

9^e UX-FORUM® Innovation 'EXOSQUELETTES'



Entreprises et Santé

Avenir de la relation au travail



Préventica



Yonel Giovanelli
SNCF



Samya
BELLHARI-TRAHIN
FM logistic



Bernard BOULLE
NAVAL Groupe



Xavier Pierre
Lidl



Anais SCHOREEL
JAPET Médical



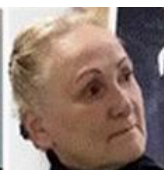
Pr Frédéric TELLIEZ
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Jean-Paul Carta
LabCOM LEMM



Jacques BOUVET
Cercle E & S



Anne-Marie de VAIVRE
Cercle E & S



9^e UX-Forum® Exosquelettes : Merci à nos intervenants !

« Grands utilisateurs »



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Bernard Boulle
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« Grands Concepteurs ... »



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« Grands Observateurs engagés ... »



Philippe GARABIOL
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Entreprises et Santé

Avenir de la relation au travail

Think-tank / do-tank dédié à la santé et l'innovation au travail,
à l'avenir de la relation au travail, et à la Responsabilité Sociétale en action.

Innovation



Santé

Travail



Club
Interne



Rayonnement
Réseaux



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Innovation – Santé – Travail :

les « UX-Forum® » du Cercle



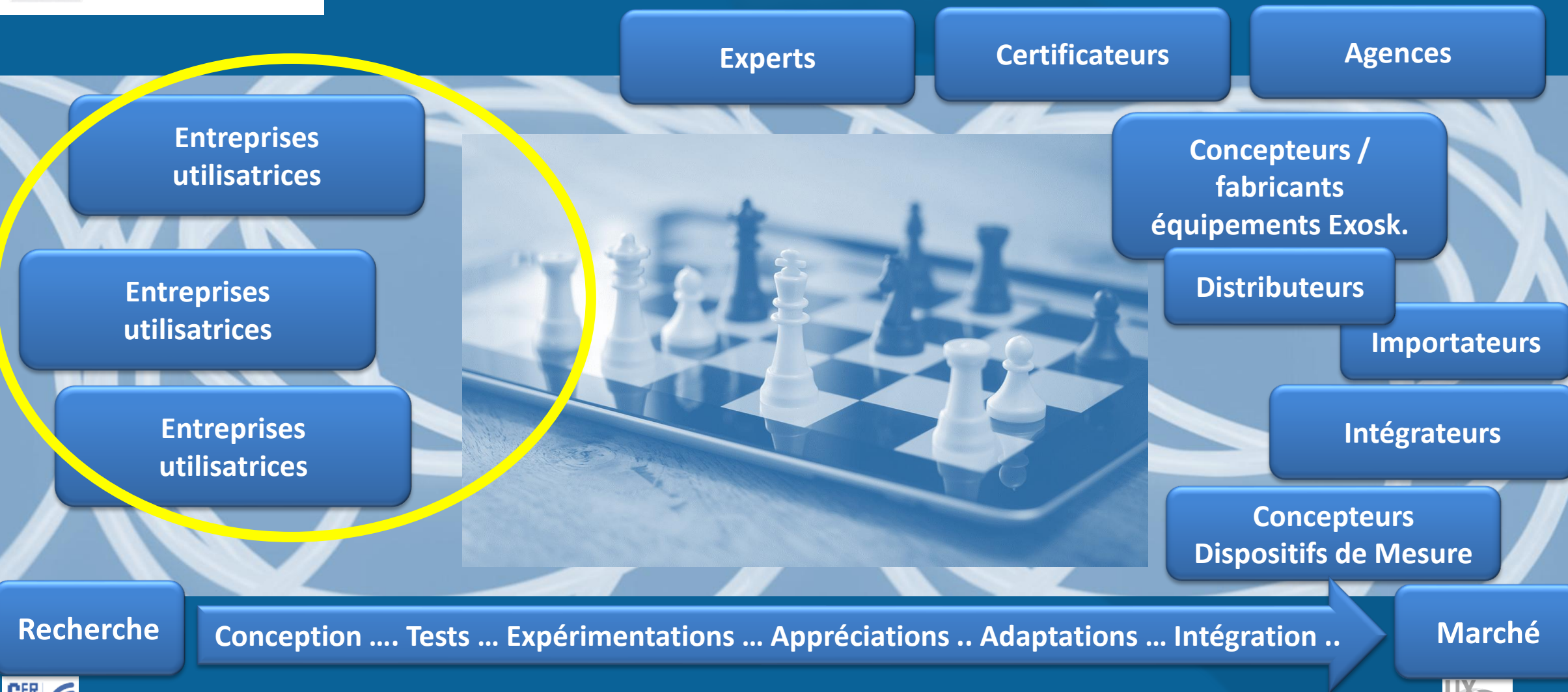
Innovation



Sociétal



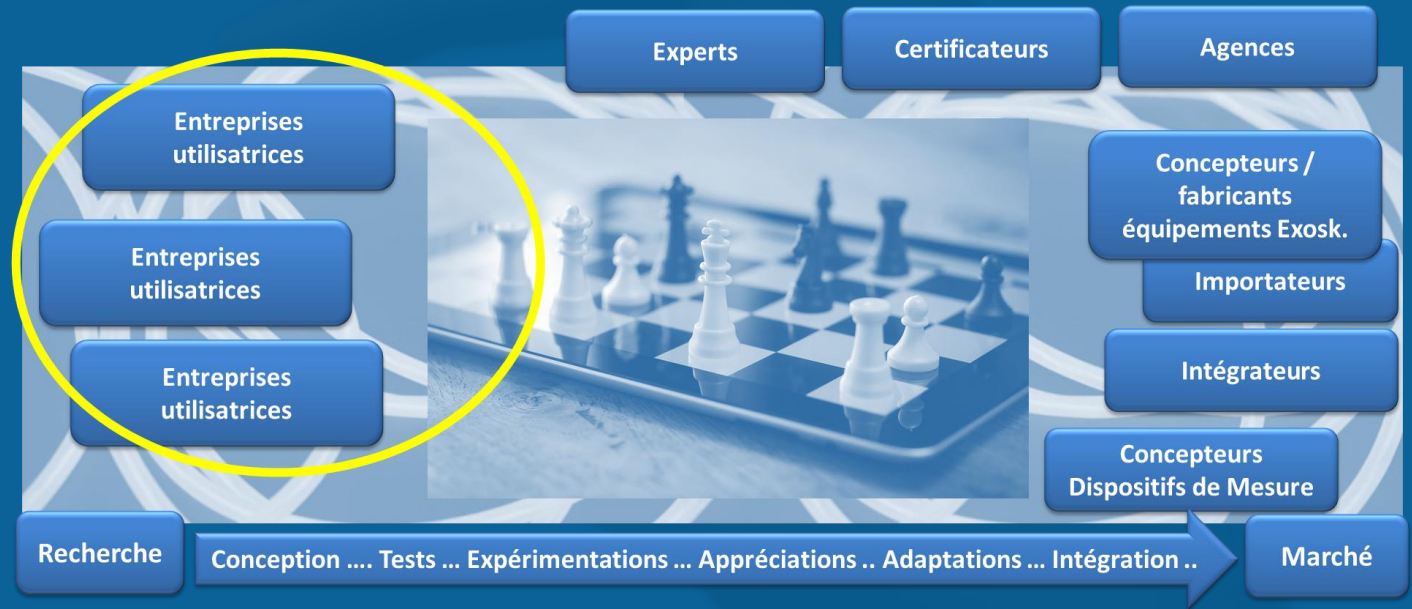
Damier des acteurs / exosquelettes ? un éclairage sur les utilisateurs / entités utilisatrices



Damier des acteurs / exosquelettes ?

un éclairage sur les utilisateurs / entités utilisatrices

.... Comprendre/ aider à suivre
la montée en maturité de l'écosystème-Innovation 'Exosk'..



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... après quelques éléments de contexte

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- 2) Vigilances et facteurs-clés de succès d'intégration ?

Échanges, débats, questions

Perspectives pour aller plus loin ...

Tous replays Ux-Forum® www.cercle-entreprisesetsante.com



Innovation Exosquelettes : Foisonnement croissant d'informations ww. !



CHRONIQUE

Les exosquelettes vont-ils sauver nos pensions?

