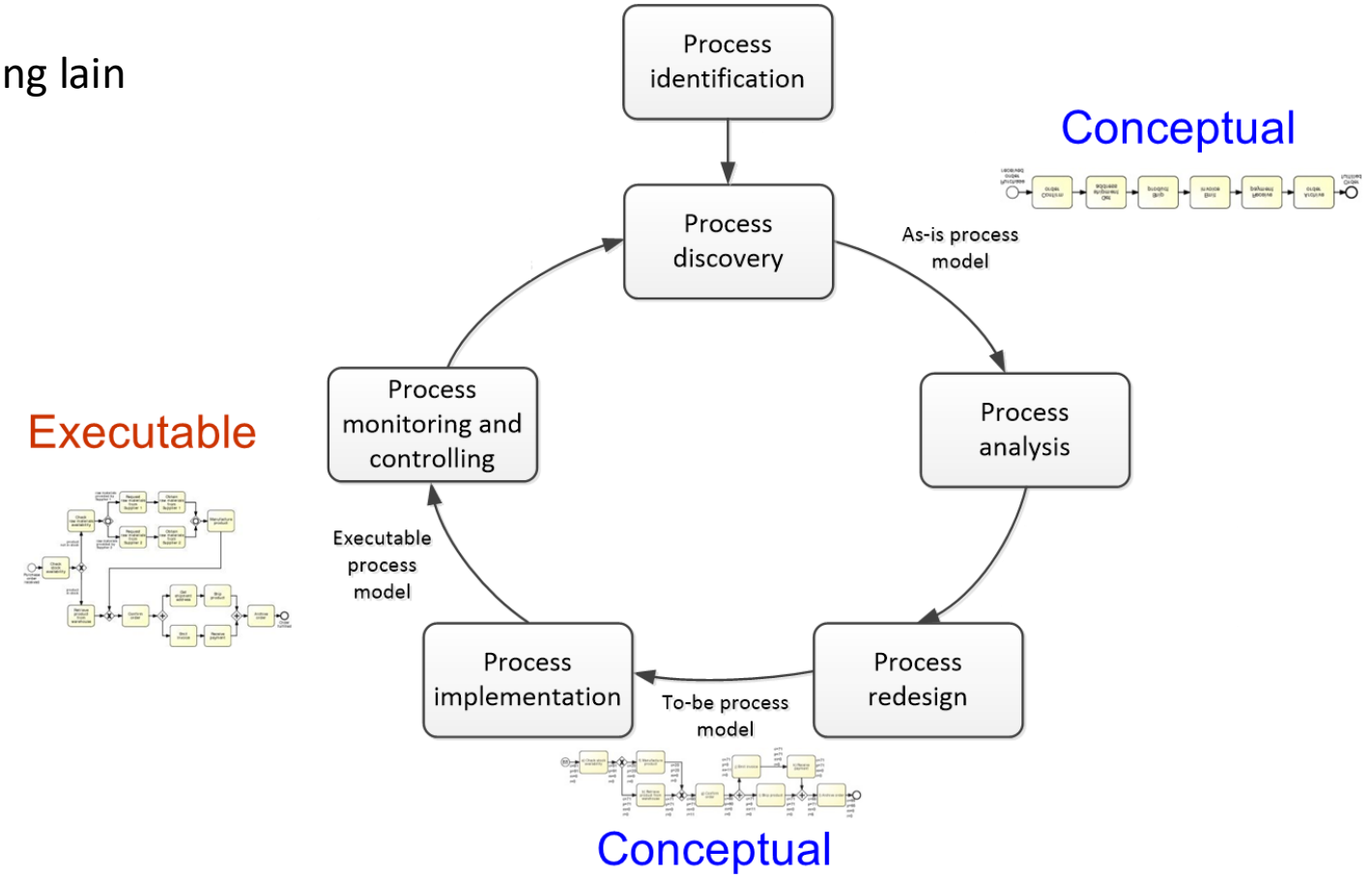
- *Customers* – staf organisasi yang akan dibayar
- *Products and services* – pembayaran untuk staff, slip gaji, laporan ke organisasi tetang pembayaran staf dan fungsi personel lainnya
- *Business process* – termasuk :
  - Pembayaran gaji staf
  - Penelusuran perpindahan dan level penggajian
  - Penerimaan waktu kerja rinci (kehadiran/ketidak hadiran)
  - Menghasilkan daftar gaji payroll
  - Pengiriman rincian transaksi pembayaran gaji ke bank
  - Pengiriman slipgaji, sertifikat kelompok
  - Menghasilkan beberapa laporan untuk organisasi

CONTOH: Proses Invoice Kegiatan Projek



BUSINESS PROCESS MODELING- BPM

- Penggambaran proses bisnis dalam bentuk diagram sehingga:
  - Terdokumentasikan
  - Dapat dikomunikasikan kepada yang lain
  - Untuk memudahkan pemahaman
- Tujuan BPM:
  - Komunikasi
  - Dokumentasi
  - Analisi (seperti simulasi)

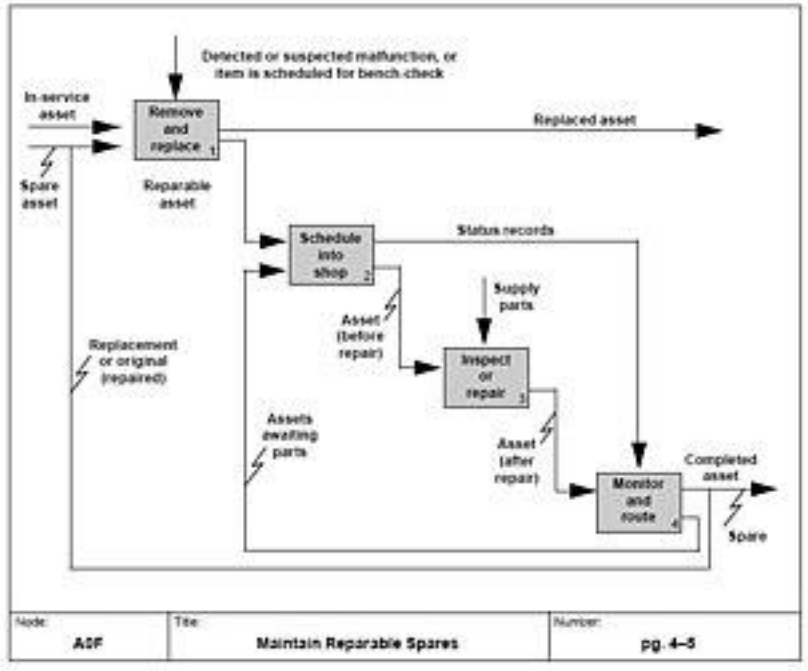


STANDARD PEMODELAN: IDEF0

- **I**CAM (Integrated Computer Aided Manufacturing) **DEF**inition for Function Modeling
  - Function modeling methodology for describing manufacturing functions, which offers a functional modeling language for the analysis, development, reengineering and integration of information systems, business processes or software engineeringanalysis

Pros of Using ICAM (IDEF0) for Business Process Modeling
1. Structured and Hierarchical Representation
2. Emphasizes Inputs, Controls, Outputs, and Mechanisms (ICOM Model)
3. Standardized and Widely Used in Engineering & Government
4. Better for Complex, Large-Scale Systems
5. Focus on Function Rather than Sequence

Cons of Using ICAM (IDEF0) for Business Process Modeling
1. Not Intuitive for Non-Technical Users2. Lacks a Clear Timeline or Process Flow
3. Limited for Workflow and Decision Modeling
4. Complex and Time-Consuming for Simple Processes
5. Not Directly Compatible with Process Automation Tools



STANDARD PEMODELAN: IDEF0

- Untuk memfasilitasi komunikasi dengan pihak lain yang menggunakan standard yang sama
- Beberapa standard :
  - ASME (American Association of Mechanical Engineering)
  - Flowchart / Flowmap
  - IDEF0 (Integration Definition For Function Modeling)
  - IGOE (Input, guide, output, enabler)
  - BPMN (Business Process Modeling Notation)
  - UML (Unified Modeling Language)
  - . . .

STANDARD PEMODELAN: ASME Notation

- ASME (American Association of Mechanical Engineering)

Pros of Using ASME for Business Process Modeling
1. Standardized Representation
2. Great for Manufacturing and Engineering Workflows
3. Focus on Process Efficiency & Waste Reduction
4. Supports Detailed Process Breakdown
5. Widely Used in Industrial Sectors

Cons of Using ASME for Business Process Modeling
1. Not Designed for High-Level Business Processes
2. Lacks Organizational Role Representation
3. Not Suitable for IT & Business Process Automation
4. Less Emphasis on Event Handling

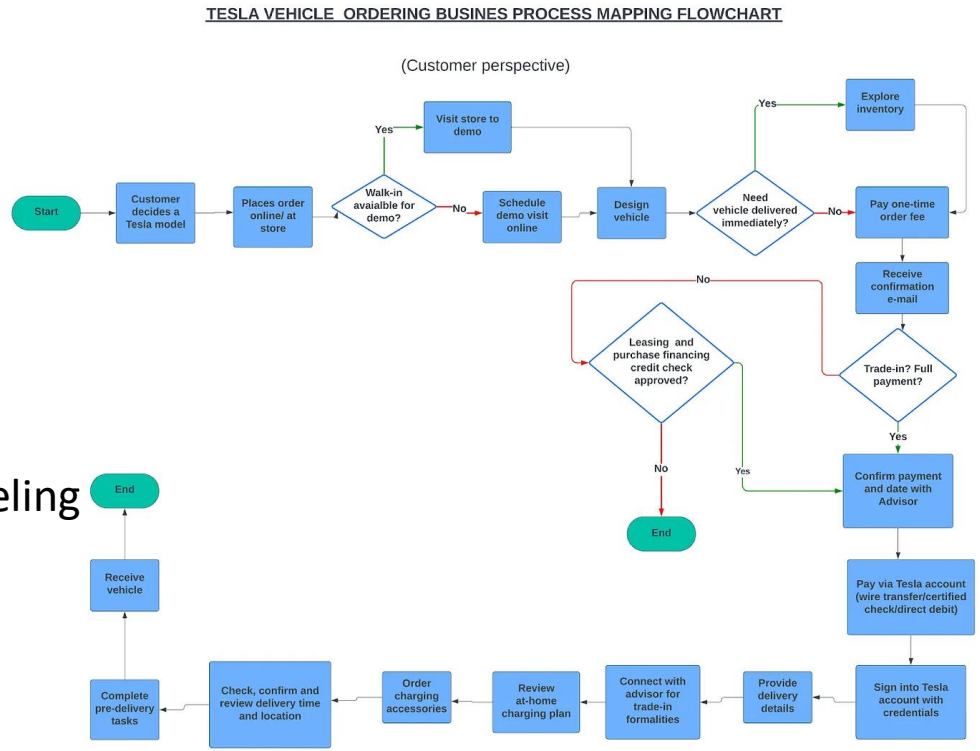
ACTIVITY		INDUSTRIAL PROCESS	CATERING SERVICES	MEDICAL SERVICES	ADMINISTRATIVE PROCESS
Operation	○	Connection of the motor in a washing machine	Addition of sauce to a fish dish	Radiography	Introduction of the information of an invoice in the computer
Inspect	□	Quality control of the connection	Control of flavor and PH of the sauce	Control of patient identity data	Checking the invoice data
Delay	D	Working places waiting for the supply of cables	Fish waiting for the addition of the sauce	Patient in a stretcher waiting for the doctor	Invoice waiting for the signature of the responsible person
Inventory / Warehouse	▽	Washing machines on AGV or in warehouse	Bowl with elaborated sauce for several fish dishes	Waiting area with patients waiting to be called	Folder with invoices to introducing in the computer
Move	⇨	AGV with washing machines to packing area	Fish dishes with sauce taken to the customer´s table	Stretcher with patient moved to an operating room	Folder of invoices taken to filing cabinet

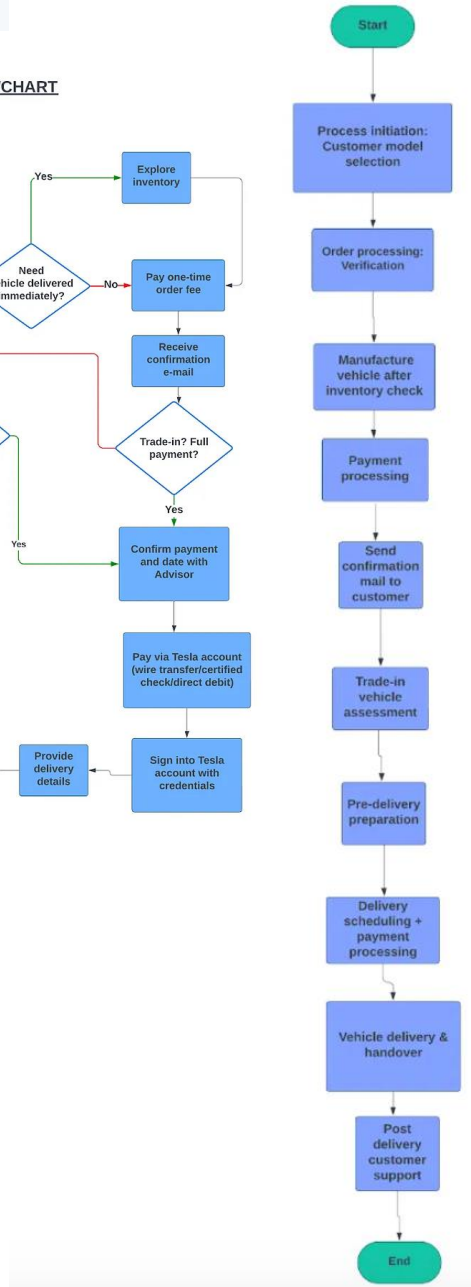
Activities that add no value

STANDARD PEMODELAN: Flowchart

Pros of Using Flowcharts for Business Process Mode
1. Simplicity & Easy to Understand.
2. Fast and Easy to Create
3. Great for High-Level Process Representation
4. Helps in Identifying Bottlenecks
5. Flexible & Tool-Agnostic

