

MODELAÇÃO E ANÁLISE DE SISTEMAS

# UML Activity diagram

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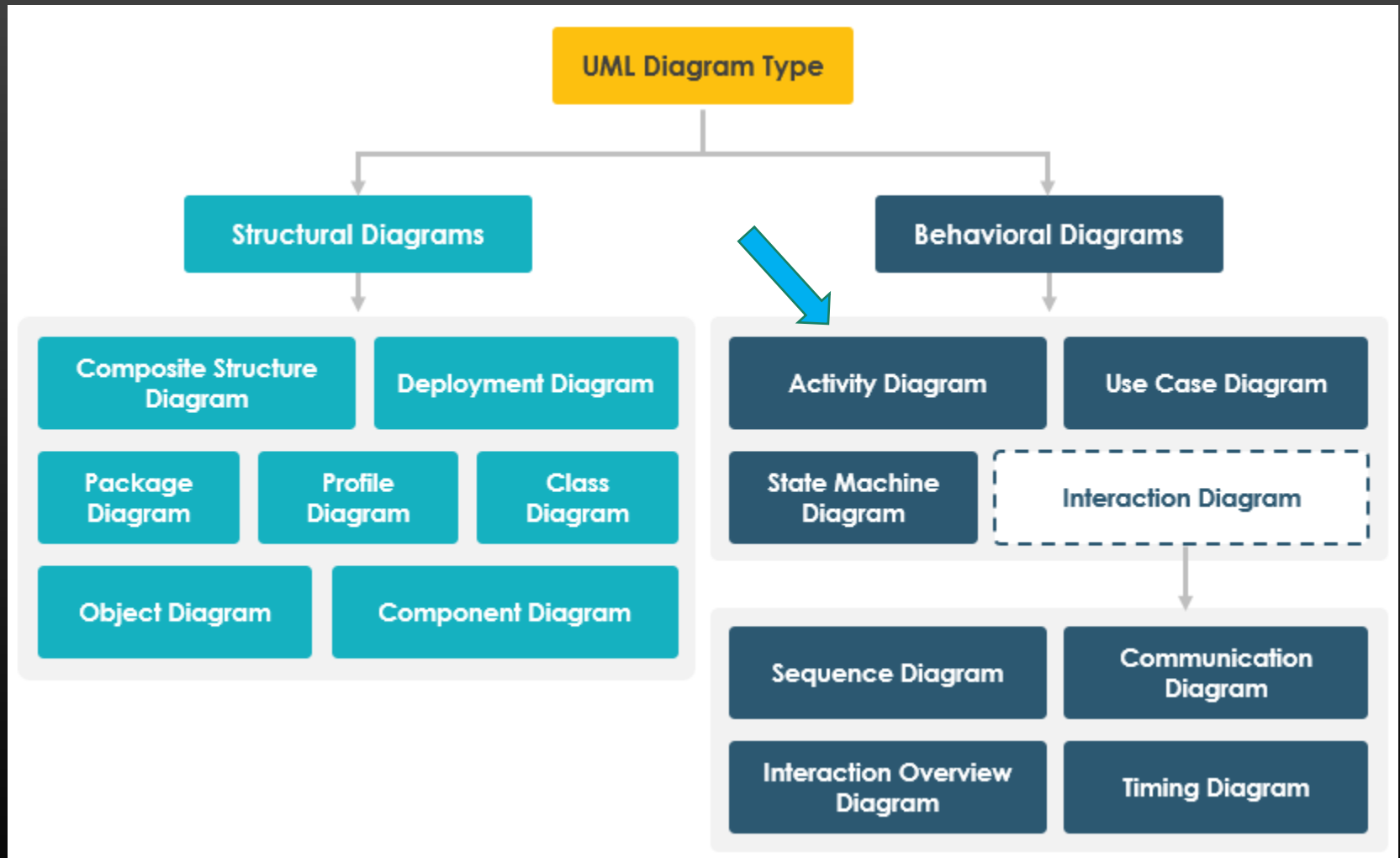
# Objectivos de aprendizagem

