YODEL

collect+

Logistics Control Tower & Multidimensional Profitability

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Agenda

Yodel 1

Yodel Data Timeline..... 2

Logistics Control Tower 3

Multidimensional Profitability 4

Q & A 5

Yodel Background & Data Journey

Yodel Parcel Journey

Client Collection

1,500 trailers

3 UK Sort Hubs: Hatfield, Wednesbury, Shaw

55 UK Service Centres + Republic of Ireland

145M parcel deliveries per year

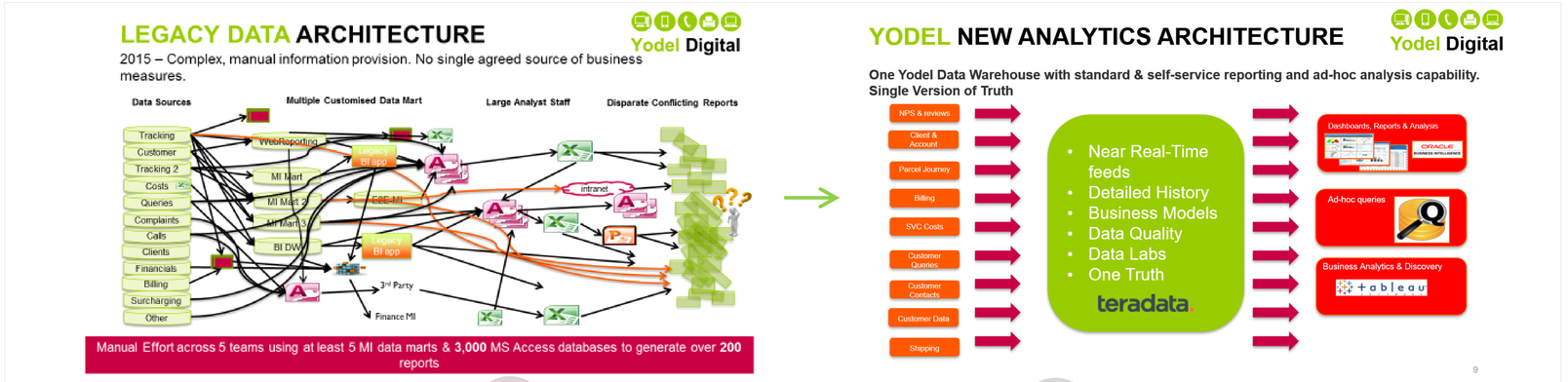
6,000 collect+ Stores

1M deliveries on peak days

5,000 Final Mile Delivery vehicles

5,500 delivery routes per day

Data Timeline



2015

- **Build the Platform**
- **Compliance Reporting 8 weeks from platform arrival**
- **Building Data team (5 to 10 FTE) and agile process**

2016

- **200 Excel Reports Decommissioned.**
- **Automated Dashboards**
- **New compliance reports**

2017

- **Driver Portals**
- **Computing Big Data and IOT Excellence Award 2017 for the "Outstanding Data Management Solution"**

2018

- **Data Governance Board**
- **Derived/Estimated Data**
- **Logistics Control Tower**

One Source of Accurate Data

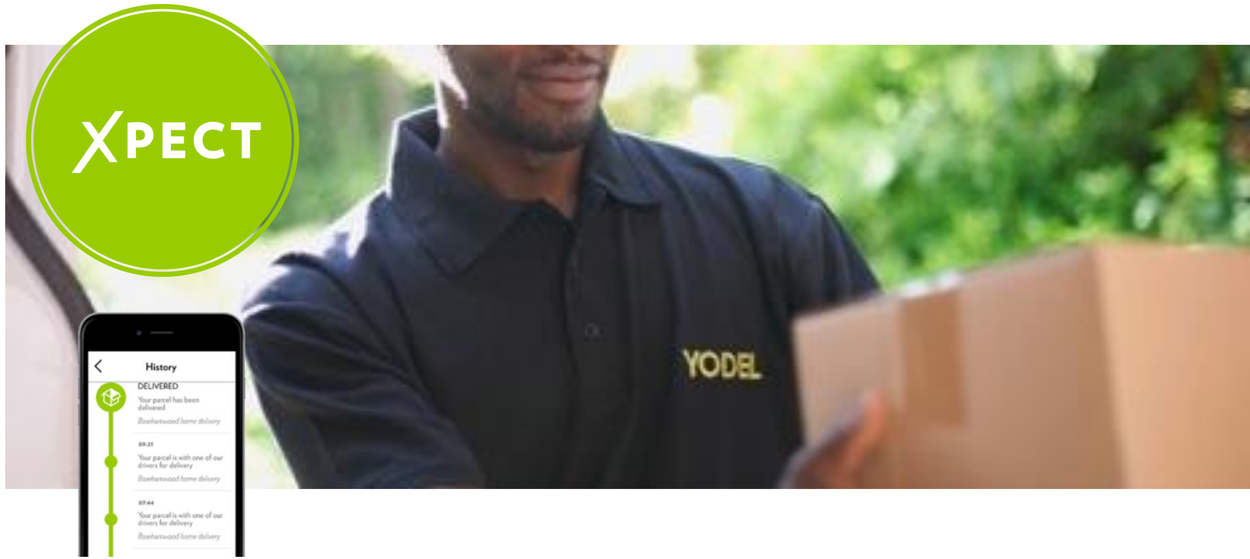
- Over 500 internal users and 150 external clients accessing near real-time dashboards
- Service Centres monitor driver compliance
- Sort Operations monitor numbers and patterns for miss-routes
- Central Planning team monitor volumes vs. plan to help network re-modelling
- Sort and Driver productivity by activity type
- Strategic Exec Dashboards
- 24/7 near real-time visibility of entire operation
- Widespread Yodel access to accurate, timely data in a single Yodel data store
- Improve tracking and alerting
- React Quickly to changes or issues

What if we could predict & prevent failure

Yodel Xpect Service.

