

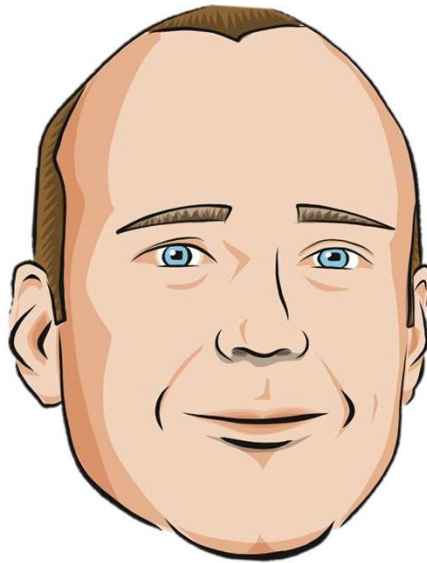


Building the data sharing platform of the future

@GlennColpaert

Data becomes more useful
the more it is used





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Microsoft Azure MVP

Microsoft Azure Advisor

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 [@GlennColpaert](https://twitter.com/GlennColpaert)

 glenncolpaert.wordpress.com

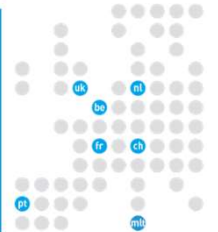
codit |



About Codit



2000 Belgium
2004 France
2013 Portugal
2016 Switzerland
2016 UK
2016 The Netherlands
2017 Malta



180
worldwide



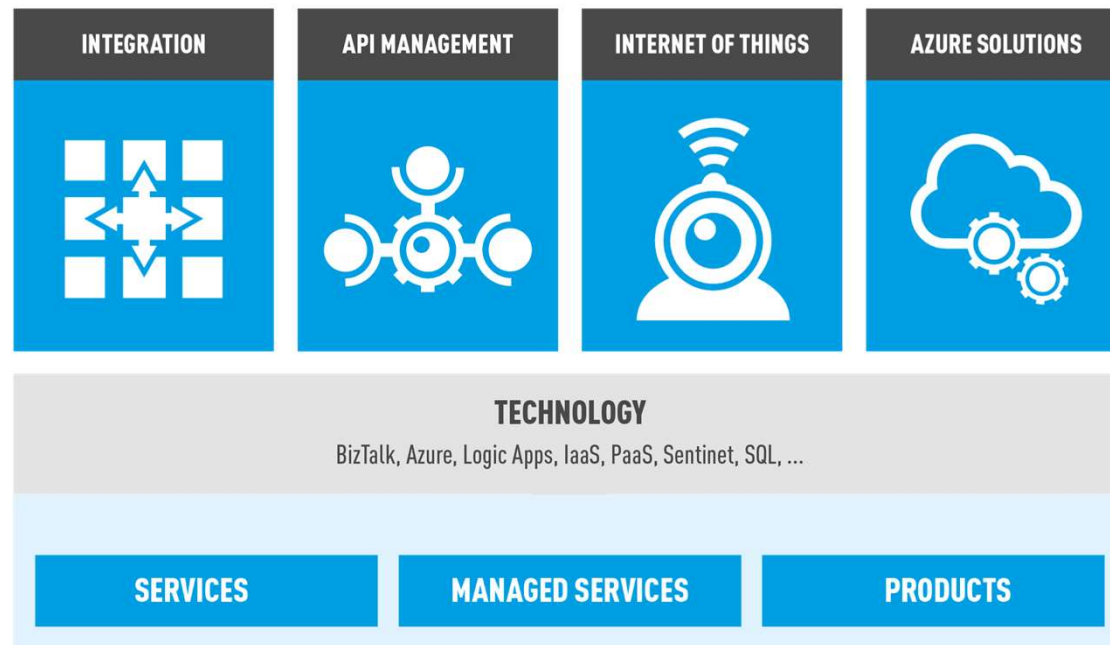
Largest Microsoft partner in Europe for integration, API management, IoT and Azure Solutions

Microsoft Partner



- Gold Application Development
- Gold Application Integration
- Gold Cloud Platform
- Gold Data Analytics

connecting ^(is) everything



“

There are no compromises you can make.

So we need the best data utility platform to eliminate redundant data entries and skyrocket the productivity for the port of Antwerp.

”

(Hans Verbeeck, CTO at NxtPort)

Agenda

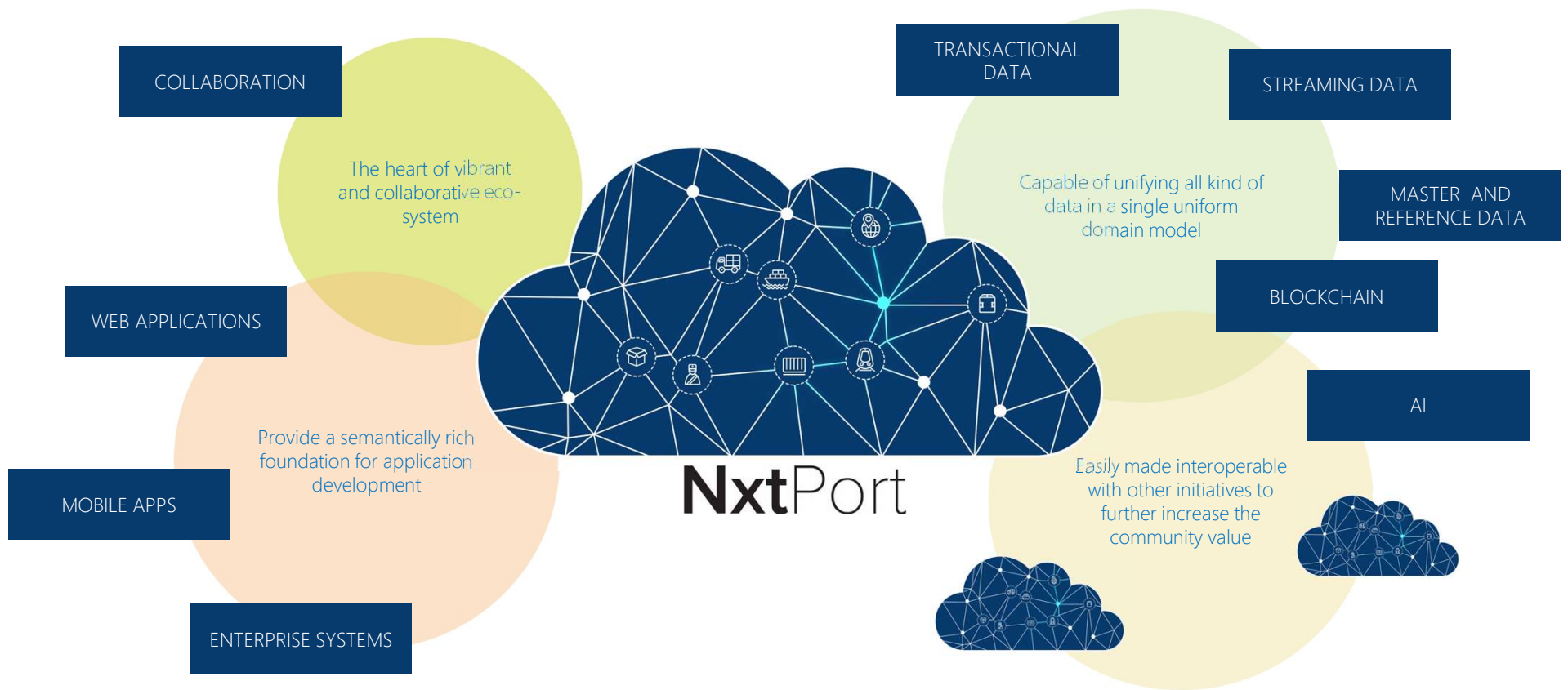
- | Setting the scene
- | Data Ingestion
- | Data Sharing & Notification
- | The API Economy

