

LES NOUVEAUX ENJEUX INDUSTRIELS GRÂCE À L'INTERNET INDUSTRIEL DES OBJETS

SÉMINAIRE CAP'TRONIC
25/02

MORGAN COLLETER 4CAD GROUP – VINCENT DECAMPS PTC



4CAD Group

1^{er} VAR français, 7^{ème} mondial
Certifié Platinum
PLM Preferred



PLM



ERP

2^{ème} VAR français
Certifié Gold

CA 25 M€
60% en PME

11 années d'expérience



140 personnes
65% d'ingénieurs

1 700 clients

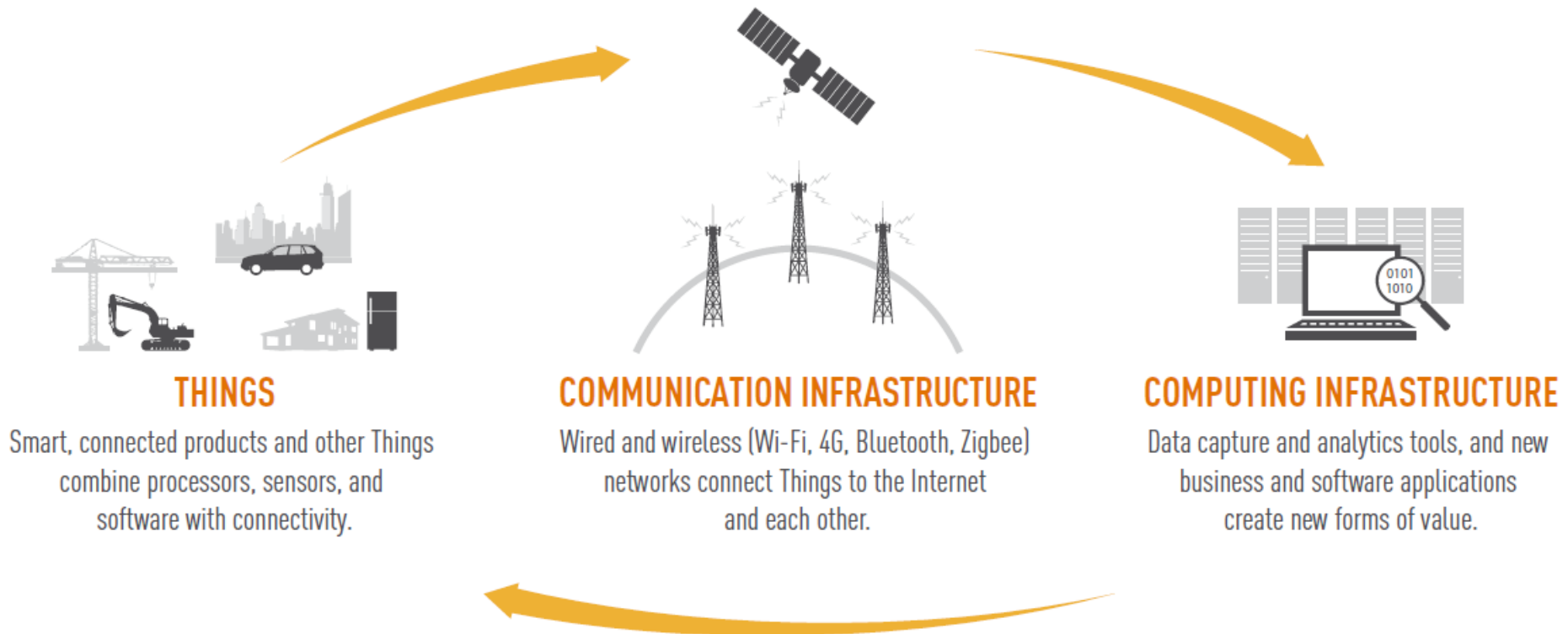
Approche

Intégration
Focus objectifs
Approche forfaitaire
Méthodologie packagée
Contractuellement engagé