Yodel Xpect is Yodel's van-based delivery service with a two-hour delivery window notification keeping customers informed through push notification, email and SMS.

Can we build algorithms that will predict failure and recommend corrective actions



Process Outline

Continuous near real-time analysis of up to 5,500 driver tours delivering over 500,000 parcels. Predict end of day performance & recommend actions to improve

Identify “at risk” parcels and routes

- Regular tour progress updates using scan data
- Deliveries and collections included
- ”at risk” based on;
  - Latest parcel scan
  - Expected drive time
  - Expected ETA v original time range

Calculate “suggested actions”

- Prioritise the delivery of Xpect parcels
- Skip/delay non-Xpect parcels to protect the ETAs of Xpect deliveries and collections

Determine “suggested action” effects

- Recalculate ETA’s
- Re-evaluate parcels “at risk”
- Re-order tour

YODEL DASHBOARD

Original Service Level
V
Predicted Service Level

Based on suggested actions

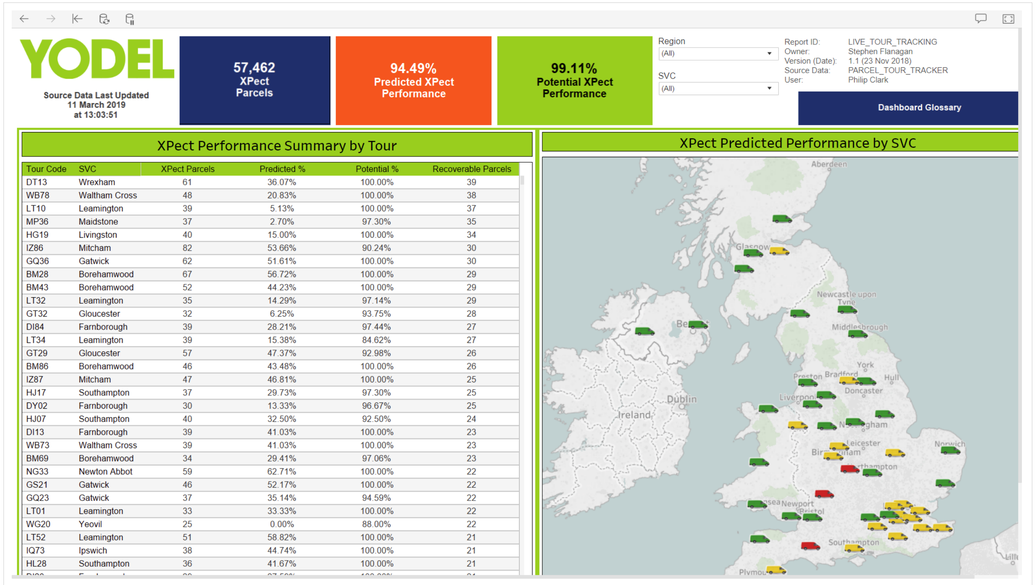
Results

What are the improvements to the Xpect Service?

Data Snapshot		Completed Xpect Performance		Projected Xpect Performance		Actioned Xpect Performance	
Date	Time	Successful / Total	Current % Successful	Successful / Total	Total % Successful	Successful / Total	Total % Successful
15/08/2018	15:12	15978 / 16381	97.5%	11719 / 12925	94.5%	12742 / 12925	98.0%
15/08/2018	17:37	23800 / 24723	96.3%	4418 / 5264	94.1%	5021 / 5264	96.1%
15/08/2018	End	29623 / 31300	94.6%	-	-	-	-
24/08/2018	12:50	9218 / 9318	98.9%	16321 / 17463	95.4%	17193 / 17463	98.6%
24/08/2018	14:51	17074 / 17519	97.5%	10917 / 12022	94.8%	11650 / 12022	97.2%
24/08/2018	17:30	24760 / 25755	96.1%	3946 / 4774	94.0%	4332 / 4774	95.3%
24/08/2018	End	29642 / 31663	93.6%	-	-	-	-

- Xpect performance decreases across the day without intervention
- Projected performance similar to where the day ended
- Action provided increased Xpect Performance throughout the day

