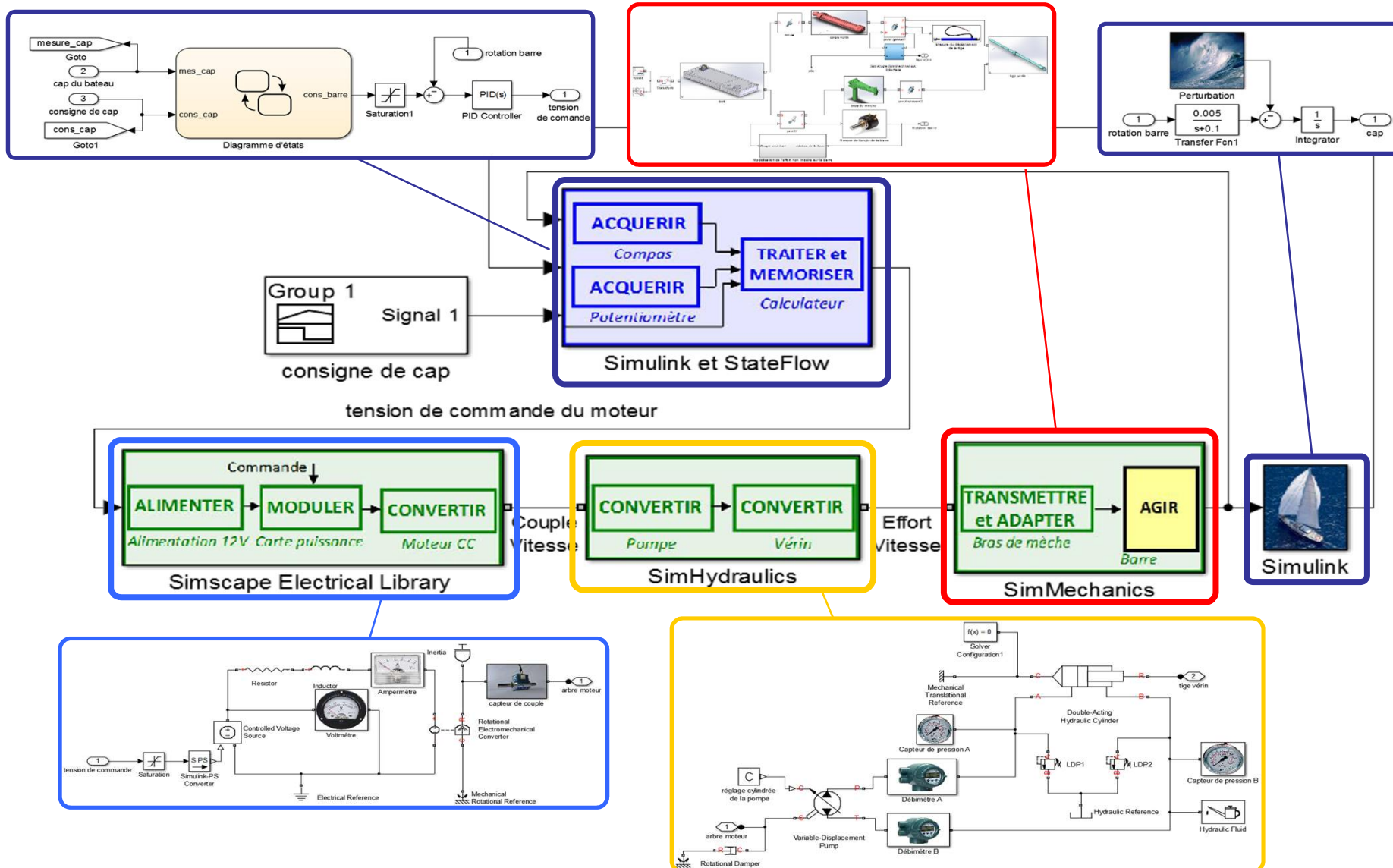
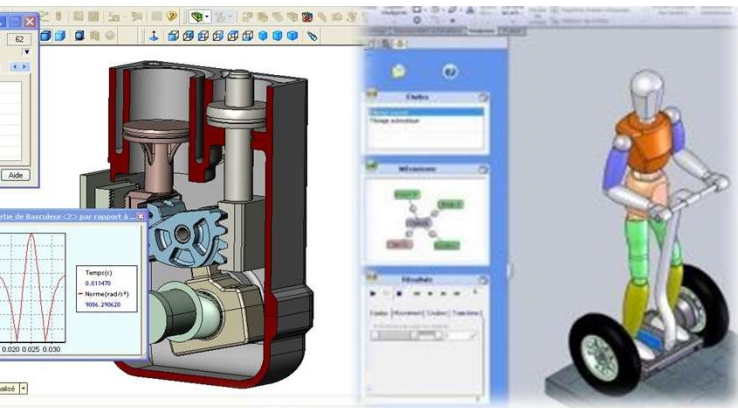
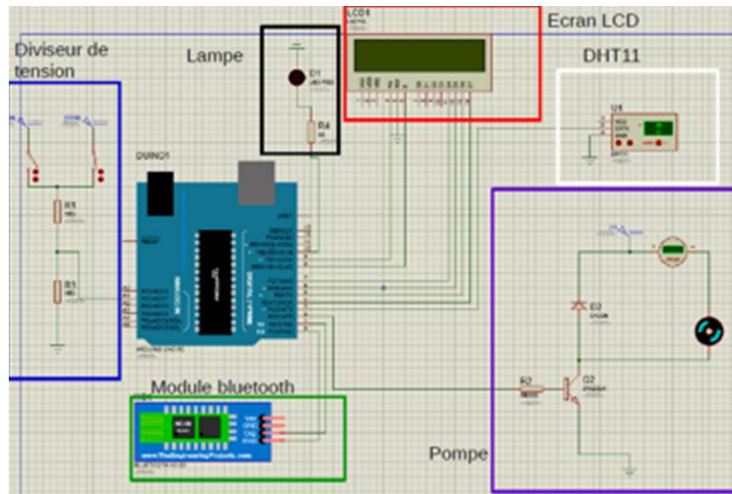


