Risk Assessment for International Dissemination of 2019-nCoV across ASEAN

As of January 27, 2020
2019-nCoV Highlights and Situation Overview

Ground Zero - Wuhan City, Hubei Province, China

- Capital of Hubei province, People’s Republic of China
- It is the largest city in Hubei and the most populous city in Central China, with a population of 19 million
- Seventh most populous Chinese city, and one of the nine National Central Cities of China.
- Reported a cluster of cases of a respiratory syndrome of unknown cause associated with the Wuhan China Seafood Market last 30 December 2019. Contact with meat from various animals sold in the market has been established as the most likely cause of the first reported human infections.

Cases and Deaths as of 27 January 2020

- As of January 27, worldwide, there were 2,923 confirmed cases, including 82 deaths.
- The 2019-nCoV outbreak, originally centered in Wuhan city, is continuing to show evidence of broader geographic spread across mainland China.
  - As of January 27, in China, there were 2,858 confirmed cases. While most cases are being reported from Hubei, all provinces and autonomous regions in mainland China, except Tibet, have reported cases. There have been 82 deaths, all of which have occurred within Hubei province except one in each of Beijing, Shanghai, Henan, Hebei, and Heilongjiang provinces.
  - 65 imported cases of 2019-nCoV have been reported in Thailand (8), Japan (4), South Korea (4), Taiwan (5), the United States (5), France (3), Singapore (5), Macao (6), Vietnam (2), Hong Kong (8), Nepal (1), Canada (2), Australia (5), Malaysia (4), Sri Lanka (1), Cambodia (1) and Germany (1).
  - UN health agency said current estimates put the incubation period for the virus at between two and 10 days. The World Health Organization said on Monday it remained unclear if the deadly coronavirus spreading in China and beyond is contagious during its incubation period, before symptoms appear.

Control Strategies

- China
  - China started requiring nationwide use of monitoring stations for screening, identification and immediate isolation of coronavirus-infected travelers. These included airports, railway stations, bus stations and ports.
A specialty hospital named Huoshenshan Hospital has been under construction as a countermeasure against the outbreak and to better quarantine the patients.

China's National Health Commission is sending 1,230 medical staff in six groups to Wuhan City, central China's Hubei Province, to combat the novel coronavirus outbreak in the region. 3 of the 6 groups have begun their work in the virus-hit area. Local media earlier reported that 450 military medical personnel have also landed in the city to offer support. Wuhan announces building a second emergency specialty hospital, named Leishenshan Hospital, with a planned capacity of 1,300 beds, to be in use in half a month.

Wuhan closed transport networks since January 23, 2020. Chinese health officials suspended outbound travel from Wuhan via air and rail, as well as local transportation services within the city, in an effort to curb further spread of the 2019-nCoV virus.

Public activities related to the Lunar New Year in Wuhan have been cancelled.

Beijing announced it will halt all inter-provincial bus and train services starting January 26. Schools in Beijing have been closed until further notice to prevent further spread of the coronavirus. Separately, the Beijing Government stated it will not lock-down the city.

- **Hong Kong** declares state of emergency. Hong Kong announced it would close schools until 17 February.
- **Philippines** will suspend issuance of visa upon arrival (VUA) to Chinese nationals amid coronavirus alarm starting January 28, 2020. This excludes those who have secured their entry visa from their foreign posts.
- **Singapore** announced further measures to curb the spread of the Wuhan coronavirus. All non-essential travel from Singapore to mainland China will be deferred and screenings at land and sea checkpoints will continue. Starting January 28, temperature screening will be expanded to cover travelers on all flights into Singapore. Likewise, inbound flights from mainland China will be given extra attention, with healthcare teams stationed nearby as passengers alight from these flights.
- **Japan**'s Prime Minister revealed a plan to designate pneumonia caused by a new strain of coronavirus as a special infectious disease, with the aim of making it possible to provide urgent treatment to patients using public funds. The designation will allow the government to adopt similar measures as those taken for SARS and MERS-CoV without amending the law. These measures include compulsory hospitalization of infected people at one of approximately 400 designated medical institutions in Japan, as well as disinfection of sites where the virus has been detected. Physicians will be obliged to report any patients who test positive for the virus.
• **Canadian airport screening** has been initiated for all international travellers arriving in Toronto, Montreal and Vancouver international airports. Additional screening questions to determine if they have visited the city of Wuhan in China, where the outbreak was first reported, will be asked.

