After the dust settles
Applications of Geospatial technology

The needs

- **Collection**

- **Collaboration**

- **Implementation**

Collection
The Need – An accurate framework

- Option 1: Trimble's RTX network providing accurate positioning in a global reference frame
  - All reference stations continuously monitored for movement
  - Effected stations removed from network
  - Displacement verified and then re-inserted into the network
  - Enables positioning to within a few centimetres almost immediately after an event
  - Options for increased density for faster convergence and improved vertical
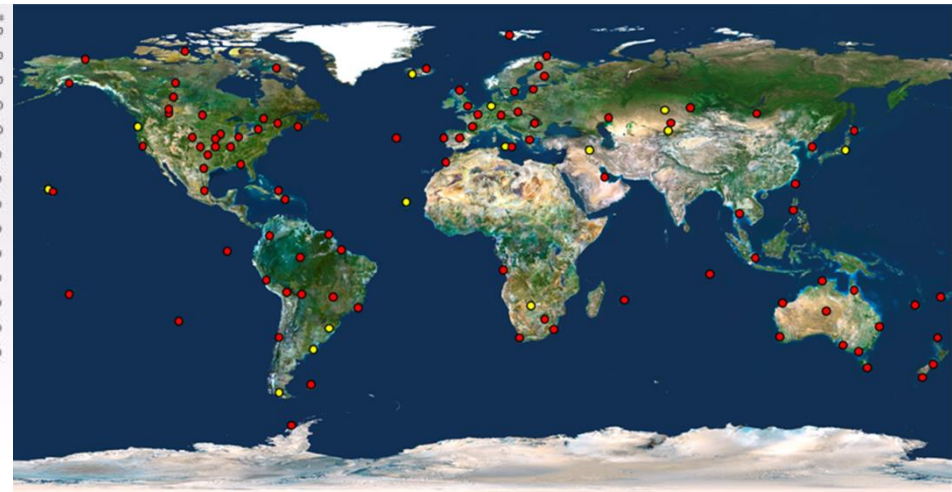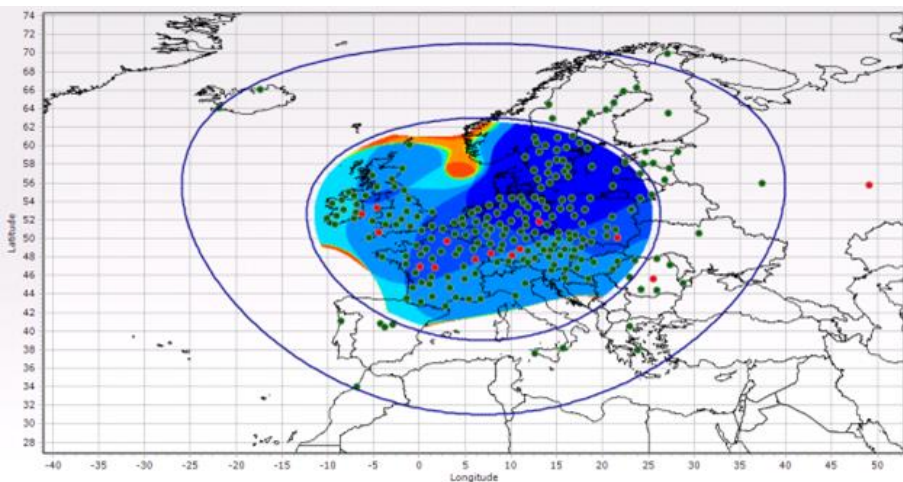
Collection
The need – An accurate framework

- Option 2: The establishment or re-survey of a VRS network

- Used as the framework post event for
  - Malaysian Tsunami - 2004
  - Hurricane Katrina - 2005
  - Sichuan Earthquake – 2008
  - Christchurch Earthquake - 2011

