

UWB諸外国の状況

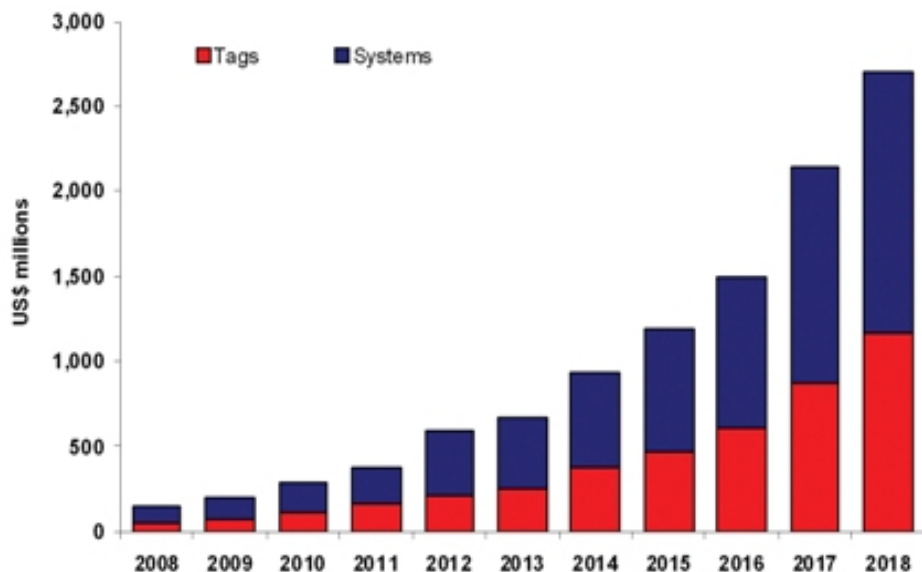
株式会社 日立製作所

- RTLS (Real Time Locating System RTLS、屋内リアルタイム位置検知) 市場が立ち上がりつつある
 - WiFi/UWBベース、2018年\$0.25billion市場 (IDTechEX社予測)
 - WiFiで位置検知精度3m程度 ⇒ 物品管理等には使えない
 - サブ1mクラスの位置検知はUWBにより達成できるがコストが普及のネック
 - IEEE802.15.4a準拠のチップが開発されたことを契機に今後急速に立ち上がるものと期待される
 - 潜在市場: 産業 (鉄鋼、自動車、航空機等) 向けライン管理・従業員安全、病院向け資産管理

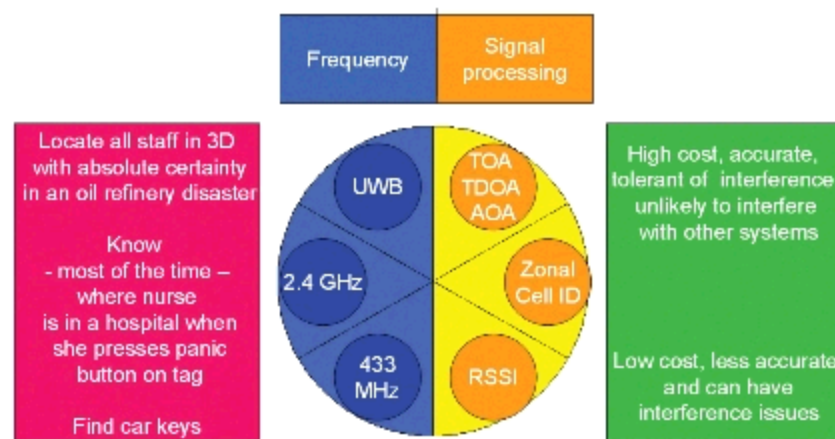
RTLS の方式比較

	無線LAN	UWB	備考
位置精度	～3m程度	～30cm程度	屋内想定
通信範囲	～30m程度	～30m程度	屋内想定
電池寿命	～1年	～3年	典型的な使用状況にて
検知方式	TDOA他	TDOA	
コスト	安価 (チップあり)	現状高価 (チップ開発中)	

