Urban Development and Transport Planning In Malaysia – Present Practice

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TODAY’S FOCUS SHALL BE ON:

• TRENDS OF URBAN DEVELOPMENT IN MALAYSIA
  • HIGHWAYS TO ECONOMIC DEVELOPMENT
  • EFFECTS ON TODAY’S COMMUNITY
  • THE WAY FORWARD
TRENDS OF URBAN DEVELOPMENT IN MALAYSIA

Almost all the existing towns in Malaysia was not pre-planned on the drawing board as a total consideration and so was the case with the other famous cities of the World. In the early stage planning was done in isolation depending on the importance of a particular project.
TRENDS OF URBAN DEVELOPMENT IN MALAYSIA

EARLY NEW TOWNS DEVELOPMENT IN MALAYSIA

Main Economic Activity - Agriculture

• SATELITE TOWNS
  Petaling Jaya - support the growth of Kuala Lumpur.

• FELDA VILLAGES
  (after Independence) – Examples are Bilut Valley, Jengka, Sungai Buaya etc.

REGIONAL CENTRES
By the Regional Development Authorities of KESEDAR (Kelantan), KEJORA (Johor), KETENGAH (Trengganu), DARA (Pahang). Examples are towns of Bandar Penawar, Gua Musang etc.
TRENDS OF URBAN DEVELOPMENT IN MALAYSIA

DEVELOPMENT OF URBAN TRANSPORT IN MALAYSIA

1920’s – 1950’s
Walking – Cycling (middle income)- Rickshaws (public transport)
Cars (elite) – Trams (Penang only) – Mosquito Bus (7-seater bus)

1960’s
Decrease bicycle, Increase bicycle and cars,
Rickshaws (restricted areas only) - Buses

1970’s
Even lesser bicycles, Buses, Cars and motorcycles

Today
Cars and Motorcycles, Buses and beginning of Light Rail
TRENDS OF URBAN DEVELOPMENT IN MALAYSIA

OPENING UP OF NEW ECONOMIC SECTORS - INDUSTRIALISATION

1964 - First KL Transportation Study
(recommends on capital intensive road building projects)

1986 - Industrial Master Plan

- OIL TOWNS
  Kertih, Trengganu

- FREE TRADE ZONES
  Penang, Selangor and many others

- MANUFACTURING PLANTS
  All States promoting and attracting investors to open up manufacturing plants in Malaysia on a large scale.
HIghways TO Economic Development

- **Total Highways**: 64,672 km
- **Paved**: 48,707 km (including 1,192 km of expressways)
- **Unpaved**: 15,965 km

Note: In addition to these national and major regional roads, Malaysia has thousands of kilometers of local roads that are maintained by local councils.
HIGHWAYS TO ECONOMIC DEVELOPMENT

- Projek Lebuhraya Utara-Selatan Berhad or PLUS holds the concession to operate and maintain a total of 847.7 km of inter-urban toll highways in Peninsular Malaysia collectively known as the North-South Expressway and comprising:

| I | The North-South Expressway from Bukit Kayu Hitam to Johor Bahru (NSE) |
| II | The New Klang Valley Expressway from Bukit Raja to Jalan Duta (NKVE) |
| III | The Federal Highway Route 2 from Batu Tiga to Sungai Rasau (FHR2) |
HIGHWAYS LINKING URBAN GROWTH AREAS

Urban Planning and Development – highways and townships
• Kuala Lumpur – area and peripherals
• MSC – Multimedia Super Corridor
• KLIA – Kuala Lumpur International Airport
• Others – Recreational Seaport, Townships, etc
**EMERGING OF NEW GROWTH CENTRES**

Highways promote growth and many new townships emerged.

**SPRAWL DEVELOPMENT**

Growth of KL, satellite town of PJ and Klang had lead to the growth of a KL Metropolitan area or a KL conurbation that leads to urban sprawl towards south and north.

**AUTO-DEPENDENCY AND AUTO-MOBILITY**

Building cities for cars. Motorisation = Modernisation? (total no of vehicles (july 2003 – 12.5 million, Wilayah – 2.6 m, Johor – 1.7m, Selangor – 1.5m, Penang -1.3)

**AIR POLLUTION**

Road transport is the fastest growing source of carbon emissions in Malaysia.