Valeurs

Agilité
Performance
Savoir-faire
Proximité

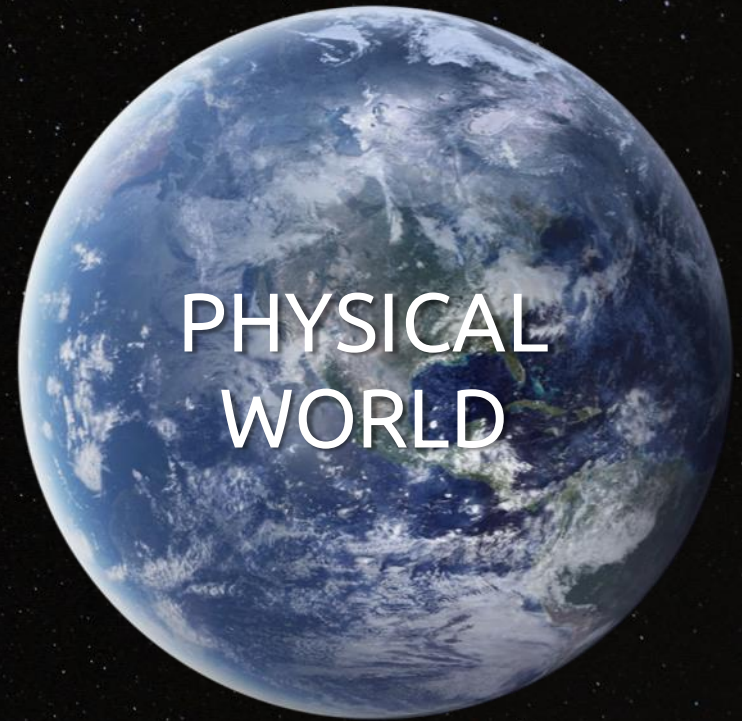
Une définition de l'internet des objets



On parle d'objets connectés – ou d'Internet des Objets - pour définir des types d'objets (...) auxquels l'ajout d'une connexion Internet permet d'apporter une valeur supplémentaire en terme de fonctionnalité, d'information, d'interaction avec l'environnement ou d'usage. »