JEAN-YVES HUWART
Entrepreneur et auteur
18 septembre 2021 03:00

Des solutions existent pour accroître la productivité des métiers de l'accompagnement à la personne ainsi que les services. L'enjeu est le financement de notre système de soins de santé.

“L'économie belge a créé 422.000 emplois supplémentaires entre 2008 et 2019. Cette performance cache néanmoins un **déséquilibre grandissant dans la structure productive de la Belgique**. En effet, la majorité de ces nouveaux emplois voient le jour dans des domaines où la productivité et les salaires sont moindres que la moyenne. C'est un **gros risque pour nos finances publiques**.”

Traduction: Jean-Yves Huwart

Jean-Yves Huwart, @doc
Après la Banque Nationale, voici quelques mois, le département de recherche économique de la banque ING tire à son tour la sonnette d'alarme sur le danger que fait porter un glissement du tissu économique belge. La banque pense essentiellement



THE WALL STREET JOURNAL.

Warehouse Operators Turn to Wearable Technology to Solve Workplace Strains

U.S. supply-chain arm of grocery store owner Ahold Delhaize is bringing 'exosuits' to its increasingly busy distribution centers

<https://www.wsj.com/articles/warehouse-operators-turn-to-wearable-technology-to-solve-workplace-strains-116344075200>

BOSS MAGAZINE Wearable technology is helping improve warehouse worker safety and efficiency

Technology is constantly improving, and we continue coming up with new ways to use (and wear) it.



Warehouse wearables Wearable technology is helping improve warehouse worker safety and efficiency. Technology is constantly improving, and we continue coming up with new ways to use (and wear) it.

Workers in Physical Occupations Benefit from Back-Relieving HeroWear Apex Exosuit

Field tests offer the wearable, lightweight, non-powered HeroWear Apex exosuit device back relief support for heavy lifting.



By Margie Richmond | August 5, 2021
Listen to this article
HeroWear Apex Exosuit
Karl Zettl, Ph.D., an associate professor of physical medicine and rehabilitation at Vanderbilt University Medical Center and co-director of the Center for Rehabilitation Engineering and Assistive Technology at Vanderbilt, spent the last five years working on a system to reduce work-related back injuries. The technology he pioneered at Vanderbilt has led to the HeroWear Apex Exosuit, a wearable lift-assist device now in use in multiple industries at over 100 locations in 10 countries.

autoevolution

HeroWear Apex Exosuit Is the

Next Generation of Free-Movement Exoskeletons

Humans are needed to do just about anything. But the human body does have limits, like everything else on Earth. However, this doesn't stop industry leaders from pushing forward, even when the workforce seems exhausted and nearly broken. One way this is being avoided is with exoskeletons.

by Cristian Cumei



Since we're now living in an age where just about anything you dream can be created, some companies are hard at work helping overcome the human body's limits, with technology. One crew doing this is HeroWear, with their freshest addition to the market, the Apex back-assist exosuit.

Like any other exoskeleton or exosuit, the Apex, too, is meant to help reduce stress and strain on the body it's applied to. But what makes this exoskeleton so special is the fact that it includes no motors or electrical gear to make it function, leading to a suit that weighs only 3.4 lbs (1.55 kg). But those three pounds can reduce back strain by up to 75 lbs (34 kg). Time to find out how.

So that you may understand exactly what sort of device the Apex is, it also helps to know a bit about the team behind the design. Started by a group of scientists from Vanderbilt University, ranging in backgrounds from manufacturing and ergonomics to biomechanics (clearly) and design, the Apex

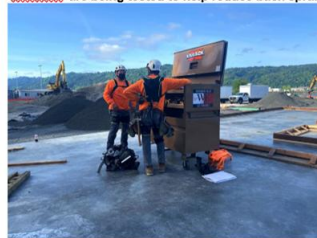
BusinessTribune

The future is now for lifting on construction sites

Melody Finnemore

August 10 2021

'Exosuits' are being tested to help reduce back sprains, other injuries in construction sector.



COURTESY PHOTO: SAIF - Employees at Whitaker Ellis Builders Inc., a Tigard-based concrete contractor, participate in a pilot to test how exoskeletons, or "exosuits," may reduce back injuries and improve worker safety in the construction industry.