**CLIMATE CHANGE, DEGRADE ENVIRONMENT AND QUALITY OF LIFE!**
HIGHWAYS IN URBAN AREAS

KLCC

MID VALLEY CITY
EFFECT OF HIGHWAYS ON THE SYSTEM OF ROAD HIERARCHIES IN TOWNSHIPS

• Highways passing into/by many townships to maximise users.

• Creates limited access into the township – leads to bottleneck.

• Road hierarchies becomes too high requiring large road reserves.
EFFECT OF HIGHWAYS ON THE SYSTEM OF ROAD HIERARCHIES IN TOWNSHIPS

- With high speed and high capacity roads:
  - limited access for neighbourhoods
  - encourages developments in long corridors

- Neighbourhood Centres and community amenities becomes displaced.
EFFECT OF HIGHWAYS ON THE SYSTEM OF ROAD HIERARCHIES IN TOWNSHIPS

- Non-walkable
- Streets become unfriendly to communities.
- Streets become unsafe for walking
URBAN PLANNING PRACTICE AND ITS IMPACT ON URBAN TRANSPORTATION

• THE STRATEGIC DEVELOPMENT PLAN

• THE LAYOUT ZONING PLAN

• INTENSITIES AND DENSITIES OF DEVELOPMENT
THE STRATEGIC DEVELOPMENT PLAN

• Encourages growth – identify new growth areas, exploit potential growth corridors, control urban developments, decentralization, hierarchies of urban centres in line with economic focus of the area.
• Proposes new urban road networks, linking growth areas, opening up new areas and solving urban transportation issues.
• Identify environmental sensitive areas.
• Identify major infrastructure and utilities.
• Identify public amenities and green areas.
• Sets the limits of growth.

PETUNJUK:
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THE LAYOUT ZONING PLAN

- Zoning sets the pace for single use class order.

- Zoning emphasize on segregated land uses and in locations that are accessible only by private vehicles.

- Zoning at times lead to exclusive communities and affordable housing most often are placed at the edge.
**DENSITIES OF DEVELOPMENT**

- With greenfield developments, densities are fairly low in Malaysian township with an average of about 14-20 persons per acre or 30 - 45 persons per hectare.

- Low densities cannot support public transportation and discourages the community to walk for daily activities.

<table>
<thead>
<tr>
<th>New Township</th>
<th>Acreage (acre)</th>
<th>Population</th>
<th>Density (people/ac)</th>
<th>Density (units/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Putrajaya</td>
<td>11,320</td>
<td>300,000</td>
<td>26.5</td>
<td>5.9</td>
</tr>
<tr>
<td>Cyberjaya</td>
<td>17,300</td>
<td>370,000</td>
<td>21.4</td>
<td>4.7</td>
</tr>
<tr>
<td>Bukit Jelutong</td>
<td>2,205</td>
<td>31,068</td>
<td>14.1</td>
<td>3.13</td>
</tr>
<tr>
<td>Kota Kemuning</td>
<td>1,820</td>
<td>32,715</td>
<td>18.0</td>
<td>3.9</td>
</tr>
<tr>
<td>Berjuntai Bestari</td>
<td>29,000</td>
<td>500,000</td>
<td>17.24</td>
<td>3.8</td>
</tr>
</tbody>
</table>

**DENSITIES DEFINED BY SOME STUDIES**

1. Minimum density for encouraging the use of public transport
   - 30-130 pph
   - Source: Cities and Automobile dependence research by Newman and Hogan on various cities.

2. Minimum density for encouraging the community to walk to daily activities.
   - 130-400 pph
   - Source: Cities and Automobile dependence research by Newman and Hogan on various cities.

3. Minimum density for tram service
   - 240 pph
   - Source: Local Govt Mgt- Board Sustainable Settlement Guide

4. Minimum density for a bus service
   - 100 pph
   - Source: Local Govt Mgt- Board Sustainable Settlement Guide
WHAT NEXT?

• Put the brakes on Sprawl.

• Emphasize on ‘Accessibility Planning’ not Mobility Planning’.

• Encourage Mixed-Use and Compact Development.