• **United States of America**
  - US CDC recommends that travelers avoid all nonessential travel to China.
  - The **United States Department of State** raised the travel advisory to level 3, i.e. reconsider travel to China due to novel coronavirus.

• **Australia** authorities are taking all necessary precautions to limit the transmission of the virus. Australia have processes in place to identify and treat cases such as the novel coronavirus, including isolation facilities in each state and territory.
Wuhan Health and Medical Commission issued an alert highlighting cases of a respiratory syndrome of unknown cause associated with the Wuhan China Seafood Market.

Urgent notice on the treatment of Pneumonia of unknown case
30 December 2019

Wuhan China Seafood Market has been temporarily closed for environmental sanitation and disinfection.

Wuhan China Seafood Market was closed
1 January 2020


Isolation and identification of 2019-nCoV
7 January 2020

41 confirmed cases of pneumonia preliminary diagnosed with 2019-nCoV
• Symptom onset ranges from December 8, 2019 to January 2, 2020
• No case other than Wuhan
• Gene sequence was found 87.6% similar to bat coronavirus

WHO Statement published
12 January 2020

27 people with pneumonia of unknown cause were reported to WHO.

27 people with pneumonia of unknown cause were reported to WHO
31 December 2019

A total of 44 patients have been reported to WHO.

A total of 44 patients have been reported to WHO by the national authorities in China. Of the 44 cases reported, 11 are severely ill, while remaining 33 patients are in stable condition.

1st death related to 2019-nCoV
10 January 2020

61/M: First death related to nCoV 2019 reported in China
• a frequent customer at the Wuhan food market
• with underlying medical conditions
30/M: Imported case reported and confirmed in Japan:
- travelled to Wuhan, returned on 6 January; admitted in hospital on 10 January; - no visit to the seafood market
- presented with persistent fever and eventually discharged from hospital

Wuhan: 17 additional laboratory-confirmed cases, with three cases in critical condition. The number of laboratory-confirmed cases rose to 62 with age ranging from 30 to 79, of which 19 were discharged and eight remain critical

61/F: Imported case reported in Thailand
- taken to a Thai hospital immediately after arriving at Suvarnabhumi Airport in Bangkok on 8 January.
- Presently free of the infection, recovering and ready to return to Wuhan

1st confirmed case in Thailand
13 January 2020

1st confirmed case in Japan
16 January 2020

Additional confirmed cases in Wuhan
18 January 2020

69/M: Second death related to nCoV 2019 in China
- became ill on December 31, 2019, became worse on January 4, 2020, and was transferred to Wuhan Jinyintan Hospital for treatment.
- Admitted with severe myocarditis, abnormal renal function, and multiple organ functions. Died at 00:45 on January 15

Thailand: 74/F: Imported case (2nd case) reported and confirmed
- travelled to Wuhan, arrived at Thailand on January 13

Wuhan, China: Newly identified 45 cases of pneumonia with new coronavirus infection based on the clinical manifestations, epidemiological history of the patients, and the results detected by the diagnostic kit.
Wuhan: A total of 201 cases, 3 deaths reported

Shenzhen, Guangdong: 66/M, Chinese, visited relatives in Wuhan on December 29, 2019 and developed fever and fatigue on January; returned to Shenzhen on January 4 and was admitted to the hospital and placed in isolation on January 11, where he is currently reported to be in stable condition.

Beijing Daxing District Health Committee reported 2 laboratory-confirmed cases of 2019-nCoV: with febrile illnesses, no respiratory symptoms and recent travel to Wuhan. They are currently in isolation, in stable condition.

19 JANUARY 2020

- Wuhan: 136 additional confirmed cases; 3rd confirmed death
- 3 confirmed cases outside Wuhan

19 JANUARY 2020

Total confirmed cases in China: 321 cases, 6 deaths

Newly confirmed cases were reported in several locations in China: Zhejiang (5), Tianjin (2), Henan (1), Chongqing (5), Hunan (1), Yunnan (1), Shandong (1), Jiangxi (1), and Sichuan (1). Guangdong and Shanghai reported 3 and 4 additional confirmed case respectively.