Collection
The need – Better understanding of crustal deformation

- Utilizing data from either permanently deployed geodetic networks or rapidly deployed new networks
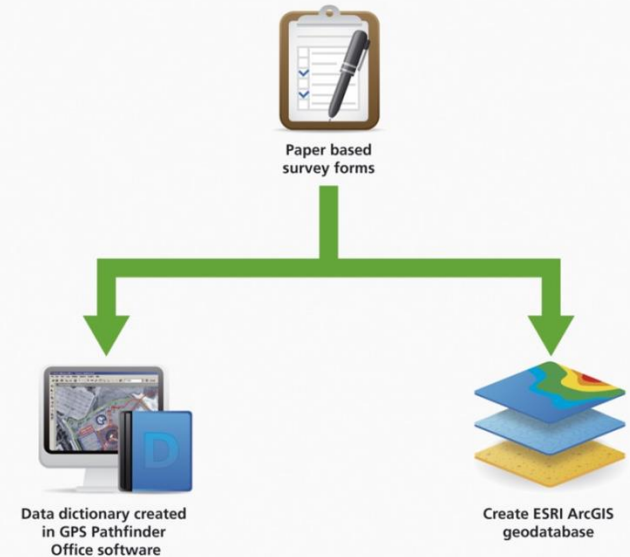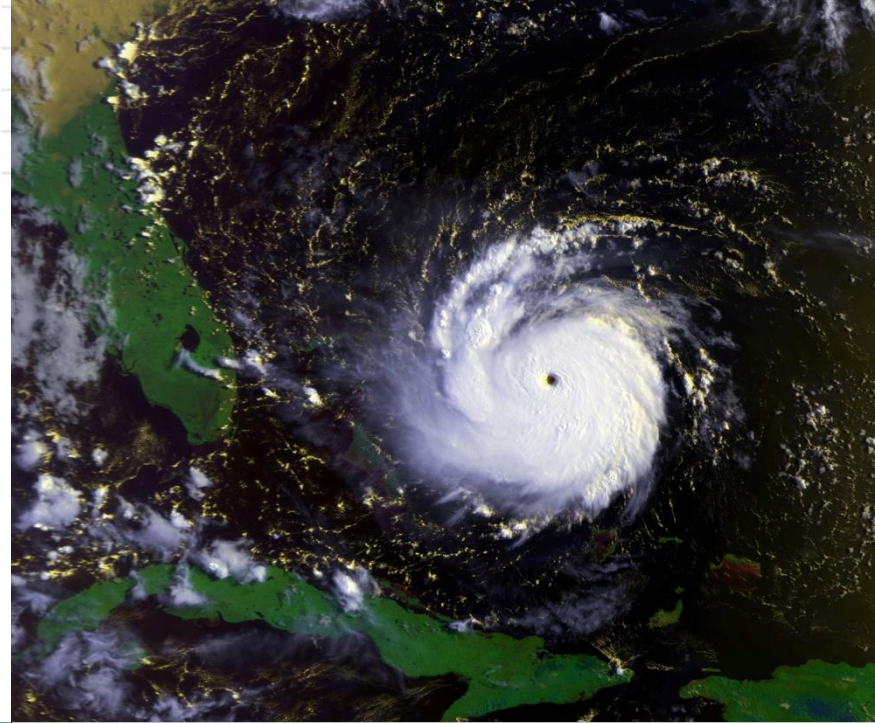
- Recent examples:
  - Nepal
  - Haiti
  - Chile

Trimble.

Collection
Damage assessment

- Oakland Fire - 1991

- Near real time mapping of fire fronts

Collection
Damage assessment

- Hurricane Andrew – 1992

- Category 5 – 282 km/hr winds

- GPS mapping of damage

Paper based
survey forms

Data dictionary created
in GPS Pathfinder
Office software

Create ESRI ArcGIS
geodatabase

Collection
Damage assessment

- Mobile mapping to accurately record the current status
- Post quake in Christchurch the city centre was mapped in 2 days using mobile mapping

Trimble.
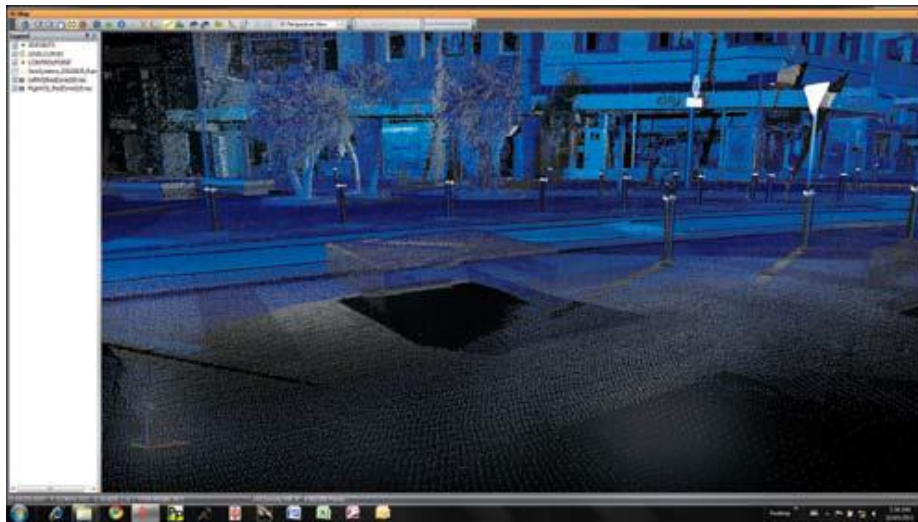
Illegal Builds and Acute Shocks Affect Safety
Cities Need to Assess Changes and Respond Quickly

