



Aalto University
School of Electrical
Engineering

S-38.3046 Value Network Design for Internet

Case: Sharper Shape

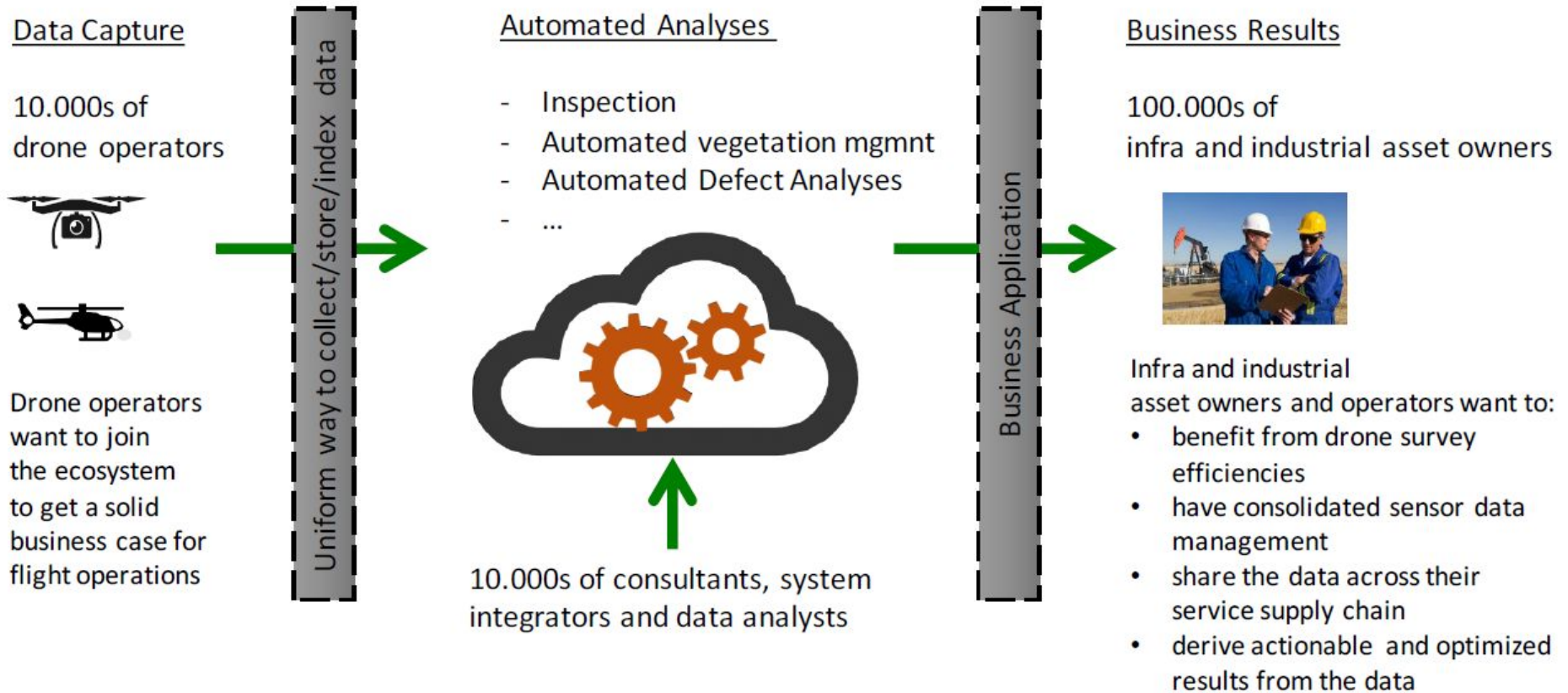
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Case description

- Sharper Shape: services provided on drone platforms, current focus on inspection and management of utilities' infrastructure, data collection and analysis, and required software development.
- The future market depends on the regulations in different countries and technological development of sensors and drones.
- Company's aim is to license their platform to other companies which would then provide additional services

Case company business view



Scope definition and Stakeholders

- Scope:
 - US market centric
 - Timeframe 5-10 years
- Stakeholders:
 - Sharper Shape
 - Utility companies and other asset owners
 - 3rd party application and service providers
 - Drone and measurement equipment manufactures
 - Mobile operators

Key Trends

- Increasing use of drones
 - > decreasing unit cost
- Improvement in drone and sensor technology
 - > more use cases become affordable
- Regulations will evolve toward more permissible and homogenous forms