Dictionnaire du web 2015

Deux Mondes Séparés



Distincts Mais Aujourd'hui Inséparables

INTERNET
Digital World

OF

THINGS
Physical World

Une Transformation Omniprésente



Produits intelligents et connectés

Service à distance,
opérations et analyses



Opérations connectées et intelligentes

Usine intelligente/Industrie 4.0

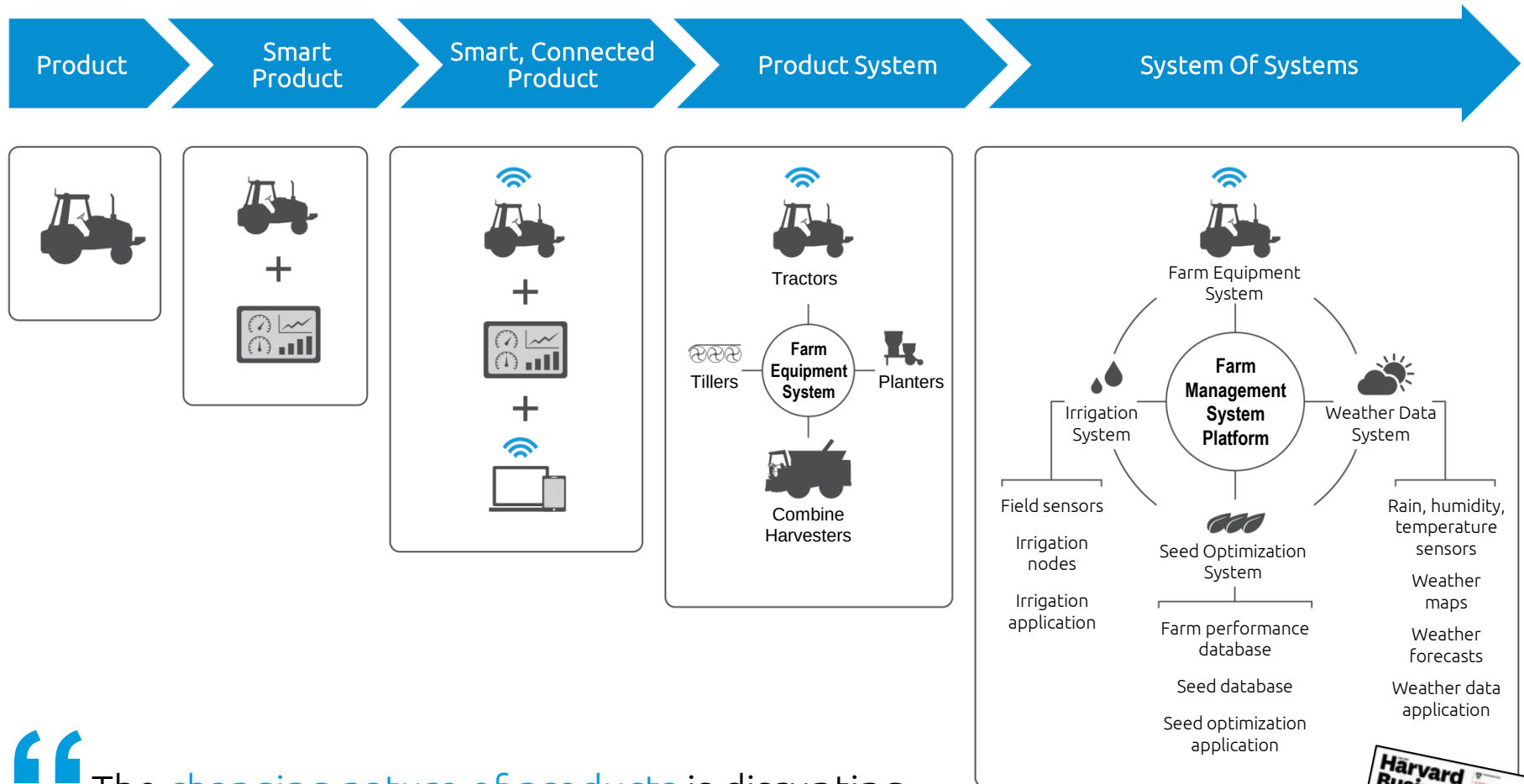


Systèmes intelligents et connectés

Exploitations agricoles intelligentes,
villes intelligentes, etc.



Les Stratégies Changent...



“The changing nature of products is disrupting value chains, forcing companies to rethink and retool nearly everything they do internally.”

Les opportunités sont à saisir...

IoT accélère l'innovation et déverrouille les opportunités de business



World Class Service

LEVERAGE DATA FROM CONNECTED PRODUCTS FOR VISIBILITY, PROACTIVE SERVICE



Business Insight

ANALYZE PRODUCT DATA TO DRIVE NEW INTELLIGENCE



Optimize Business Processes

COMBINE REAL-TIME DATA WITH EXISTING SYSTEMS TO INCREASE EFFICIENCY



Differentiate Offering

INCREASE PACE OF PRODUCT AND SERVICE INNOVATION



New Revenue Streams

UNLOCK NEW BUSINESS MODELS AND REALIZE NEW VALUE-ADD OPPORTUNITIES

L'impact sur l'Industrie est énorme



\$6.2T

Estimated potential economic impact of The Internet of Things in 2025, range from \$2.7 – 6.2 trillion annually

– **McKinsey Global Institute**

Gartner® #1

Manufacturing industry will be the #1 industry sector by share of global economic value-add.

