The forecast is cloudy: a look ahead to the future of WIS

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- ‘Free and unrestricted’ data exchange is at the core of WMO
- Data policies, licenses, and technical standards enable sharing safety-critical data for the World Weather Watch programme
- Global Telecoms System (GTS)
- WMO Information System (WIS)

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WIS 2.0: The next step in data sharing infrastructure for all of WMO

"WIS 2.0: Prioritizes use of public telecoms networks."

"WIS 2.0: Adopts Web technologies ..."

"WIS 2.0: uses Web services for publishing data."

"WIS 2.0: adds open standard message protocols to the GTS."

- So why are web-services so important in WIS 2.0?

1. Everyone uses the Web!

2. APIs … encapsulation of complexity … interoperability … evolution.

- So how does all this work?
- How do users find the data they need?

1. M … is for Metadata

2. Shared infrastructure – WIS catalogue and discovery portal

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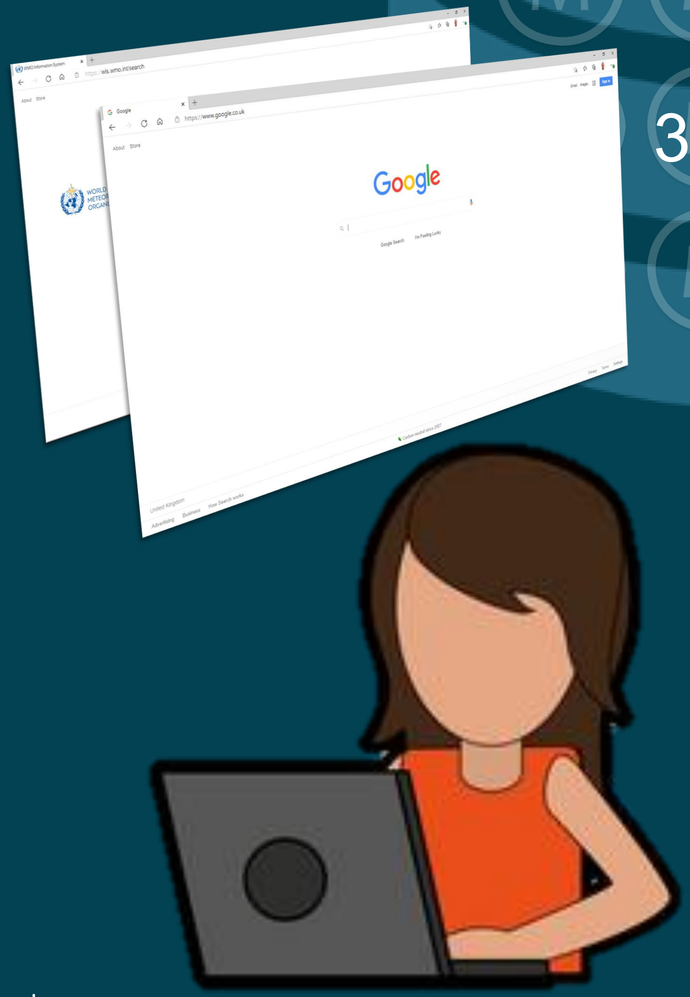
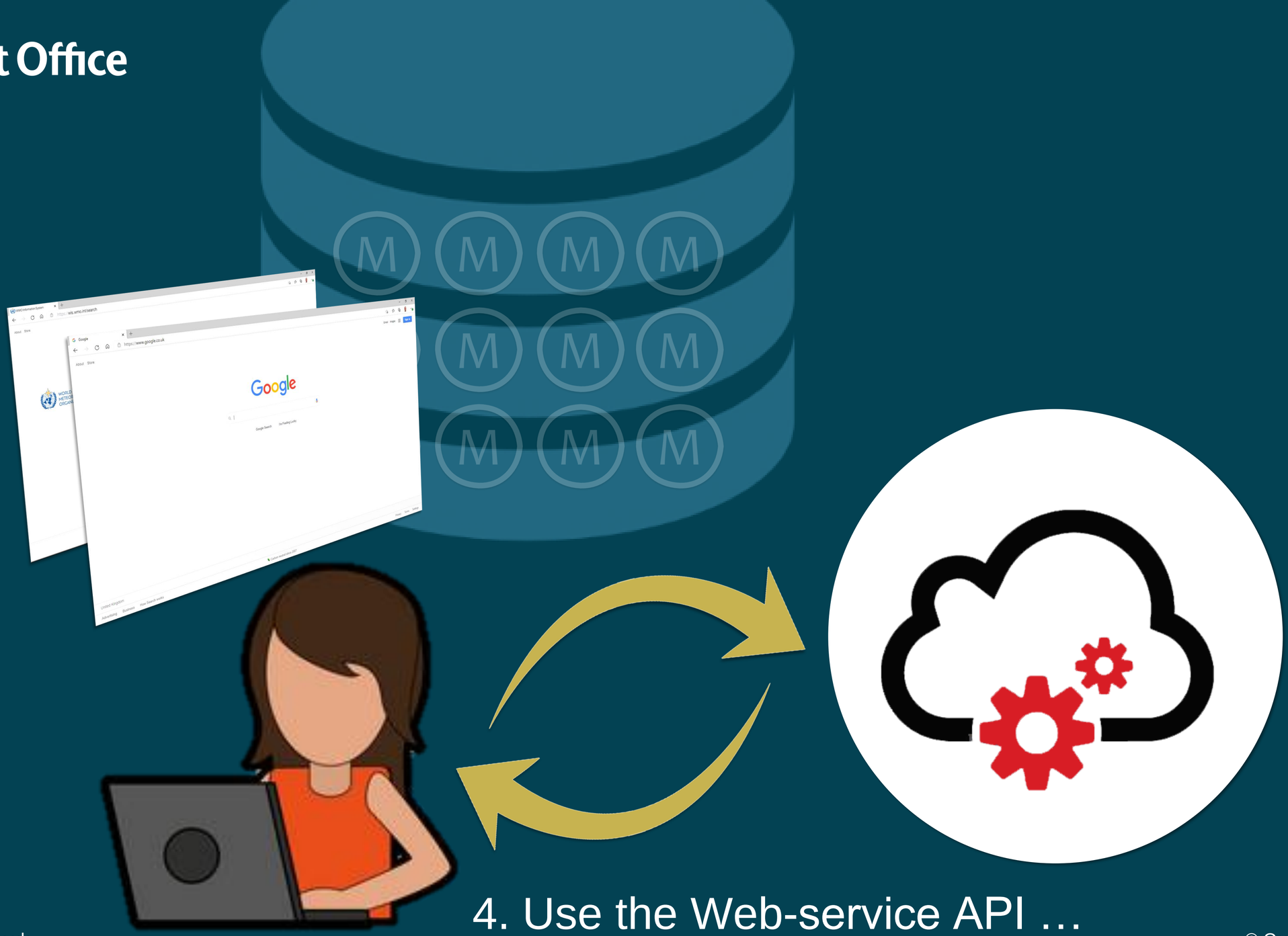