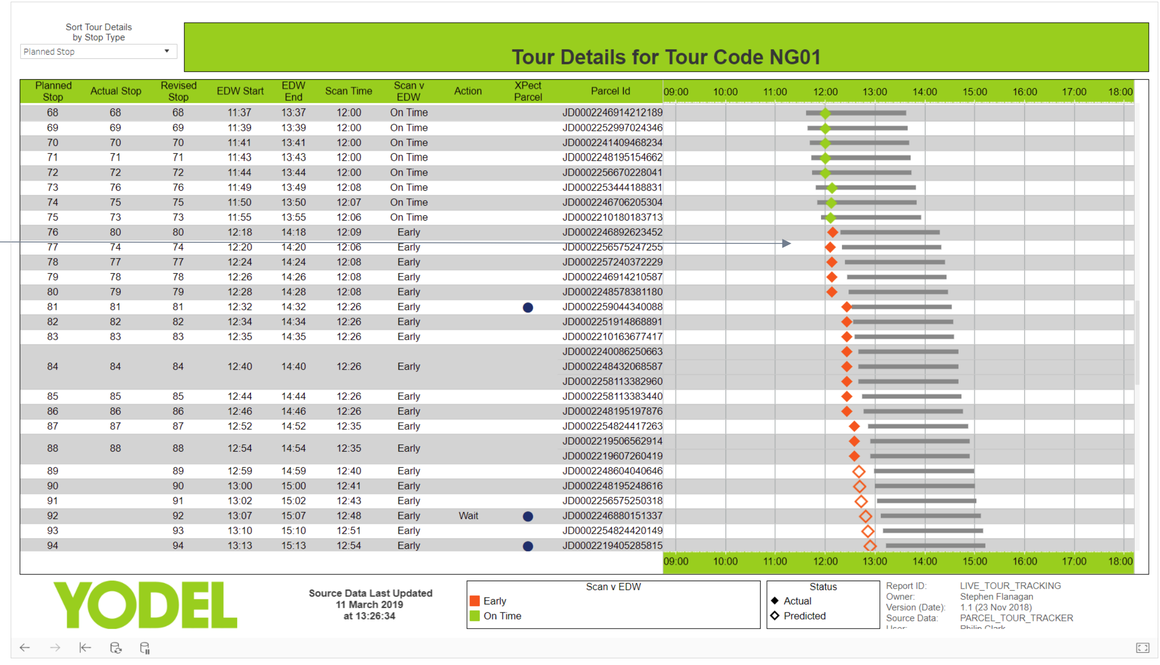
Live Predictions



Tour Code	SVC	XPect Parcels	Predicted %	Potential %	Recoverable Parcels
DT13	Wrexham	61	36.07%	100.00%	39
WB78	Waltham Cross	48	20.83%	100.00%	38
LT10	Leamington	39	5.13%	100.00%	37
MP36	Maidstone	37	2.70%	97.30%	35
HG19	Livingston	40	15.00%	100.00%	34
IZ86	Mitcham	82	53.66%	90.24%	30
GQ36	Gatwick	62	51.61%	100.00%	30
BM28	Borehamwood	67	56.72%	100.00%	29
BM43	Borehamwood	52	44.23%	100.00%	29
LT32	Leamington	35	14.29%	97.14%	29
GT32	Gloucester	32	6.25%	93.75%	28
DI84	Farnborough	39	28.21%	97.44%	27
LT34	Leamington	39	15.38%	84.62%	27
GT29	Gloucester	57	47.37%	92.98%	26
BM86	Borehamwood	46	43.48%	100.00%	26
IZ87	Mitcham	47	46.81%	100.00%	25
HJ17	Southampton	37	29.73%	97.30%	25
DY02	Farnborough	30	13.33%	96.67%	25
HJ07	Southampton	40	32.50%	92.50%	24
DI13	Farnborough	39	41.03%	100.00%	23
WB73	Waltham Cross	39	41.03%	100.00%	23
BM69	Borehamwood	34	29.41%	97.06%	23
NG33	Newton Abbot	59	62.71%	100.00%	22
GS21	Gatwick	46	52.17%	100.00%	22
GQ23	Gatwick	37	35.14%	94.59%	22
LT01	Leamington	33	33.33%	100.00%	22
WG20	Yeovil	25	0.00%	88.00%	22
LT52	Leamington	51	58.82%	100.00%	21
IQ73	Ipswich	38	44.74%	100.00%	21
HL28	Southampton	36	41.67%	100.00%	21