LES MODELES MULTIPHYSIQUES

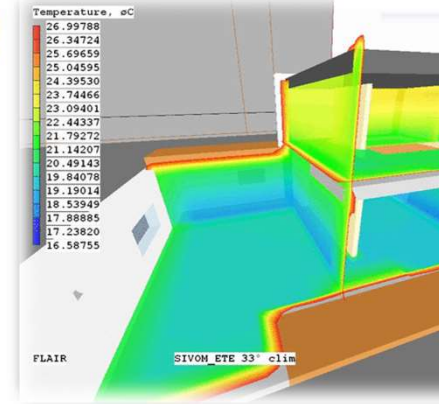
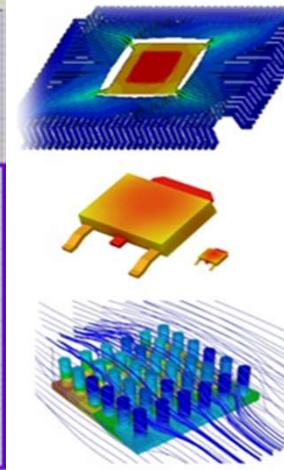




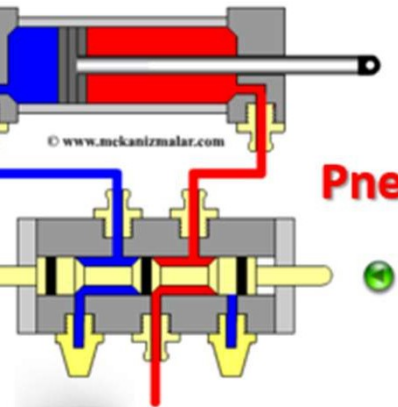
Mécanique (cinématique, dynamique)



Electronique



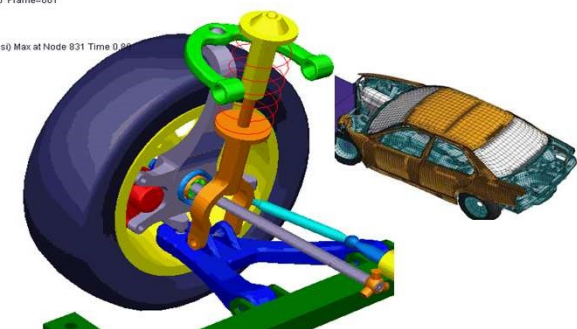
Thermique



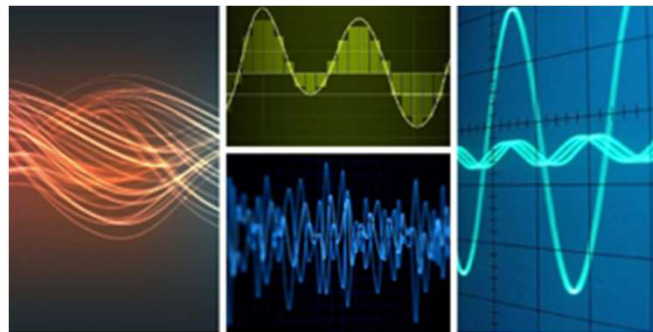
Pneumatique

Chaque domaine (mécanique, électronique, thermique, hydraulique...) doit être abordé par un **logiciel spécifique**