Cons of Using Flowcharts for Business Process Modeling
1. Lack of Standardization
2. Limited Scalability for Complex Processes
3. Weak in Representing Process Responsibilities
4. Not Suitable for Business Process Automation
5. Cannot Handle Exception Handling & Events





STANDARD PEMODELAN: BUSINESS PROCESS MODELING NOTATION (BPMN)

- DIkembangkan oleh Business Process Management Initiative (BPMI), dan dikelola oleh Object Management Group sejak penggabungan kedua organisasi pada tahun 2005
- Mendukung manajemen proses bisnis untuk pengguna teknis maupun bisnis
- Merupakan penghubung komunikasi antara kegiatan desain proses bisnis dan implementasinya
- Current version: 2.0

BPMN

- Sederhana
- Dalam bentuk diagram yang mudah dimengerti
- Dapat dipahami baik oleh orang bisnis maupun teknis
- Mirip flowcharts dan Diagram Activitas pada UML
- Alur aktivitas dengan pesan dan data
- Dapat dipergunakan untuk service orchestration pada SOA

PERBANDINGAN ANTAR NOTASI

📊 Business Process Modeling Notation Comparison Matrix

Criteria	Flowchart ✅	ASME ✅	ICAM (IDEF0) ✅	BPMN 2.0 ✅	UML (Activity Diagrams) ✅
Ease of Use	✅ Very Easy	✅ Easy	❌ Moderate-Hard	❌ Moderate	❌ Moderate
Standardized Notation	❌ No	✅ Yes	✅ Yes	✅ Yes	✅ Yes
Best for Simple Processes	✅ Yes	✅ Yes	❌ No	✅ Yes	✅ Yes
Best for Complex Processes	❌ No	❌ No	✅ Yes	✅ Yes	✅ Yes
Step-by-Step Workflow	✅ Yes	✅ Yes	❌ No	✅ Yes	✅ Yes
Decision Modeling (Gateways)	❌ No	❌ No	❌ No	✅ Yes	✅ Yes
Parallel Processing	❌ No	❌ No	❌ No	✅ Yes	✅ Yes
High-Level Functional Analysis	❌ No	✅ Somewhat	✅ Strong	❌ No	❌ No
Process Automation Support	❌ No	❌ No	❌ No	✅ Yes	❌ No
Role-Based Modeling (Pools & Lanes)	❌ No	❌ No	❌ No	✅ Yes	✅ Yes
Supports Exception Handling	❌ No	❌ No	❌ No	✅ Yes	❌ No
Best for Manufacturing Processes	❌ No	✅ Yes	✅ Yes	❌ No	❌ No
Best for Business Workflows	✅ Basic	❌ No	❌ No	✅ Yes	✅ Yes
Industry Use	General Business	Manufacturing, Engineering	Enterprise, Government	Business, IT, BPM	Software Engineering, System Design

Pros dari BPMN

1. Clear Workflow Representation

- BPMN visualizes the exact sequence of tasks in a process, making it easy to understand execution order.
- Uses Start, Intermediate, and End Events to define process flow.

2. Decision Logic & Parallel Processing

- BPMN includes gateways (XOR, AND, OR) for decision-making and parallel processes, which IDEF0 lacks. Example: “Stock Available?” decision in Order-to-Cash process.

3. Standardized & Widely Used in Business & IT

- BPMN is an ISO standard for business process modeling.
- Widely used in business, IT, banking, and automation industries.

4. Supports Business Process Automation

- BPMN diagrams can be executed in process automation tools (e.g., Camunda, IBM BPM).
- Enables workflow orchestration in business applications.

5. Can Model Exception Handling

- BPMN supports error, escalation, and compensation events.
- Useful for processes with error recovery and message-based interactions.

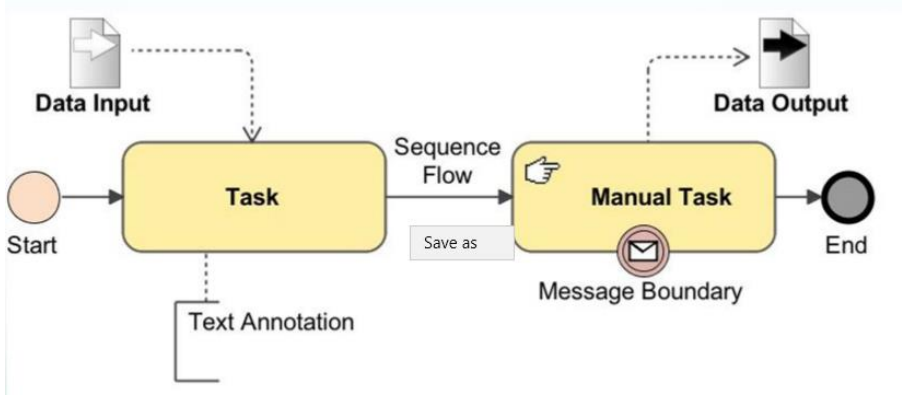
Cons dari BPMN

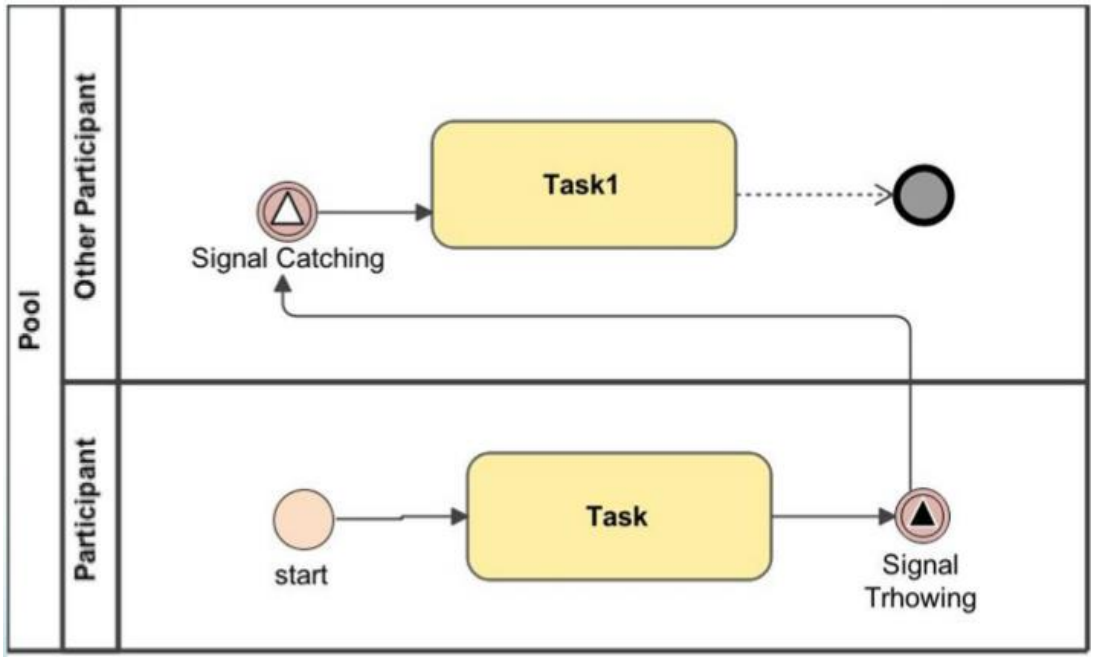
1. **Complex Notation for Large Processes**
   - BPMN diagrams can become **cluttered** in large-scale business systems.
   - Requires **modularization** for maintainability.
2. **Not Ideal for High-Level Functional Analysis**
   - BPMN focuses on **process execution** rather than function decomposition.
   - Unlike IDEF0, BPMN does not clearly define **inputs, controls, and mechanisms**.
3. **Requires Training for Non-Technical Users**
   - Business analysts and managers may need **training** to understand BPMN **notations like pools, lanes, and message flows**.
4. **Limited for Static Process Representation**
   - BPMN is best for **process execution modeling**, not for **strategic process improvement** or **functional dependency analysis**.

DIAGRAM BPMN

- Process –Flow of activity, decisions, data and events
- Collaboration –Conversations and interactions (also process)
- Choreography –Tasks performed by participantsand how participants coordinate interactions via messages.

