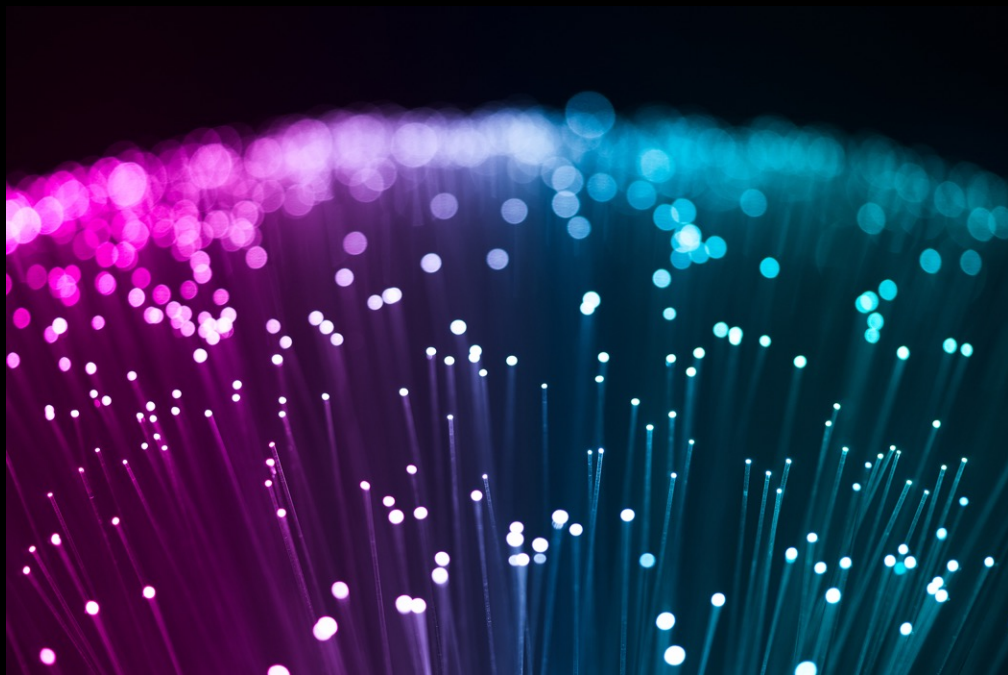