For employees at Whitaker/Ellis Builders Inc., a Tigard-based concrete contractor, it's not uncommon to have to bend and lift up to 150 pounds while building concrete slabs, 60-foot walls, columns and other structures that require heavy lifting and strenuous labor — often during bad weather and unstable ground conditions.

"About 10 percent of our injuries are strains and sprains, and most of those are back sprains," said Randy Johnson, the company's safety director. "Our



Verve Motion raises \$15M following exosuit pilot with grocery workers

Brian Heater (@bheater) / 1:00 PM GMT+2 July 15, 2021



Image Credits: ADUSA Distribution

The exoskeleton/exosuit category has been heating up over the past few years. It makes sense, really. There are two giant — and dramatically different — potential customer bases.

On one end are those sorts of jobs that could benefit from some wearable assistance. On the other are people with mobility issues for whom such technology might go a long way.

Founded last year by a team spun out of Connor Welsh's lab at Harvard's Wyss Institute and the John A. Paulson School of Engineering and Applied Sciences, Verve Motion is targeting the former for now. You

ROBOTICS TOMORROW

AN IDEA STRENGTHENS THE BACK OF THE WORLD

09/10/21, 05:24 AM | Unmanned & Other Topics | FAULHABER MICROMO | Exoskeletons, micromotors

It is neither fatal nor infectious but very difficult to manage and extremely expensive to society: the widespread medical disorder of chronic back pain. A motorized exoskeleton can provide relief to the especially vulnerable lumbar spine. French manufacturer Japet relies on FAULHABER here, as its product demands the highest quality, and every gramme counts.



Nova Scotia

The future is now: how exoskeletons are changing Canada's construction industry

'There are many, many young people that are very excited about the technology'

David Burke - CBC News - Posted: Feb 04, 2020 6:00 AM AT | Last Updated: February 4, 2020



A Freshco.ca worker wears an exoskeleton while using a chipper to clear tiles off a wall. (Freshco.ca/YouTube)
135 comments
Encased in a metal exoskeleton, a construction worker looking like a robot wields a motorized chipper to remove tiles from a wall.

Despite the weight of the tool and its intense vibrations, the worker never tires or loses their grip.

They are a new breed of construction worker in Canada, using wearable machinery to do work faster and with less fatigue.



Clarkson

Interdisciplinary Clarkson University Team Receives One of NSF's 10 Big Ideas Grants to Create New Intelligent and Adaptive Firefighting Exoskeleton Suits

Release Date Friday August 27, 2021



A group of Clarkson University professors, led by Prof. Michael Bazzocchi, have been awarded an NSF grant worth nearly \$150,000 to design a new intelligent and adaptive firefighting exoskeleton suits for the Future of Work at the Human-Technology Frontier, which is one of NSF's 10 Big Ideas for the future.

The project is an interdisciplinary effort between Professors Michael Bazzocchi,

Natasha Banerjee, Sean Banerjee, Kevin Eide, and Marcia Martines from the Mechanical E

CISION® PR Newswire

Advancements in Robotics, Sensors, and AI Expand

Applications of Smart Exoskeleton; Global Market to Advance at CAGR of 32.7% during Forecast Period: TMR Study

- Focus on developing advanced human-machine interfaces (HMI) and novel wearable sensors to expand use of smart exoskeleton in medical rehabilitation applications

- Multifunctional personalized wearable exoskeleton to increase worker safety; open up profitable opportunities in industrial automation for smart exoskeleton market players

NEWS PROVIDED BY
Transparency Market Research
Sep 02, 2021, 08:30 ET

ALBANY, N.Y., Sept. 2, 2021 /PRNewswire/ -- The multidisciplinary research on designing wearable exoskeletons integrated with innovative robotics, novel materials, and advanced actuators has opened up enormous possibilities in the smart exoskeleton market. They are attracting industry attention for meeting

Exemples d'exosquelettes 'travail' présents sur le marché US (septembre 2021)