Setting the scene

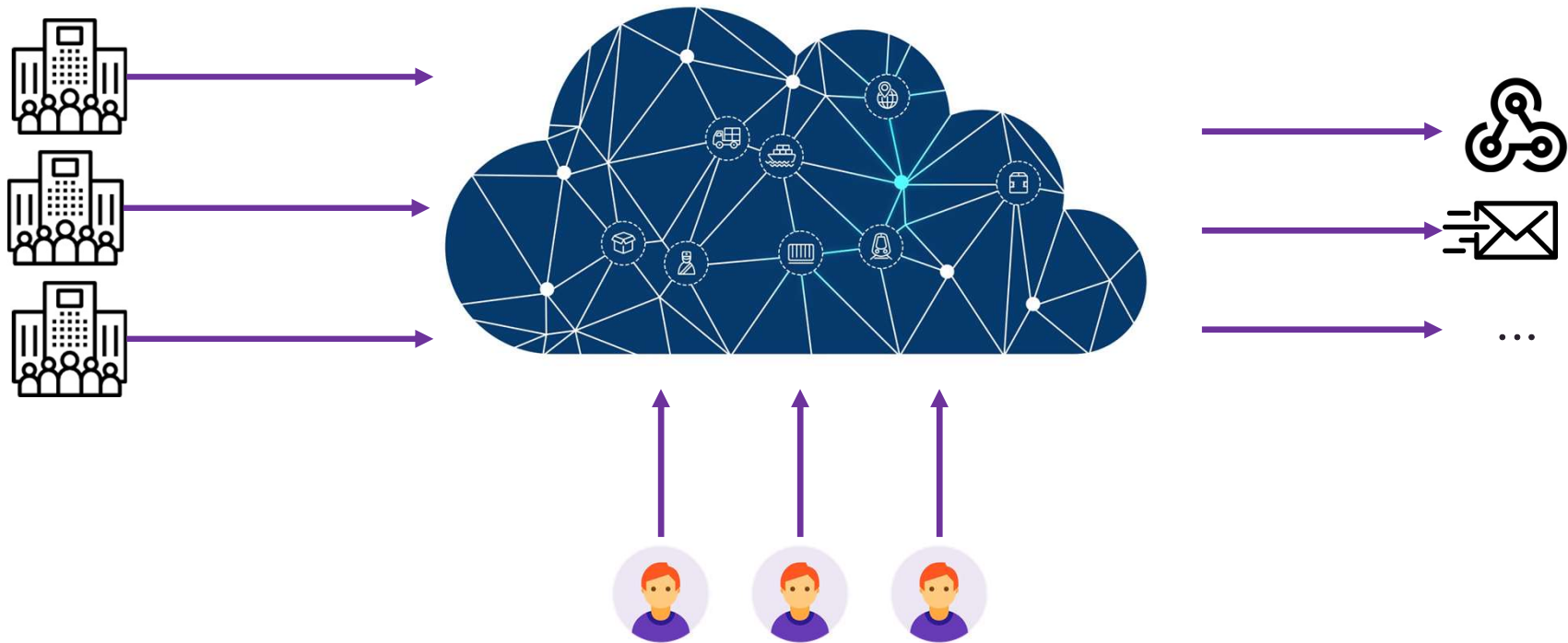
About NxtPort



The Vision



Dataflow

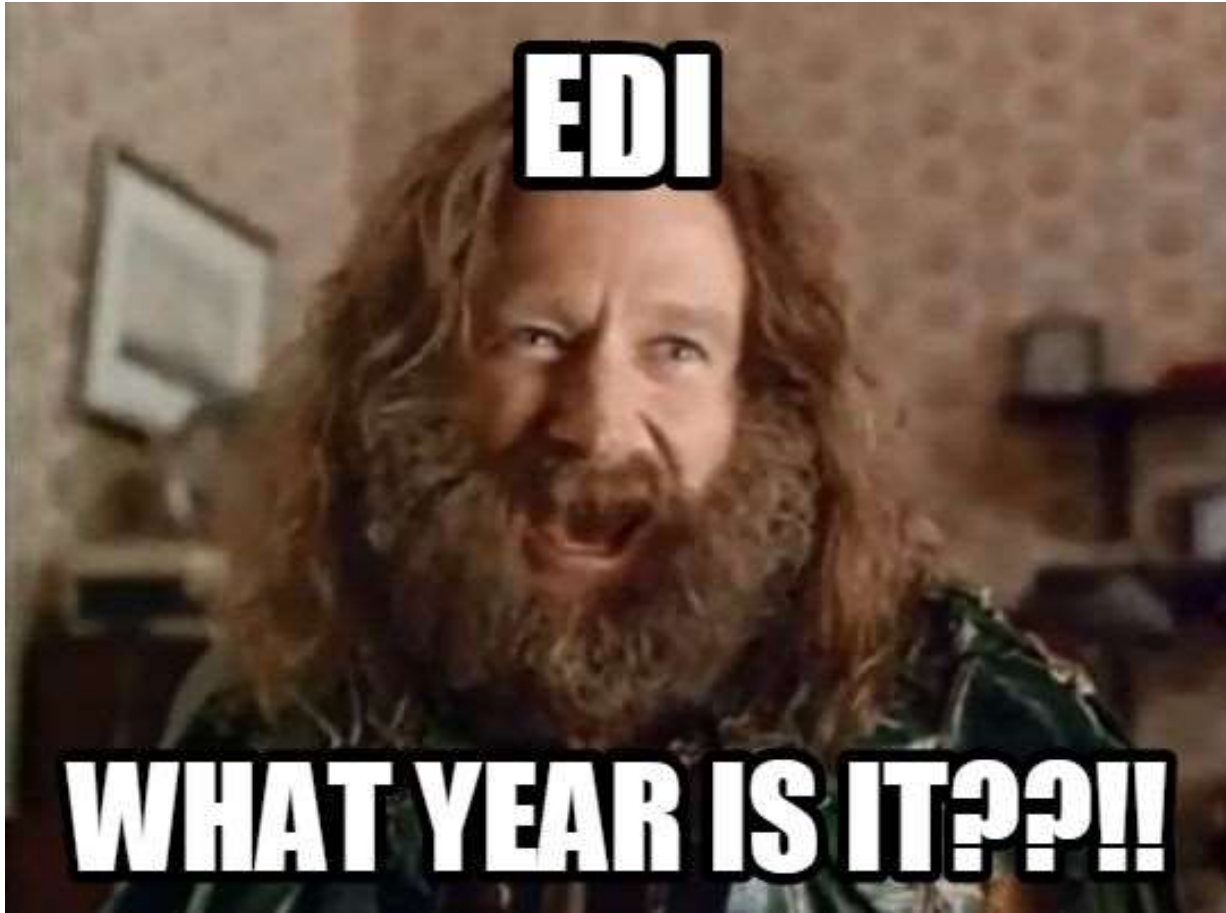


Data Ingestion

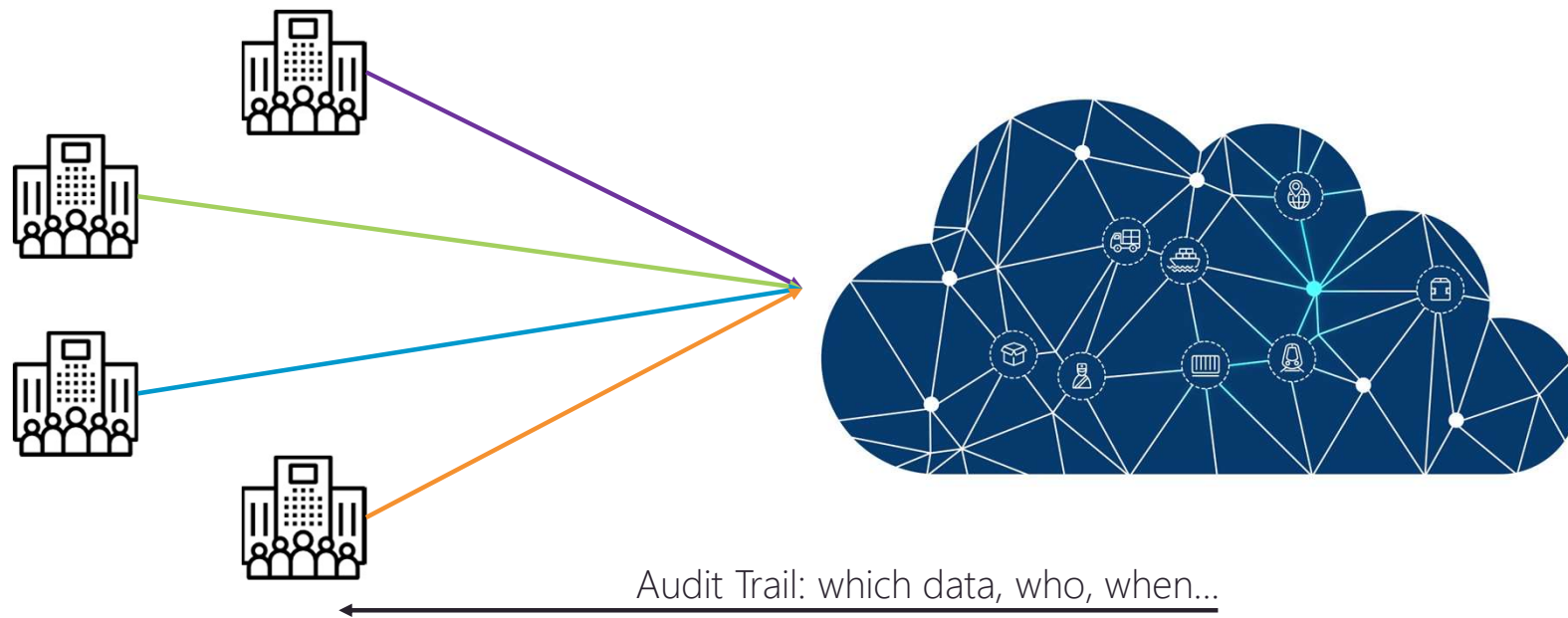
Creating robust discoverable metadata

Types of data

```
1.000 1.000 1.000 1.000 1 000 1 000 1 000 1 000 0 711 0.544 0.559 0.541 0.461 0.430 0.425 0.381 0.364 0.437 0 362 0 509 0 528 0 678 1 000 0.991 1.000 1.000 1.000
1.000 1.000 1.000 1.000 1 000 1 000 1 000 0 680 0 594 0.579 0.513 0.490 0.429 0.405 0.425 0.381 0.401 0.387 0 367 0 484 0 428 0 483 0 659 0.935 1.000 1.000 1.000
1.000 1.000 1.000 1.000 1 000 0 761 0 677 0 610 0 555 0.511 0.498 0.457 0.416 0.396 0.388 0.369 0.355 0.359 0 468 0 392 0 380 0 487 0 499 0.595 0.744 1.000 0.485
1.000 1.000 1.000 1.000 0 861 0 640 0 579 0 550 0 542 0.475 0.470 0.441 0.405 0.389 0.392 0.396 0.436 0.355 0 327 0 394 0 407 0 393 0 374 0.523 0.755 0.576 0.437
1.000 1.000 1.000 0.827 0 646 0 579 0 555 0 545 0 489 0.505 0.489 0.478 0.411 0.387 0.404 0.401 0.391 0.452 0 352 0 292 0 367 0 375 0 418 0.422 0.510 0.578 0.538
0.509 1.000 0.860 0.675 0 598 0 528 0 535 0 500 0 497 0.517 0.458 0.520 0.523 0.619 0.507 0.472 0.385 0.298 0 254 0 272 0 283 0 331 0 354 0.318 0.452 0.491 0.426
1.000 0.989 0.693 0.561 0 546 0 523 0 532 0 452 0 441 0.461 0.549 0.559 0.595 0.696 0.632 0.672 0.612 0.396 0 365 0 339 0 358 0 295 0 310 0.335 0.363 0.418 0.458
0.969 0.849 0.606 0.530 0 521 0 494 0 437 0 395 0 421 0.525 0.598 0.741 0.737 0.763 0.743 0.729 0.690 0.638 0 565 0 506 0 435 0 358 0 311 0.299 0.313 0.402 0.488
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1.000 0.924 0.554 0.517 0 450 0 416 0 449 0 373 0 585 0.700 0.727 0.736 0.776 0.772 0.785 0.740 0.700 0.653 0 626 0 590 0 502 0 431 0 338 0.279 0.295 0.330 0.446
