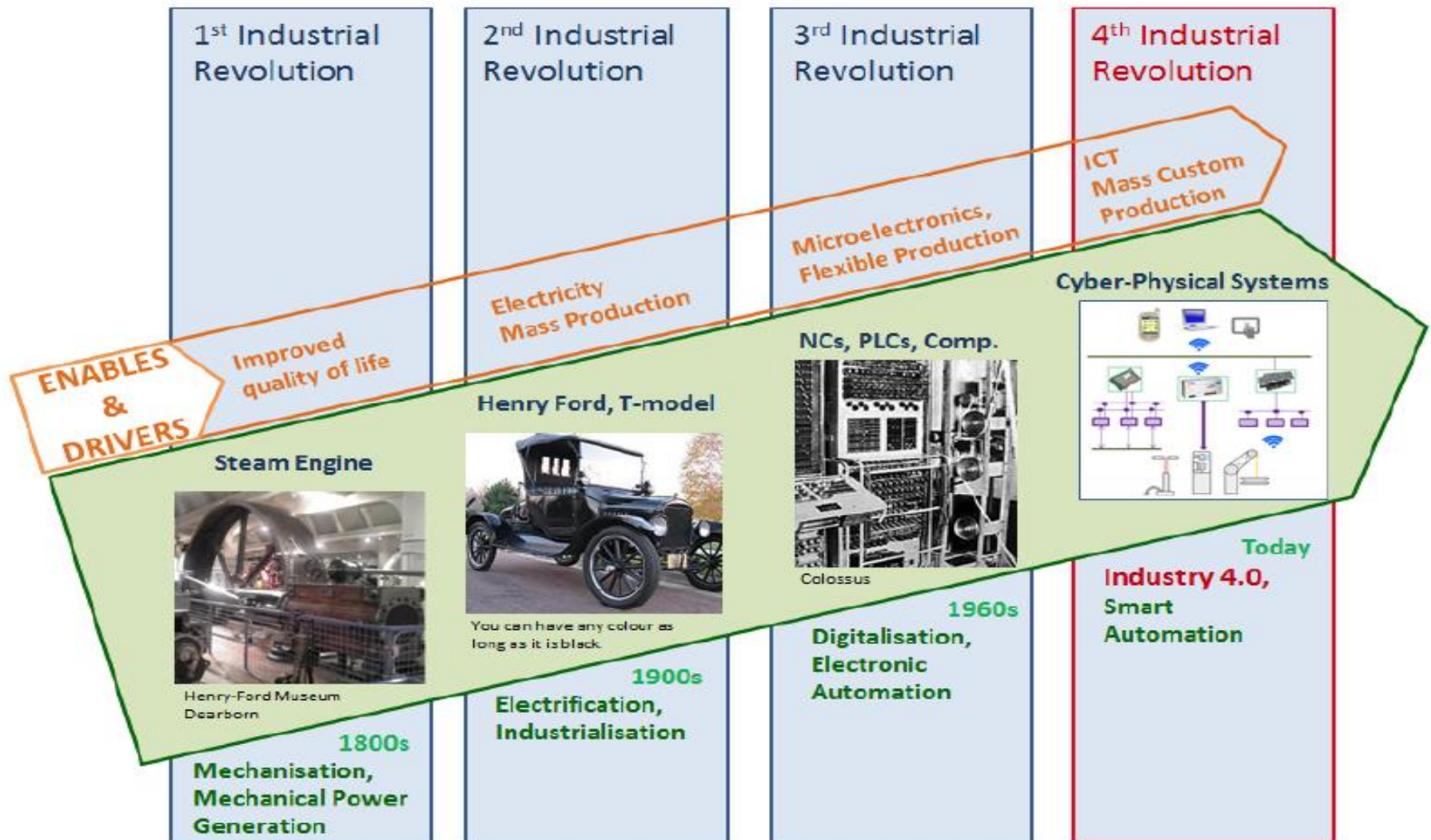