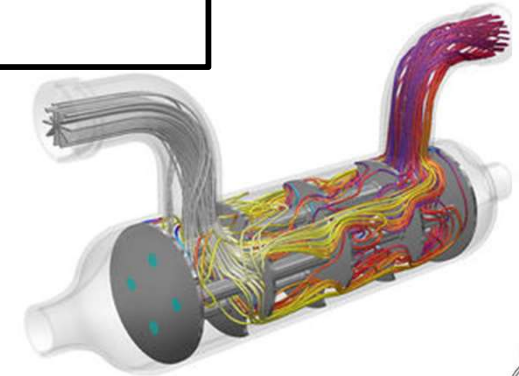
Mécanique des fluides



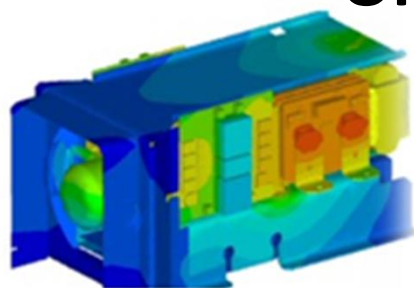
Resistance des matériaux



Traitement du signal

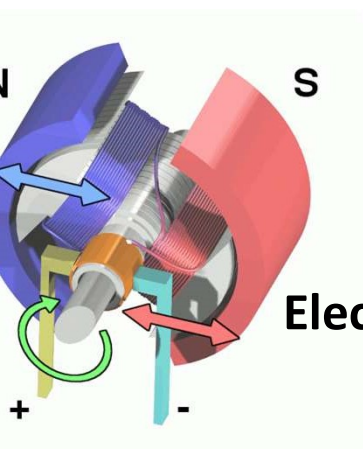
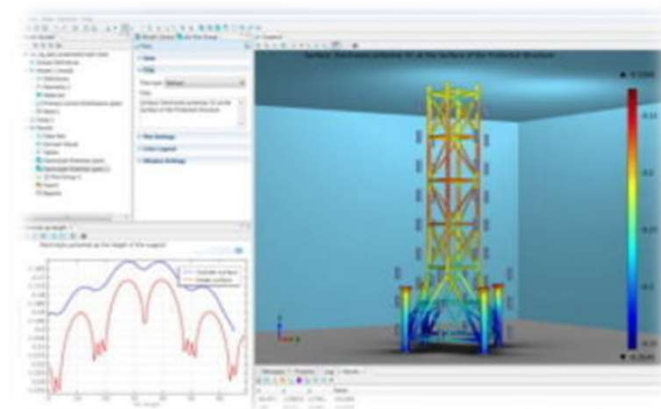


Utilisation de logiciels multi-domaines : On parle de **simulation multiphysique**