Simple BPMN Process Diagram





SIMBOL DIAGRAM PROSES pada BPMN

- Core Elements
- Activities
- Gateways
- Data
- Event
- Pools & Lanes
- Flows

CORE ELEMENTS

activity

event

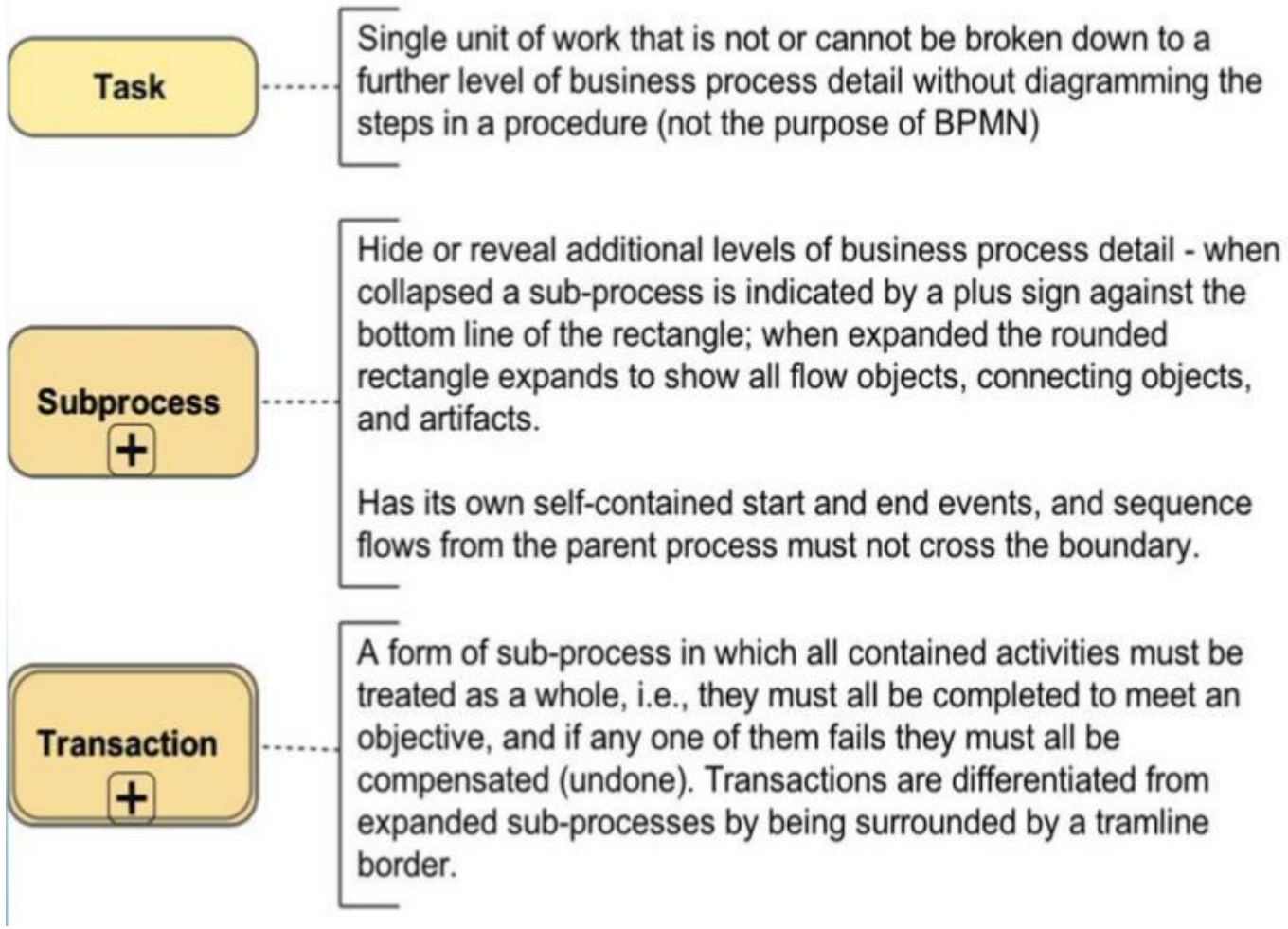
gateway

sequence flow

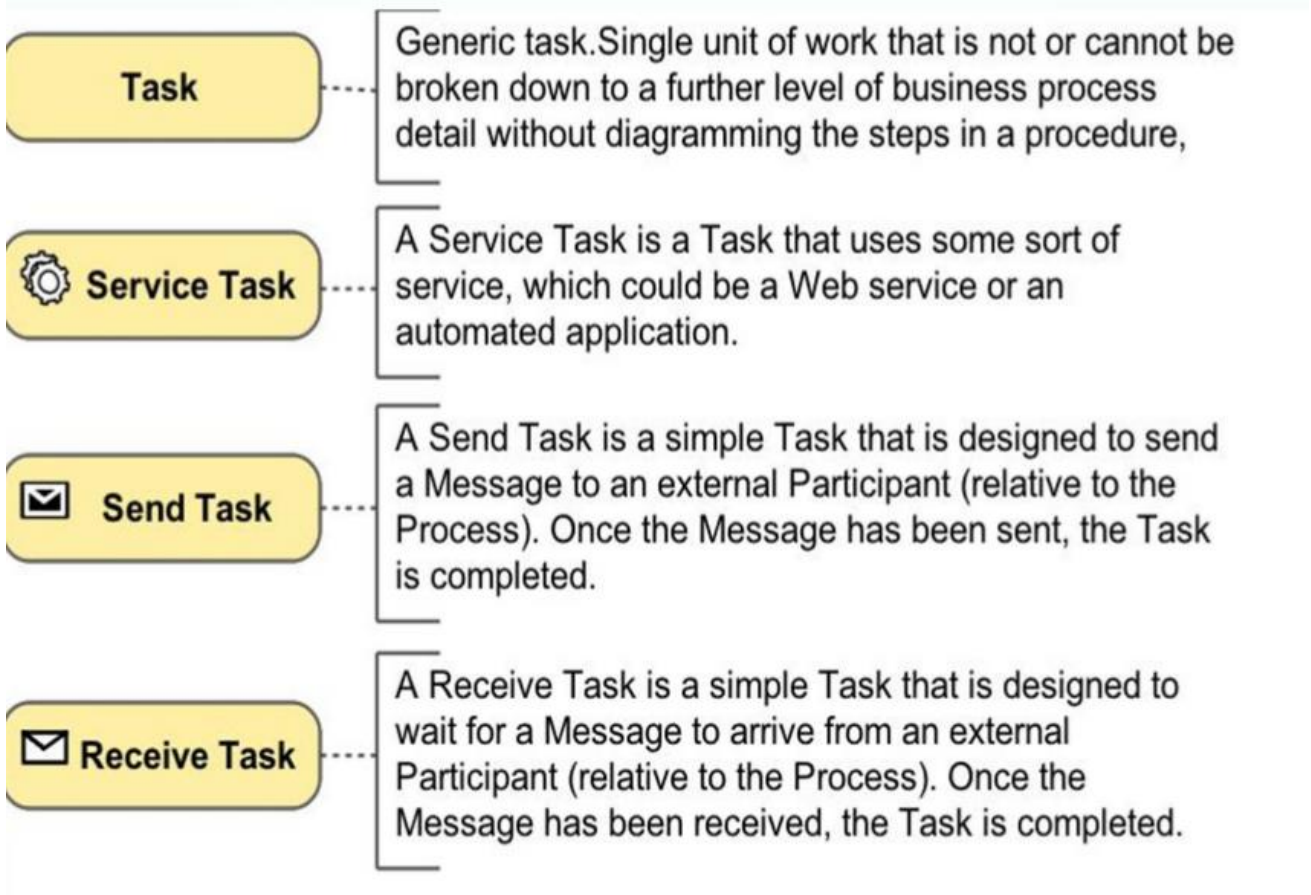
ACTIVITIES

- Work that is performed within a Business Process.
- Activity can be atomic or non-atomic (compound)
- High-level, so does not describe the activity detail (not the job of BPMN)
- Three types: Task, Sub-process, and Transaction

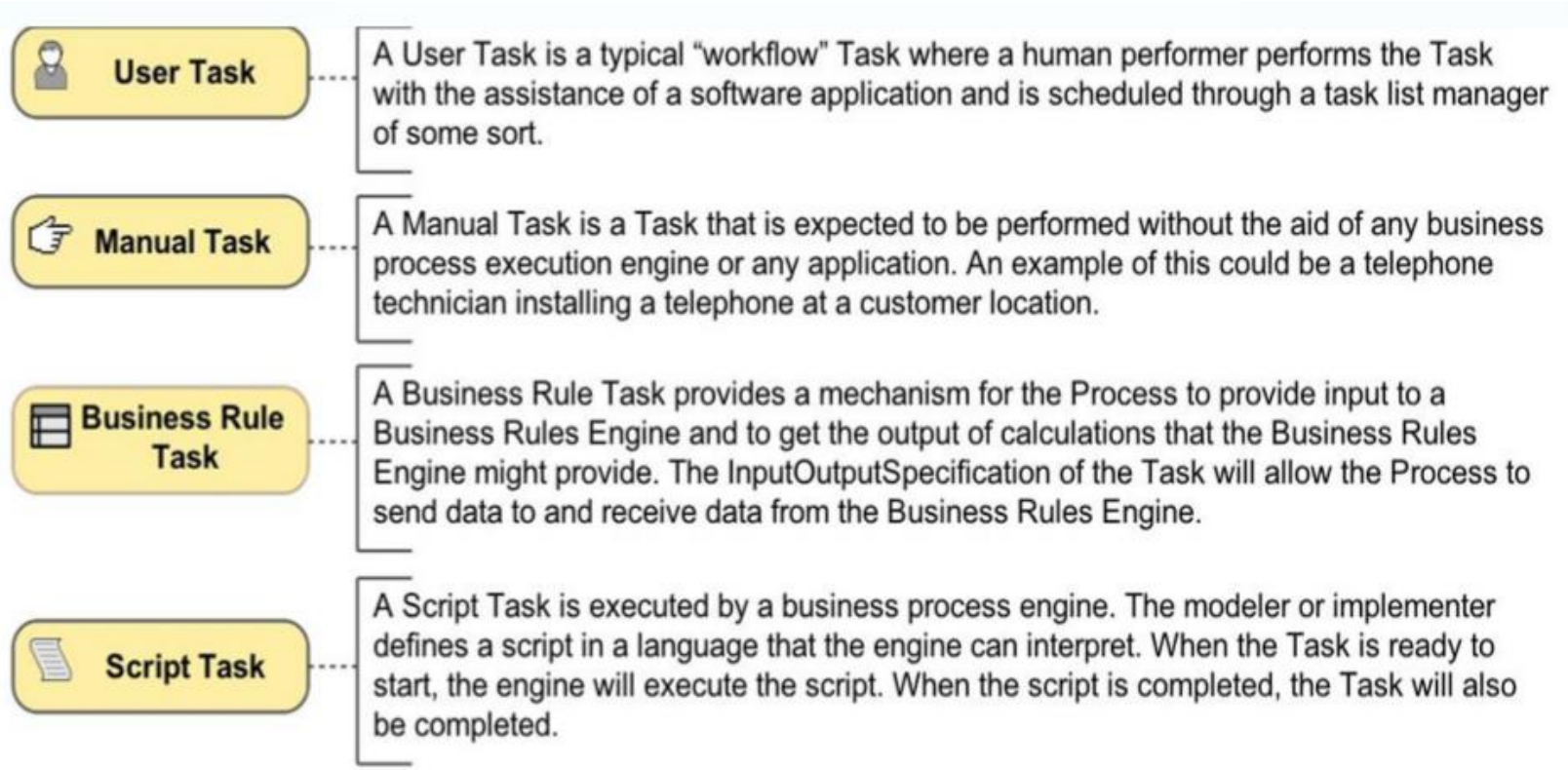
ACTIVITIES SYMBOL



TASK SYMBOLS



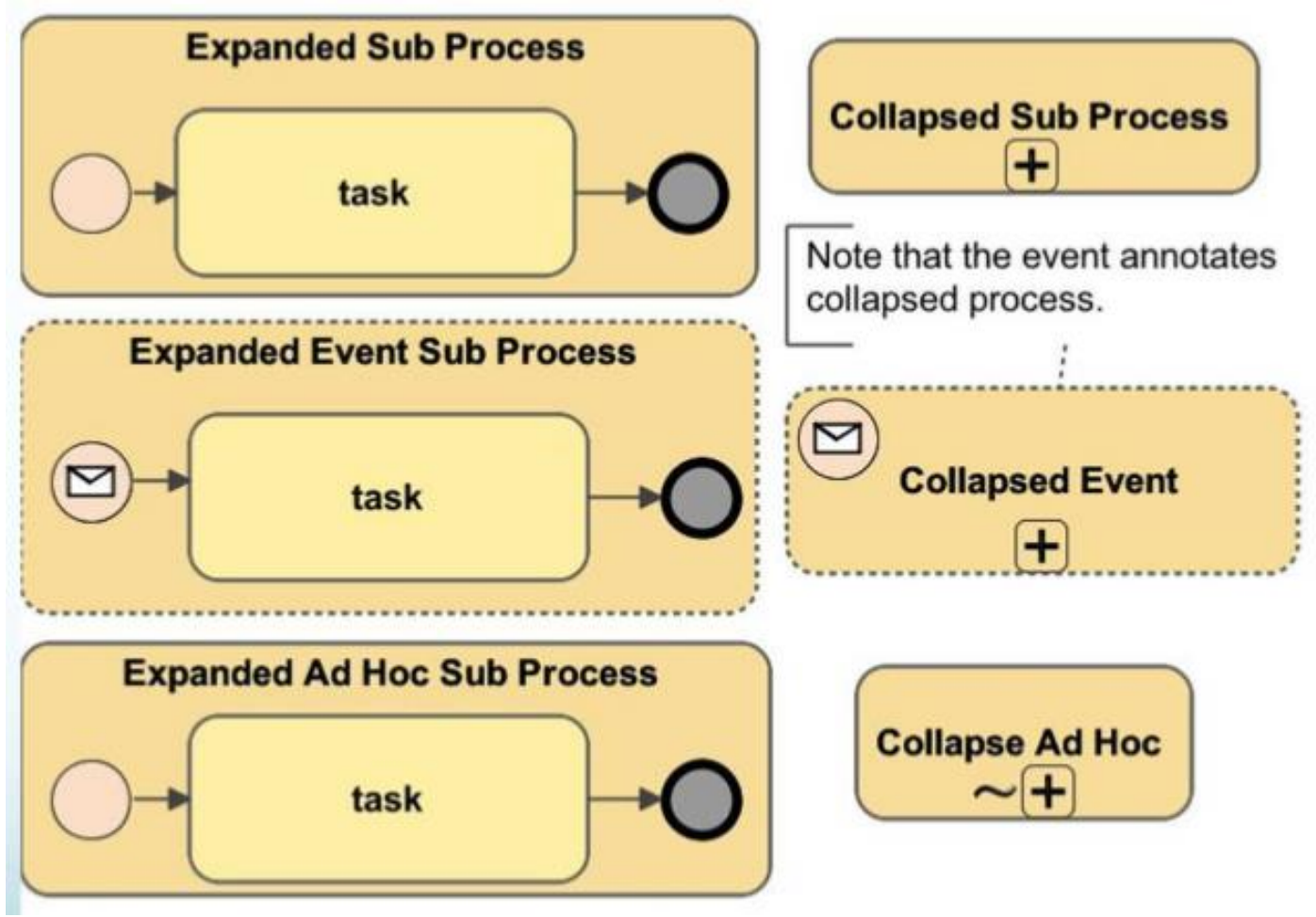
TASK SYMBOLS



SUB PROCESS

- Is in the context of the process and can access the contextual data.
- Can be expanded or collapsed to show detail of the sub-process or to hide the detail.
- Sub process MUST define an internal process with a start and end event.
- A sub process is only reusable within the parent process (i.e. it is not reusable in the overall design).

SUB PROCESS SYMBOL



GATEWAYS

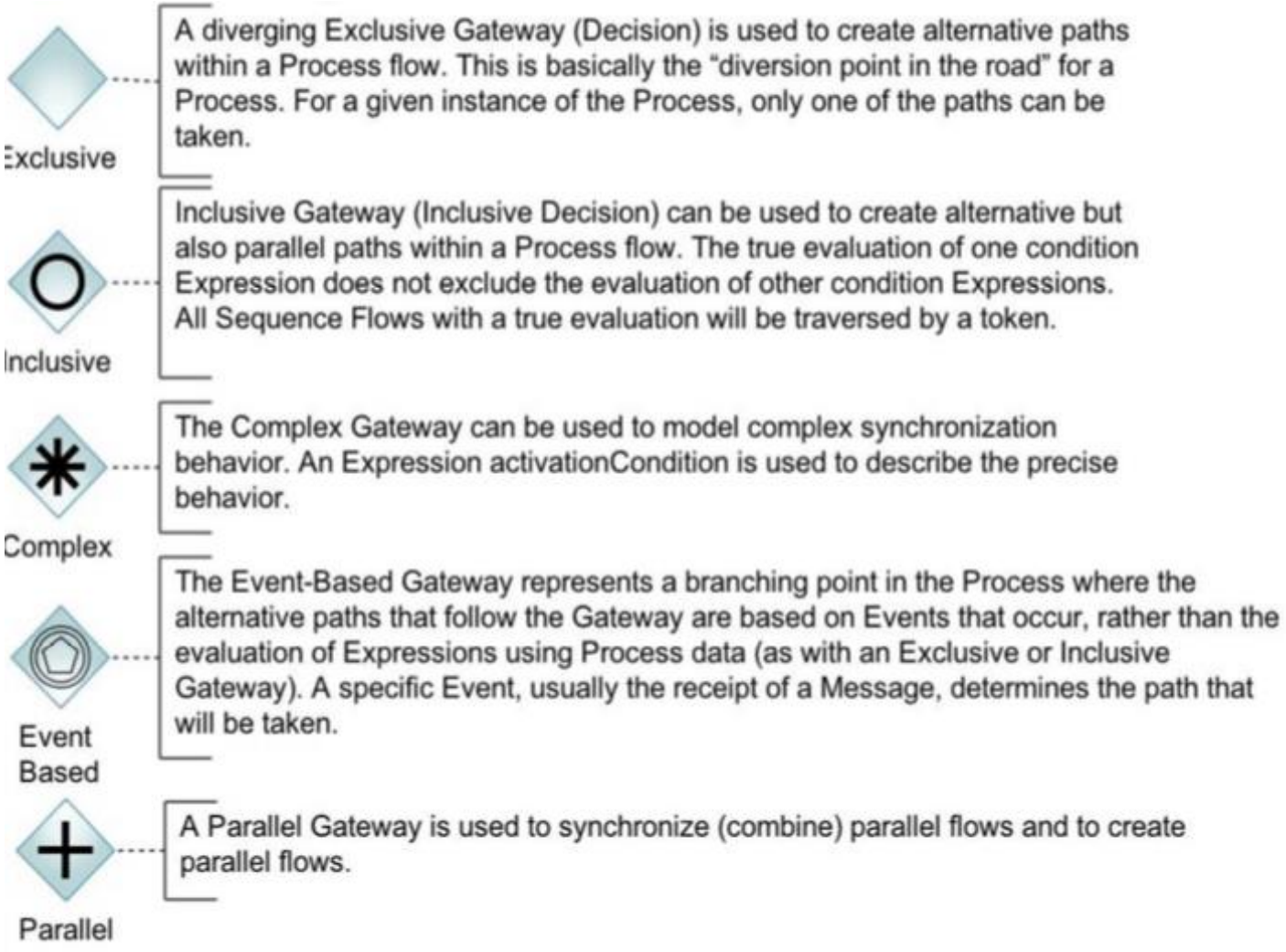
- Gateways are used to control how Sequence Flows interact as they converge and diverge within a Process.
- Capable of consuming or generating additional tokens.
- Define decisions/branching (exclusive, inclusive, and complex), merging, forking, and joining.