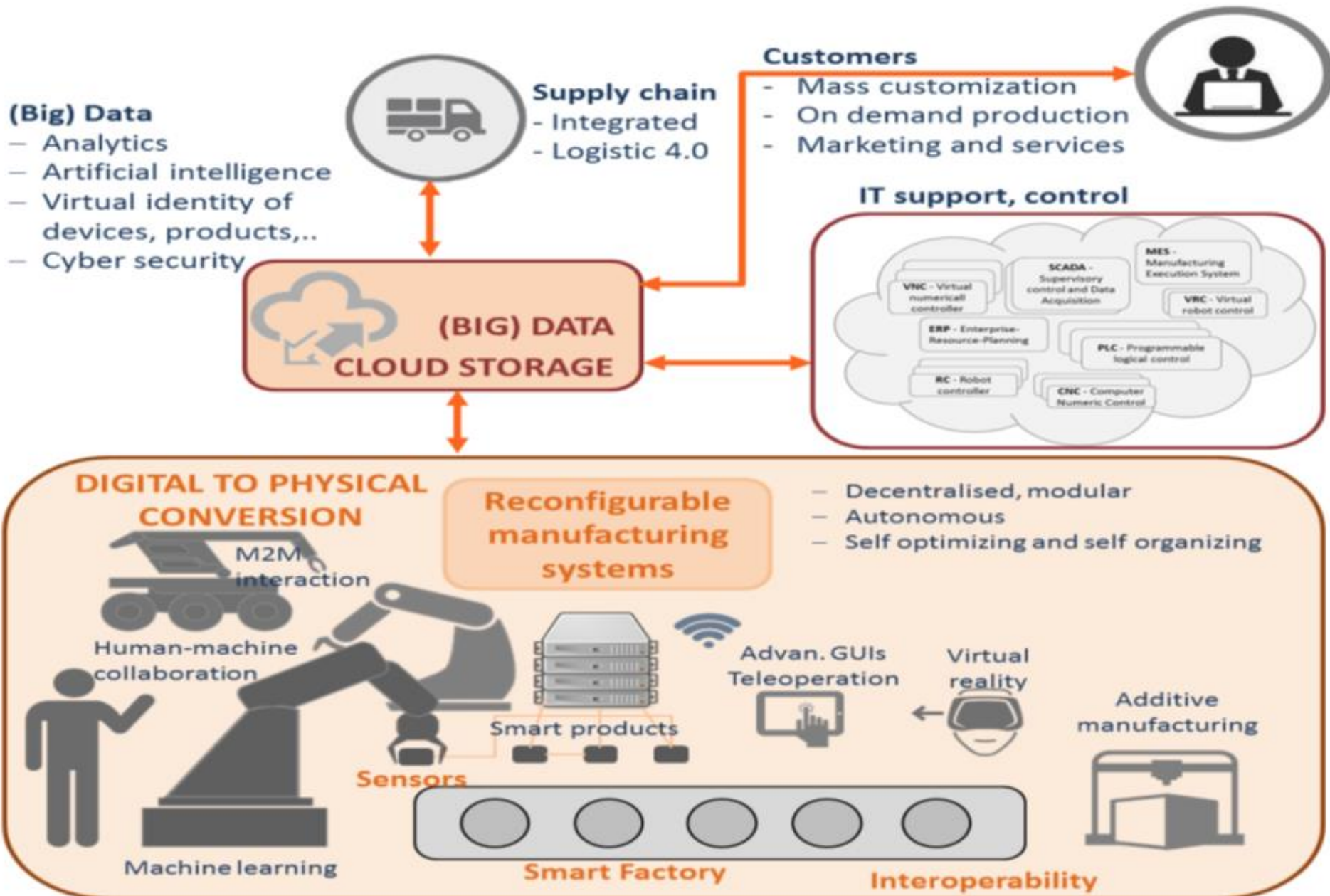