One dead, 1,000 displaced in Cape Town shack fires

SOUTH AFRICA   Sunday 25 May 2014 - 2:52pm

Source: blog.michaelbagleyphoto.com

Transforming UAS Imaging Data to Monitor Change and Respond to Emergency

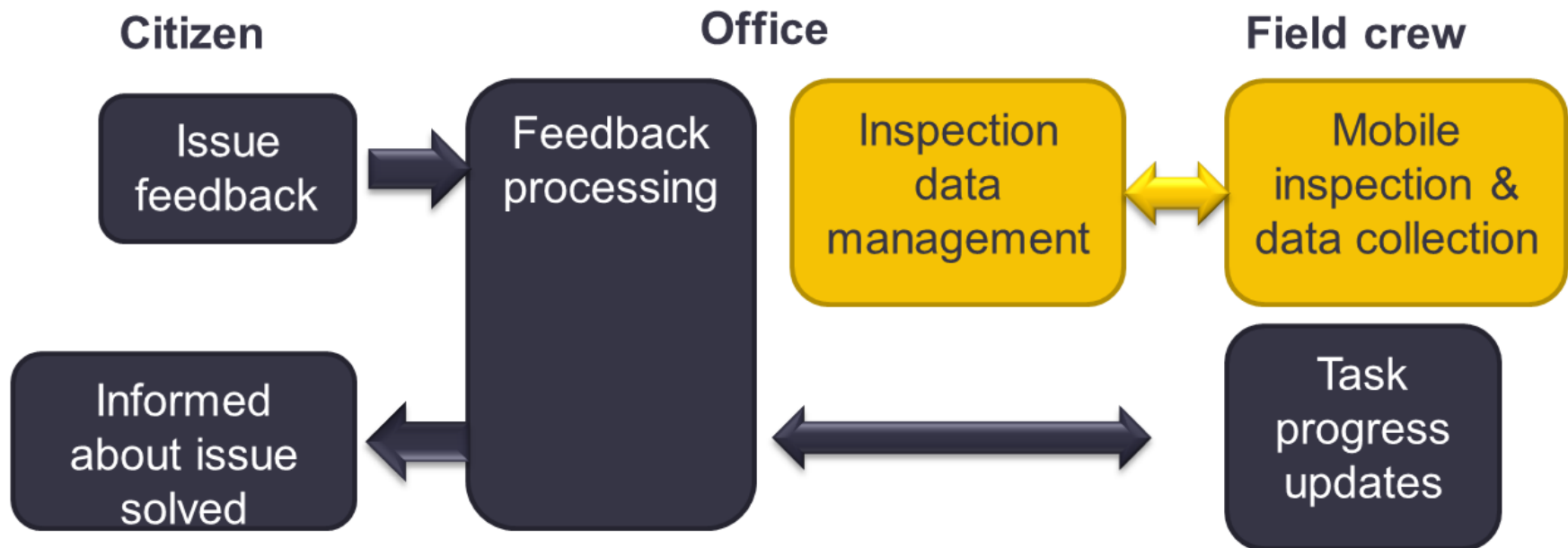**IMAGERY** | Trimble UX5   **ANALYSIS** | Trimble eCognition   **RESPONSE** | Trimble Terraflex
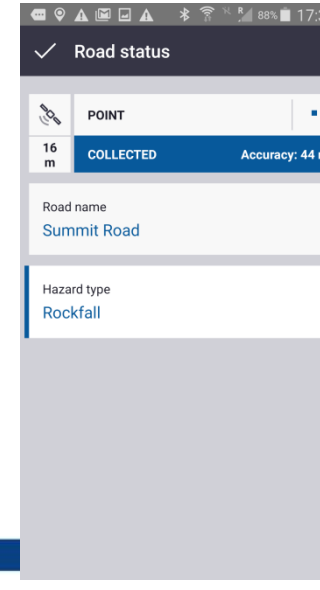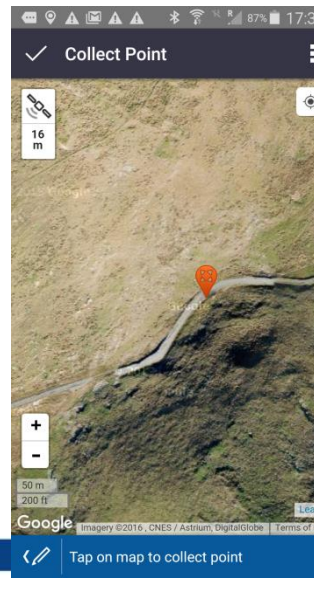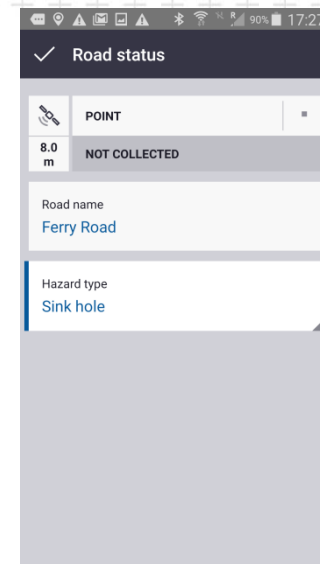
Collection
Damage assessment