– **Forecast: The IoT, Worldwide, 2013**



*“Huge Explosion of devices... candidly, doesn’t do you any good **without the applications** to make them practical.”*

– **John Chambers, CEO**

Internet Des Objets (IOT)

Etendre le champ des possibles avec l'internet Industriel des Objets

Smart, Connected Operations



Process centric

Optimize the use of a variety of smart assets:

- Industry 4.0, smart manufacturing
- Manufacturing intelligence
- Real-time equipment health monitoring

Operational
Effectiveness

Smart, Connected Products



Product centric

Transform the products you create and service:

- Remote diagnosis and remote service
- Connected product usage analysis
- New pricing models

Strategic
Differentiation

Des besoins identiques depuis longtemps...

Ensuring consistent **QUALITY** of products

61%

RESPONSIVENESS
to customer order demands

55%

Increasing production
CAPABILITIES and **CAPACITY**

52%

Getting new products to market
FASTER

42%

Source: LNS Research, 2015: Top Operational Objectives for Manufacturing Executives

DES CHALLENGES RECURRENTS

Hétérogénéité des données: Origine, format, type

Diversité des process industriels
flexibilité, visibilité des systèmes entre eux

Métiers, processus, produits évolutifs
Besoins en ressources IT

Coûts, risques des déploiements

Systems



Web



Vendor



ERP



MES



SCADA



Fleet



Line



Tank



Robot



Plant



Office

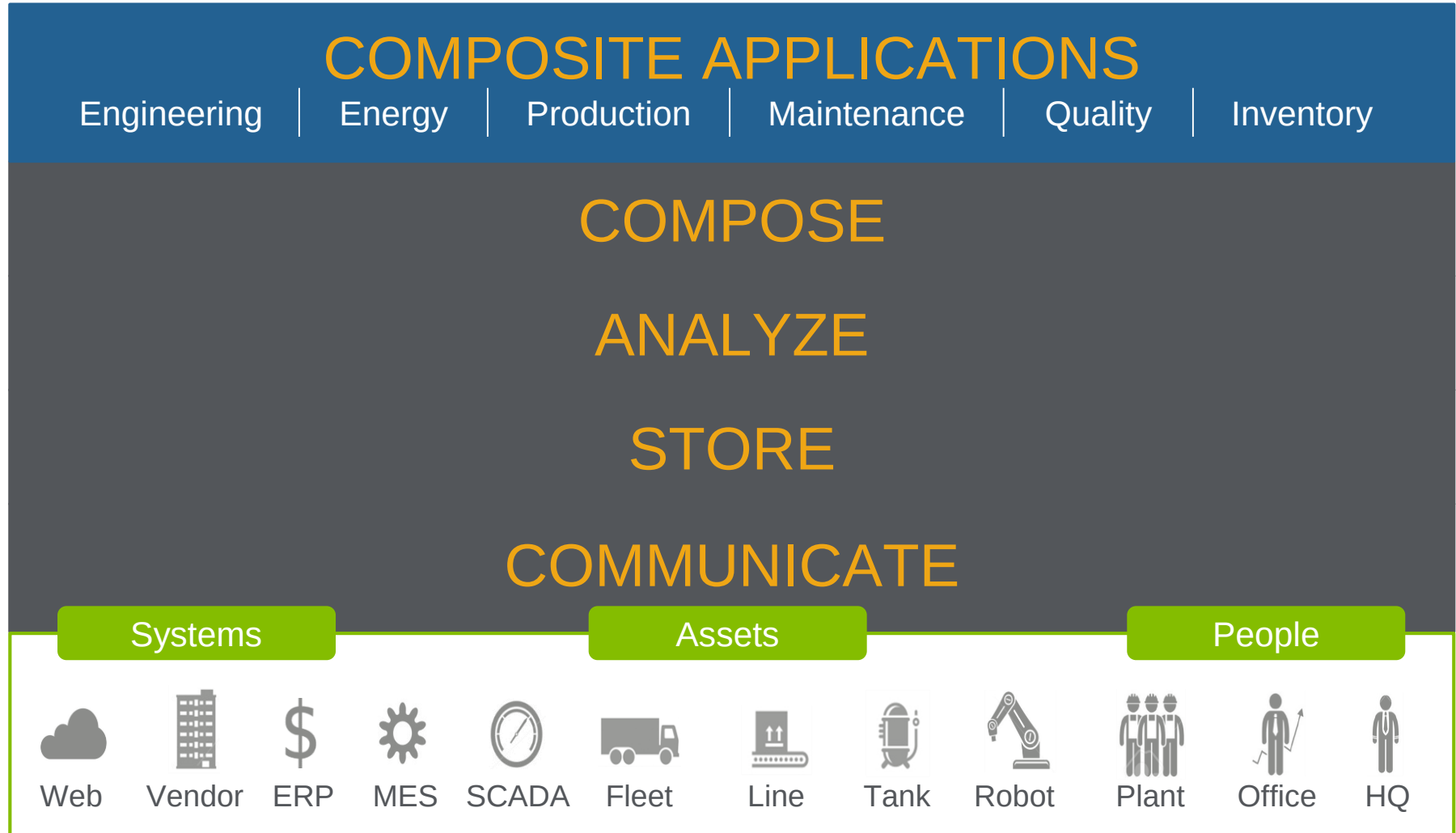


HQ

Assets

People

Une plateforme IoT pour étendre le champ des possibles



De nouveaux paradigmes...

Next-generation manufacturing intelligence

- Unifiée, visibilité temps réelle entre les systèmes, opérateurs et produits
- Connection entre les systèmes d'entreprises et le shop floor
- KPI en place sur toutes les usines, lignes de production et équipements

Digital thread & operations management

- **Industry 4.0** & Smart manufacturing
- PLM – MES – ERP Integration bi-directionnelle