# THE INDUSTRIAL REVOLUTIONS



# THE INDUSTRIAL 4.0

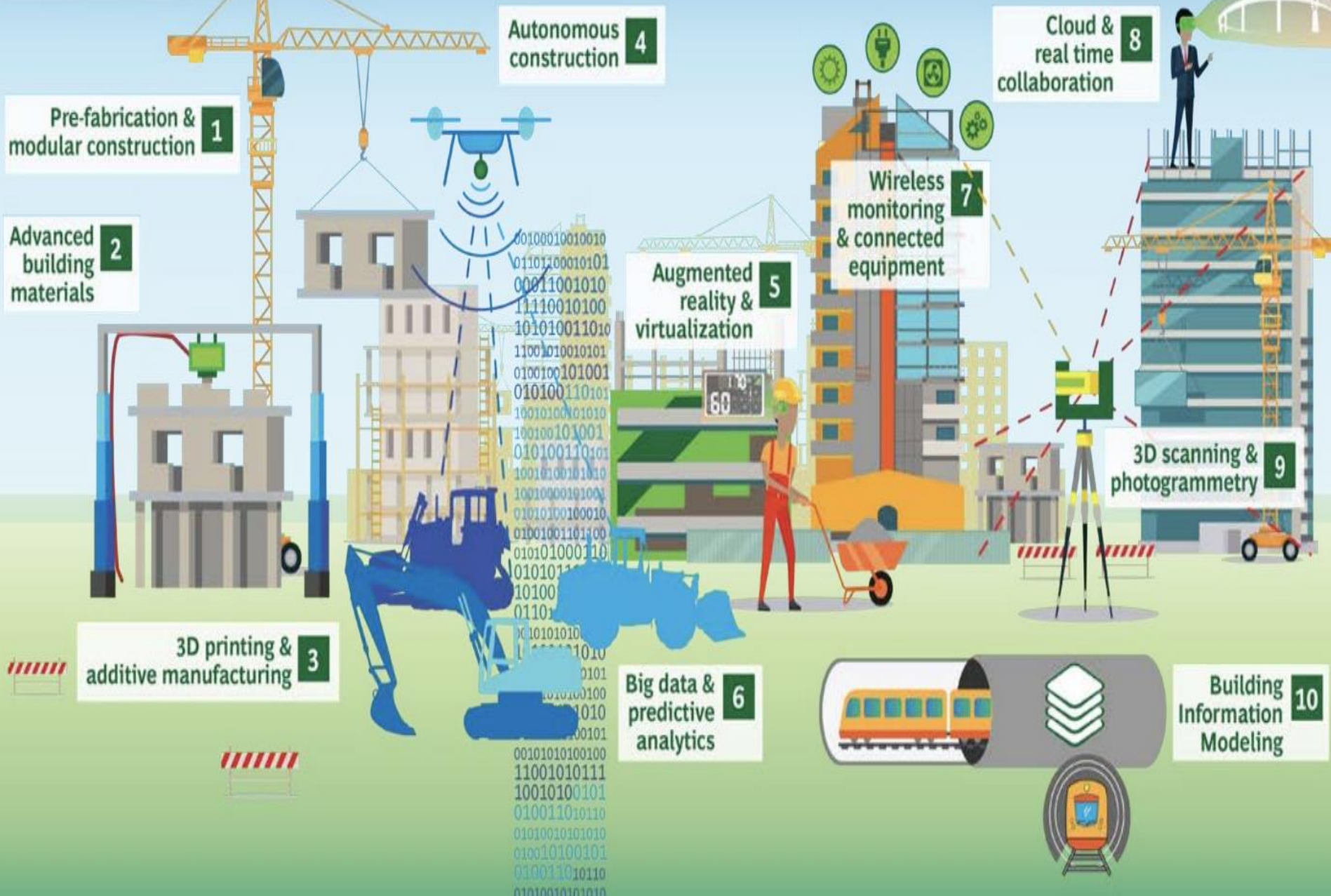


# THE INDUSTRIAL 4.0

The background of the slide features a close-up, low-angle shot of several industrial robotic arms. The arms are metallic, with some sections painted in a light grey and others in a reddish-pink. They are positioned in a way that creates a sense of depth, with some arms in the foreground and others receding into the background. The lighting is bright, highlighting the mechanical details and joints of the robots. The overall composition suggests a modern, automated industrial environment.

