

**CUSHIONING THE IMPACT
of Emerging Technologies
on the Geodetic
Engineering Profession**

**32nd GEP CAR Division
Annual Regional Convention
Kiangnan, Ifugao
January 31, 2020**

**EPIFANIO D. LOPEZ
Chairman, PRC-BGE**

Session Outline

- **Overarching Technology Trends**
- **Impacts on Geospatial Landscape**
- **Impacts on our Practice**
- **Cushioning the Impacts**
- **Take-Home Message**



5 OVERARCHING TRENDS

**DRIVING
EMERGING
GEOSPATIAL
TECHNOLOGIES**

OVERARCHING TRENDS

1. REAL-TIME DATA COLLECTION



OVERARCHING TRENDS

**2. MINIATURIZATION
OF TECHNOLOGIES**

OVERARCHING TRENDS

3. Proliferation of new mobile SENSOR PLATFORMS

OVERARCHING TRENDS

4. Expanding WIRELESS AND WEB NETWORKS

OVERARCHING TRENDS

5. Advances in COMPUTING SPEED AND CAPACITY

- **IMPACT
OF OVERARCHING TRENDS
ON THE GEOSPATIAL LANDSCAPE**



- **DATA COLLECTION
AND GENERATION**

- **BIG DATA SETS**



BIG DATA ➤ 4 Vs

- **VOLUME**
- **VELOCITY**
- **VARIETY**
- **VALUE**

● **DATA ANALYSIS**

- **MULTI-DIMENSIONAL**
- **MULTI-RESOLUTION**
- **MULTI-TEMPORAL**



● **INFRASTRUCTURE**

➤ **STORAGE**

➤ **PROCESSING**

➤ **PROTECTION OF DATA**





● **ACCESS**
(TECHNOLOGY and DATA)

➤ **INTERNET**

➤ **DEVICES**

● **WORKFORCE**

➤ **AWARENESS OF NEW SKILLS**

➤ **TRAINING** ➤ **SPECIALIZATION**



TECHNO TREND

- **REAL-TIME DATA COLLECTION**
- **MINIATURIZATION**
- **MOBILE PLATFORM PROLIFERATION**
- **WEB NETWORK EXPANSION**
- **COMPUTING SPEED ADVANCES**



IMPACT

- **BIG DATA GENERATION**
- **DATA ANALYSIS**
- **INFRA-STRUCTURE**
- **ACCESS**
- **WORK FORCE**

A photograph of a drone on a grassy field. The drone is black with red and yellow accents on its arms. It has four propellers and a camera mounted on the front. The background shows a green field, a fence, and hills under a blue sky with some clouds. The text is overlaid on the image in white, bold, sans-serif font on a black background.

IMPACT OF EMERGING TECHNOLOGIES ON OUR PROFESSIONAL PRACTICE

Image Credit:

Klaus Schwab 2016. weforum.org

Source: www.slideshare.net

Adapted from Mark Dinning's
'The World is Getting Smaller



**IMPACT
NO.1**

**Our world is getting
smaller and smaller.**

A photograph of a red brick wall with a dense covering of green ivy. The ivy is growing in several vertical columns, partially obscuring the bricks. The overall scene is a mix of red and green.

'CREEPING'
INVASION
OF OUR ROLES

Source: www.margopayne.wordpress.com

PROFESSIONAL PRACTICE.1

1. Control Surveys

1.1 Geodetic



1.2 Project



2. Mapping



3. Property Surveys



4. Parcellary Surveys



PROFESSIONAL PRACTICE.2

5. Engineering Surveys

6. Mineral Land Surveys

7. Photogrammetry/
Remote Sensing Multi-
disciplinary

8. GIS Multi-
disciplinary

PROFESSIONAL PRACTICE.3

9. Technology Transfer

10. Gravimetric Survey

11. Hydrographic Surveys

12. Consulting

LOOKING AT THE POSITIVE SIDE

**NEW TECHNOLOGIES OFFER
NEW OPPORTUNITIES**



- **Value-added outputs**



- **New clients**

LOOKING AT THE DOWNSIDE

● THE MARKET IS
MORE OPEN

➤ *'Push-button'*

➤ **Digital**

➤ **MORE DIFFICULT TO
REGULATE**

NEW MARKETS

- **For Geodetic Engineers**

... and

***NON-GEODETIC
ENGINEERS!***

NEW MARKETS

➤ Unless we **GRAB**
opportunities

... these may become

DOMAINS

of non-Geodetic Engineers!