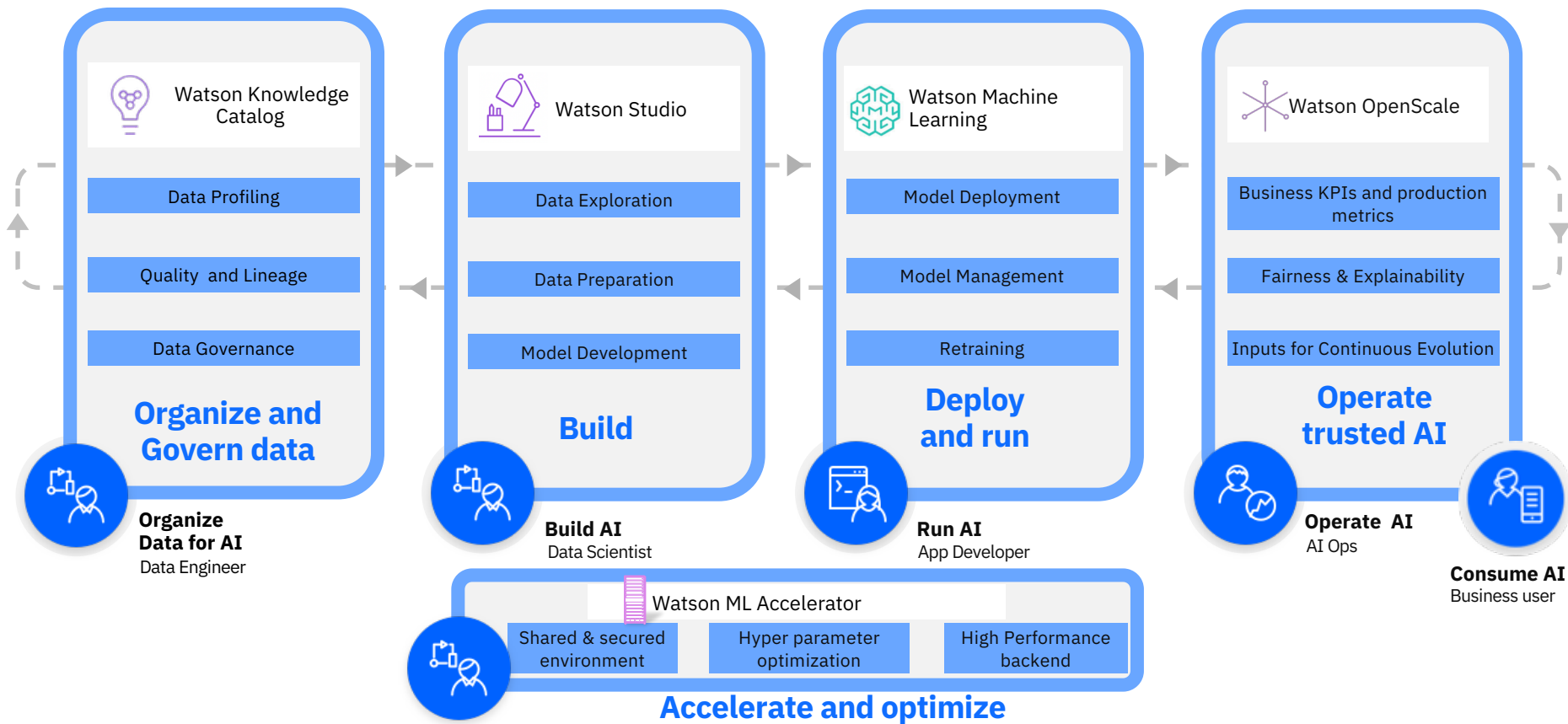


