Transforming Fire and Rescue Response Through Innovation

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Commissioner
Singapore Civil Defence Force

AFAC18 powered by INTERSCHUTZ - 5 to 8 September 2018
Scope

- Singapore’s Profile
- SCDF Structure and Operational Statistics
- Strategic Challenges and Driving Forces
- Transformation Vision and Framework
- Transforming Fire and Rescue Response
  - Leveraging Technology and Innovation
  - Robust Fire Safety Regime
  - Enabled and Empowered Community
Singapore’s Profile

Densely Populated
- 719.9 km\(^2\)
- 5.6 million population

Ageing Population
- 1 : 8  Today
- 1 : 4  2030

Number of Singaporeans aged 65 and above

Source: Department of Statistics. Projections assume TFR of 1.2 and current immigration rates.
Singapore Civil Defence Force

- **2,500** Uniformed Officer
- **280** Civilian Staff
- **3,100** NS Full-time
- **16,700** Active ORNSmen

HQ SCDF

- 4 SCDF Land Divisions
- 1 Marine Command
- 2 Training Institutions

- 19 Fire Stations
- 2 Fire Stations
- 28 Fire Posts
- 1 Fire Post
### Operations Statistics

#### Fire

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<td>142,549</td>
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<td>155,781</td>
<td>165,853</td>
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#### Rescue

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#### HazMat

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SCDF’s Strategic Challenges

**Volatility**
Myriad of response scenarios

**Uncertainty**
Evolving Operating Environment (Threat of terrorism)

**Complex**
Pace of technological Advancements

**Ambiguous**
High Potential for mis-reading conditions

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**ISLAMIC STATE-LINKED TERROR ATTACKS**

- **LUN 2016**
  - Grenade attack in Putrajaya, Selangor

- **JAN 2016**
  - Shooting and stabbing attacks in Jakarta

- **OCT 2016**
  - Stabbing attack in Tangerang, Banten

- **FEB 2017**
  - Bomb attack and shooting in Bandung, West Java

- **APR 2017**
  - Suicide bombing in Subang, Central Java

**The Straits Times**

Suspected Batam launch site of foiled rocket attack was 18km away from Marina Bay

**Counter-Terrorism Exercise**

Day 1.1: Preparing
- Planning and strategizing for the exercise.

Day 2.1: The Expedition
- Conducting the exercise in various locations across Southeast Asia.

Day 3.1: The Consequences
- Assessing the impact and learning from the exercise.
1. Increasing Workload

2. Manpower Constraints

3. Higher Public Expectations

4. Ageing Population
SCDF Transformation Vision 2025

2025 A Nation Of Lifesavers

LEGEND
- Enhancing Competencies
- Enhancing Capabilities
Transformation Framework

Building
A NATION OF LIFESAVERS

- Transforming Emergency Response
- Institutionalise Safety & Public Protection
- Enable & Empower The Community

- Embrace Operations Technology & Innovation
- Inculcate High Performance

Vision
Strategic Outcomes
Enablers
Leveraging Technology and Innovation

Robust Fire Safety Regime

Enabled and Empowered Community

Transforming Fire and Rescue Response
Leveraging Technology and Innovation

1 Data Analytics

• Dynamic Resource Optimisation (DRO)
• SCDF Business Intelligence Tool (S-Bit)

2 IT Systems / Infrastructure

• Integrated Management, Communications, Command & Control (IM3C) System
• Advanced Medical Protocol System (AMPS)
Leveraging Technology and Innovation

3 New Concept of Operations

- Tiered EMS Response
- Enhanced Triaging
- Enhanced Marine Response
- Enhanced HazMat Response

<table>
<thead>
<tr>
<th>CATEGORY OF CASES</th>
<th>EXAMPLES</th>
<th>RESPONSE</th>
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</thead>
<tbody>
<tr>
<td>LIFE-THREATENING EMERGENCIES</td>
<td>Cardiac arrest, severe burns, drowning, severe trauma and stroke</td>
<td>Highest priority response</td>
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<tr>
<td>EMERGENCIES</td>
<td>Severe bleeding, emergency surgery, head injury, bone fracture, children, elderly with chronic medical conditions and sick children</td>
<td>High priority response</td>
</tr>
<tr>
<td>MINOR EMERGENCIES</td>
<td>Cut with bleeding, accident with blunt trauma, contusion, mild injury and acute pain</td>
<td>Lower priority response</td>
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<tr>
<td>ACCIDENTS</td>
<td>Cold, heat, cough, diaphoresis and skin rashes</td>
<td>Emergency medical assistance not required Seek treatment at clinic or call for non-emergency ambulances</td>
</tr>
</tbody>
</table>
Leveraging Technology and Innovation

4 Hardware / Equipment

• FROST
• Fire and Medical Vehicle (FMV)
• HazMat Control Vehicle (HCV)
• SkyCam
4 Hardware / Equipment

- LF6G & Red Rhino Robot (3R)
- DART Rescue Vehicle (DRV)
- Exoskeleton
- Life Detection Robot

Source: The Straits Times, 18 April 2018
Leveraging Technology and Innovation

5 Training Facilities and Simulations

- New Field Training Area (FTA)