Injury Prevention

Showing 1-25 of 49 results



Againer

AGAINER



AIRFRAME

LEVITATE TECH



ALDAK

CYBER HUMAN



ALDAK - Passive

CYBER HUMAN



backX

SUITX



BESK

CYBER HUMAN



CarrySuit

AUXIVO



CDYS

CRIMSON DYNAMICS



ExoHeaver

EXOMED



Exy ONE

EXY



FLx ErgoSkeleton



Apex

HEROWEAR



Archelis

ARCHELIS



Armor-Man 2

TILTAMAX (AMAZON)



AWN-12

ATOIN



Chairless Chair

NOONEE



Cray X

GERMAN BIONIC



Daiya Glove

DAIYA



DARWING PA-Jacket

DAIYA



H-WEX

HYUNDAI



FORTIS

LOCKHEED MARTIN



FLx ErgoSkeleton

STRONGARM TECH



HAL Lumbar Support

CYBERDYNE



HAPO

ERGOSANTÉ



Hercule

RBCD



Ironhand

BIOSEVO



Marine Mojo

ZOKTS+



MATE-XT

COMAU



Muscle Suit

INNOPHYS



Muscle Upper

INNOPHYS



shoulderX

SUITX



Ski-Mojo

KINETIC



UPRISE

MAWASHI



V22 ErgoSkeleton

STRONGARM TECH



Laevo V2

LAEVO



legX

SUITX



LiftSuit

AUXIVO



LIGHT*

HMT



Paexo Back

OTTOBOOK



Paexo Shoulder

OTTOBOOK



PLUM*

HMT



Shiva Exo

ERGO SANTÉ



Wieldy Exoskeleton

WIELDY (AMAZON)



X-Arm

EXORISE



X-Rise

EXORISE

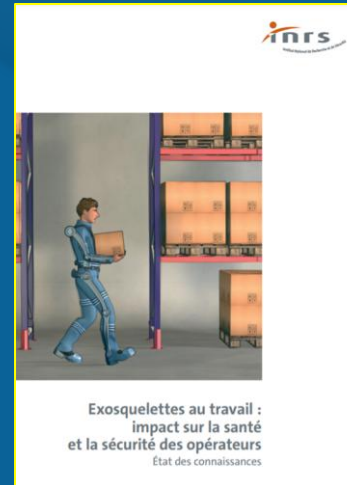


Xknowers

LEVER

Pour vous aider :

... saines lectures



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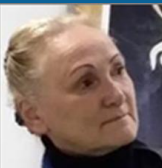
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Anne-Marie de Vaivre
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9e UX-Forum® Exosquelettes – Notre mode d'emploi

... après quelques éléments de contexte

1) Quatre cas d'usage :

Pour quels métiers ? répondre à quels besoins ?
quelles situations de travail ?

2) Vigilances et facteurs-clés de succès d'intégration ? ?

Échanges, débats, questions ...



Quels besoins ? Quels usages ?

Contexte, besoins, décisions, d'entreprises utilisatrices

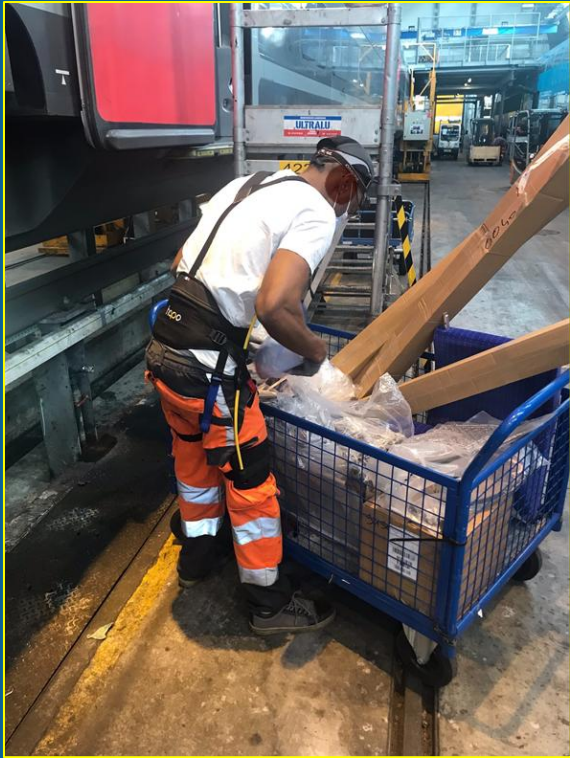


Yonnel
Giovanelli
SNCF





Clichés SNCF
Yonnel Giovanelli



Clichés SNCF
Yonel Giovanelli

Quels besoins ? Quels usages ?