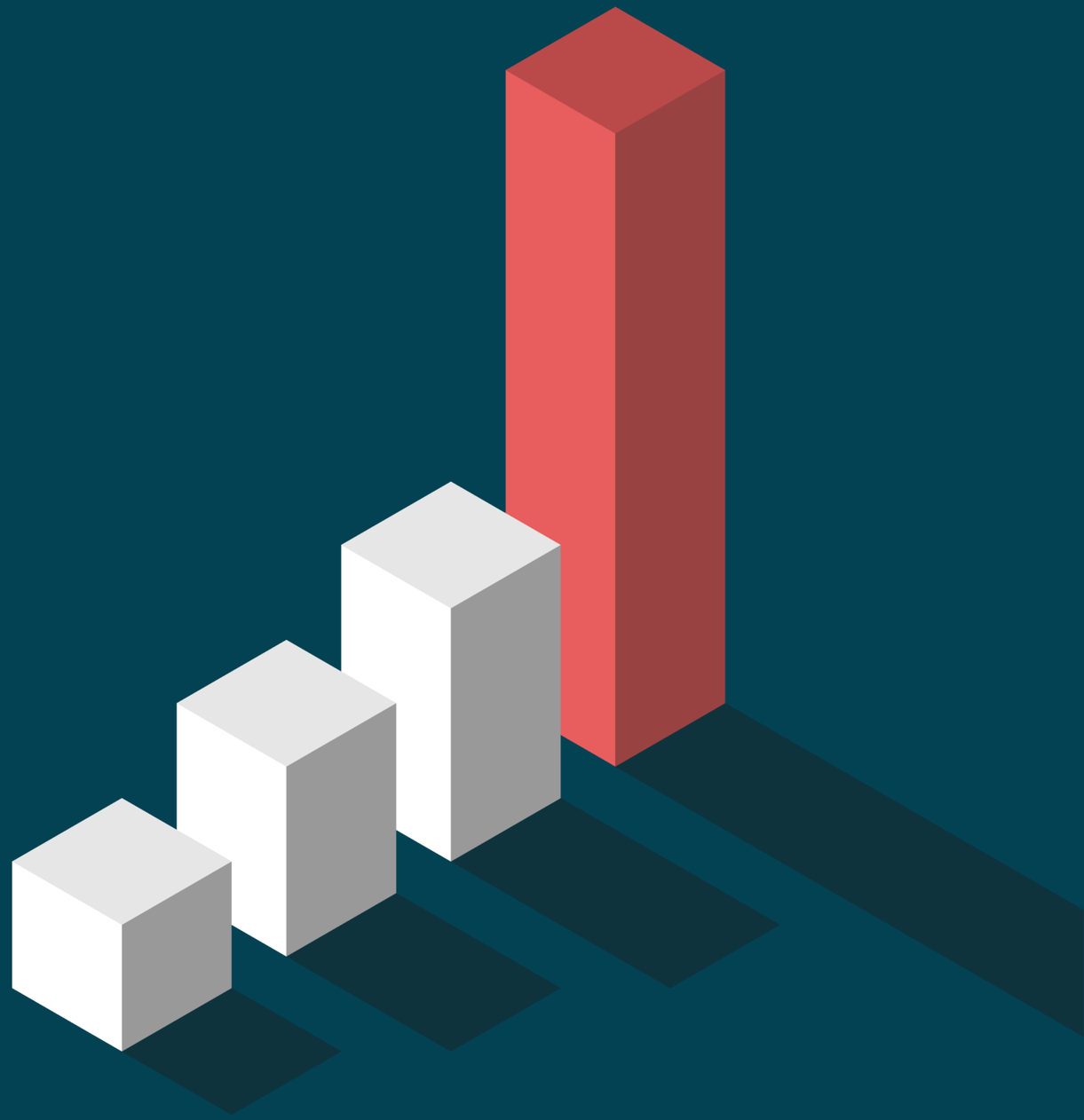
3. Search from where you feel most at home …