GATEWAY SYMBOL

XOR Gateway

OR Gateway

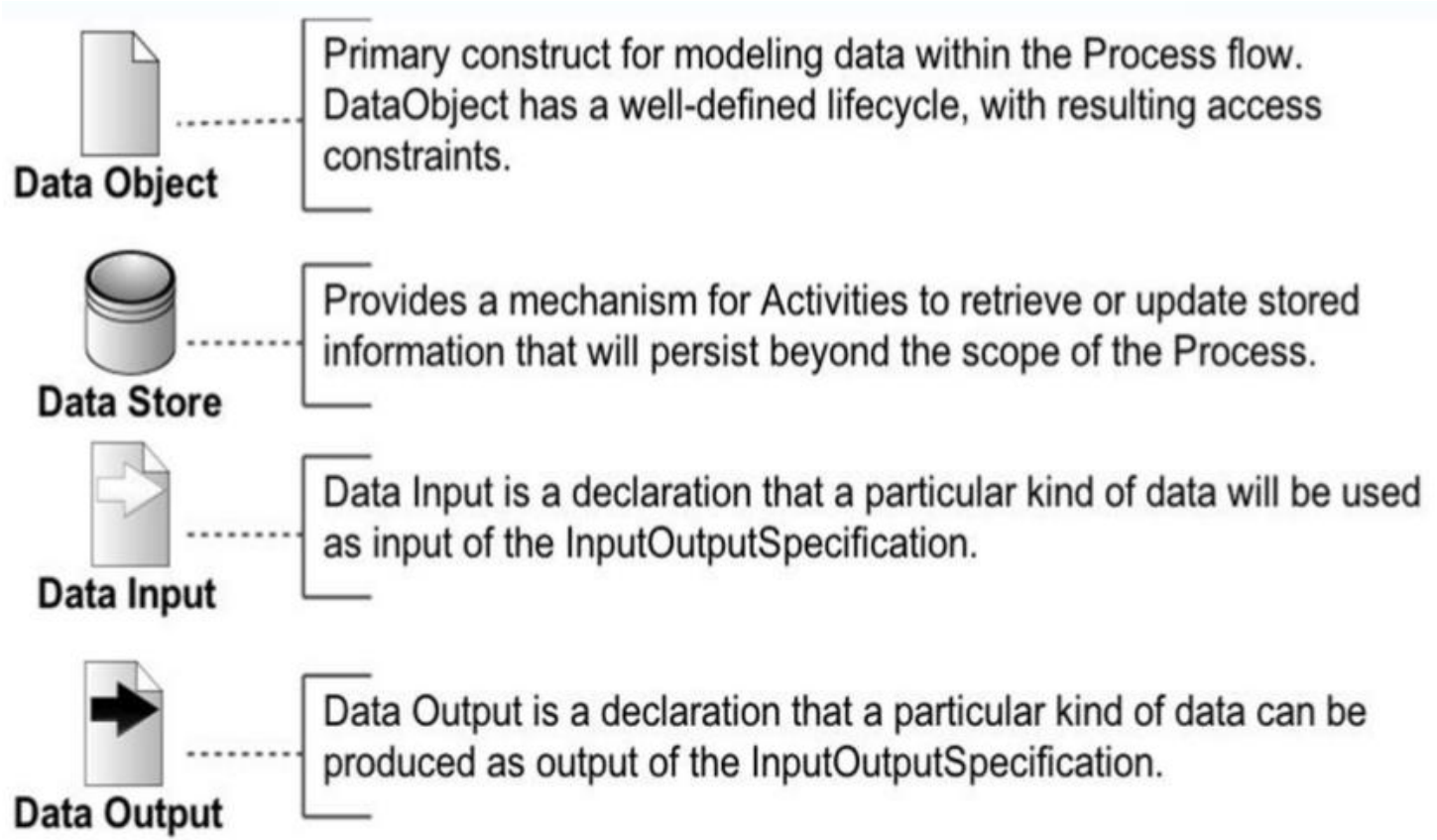
AND Gateway



DATA

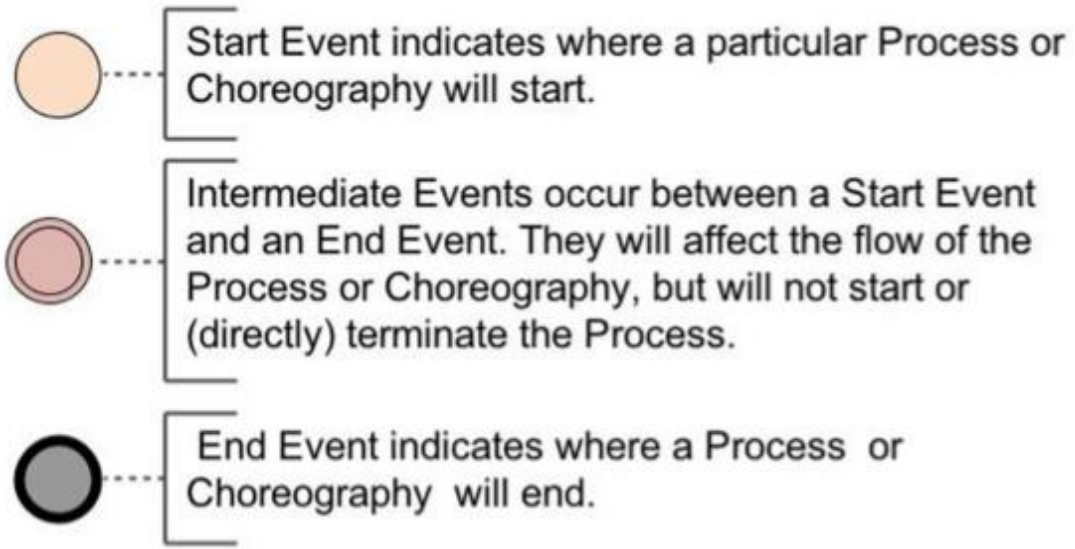
- Data Objects provide information about what Activities require and/or what they produce
- Represent a singular object or a collection of objects
- Data Input and Data Output provide the same information for Processes

DATA SYMBOL


Data Object
Primary construct for modeling data within the Process flow. DataObject has a well-defined lifecycle, with resulting access constraints.
Data Store
Provides a mechanism for Activities to retrieve or update stored information that will persist beyond the scope of the Process.
Data Input
Data Input is a declaration that a particular kind of data will be used as input of the InputOutputSpecification.
Data Output
Data Output is a declaration that a particular kind of data can be produced as output of the InputOutputSpecification.

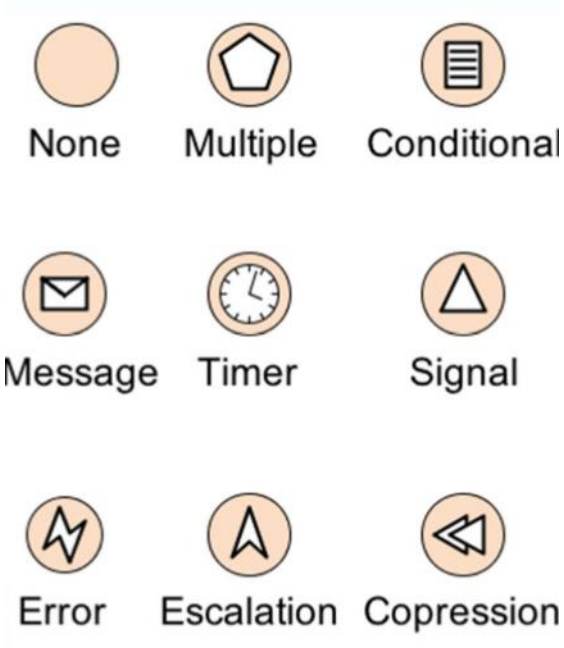
EVENTS

- Something that “happens” during the course of a Process
- Affect the flow of the model and usually have a cause (Trigger) or an impact (Result)
- There are three types, based on what they affect the flow: Start, Intermediate, and End