➤ **Other professionals and**
ENTREPRENEURS
are hustling for market niche
and happily CUTTING CORNERS.



CUSHIONING
IMPACT NO.1



1. P€RADIGM SHIFT

➤ to see
different view

Source: dadslegacy.blogspot.com



***“The Lighthouse
vs the Battleship*”***

➤ Dangers of
**INFLEXIBILITY
and SELF-
IMPORTANCE**

Image Credit: Matthew Salomon

* Story by Frank Koch

● ***‘Time and tide wait for nobody.’***

➤ **If we don't make use
of a favorable opportunity,
we may**

NEVER GET

the same chance again.

Image Credit: Tom Danneman



***LET US
PROTECT
OUR TURF!***

**➤ Protect our professional rights
as suppliers of geospatial data.**

2. AMEND/REVISE RA8560

- **CLEARER SCOPE OF PRACTICE**
- **STIFFER PENALTIES**
 - **For *ILLEGAL* practice**
 - **For *VIOLATION* of Code of Ethics**



3. ENHANCE OUR RELEVANCE AS A PROFESSION

Image Credit: Datta (2019)



● **ATTEND**
relevant CPD programs

Image Credit: Maher.GeoAI.2018

- 
- **Develop and PURSUE**

Career Progression and Specialization (CPS) Program

Image Credit: Maher.GeoAI.2018

CAREER PROGRESSION AND SPECIALIZATION PATHWAYS

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graph TD; A[CAREER PROGRESSION AND SPECIALIZATION PATHWAYS] --> B[Professional Track]; A --> C[Academic Track]; A --> D[Creative Innovative Work]; A --> E[Leadership/Management]; A --> F[Research];
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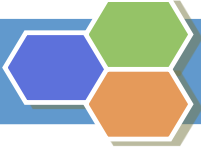
**Professional
Track**