L'Intelligence Artificielle à portée de main !!

Laurent Vanel
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Cognitive Systems Technical Leader

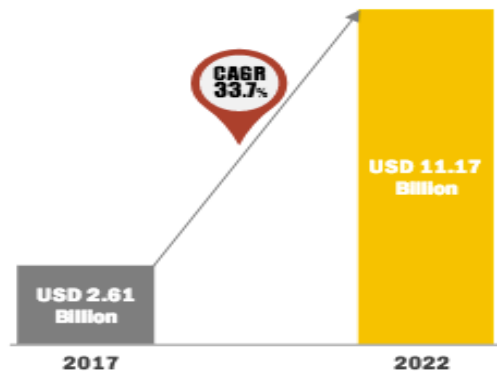


IBM OneAI : intégration des applications d'IA pour l'entreprise

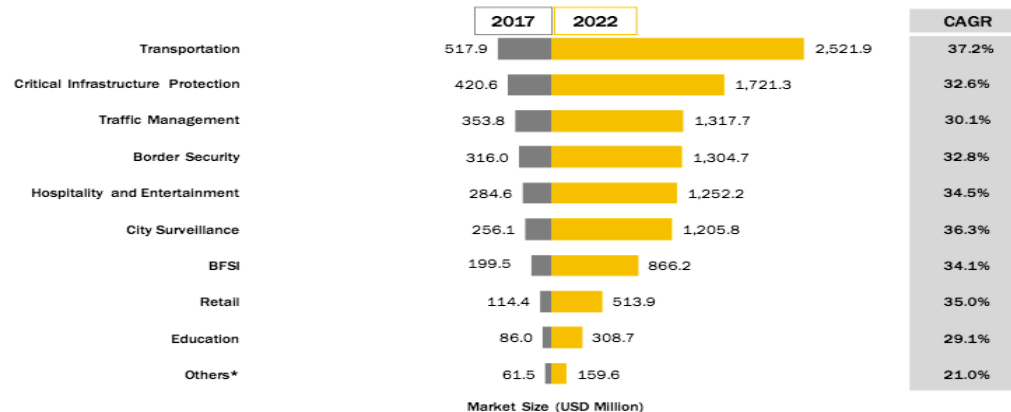




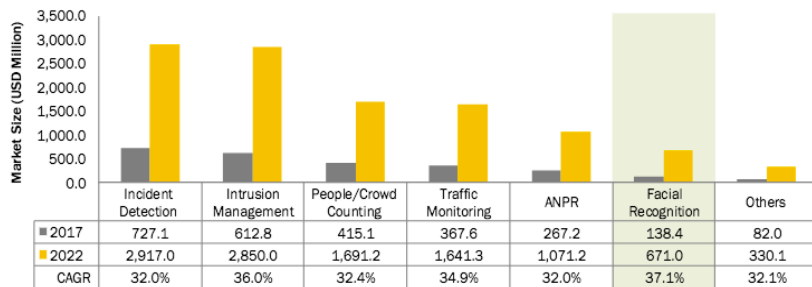
Le marché de la reconnaissance d'image



Computer vision market



Market based on Industry verticals



Several applications with Computer vision

Region	2015	2016	2017-e	2022-p	CAGR (2017-2022)
North America	28.7	38.1	51.0	250.7	37.5%
Europe	18.7	24.5	32.5	169.5	39.2%
APAC	24.4	30.2	37.8	185.5	37.5%
MEA	7.1	8.8	11.0	43.8	31.8%
Latin America	4.2	5.0	6.2	21.5	28.4%
Total	83.1	106.6	138.4	671.0	37.1%

European markets expected to embrace CV applications faster than other Geos

*MD&I: Nov 2017, Markets&Markets.com

Case 1: Deep analysis in basketball game



AI Vision auto-detect No.3 Paul is shooter, and provide pixel-level tracking



Fig.1 To count passenger for persons in **red** in a given zone

Trigger: run Interval(s): 300 videos/streams: C1.mp4 Color: 124,42,56

Detect Type: Gender Count

Tags: **Color**

Color	Video/Stream	Start	End	Person #
124,42,56	C1.mp4	00:00:00	00:00:05	1

RGB input for color attributes recognition

Fig.2 To count passenger for persons in **yellow**

Trigger: run Interval(s): 300 Videos/Streams: B1.mp4 Color: 107,69,26

Detect Type: Color Count

Video/Stream	Start	End	Person #
B1.mp4	00°	50°	5
B1.mp4	50°	100°	1
B1.mp4	100°	150°	1
B1.mp4	150°	200°	2
B1.mp4	200°	2015°	0

Gender analysis based on multiple aspects

- Facial attribute
- Dress attribute
- DNN learning for female and male features

Fig.1 To count passengers for gender

Trigger

run Submit

Interval(s)

300 Submit

Videos/Streams


C1.mp4 Submit

Color


124,42,56 Submit

Detect Type


Gender Count ▼ Submit



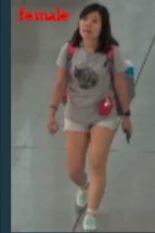
Gender Count					
Video/Stream	Start	End	Total	Male	Female
C1.mp4	00"	50"	75	43	32
C1.mp4	50"	100"	99	69	30
C1.mp4	100"	150"	93	63	30
C1.mp4	150"	160"	26	19	7