Taiwan: 55/F, Taiwanese who works in Wuhan reported to quarantine officials that she was suffering from a fever upon arriving at Taoyuan International Airport; first non-Chinese national diagnosed.

United States: 1st US case of Wuhan coronavirus reported. Patient was admitted to hospital on Sunday, after arriving in Seattle from Wuhan, China, on January 15. The man did not visit any of the markets connected to the virus while in Wuhan, nor did he know anyone ill, and

19 JANUARY 2020

- 1st confirmed case in Taiwan
- 1st confirmed case in United States
- New cases outside Wuhan but within China

20 JANUARY 2020

- 1st confirmed case in South Korea
- 1st confirmed case in Shanghai, China
- Beijing: additional 3 confirmed cases
- Guangdong: 13 additional case

20 JANUARY 2020

- First confirmed case reported in South Korea at point of entry
- Shanghai confirms its first case, bringing the total number of laboratory-confirmed cases in China to 218
- Beijing and Guangdong reported an additional three and thirteen laboratory-confirmed cases respectively.
- WHO raises possibility of ‘sustained’ human-to-human transmission
WHO’s emergency committee was unable to reach a consensus on whether the outbreak should be classified as PHEIC due to lack of information.

China confirmed cases: 571 cases, 17 deaths

Additional cases in China: Beijing (5), Guangdong (9), Shanghai (5), Tianjin (2), Zhejiang (5), Jiangxi (1), Hunan (3)

New cases in China: Hainan (4), Guangxi (2), Liaoning (2), Guizhou (1), Fujian (1), Anhui (1), Shanxi (1), and Ningxia (1).

2 additional cases in Thailand

2 first cases in Hong Kong

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France reported its first two confirmed cases. The French Health Minister stated in a press conference that it is likely other cases would arise in the country

Nepal confirms its first case, a student who returned from Wuhan

The first incidence of possible human to human transmission outside of China was documented by the WHO in Vietnam. One confirmed case has no travel history in Wuhan.

Confirmed cases: 948 cases (882 from China), 26 deaths reported

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Wuhan suspended all public transport

New and additional cases in China

Additional cases in Thailand

2 cases in Hong Kong was reported

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22 JANUARY 2020

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1st two confirmed case in France, the first in Europe

1st confirmed case in Nepal

1st confirmed incidence of human-to-human transmission

Additional cases in China, Japan, South Korea, US, Singapore, Thailand, and Hong Kong

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24 JANUARY 2020

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Wuhan suspended all public transportation from 10 a.m. onwards, including all bus, metro and ferry lines. Additionally, all outbound trains and flights were halted

New case in China: Jiangsu (1), Heilongjiang (2), Xinjiang (2), Shaanxi (3), Gansu (2)

Additional cases: Fujian (3), Guangxi (3), Shanghai (7), Macau (1)

Confirmed cases: 582 cases (571 cases in China), 17 deaths (all from Hubei)

1st confirmed case in Singapore: 66/M from China

1st two confirmed cases in Vietnam: 66-year-old father and 28-year-old son from China

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23 JANUARY 2020
• **Australia** confirmed its first four cases (1 in Victoria and 3 in New South Wales).
• **Malaysia** confirms it first four cases in Johor Bahru
• **Canada**’s first case appeared in **Toronto**. 50s/M had travelled to Wuhan and recently took a flight back to Toronto.
• **Additional cases**: **Japan** (1), **Thailand** (2), **Singapore** (1)
• **Hong Kong** declares state of emergency. Hong Kong announced suspension of classes in all schools until 17 February 2020

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- **1st four confirmed cases in Australia**
- **1st four confirmed cases in Malaysia**
- **1st confirmed case in Canada**
- **Additional cases in Japan, Thailand, and Singapore**
- **Hong Kong** declares state of emergency

25 JANUARY 2020

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• **The Sri Lankan Health Ministry** confirmed its 1st case of coronavirus, a 43 year old Chinese woman
• **Cambodia** confirmed its first case of the virus in a Chinese man who came with his family from Wuhan to the coastal city of Sihanoukville
• **Germany** confirmed its first case
• **Beijing** reports first death from coronavirus, 50/M
• **Confirmed cases**: 2923 cases (2858 from China), 82 deaths reported

