

Wearables: Imagine the Possibilities

Impact on the Mining Sector

Biswajit Das (bidas@deloitte.ca)

April 2015

Wear-a-ble

Wearable technology is clothing and accessories that incorporate computer and advanced electronic technologies. The designs often incorporate practical functions and features, but may also have a purely critical or aesthetic agenda.

The **wearable technology** industry is set to grow from an estimated **\$3.3 billion** to **\$8.1 billion** over the next **3 years**



MINING SAFETY STATISTICS

The Ontario Mining Sector

the past 10 years:

- 337 critical injuries
- 24 fatalities (including 6 in 2014)

At Least 17 Workers Killed in East Ukraine Coal Mine Blast

Reuters | Mar. 04 2015 13:22 | Last edited 17:42

SOUTH AFRICA

Nearly 500 miners rescued from South African gold mine

All 486 miners trapped after a fire broke out in a South African gold mine over the weekend have been rescued. Some of the miners were trapped at a depth of nearly 3.5 kilometers.

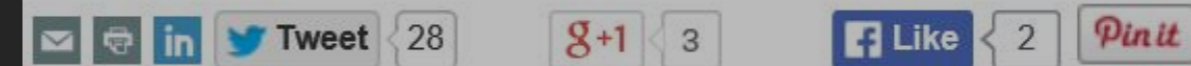
Anger and confusion after worst disaster in Canadian mining history darkens B.C. town

BRIAN HUTCHINSON | September 12, 2014 | Last Updated: Jan 24 7:48 PM ET
More from Brian Hutchinson | @hutchwriter



Disturbing trend in mining fatalities

1 July, 2014 Ben Hagemann 6 comments



Deaths in the mining industry have spiked alarmingly over the past financial year.

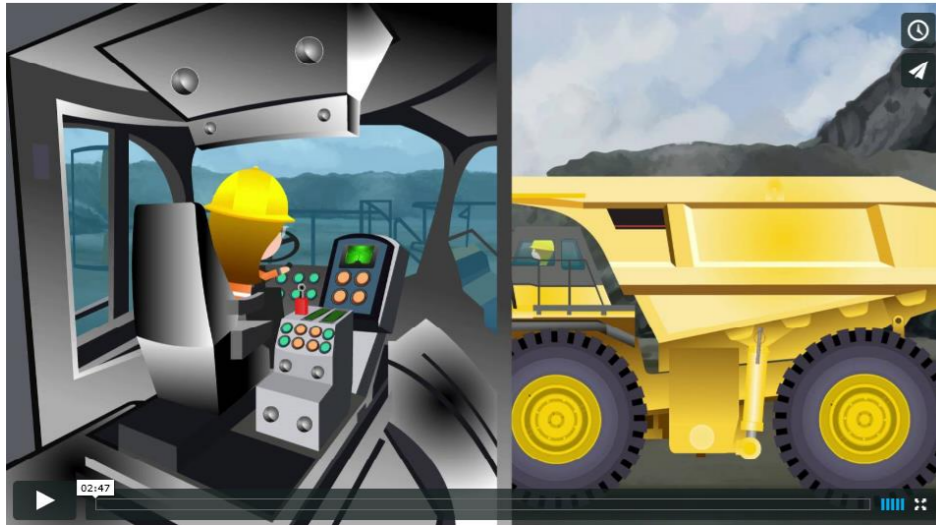
Injury figures published by Safe Work Australia have shown a downward trend in the number of deaths in the mining industry over ten years.

In financial year 2013-14 *Australian Mining* has counted 17 people who have fallen in the line of duty, the victims of tragic accidents.