- Cloud based solutions leveraging mobile phones/tablets
  - Data hosted in the cloud –
    - provides redundancy for local network failures

Collection Damage assessment

Efficient Feedback process gives benefits

More information:

Streamlined operations

Community satisfaction

BENEFITS OF EFFECTIVE FEEDBACK MANAGEMENT

Analysis & reporting

Enhanced peer-to-peer communication

Improved levels of service
Time and resource cost savings
Informed decision making

EFFICIENT FEEDBACK PROCESS

Communicate
Observe
Action
Receive
Process

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Collaboration
Enabling the discussion

- Post earthquake the environment looks very different

- 3D city model created to enable discussions and communicate future plans
  - Built using SketchUp models from the 3D Warehouse

3D Warehouse

Search 3D Warehouse   Search   Sign in   Upload Model

Municipal Chambers, Christchurch, New Zealand

Download

Downloads   190
Likes   5
.skp File Size   2.3 MB
Polygons   180
Materials   14
Uploaded   6/6/08
Last Modified 3/22/14

Share   <> Embed

ZNO
874 models

"Our City O-Tautahi". Municipal Chambers, Christchurch, New Zealand. This distinctive "Queen Anne" style building at the corner of Oxford Terrace and Worcester Street was erected in 1887 as the former Christchurch City Council Chambers and functioned as the centre of local government until 1924. It remains in City Council ownership. Now it is the building for "Our City O-Tautahi". Higher Detail, Height accurate, interactive models and modeling services available from :

For more information, visit:
http://www.zno.co.nz/

Tags

30113, 804405, Anne, Architect, Architecture, B01, Building, Chambers, Christchurch, city, council, Municipal, New Zealand, Oxford, Pivnice, Queen, Street, Tautahi, Terrace, Worcester, ZNO

⨁ Trimble.

Collaboration
Tools for improving the rebuild efficiency

- Lightweight
- Cloud based
- Easy to deploy
- Enables collaboration across disciplines and companies
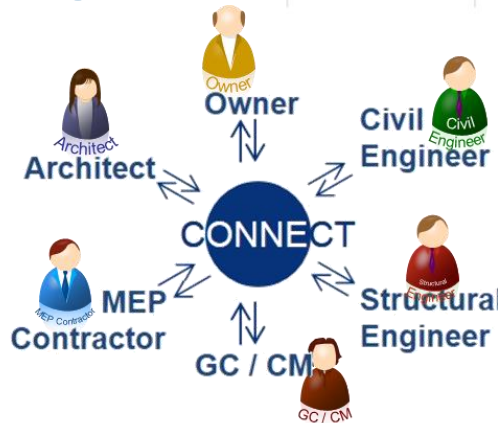
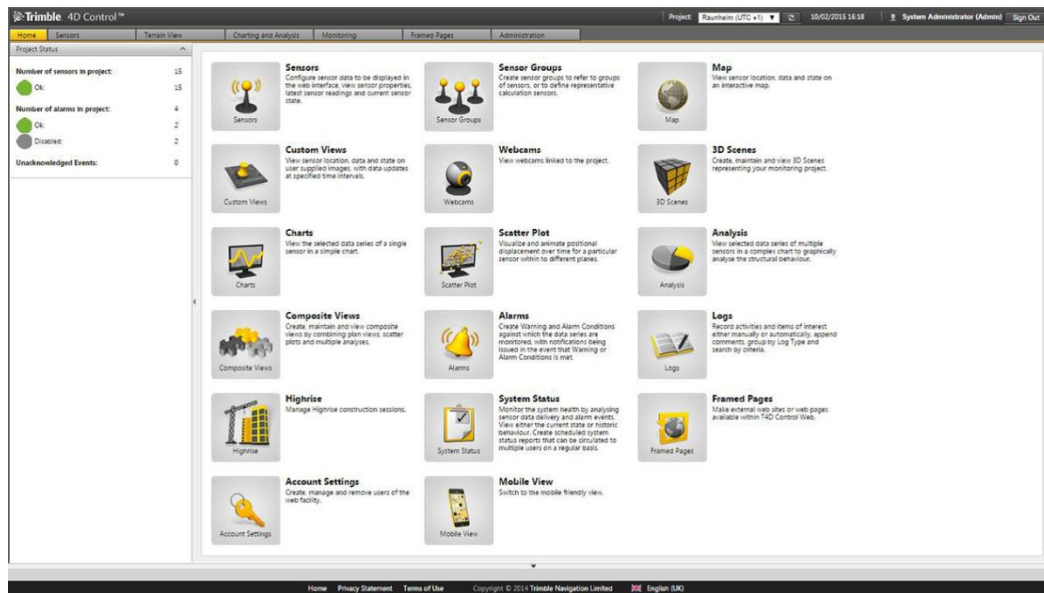**Trimble Connect**