• Start by Making Neighbourhood’s More Accessible.

• Reduce The Need For Motorised Transport By Adaptation of Land Use Policies and Urban and Regional Planning.

• Adopt An Integrated Long Term Approach That Is Holistic and Enhances The Urban Quality of Life and Economic Thrift and Prosperity.
ACCESSIBILITY IN A NEIGHBOURHOOD

• Good local accessibility to retail, leisure, health and education facilities is critical to establishing healthy neighbourhoods (within easy reach).

• Good accessibility in a neighbourhood means being able to get from one point to another in many ways.

• It is about being interconnected and minimising traffic in a neighbourhood.
ACCESSIBILITY IN A NEIGHBOURHOOD

PRINCIPLES OF ACCESSIBILITY

- **SAFE**
  Safety is main issue in accessibility and communities must be assured that it's safe to walk.

- **CONVENIENCE**
  Interconnected streets creates options to get from one place to another.

- **WALKABLE**
  To emphasize on pedestrian friendly development which prioritize to favour on-foot, bicycle, public transport and finally private transport.

- **BARRIER FREE**
  Creating a barrier free environment, where accessibility and reachability to public spaces can be achieved.
WALKABILITY

The Concept of Permeability

The Pedestrian Shed Areas

Characteristics:
- Low Density (5u/ac)
- Bungalows
- Semi-detached
- School
- MPSJ
- 3 lane road

% of Area within 5 minutes Walking Distance - 35%
% of Residential Area covered - 18%
Distance within 5 minutes - 400m
NEIGHBOURHOOD SIZE, SHAPE AND ACREAGE
Optimum Size That Is Within Walking Distance

Neighbourhood size = 5 minutes walking distance or 380m
Acreage = 145 acre for flat condition
(or 120-160 ac depending on topographical condition)
NEIGHBOURHOOD SIZE

- Optimum size of a neighbourhood that is within walking distance
- Compact development: medium to high density
- Self contained with sufficient facilities within walkable catchment
- Community focal point / Centre

Walking to most locations or nearest transit point to not exceed 5 mins or 380m and cycling to most locations or nearest transit point do not exceed 5 mins or 1250m.
It’s smarter to walk

Children who go to school on foot are brighter and more alert, say teachers.

Children who walk to school are brighter and more alert than those taken by car, say teachers. Nearly three-quarters of primary school teachers in Britain consider the morning drop-off at the school gates to be a major cause for concern, according to a Government survey.

Nine out of 10 British teachers believe the walk to school actually makes children brighter, more alert and ready for the first class of the day. And all 107 teachers questioned felt that walking to school instead of being driven helps children stay fit and healthy.

Britain’s transport and education ministers used the findings – released on October 1, first day of the country’s Walk to School Week – to discourage the school run and reduce the morning congestion and pollution. However, some parents and education groups believe the survey by the Department of Transport, Local Government and the Regions has a flavour of the “Nanny state” and is a vehicle for more anti-car propaganda.

Nick Sexton of the Campaign for Real Education said: “The lack of decent schools and a workable public transport system means many parents have no choice but to drive their children to school. This smacks of patronising Nanny-Statism. It’s another example of New Labour ministers telling us ‘Do as I say, not as I do.’ ‘Parents have understandable safety fears about letting their children walk to school.'

The teachers from English and Welsh primary schools were interviewed by telephone as part of the Government’s campaign to promote the benefits of walking to school safely amongst parents, children and teachers.

More than eight in 10 teachers were strongly in favour of Walk to School Week, with 79 per cent encouraging their own children to walk to school. Teachers said children who walked to school not only enjoy advantages of health, but also education and general awareness. Some 87 per cent of teachers questioned believed walking to school give children a chance to wake up fully before they reached the classroom.

Six out of 10 believed walking to school enabled children to settle down in the classroom. And 90 per cent believed it made children more aware of their local environment, with 93 per cent convinced it made them more aware of road-safety issues.

British Transport Minister David Jamieson said: “The reliance on the car to take children to school should concern us all. We know it leads to increased congestion and pollution outside the school gates, and to a decline in our children’s health and fitness.