Ler e criar Diagramas de Actividades

Distinguir actividades estruturadas de acções; fluxos de controlo dos fluxos de dados

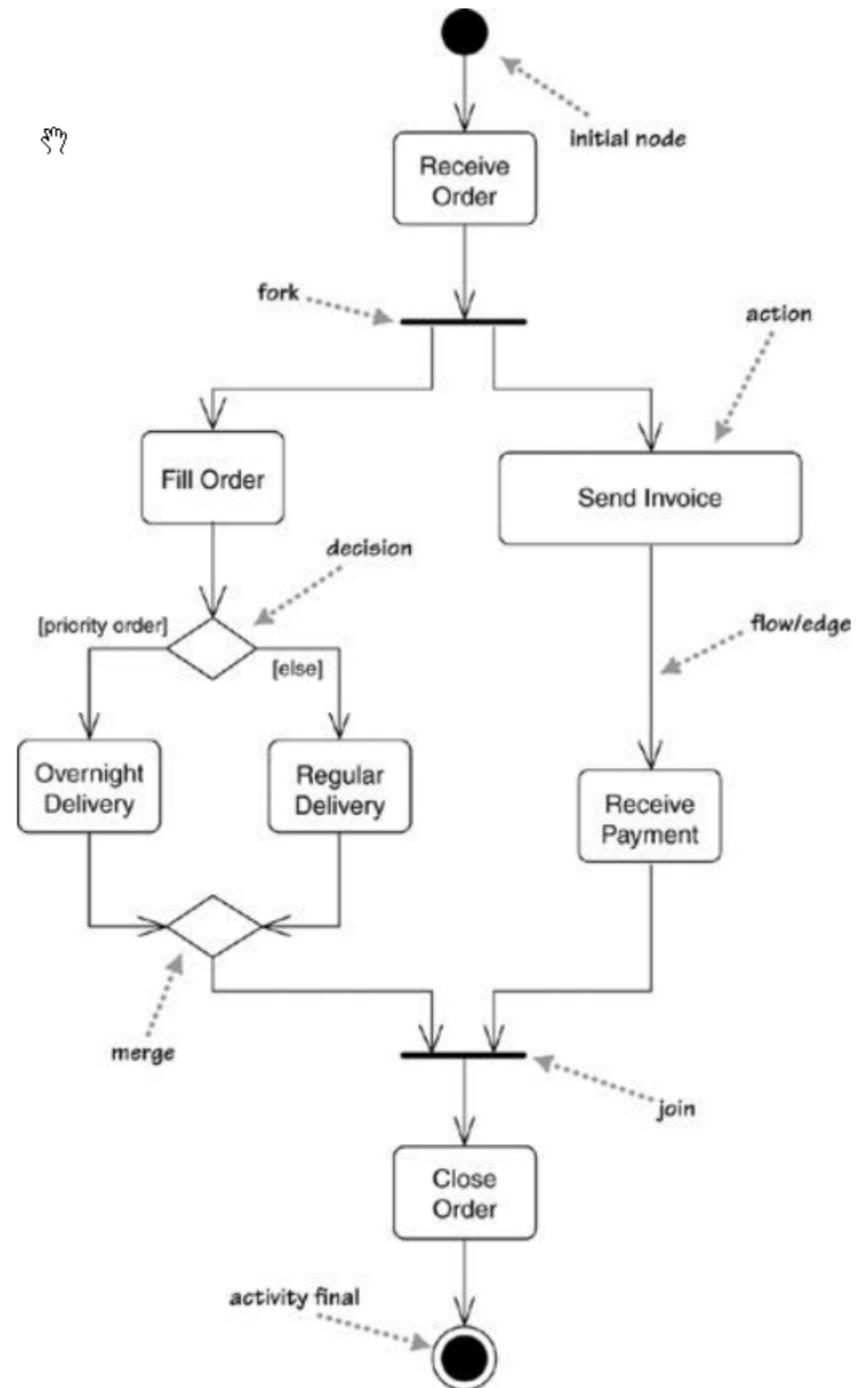
Identificar quando utilizar a modelação de actividades