4. Use the Web-service API …

- We’ve been using Web-services for ages – so why are we talking about cloud?
- What is different now?

- Difference 1: explosive growth in data volumes
- Cloud-based platforms are being established to make ‘big-data’ accessible and usable



- Difference 2: how we work with data
- Using cloud, anyone can work with big-data
- Application developers want convenient access to data
- Data scientists use AI tools to analyse data
- We need to present our data through simple to use APIs

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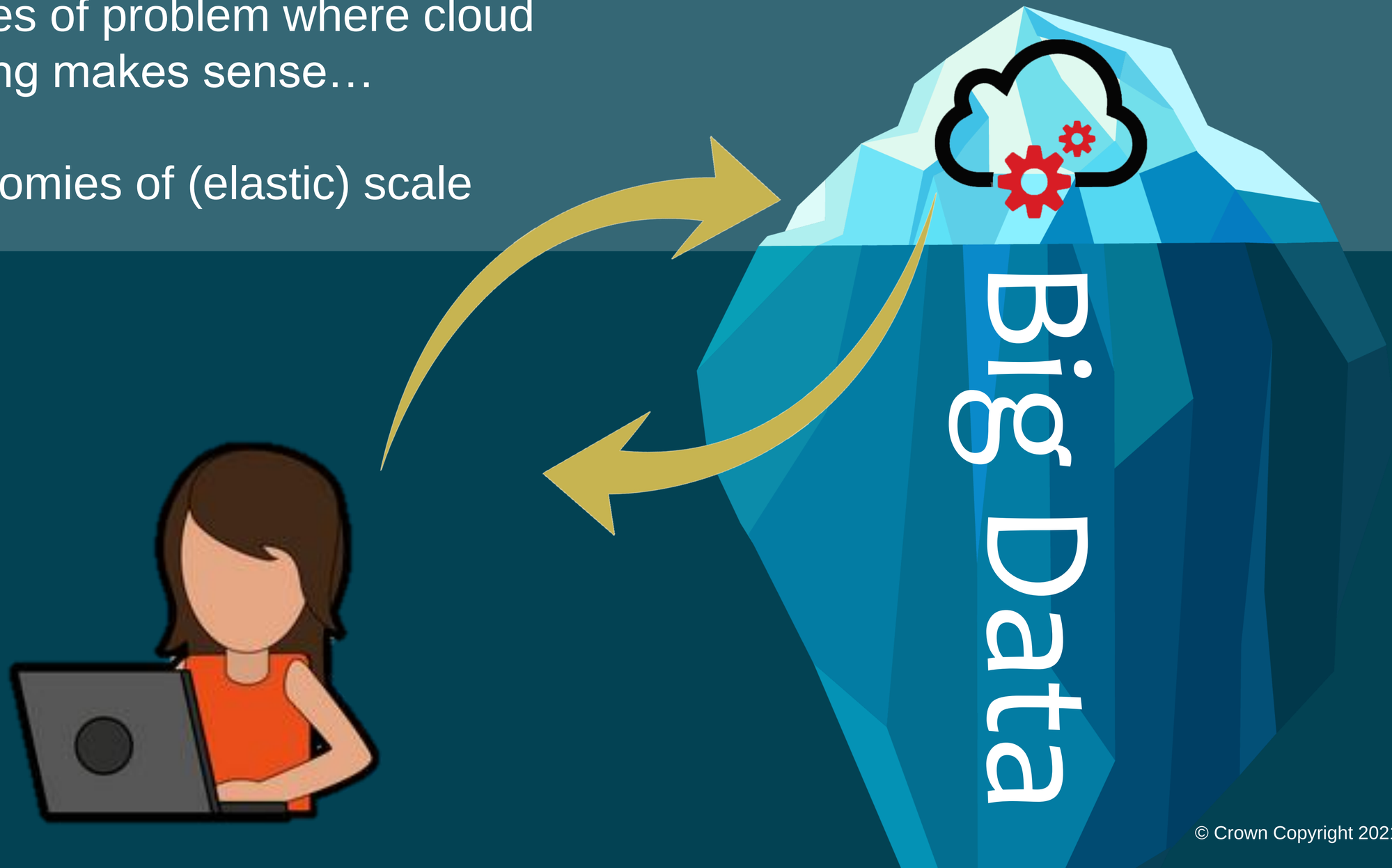
Two types of problem where cloud computing makes sense…