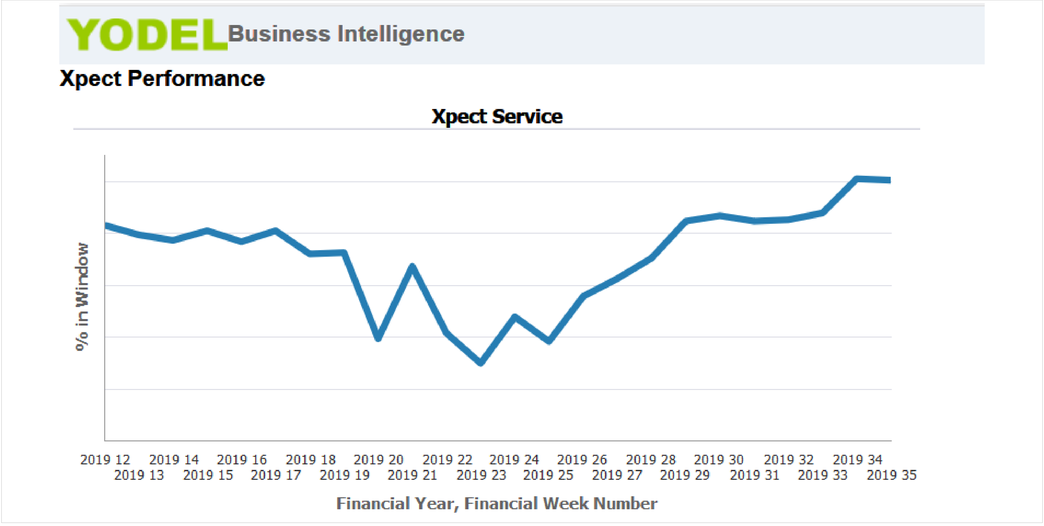
Live Predictions

- **Driver predicted to be early – advice wait**



Impact

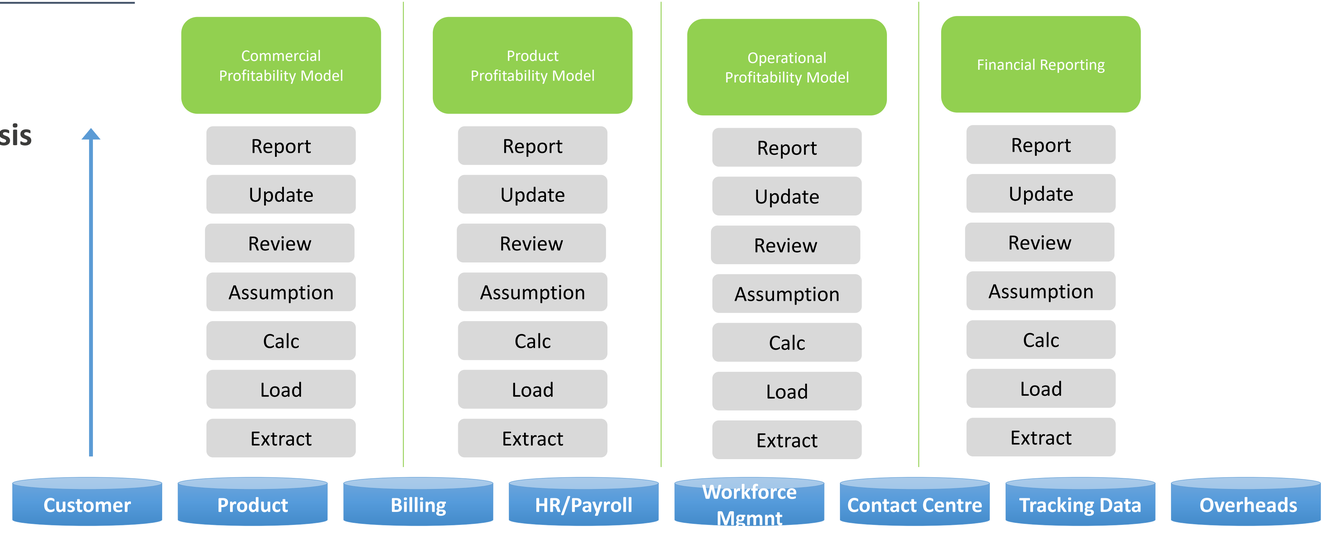
- Implementation in January 2019
- Reversed recent service decline almost immediately
- Uplift of 4.5% in service since implementation



Multidimensional Profitability

Multiple Excel Models base on averages and assumptions

- Summarised Data: No detail for diagnosis
- Too many assumptions
- No Reconciliation to GL
- No audit
- Time Consuming
- Not Trusted



Using Averages

e.g. If Leeds Service Centre receives 88000 parcels a week:

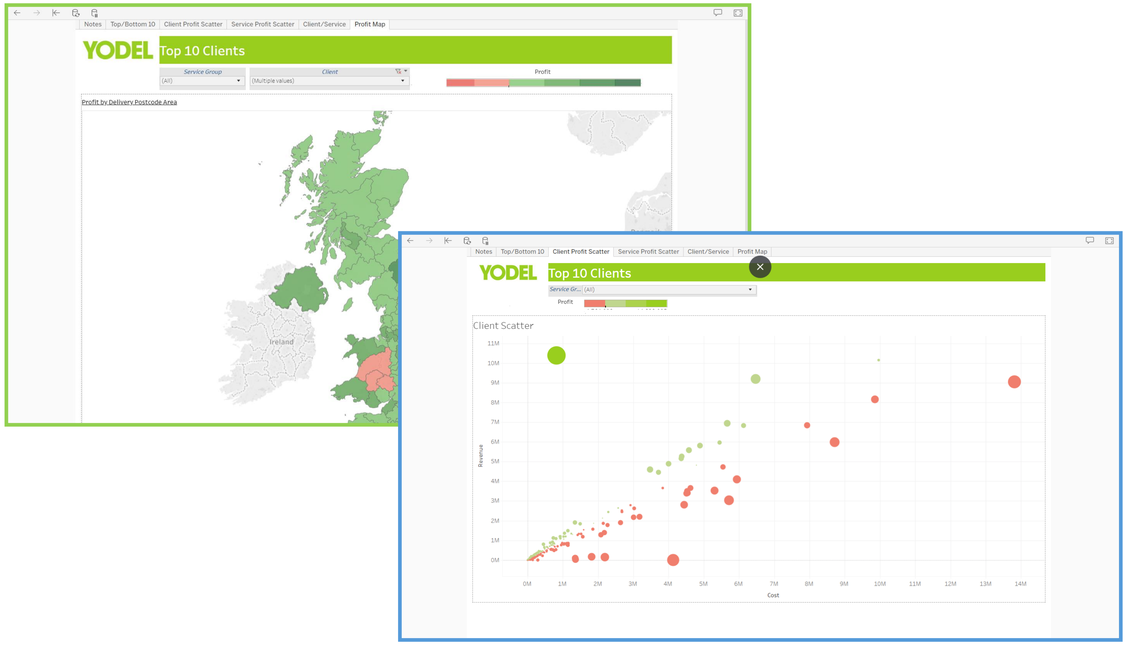
Location Name	Calendar Date	Parcel Volume	Activity Cost	Cost Per Parcel
Leeds	Sunday	601	85	0.14
	Monday	14533	13,508	0.93
	Tuesday	14708	16,231	1.10
	Wednesday	16177	16,989	1.05
	Thursday	15705	16,855	1.07
	Friday	15379	16,116	1.05
	Saturday	11219	12,233	1.09
	TOTAL	**88322**	**92018**	**1.04**

- **What about parcels not delivered on 1st attempt?**
- **Parcels with manual handling or address queries?**
- **Stop Density?**
- **Rural vs Urban?**
- **Are all customer parcels the same?**