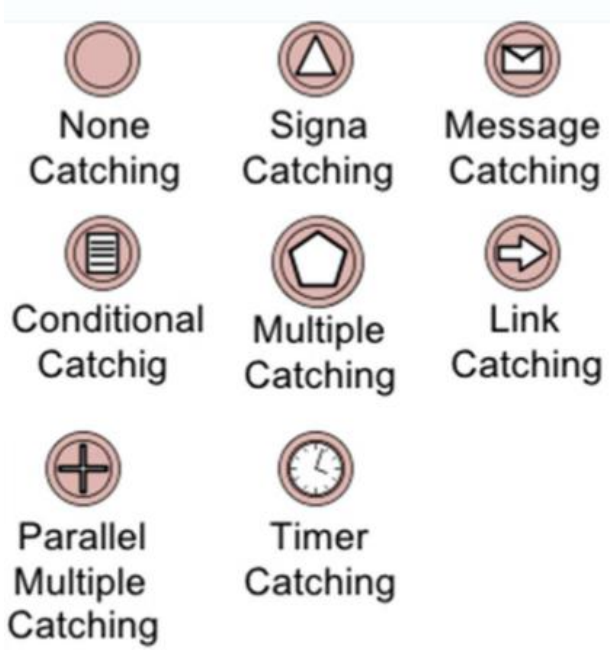


EVENT SYMBOL

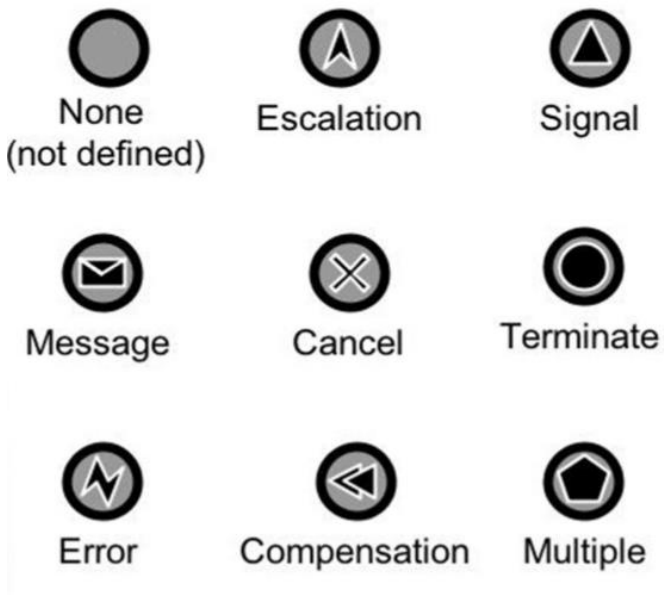
Start Events



Intermediate Events



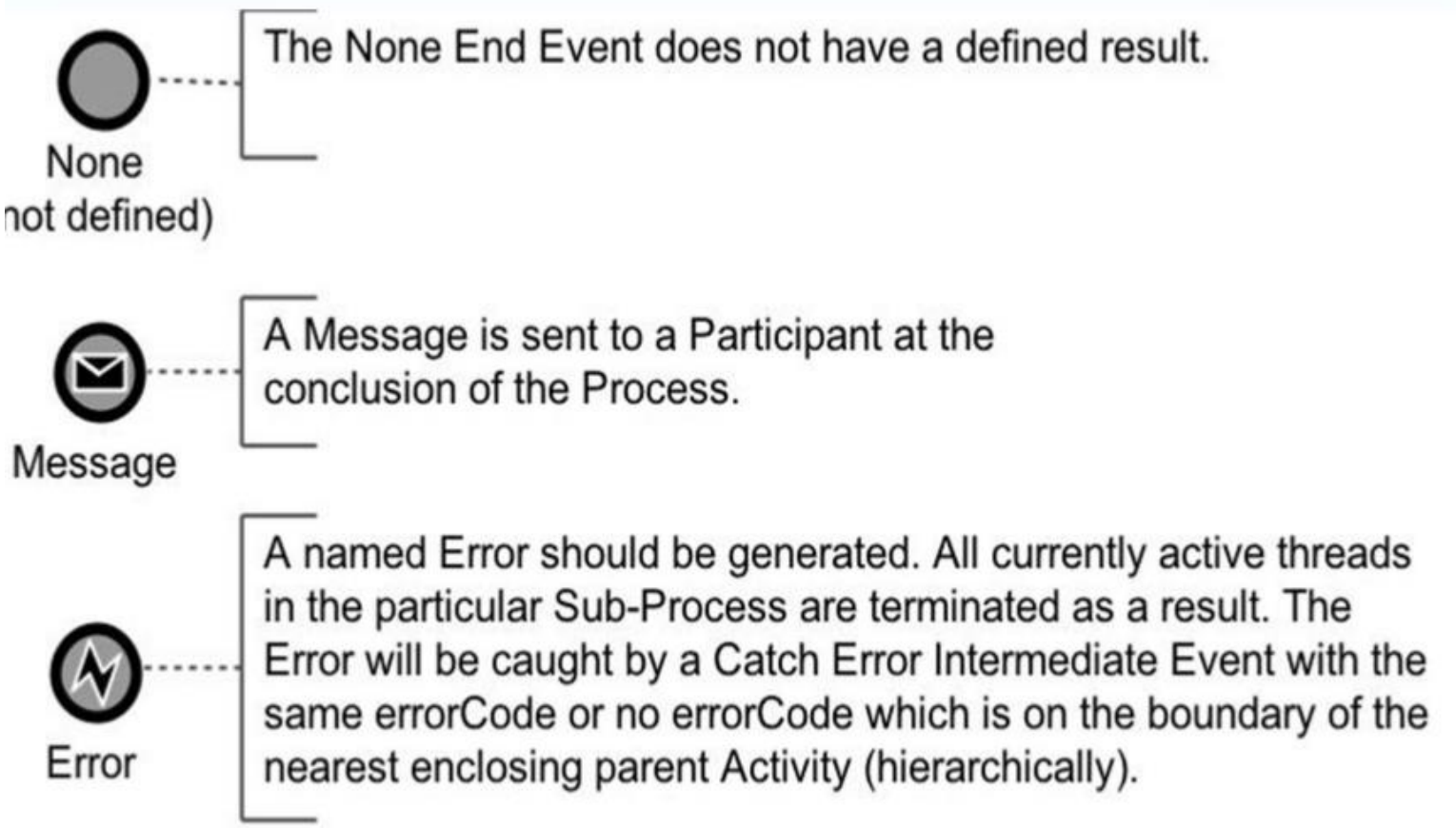
End Events



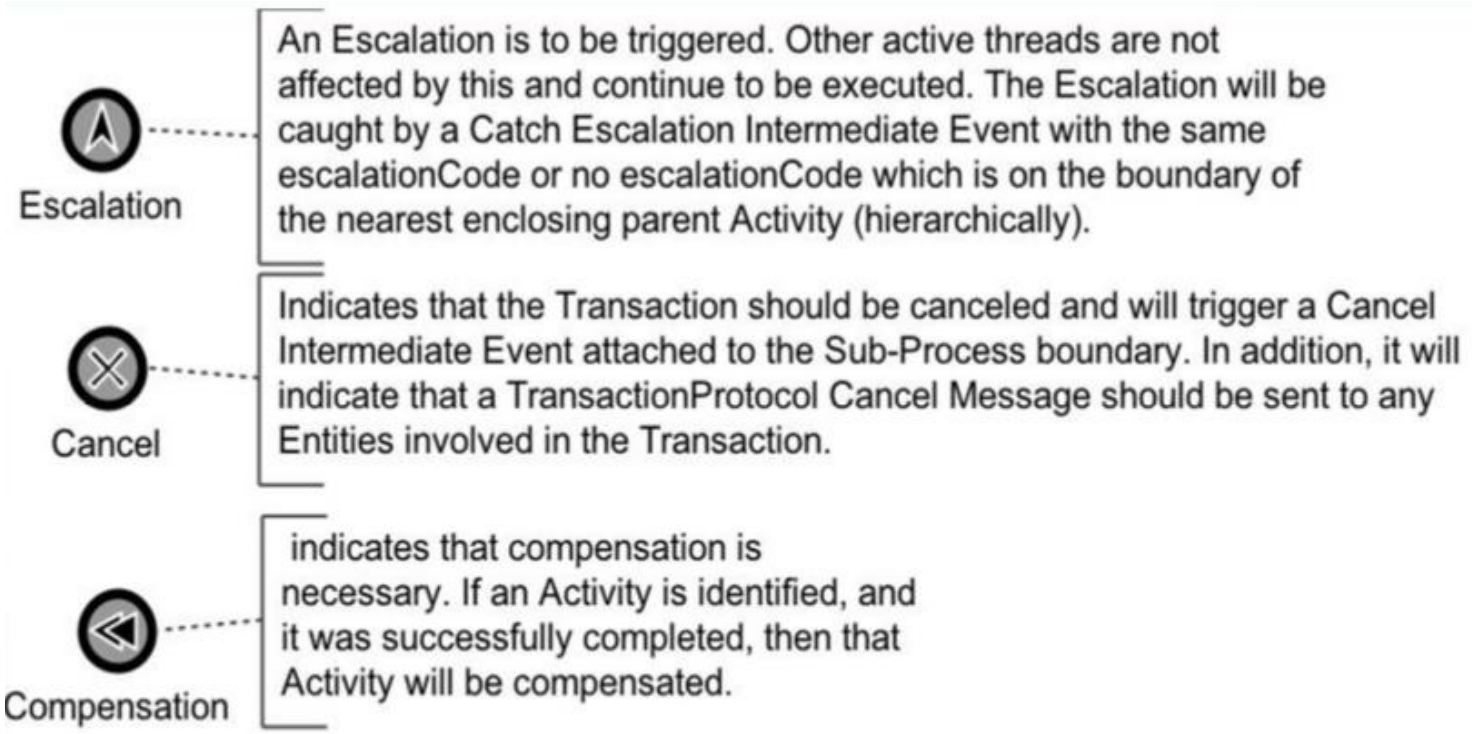
END SYMBOL

- End Event indicates where a Process will end.
- In terms of Sequence Flows, the End Event ends the flow of the Process, and thus, will not have any outgoing Sequence Flows.
- No Sequence Flow can connect from an End Event.
- Depending on the type, other rules are enforced (like error handling and/or how the process is terminated).

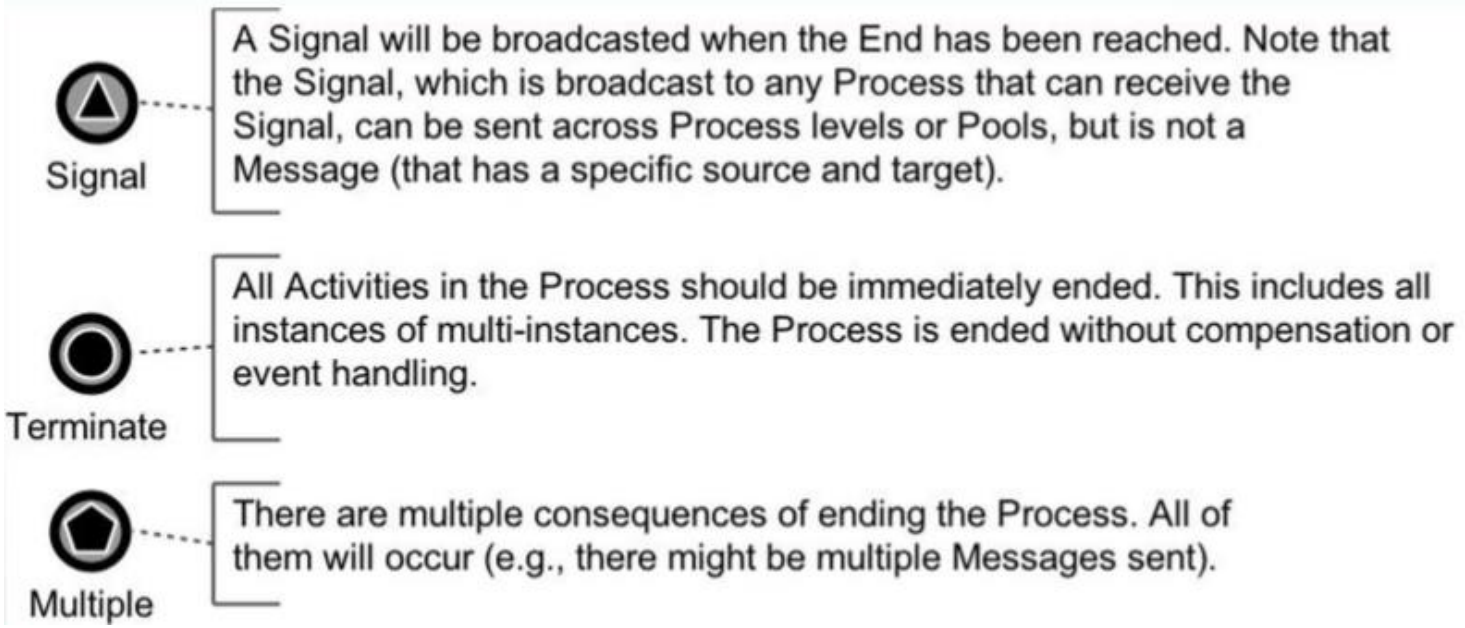
END EVENT


The None End Event does not have a defined result.
None
not defined)
A Message is sent to a Participant at the conclusion of the Process.
Message
A named Error should be generated. All currently active threads in the particular Sub-Process are terminated as a result. The Error will be caught by a Catch Error Intermediate Event with the same errorCode or no errorCode which is on the boundary of the nearest enclosing parent Activity (hierarchically).
Error

END EVENT


Escalation
An Escalation is to be triggered. Other active threads are not affected by this and continue to be executed. The Escalation will be caught by a Catch Escalation Intermediate Event with the same escalationCode or no escalationCode which is on the boundary of the nearest enclosing parent Activity (hierarchically).
Cancel
Indicates that the Transaction should be canceled and will trigger a Cancel Intermediate Event attached to the Sub-Process boundary. In addition, it will indicate that a TransactionProtocol Cancel Message should be sent to any Entities involved in the Transaction.
Compensation
indicates that compensation is necessary. If an Activity is identified, and it was successfully completed, then that Activity will be compensated.

END EVENT

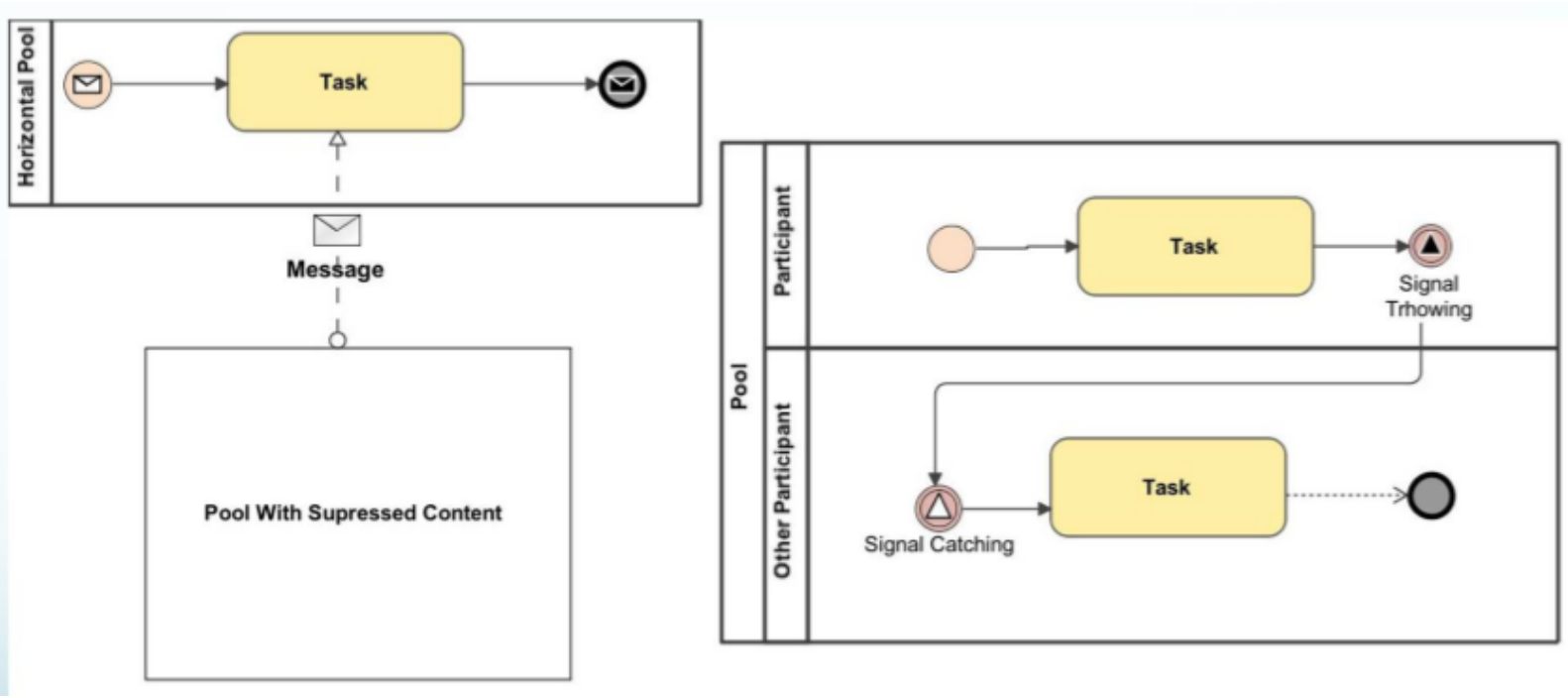

Signal
A Signal will be broadcasted when the End has been reached. Note that the Signal, which is broadcast to any Process that can receive the Signal, can be sent across Process levels or Pools, but is not a Message (that has a specific source and target).
Terminate
All Activities in the Process should be immediately ended. This includes all instances of multi-instances. The Process is ended without compensation or event handling.
Multiple
There are multiple consequences of ending the Process. All of them will occur (e.g., there might be multiple Messages sent).