- INDUSTRY 4.0 COULD DECREASE
  - PRODUCTION COSTS BY 10 – 30%
  - LOGISTIC COSTS BY 10 -30%
  - QUALITY MANAGEMENT COSTS BY 10 – 20 %

# 4TH INDUSTRIAL REVOLUTION IN CONSTRUCTION INDUSTRY



# HOW BIG DATA TRANSFORMING CONSTRUCTION INDUSTRY ?



# COST INFORMATION IN THE NEW ERA



# PUBLIC WORKS COST INFORMATION CENTRE (PWCIC)

pwcic.jkr.gov.my

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**PWCIC**  
PUBLIC WORKS COST INFORMATION CENTRE



## ABOUT US

Cawangan Kontrak dan Ukur Bahan has identified 4 Key Result Areas under its Business Plan Strategies. [...]

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## COST INFORMATION & COST ANALYSIS



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The  
**ULTIMATE**  
cost driver

## NEWS UPDATES

**Buku Kos Purata Semeter Persegi Kerja Bangunan Edisi 1/2015**

Buku Kos Purata Semeter Persegi Kerja Bangunan (Jan-Jun 2015) boleh didapati di E-Library untuk dijadikan s...

[News Archive](#)

[CONVERSION CALC](#)

[ONLINE QUOTATION](#)




# RATOL SYSTEM

Jabatan Kerja Raya Malaysia 20... X JKR Rates Online (RATOL) X +

ratol.jkr.gov.my Search

Portal RATOL & Rates PreMo  
CAWANGAN KONTRAK UKUR DAN BAHAN

Home Rates PreMo Contact Us Login


 **searchRATES**

**Keywords**

**SEARCH**

*Ex : Reinforced Concrete Grade 30*


**Optional**

**Location**  
Select All 

**Start Year**  
2005

**Element**  
Select All

**End Year**  
2015

Hover on the  icon to see location details

**BUILDING**

- PILING
- WORK BELOW LOWEST FLOOR FINISH
- APRON AND PERIMETER DRAIN
- FRAME
- UPPER FLOORS
- ROOF
- STAIRS
- EXTERNAL WALLS
- WINDOWS AND EXTERNAL DOORS
- INTERNAL WALLS & PARTITIONS
- INTERNAL DOORS
- EXTERNAL FLOOR FINISHES
- INTERNAL FLOOR FINISHES
- EXTERNAL CEILING FINISHES
- INTERNAL CEILING FINISHES
- EXTERNAL WALL FINISHES
- INTERNAL WALL FINISHES

**NEWS & UPDATES**

**Surat Arahan KPKR Bil 3/2011 - Penggunaan Sistem NeTI dan PIMS untuk Projek RMK-10**

created at 11/07/2011  
Posted by Super Administrator


# DATA ACCURACY IN RATOL SYSTEM

Jabatan Kerja Raya Malaysia 20... x JKR Rates Online (RATOL) x +








ratol.jkr.gov.my/search

Portal RATOL & Rates PreMo  
CAWANGAN KONTRAK UKUR DAN BAHAN

Home Rates PreMo Contact Us Login

 **searchRATES** Compare Print

**Work Items** My Basket (0 items)

No	Work Items	Unit	Range (RM)	Average (RM)	Add to Basket
1	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 25 as specified In floor beam	m3	270.00 - 290.00	<b>280.00</b>	 <a href="#">Add to Basket</a>
2	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 25 as specified In roof beam	m3	270.00 - 290.00	<b>280.00</b>	 <a href="#">Add to Basket</a>
3	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 25 as specified In columns	m3	270.00 - 270.00	<b>270.00</b>	 <a href="#">Add to Basket</a>
4	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 30 as specified In floor beam	m3	230.00 - 349.90	<b>272.93</b>	 <a href="#">Add to Basket</a>
5	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 30 as specified In roof beam	m3	230.00 - 349.90	<b>272.14</b>	 <a href="#">Add to Basket</a>
6	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 30 as specified In columns	m3	230.00 - 349.90	<b>276.14</b>	 <a href="#">Add to Basket</a>
7	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 35 as specified In upstands beam	m3	229.61 - 298.00	<b>263.81</b>	 <a href="#">Add to Basket</a>