TOA: Time of Arrival, TDOA: Time difference of arrival, AOA: Angle of arrival



IDTechEx Forecast of Global RTLS Market by Value 2008-2018



The Main Choices of Active Tag RTLS Frequency and Signaling Compared

TOA: Time of Arrival , TDOA: Time difference of arrival, AOA: Angle of arrival

<http://www.parcelindustry.com/ME2/dirmod.asp?sid=23C6283BD51B46348B616C079EEB2E21&nm=Miscellaneous&type=Publishing&mod=Publication&s%3A%3AArticle&mid=8F3A7027421841978F18BE895F87F791&tier=4&id=41C56ACC1AF046C9936403EFD044AE77>

UWBの海外動向：主要ベンダ

■ 産業向けに市場をスタートアップしている段階

- 大規模例あり： Ubisense社のPOSCO、Zebra社のアブダビ空港
- IEEE802.15.4a準拠のチップ開発： 2011/11サンプル出荷（decaWave社/アイルランド）
⇒ UWBのコストの問題が解決されれば、海外ではUWBがRTLSの主要技術になるものと期待される

ベンダ	内容	適用例	備考
Ubisense	<ul style="list-style-type: none"> ・英国、製品ベンダ ・5.8～7.2GHz(6.4～7.6GHz) ・TDOA+AOA、精度10～30cm 	BMW、AirBus、POSCO(韓国、鉄鋼)、Cummins(米、自動車部品)、米陸軍他	2011/8 中国で認可
Zebra	<ul style="list-style-type: none"> ・米国、製品ベンダ ・5.94～7.12GHz(6.35～6.75GHz) ・TDOA、精度～30cm、レンジ～200m 	アブダビ空港物品管理、Voestalpine(奥、鉄鋼加工)、Washington Hospital Center(米、病院)	タグ電池寿命7年
TimeDomain	<ul style="list-style-type: none"> ・米国、チップベンダ ・3.1～5.3GHz TDOA? 	UWB radar fence detects, tracks, locations, classifies targets.	
decaWave	<ul style="list-style-type: none"> ・アイルランド、チップベンダ ・IEEE802.15.4a準拠チップ(DW1000) 		2011/11 サンプル出荷、2012/Q3 量産予定

TDOA: Time difference of arrival, AOA: Angle of arrival

Ubisense社のUWB位置検知システム開発キット



<http://www.ubisense.net/en/rtls-solutions/research-packages.html>

uVALUE

Zebra社のUWB位置検知タグと基地局



http://www.zebra.com/id/zebra/na/en/index/products/location/ultra_wideband.html

decaWave社のIEEE802.15.4a準拠チップ



<http://www.decawave.com/scsensor.html>

■ 産業向けをスタートアップ

- 工場ラインでの、物品(+作業員)のリアルタイム位置検知システム
- 作業員管理(原子力発電所、英国)なども

UWB位置検知システム開発キット



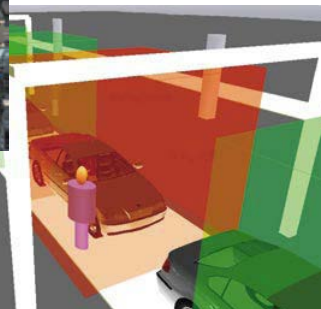
<http://www.ubisense.net/en/rtls-solutions/research-packages.html>

物品+作業員管理:鉄鋼(POSCO、韓国)



http://www.ubisense.net/en/media/pdfs/casestudies_pdf/49123_rfidjournal-posco.pdf

物品+作業員管理:自動車メーカ(欧州)



http://www.ubisense.net/en/media/pdfs/casestudies_pdf/5177_casestudyautomotiveassemblylinevus010809en.pdf

■ 産業向けをスタートアップ

- 物品(+作業員)のリアルタイム位置検知システム
アブダビ空港への導入

Voestalpine(自動車部品)への導入

UWB位置検知タグ
と基地局

タグ



基地局(センサ)