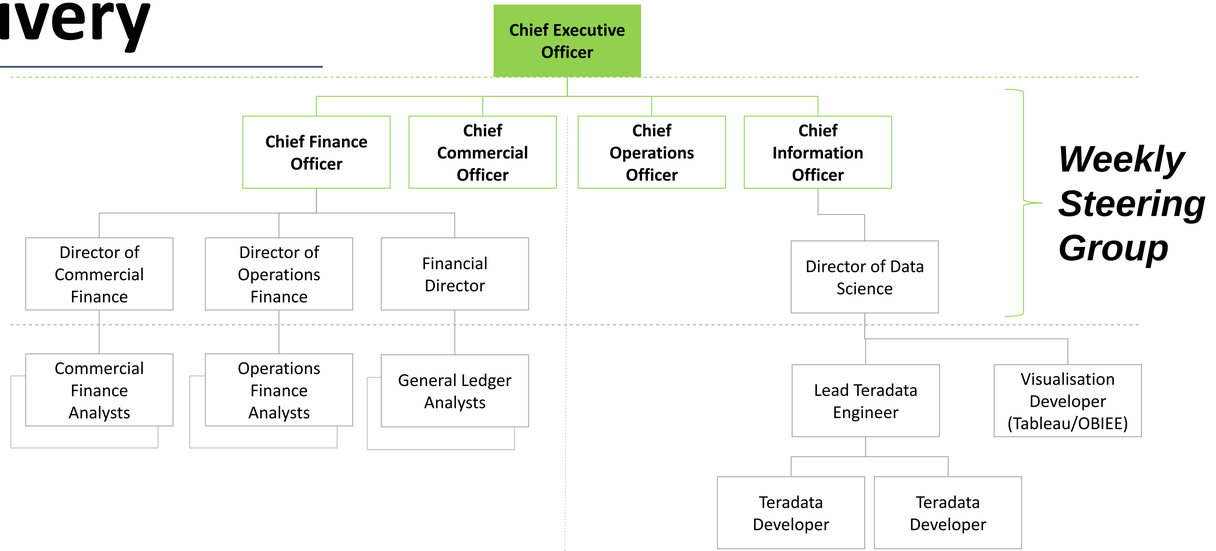
Figures are not genuine – for example only

Approach POC & Scope

- Collaboration with Finance (commercial and operations)
- Used average activity cost (e.g. 15p for all machine sort, 40p for trailer etc.) to allocate at granular level
- Demonstrate art of possible to Exec to show multi-dimensional possibilities
- Background activity for **4 months**
- Sample visualisations
- Framework to demonstrate functionality and possibilities