POOLS & LANES

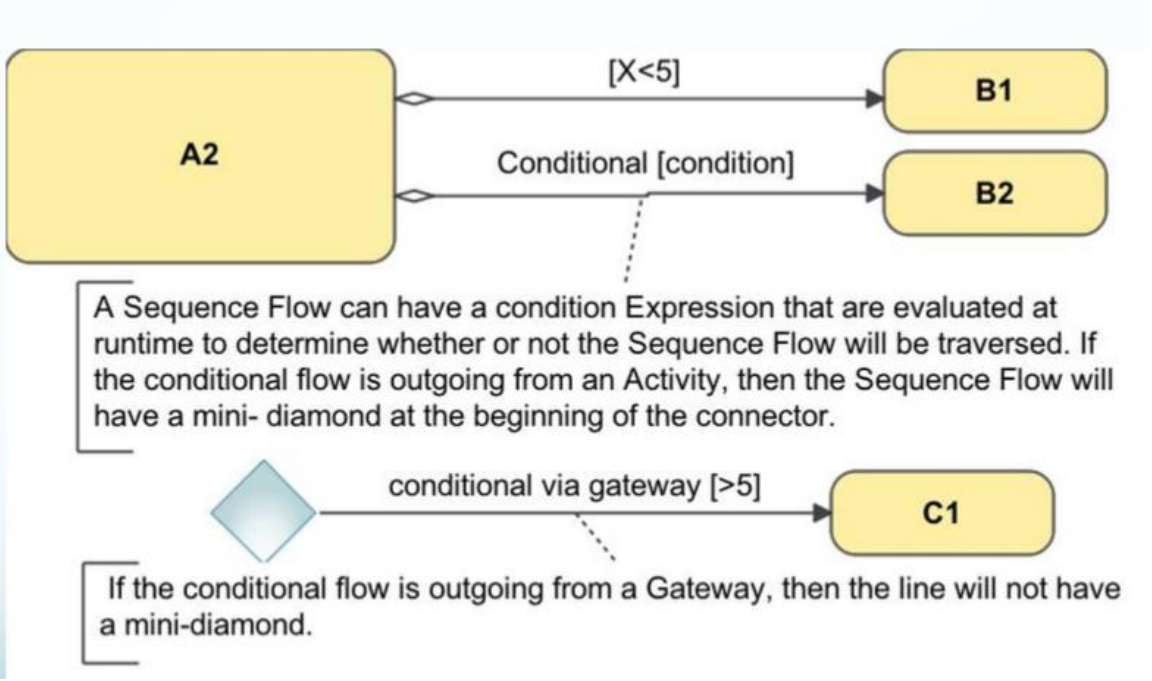
- A Pool is the graphical representation of a Participant in a Collaboration. It also acts as a “swimlane” and a graphical container for partitioning a set of Activities from other Pools, usually in the context of B2B situations.
- Pool captures a resource class. Generally used to model a business party (e.g. a whole company)
- A Pool acts as the container for the Sequence Flow between activities. The Sequence Flow cannot cross the boundaries of a Pool

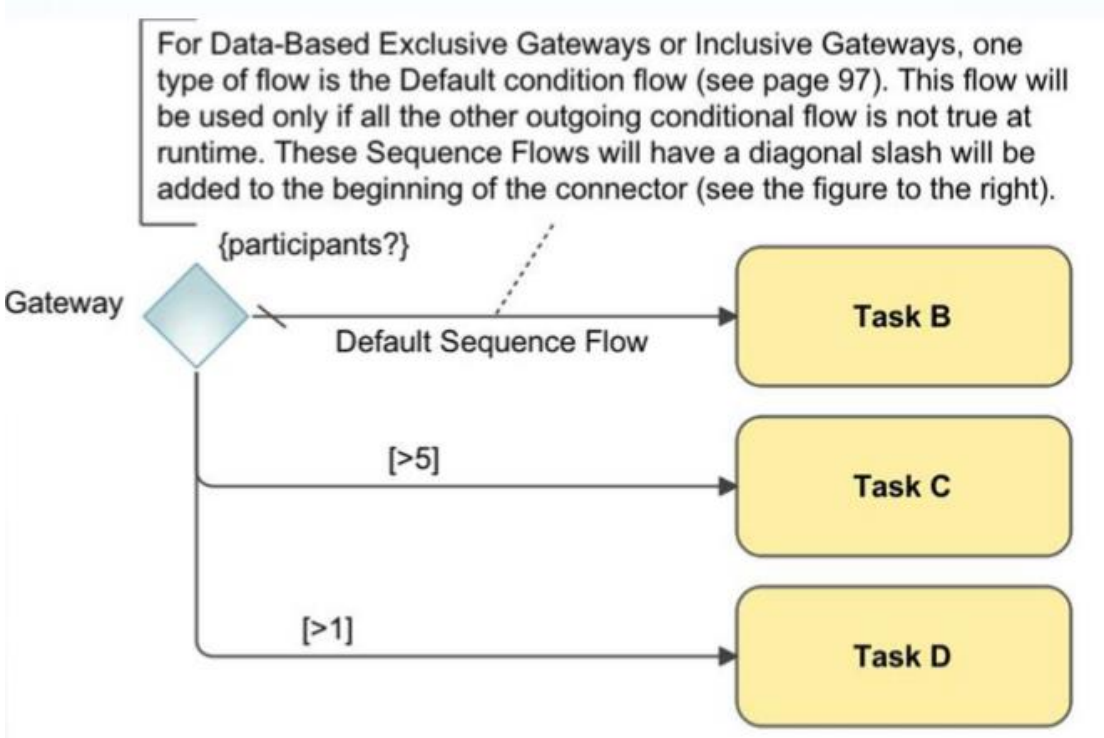
- Lane (Swimlane) is a sub-partition within a Process that extend the entire length of the Process. Lanes are used to organize and categorize Activities.
- Lane is a *resource sub-class* within a pool. Generally used to model departments (e.g. shipping, finance), internal roles (e.g. Manager, Associate), software systems (e.g. ERP, CRM)
- Lanes can be nested (e.g. an outer set of Lanes for company departments and an inner set for roles within each department)

POOLS & LANES

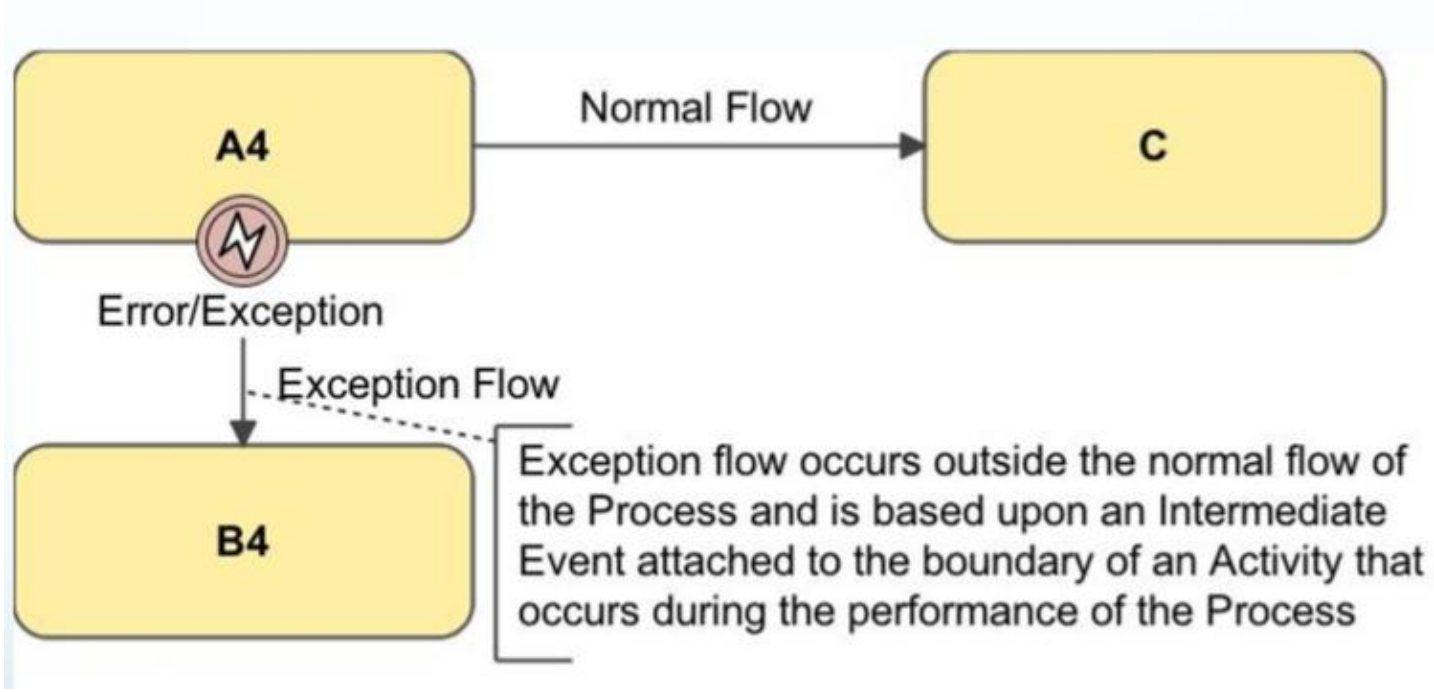

Horizontal Pool
Task
Message
Pool With Supressed Content
Pool
Participant
Task
Signal
Trhowing
Other Participant
Signal Catching
Task