“The survey results show that teachers are strongly in favour of encouraging children to walk to school. And happily, the majority ensure their own children do that.”

- DM
## 5 MINUTE WALKING DISTANCE BY AGE GROUP

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-6 years old</td>
<td>≤ 100 m</td>
</tr>
<tr>
<td>7-12 years old</td>
<td>≤ 180 m</td>
</tr>
<tr>
<td>13-50 years old</td>
<td>≤ 380 m</td>
</tr>
</tbody>
</table>

- Maximum distance for the age group 13-50 years old within 5 minutes walks.
- Maximum distance for the age group 7-12 years old within 5 minutes walks.
- Maximum distance for the age group 3-6 years old within 5 minutes walks.
<table>
<thead>
<tr>
<th>Age Group</th>
<th>Estimation of 5 minutes Walking Distance</th>
<th>Destination Must Within The Neighbourhood Unit (380m radius/5 minutes walks)</th>
<th>Destination Which Near By Or At The Edge of Neighbourhood Unit (&gt;5-15 minutes walks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-6 years old (Pre-school Child)</td>
<td>100m – 180m</td>
<td>• Tot lot (under immediate adult supervision) • Kindergarten • Corner shop</td>
<td></td>
</tr>
<tr>
<td>7-12 years old (Elementary School Child)</td>
<td>180m – 380m</td>
<td>• Playground • Corner shop</td>
<td>• Primary school</td>
</tr>
<tr>
<td>13-22 years old (Teenager &amp; College Student)</td>
<td>380m – 600m</td>
<td>• Public transit (e.g bus stop) • Surau • Square, mall, plaza • Community hall (meeting places) • Corner shop</td>
<td>• Secondary school • Library • District park (field, sport courts, park) • Local shop</td>
</tr>
<tr>
<td>23-50 years old (Adult &amp; Middle Adult)</td>
<td>380m – 600m</td>
<td>• Public transit (e.g bus stop) • Surau • Square, mall, plaza • Community hall (meeting places)</td>
<td>• Workplace (office, workshop, shop, light industry) • Local shop • Child care centre • Mosque/ church/ temple • Library • District park (field, sport courts, park)</td>
</tr>
<tr>
<td>&gt; 51 years old (Senior Citizen)</td>
<td>180m</td>
<td>• Surau • Health and medicine centre (e.g clinic) • Park • Corner shop • Elderly care centre</td>
<td>• Mosque/ church/ temple</td>
</tr>
</tbody>
</table>
HIGHLY INTERCONNECTED ROAD SYSTEM LEADS TO BETTER PERMEABILITY

The streets in a neighbourhood needs to be highly connected which will thus make the area permeable.

Parallel routes are provided for local traffic with alternate ingress/egress to arterial roads.
WALKABLE NEIGHBOURHOOD & HIGH DEGREE OF STREET CONNECTIVITY

- Neighbourhood size of 380m radius
- Interconnected street network
STREET STRUCTURE
Interconnected street structure

New York Grid

Cairo Loop and Cul-de-sac

Paris Radial
HIGHERLY INTERCONNECTED ROAD SYSTEM
- Road hierarchies need to be reviewed in accordance to the street’s function.

- Size of carriageway at acceptable minimum, i.e.
  i. 30m row – 3.25m
  ii. 22m row – 3.00m
  iii. 15m row – 2.75m
  iv. 12m row - 2.75m

- Roadside parking proposed within row as traffic calming.

- Integrate position of drain and utility to get the desired streetscape.

- Kerbs (rolling and raise) proposed at all roads to achieve the desired streetscape.
HIGHERLY INTERCONNECTED ROAD SYSTEM
- With lower road hierarchies, at grade pedestrian crossings becomes feasible.

