




Connected Factory

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Contexte



Cahier des charges

- Objectif
 - Automatisation d'une chaîne d'assemblage
- Contraintes
 - Machines de la Haute école Arc
 - Protocole OPC UA
- Démarche
 - Exploratoire

Gestion de projet




VS




Présentation de OPC UA

Vue d'ensemble

- Succède à OPC

DB9	Pin	Code	Function	I/O
	1	-	Spare	
	2	RXD	Received data	Input
	3	TXD	Transmitted data	Output
	4	DTR	Data terminal ready	Output
	5	GND	Signal ground	
	6	-	Spare	
	7	RTS	Request to send	Output
	8	-	Spare	
	9	-	Spare	
Wiring view of plug				



	Pin	Code	Function
 External view of socket	1	DATA	Serial Data
	2	NC	Not connected
	3	GND	Ground
	4	+5V	+5 V Supply
	5	CLK	Clock
	6	NC	Not connected

Vue d'ensemble

- OPC UA
 - « Object Linking and Embedding for Process Control
Unified Architecture »
- Spécification
 - ensemble explicite d'exigences à satisfaire

OPC Unified Architecture Specifications

Core Specification Parts

Part 1 – Concepts

Part 2 – Security Model

Part 3 – Address Space Model

Part 4 – Services

Part 5 – Information Model

Part 6 – Service Mappings

Part 7 – Profiles

Access Type Specification Parts

Part 8 – Data Access

Part 9 – Alarm and Conditions

Part 10 – Programs

Part 11 – Historical Access


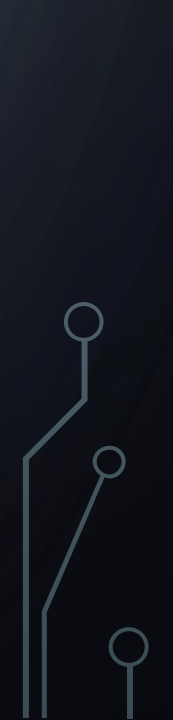
Utility Type Specification Parts

Part 12 – Discovery

Part 13 – Aggregates



Fonctionnalités de bases

- Travail sur des données
 - Événement
 - Historique
 - Abonnement sur une donnée
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Architecture