®Trimble.

Implementation Re-levelling

- Monitoring for precise building re-levelling
  - Trimble 4D control
- Christchurch Arts Centre

☙ Trimble.
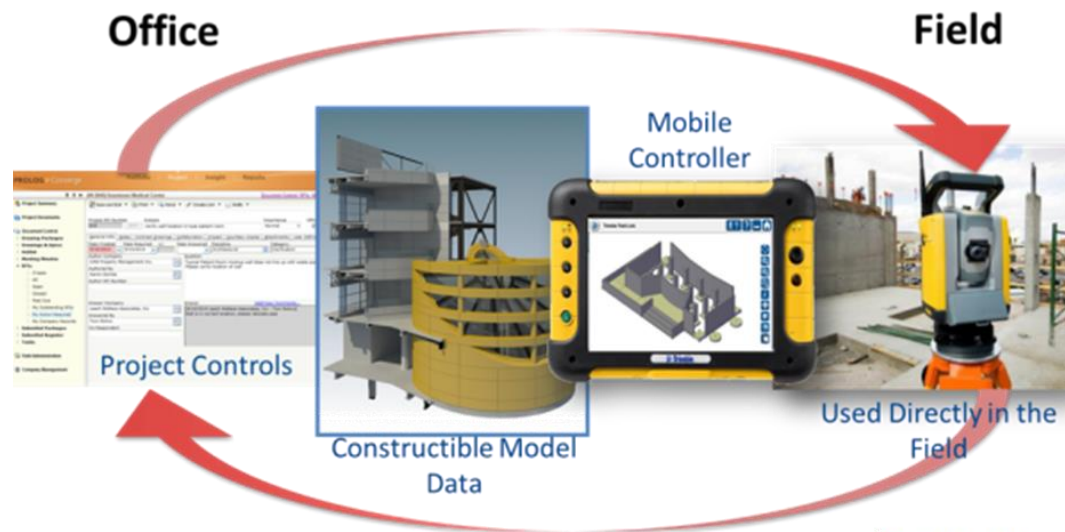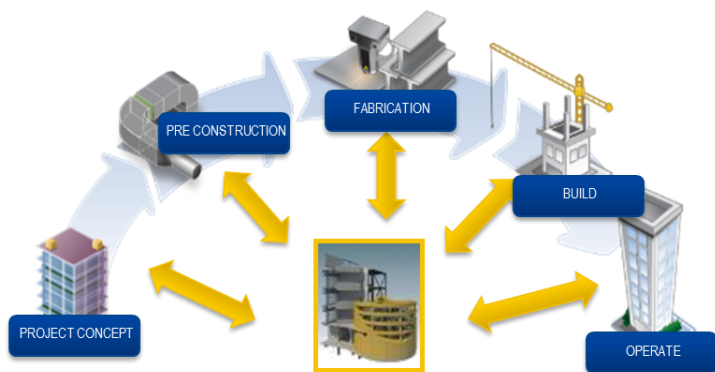
Implementation
Monitoring for the future

- Continuously monitored building

- Enables data driven decisions on re-occupation post event

- "Big data" can potentially aid emergency response

Implementation
Use of BIM to accelerate rebuild

- Efficient use of the 3D model

- Faster layout

- Less errors

- Less rework

- Example Justice Precinct

PRE CONSTRUCTION

FABRICATION

BUILD

PROJECT CONCEPT

OPERATE

Office

Field

Mobile Controller

Project Controls

Constructible Model Data

Used Directly in the Field

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Questions?

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