CONDITIONAL FLOW & DEFAULT SEQUENCE FLOW

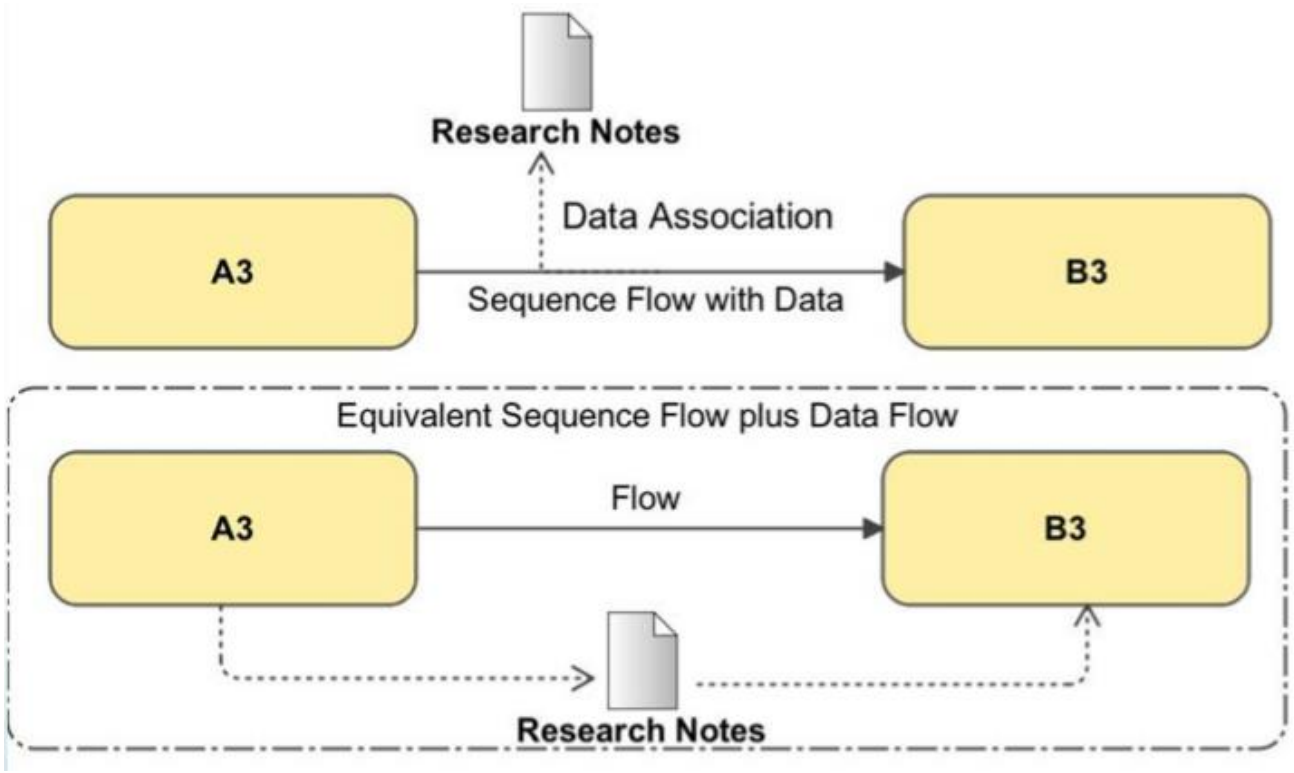




EXCEPTION FLOW

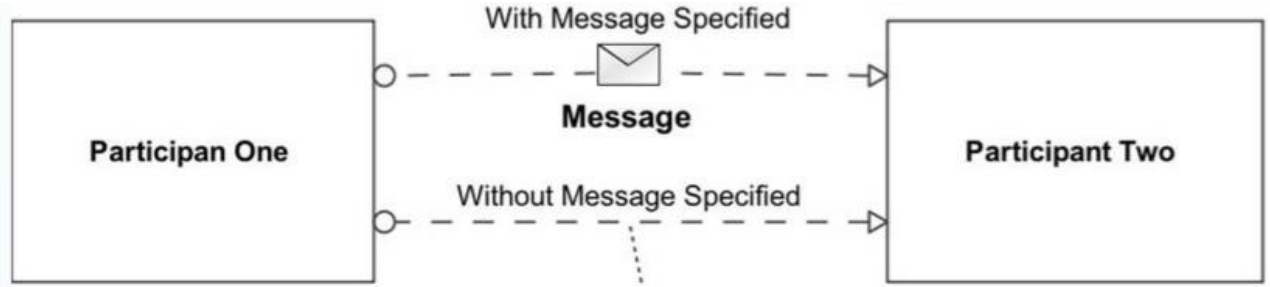


DATA FLOWS

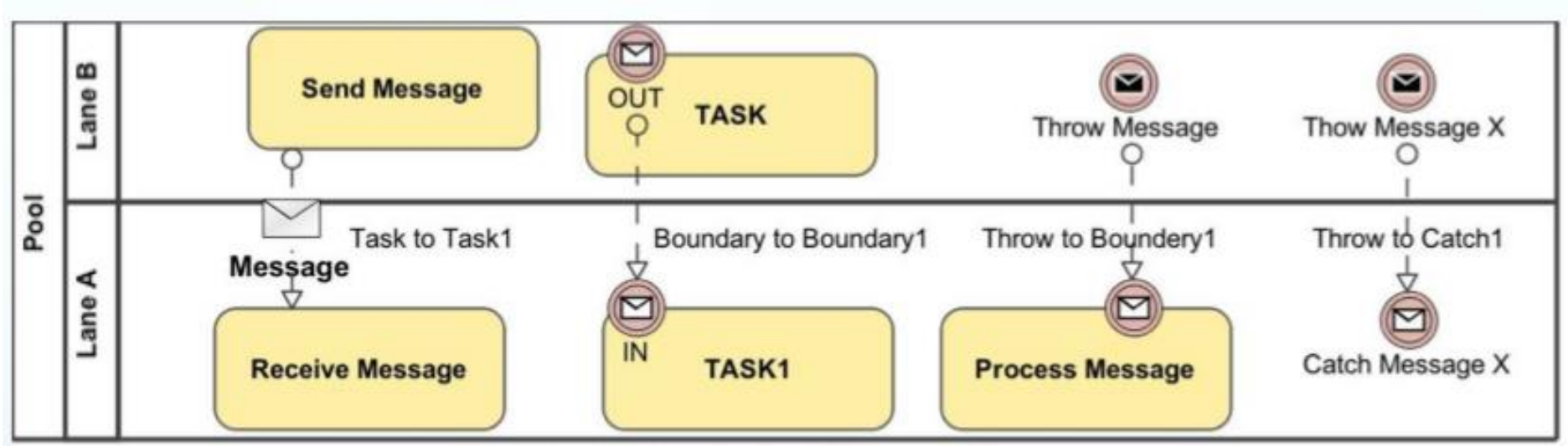

Research Notes
Data Association
A3
B3
Sequence Flow with Data
Equivalent Sequence Flow plus Data Flow
A3
Flow
B3
Research Notes

MESSAGE FLOW

- Flow of Messages between two Participants that are prepared to send and receive them.
- A Message Flow MUST connect two separate Pools.
- They connect either to the Pool boundary or to Flow Objects within the Pool boundary.
- They MUST NOT connect two objects within the same Pool.



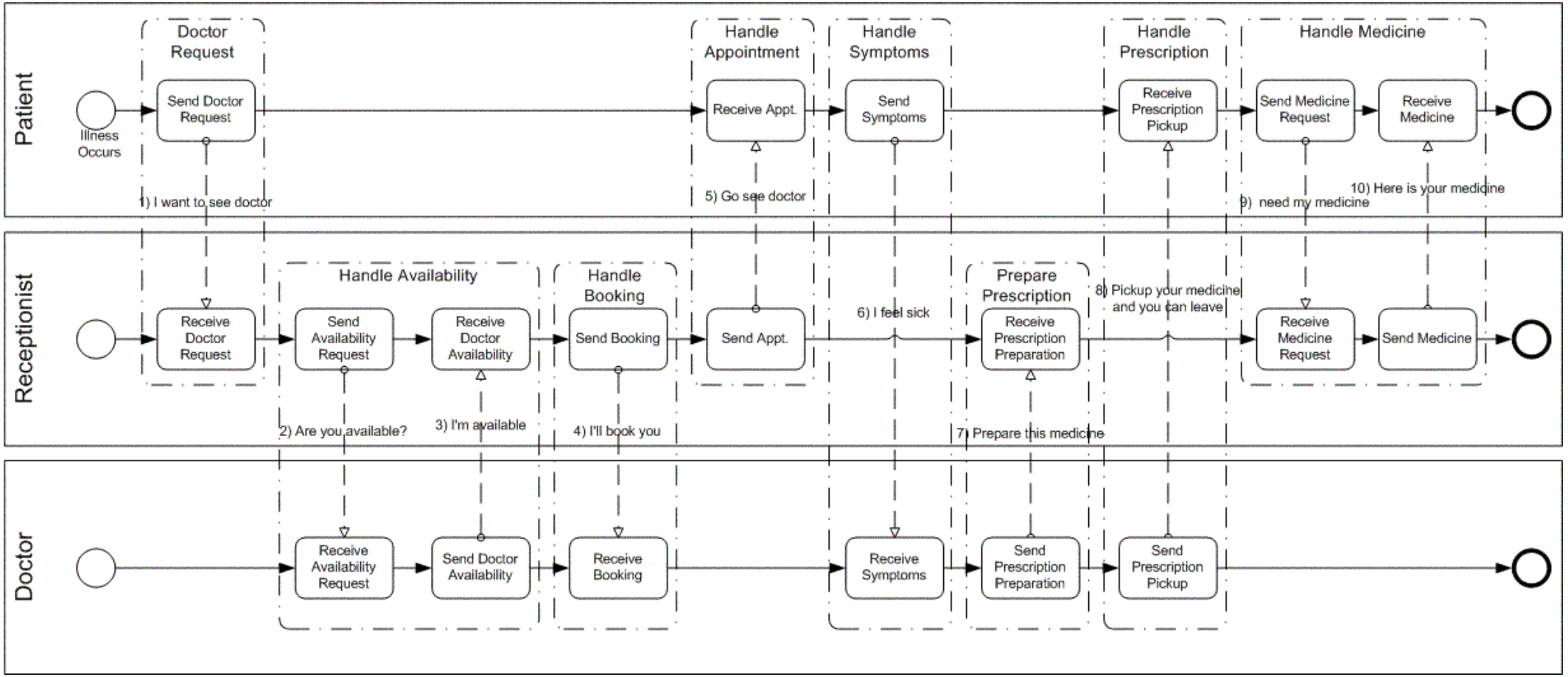
Message Flow Between Lanes



Guidelines: Naming Conventions

- Give a name to every event and task
- For tasks: verb followed by business object name and possibly complement
  - Issue Driver Licence, Renew Licence via Agency
- For message events: object + past participle
  - Invoice received, Claim settled
- Avoid generic verbs such as Handle, Record…
- Label each XOR-split with a condition
  - Policy is invalid, Claim is inadmissible

BPMN Example



BPMN 2.0 - Business Process Model and Notation

http://bpmb.de/poster

Activities

Task — A Task is a unit of work, the job to be performed. When marked with a ⊞ symbol it indicates a Sub-Process, an activity that can be refined.

Transaction — A Transaction is a set of activities that logically belong together; it might follow a specified transaction protocol.

Event Sub-Process — An Event Sub-Process is placed into a Process or Sub-Process. It is activated when its start event gets triggered and can interrupt the higher level process context or run in parallel (non-interrupting) depending on the start event.

Call Activity — A Call Activity is a wrapper for a globally defined Sub-Process or Task that is reused in the current process.

Activity Markers

Markers indicate execution behavior of activities:

- Sub-Process Marker
- Loop Marker
- Parallel MI Marker
- Sequential MI Marker
- Ad Hoc Marker
- Compensation Marker

Task Types

Types specify the nature of the action to be performed:

- Send Task
- Receive Task
- User Task
- Manual Task
- Business Rule Task
- Service Task
- Script Task

Sequence Flow — defines the execution order of activities.

Default Flow — is the default branch to be chosen if all other conditions evaluate to false.

Conditional Flow — has a condition assigned that defines whether or not the flow is used.

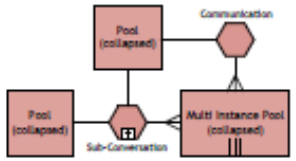
Conversations

A Communication defines a set of logically related message exchanges. When marked with a ⊞ symbol it indicates a Sub-Conversation, a compound conversation element.

A Conversation Link connects Communications and Participants.

A Forked Conversation Link connects Communications and multiple Participants.

Conversation Diagram



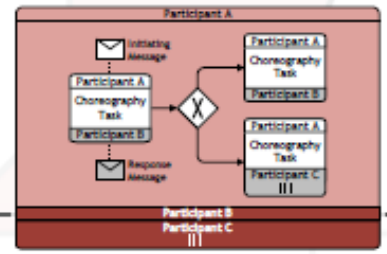
Choreographies

A Choreography Task represents an interaction (Message Exchange) between two Participants.

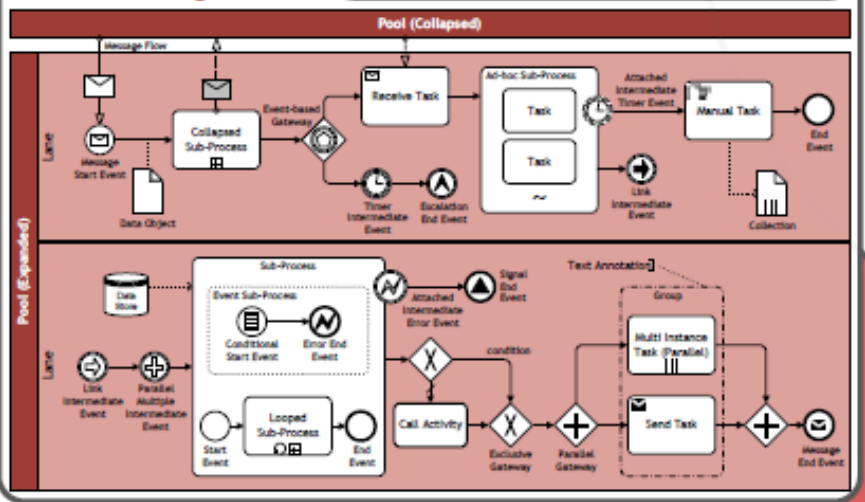
Multiple Participants Marker denotes a set of Participants of the same kind.

A Choreography Sub-Process contains a refined choreography with several interactions.

Choreography Diagram



Collaboration Diagram



Events

	Start: Top-Level	Start: Event Sub-Process Interrupting	Start: Event Sub-Process Non-Interrupting	Intermediate: Catching	Intermediate: Boundary Interrupting	Intermediate: Boundary Non-Interrupting	Intermediate: Throwing	End
None: Untyped events, indicate start point, state changes or final states.	○						○	○
Message: Receiving and sending messages.	✉	✉	✉	✉	✉	✉	✉	✉
Timer: Cyclic timer events, points in time, time spans or timeouts.	🕒	🕒	🕒	🕒	🕒	🕒		
Escalation: Escalating to an higher level of responsibility.		Ⓐ	Ⓐ		Ⓐ	Ⓐ	Ⓐ	Ⓐ
Conditional: Reacting to changed business conditions or integrating business rules.	≡	≡	≡	≡	≡	≡		
Link: Off-page connectors. Two corresponding link events equal a sequence flow.				⇨			⇨	
Error: Catching or throwing named errors.		↯			↯			↯
Cancel: Reacting to cancelled transactions or triggering cancellation.					⊗			⊗
Compensation: Handling or triggering compensation.		⏪			⏪		⏪	⏪
Signal: Signalling across different processes. A signal thrown can be caught multiple times.	△	△	△	△	△	△	▲	▲
Multiple: Catching one out of a set of events. Throwing all events defined.	⬠	⬠	⬠	⬠	⬠	⬠	⬟	⬟
Parallel Multiple: Catching all out of a set of parallel events.	✚	✚	✚	✚	✚	✚		
Terminate: Triggering the immediate termination of a process.								●

Gateways

Exclusive Gateway — When splitting, it routes the sequence flow to exactly one of the outgoing branches. When merging, it awaits one incoming branch to complete before triggering the outgoing flow.

Event-based Gateway — Is always followed by catching events or receive tasks. Sequence flow is routed to the subsequent event/task which happens first.

Parallel Gateway — When used to split the sequence flow, all outgoing branches are activated simultaneously. When merging parallel branches it waits for all incoming branches to complete before triggering the outgoing flow.

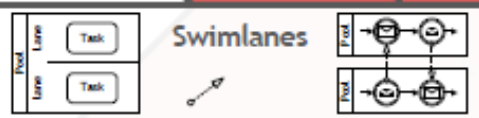
Inclusive Gateway — When splitting, one or more branches are activated. All active incoming branches must complete before merging.