1.000 1.000 0.557 0.517 0 457 0 396 0 393 0 445 0 535 0.558 0.707 0.719 0.751 0.757 0.792 0.764 0.714 0.694 0 642 0 597 0 542 0 419 0 341 0.289 0.291 0.326 0.380
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1.000 1.000 0.750 0.476 0 380 0 344 0 328 0 490 0 550 0.523 0.593 0.595 0.521 0.646 0.693 0.638 0.570 0.411 0 421 0 519 0 500 0 565 0 521 0.285 0.249 0.234 0.259
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0.760 0.587 0.639 0.557 0 681 0 593 0 397 0 340 0 575 0.574 0.547 0.591 0.566 0.620 0.506 0.614 0.550 0.532 0 487 0 589 0 610 0 615 0 504 0.482 0.310 0.271 0.237
0.577 0.599 0.443 0.561 0 657 0 363 0 914 0 625 0 482 0.553 0.531 0.578 0.722 0.561 0.523 0.639 0.634 0.510 0 481 0 558 0 533 0 597 0 570 0.509 0.342 0.263 0.243
0.639 0.615 0.748 0.639 0 911 0 796 0 647 0 614 0 529 0.553 0.588 0.551 0.544 0.595 0.433 0.606 0.598 0.467 0 313 0 363 0 349 0 415 0 578 0.512 0.305 0.274 0.256
0.569 0.661 0.486 0.605 0 448 0 494 0 705 0 730 0 579 0.532 0.525 0.523 0.518 0.397 0.310 0.338 0.466 0.378 0 559 0 479 0 444 0 430 0 494 0.455 0.232 0.248 0.237
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0.891 0.817 0.441 0.445 0 473 0 452 0 720 0 423 0 700 0.492 0.525 0.509 0.463 0.614 0.466 0.477 0.603 0.615 0 509 0 517 0 563 0 405 0 224 0.258 0.234 0.211 0.228
0.543 0.548 0.598 0.433 0 386 0 627 0 482 0 345 0 835 0.751 0.581 0.502 0.482 0.610 0.531 0.524 0.615 0.625 0 562 0 481 0 565 0 305 0 255 0.407 0.355 0.243 0.252
0.762 0.720 0.506 0.496 0 495 0 698 0 395 0 627 0 555 0.317 0.491 0.294 0.382 0.393 0.572 0.449 0.405 0.407 0 357 0 567 0 518 0 243 0 255 0.455 0.415 0.323 0.248
0.472 0.437 0.618 0.547 0 500 0 439 0 580 0 579 0 474 0.405 0.320 0.302 0.233 0.262 0.387 0.622 0.556 0.499 0 580 0 558 0 378 0 214 0 354 0.502 0.413 0.311 0.269
```



Types and Protocols

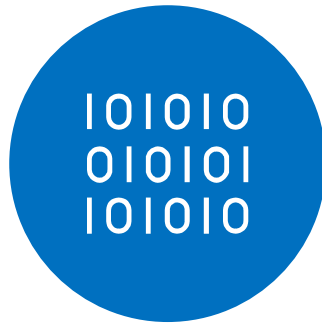


- | EDIFACT, X12, XML, TXT, JSON,...
- | HTTPS, FTP, SFTP, SMTP, X400, AS2,...