- Synchronisation des processus complexes
- Compréhension des données métiers, séries et humaines

Innovation and agility

- Mise en place rapide d'applications pour amélioration continue
- Suivi des produits, capteurs et outils
- Zero papier, mobilité, réalité augmentée

Equipment health and monitoring

- Condition-based monitoring
- Maintenance prédictive
- Diagnostic et service à distance des produits & équipements

DES RESULTATS
OPERATIONNELS
PROBANTS

Reduction du temps
d'arrêt

10-15%

Reduction des coût
de travail

14%

Reduction des
stocks

30%

Reduction des temps
de production

60%

Amélioration des
livraisons dans les temps

50-60%



Aircraft assembly optimized by ThingWorx.

Every action is recorded and verified for accuracy.

BENEFITS:

- Better control in manufacturing processes
- Higher quality manufacturing
- Increased productivity throughout the manufacturing process



Exemple: Poste Operateur MultiMédia dans l'Aéronautique

Bénéfices Attendus

Besoins

Poste de travail moderne et simple d'utilisation.

Capitaliser sur les investissements, ne pas révolutionner le paysage informatique.

Supprimer les documents papier, éviter les ressaisies et leurs erreurs

Accéder aux différentes applications utilisées en production (QDA, SAP, PDM,...) et assurer les transactions vers ces applications.

Faciliter la communication des opérateurs avec les applications intranet (RH, BMS,...)

Faciliter la collaboration entre opérateurs et avec les responsables

- **Amélioration de l'efficacité opérationnelle**
 - Interface utilisateur simplifiée
 - Fluidification des processus
 - Une plus grande efficacité grâce à un accès facilité aux informations
 - Meilleure collaboration entre opérateurs ou avec les chefs d'équipe

- **Amélioration de la qualité**

- Limiter les risques d'erreurs liés à la ressaisie
- Une meilleure traçabilité grâce à l'enregistrement des différentes actions, des relevés,...