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- **1st confirmed case in Sri Lanka**
- **1st confirmed case in Germany**
- **1st confirmed case in Cambodia**
- **Beijing** reported its first death

27 JANUARY 2020

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- **Shanghai** reported first death
- **China** banned wildlife trade
- **Additional cases** in the **US**, **Macao**, **Hong Kong**, and **Thailand**
- **CCDC** started developing vaccines against 2019-nCoV

26 JANUARY 2020

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• **Shanghai** reported its first death, 88/M.
• **China** banned all **wildlife trade** with immediate effect
• **Additional cases**: **United States** (3), **Macao** (3), **Hong Kong** (3) and **Thailand** (1)
• **The Chinese Center for Disease Control and Prevention (CDC)** has started developing **vaccines against the novel coronavirus (2019-nCoV)**. **CCDC** has isolated the virus and is currently identifying seed strain
Map of 2019-nCoV Affected Countries

Figure 1. Map of countries with 2019-nCoV confirmed cases as of January 27, 2020

Reasons for Concern

- There is evidence of broader geographic spread across mainland China and the rest of Asia, Australia, Europe, USA and Canada.

- WHO said earlier that an animal source seemed to be "the most likely primary source" with "some limited human-to-human transmission occurring between close contacts."

- HEIC is still NOT declared but they consider it an emergency event and that they are monitoring it closely.

- WHO’s assessment of the risk of this event has not changed since the last update (22 Jan): very high in China, high at the regional level and high at the global level. Using the Biodiaspora tools, there’s approximately 21% to 28% risk of disease importation to ASEAN region via air travel. The risk of importation is interpreted as the probability of at least one (1) imported infected traveler in one month going to area of destination. In addition, the risk of exportation is approximately 61% to 81% which means there’s at least 1 to 2 exported infected traveler in one month. This is based in the case burden of the source region and the monthly outbound air passenger volume. Countries with more flights and seats from China are at greater risk of importing an infected traveler from China.

- Evidence supports human-to-human transmission of the virus.
  - In Guangdong, two patients were infected by family members who visited Wuhan.
o Fifteen medical workers helping with coronavirus patients in Wuhan have also been diagnosed with pneumonia, with one in critical condition.
o The Wuhan South China Seafood Market which sold various live animal species and may have been the source of the novel virus, was closed 01 January 2020. The increasing cases reported more recently indicate further spread through human-to-human transmission is likely to continue.
o Further information is required to understand how readily the virus can be transmitted between infected individuals.

Public Health Outlook

- WHO emphasized that even without the declaration of a public health emergency of international concern (PHEIC), there is already a coordinated international health response to the current coronavirus outbreak.

- With evidence that 2019-nCoV can be transmitted between humans, and daily reports of international importation, further domestic and international spread is possible. Southeast Asian nations are most highly connected to Wuhan by international air travel. Many international cities are connected to the larger affected region.

- Close monitoring of case reports from within China and highly connected countries is essential to prepare for further domestic and international spread of 2019-nCoV.

- It is expected that further spread within China may occur secondary to increased travel for the Chinese Lunar New Year which takes place on January 25th.

- The WHO has provided general recommendations following the MERS Guidelines to the medical community including the use of enhanced standard infection prevention and control practices, especially in emergency departments. For the general public, preventive measures include avoiding close contact with people suffering from acute respiratory illnesses, avoiding contact with wild or farm animals in affected areas, and practicing good hand and respiratory hygiene.
## Risk of 2019-nCoV spread via Air Travel