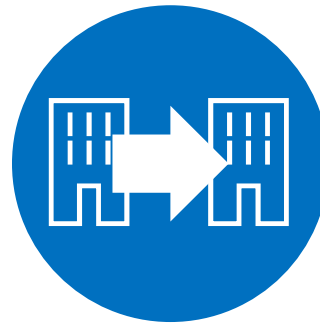
Platform Flexibility



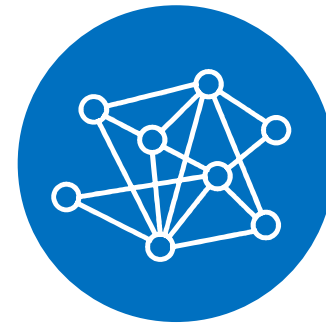
Messaging



Data
Wrangling

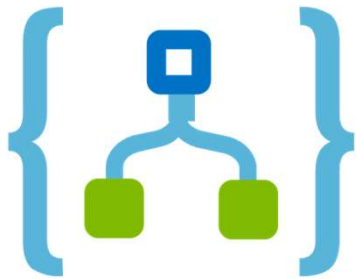


B2B & EDI



Application
Integration

Serverless at the heart of data ingestion



Logic Apps



Functions



Service Bus

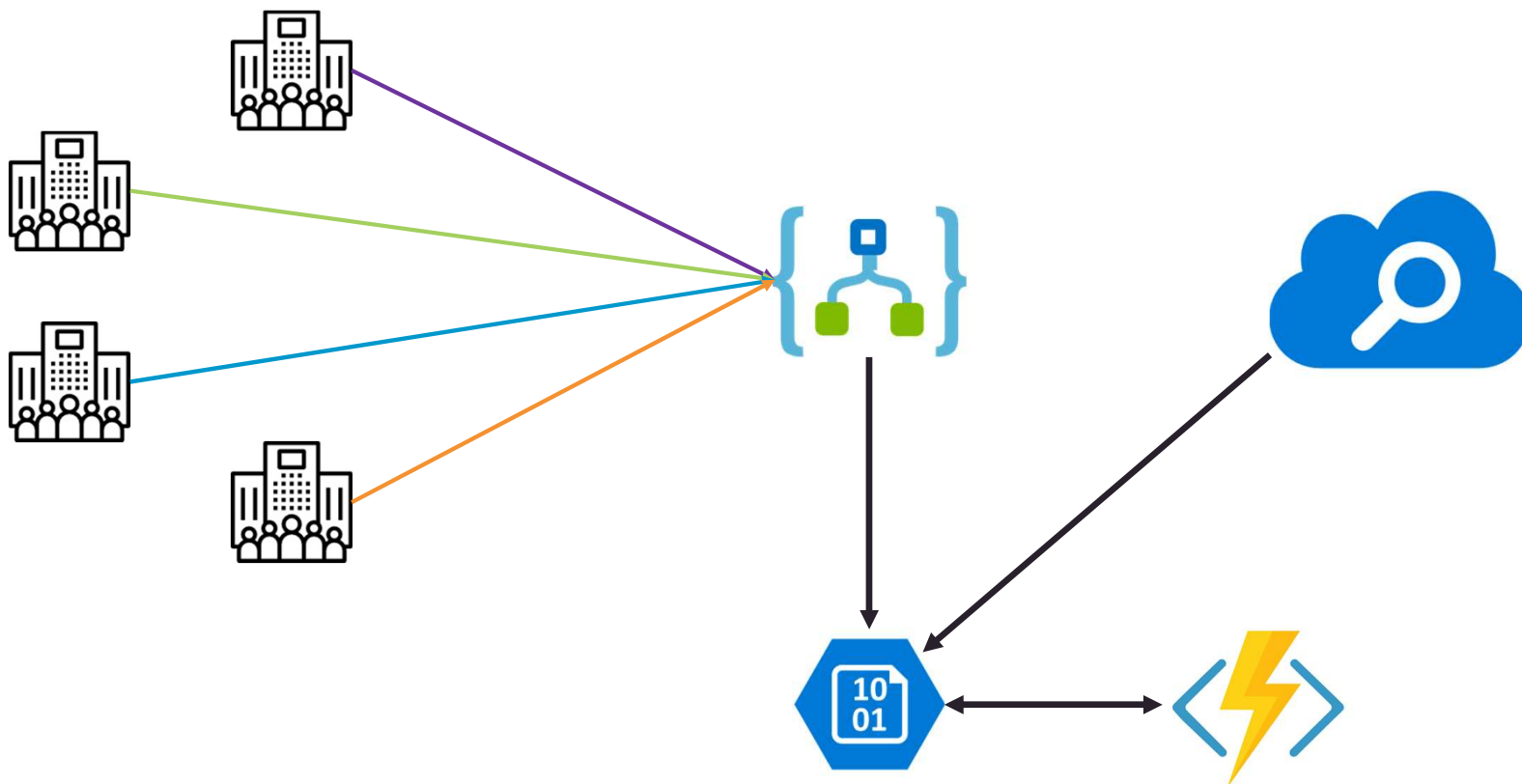


Blob Storage



Azure Search

High level architecture

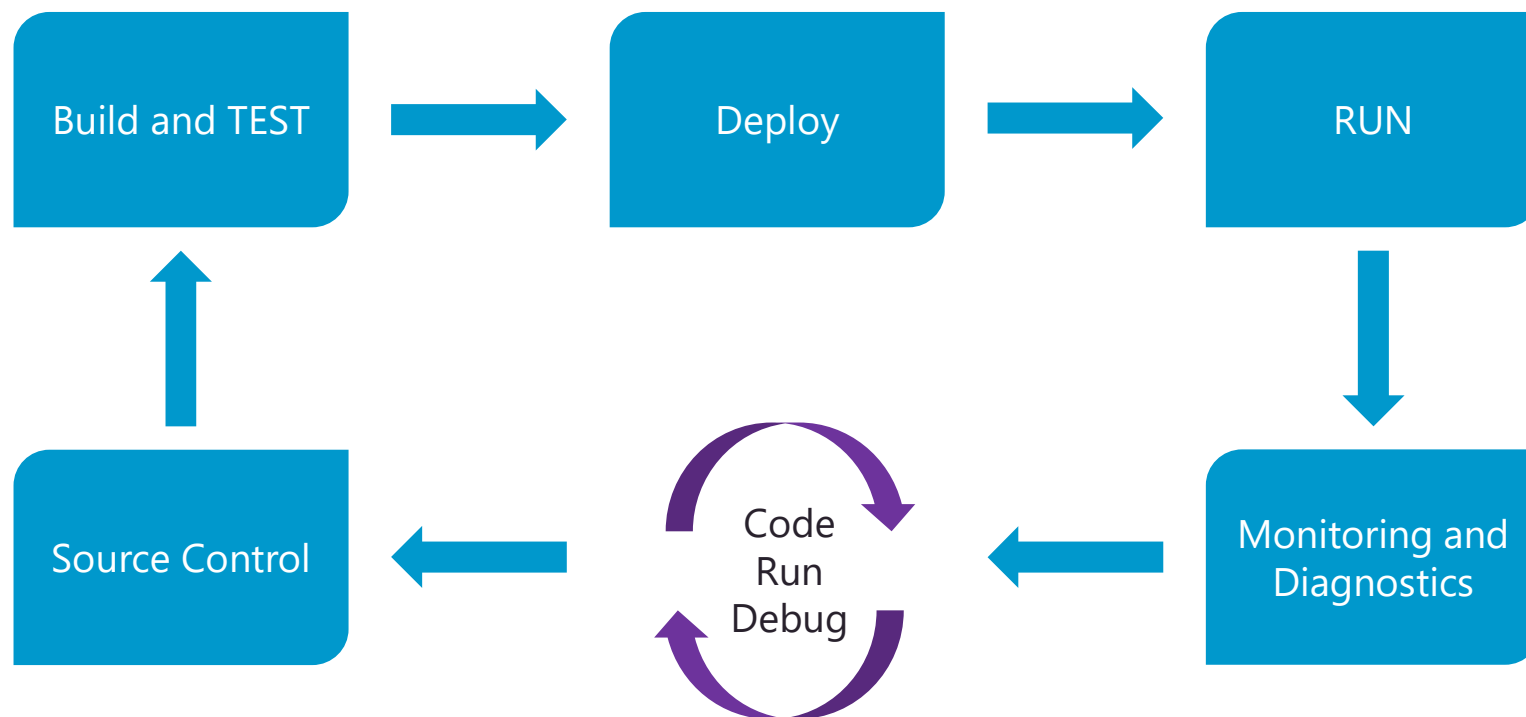


DEMO – Serverless Data Ingestion

Lessons Learned - Takeaways

- | Functions - COLD Start
 - | Keep dependencies small
 - | "Pinger"
 - | Non-consumption plan
- | Functions – 'Live' Instances
 - | *private static HttpClient | SqlClient | etc...*
- | Logic Apps
 - | Decouple protocol and message processing
 - | Design for reuse
- | Live with limitations of some Azure Services (eg Azure Search indexer)
- | Don't forget your outer loop development