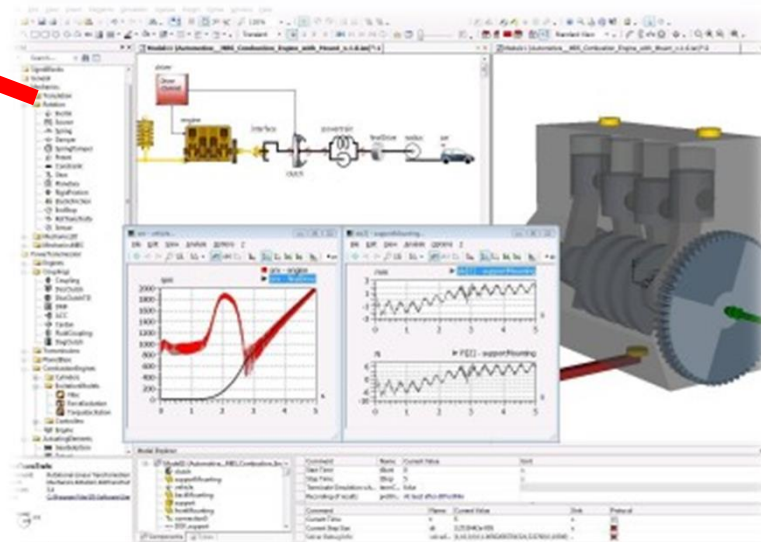


Thermique

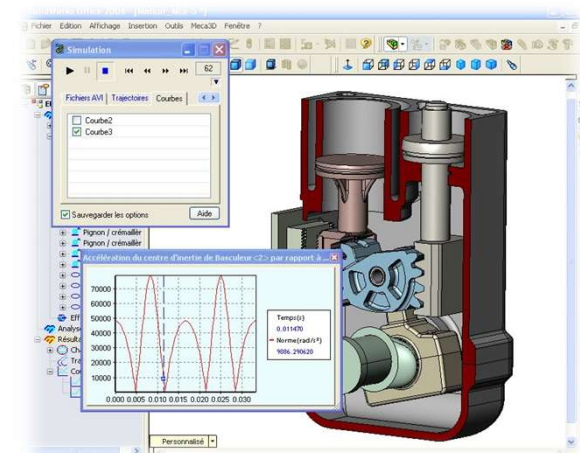
Résistance des matériaux



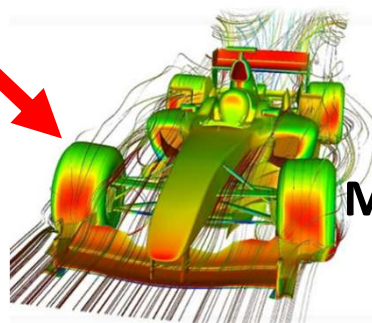
Electrique



Mécanique du solide



Electronique



Mécanique des fluides

LA MODELISATION MULTIPHYSIQUE

2 MODELES SONT POSSIBLES :

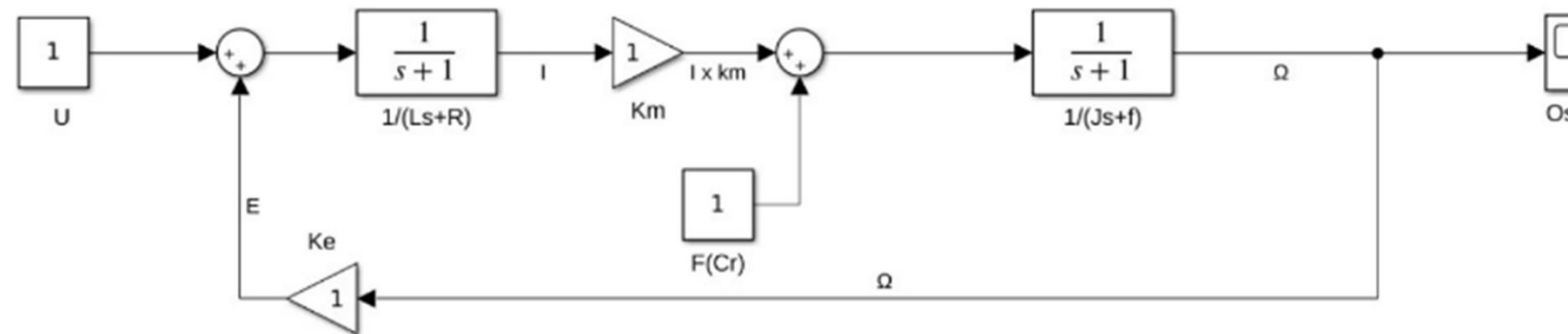
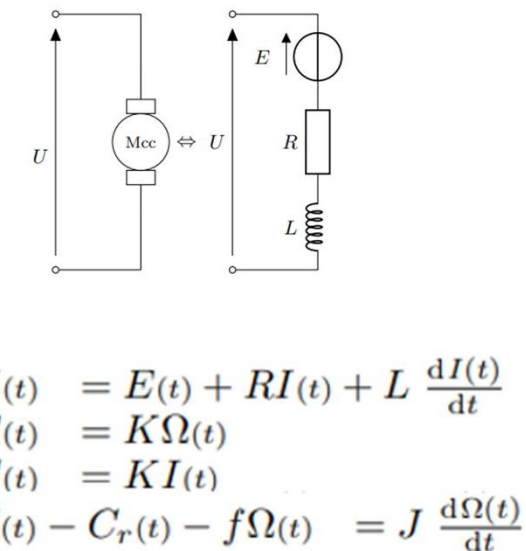
- CAUSAL

- ACAUSAL

MODELE CAUSAL

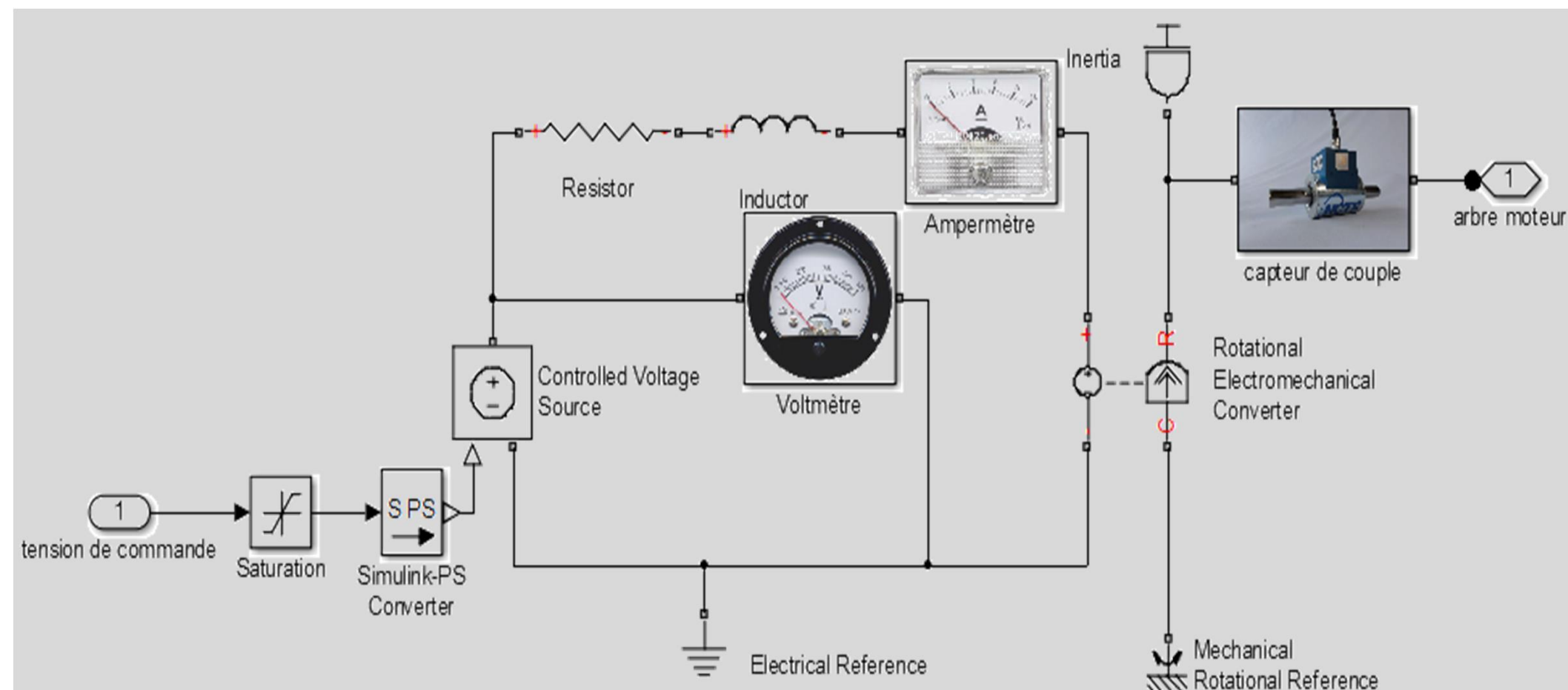
On parle de **causalité** lorsque **l'entrée** précède nécessairement la **sortie** (principe de cause à effet). La **causalité** repose essentiellement sur des **techniques mathématiques**.