1. Economies of (elastic) scale



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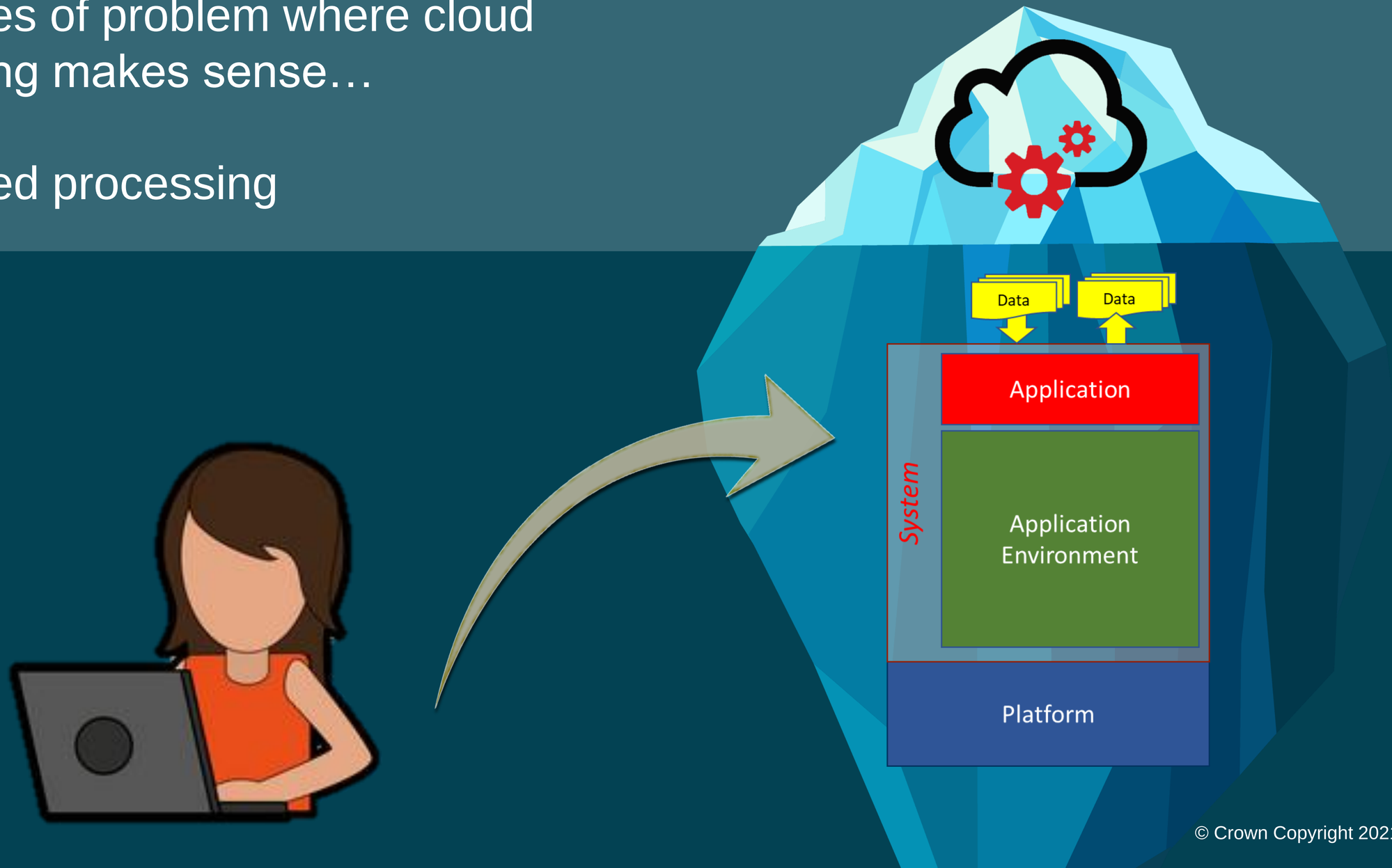
Two types of problem where cloud computing makes sense…