Inner and Outer Loop Development



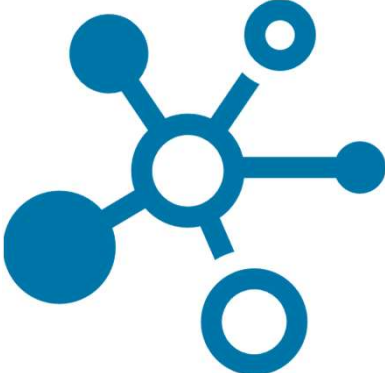
Datasharing and Notification

Share data and be notified on events

Sharing Data



Open Data

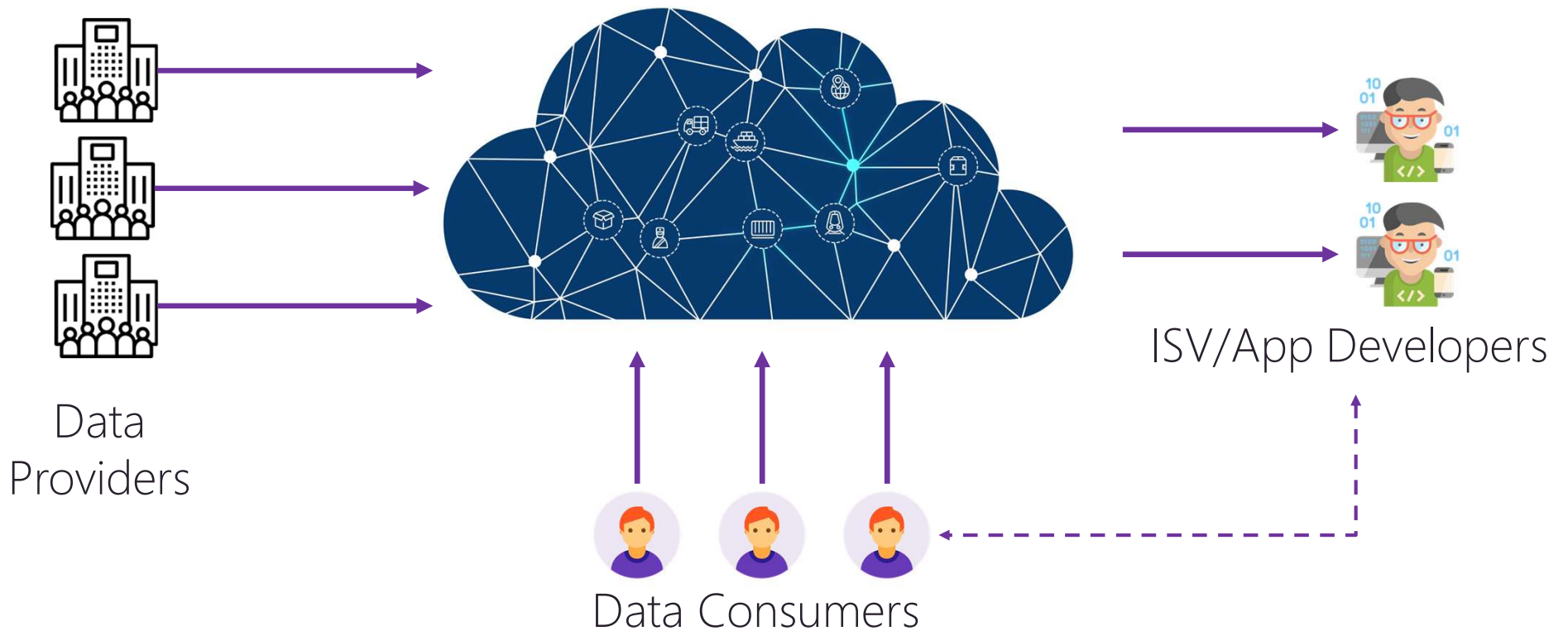


Linked Data



Shared Data

Sharing Data



Datasharing Engine

- | Data is non-consumblable by default
- | Data provider creates sharing rules
 - | Open Data, Linked Data, Shared Data
- | Open up data object(s) to entities

*NxtPort attributes data with roles in the supply chain like shipping agents, forwarders, customs...
This way the data provider can share with for example only forwarders.*

Eventprocessing



Eventprocessing



Eventprocessing

| Advantages

- | Faster (near real time'ish)
- | More efficient

| Disadvantages

- | Extra responsibilities for the client
- | Support for some dinosaur protocols

The API Economy

Publish and consume assets via the marketplace

Living in an API Economy

“

APIs allow companies to grow and extend business at unprecedented rates by sharing services with third parties.

”

(Harvard business review – the strategic value of APIs)



