# Increasing Engineering Productivity in Microservices World

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## About My Company







# About Me



Principal Engineer in Quality, Intuit



# Agenda

- Microservices Overview
- Opportunity
- Journey Line
- Optimization
- Helping Engineering Productivity
- Best Practices and Lessons Learned
- Q & A



# Microservices Overview (Financial Data

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# Platform)

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#### **Financial Data Platform – Mission**

Acquire and provide financial data that enables awesome user experience across the small business and consumer ecosystems



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# Challenges – Microservices





## **Challenges - Engineering**



# Journey Line

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# Journey Line

#### **Supportability** Version Control **Best Practices** ٠ **Testability** Internal Services Visibility • **Functional Flow** ٠ Traceability E2E Testing • Alerting Splunk SDLC • Splunk 6.1 2016 Logging standard • Continuous • **Mocking Service** Delivery .conf 2014 Txn Tracing 2015-Apr Data Modelling Pivot 2015-Jan Dashboards 2014-Oct **Product Manager** ᠿ 2014-Aug Support Management ÷ Quality ф Developer Ops

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Advance Charting

# Optimization

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# Helping Engineering Productivity

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#### Process Implementation-Increase Engineering Productivity

- Continuous Delivery
- Standards (Logging/Testing/E2E/Certification)
- Traceability
- Adoption
- Agility



#### **For Reference**

### **Continuous Delivery**



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# **Standards - Process Adoption**

- Logging
- Testing

- Workflow
- Certification



# Standards - Logging

#### S Log Formatting Information

Created by Nagal, Sumit, last modified by Cao, Hong on Mar 31, 2015

S.No.	Log Location	Existing	Suggestion
1	Time Format	2014/9502.104501.498/PDT	yyy+MM-dd HH:mm:ss.SSSizzz
2.	Logging Information coming from calling application (TTO Import)	intuit_tid - tid-58666a1d-008-423-477-6d546625c1     Provider name - providerId-VertizonTest     Ently Type = ntth/Types=TV(1088]     Ently Count - ently Count=(1V2-1)(088-1)     Tax Year - taxTear=2014     Auth ID - userAuthid=???     App ID - applic=Imit_platform fispasservice.astestclient     Asset - asset???     Intuit_Asset - intuitOrgAsset/=8144777516287388300	intuit_tid - tid=58968cid<008b-4t23-af7/8dtd946625c1
3.	Logging information coming from Application (AS)	Log Larel - level=NFO     Method Type - regMeth=POST     End Point - regAtherH=POST     End Point - regAtherH=POST     Content Inger regAtherame=0;     Content Inger regAtherame=0;     Point - regAtherame=0;     Point - regAtherame=0;     Total Memory - readMemer436mb     Response Content Type-regAtherame=0;     Response Content Type-regAtherame=0;     Host Response Content Type-regAtherame=0;     Host Response Content Type-regAtherame=0;     Status Message-statusDetail=     Status Code - regStatus=200     Status Code - regStatus=200     Status Code - regStatus=200     Status Code - regStatus=200     Status Code - regStatus=200	Log Level - level=INFO     dass-information dass-com.initial platform.tipp access.syz     Method Type - reg/Meth=POST     End Point - reg/OFarms="         Content Type = reg/OFarms="         Content Type = reg/OFarms="         Content Type = reg/OFarms="         Content Type = reg/OFarms="         Total Memory - tradeMem=408mh         Total Memory - tradeMem=408mh         Total Memory - tradeMem=408mh         Total Memory - tradeMem=408mh         Response Content Type - reg/OFArtSpe=application/json         Response Content Type - respContType=application/json         Response Content Type - respContType=application/sot         Hotal Response Content Type - respRes/OrtType=application/sot         Hotal Response Content Type - respRes/OrtType=application/sot         Hotal Response Content Type - respRes/OrtType=application/sot         Status Code - statusEcode=200         Status Code - statusEcode=200         Status Code - statusEcode=200

#### Log Entry at Calling Service

The following style should be used by a service to log all calls made to a remote service. For example, this log entry should be generat

- date
- time :
- logLevel
- myAppId : This is my (i.e., the service generating the log entry ) app Id
- intuit\_tid :
- · remoteAppid : AppId of the service to which the call is being made
- remoteMethod :
- remotePath:
- · remoteStatus: HTTP status code received from the remote service
- remoteErrorCode: error code received from the remote service
- remoteExecutionTime: time elapsed between the when the request was send, and when the response was received.
- These fields should appear in the logs in the order specified above. In addition to these fields, a service may also log additional data as

In case the calling service is using a SDK to talk to the remote service, it is the SDK's responsibility to log in this format. If the SDK does not lo maintained.