<http://www.zebra.com/content/dam/zebra/success-stories/en-us/pdfs/abu-dhabi-en-us.pdf>

Abu Dhabi Airport Services

Company Overview

Abu Dhabi Airport Services (ADAS) is a subsidiary of Abu Dhabi Airports Company (ADAC), and provides ground handling services at the airports of Abu Dhabi and Al-Ain and at the air bases of Al-Bateen, Delma and Al-Dhafra, all in the emirate of Abu Dhabi.

Key Challenges

- Ensure fast turnaround times in-line with the airlines' service level agreements
- Obtain optimum information on Ground Support Equipment (GSE) location and utilization in real-time
- Determine optimal fleet size to avoid unnecessary capital expenditures
- Reduce the number of accidents and GSE damage repair costs
- Monitor and control each vehicle's fuel levels
- Manage vehicle service and maintenance

Operational Benefits

- Achieve accurate location and availability of mobile assets on the apron in real-time
- Improve maintenance forecasting by switching to an engine hour-based maintenance regime
- Gain better decision-making processes due to real-time engine GSE data
- Automate processes for enhanced vehicle security and driver safety
- Monitor fuel levels of the entire fleet, optimizing overall refueling strategies

Business and Financial Benefits

- Reduced the actual daily refueling tasks by approximately 50%
- Achieved double digit percentage reduction of maintenance costs
- Lowered Total Cost of Ownership
- Gained the ability for facts-based decision making
- Required no additional capital investment

Why Zebra Enterprise Solutions?

- Ability to deliver a proven solution for today's challenging ground handling environments
- Return on investment for ADAS was fast, tangible and easily measurable



CUSTOMER BRIEF

QUICK FACTS

Industry
Aviation – Airport Support Services

Employees
2,200

Location
Abu Dhabi, United Arab Emirates

Zebra Enterprise Solutions
Airport Visualiser

Implementation Partner
Zebra Enterprise Solutions

voestalpine Expedites Search and Rescue Time with Real-Time Location

Technology Tracks People, Assets When It Matters Most

Challenge: Enhance Worker Safety

voestalpine is the industry leader in customized high-quality and high-tech steel products and solutions, and is the leading European supplier of high-quality automotive components. The company sought to enhance visibility of plant operations in order to prevent incidents and improve overall worker safety around dangerous blast furnaces – ultimately to create an efficient, automated safety system.

Better Incident Prevention

At its steel manufacturing plant in Linz, Austria, with 10,000 employees, voestalpine chose to run a pilot project with Zebra's real-time location system (RTLS), including operational software. voestalpine chose Zebra specifically for its ability to provide Ultra-Wide Band (UWB) hardware and RTLS software integrated in a safety solution especially tailored for high-demanding heavy industry environments. Additionally, Zebra offered an automated, state-of-the-art safety system to manage evacuations and save lives.

With RTLS, voestalpine increases incident prevention through innovative software capable of providing real-time visibility of critical assets and people. The company now automates processes for a safer and more efficient evacuation process.

Personnel are better able to locate workers in need, even in difficult conditions with smoke and poor visibility. With that real-time view, especially of the blast furnace area, the company can more effectively find missing persons. Through automatic warnings, RTLS additionally improves compliance with safety regulations.

Faster Response Time

The company realized valuable business and financial benefits:

- Accelerated search and rescue time by nearly 100 percent
- Demonstrated capabilities for evacuation and search and rescue operations, actively supporting the prevention of incidents and accidents near the blast furnace

About voestalpine

voestalpine is the industry leader in customized high-quality and high-tech steel products and solutions and is the leading European supplier of high-quality automotive components. Through the implementation at its steel manufacturing plant in Austria, voestalpine was able to secure enhanced visibility to prevent incidents and improve overall worker safety around dangerous blast furnaces, ultimately creating an efficient, automated safety system.