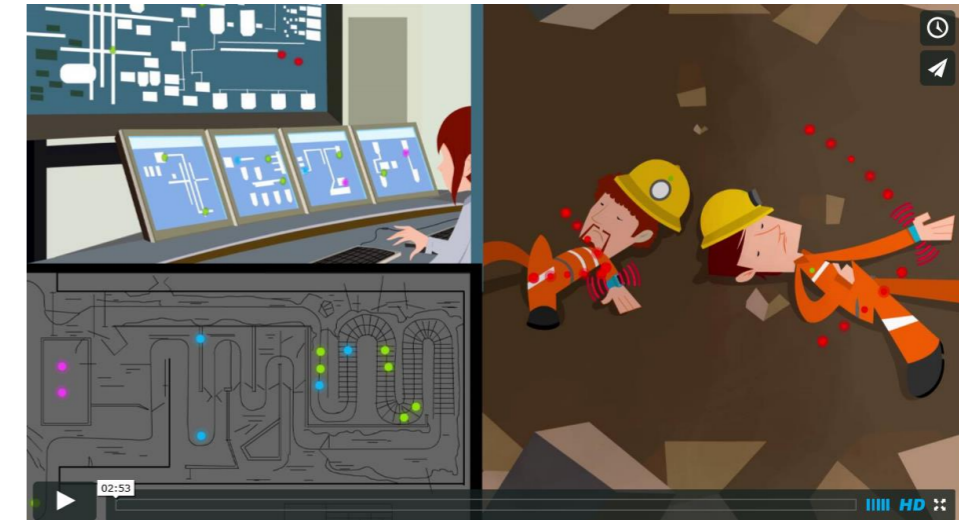


Use Cases



<https://vimeo.com/124782529>

Wearables for Truck Operations



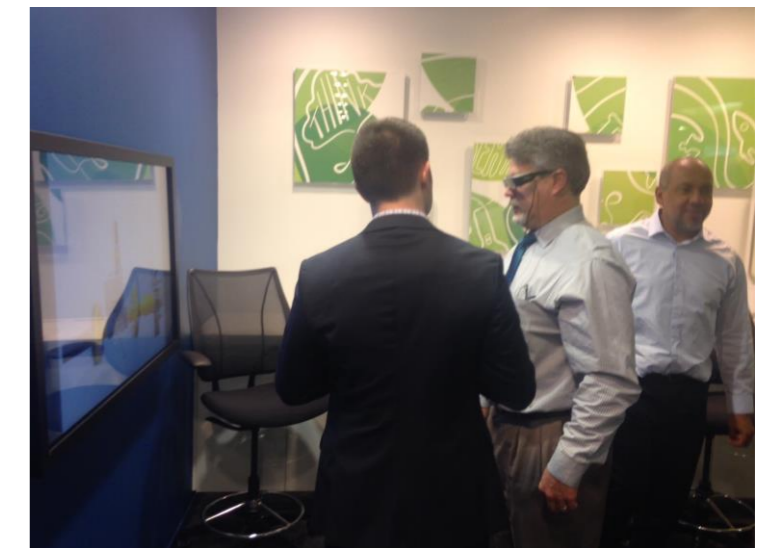
<https://vimeo.com/122846215>

Wearables for Health & Safety



<https://vimeo.com/124783106>

Intelligent Ventilation on Demand



Art of the Possible Session
Deloitte GreenHouse

“You'll learn more in a day talking to customers than a week of brainstorming, a month of watching competitors, or a year of market research” - Aaron Levie, CEO, Box.com

Name	Designation	Org
Cam Duquette	Director, Health & Safety	Centerra Gold
Vern Baker	Vice President of Operations,	First Nickel Inc.
Darren Parry	Director – Occupational Health & Safety	New Gold Inc
Doug Brown	Safety Health & Risk Manager	De Beers
Don Ritz	Former SVP Safety	Barrick Gold
Don Duval	CEO	NORCAT
Alex Gyska	General Manager	Ontario Mine Rescue
Dave Radu	CIO	Yamana Gold
Afzal Jessa*	Global Director, IT Innovation	Vale
Ian Cooper*	H&S Manager	Hudbay Minerals

- Fatigue Management is a key concern leading to accidents and a wearable product will be of great help to the miners
- An injury incident costs about 80-100K \$ while fatalities can result in millions of dollars
- Mining companies are eager to try out prototypes in the field and provide feedback
- Product should tap into an existing product or technology used in mines. Miners will be reluctant to wear an additional piece of equipment
- While Health and Safety is the ultimate reason for adoption, the business case for adoption should be around increased productivity or cost savings
- The product developed should be strong, durable and comply to regulatory standards (example Mine Safety and Health Administration (MSHA))



Deloitte Offerings

Wearables Consulting

Power by the Hour

#1 Wearable Strategy

- Develop a wearable strategy, roadmap and implementation plan for an enterprise

#2 Wearable Tech Integration

- Integrate and operationalize wearable technology for the enterprise

#3 Risk and Regulatory Advisory

- Provide guidance to enterprise on issues related to Wearable – E.g.: Privacy, Security Policy

Wearable Insights

Actionable Insights

#4 Analytical Models

- Develop analytical models for clients to generate actionable insights from wearable data.