Exclusive Event-based Gateway (Instantiate) — Each occurrence of a subsequent event starts a new process instance.

Complex Gateway — Complex merging and branching behavior that is not captured by other gateways.

Parallel Event-based Gateway (Instantiate) — The occurrence of all subsequent events starts a new process instance.

Swimlanes



Pools (Participants) and Lanes represent responsibilities for activities in a process. A pool or a lane can be an organization, a role, or a system. Lanes subdivide pools or other lanes hierarchically.

Message Flow symbolizes information flow across organizational boundaries. Message flow can be attached to pools, activities, or message events.

The order of message exchanges can be specified by combining message flow and sequence flow.

Data

A Data Input is an external input for the entire process. It can be read by an activity.

A Data Output is a variable available as result of the entire process.

A Data Object represents information flowing through the process, such as business documents, e-mails, or letters.

A Collection Data Object represents a collection of information, e.g., a list of order items.

Data Store

A Data Store is a place where the process can read or write data, e.g., a database or a filing cabinet. It persists beyond the lifetime of the process instance.

A Message is used to depict the contents of a communication between two Participants.

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camunda

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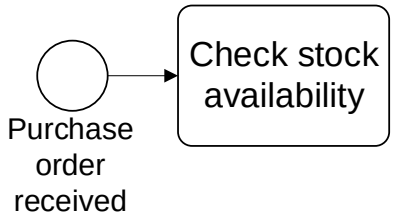
SIGNAVIO

LATIHAN

Order-to-cash

- An order-to-cash process is triggered by the receipt of a purchase order from a customer.
- Upon receipt, the purchase order has to be checked against the stock to determine if the the requested item(s) are available.

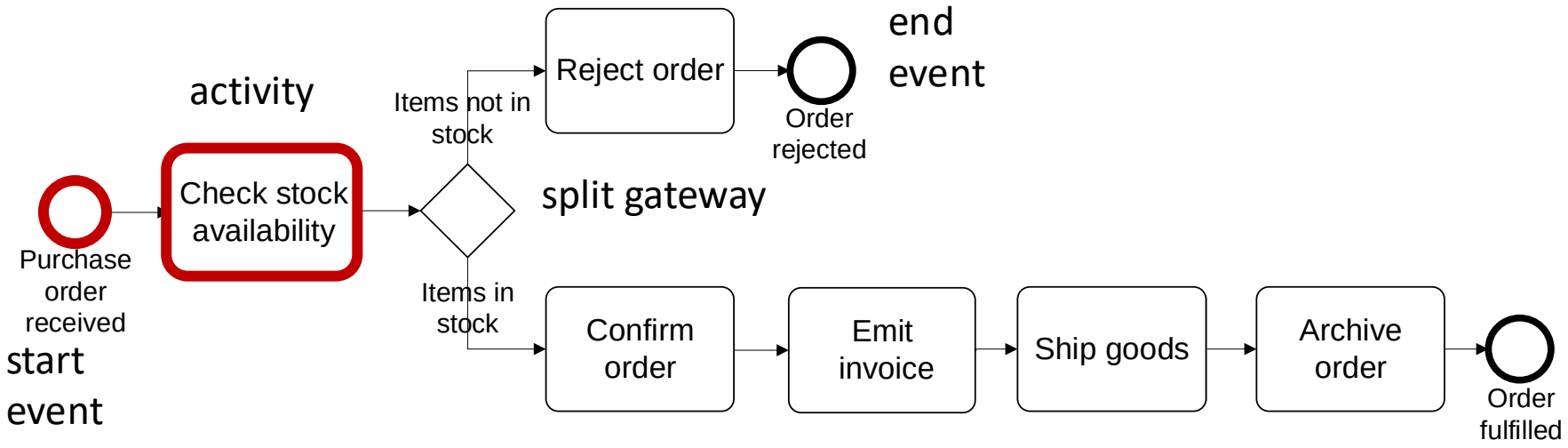
BPMN Process Diagram (1)



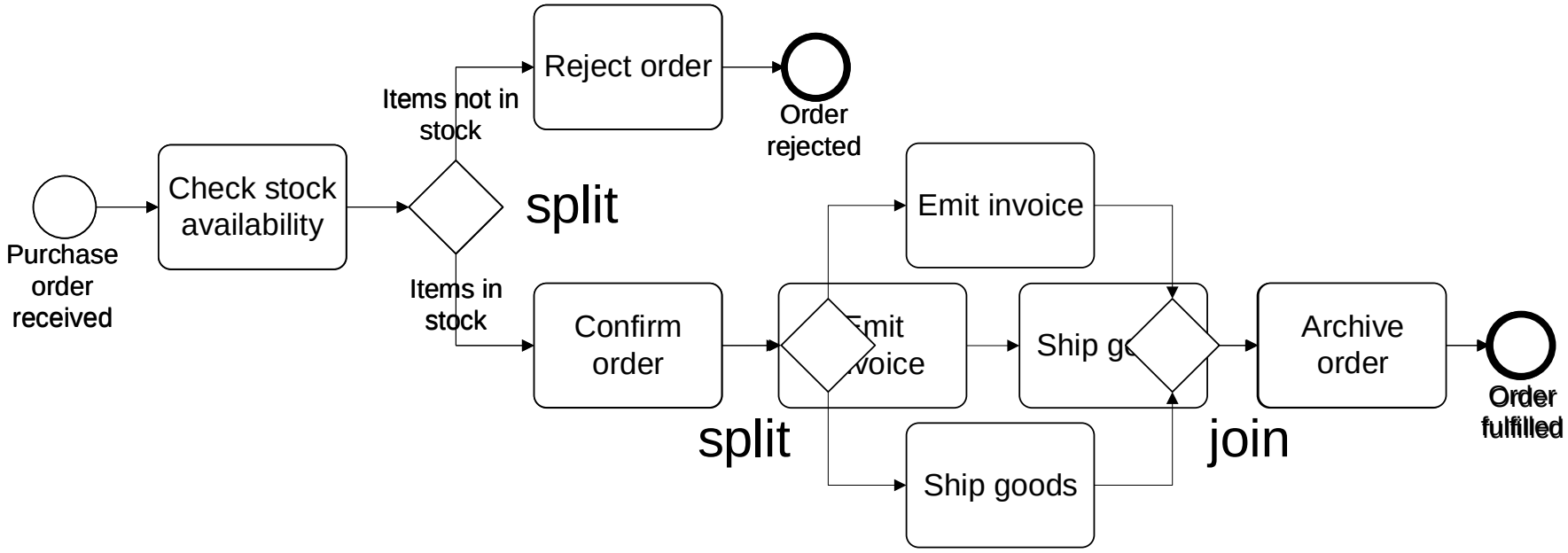
Order-to-cash

- An order-to-cash process is triggered by the receipt of a purchase order from a customer.
- Upon receipt, the purchase order has to be checked against the stock to determine if the the requested item(s) are available.
- **Depending on stock availability the purchase order may be confirmed or rejected.**
- **If the purchase order is confirmed, an invoice is emitted and the goods requested are shipped.**
- **The process completes by archiving the order or if the order is rejected.**

BPMN Process Diagram (2)



- […] If the purchase order is confirmed, **an invoice is emitted and the goods requested are shipped (in any order)**. The process completes by archiving the order. […]



Hands-on BPMN Exercise

Task: Model a simple business process in BPMN

1. Define a *real-world process* (e.g., online order fulfillment, leave request)
2. Identify key *tasks, events, and decision points*
3. Create a BPMN diagram using a BPMN tool or on paper
4. Present and discuss common errors and improvements

Advanced BPMN Elements

- - **Subprocesses**: When to use them, nested vs. reusable
- - **Exception Handling**: Handling errors using boundary events
- - **Pools & Lanes**: Differentiating roles and business entities
- - **Message Flow**: Interaction between organizations

Common BPMN Mistakes

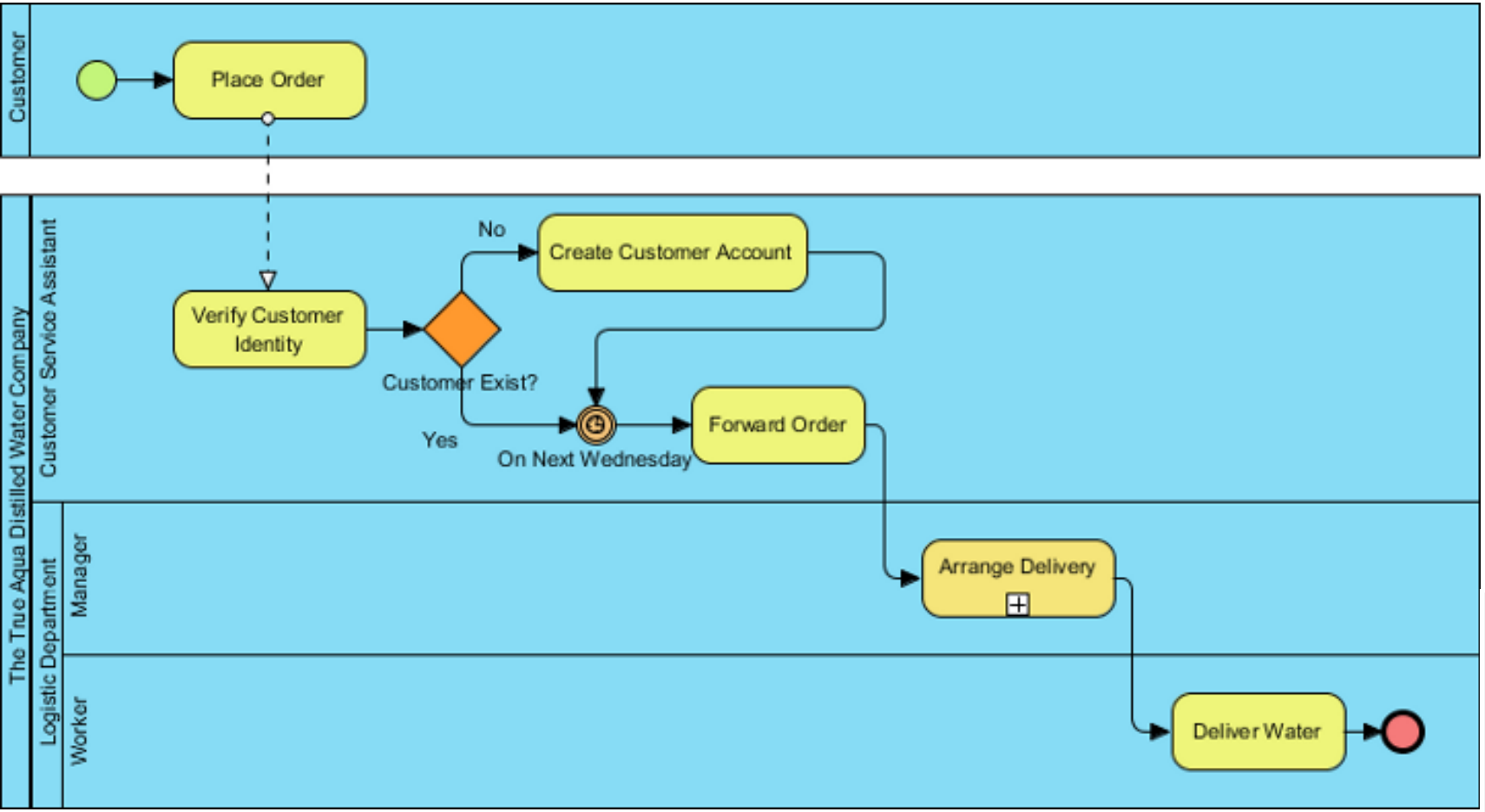
- Missing start/end events
- Incorrect use of gateways (e.g., XOR vs. AND)
- Confusing message flow with sequence flow
- Overcomplicated diagrams
- Inconsistent naming conventions

Contoh Kasus Pemesanan Air Mineral (Galon)

- Untuk memesan air, pelanggan dapat menghubungi hotline pemesanan atau mengirim email. Saat ini, 90% pesanan berasal dari panggilan telepon, sementara 10% dilakukan melalui email. Asisten layanan pelanggan yang menerima pesanan akan memeriksa apakah pelanggan tersebut adalah pelanggan lama atau pelanggan baru. Jika pelanggan belum pernah memesan sebelumnya, asisten layanan pelanggan akan membuat akun pelanggan untuknya sebelum melanjutkan pengiriman air.

- Pengiriman air, dilakukan seminggu sekali setiap hari Rabu. Jadi setiap Rabu pagi, asisten layanan pelanggan akan meneruskan pesanan ke Departemen Logistik untuk pengiriman. Setelah manajer di Departemen Logistik menerima pesanan, ia akan mengatur pengiriman dengan menugaskan pekerja untuk pesanan yang berbeda, mencetak dan memposting jadwal. Para pekerja menerima panggilan dan mengirimkan air kepada pelanggan sesuai dengan pesanan.

Contoh Kasus



Notation	Description
	Pool - Represents a participant within a process. In BPMN, both pools and lanes are used to represent participants. A lane is contained by a pool for modeling a sub-partition of the parent pool.
	Start event - The beginning of a process. Triggers can be defined to tell readers in what situation the process will be triggered. For example, when an Email is received/when it is Monday morning/when an error has occurred.
Place Order	Task - An atomic activity that designated participants (modeled by pool/lane) might perform. Tasks and other flow objects are connected together to form a complete business workflow.
	End event - The end of a process. A result can be defined to tell readers what will happen when the process ends. For example, to issue a signal/to produce an error, etc.

Thank You