# Diagramas da UML 2.x



<https://www.visual-paradigm.com/guide/uml-unified-modeling-language/overview-of-the-14-uml-diagram-types/>

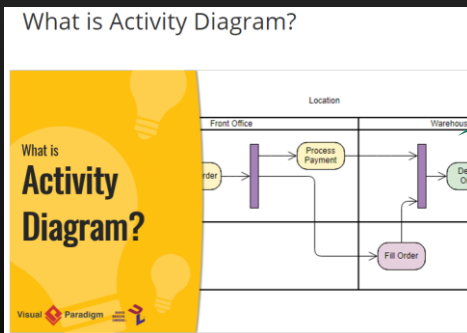
# Elementos do diagrama de atividades



# Os diagramas de atividade mostram o fluxo de ações (e, opcionalmente, de dados)

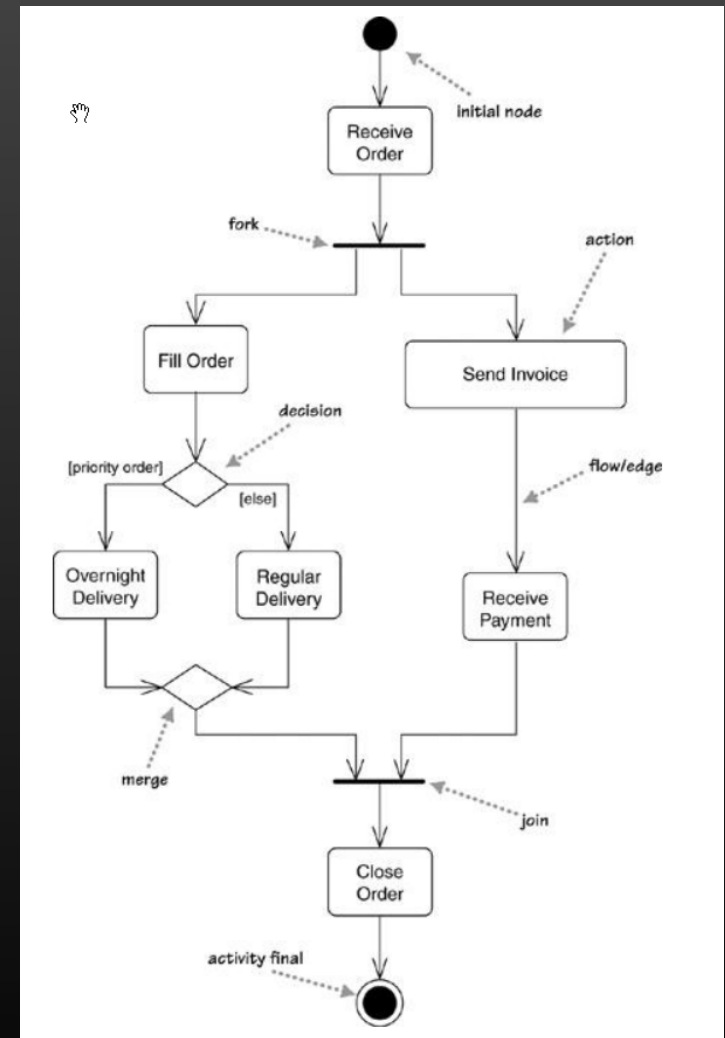
Quando aplicar?

- Modelar fluxos de trabalho/processos de negócio
- Modelar processos computacionais: e.g. descrever um algoritmo complexo