**Academic
Track**

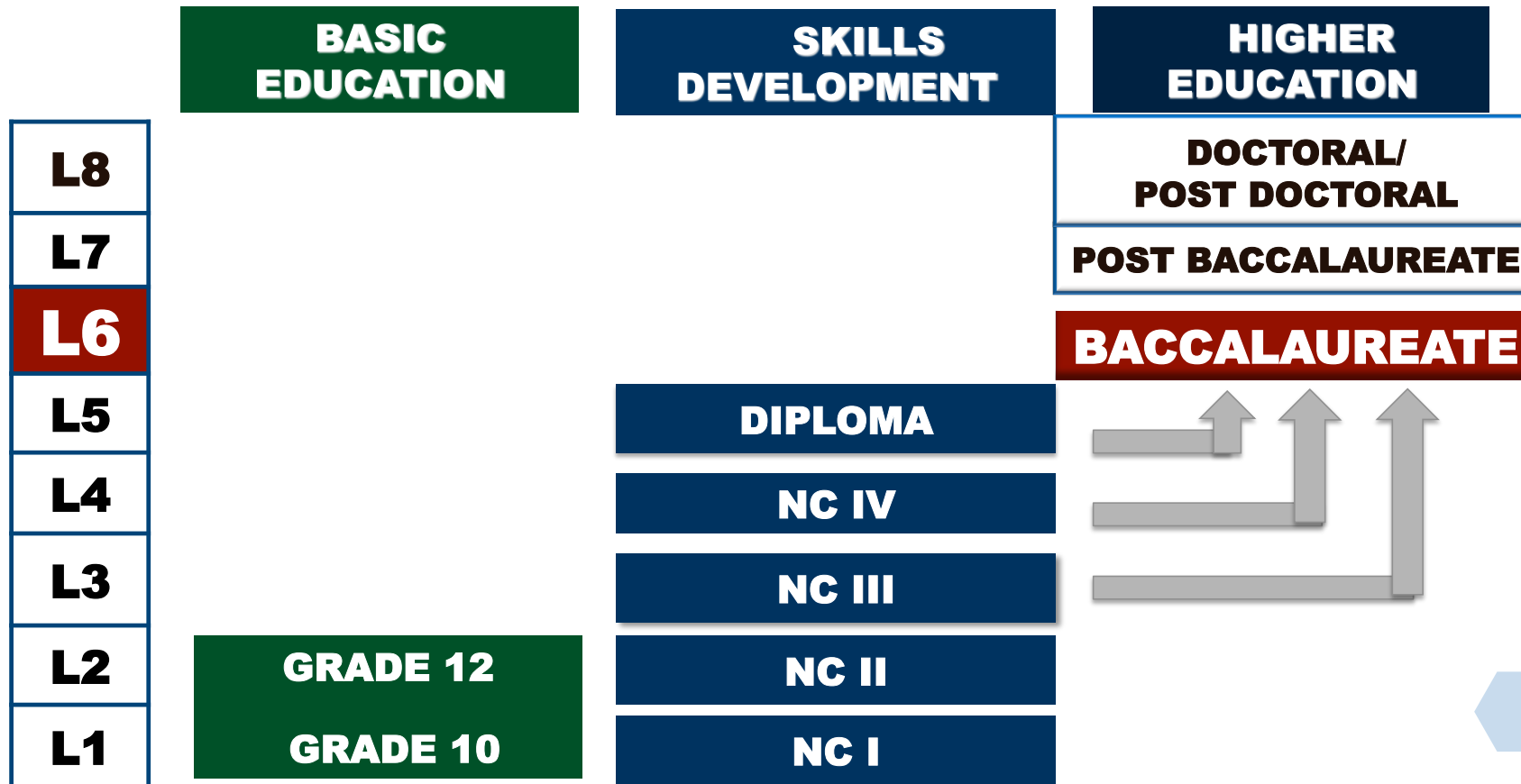
**Creative
Innovative
Work**

**Leadership/
Management**

Research