At grade crossing is more desirable in a neighbourhood, hence road hierarchies in neighbourhood areas should be reduced.
STREET PATTERN
Characterised by Perimeter Block

Block Dimension: 60 - 90m (length and width)
- can be varied in sizes
- block width of 70-90m enable more option for internal treatment

Shape of perimeter block: square, rectangular or irregular.
- square blocks - the most flexible basis for accommodating a range of commercial and residential and more option for internal treatment.
- rectangular block with depth 110m are more comfortably able to accommodate larger buildings, such as factories and warehouses (usually on the fringe)
- irregular block moulded to respond to topography and the creation of focal point.
Compact Development
High density and medium density development to promote the concentration of economy and social activities and also to promote walking activity and support for public transport

Neighbourhood Size – 145 acres

Neighbourhood Density - 8 units/ac(gross residential)
(232 persons/ac)

Neighbourhood Mix – High Density – 40%
  - Medium Density – 48%
  - Low Density – 12%

**Benchmarking –
Sustainable Urban Density – 130pph – 400pph.

Legend:
- High Density (2 - 6 storey)
- Medium Density (preferable 2 - 4 storey)
- Low Density (preferable 2 storey)

*building height 2-6 storey
**NEIGHBOURHOOD LANDUSE COMPONENT**

**Local Self Sufficiency**
Range of activities located within close proximity and within walking distance in the neighbourhood.

**Mixed Use Development**

Types of Mixed Use Development:-

a) Mixed use within the lot (horizontal)

b) Mixed use within the building (vertical)

Categories of Mixed Use Development can be:

- Shop house (residential/retail/office/service)
- Home-based business (residential/workplace)
- Retail/community purpose
- Medium or higher density residential (urban apartment, town house)
NEIGHBOURHOOD STRUCTURE
Divided into Centre, General & Edge Zone

Main Function of Each Zone: -

a) Centre Zone
As community focus point which encourages inner growth

b) General Zone
Residential as dominant element to support the activities in ‘Centre Zone’

c) Edge Zone
As neighbourhood edge or neighbourhood boundary that can integrate with surroundings neighbourhoods.

Legend: -
- Centre Zone
- General Zone
- Edge Zone
- Edge Zone (open space)
STREETS NEED TO BE WELL DESIGNED TO ENCOURAGE WALKING

Design for pedestrian as first priority – consistently provide for pedestrians as baseline obligations.

Design for human scale – street to function as three dimensional outdoor room.

Design street as a unified whole – integrating all ingredients i.e. trees, sidewalk, lighting, carriageways etc.

Include sidewalk everywhere.
STREETS NEED TO BE WELL DESIGNED TO ENCOURAGE WALKING

Roads in neighbourhood areas need no median.

Provide shades. Plant street trees in an orderly manner.

Use smart lighting – streets should be well lit for automobile and pedestrian safety.

Allow on-street parking in suitable locations.
STREETS PLAY AN IMPORTANT ROLE IN PUBLIC SURVEILLANCE - SAFETY

Streetscape to promote surveillance over public realm by reducing setback of buildings at certain places and also by not having heavy plantings along the road.
PEDESTRIAN NETWORK
Continuous Walkways Linking Residential to Public Spaces
Pedestrian Walkways Should Be Everywhere To Allow Accessibility.
Characteristics of the network: -

- It will be designed with the aim of creating a pedestrian friendly development.
- The network of footpaths provided will be continuous. In no instance will the footpath suddenly ‘run-out’.
- Footpaths will be on average 3.0 m in width. It will be as wide 3.5m where it is shared with cyclists. In locations where there is a minimum no. of pedestrians, it will be no less than 1.5 m in width.
- Footpaths will have ramps at all kerb corners for wheelchair and pram access.
- Ramps at kerb corners are not to exceed gradient of 1:12.
- The pedestrian will have priority at junctions and all roads will be at grade.
### Urban Development and Transport Planning In Malaysia

**STREETS NEEDS TO BE FUNCTIONAL**
**Combine Capacity & Character**

<table>
<thead>
<tr>
<th>Conventional Capacity Based Terminology</th>
<th>Street That Combine Capacity And Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway</td>
<td>Expressway/highway</td>
</tr>
</tbody>
</table>
| Main Road                              | Main Road
Routes providing connection across the city |
| Arterial road                          | Boulevard or Avenue
Formal, generous landscaping              |
| Collector road                         | Neighbourhood Connector/High Street
Mixed uses, active frontage, connection across the neighbourhood centre |
| Local road                             | Access Street
Mainly residential, encouraging traffic calming |
| Lane                                   | Alley/Laneways
Safety access and resting place          |
STREETS NEED TO BE WELL DESIGNED TO ENCOURAGE WALKING

Our streets today.