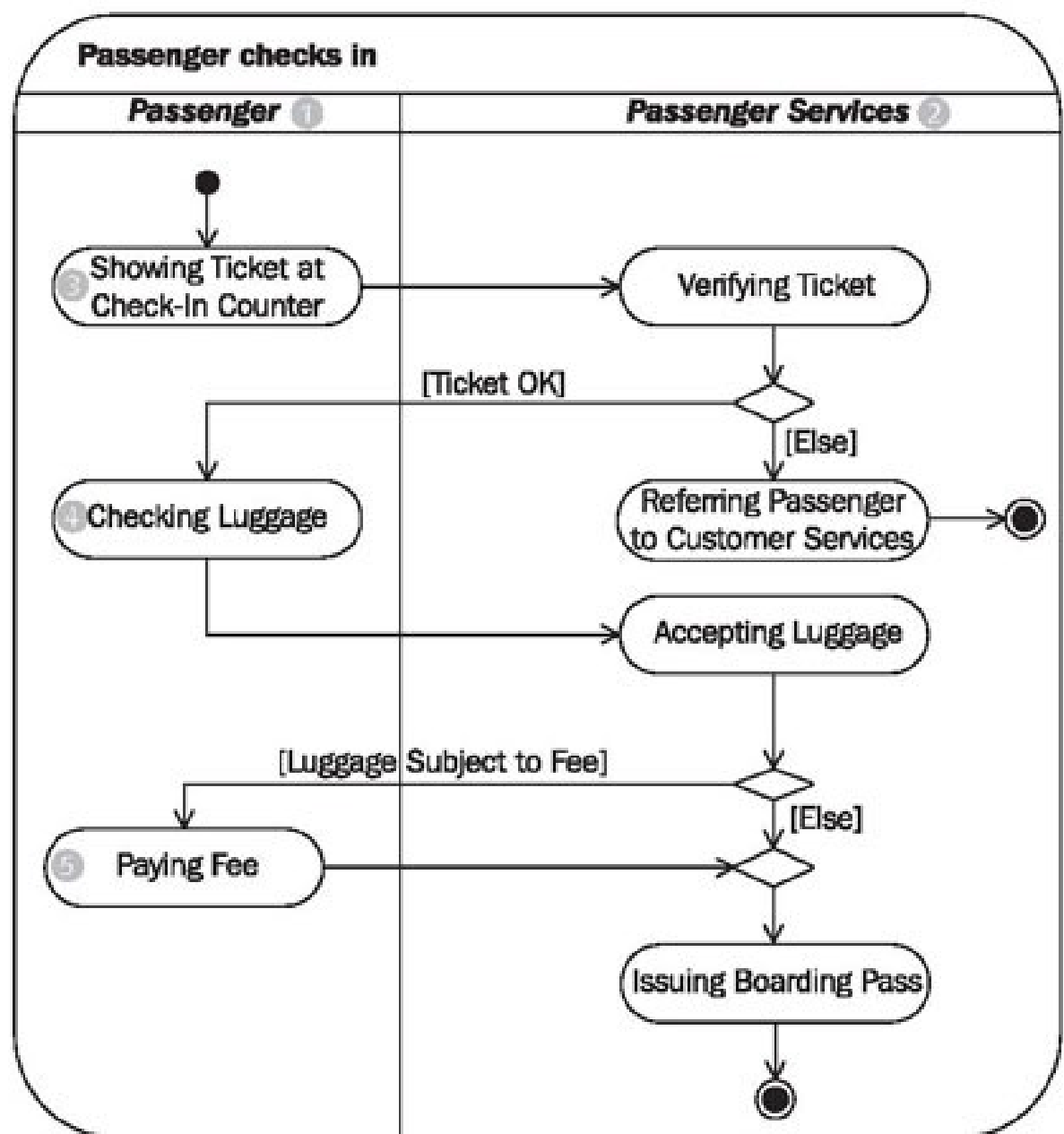


Ver explicação tutorial aqui!