Key market uncertainties

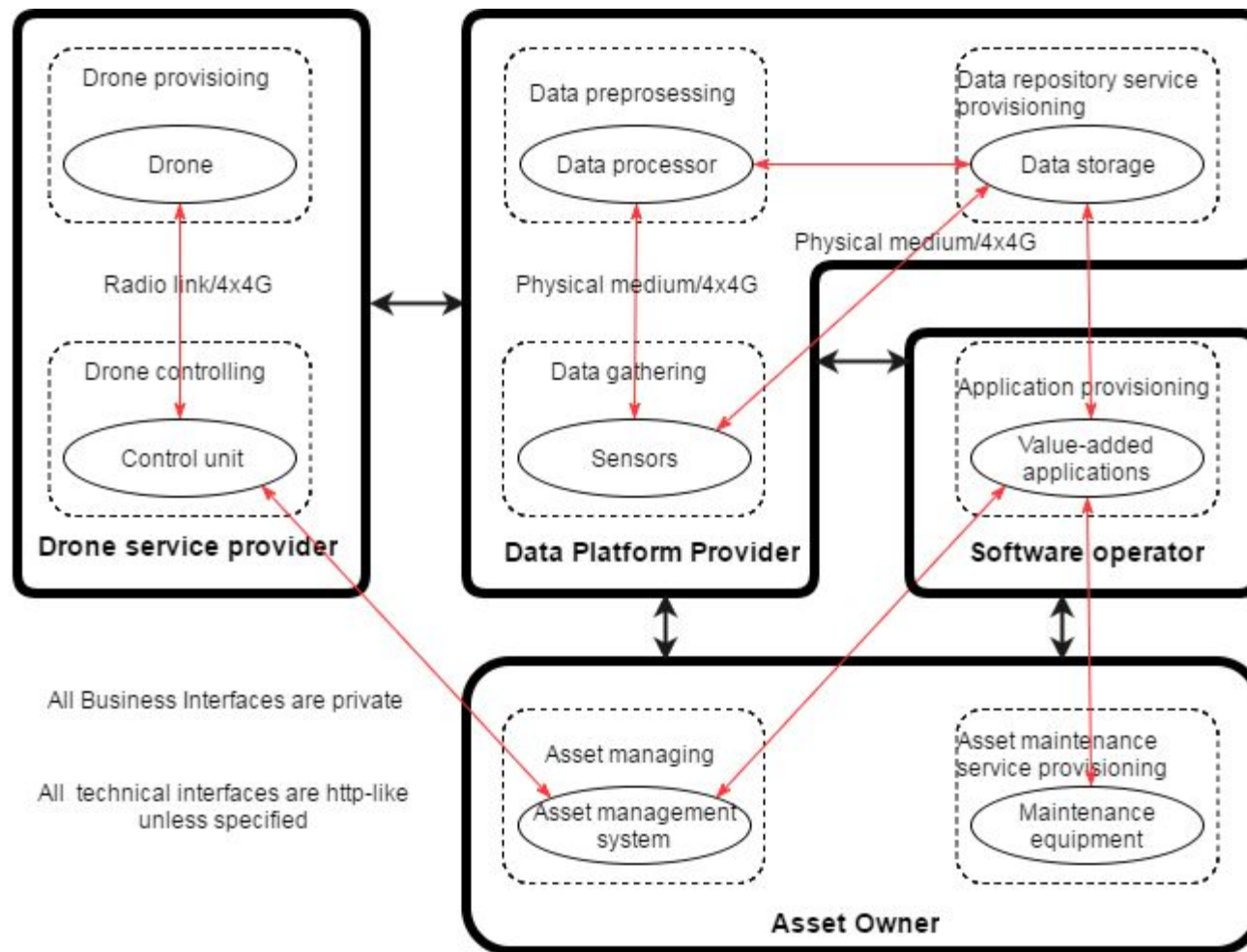
- Will market take horizontal or vertical form
- Availability of networks for real-time operation
- Cost reduction rate: many services only become affordable if costs reduce by order of magnitude
- Do regulator allow automated and autonomous operation an
- Level of competition in the market

Scenario planning



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Data Platform driven VNC



STOF Method - Quick Scan

- **Service Domain**
- **Technology Domain**
- **Organizational Domain**
- **Finance Domain**