- Indépendance
- Performance
- Sécurité



Linux

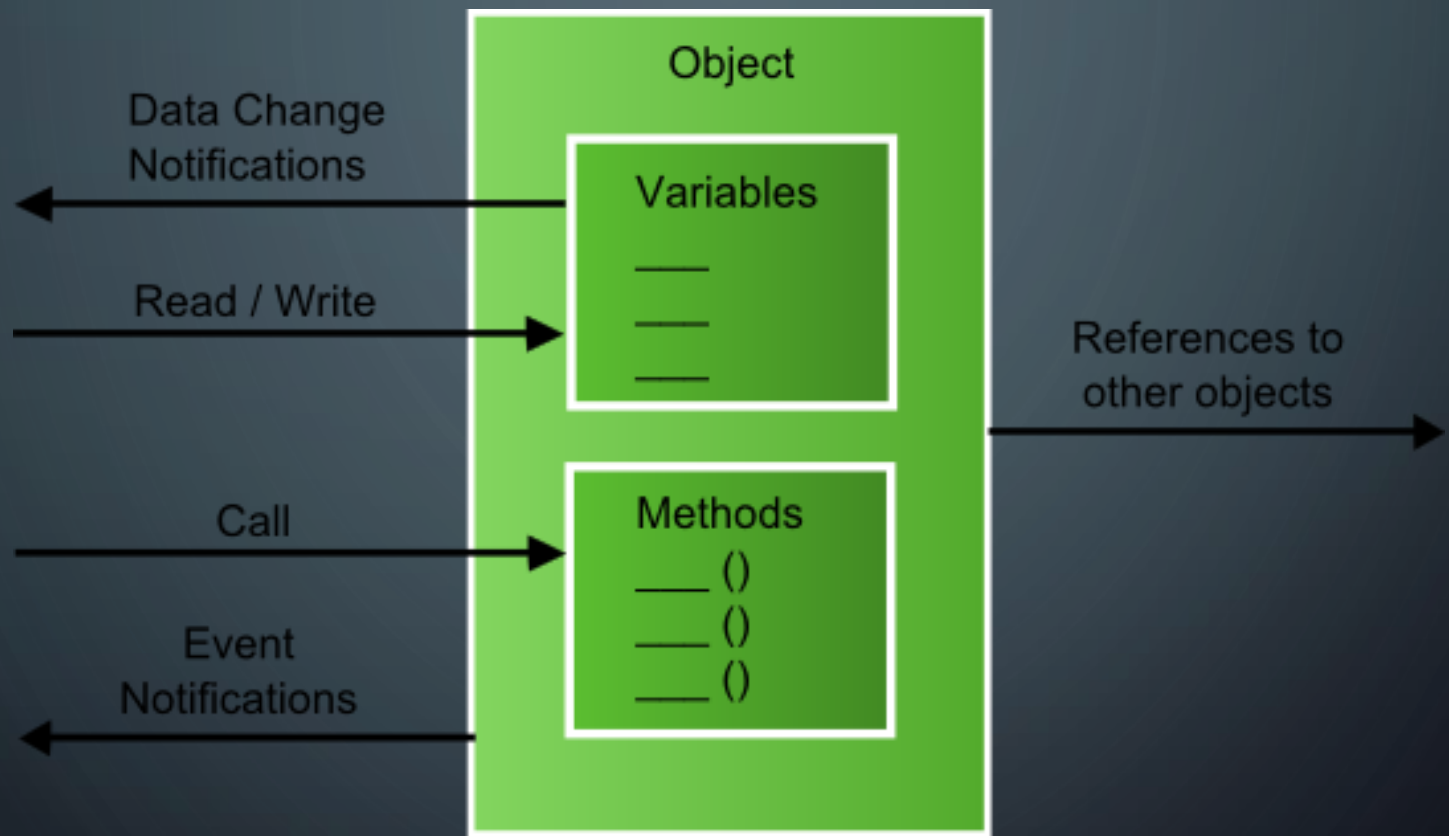


Mac OS

The background is a dark blue gradient. In the corners, there are decorative white line art elements resembling circuit traces or a stylized city grid. These lines connect to small white circles, some of which are arranged in a grid-like pattern.

Fonctionnement

DisplayName	BrowseName	ModelId
▼ Root	0:Root	i=84
▼ Objects	0:Objects	i=85
> Server	0:Server	i=2253
▼ Robot1	2:Robot1	ns=2;i=1
> Arm Clamp	2:Arm Clamp	ns=2;i=7
> Arm X coordinate	2:Arm X coordinate	ns=2;i=3
> Arm Y coordinate	2:Arm Y coordinate	ns=2;i=4
> Arm idle position	2:Arm idle position	ns=2;i=12
> Arm model	2:Arm model	ns=2;i=6
> Arm speed	2:Arm speed	ns=2;i=5
> TempSensor	2:TempSensor	ns=2;i=2
> Trigger Event	2:Trigger Event	ns=2;i=24
> (x) grab_object	2:grab_object	ns=2;i=19
> (x) move_arm	2:move_arm	ns=2;i=16
> (x) move_arm_v	2:move_arm_v	ns=2;i=13
> (x) open_clamp	2:open_clamp	ns=2;i=11
> (x) use_clamp	2:use_clamp	ns=2;i=9
> Types	0:Types	i=86
> Views	0:Views	i=87



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Complications



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Interfaçage avec les machines

- Aucune machine utilise OPC UA!
- Contrôleur nouvelle génération?

The background is a dark blue gradient. In the corners, there are decorative white lines resembling circuit traces or a stylized city map. These lines connect small white circles, some of which are larger than others. The lines are more dense in the top-left and bottom-left corners and more sparse in the top-right and bottom-right corners.