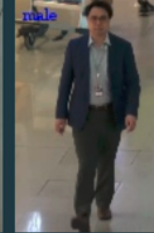
male




male



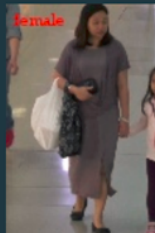
female




male



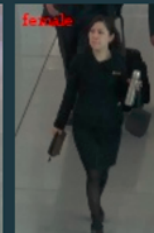
female



female



male



female

Items per page: 8 | 1 of 13 pages < 1 >

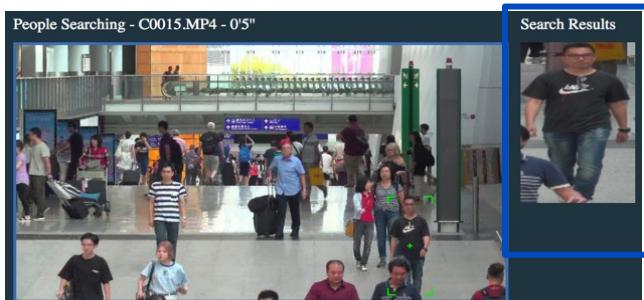
Case 4: Person search in multiple cameras

- Finished searching time in 2 seconds for all the 5 cameras
- Build trajectory for each person not rely on face only

Enrolled photo



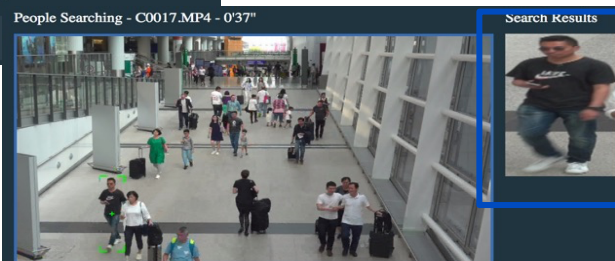
Fig. 1 Search result for camera 1



People Search (results retrieved in 0.11s)

Video Name	Start Frame Id	End Frame Id
C0015.MP4	25 (0'1")	345 (0'13")

Fig. 1 Search result for camera 2



People Search (results retrieved in 0.14s)

Video Name	Start Frame Id	End Frame Id
C0017.MP4	915 (0'36")	1040 (0'41")

Fig. 3 Search result for camera 5



People Search (results retrieved in 0.12s)

Video Name	Start Frame Id	End Frame Id
C0033.MP4	195 (0'7")	670 (0'26")

Case 5: Queue management

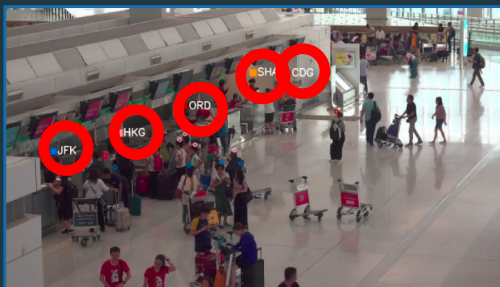
- Identify number of queues
- Identify number of persons in each queue
- Identify who is the staff serving each queue
- Estimate service time for each queue



Interval (minutes)

5

Submit



Average number of passengers in queue **JFK** is 4 in first 5 minutes

Queue Time (mm:ss)

Queue Name	Min	Max	Average	Avg. Passenger Count
CAN	3'34"	10'56"	7'1"	1
CDG	7'13"	11'0"	7'30"	1
JFK	9'20"	21'7"	11'35"	4
LAX	8'34"	15'3"	10'22"	3
LHR	7'13"	11'4"	8'48"	2
SHA	5'45"	12'35"	8'7"	2

Minimum waiting time of the passengers in queue **CAN** is 3'34"

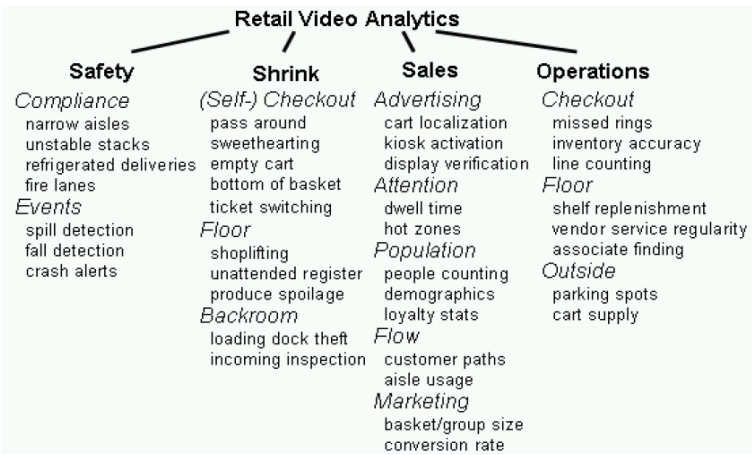
Maximum waiting time of the customers in queue **CAN** is 10' 56"