### AIR TRAVEL FROM WUHAN TO INTERNATIONAL CITIES IN 2019

Table 1. Top ranking international countries receiving passengers from Wuhan Tianhe International Airport, Hubei, China in 2019.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Origin City</th>
<th>Destination Country</th>
<th>Direct volume</th>
<th>Indirect Volume</th>
<th>Total Volume*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wuhan</td>
<td>China</td>
<td>9,980,789</td>
<td>44,494</td>
<td>10,025,283</td>
</tr>
<tr>
<td>2</td>
<td>Wuhan</td>
<td>Thailand</td>
<td>268,118</td>
<td>59,237</td>
<td>327,355</td>
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<tr>
<td>3</td>
<td>Wuhan</td>
<td>Japan</td>
<td>102,229</td>
<td>36,263</td>
<td>138,492</td>
</tr>
<tr>
<td>4</td>
<td>Wuhan</td>
<td>Malaysia</td>
<td>94,920</td>
<td>35,627</td>
<td>130,547</td>
</tr>
<tr>
<td>5</td>
<td>Wuhan</td>
<td>Taiwan</td>
<td>88,768</td>
<td>16,975</td>
<td>105,743</td>
</tr>
<tr>
<td>6</td>
<td>Wuhan</td>
<td>Singapore</td>
<td>76,206</td>
<td>16,693</td>
<td>92,899</td>
</tr>
<tr>
<td>7</td>
<td>Wuhan</td>
<td>Korea (South)</td>
<td>67,205</td>
<td>11,690</td>
<td>78,895</td>
</tr>
<tr>
<td>8</td>
<td>Wuhan</td>
<td>Hong Kong (SAR)</td>
<td>71,521</td>
<td>374</td>
<td>71,895</td>
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<td>9</td>
<td>Wuhan</td>
<td>Indonesia</td>
<td>33,855</td>
<td>26,902</td>
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<td>United States</td>
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<td>44,347</td>
<td>56,328</td>
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<tr>
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<td>Wuhan</td>
<td>Cambodia</td>
<td>35,363</td>
<td>20,728</td>
<td>56,091</td>
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<td>12</td>
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<td>Australia</td>
<td>17,671</td>
<td>37,100</td>
<td>54,771</td>
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<tr>
<td>13</td>
<td>Wuhan</td>
<td>Macao (SAR)</td>
<td>42,759</td>
<td>74</td>
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<td>14</td>
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<td>15,600</td>
<td>35,505</td>
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<td>21,214</td>
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<td>France</td>
<td>11,000</td>
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<td>20</td>
<td>Wuhan</td>
<td>Italy</td>
<td>7,591</td>
<td>10,634</td>
<td>18,225</td>
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</table>

*Data from International Air Travel Association (IATA) totaled across January to November 2019*
Table 2. Estimated travel data from Innovata (using Biodiaspora tools) based on the booked flights from Wuhan to ASEAN countries

<table>
<thead>
<tr>
<th>Rank</th>
<th>Origin City</th>
<th>Destination Country</th>
<th>Destination City</th>
<th>Flights</th>
<th>Seats*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wuhan</td>
<td>Thailand</td>
<td>Bangkok</td>
<td>477</td>
<td>83,732</td>
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<td></td>
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<td></td>
<td>Phuket</td>
<td>91</td>
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<td></td>
<td></td>
<td></td>
<td>Chiang Mai</td>
<td>39</td>
<td>6,162</td>
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<tr>
<td>2</td>
<td>Wuhan</td>
<td>Singapore</td>
<td>Singapore</td>
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<td>Malaysia</td>
<td>Kota Kinabalu</td>
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<td>22,971</td>
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<td></td>
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<td>Kuala Lumpur</td>
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<td>1,110</td>
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<tr>
<td>4</td>
<td>Wuhan</td>
<td>Vietnam</td>
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<td></td>
<td>Sihanoukville</td>
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<td>Wuhan</td>
<td>Indonesia</td>
<td>Denpasar Bali</td>
<td>39</td>
<td>8,385</td>
</tr>
</tbody>
</table>

*Data is still incomplete and may vary from the actual passengers travelling to country of destination

Note: Chinese health officials suspended outbound travel from Wuhan via air and rail since January 23, 2020

Figure 2. Map showing air travel movements from Wuhan to ASEAN countries in January to March 2020
Table 3. Estimated travel data from Innovata (using Biodiaspora tools) based on the booked flights from China to ASEAN countries

*Data is still incomplete and may vary from the actual passengers travelling to country of destination
Note: Chinese health officials suspended outbound travel from Wuhan via air and rail since January 23, 2020

<table>
<thead>
<tr>
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<th>Seats*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China</td>
<td>Thailand</td>
<td>17,830</td>
<td>3,371,183</td>
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<tr>
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<td>China</td>
<td>Singapore</td>
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<td>Malaysia</td>
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</tr>
</tbody>
</table>

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