2. Hosted processing



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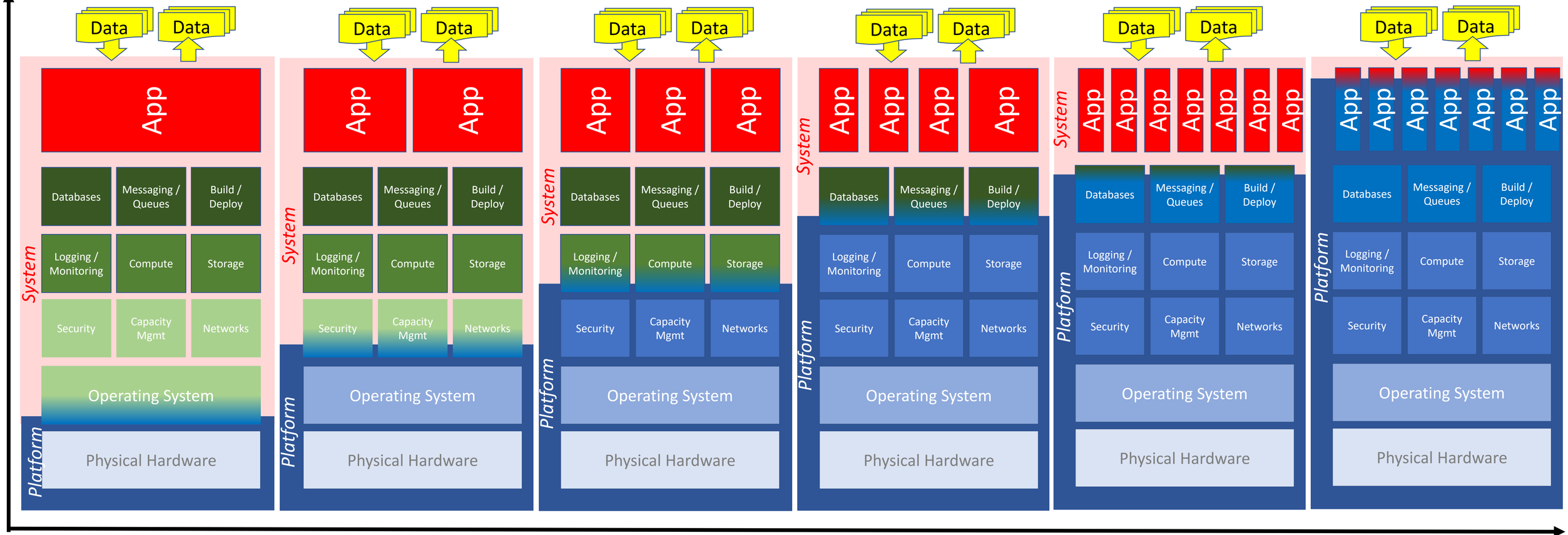
Application architecture tends towards smaller units of system; Platform tends towards Resource sharing

Hardware Provisioning | *Managed Data Centres* | *Infrastructure-as-a-Service* | *Platform-as-a-Service* | *Function-as-a-Service* | *Software-as-a-Service*



Value Chain

Degree of Cloudiness

NB: examples of Services only. Not a complete or precise value-chain depiction. For illustration of cloudiness only

Bare Metal | **Managed Servers** | **Virtualised** | **Cloud** | **Serverless** | **Systemless**

Virtualisation

Containerisation

Fewer services in Application Environment managed by System developer; System developer uses increasingly higher level Services

- How can we all benefit from advances in science and technology?
- “Leave no-one behind”
- Extend our existing GDPFS model
- World Meteorological Centres provide cloud-based data platforms that NMHS can use to help deliver their services

- Will we have a “global meteorological data cloud service” similar to RMDCN?
- In summary – yes. But several platforms, not just one. But we have a long way to go to make our cloud platforms interoperable and discoverable via WIS.
- Training and capacity building are essential!

Thank you

For more information on WIS 2.0 (but not so much about cloud) please see the following links:

WMO Information System 2.0 Implementation Approach Cg-18/INF 6.2(3)
https://wmoomm.sharepoint.com/:b:/s/wmocpdb/EcdiHpZdY7FNpvuZeQABanQB3NYM0OAC04ox0yyKf_CW4Q?e=IaEZNx

Draft Recommandation 4.1.3(1)/1 (INFCOM-1) - draft implementation plan and functional architecture
https://wmoomm.sharepoint.com/:w:/s/wmocpdb/EaYXoySveg1DgI7sNz5ezXoBgLpiEylMWZZAdipGo1xATg?e=hmZ5Zq