Queue Details

Time Span	No. of Queues	Queue JFK	Queue CAN	Queue LAX	Queue CDG	Queue SHA	Queue LHR
00" ~ 50"	5	4	2	4		2	3
50" ~ 100"	4	4		2	1	2	

Average number of passengers in queue **LHR** is 3 in first 5 minutes

RETAIL VIDEO ANALYTICS: AN OVERVIEW AND SURVEY (2013 by IBM Research)



Object, People and Action Tracking



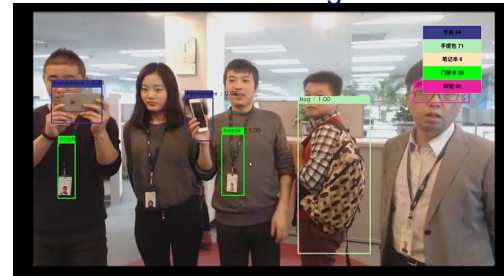
Items Searching and Analysis



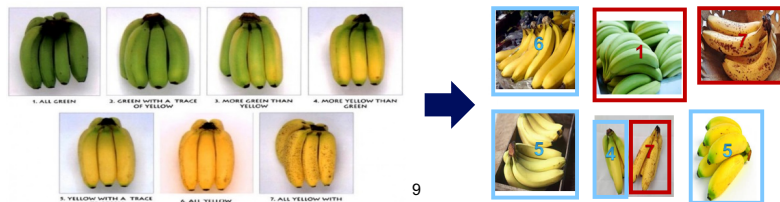
Event Detection for Sensitive Area



Customer Insight



Food quality monitoring

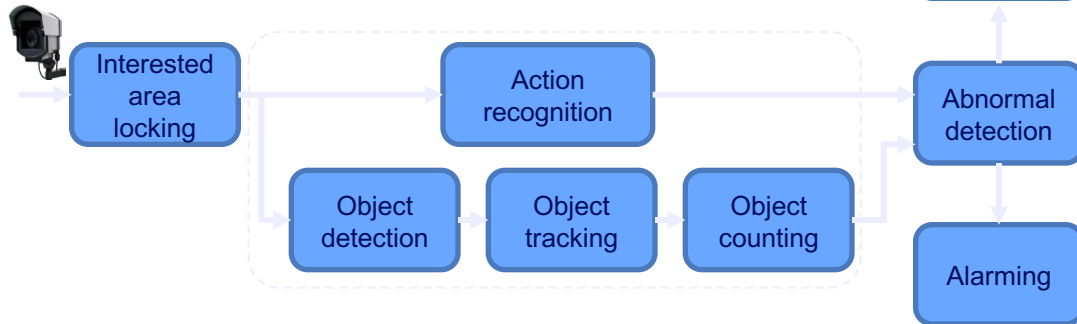
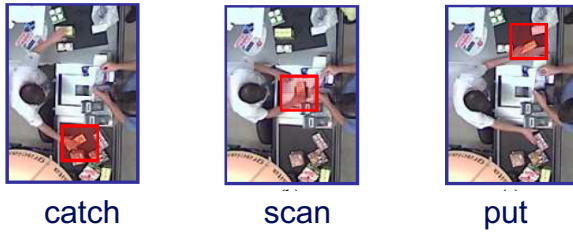