Customer

voestalpine

Industry

Manufacturing (steel)

Challenge

The company needed to improve worker safety with real-time visibility.

Zebra Solutions

- Zebra Real-Time Locating Systems Ultra-Wide Band/RFID RTLS software

Results

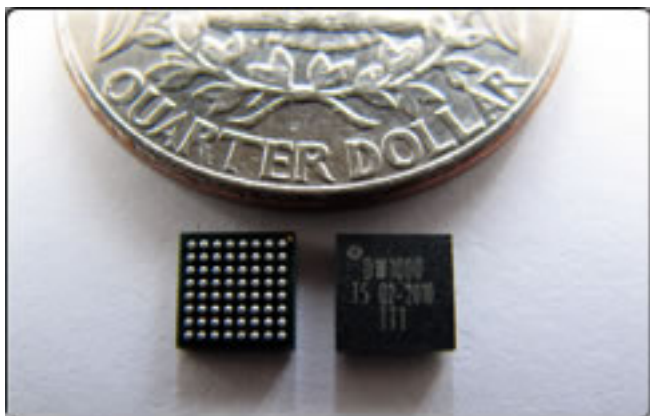
- Actively supports the prevention of incidents and accidents near the blast furnace
- Search and rescue time accelerated by nearly 100%

出典<http://www.zebra.com/content/dam/zebra/success-stories/en-us/pdfs/voestalpine-en-us.pdf>

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- 自社開発のUWBチップで差別化
 - IEEE802.15.4a準拠チップを開発
 - その他、物流管理も開発

IEEE802.15.4a準拠チップ



<http://www.decawave.com/scensor.html>

タグ開発 例

siliconrepublic®

Low-cost wireless tracking breakthrough by Irish tech firm

26.07.2011

Categories: Engineering, Intellectual Property, Investments, Communications, Mobility, Networking &

Tags: Data Communications, Location Based, Wireless, Electronics

Share: Tweet 2 Like +1 0 + more

An Irish company that has developed low-cost wireless sensors for accurately tracking an object or person has completed the tape out of its ground-breaking DW1000 chip.

Award-winning Irish fabless semiconductor firm DecaWave developed the DW1000.

Key features include its ability to locate objects indoors to a precision of 10cm, and to communicate at data rates up to 6.8Mbps from a range of 450 meters (with line of sight) and 45 meters (non-line of sight).

This is all done at low power consumption (transmitter power consumption is about seven times lower than narrowband 802.15.4 transceivers and receiver power consumption up to three times lower).

DW1000 conforms to the Institute of Electrical and Electronic Engineers IEEE802.15.4a standard.

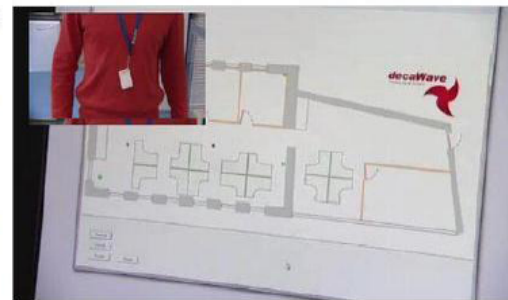
'On schedule'

"We are delighted to announce the tape out of MPW2 on schedule", says Ciaran Connell, CEO, DecaWave.

"There is already very strong advance customer demand for this silicon, so samples will be made available to our customers as soon as possible so that they can continue their development work.

"This is a highly significant milestone for DecaWave – and we are very confident that MPW2 is the product the market is expecting."

DecaWave is privately held, and based in Dublin, Ireland, with offices in San Jose, California, Toulouse, France, and South Korea. Last year, DecaWave raised €2m in an investment round led by Bank of Ireland Kernel Capital Fund and investors, including Dermot Desmond.



Low cost wireless tracking breakthrough by Irish tech firm

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<http://www.decawave.com/assets/files/press/Silicon%20Republic%2026%20July%202011.pdf>