外部训练
模拟器
混合用途（交通枢纽、商业及住宅）
企业
EXCEL
The Furnace
Compartment Fire Behaviour Training
混合用途
The Enterprise
Tunnel
Mock Fire Station
Mass Display Area
Leveraging Technology and Innovation

5 Training Facilities and Simulations

• Fire Research Centre
• EXCEL @ Civil Defence Academy

Tunnel
Fire Research
Compartment Fire Behaviour Training (CFBT)

EXCEL – Emergency Responders
Fitness Conditioning &
Enhancement Lab
Leveraging Technology and Innovation

6 Streamline Processes with IoT

- FISSION (Fire Safety & Shelter Information Online)
- Fully-automated checks on the submitted building plans
- Traffic Priority System
- Community First Response
Robust Fire Safety Regime

- Evidence based approach
- Review regularly
- Collaborate with building industry, stakeholders and regulatory bodies

2018 Fire Code

Digitising Fire Code

- Easily accessible
- Interactive
- Easy to cross reference

Incorporating New Tech and Regulations

1. Video Image Fire Detection System (VIFDS)
2. Home Fire Alarm Device (HFAD)
3. Adoption of New and Green Tech
Robust Fire Safety Regime

- Timer-based Water Release System
- Fire Modelling Simulation Studies (Analytics)
- Home Fire Alarm Device (HFAD)
- Adoption of New and Green Tech Building Materials
- Enhanced Hazardous Transport Vehicle Tracking System
- Community-based enforcement approach to safeguard fire safety standards
- Video Image Fire Detection System (VIFDS)
- CERT Standards Extended to Public & Industrial Buildings
- Integration with Smart Nation Framework
Enabling and Empowering the Community To Be Community First Responders

**EMPOWER THE ACTIVE RESPONDER**
- Trained in Life Saving Skills
- Commits volunteer hours and serve Community as a dedicated responder

**ENABLE THE BYSTANDER RESPONDER**
- Trained in Life Saving Skills
- Involves in the chain of saving lives but does not commit volunteer hours
- Examples: Calls 995 & retrieve AED

**ENGAGE THE CONCERNED CITIZEN**
- Basic EP Knowledge awareness
- Knows how to help and get out of harm’s way in times of emergency
- Examples: Self evacuation & use mySCDF app to take snap shots
Enabling and Empowering the Community To Be
Community First Responders

Junior CD Lionhearters  National CD Cadet Corps  CD Lionhearters  CD Auxiliary Unit

Preschool Resource Kit  Primary School Curriculum

Emergency Preparedness (EP) Days

Public Education Programs

Future 7-Storey EP Centre

Future-Ready

SCDF
The Life Saving Force

UNCLASSIFIED
Enabling and Empowering the Community To Be Community First Responders

Save-A-Life Initiative

» Hardware
  • Enhance Community First Response
  • Install AEDs in residential estates
  • AEDs on wheels
    – Placed in taxis
    – 1st in Southeast Asia

» Heart-ware
  • Basic Training - Triangle of Life Training
  • Dispatcher-Assisted First Responder (DARE) Program

» Software
  • Geo-location Technology
  • Alerts volunteers to nearby cardiac arrest cases & nearest available AED
MyResponder App

92,327 Downloads
30,893 Active Responders
15,615 Activations

*As at 31 July 2018
Expanding myResponder App usage
- Enable Community First Responders (CFRs) to attend to rubbish chute and bin fires

Encouraging Stats
- MOPs willing to assist in more than 30% of the cases
- Successfully extinguished 85% of the cases they accepted
- Accounted for 25% of all rubbish chute and bin fires.

Help fight fires with SCDF app alert

Kimberley Chia
Individuals now play a part in fighting small fires on their premises, such as small rubbish fires. A new function in the Singapore Civil Defence Force’s (SCDF) myResponder mobile app called Elastic, registered users to causes of minor fires even before SCDF arrives.

Such fires are usually small with no risk of spreading and can be swiftly put out, noted SCDF.

As such, the link to responders is minimal and the meaning will be replicated for firefighters to attend to larger fires.

The new feature allows users to upload a photo using a smartphone, or upload a photo to a rubbish chute, or bin fire. This allows SCDF to react faster.

They can also use the SCDF through the app or submit photos and videos.

The new feature was officially launched yesterday by SCDF Commissioner, Low and Home Affairs Minister, at the SCDF’s annual workshop seminar.

"Fire prevention is by residents preventing the fire from spreading and also saves valuable SCDF resources, which can be deployed to more urgent incidents," he said in his address.

According to the SCDF, minor rubbish fires account for around half of all residential fires, with the force responding to more than 2,000 such incidents per year.

Since the new alert function is set to launch in January, close to 3,000 users have signed up for the alert.

The function is an extension to SCDF’s myResponder app, which was introduced at last year’s summit in 2016 to allow registered users to enable immediate medical aid for victims of minor fires.

The app, which has been downloaded more than 40,000 times since its launch, has seen its share of successes.

SCDF said that since its introduction in 2016, the SCDF myResponder app has been downloaded more than 40,000 times since its launch, with more than 30% of MOPs willing to assist and successfully extinguished 85% of the cases they accepted.

Accounted for 25% of all rubbish chute and bin fires.

Source: The Straits Times, 18 April 2018
Future Ready To Safeguard Our Nation