What our streets can be.

Our streets today.

What our streets can be.
STREETS NEED TO BE WELL DESIGNED TO ENCOURAGE WALKING

Our back street today.

What our back street can be.

Our streets today.

What our streets can be.
DESIGNING STREETS TO MAKE IT SAFE FOR PEDESTRIAN - Traffic Calming

- Traffic calming as means to slow traffic.
- Manage through design not ad-hoc such as road berms.
TRAFFIC MANAGEMENT

To reduce speed of vehicles.
DESIGN FOR BARRIER FREE ENVIRONMENT

KEY FACTORS:
- ACCESSIBILITY
- REACHABILITY
- USABILITY
- SAFETY
DESIGN FOR BARRIER FREE ENVIRONMENT

KEY FACTORS:
- ACCESSIBILITY
- REACHABILITY
- USABILITY
- SAFETY
**PUBLIC TRANSPORT**

It is important to plan for proper stop intervals which support a certain catchment of population.

Stops for public transport can be good locations for meeting place and acts as nodes in a neighbourhood.

<table>
<thead>
<tr>
<th>Design Parameter for Public Transport</th>
<th>Mini Bus</th>
<th>Bus</th>
<th>Guides bus</th>
<th>Tram</th>
<th>Light Rail</th>
<th>Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop interval (minimum)</td>
<td>200m</td>
<td>200m</td>
<td>300m</td>
<td>600m</td>
<td>600m</td>
<td>1,000m+</td>
</tr>
<tr>
<td>Corridor Width/Area Served</td>
<td>800m</td>
<td>800m</td>
<td>800m</td>
<td>1,000m</td>
<td>2,000m+</td>
<td></td>
</tr>
<tr>
<td>Pop. Catchment per stop</td>
<td>320-640</td>
<td>480-1,760</td>
<td>1,680-3,120</td>
<td>4,800-9,000</td>
<td>24,000-24,000</td>
<td></td>
</tr>
</tbody>
</table>
PARKING

Encourage on-street car parks but plan and design to be well incorporated in the ROW.
<table>
<thead>
<tr>
<th>Aspects</th>
<th>MEANS/AIMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic and Transportation</td>
<td>Reduce road widths and curb radii, make street safer and pedestrian friendly, allow more room for urban furniture and greeneries, reduces the amount of impervious surface in the development providing both economical and environmental benefits.</td>
</tr>
<tr>
<td>Design human scale streets</td>
<td>Creating efficiently connected street grids and downsizing streetblocks de-emphasizes the use of primary arterials, reducing traffic congestion and creating a pedestrian-friendly environment.</td>
</tr>
<tr>
<td>Design street patterns to dilute rather than concentrate traffic</td>
<td>Reduces environmental impact of the development, reduces the alteration of the site's natural drainage pattern, save costs by eliminating unnecessary over engineering of road system.</td>
</tr>
<tr>
<td>Design street patterns which conform to the site's natural topography</td>
<td>Provide greenery within the streetscape To enhance the human scale of street section.</td>
</tr>
<tr>
<td>Provide greenery within the streetscape</td>
<td>Use alternative paving surfaces when possible to reduce the amount of impervious paving.</td>
</tr>
<tr>
<td>Reduce the area of impervious surface</td>
<td>Cluster development, building vertically, shared driveways, and decreasing side and rear yard setback.</td>
</tr>
<tr>
<td>Provide alternative to parking lots</td>
<td>Provide on street parking.</td>
</tr>
<tr>
<td>Design sufficient and attractive sidewalks</td>
<td>Should be included in all street development, good street furniture, make the sidewalk more desirable alternative, increase street life and promote the use of mass transit.</td>
</tr>
<tr>
<td>Make mass transit a desirable alternative</td>
<td>Cooperation of urban planning with the development of transit strategies is vital in its success.</td>
</tr>
<tr>
<td>Promote the use of bicycles</td>
<td>Develope an efficient network of bicycle paths, incorporated in the road system, alongside cars and separate.</td>
</tr>
</tbody>
</table>
MAKE OUR NEIGHBORHOODS ACCESSIBLE!!

Thank You

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