Modèle de connaissance d'une machine à courant continu :

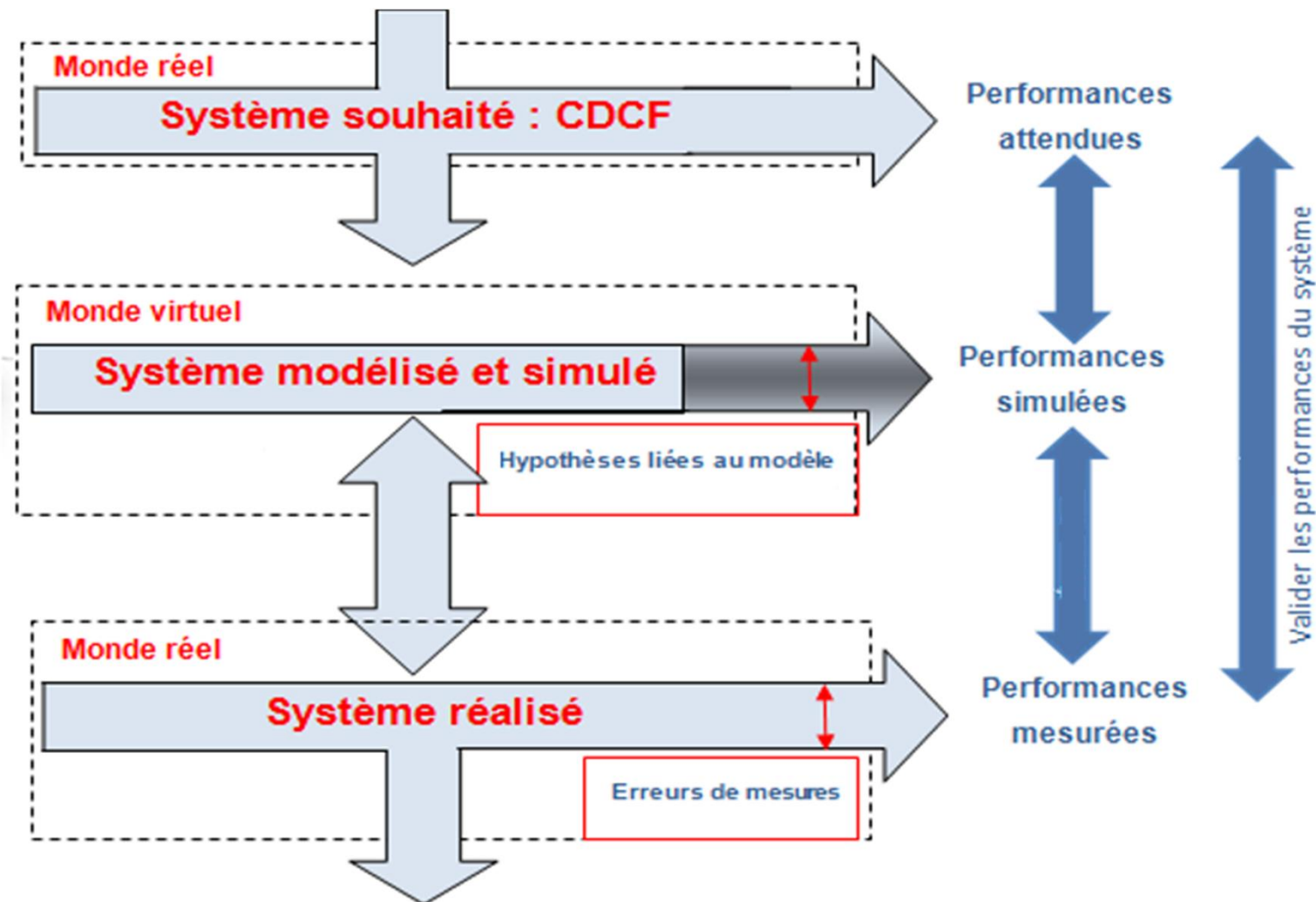


MODELE ACAUSAL

Modèle où la **modélisation** se fait **directement** par **assemblage de composants**