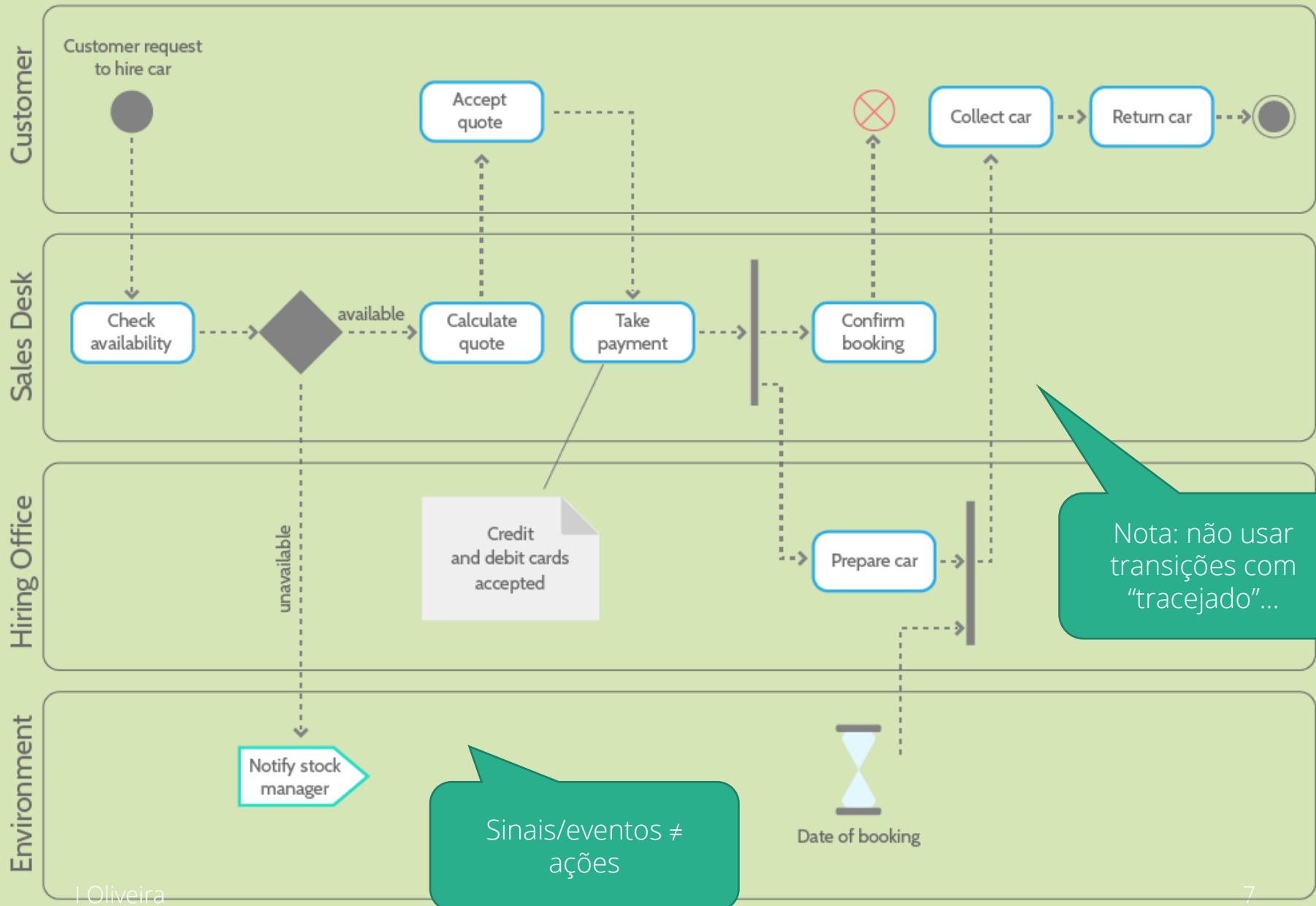
<https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-activity-diagram/>

