The Tuas mega port, slated to open in phases from 2021, will incorporate smart and green technologies into its operations. Some of these will be tested at the MPA Living Lab. The Straits Times looks at the journey of a container through the port of the future.

### Future Port

The Tuas mega port, slated to open in phases from 2021, will incorporate smart and green technologies into its operations. Some of these will be tested at the MPA Living Lab. The Straits Times looks at the journey of a container through the port of the future.

#### Floating platforms

- Currently, if a berth is not available, the vessel waits at anchorage in the sea.
- The Maritime and Port Authority of Singapore (MPA) is now exploring the use of multi-purpose floating platforms so that while waiting, immigration checks, refuelling and top-up of supplies can be done. More ships moored to the platforms will free up space at sea.

#### Automated technology

- Quay cranes, yard cranes and guided vehicles will be automated.
- Automated loading/unloading operations.
- Computers, sensors and cameras ensure the safe and precise handling of containers.
- 50% of wharf operation supervisors and up to 80% of yard crane operators and prime mover drivers will be retrained for higher-skilled roles.

#### Green technology

- The cranes and automated guided vehicles will be fully electric.
- Solar energy will be harvested and waste heat recovered from building cooling systems.

#### Comparing Automated Terminal Operations

<table>
<thead>
<tr>
<th>Phase</th>
<th>Area (ha)</th>
<th>Start of operations</th>
<th>Cargo handling capacity (TEUs, million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>414</td>
<td>Early 2020s</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>405</td>
<td>Late 2020s</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>260</td>
<td>Early 2030s</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>260</td>
<td>Mid-2030s</td>
<td>13</td>
</tr>
</tbody>
</table>

*Twenty-foot equivalent units. Refers to a common international standardised 20-foot-long (6.1m) container type.*

#### Just-In-Time Arrival System

- When the vessel enters the Singapore Strait, the captain now reports verbally by VHF radio to MPA and radios PSA Marine to arrange for a marine pilot who will guide the vessel through Singapore waters.
- In future, the Just-In-Time Arrival system will take over the coordination. This will cut delays and waiting times of calling vessels and optimise port services and resource deployment.

#### TUAS TERMINAL FACTS AND FIGURES

- $1 billion
  Approximate cost savings in reclamation fill material by re-using dredged and excavated materials from land construction projects such as rail infrastructure projects for reclamation of Tuas Phase 1.

- $6 million
  Cost of the coral relocation project

#### Cost of the coral relocation project

Feasibility studies are being done on the construction of an elevated area 42m above ground – overlooking port operations – to house warehousing, distribution and logistics operations, as well as possibly cafes, retail stores and other amenities.

2,300 out of 2,800 coral colonies around Sultan Shoal lighthouse – in the vicinity of the proposed reclamation works – have been relocated to the Southern Islands successfully.