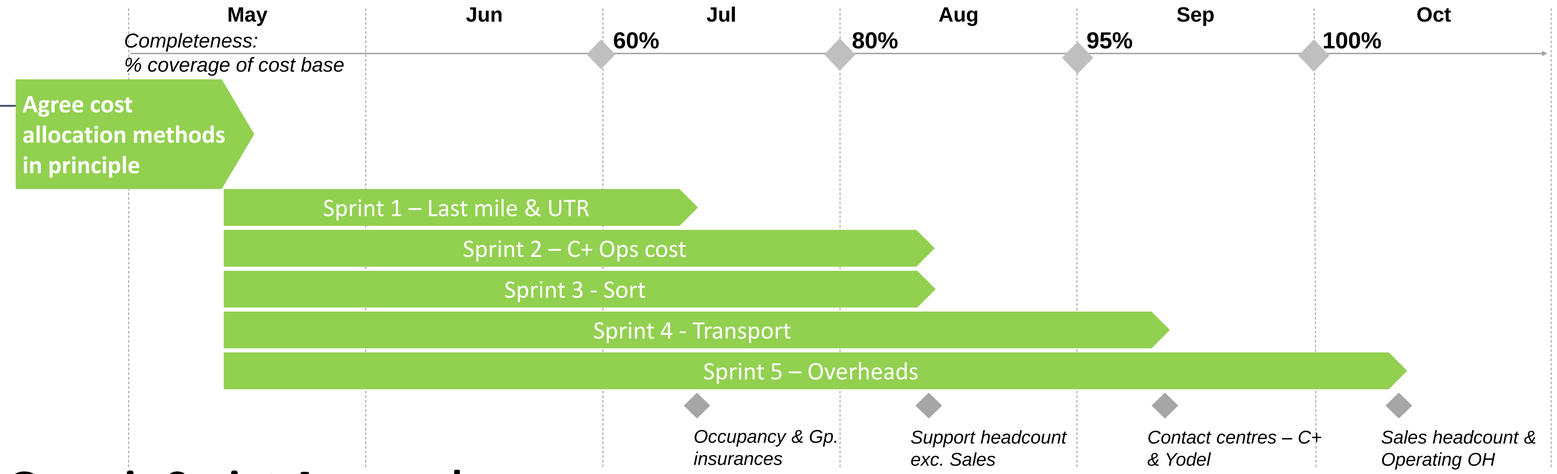


Collaborative Delivery

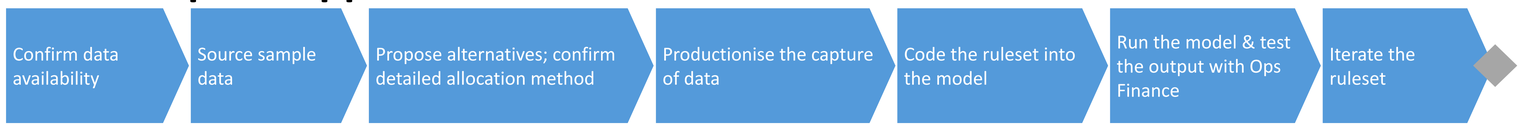


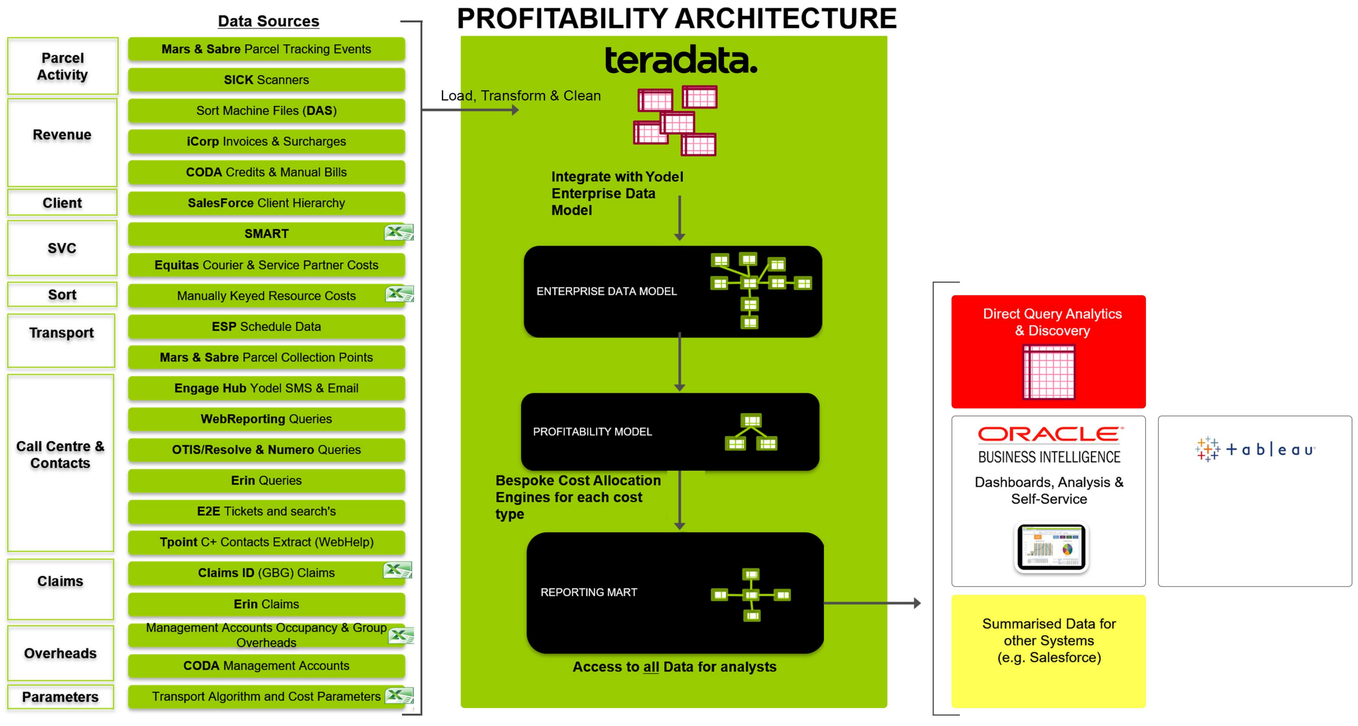
6 month delivery

- Agile Delivery
- Take 1 process at a time
- Find the Data
- Agree the allocation
- Build
- Test
- ALL YODEL COSTS!



Generic Sprint Approach




Data Sources
Parcel Activity
Mars & Sabre Parcel Tracking Events
SICK Scanners
Revenue
Sort Machine Files (DAS)
iCorp Invoices & Surcharges
CODA Credits & Manual Bills
Client
SalesForce Client Hierarchy
SVC
SMART
Equitas Courier & Service Partner Costs
Sort
Manually Keyed Resource Costs
Transport
ESP Schedule Data
Mars & Sabre Parcel Collection Points
Call Centre & Contacts
Engage Hub Yodel SMS & Email
WebReporting Queries
OTIS/Resolve & Numero Queries
Erin Queries
E2E Tickets and search's
Tpoint C+ Contacts Extract (WebHelp)
Claims
Claims ID (GBG) Claims
Erin Claims
Overheads
Management Accounts Occupancy & Group Overheads
CODA Management Accounts
Parameters
Transport Algorithm and Cost Parameters
PROFITABILITY ARCHITECTURE
teradata.
Load, Transform & Clean
Integrate with Yodel Enterprise Data Model
ENTERPRISE DATA MODEL
PROFITABILITY MODEL
Bespoke Cost Allocation Engines for each cost type
REPORTING MART
Access to all Data for analysts
Direct Query Analytics & Discovery
ORACLE
BUSINESS INTELLIGENCE
Dashboards, Analysis & Self-Service
tableau
Summarised Data for other Systems (e.g. Salesforce)

Costs at Lowest Level

- Costs Allocated at the lowest level
- Typically 22 activity costs per parcel
- 3,500,000,000 activities per year