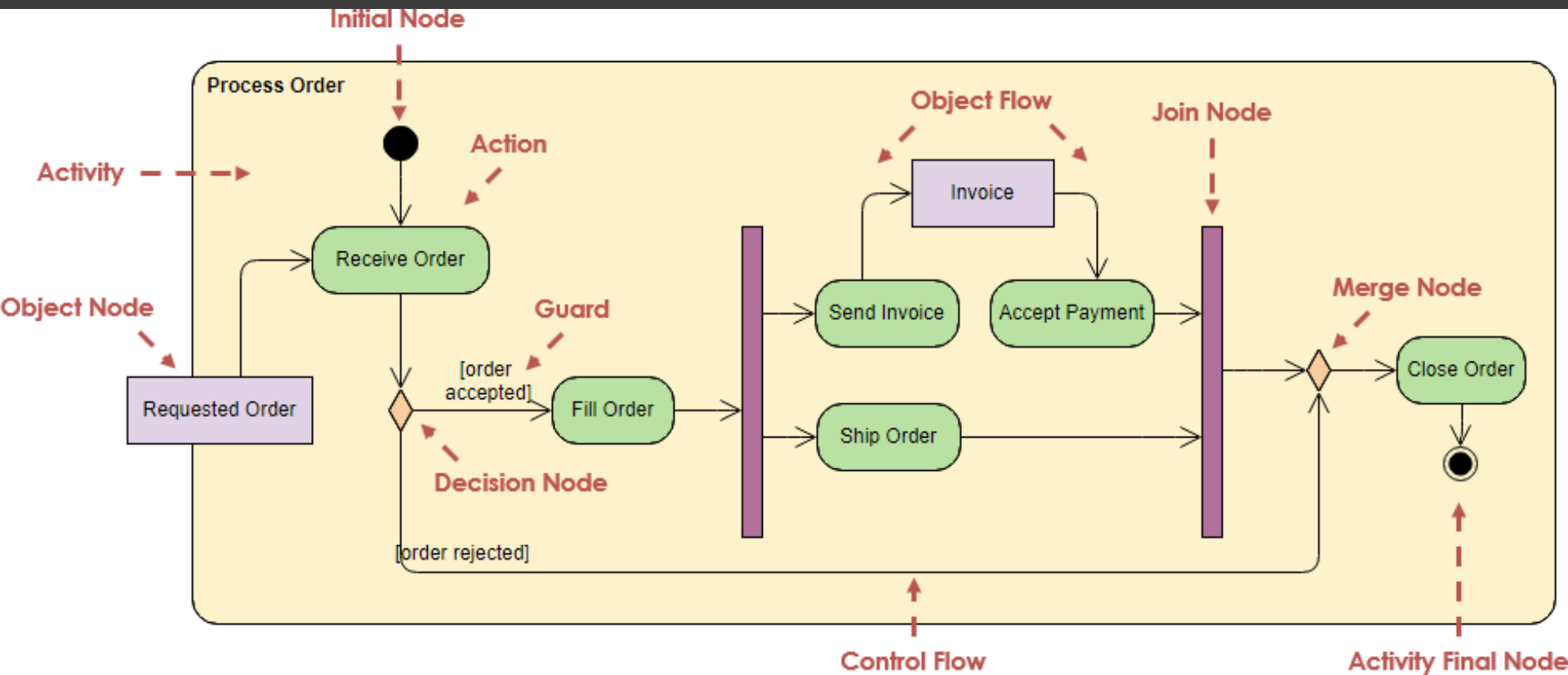


Partições mostram  
zonas de  
responsabilidade

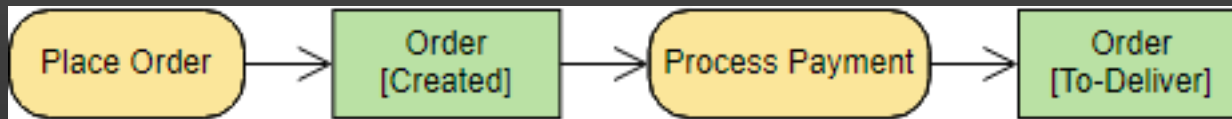


# Car Hire

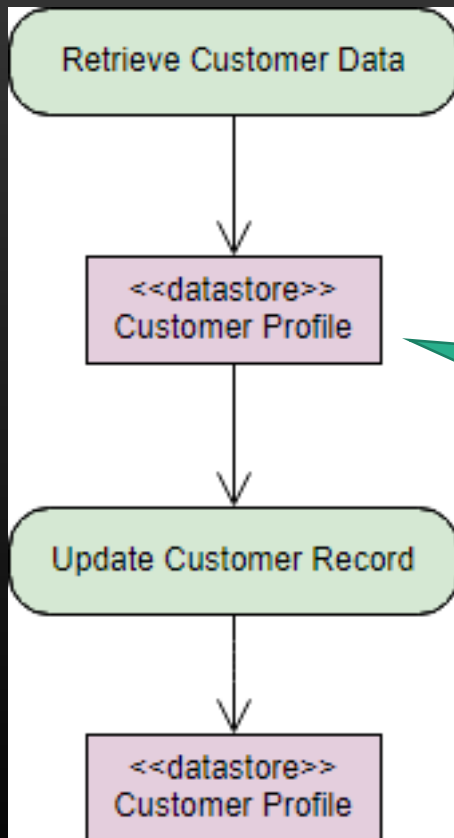








Objetos com estado associado



Object node com um esteriótipo associado (base de dados, repositório)

## Diagramas para representar *workflow*

Definido na UML.

Diagram	Description	Advantages	Disadvantages
System flowchart	Earliest form for depicting sequencing of activities.	<ul style="list-style-type: none"> <li>■ Intuitive. Each type of input and output is clearly marked with its own symbol.</li> <li>■ Includes logic symbols.</li> </ul>	<ul style="list-style-type: none"> <li>■ Not compliant with UML.</li> <li>■ Can be hard to learn (many symbols).</li> </ul>
Activity diagram	UML tool for describing logic. Used to describe entire system, a use case, or an activity within a use case. Has two versions: <ul style="list-style-type: none"> <li>■ Activity diagram without partitions (swimlanes): Does not show who does what.</li> <li>■ Activity diagram with partitions: shows who does what.</li> </ul>	<ul style="list-style-type: none"> <li>■ Part of UML standard.</li> <li>■ Can handle many situations in one diagram.</li> <li>■ Simple diagramming conventions.</li> <li>■ Encourages thinking about opportunities for parallel activities (more than one activity going on at the same time).</li> </ul>	<ul style="list-style-type: none"> <li>■ Ability to handle many situations can lead to a diagram that is too complex to follow.</li> </ul>
Business process diagram (BPD)	Business process modeling notation (BPMN) tool for describing workflow	<ul style="list-style-type: none"> <li>■ Part of BMN standard, managed by the OMG</li> <li>■ Rich symbol set can model complex and subtle workflow requirements better than activity diagrams.</li> </ul>	<ul style="list-style-type: none"> <li>■ Not UML-compliant</li> <li>■ Difficult to understand without prior training</li> </ul>