**modifySEARCH**

**Keywords**

Search Clear

**Category** [Show Options](#)

**Elements** [Hide Options](#)

- ☐ PILING
- ☐ WORK BELOW LOWEST FLOOR FINISH
- ☐ APRON AND PERIMETER DRAIN
- ☒ **FRAME**
- ☐ UPPER FLOORS
- ☐ ROOF
- ☐ STAIRS
- ☐ EXTERNAL WALLS
- ☐ WINDOWS AND EXTERNAL DOORS
- ☐ INTERNAL WALLS & PARTITIONS
- ☐ INTERNAL DOORS
- ☐ EXTERNAL FLOOR FINISHES
- ☐ INTERNAL FLOOR FINISHES
- ☐ EXTERNAL CEILING FINISHES
- ☐ INTERNAL CEILING FINISHES
- ☐ EXTERNAL WALL FINISHES
- ☐ INTERNAL WALL FINISHES
- ☐ FITTINGS AND FURNISHING
- ☐ SANITARY APPLIANCES

Search the web and Windows

12:25 PM  
11/4/2015

# DATA ACCURACY IN RATOL SYSTEM

Jabatan Kerja Raya Malaysia 20... X JKR Rates Online (RATOL) X +

ratol.jkr.gov.my/search

Search

12	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 35 as specified In isolated beam	m3	220.00 - 450.00	303.36	Add to Basket
13	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 35 as specified In isolated columns	m3	290.00 - 450.00	333.75	Add to Basket
14	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 40 as specified In floor beam	m3	280.00 - 280.00	280.00	Add to Basket
15	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 40 as specified In roof beam	m3	420.00 - 420.00	420.00	Add to Basket
16	FRAME CONCRETE WORK Reinforced In-Situ Concrete Grade 40 as specified In columns	m3	420.00 - 420.00	420.00	Add to Basket
17	FRAME CONCRETE WORK Reinforcement bars; hot rolled plain round mild steel 6mm Diameter; straight and bent	Kg	2.80 - 3.60	3.20	Add to Basket
18	FRAME CONCRETE WORK Reinforcement bars; hot rolled plain round mild steel 8mm Diameter; straight and bent	Kg	2.80 - 2.80	2.80	Add to Basket
19	FRAME CONCRETE WORK Reinforcement bars; hot rolled plain round mild steel 10mm Diameter; straight and bent	Kg	2.80 - 4.50	3.31	Add to Basket
20	FRAME CONCRETE WORK Reinforcement bars; hot rolled plain round mild steel 12mm Diameter; straight and bent	Kg	3.10 - 3.40	3.25	Add to Basket

Page 1 of 11

- ☐ WORK BELOW LOWEST FLOOR FINISH
- ☐ APRON AND PERIMETER DRAIN
- ☒ FRAME
- ☐ UPPER FLOORS
- ☐ ROOF
- ☐ STAIRS
- ☐ EXTERNAL WALLS
- ☐ WINDOWS AND EXTERNAL DOORS
- ☐ INTERNAL WALLS & PARTITIONS
- ☐ INTERNAL DOORS
- ☐ EXTERNAL FLOOR FINISHES
- ☐ INTERNAL FLOOR FINISHES
- ☐ EXTERNAL CEILING FINISHES
- ☐ INTERNAL CEILING FINISHES
- ☐ EXTERNAL WALL FINISHES
- ☐ INTERNAL WALL FINISHES
- ☐ FITTINGS AND FURNISHING
- ☐ SANITARY APPLIANCES
- ☐ COLD WATER AND SOIL PLUMBING
- ☐ SITE PREPARATION AND EARTHWORK
- ☐ TURFING AND SOFT LANDSCAPING
- ☐ ROADS, HARDSTANDING, FOOTPATHS AND PAVINGS
- ☐ FENCING AND GATES
- ☐ SURFACE DRAINAGE
- ☐ SEWERAGE
- ☐ EXTERNAL WATER SUPPLY INSTALLATION
- ☐ OTHER EXTERNAL WORKS
- ☐ ENVIRONMENTAL PROTECTION WORKS
- ☐ DEMOLITION WORKS AND SITE CLEARANCE
- ☐ PENYEDIAAN LUBANG, MEDIA TANAMAN, KAYU PANCANG DAN KERJA - KERJA PENYELENGGARAAN
- ☐ SLOPE STABILISATION & GROUND TREATMENTS
- ☐ AIR CONDITIONING SYSTEM
- ☐ FIRE FIGHTING