- date
- time
- logLevel
- myAppId : This is my (i.e., the service generating the log entry ) app Id
- intuit\_tid :
- · remoteAppid : AppId of the service to which the call is being made
- · appClass : The class name where the log is being generated
- · appMethod : The method name where the log is being generated
- · remoteErrorCode: error code received from the remote service
- · remoteExecutionTime: time elapsed between the when the request was send, and when the response was received.

#### Other Log Entries

The following style should be application to log everything else. For example, this can be used to log something interesting within a me

- Date
- Time
- LogLevel
- myAppId : This is my (i.e., the service generating the log entry ) app Id
- intuit\_tid :
- · appClass : The class name where the log is being generated
- · appMethod : The class name where the log is being generated



### **Standards - Testing**

S.No.	Task	AS	PS	DAS	DAC	wsi	Vault	Doc	NGWI	cs	AGG	Available
1	Automation for every Environment	DONE	DONE	DONE	DONE	IN PROGRESS	DONE	DONE	DONE	DONE	IN PROGRESS	DONE
2	Automation for every host	DONE	DONE	DONE	DONE	IN PROGRESS	IN PROGRESS	IN PROGRESS		DONE	IN PROGRESS	IN PROGRESS
3	Unique identification for every Test	DONE	DONE	DONE	DONE	DONE	IN PROGRESS	IN PROGRESS	PENDING	DONE	IN PROGRESS	IN PROGRESS
4	Production tests	DONE	DONE	DONE	DONE		DONE	DONE	IN PROGRESS	DONE	IN PROGRESS	IN PROGRESS
5	No hardcoding	DONE	DONE	DONE	DONE	DONE	DONE	DONE	IN PROGRESS	DONE	IN PROGRESS	IN PROGRESS
6	Detaching Test from Source Code	PENDING	DONE	DONE	DONE	PROGRESS	DONE	PENDING	PENDING	DONE	IN PROGRESS	IN PROGRESS
7	Perf Automation Support	DONE	DONE	IN PROGRESS	IN PROGRESS		DONE	DONE	IN PROGRESS	DONE	IN PROGRESS	IN PROGRESS
8	Automation Test Stability - QA	IN PROGRESS	DONE	IN PROGRESS	IN PROGRESS	IN PROGRESS	DONE	IN PROGRESS		DONE	IN PROGRESS	IN PROGRESS
9	Automation Test Stability - E2E	DONE	DONE	DONE	DONE	IN PROGRESS	DONE	DONE		DONE	IN PROGRESS	IN PROGRESS
10	Automation Test Stability - Perf	IN PROGRESS	DONE	IN PROGRESS	IN PROGRESS		DONE	IN PROGRESS		DONE	IN PROGRESS	IN PROGRESS
11	Automation test Time (less then 10 minutes)	PENDING	DONE	DONE	DONE		IN PROGRESS	PENDING		IN PROGRESS	IN PROGRESS	IN PROGRESS
12	Smart/Smoke Tests	DONE	DONE	IN PROGRESS	IN PROGRESS		DONE	DONE	DONE	DONE	IN PROGRESS	IN PROGRESS