LA MODELISATION MULTIPHYSIQUE EN PROJET OU TP



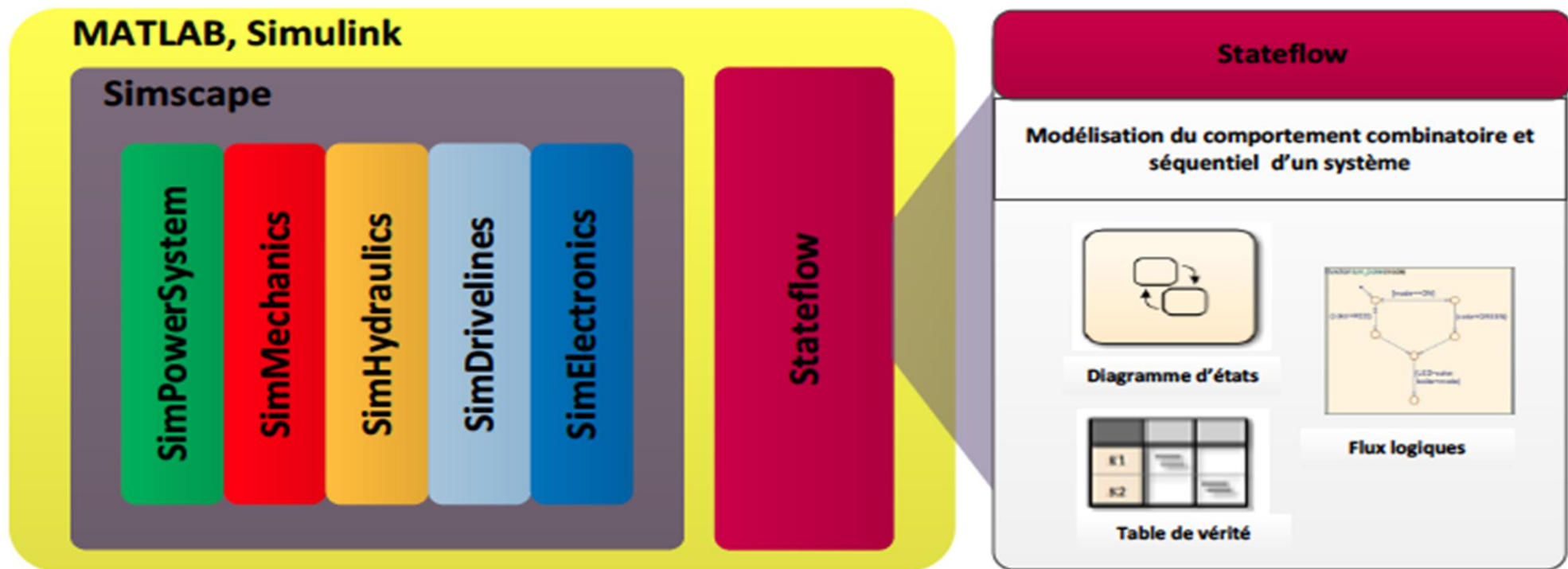
Bilan de la démarche scientifique en Sciences Industrielles de l'Ingénieur

MODELE CAUSAL – ACAUSAL : CARACTERISTIQUES

Modèle causal	Modèle acausal
Nécessite une parfaite connaissance théorique des phénomènes Utilisation d'outils mathématiques avancés	- Très proche de la structure du système - Toutes les grandeurs physiques sont mesurables au sein du modèle - Pas d'équation à écrire