Search the web and Windows

12:30 PM 11/4/2015

# DATA ACCURACY IN RATOL SYSTEM

Jabatan Kerja Raya Malaysia 20... X JKR Rates Online (RATOL) X +

ratol.jkr.gov.my/cpm

Portal RATOL & Rates PreMo  
CAWANGAN KONTRAK UKUR DAN BAHAN

Home Rates PreMo Contact Us Logout

## Rates PreMo Result

### Rates PreMo Rates Table

Elements	Unit	Rates
CONCRETE WORK Reinforced In-Situ Concrete Grade 30 as specified In floor beam	m3	299.20
CONCRETE WORK Reinforced In-Situ Concrete Grade 30 as specified In roof beam	m3	1099.00
CONCRETE WORK Reinforced In-Situ Concrete Grade 30 as specified In suspended beam	m3	357.10
CONCRETE WORK Reinforced In-Situ Concrete Grade 30 as specified In columns	m3	1099.00
CONCRETE WORK Reinforced In-Situ Concrete Grade 30 as specified In stiffener	m3	1099.00
CONCRETE WORK Reinforced In-Situ Concrete Grade 35 as specified In floor beam	m3	95.30
CONCRETE WORK Reinforced In-Situ Concrete Grade 35 as specified In upper roof beam	m3	378.40
CONCRETE WORK Reinforced In-Situ Concrete Grade 35 as specified In top roof beams	m3	378.40
CONCRETE WORK Reinforced In-Situ Concrete Grade 35 as specified In isolated beam	m3	362.00
CONCRETE WORK Reinforced In-Situ Concrete Grade 35 as specified	m3	102.90

## Rates PreMo List

### Rates PreMo Options

#### Rates PreMo Primary Input

**Work Category**  
BUILDING

**Element**  
FRAME

**Site Location**  
KELANTAN

**Start Month / Year**  
Sep 2015

**End Month / Year**  
Oct 2015

**Expected Month / Year**  
Nov 2015

Rates PreMo Variables	Value
Polisi Baru Kerajaan	Show
Pasaran Industri Binaan	Show
Perubahan Harga Bahan Binaan	Show
Pasaran Buruh	Show
Pasaran Loji	Show

Search the web and Windows

12:44 PM  
11/4/2015

# PROBLEMS IN RATOL SYSTEM


The screenshot shows a web browser window with the URL `ratol.jkr.gov.my/search#`. The browser tabs include 'Jabatan Kerja Raya | Jabatan Ke...', 'JKR-PWCIC', and 'JKR Rates Online (RATOL)'. The main content area displays a modal window titled 'checkoutRESULTS' with a close button. Inside the modal, there is a table with the following columns: 'Work Item', 'Unit', 'Location', 'Range (RM)', 'Average (RM)', and 'Overall Average (RM)'. The table contains a single row with the text 'There is no data'. Below this table, there is a section titled 'List Of Projects' with a sub-section 'Tools & Features'. This section contains a table with columns 'Location', 'Project', and 'Average (RM)'. This table also contains a single row with the text 'There is no data'. To the right of the 'List Of Projects' table, there is a button labeled 'Print this page' and a button labeled 'Print'. Below the modal, there is a table with the following data:

No	Work Item	Unit	Range (RM)	Average (RM)	Action
5	DRAINAGE WORKs NEW PIPE CULVERT Inlet / Outlet Structures Reinforced concrete headwall, wingwall, base sl... 1500mm diameter single pipe culvert.	no	1000.00 - 3500.00	1900.00	<a href="#">Add to Basket</a>
6	DRAINAGE WORKs NEW PIPE CULVERT Fill Material Filling with suitable material in layers up to formati...	m3	10.00 - 12.00	11.00	<a href="#">Add to Basket</a>
7	DRAINAGE WORKs NEW PIPE CULVERT	m3	30.00 - 45.00	39.17	<a href="#">Add to Basket</a>


On the right side of the page, there is a sidebar with the following items: 'APRON AND PERIMETER DRAIN', 'FRAME', 'UPPER FLOORS', 'ROOF', and 'STAIRS'.