Service Domain

- **Service concept :**
 - Providing a platform for drone based inspection and data analysis services
- **Customer:**
 - Owners of infrastructure
- **Added value :**
 - Maintenance costs lowered for the asset owners
 - Gives drone operators and related application providers access to the industrial market
 - Enable better asset management

CDIs in Service Domain

CDI	Description
Targeting	B2B with asset owners as the target customers.
Creating Value Elements	<p>Service provides both better inspection results and analysis resulting in better management and maintenance of assets.</p> <p>Costs are significantly reduced by both using drones for data capturing and by automated analysis of data.</p>
Branding	Need to connect the service to technologically advanced sensors and automated data-based analysis
Customer retention	Service should provide distinct advantages to end-users that will hopefully lead to loyal customers
Trust	Service not only provides accurate measuring and analyzed data but also offers information integrity and security for asset owners to enhance end users' trust in service.

Technology Domain

Sharper Shape core technologies:

- Sensors
- Data processing and storage
- APIs to connect the platform together

Partner core technologies:

- Unmanned Aerial System (UAS) including ground control, UAV and Sharper Shape provided sensors
- Data analysis software applications

CDIs in the Technology Domain

CDI	Description
Security	<p>Drone operators' and data analysis software providers' access to sensor data can be limited if needed.</p> <p>Use of secure data uplinks and data storage.</p>
Quality of service	<p>Sensor data must be at least on par with competitors and preferably superior to give the platform a distinct advantage.</p> <p>Access to a range of drone operators' and analysis software providers increase the QoS</p>
Sensors	<p>High accuracy LiDAR. In the future advanced lenses and sensors can be implemented.</p>
Drones	<p>Technology is advancing rapidly, and if regulation allows, fully automated autonomous drones will become available.</p>

Organization Domain

Customers:

- Asset owners

Partners:

- Drone operators
- Data analysis software developers

Other parties:

- Hardware providers (sensors and drones)
- Regulators and standardization organizations

CDIs in the Organization Domain

CDIs	Description
Partner selection	Need both drone operators and data analysis software providers to create a viable network.
Network openness	It is important for the customers to be able to trust every member of the network, so Sharper Shape needs to evaluate the trustworthiness and capabilities of the drone operators and data analysis software providers.
Network governance	Sharper Shape governs the network, but asset owners choose the drone operators and data analysis software providers they use.
Network complexity	On the drone operator side, the network can become quite complex with many local operators offering their services.

Finance Domain

- Sharper Shape sources for revenue are the drone operators and data analysis software providers partners
- Partners get their revenue from the asset owners
- In the North America, the estimated possible market size for utility and industrial sectors is \$10B and \$25B globally

CDIs in the Finance Domain

CDIs	Description
Investment	Yearly revenues of around €1M, so will need additional capital to fund the need for sensors which are still quite expensive.
Revenue division	Partners pay either a share of the revenue they get from the network or licensing fees to access the platform.
Pricing	Current data capturing and analysis expenditures for asset owners are quite substantial (up to \$700/mile) and they do not provide the level of service Sharper Shape can. This should allow for pricing that is both profitable (>\$100/mile) and still low enough to increase market share.

CSFs

CSFs for customer value	Description
Compelling Value Proposition	Cost reductions, less labor use, more efficient and data capturing and analysis, producing very accurate results for asset maintenance, automatic identification of critical asset's conditions
Clearly Defined Target Group	Asset owners with geographically distributed infrastructure, maintenance companies
Unobtrusive Customer Retention	Database for each individual customer Customer tailored software
Acceptable Quality of Service	Accurate recognition of asset's critical conditions

CSFs

CSFs for network value	Description
Acceptable profitability	Break even at first, remarkable profit later
Acceptable risks	Rival companies entering the market. Cost reduction doesn't meet the customer expectations
Sustainable network strategy	Gain reliable and trustworthy partners in high numbers
Acceptable division of roles	Core competence is to be utilized in the most effective way

Conclusion

- UAS has reduced by considerable amount the inspection and maintenance costs for the asset owners. This creates a large market for Sharper Shape
- The emerging technologies can further reduce the cost of UAS and also enable it to cover longer distances
- Challenges
 - Limited availability of 4G network
 - Regulation uncertainties
 - Large companies entering the market
- UAS should evolve to be autonomous
- Real-time data analysis

Any Questions ?