The Goals

Open up the information silos in a secure way

Create a seamless experience for the customers

Create a flexible and dynamic ecosystem

Automated data sharing & profitable API monetization



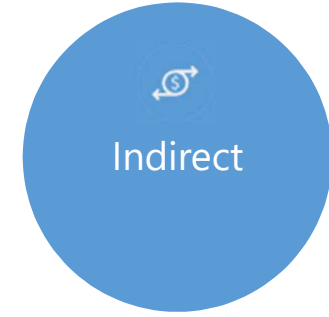
Monetization Models



Pay as you go
Tiered
Freemium
Unit-based
Transaction fee

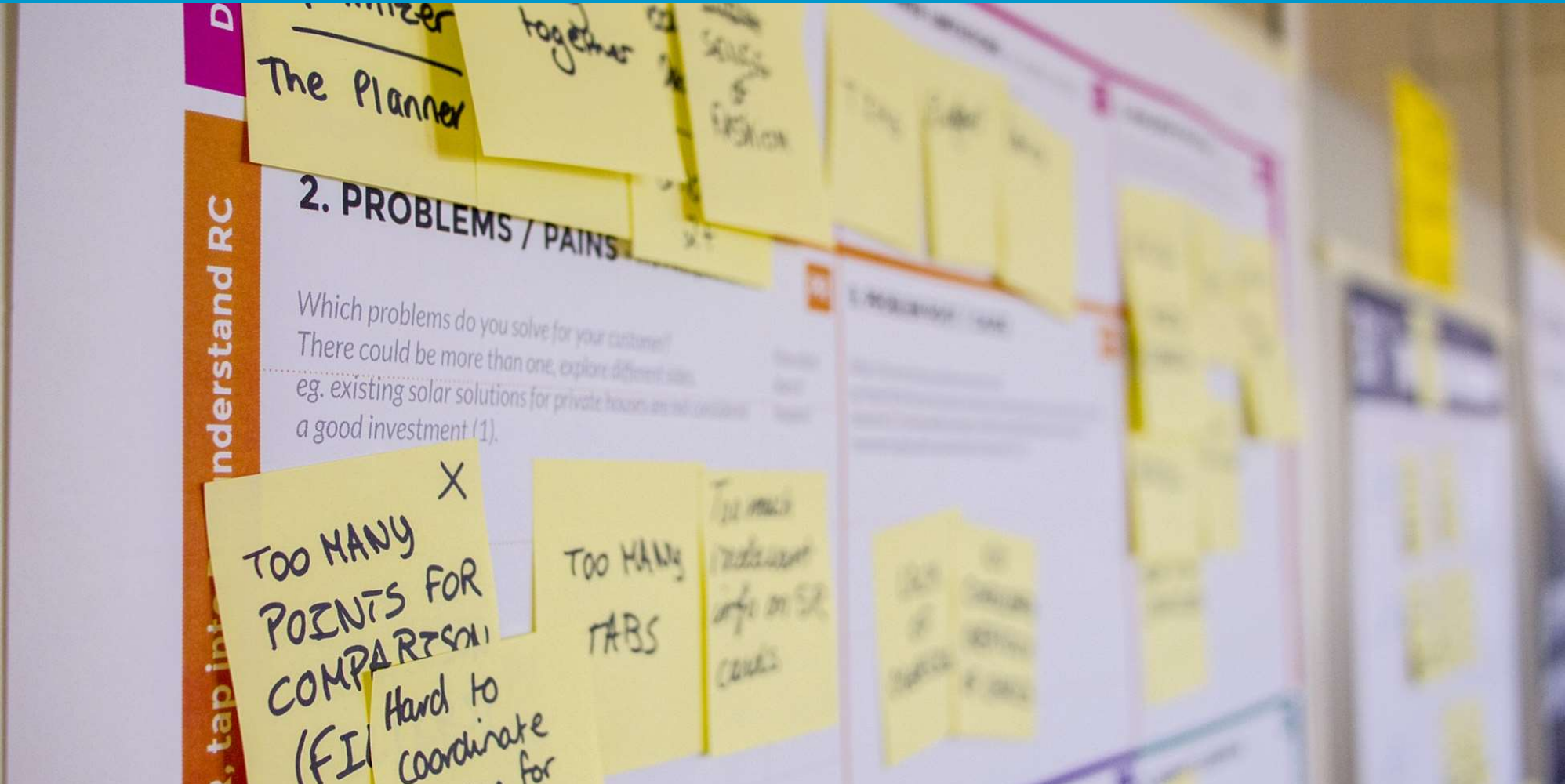


Affiliate



Content acquisition
Content syndication
SaaS
Internal use

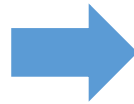
Which model?



Monetization at NxtPort



Pay as you go
Tiered
Freemium
Unit-based
Transaction fee



Depending on the API you might have to pay:

- One fee
- A combination of fees
- No fee at all

Subscription:

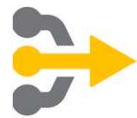