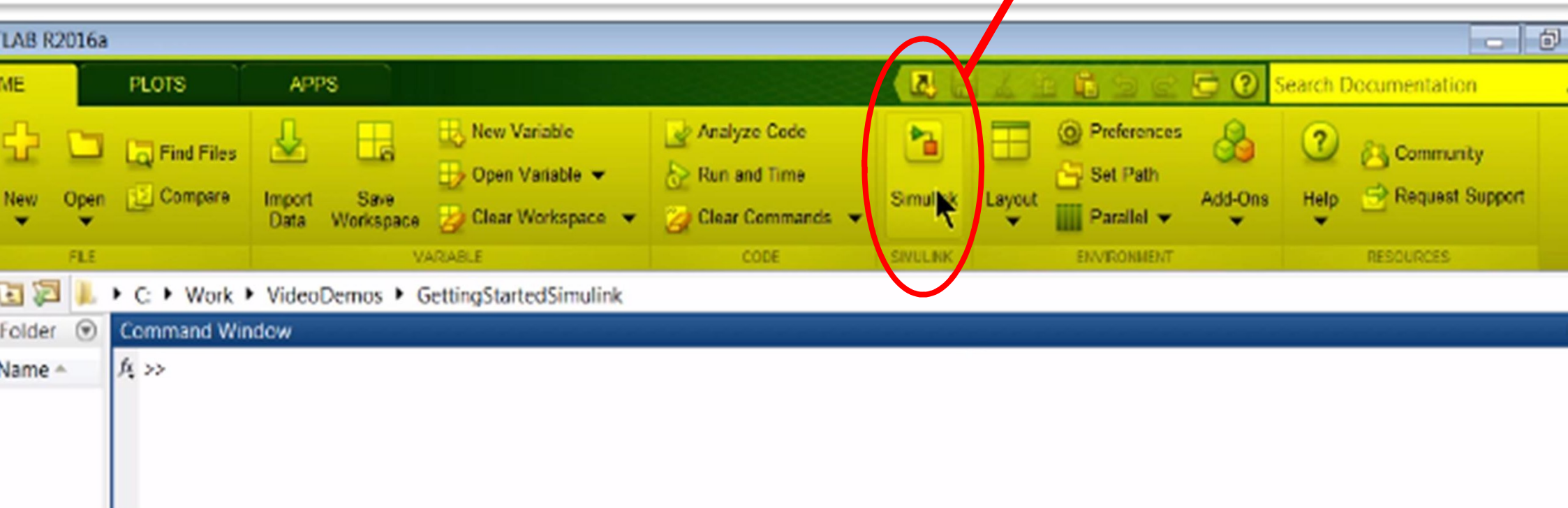
LA MODELISATION MULTIPHYSIQUE

ARCHITECTURE DU LOGICIEL MATLAB



BARRE DE COMMANDE MATLAB

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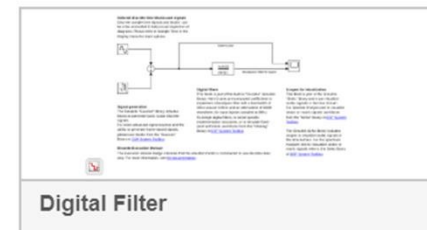
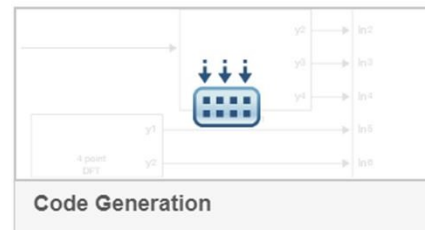
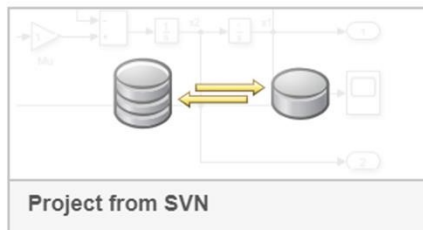
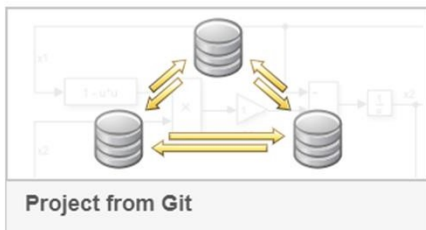
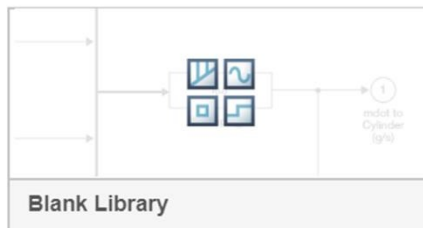
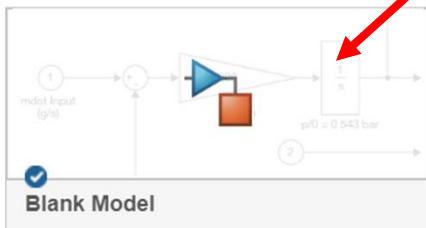


CLIQUER ICI

My Templates

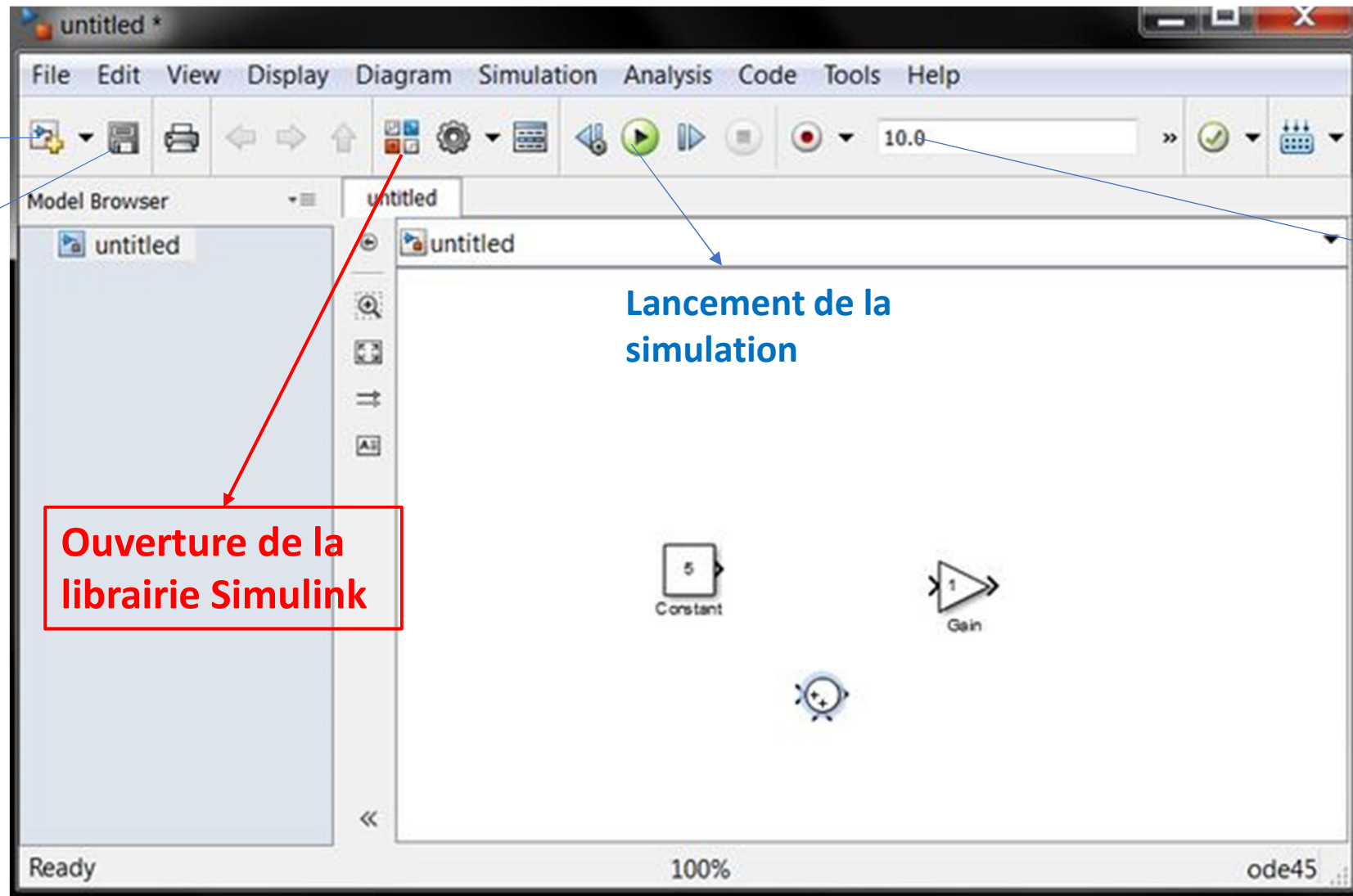
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Simulink