Activity Detail

Parcel ID	Activity Seq No	Activity Ts	Activity Description	Activity Location Name	Employee Name	Activity Cost
JD0002248392638367	1	03/07/2019 00:00	Parcel Data Received	Lincoln		0.00
JD0002248392638367	2	03/07/2019 21:14	Transport Client to Sort	Shaw Hub		0.42
JD0002248392638367	5	03/07/2019 21:14	Manual Brantech Sort	Shaw Hub		0.18
JD0002248392638367	6	03/07/2019 21:14	Occupancy Overhead	Shaw Hub		0.05
JD0002248392638367	8	03/07/2019 21:14	Contact Centre Yodel Overhead	N/A		0.01
JD0002248392638367	9	03/07/2019 21:14	Ops Overhead	N/A		0.04
JD0002248392638367	10	03/07/2019 21:14	Central Overhead	N/A		0.32
JD0002248392638367	11	03/07/2019 21:14	Sort Centre Management Overhead	Shaw Hub		0.06
JD0002248392638367	12	03/07/2019 21:14	Direct Sort Activities Overhead	Shaw Hub		0.05
JD0002248392638367	14	03/07/2019 21:14	Engineering Overhead	Shaw Hub		0.01
JD0002248392638367	16	03/07/2019 21:14	Transport Shaw Sort to Peterborough SVC	Shaw Hub		0.30
JD0002248392638367	19	04/07/2019 05:24	Received In Depot	Peterborough	MICHAL STEFANIAK	0.04
JD0002248392638367	20	04/07/2019 08:32	Peterborough UTR Management Overhead	Peterborough		0.09
JD0002248392638367	21	04/07/2019 05:24	Peterborough Occupancy Overhead	Peterborough		0.06
JD0002248392638367	22	04/07/2019 10:58	Loaded Onto Vehicle	Peterborough	SIKORSKI KRZYSZTOF	0.07
JD0002248392638367	24	04/07/2019 11:10	Yodel ETA Messageid=2452744496	N/A		0.02
JD0002248392638367	27	04/07/2019 18:13	Parcel Delivered	Peterborough	SIKORSKI KRZYSZTOF	0.96
JD0002248392638367	28	04/07/2019 18:13	Yodel Messageid=2455246744	N/A		0.01
JD0002248392638367					TOTAL COST	**2.69**
JD0002248392638367					REVENUE	**3.46**
JD0002248392638367					PROFIT	**0.77**

Costs at Lowest Level

e.g. If Leeds Service Centre:

Location Name	Calendar Date	Parcel Volume	Activity Cost	Cost Per Parcel
Leeds	Sunday	601	85	0.14
	Monday	14533	13,508	0.93
	Tuesday	14708	16,231	1.10
	Wednesday	16177	16,989	1.05
	Thursday	15705	16,855	1.07
	Friday	15379	16,116	1.05
	Saturday	11219	12,233	1.09
	TOTAL	**88322**	**92018**	**1.04**

exceptions

Location Name	Activity Group Description	Activity Sub Group Description	Activity Description	Parcel Volume	Activity Cost	Cost Per Parcel
Leeds	Final Mile	Delivered	As Instructed	8615	10,772	1.25
			Neighbour	2764	4,015	1.45
			Parcel Delivered	30586	35,643	1.17
			Parcel Delivered	108	22	0.20
			Parcel Delivered	2	2	1.14
			Posted	11583	13,363	1.15
			To Store	5252	5,267	1.00
			Unable To Sign Blind	128	149	1.16
			C+ Store Closed	10	0	0.00
		Delivery Attempt	Carded	1186	682	0.58
			Customer Has Moved	6	8	1.30
			Delivery Refused - Parcel Damaged	7	4	0.62
			Holiday Or Closed	125	41	0.33
			No Access To Property	81	5	0.07
			No Access To Property	441	192	0.43
			No Parcel Available	20	0	0.00
			Refused At Customers Address	1	0	0.00
			Refused At Customers Address	89	19	0.99
			Available To Deliver	8	0	0.00
			Equitas cost - CH event	1	1	1.31
			Handed back by Courier	8	0	0.00
			Parcel With Courier	2116	190	0.09
			In Secure Cage	552	37	0.07
			Loaded Onto Vehicle	59696	3,954	0.07
			Loaded Onto Vehicle	62	4	0.06
			Mis-Route At	12	1	0.06
			Parcel At Incorrect Depot	474	21	0.04
			Parcel Carried Over By Depot	2457	115	0.05
			Re-Routed To Another Courier	3	0	0.05
			Received In Depot	58650	2,597	0.04
			Received In Depot	4520	189	0.04
			Released For Courier	2119	134	0.06
			Return To Sender	305	26	0.09
			Saturday Business Address	385	48	0.12
			Stop And Return	107	7	0.07
			After 2 Attempt	109	23	0.21
			Collected From	2	0	0.08
			Customer Has Moved	58	5	0.08
			Despatched From	11962	890	0.07
			Received Off Van	4984	591	0.12
				75743	92,018	**1.21**