# Os diagramas de atividade mostram o fluxo de ações (e de dados)

Quando aplicar?

- Modelar fluxos de trabalho/processos de negócio
- Descrever um algoritmo complexo
- Descrever a sequência de interações entre atores e o sistema sob especificação, num caso de utilização

Pode ser usado para descrever os processos organizacionais existentes / novos

- Neutro em relação à programação
- Bom a captar papéis
- Pode captar o fluxo de dados também

# Ter presente os destinatários é ↑ ↑ importante na modelação de processos

*“Seriously, you need about 20% of the UML to do 80% of the kind of design you might want to do in a project – agile or not – but use the UML with a very light touch: use the notation to reason about a system, to communicate your intent to others...and then throw away most of your diagrams.” – Grady Booch*

So it is important to keep things as simple as possible if you want to model actionable diagrams that can be internalized by your team and evaluated accurately by managers for effective process optimization.

# Pontos importantes...

- A UML tem um diagrama dedicado a “algoritmos” de trabalho
- O DA mostra o fluxo de controlo na execução de uma atividade (passos, alternativas, execução paralela,...)
- Útil para modelar *workflows* (não necessariamente a ver com sw)
- Notação rica; “20% da notação resolve 80% dos casos” ....
- O Analista recorre ao DA para documentar (a reengenharia de) processos de trabalho.

# Readings & references

Core readings	Suggested readings
<ul style="list-style-type: none"><li>• Fowler, "<a href="#">Activity Diagrams</a>"</li></ul>	<ul style="list-style-type: none"><li>• <a href="#">Vídeo tutorial</a> com uma explicação dos Diagramas de Atividades</li><li>• Visual Paradigm tutorials: what is the <a href="#">Activity Diagram</a></li><li>• [Dennis15] – Chap. 4</li></ul>