ENVIRONNEMENT SIMULINK

n nouveau
trer le fichier

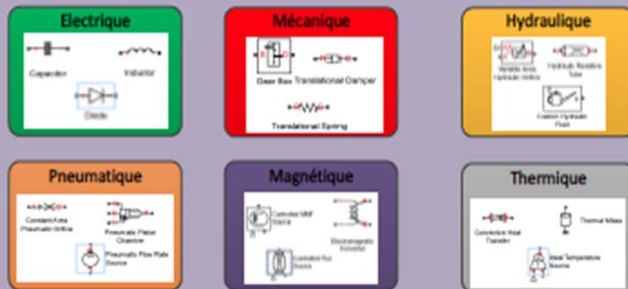




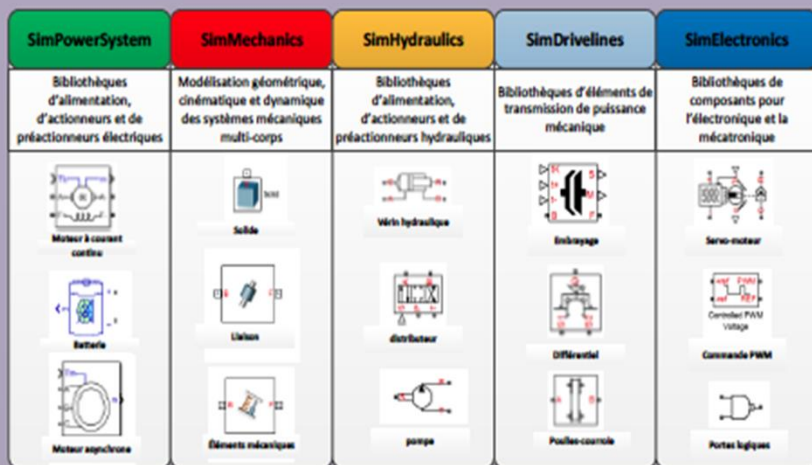
Dans **Simcape** les **blocs** sont organisés comme suit :

Simcape

Bibliothèques de composants élémentaires



Bibliothèques de composants plus évolués



Simulink Library Browser

gain

Simscape/Electronics/Actuators & Drivers/Rotational Actuators

- Simulink
- Audio System Toolbox
- Communications System Toolbox
- Communications System Toolbox HDL Support
- Communications System Toolbox Support Package for Arduino Hardware
- Computer Vision System Toolbox
- Control System Toolbox
- DSP System Toolbox
- DSP System Toolbox HDL Support
- HDL Coder
- Image Acquisition Toolbox
- Instrument Control Toolbox
- Neural Network Toolbox
- Robotics System Toolbox
- Simscape**
 - Foundation Library
 - Utilities
 - Driveline
 - Electronics
 - Actuators & Drivers
 - Drivers
 - Rotational Actuators**
 - Translational Actuators
 - Integrated Circuits
 - Passive Devices
 - Semiconductor Devices
 - Sensors
 - Sources
 - Additional Components
 - Fluids
 - Multibody
 - Power Systems
 - Simulink 3D Animation
 - Simulink Coder
 - Simulink Control Design
 - Simulink Extras
 - Simulink Support Package for Arduino Hardware
 - Simulink Support Package for Raspberry Pi
 - Stateflow
 - System Identification Toolbox
 - Recently Used