Les fiches d'instructions connectées

Bi-directional connection to:

Connected - Tailored -
Actionable



People (operator):

- Single sign-on
- Role-based



Mfg systems (ERP/MES):

- Work orders
- Operations, parts, resources
- Competencies check



PLM / MPM / CAD:

- 2D / 3D
- Part and process plan details
- Standard operating procedures



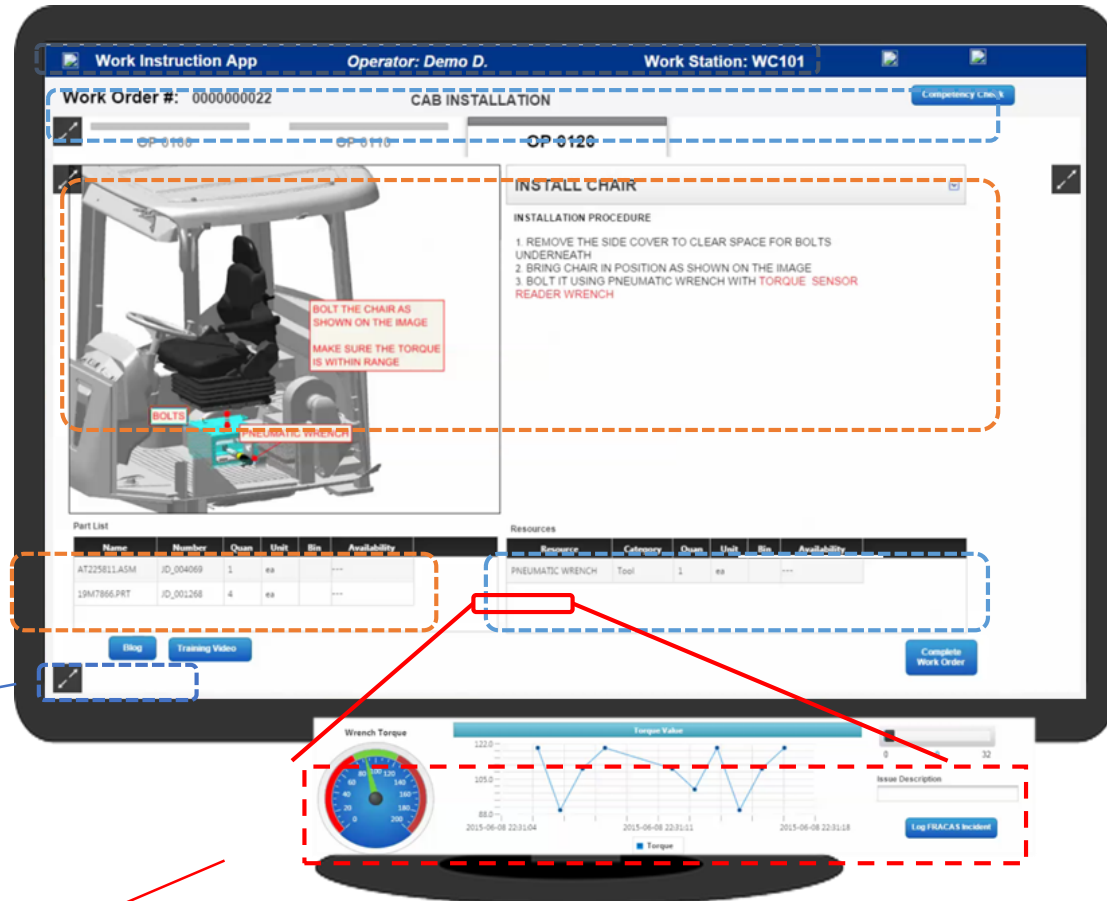
Quality / data capture:

- Traceability, genealogy
- Operator feedback



Industrial tools:

- Torque, angle, battery life, ...
- Position and orientation



Accélérateur d'ambitions



European bike-sharing company, relies on ThingWorx for connecting bikes to base stations, then to the cloud.

BENEFITS:

- Differentiated offerings in a competitive market
- Better experience for users via seamless integration with other transportation systems
- Cities that are better managed and easier to navigate



Smart Mobility within the Smart City



Smart Mobility within the Smart City



SMOOVE is the bike-sharing specialist. Its strength : The capability to provide towns, municipalities, transport operators or businesses, a comprehensive, reliable and sustainable bike solution with the emphasis on bike-share systems integrated within a multimodal proposition.