Compare average CPP or parcels handled with true CPP of distinct parcels

Figures are not genuine – for example only

Multidimensional Views

COST Week 51		Product 1	Product 2	Product 3	Product 4	Product 5	Product 6	Product 7	Product 8	Product 9		
COST Week 52		**Product 1**	**Product 2**	**Product 3**	**Product 4**	**Product 5**	**Product 6**	**Product 7**	**Product 8**	**Product 9**	Activity Cost	Activity Cost
Activity Group Description143,995,859	Activity Sub Group Description	Activity Cost	Activity Cost	Activity Cost	Activity Cost	Activity Cost	Activity Cost	Activity Cost	Activity Cost	Activity Cost		
											58	0.91	0.01
											58	**0.91**	**0.01**
Claim	Allocated Claim	2.26	0	0	0	0	0	0.68	0.91	0.01	00	0.00	0
Claim Total		**2.26**	**0**	**0**	**0**	**0**	**0**	**0.68**	**0.91**	**0.01**	00	0.07	0
Service X Operational Cost	C+ Ops MA	0	0	0	-6.41	-0.11	-0.31	0.00	0.00	0			
	Service X Allocated Operational Cost	0	0	0	124.03	2.16	5.94	0.00	0.07	0	**00**	**0.07**	**0**
											06	0.70	1.31
Service X Operational Cost Total		**0**	**0**	**0**	**117.62**	**2.04**	**5.62**	**0.00**	**0.07**	**0**	12	1.61	0
Collection	Collected	23.58	0.05	0.02	3.40	1.80	5.33	9.06	0.70	1.31	55	0.34	0.13
	Collection Attempt	0.13	0	0	0.00	0.02	0.22	0.12	1.61	0	**3**	**2.64**	**1.44**
	Collection Other	1.12	0.01	0	0.48	0.27	1.04	0.55	0.34	0.13	17	60.34	171.09
Collection Total		**24.83**	**0.06**	**0.02**	**3.88**	**2.10**	**6.60**	**9.73**	**2.64**	**1.44**	15	0.22	1.25
Final Mile	Delivered	670.33	0.00	0.01	163.51	4.68	12.09	294.47	60.34	171.09	55	-0.30	-1.44
	Delivery Attempt	11.62	0.00	0.02	1.06	0.08	0.21	6.45	0.22	1.25			
	Final Mile MA Reconciling Difference	-4.38	1.53	0.70	-0.14	-0.08	-0.15	1.25	-0.30	-1.44	24	2.06	14.62
											1	**62.32**	**185.53**
	Final Mile Other	33.30	2.66	1.25	6.82	0.49	0.86	34.24	2.06	14.62	10	8.84	38.08
Final Mile Total		**710.87**	**4.19**	**1.98**	**171.25**	**5.18**	**13.02**	**336.41**	**62.32**	**185.53**	10	0.73	3.09
Overheads	Central Overheads	112.15	0.26	0.13	42.51	0.79	2.14	54.30	8.84	38.08	10	6.44	39.62
	Contact Centre Overheads	9.09	0.02	0.01	21.65	0.39	1.06	4.40	0.73	3.09	17	1.53	6.57
	Occupancy Overheads	119.70	0.47	0.11	36.87	1.53	4.36	51.30	6.44	39.62	**18**	**17.54**	**87.37**
	Ops Overheads	19.35	0.05	0.02	7.33	0.14	0.37	9.37	1.53	6.57	99	0.14	1.19
Overheads Total		**260.29**	**0.50**	**0.27**	**108.36**	**2.85**	**7.93**	**119.38**	**17.54**	**87.37**	77	0.21	2.56
Sort	Apportioned Unallocated Cost	4.00	0.01	0.01	2.16	0.03	0.09	1.99	0.14	1.19	15	0.01	0.00
	Auto Sorter (AS)	7.40	0.03	0.01	4.10	0.05	0.06	3.27	0.21	2.56	50	0.89	0.41
	Crossdock / Flower (X)	0.72	0	0.00	0.00	0.00	0.00	0.15	0.01	0.00	16	1.35	11.92
	Customer Service (C)	3.85	0.01	0.01	0.45	0.04	0.08	1.60	0.89	0.41	.	.	.
	Direct Sort Activities	37.35	0.07	0.05	12.02	0.28	0.74	16.16	1.35	11.92	.	.	.
	.	.	.	.	.	.	.	.	.	.	**31**	**3.12**	**19.31**
		.	.	.	.	.	.	.	.	.			
Sort Total		**63.99**	**0.15**	**0.08**	**22.48**	**0.48**	**1.17**	**27.81**	**3.12**	**19.31**	14	**107.89**	**447.34**
etc.													
TOTAL COST		**1,642.20**	**6.23**	**3.61**	**587.31**	**18.38**	**49.59**	**741.04**	**107.89**	**447.34**	99	**71**	**407**
											07	**-37**	**-40**
REVENUE		**2,082**	**8**	**4**	**701**	**9**	**14**	**849**	**71**	**407**			
PROFIT		**440**	**1**	**0**	**114**	**-10**	**-35**	**107**	**-37**	**-40**			

by time

by product

by process

by client/customer

Etc. etc.

e.g. focus on final mile by driver type

Activity Group Description	Employee Group Desc	**Activity Cost**	**Cost Per Parcel**
Final Mile	Type 1	**18,794.39**	**1.18**
	Type 2	**1,015,420.03**	**0.94**
	Third Party A	**368,512.80**	**0.96**
	Small Van	**33,488.69**	**0.79**
	Third Party B	**419,252.15**	**0.68**
	Small Van	**33,488.69**	**0.79**
	Third Party C	**419,252.15**	**0.68**
	etc..		
Final Mile Total		**2,493,272.34**	**0.90**

Figures are not genuine – for example only

Benefits

- Full Drill through to Detail
- Automated
- Combining data from many sources
- Accessible at the right level to the right people
- Enables Confident Decision Making
- Already supporting key Business Decisions

Compromises & Lessons

- Data gaps (e.g. scan on/off trailer) → allocate parcels to trailer based on collection locations and evidence at sort (not 100%)
- Missing or mis-matching data or set-up issues (Transport Location <> Parcel pickup Location)
- Data For Van Collections absent → no cost allocated
- Detailed trailer costs not available – use algorithm for mileage/time
- Don’t wait for 100% accuracy before launching – tool will highlight anomalies (real or in data)
- Collaboration was key – engineer working directly with Finance Analysts
- Risk: documentation is poor – we need to work on that

WE DELIVER PROMISES
YODEL
NOT JUST PARCELS

WE DELIVER PROMISES
collect+
NOT JUST PARCELS