Nouveaux objectifs

- Démonstration des fonctionnalités
- Guide développeur

Implémentation



Client

- Modification d'un nœud
 - Abonnement des modifications d'un nœud
 - Récupération de l'historique d'un nœud
 - Abonnement aux événements serveurs
 - Appel de fonctions serveurs
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Serveur

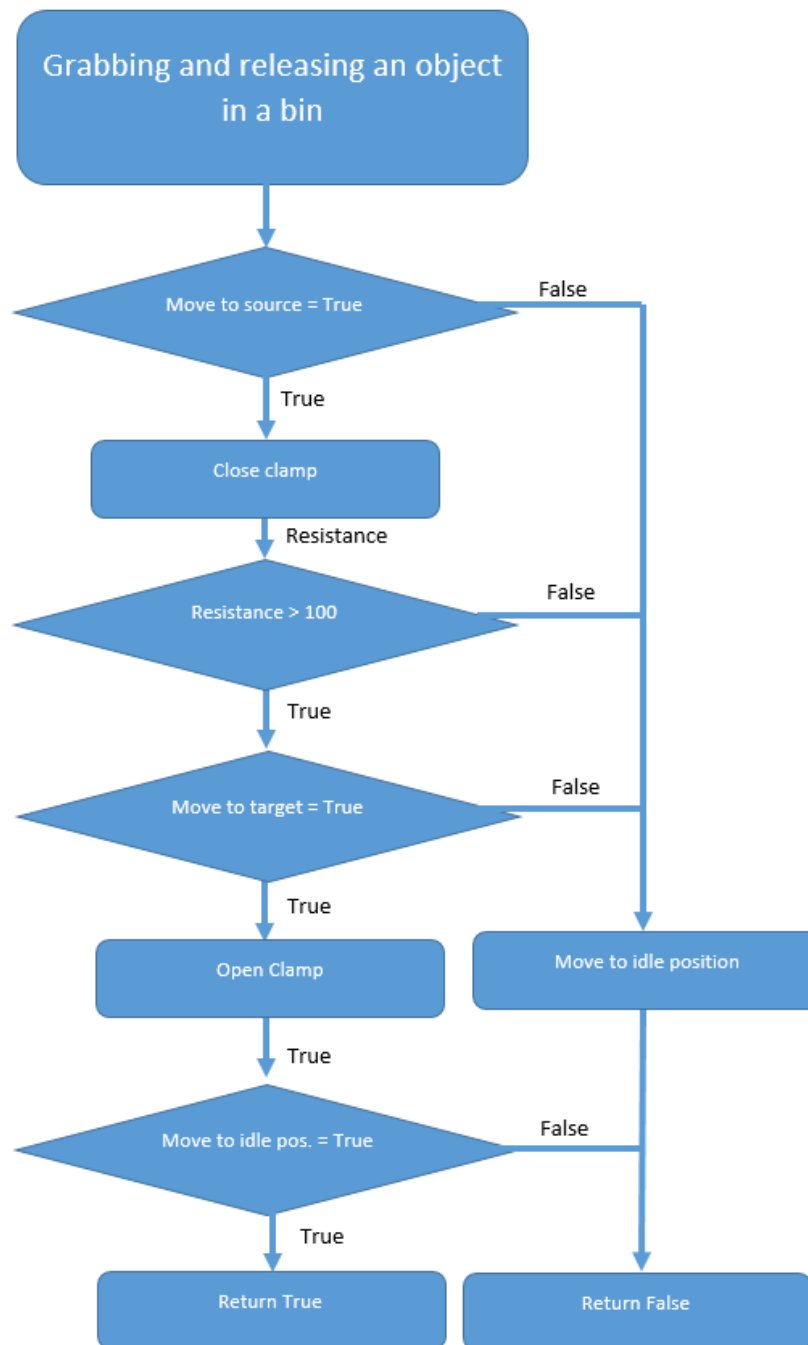
- Idem que le client
- Instanciation des nœuds à la main

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Cas d'utilisation réel





Démonstration





Conclusion

Conclusion

- Objectif initial non atteint 
 - Technologie trop récente 
- Préparation du terrain 
 - Guide développeur 

Questions



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Merci de votre attention