Business Challenge

- Any Bike-sharing project is an hardly profitable business, especially at the moment cities have strong pressure on cost reduction while they need to deliver more & more services to citizens
- Smoove needs to deliver more & more new added-value services to the overall eco-system (and not only cities) in order to switch from a product to a services business
- Smoove needs also to dramatically reduce the costs of its M2M layer

Solution

- ThingWorx Platform will enable SMOOVE to renew & expand their service offering dramatically while significantly lowering costs:
 - Direct, real-time connections to their existing kiosks (gateway) for delivering next-generation of services
 - Ability to deliver new services as soon as new innovations are set up at the bike level (e.g. electrically assisted)
 - Enable incremental replacement of their current M2M layer for deployed cities
 - Segregate services per city & per local actor

Results

- Take back the hands on technology and avoid margin dilution
- Dramatically reduce costs of development & evolutions.
- Deliver new services & innovations 10X faster on the market. Enable retrofitting.
- Maximize the capture of new revenues thru flexible ways to propose differentiated services to an enlarged eco-system and invoice them consequently

"We chose the ThingWorx IoT Platform for its flexibility and versatility in use and the opportunities it creates for enhancing the diversification of our offer," – **Denis Mercat, CTO at Smoove**



OnFarm combines sensor data about soil moisture, weather, fertilizer usage, growing conditions, GIS information

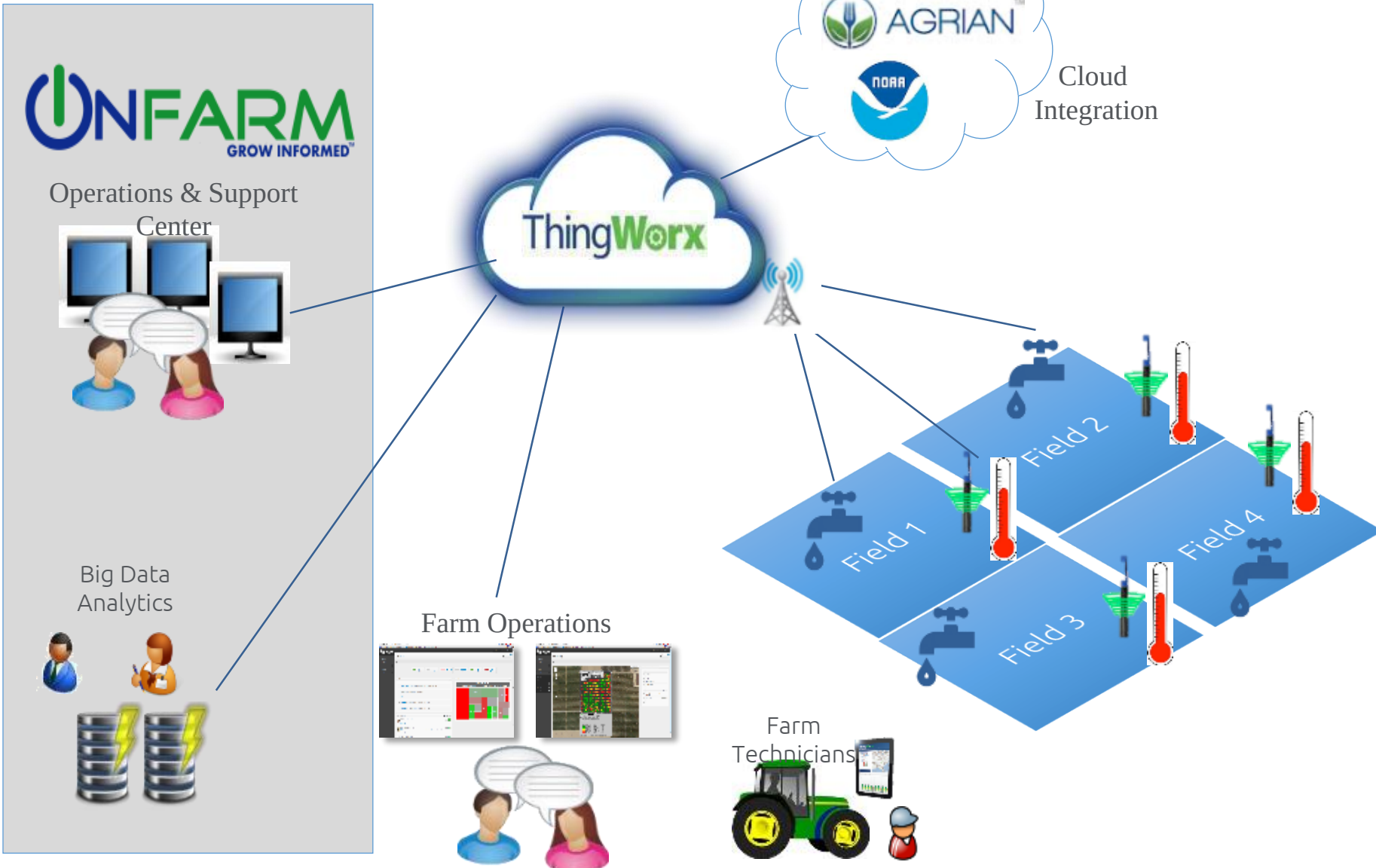
Visual app growers can use to irrigate their crops