Contexte, besoins, ... décisions et programmes d'entreprises utilisatrices

Exemple / secteur logistique



**Samya
Bellhari-Trahin**

FM-Logistic









Samia
BELLHARI -TRAHIN
FM-Logistic



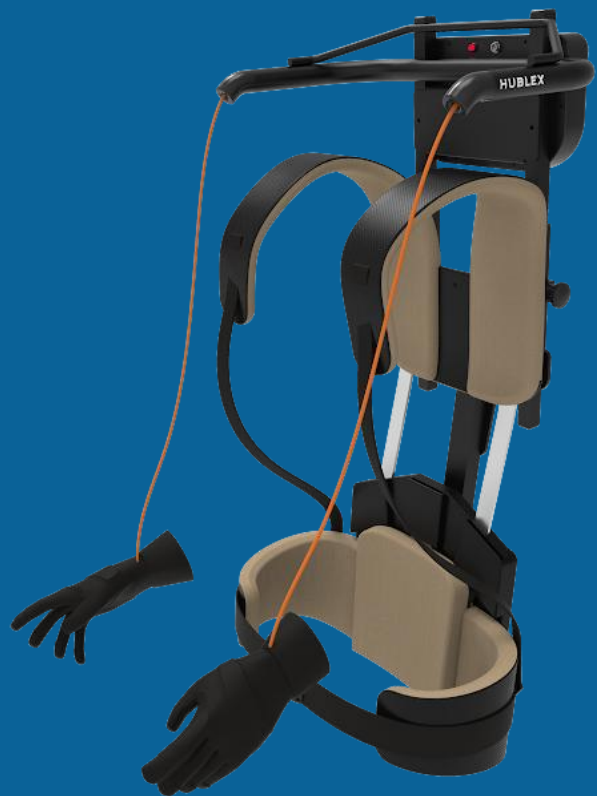


Samia
BELLHARI -TRAHIN
FM-Logistic





Samia
BELLHARI -TRAHIN
FM-Logistic





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Contexte, besoins, ... décisions et programmes d'entreprises utilisatrices

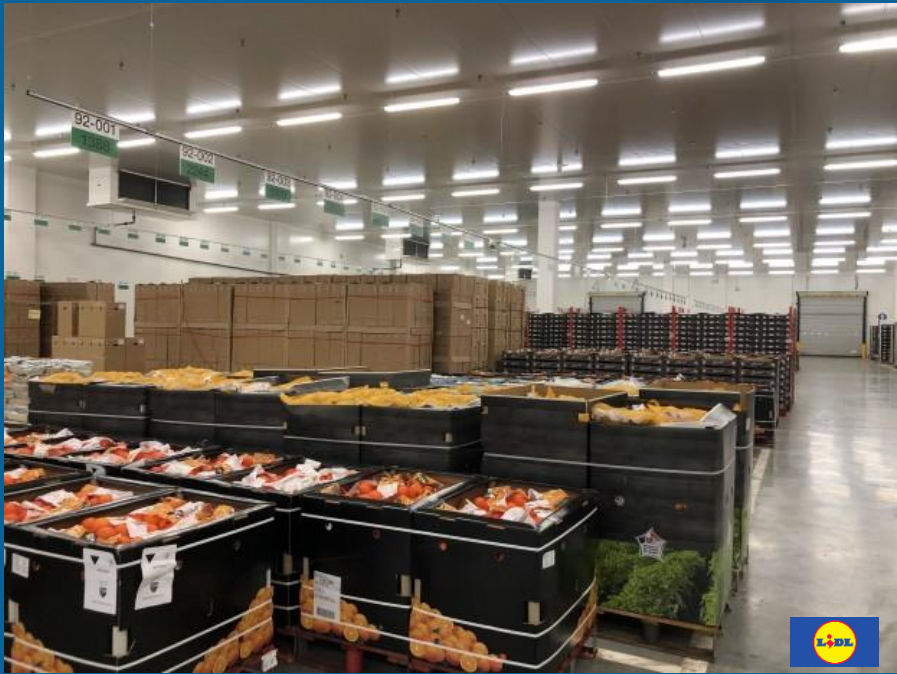
Exemple / secteur Distribution-Commerce de détail