- Monthly / Yearly

Transaction:

- Pay per “unique” request (successful calls)
- Fee per unique piece of data / time range
- Discount per volume (a pinch of Tiered model)

Azure API Management

at the core of the API Economy



Main entry point on the NxtPort Platform



Streamlined approach on security, monitoring and logging...



PoSH is (y)our friend... it really is!



Automated API Onboarding – external and internal



Price plan enforcing

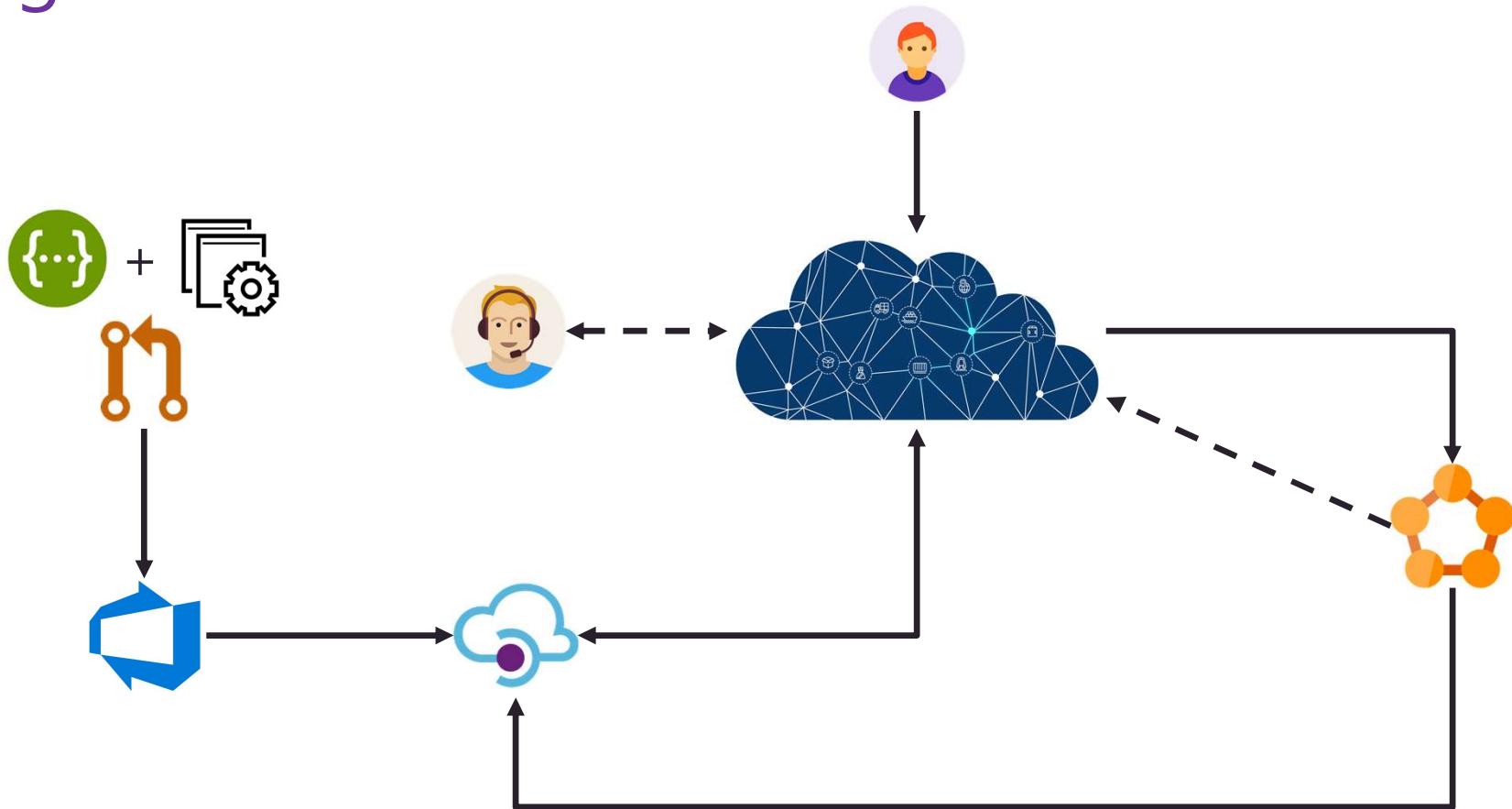


Things to do before opening an (internal) API

- | API Security
- | API Documentation with Open API (or RAML)
- | Improve Developer Experience
- | API Governance
- | Define KPIs to measure the success of your API program
- | Automated onboarding