#5 Subscription Based Insights

- Analyze Historical data from various sources and Real time Wearable data to generate actionable insights for enterprise

Wearable Ventures

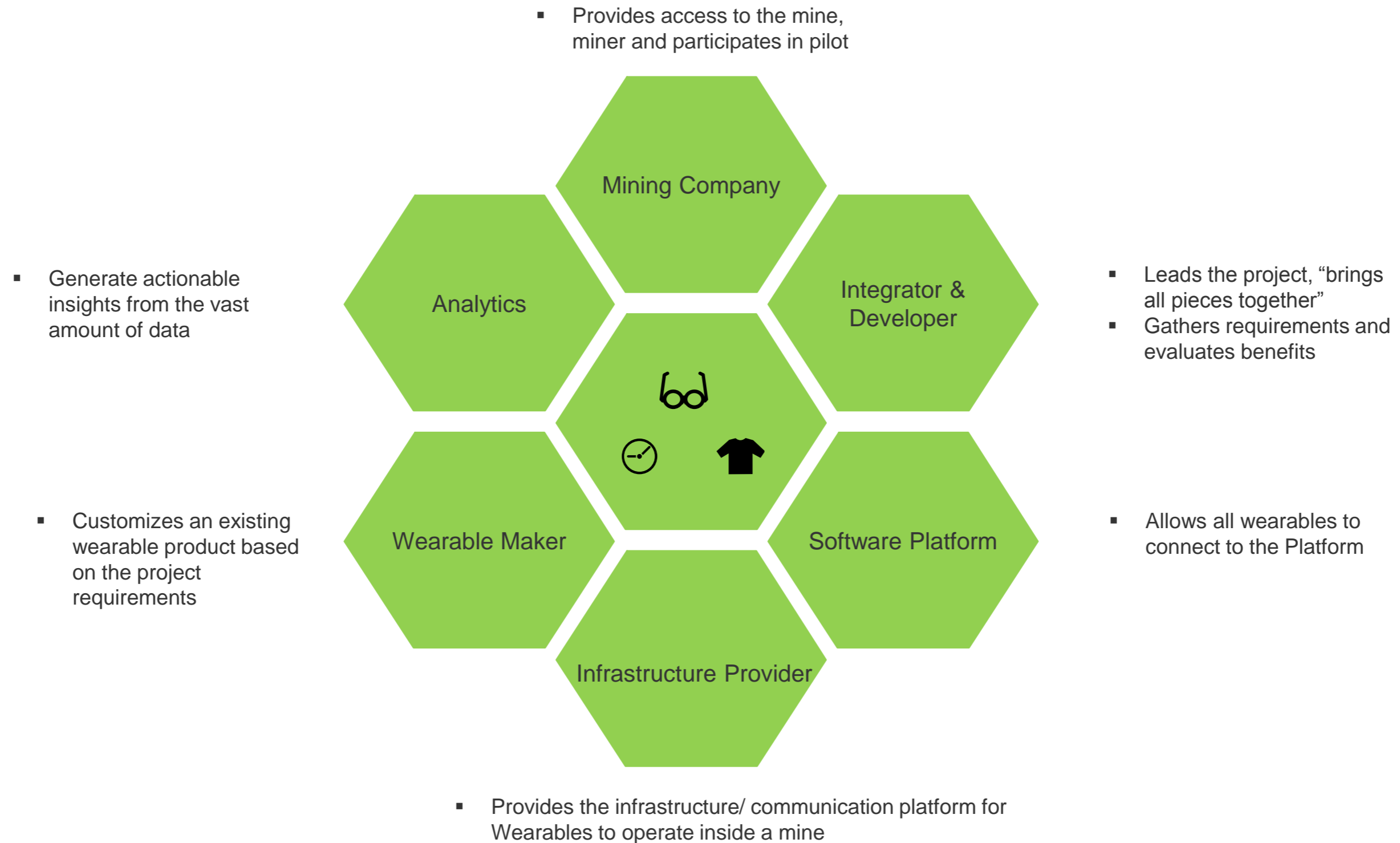
Co-design a product

#6 Product Customization

- Work with an existing Wearable manufacturer to customize a product for an enterprise



DESIGNING WEARABLES FOR THE MINING SECTOR



Thank you
The future is now

Deloitte.
Wearables

wearables@deloitte.ca

bidas@deloitte.ca