Data access on 15 October 2018

# PROBLEMS IN PWCIC SYSTEM



**PUBLIC WORKS COST INFORMATION CENTRE (PWCIC)**  
Public Works Department of Malaysia


















Waiting Approval (0)

Menu Logout [Kaz]

Create New Project

--Category-- --States-- --Status-- Filter

No	Project Name	Category	State	Created By	Created At	Updated At	Action
1	ABCD	CIVIL	Perlis	Admin	2016-04-14 08:51	2018-08-02 12:26	  
2	abcde	BUILDING/CIVIL	Perlis	Admin	2016-10-07 09:35	2016-10-07 09:35	  
3	Master BUR	CIVIL	Selangor	Admin	2013-10-14 16:18	2016-10-27 09:33	  
4	Master BUR	BUILDING/CIVIL	WP Putrajaya	Admin	2016-02-05 15:07	2016-02-05 15:07	  
5	Pembinaan	BUILDING/CIVIL	Melaka	Admin	2017-01-24 11:10	2018-10-02 15:52	  

Data access on 15 October 2018

# PROBLEMS IN PWCIC SYSTEM



PUBLIC WORKS COST INFORMATION CENTRE (PWCIC)  
Public Works Department of Malaysia



Menu Back Logout

Project Title : Master BUR

Building Work -- Select --

No	Code	Item Name	Update	Unit	Rate	Action
----	------	-----------	--------	------	------	--------

NO DATA

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The website will be best viewed using 1024x800 screen resolution with Mozilla Firefox 4.0, Google Chrome 11 and Internet Explorer 9 and above.

**Data access on 15 October 2018**

# Who's Job is it?

This is a little story about four people named **Everybody**, **Somebody**, **Anybody**, and **Nobody**.

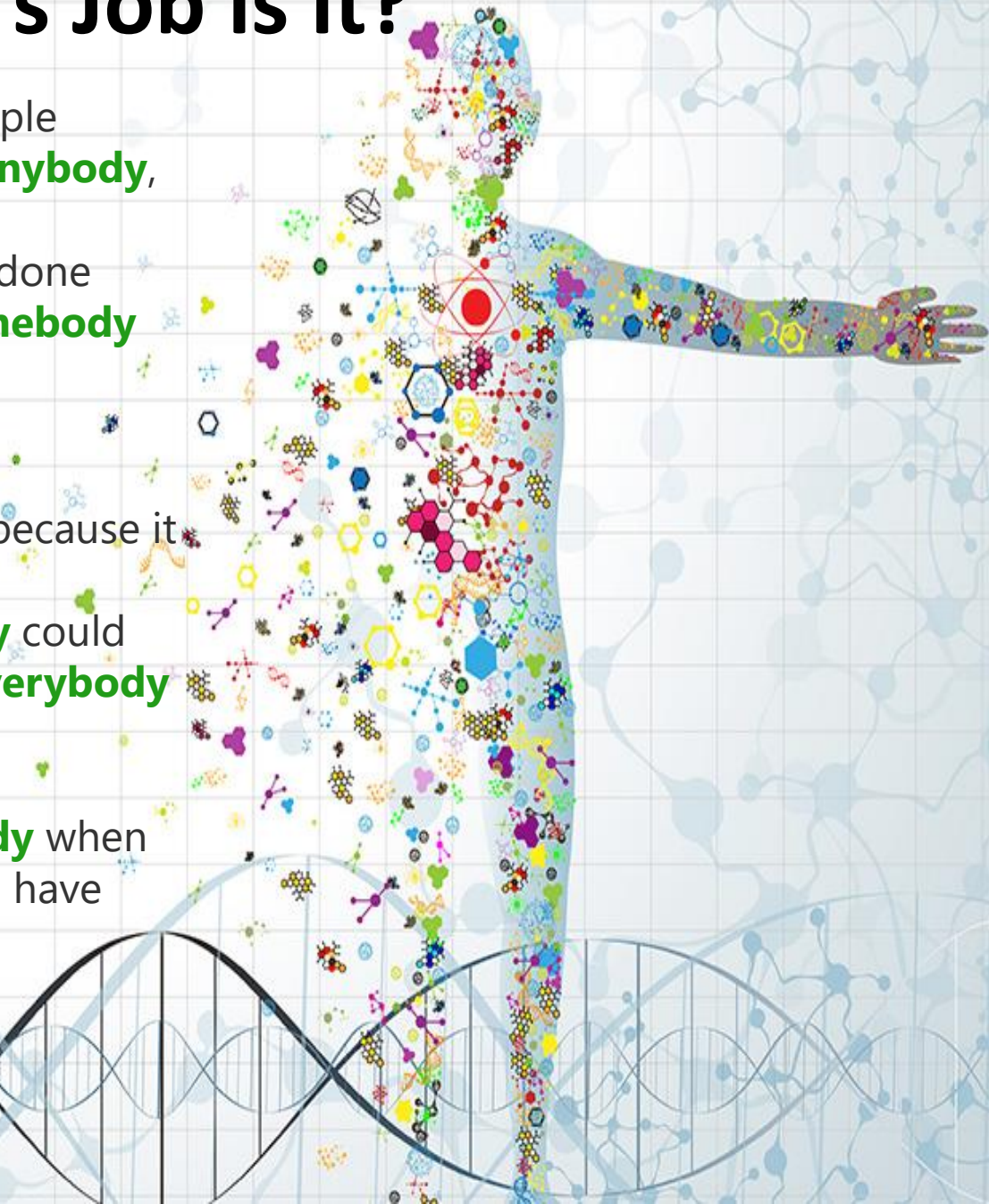
There was an important job to be done and **Everybody** was sure that **Somebody** would do it.