<https://github.com/CoditEU/practical-api-guidelines>

High level architecture



DEMO – API Onboarding

Lessons Learned – Takeaways

- | Internal API's
 - | GOAL
 - | API Security & Governance & Documentation
 - | Maximize Developer Experience
- | API Management
 - | Automation, Automation, Automation,....
- | Monetization
 - | Visibility on the costs



Detecting suspicious activities (end-to-end)



Offshore container tracking



Detect suspicious activity on terminal (rip-off)

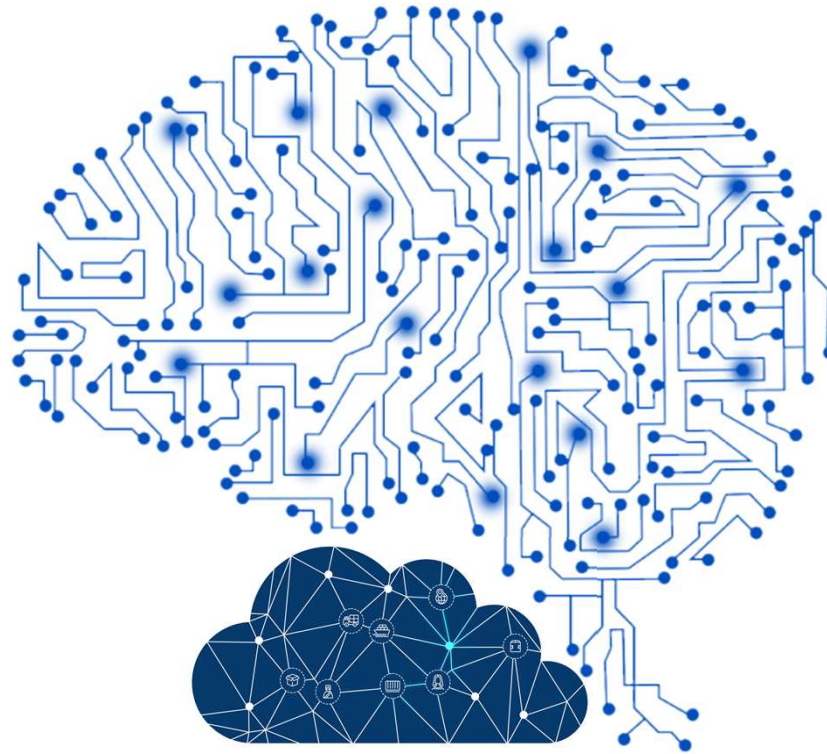


Monitor in-transit conditions

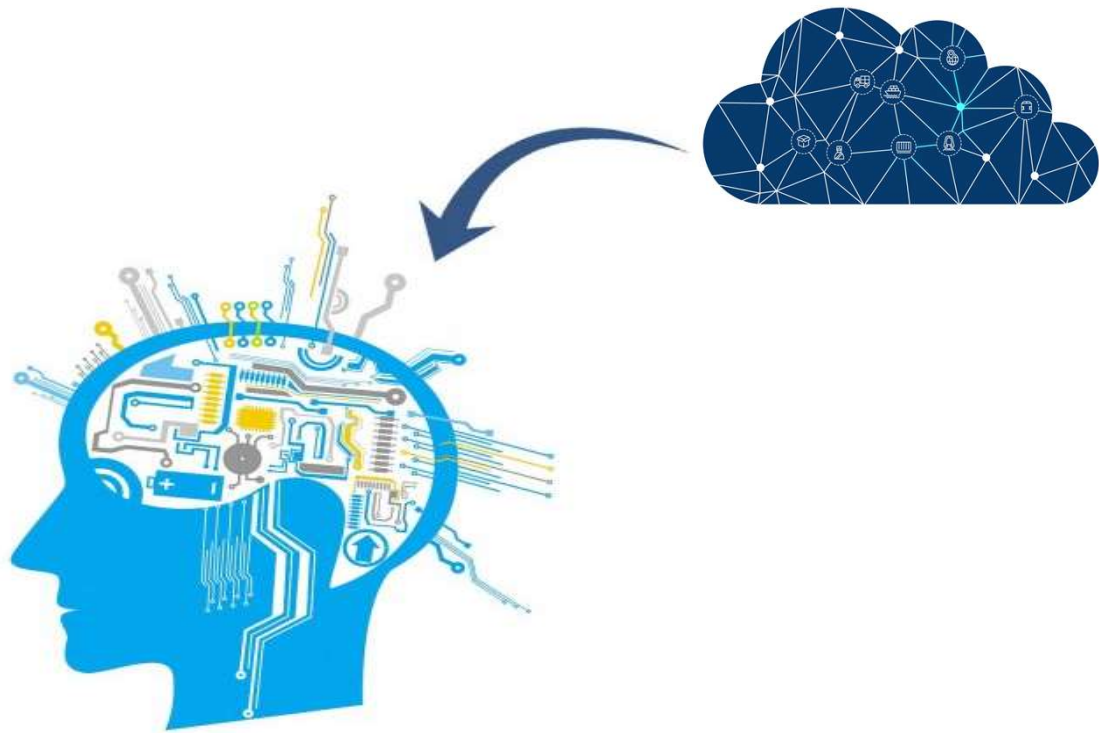


End-to-end traceability till sign-off

Efficiency







Takeaways

| Data Ingestion

- | Platform Flexibility
- | Design for re-use
- | Remember decent ALM even in 'serverless' scenarios

| Data Sharing

- | Think of different types of data
- | Make your data non-consumable by default

| Sharing Engine

- | Think big but start simple
- | Flexibility over complexity

Takeaways (2)

| Data Monetization

- | No silver bullet solution
- | Be transparent about the costs

| API Management

- | Define a set of rules before opening up API's
- | Automation, Automation, Automation



CLOUDBREW 2019

A two-day conference by AZUG, the Belgium Microsoft Azure User Group
Friday, December 13, 2019 - Saturday, December 14, 2019

“

Data is the fuel of the economy of the future...

”

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