BENEFITS:

- Lower irrigation costs for farm operators
- Increased crop yields due to more efficient and effective irrigation strategies
- Resolve crop yield issues before they get out of hand and impact revenue



Mise en oeuvre





Diebold is a \$2.9B provider of integrated self-service delivery and security systems, including ATMs.

Benefits

- Average problem resolution time reduced from 3 hours to minutes
- 17% of total issues resolved remotely without a field service visit
- Overall Opteva ATM downtime reduced by 15%





\$750 million company with approximately 3,500 employees worldwide. The company develops sophisticated, state-of-the-art tools and treatment planning systems for radiation therapy, radiosurgery and brachytherapy.

Used machine data and predictive analytics on the usage patterns and life-cycle of the systems in an effort to execute real-time preventative maintenance on machines.

BENEFITS:

- >20% of service requests resolved remotely without the need for an onsite visit
- Increased system uptime and patient throughput
- Improved product design through machine reliability data analysis



Création de valeur sur toute la chaîne avec la même plateforme IIOT



MARKETING / SALES	PRODUCT DEVELOPMENT	OPERATIONS / MANUFACTURING	SERVICE / SUPPORT	INFORMATION / OPERATIONAL TECHNOLOGY	CUSTOMER
Customer Insights and Opportunities	Connected Product Usage Analysis	Asset and Material Tracking	Monitoring and Diagnostics	Flexible Product and Asset Connectivity	Usage and Performance Dashboard
Flexible Billing and Pricing Models	Connected Product Quality Analysis	Connected Operations Intelligence	Remote Service	Identity and Security Management	Customer Self-Service
New Value Added Services	Connected Software Management	Unified Key Performance Indicators	Automated Service Execution	Scalable IoT Operations Management	Product Personalization
		Real-Time Asset Health Monitoring	Condition-Based Predictive Maintenance	Seamless IoT Data Integration	
		Operations Management Improvements	Connected Service Parts Planning	Automated Analytics and Actions	
			Warranty Cost Management	Rapid IoT Application Development	

Accélérateur d'ambitions

Contact pour plus d'informations



Morgan COLLETER
Ingénieur commercial IoT

mcolleter@4cad.fr

t +33 (0) 2 51 70 28 82

f +33 (0) 2 28 27 04 71



Les Espaces «Océane» - 2 rue Joseph Conrad - 44405 REZE



*Accélérateur d'**ambitions***