**Anybody** could have done it, but **Nobody** did it.

**Somebody** got angry about that because it was **Everybody's** job.

**Everybody** thought that **Anybody** could do it, but **Nobody** realized that **Everybody** wouldn't do it.

It ended up that **Everybody** blamed **Somebody** when **Nobody** did what **Anybody** could have done.



## A central illustration featuring a hand holding a blue smartphone. Surrounding the phone are various icons: a calendar with blue squares, a magnifying glass over a pie chart, a clipboard with a checklist, a coffee cup with steam, a house with a Wi-Fi symbol, a person in a circle, a bar chart, a line graph, a pill, a DNA helix, a heart, a speech bubble, a calendar, a truck, a dumbbell, a magnifying glass, a clipboard, a coffee cup, a house, a person, a bar chart, a line graph, a pill, a DNA helix, a heart, a speech bubble, a calendar, a truck, a dumbbell. The background is a light gray grid.



**PEOPLE**



**PROCESS**



**TECHNOLOGY**

# PEOPLE ISSUES



- **LACK OF COMMUNICATION AND DATA SHARING**
- **LACK OF TRUST**
- **LACK OF INTEREST TO SHARE DATA**
- **SELFINESS**

# PROCESS ISSUES

- 
- **USE OF TRADITIONAL TECHNIQUES**
  - **QUALITY OF DATA**
  - **NOT FIT WITH WORK PROCESS**
  - **LACK OF STANDARDIZED MECHANISM FOR DOCUMENTATION TRANSMISSION AND RECORDING COST DATA**
  - **LACK OF THE AVAILABILITY OF REQUIRED INFORMATION**
  - **LACK OF COORDINATION**
  - **LACK OF COLLABORATION**

# TECHNOLOGY ISSUES

- ISOLATED SYSTEM
- INTEROPERABILITY ISSUES
- LACK OF AUTOMATED PROCESS
- LOSS OF DATA

## Who wants Change?

Once there were four people named **Everybody**, **Somebody**, **Anybody**, **Nobody** who wanted change.

So, **Everybody** said "I want change".

**Somebody** said "If only anybody would start to change, I will join."

But nobody said "I will change."

Finally **Everybody** stayed same, blaming **Somebody** for waiting for **Anybody** to start changing. So, nobody changed.

# CONCLUSION

**TIME**

for  
change



**Thank You**