Xavier
Pierre

Lidl







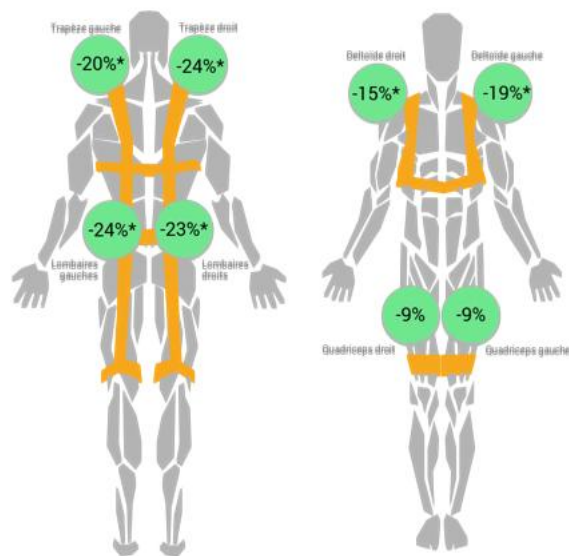


Xavier Pierre
Lidl

Impact du harnais Corfor

-19% CCR*

OP1 Fruits et Légumes



Quels besoins ? Quels usages ?

Contexte, besoins, ... décisions et programmes d'entreprises utilisatrices

Exemple / secteur Industrie / Défense



Bernard Boule
NAVAL Group

**Bernard
Boule**

NAVAL Group





Bernard Boule
NAVAL Group



Le site Naval Group, à Lorient. | ARCHIVES OUEST-FRANCE





Bernard Boule
NAVAL Group





Bernard Boule
NAVAL Group





Bernard Boule
NAVAL Group



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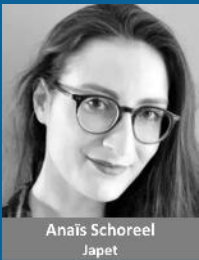


Intégration, quelles vigilances ?



Anaïs Schoreel
Japet





Intégration, vigilances ... : réactions, questions, débat pour aller plus loin ...

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Echanges, discussions, éclairages ...

.. Quelles prochaines étapes dans la collaboration Humain-Machine ?



Prochains UX-Forum® Innovation Exosquelettes

Fin 2021 - 2022



En présentiel

- 10^e UX-Forum® à Préventica Paris : 30 nov-2 dec 2021

en distanciel / hybride : UX-Forum® du Cercle et ...

- Zooms 'secteurs' : construction / BTP, commerces, services 'déportés' ..
- Zooms 'métiers' : maintenance, manutention, soins ..
- Zooms 'recevabilité' ... en articulation avec 'conception' et 'décisions' d'implantations'..

.. Et en lien avec autres UX-Forum® Innovation :

- Conception partagée / Ecosystèmes Innovation
- Handicap et travail / Vieillesse et travail ...
- Occupational Health Data ...

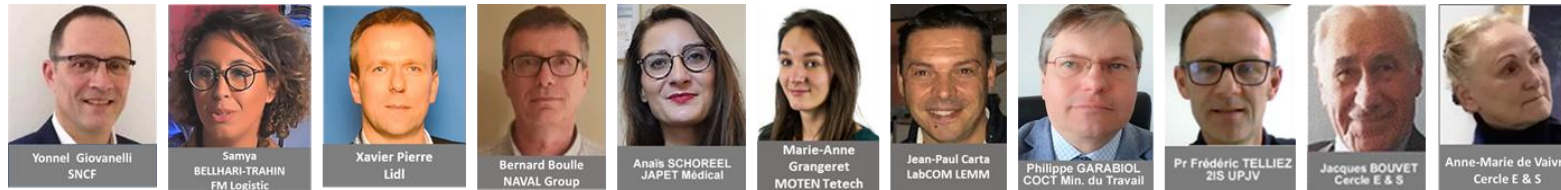


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Merci à nos intervenants ... et à vous tous !



... et bientôt le **replay** sur le site du Cercle !

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