PHILIPPINE QUALIFICATIONS FRAMEWORK



CPS ROADMAP

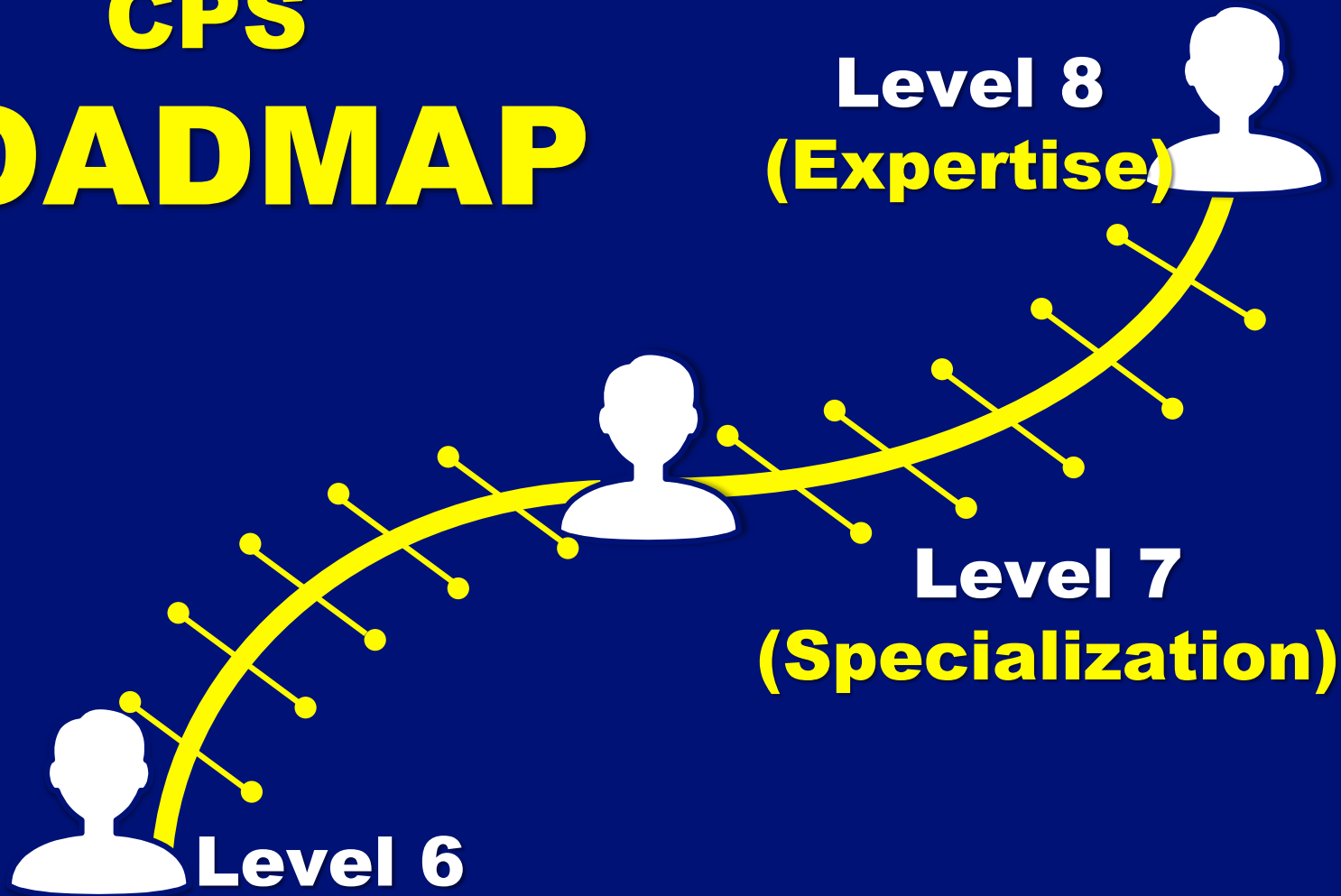


Image Credit: PRC Comm. Y.D. Reyes (2019)

CPS Competency

FACTORS:

- **KNOWLEDGE**
- **SKILLS**
- **VALUES**
- **APPLICATION**
- **DEGREE OF INDEPENDENCE**

20/20

VISION



SELF-ASSESSMENT



IMPACT NO. 2

**HIGH COST
OF SURVEY-GRADE
INSTRUMENTS**

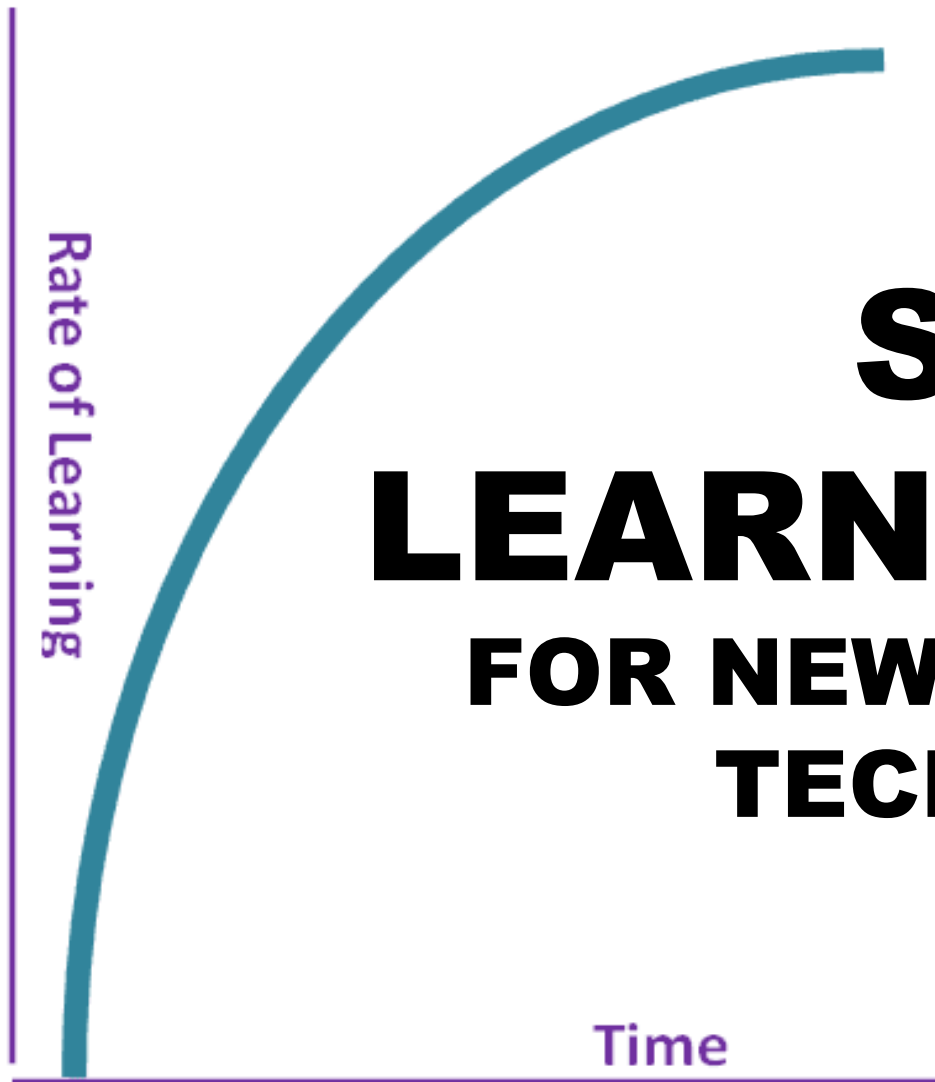
CUSHIONING IMPACT NO. 2

➤ **FORM**

COOPERATIVE(S)

IMPACT NO. 3

**STEEP
LEARNING CURVE
FOR NEW AND EMERGING
TECHNOLOGIES**



Source: www.valsgalore.blogspot.com

TLS POINT CLOUD

➤ Point Cloud Processing

Source: www.