Retail – Lost prevention

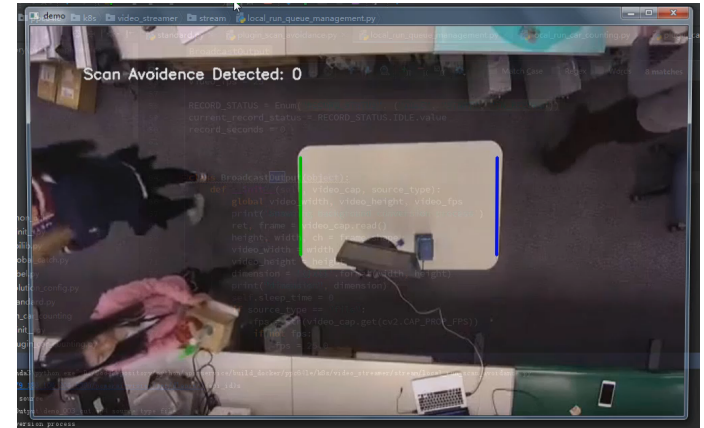
Sweethearting (wiki): in the retail loss prevention industry means theft by employees at the cash register, by giving away merchandise to a "sweetheart" customer (friend, family, fellow employee).

- It generated **\$14 billion loss annually** in retail.

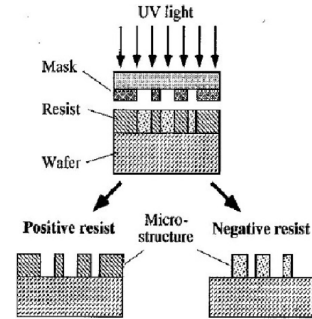
Combining technologies from AI Vision: Object detection, action detection, tracking, etc.



Video demo in simulation environment



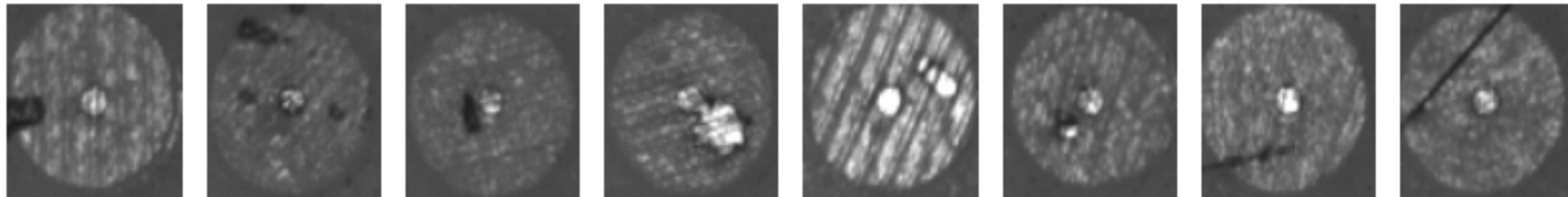
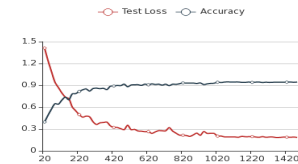
Inspect images of photoresist openings after having been exposed and developed



With **PowerAI Vision**, the manufacture could **quickly** build the auto defect inspection capability :

- Data import : 1 5 min.
- Data labeling : 5 min.
- AI Vision training : 1 0 min.

Accuracy: 94.5%



Computer Vision Services

Image Labeling and Preprocessing



Video Labeling Service



Custom Learning for Image Classification



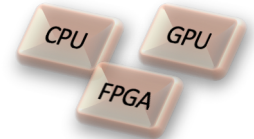
Custom Learning for Object Detection



Self-defined Training with visualized monitoring



Inference API deployment



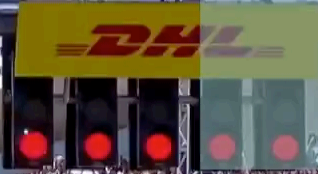
- Disponible en déploiement local et très bientôt dans le cloud
- Disponible en version d'essai, version de développement, location ou licence permanente

Demo Time

ROLEX

ROLEX

Advertiser Screen Time (sec)



Team Screen Time (sec)



Au-delà de vos contacts chez vos partenaires, la team IBM !!!



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