Source: www.geospatialworld.com

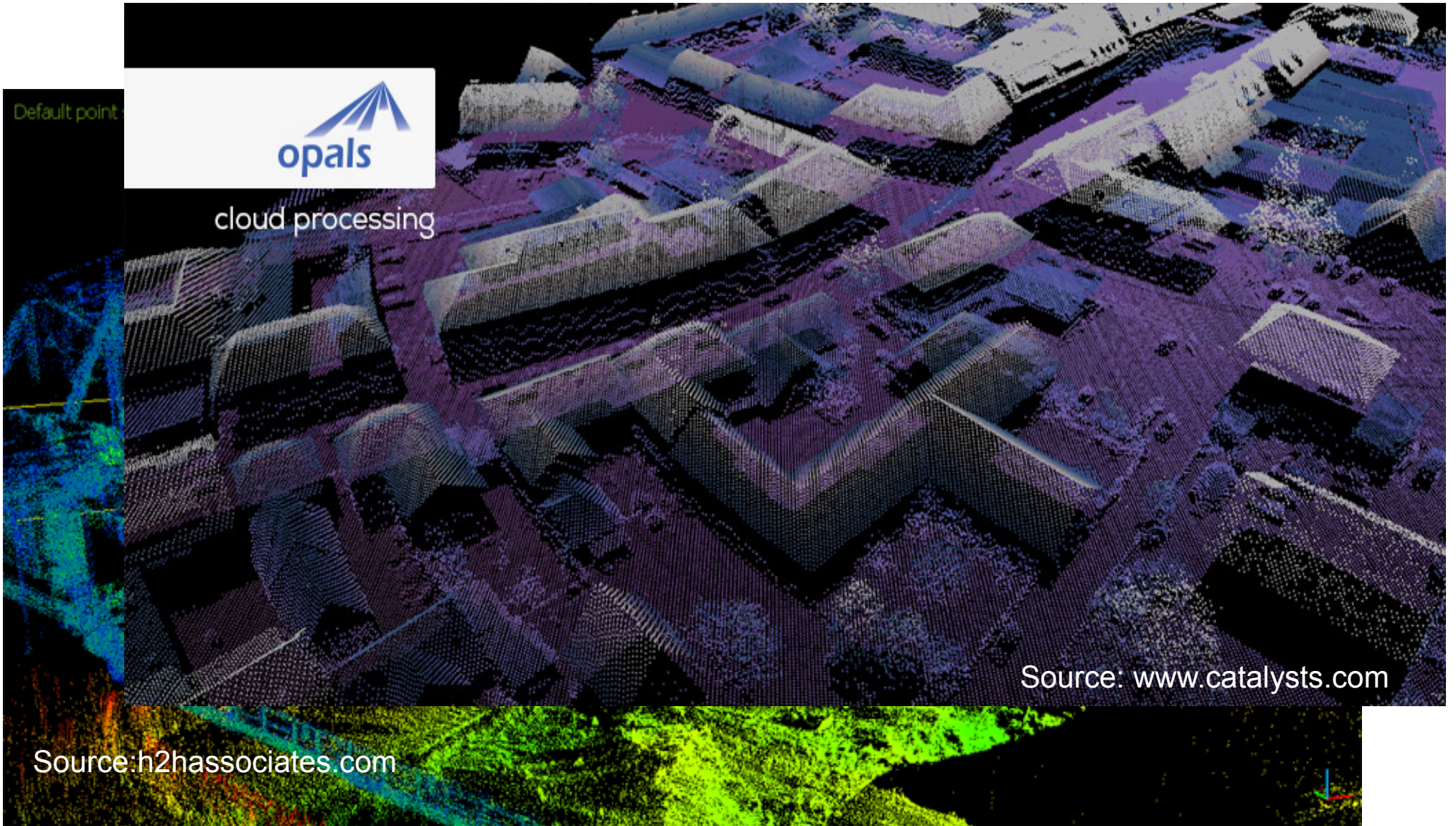
Default point



cloud processing

Source: www.catalysts.com

Source: h2hassociates.com





➤ Geospatial
**ARTIFICIAL
INTELLIGENCE
(AI)**

Image Credit: Chaturvedi (2018)

***“AI can do
NINETY
PERCENT (90%)
of surveyors’ basic work.”***

**Royal Institute of Chartered
Surveyors’ Report 12/08/2017**

Article Credit: Samantha McClary (<https://www.egi.co.uk/news/>)



CUSHIONING
IMPACT NO.3



REVERSE

MENTORING

Source: www.business.agorize.com

A photograph of three young professionals in an office setting. A man in a light blue shirt and a woman in a grey top are looking at a computer monitor. Another man in a white shirt and glasses is sitting at the desk, looking at the screen. The office has a whiteboard in the background with some text on it.

➤ **TECH-SAVVY**

➤ **GREW UP WITH
INTERNET AND
DIGITAL MEDIA**

● **MILLENNIALS**

Source: www.rappler.com

MILLENIAL GEODETTIC ENGINEERS

(Ages 21-40 in 2020)

4505/6073 \approx 74.2%

The background of the slide is a composite image. The left side shows a blue-tinted aerial view of a city grid with a semi-transparent hexagonal grid overlaid on top. The right side shows a satellite-style image of a coastline with a prominent bay or inlet. The text 'TAKE-HOME MESSAGE' is centered in a black box with white text.

TAKE-HOME MESSAGE

“ CONTINUOUS personal and professional development

ARE YOUR KEYS

to the FUTURE.”

• Brian Tracy



*Thank you
For your attention!*

Banaue Rice Terraces
Credit: www.reddit.com