For Reference

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### Standards - Workflow

S.No	Services	Release	JIRA Project	Dev Portal	Git	CI	Automation	Dependent Service	Depending Service	Security	Splunk
1	NGWI	X.X	NWI	NGWI	P4 : //ficds/DataAcquisitionService/webintegration/nextgencore/	NGWI_CI	NGWI	PS, PES , DES	AS, DAS, <u>Agg</u>		NGWIDataModel
2	wsi	X.X	FWSI	WSI	https://github.intuit.com/CTO-FDS-DurableConnectivity/wsi.git	WSI_IBP_CI	WSI	Doc, PS	FDI , DAS, Agg	WSI.pdf	WSIDataModel
3	DAC		FLGC	Direct API Connectivity	https://github.intuit.com/CTO-FDS-DurableConnectivity/dac.git	DAC_IBP_CI	DAC	PS,	AS, DAS, <u>Agg</u> , NGWI,	dac.pdf	DACServiceDataModel
4	DAS		OFXT	DAS	https://github.intuit.com/CTO-FDS-DurableConnectivity/das.git	DAS_IBP_CI	DAS	PS, DAC, NGWI, WSI, HDS, <u>CRED</u>	Agg, AS, FDI	das.pdf	DasServiceDataModel
5	HDS		FFBI	Hosted Data Services	https://github.intuit.com/CTO-FDS-DurableConnectivity/hds.git	HDS_IBP_CI	HDS	<u>PS</u> , PBI	AS, DAS, <u>Agg</u> ,	hds.pdf	HDSDataModel
6	PBI		FFBI	Bulk Import	https://github.intuit.com/CTO-FDS-DurableConnectivity/pbi.git	PBI_IBP_CI	-	<u>PS</u>	AS, DAS, Agg, HDS	pbi.pdf	PBIDataModel
7	CRED		CRED	Credentials Service	https://github.intuit.com/CTO-FDP-Credential-Service/single- credential.git	CRED_IBP_CI	CRED	<u>PS</u>	AS, DAS, DAC, Widget		CredentialServiceDataModel
8	Transaction		FAT	Transaction Service	https://github.intuit.com/cto-dev-fdp-fdi/transaction.git	FDP-TXN	Txn	-	Enhance, Trinity		TransactionServiceDataModel
9	Doc		FDP	DOC		DOC_CI	Doc	DAP	AS, <u>WSI</u> , <u>FDI</u> , <u>DAS</u>		docservicedatamodel
10	PES		PDFX	PDF Extraction Service	https://github.intuit.com/PDFX/PesPdfExtractService.git	PES_IBP_CI	PES	<u>PS</u>	NGWI, AS, DAS		PEServiceDataModel
11	AVS/FDI		FAT	FDI		FDI-AVS	FDI-AVS	DAS, NGWI, Provider	-Widget		AVSDataModel
12	Enhance/FDI		FAT	FDI	https://github.intuit.com/cto-dev-fdp-fdi/enhance.git	FDI-Enhance	FDI	Transaction, Agg Classic	-Widget		FDIDataModel
13	Vault		FDP	Vault Service			-	Doc	-		-
14	Profile/FDI		FAT CRED for profile v2	FDI	https://github.intuit.com/fdp/fdp-profile-service.git	FDI-Profile	NA	PS, NGWI, DAS	-		<u>FDIDataModel</u>
15	CAT		CCCAT	Categorization	https://github.intuit.com/FDSCategorization/Categorization.git	CAT-IBP-CI	CAT_Local_CI- Regression	IUS	PERS , <u>Agg</u>		CATDashboard
16	Agg		FDSA	AGG	P4		Agg	NGWI, PS , DASH	AS, DAS, DAC, <u>WSI, NGWI</u>		Aggdatamodel
17	Das Connector		OFXT	NA			Agg	Agg	AS, DAS, DAC, <u>WSI</u> , <u>NGWI</u>		Aggdatamodel
18	DASH		DAS	DASH	Git Link Automation Link	DASH_CI AdminUI_CI	DASH_Automation AdminUI_Automation	<i>2</i>	<u>PS</u>		DASH Splunk
19	Personalization		PERSONALIZATION Under Categorization	Personalization	https://github.intuit.com/FDSCategorization/Personalization.git	Pers-IBP-CI	PERS_Local_CI- Regression		COAAnalyzer		
20	COAAnalyzer		COAAnalyzer Under Categorization	COAAnalyzer	https://github.intuit.com/FDSCategorization/COAAnalyzer.git	COA-IBP-CI	COAAnalyzer Regression	PERS QBOv3 API	-		COAAnalyzerDashboard
21	AS		FAS	Access Service			AS	<u>PS,</u> Doc,DAS, <u>NGWI</u> , HDS,			accessservicedatamodel
22	Accounts		-	Account Service	https://github.intuit.com/cto-dev-fdp-fdi/account.git	FDP-Account	FDP-Account	-	-		-
23	CAF/FDI		FWSI	FDI	https://github.intuit.com/cto-dev-fdp-fdi/customer- authorization-deauthorization.git	FDI-CAF	FDI	<u>PS</u> ,	DAS, Doc, <u>WSI</u> ,		FDIDataModel
24	PS		FDPS	PS	https://github.intuit.com/FDP-QE/ProviderService- IntegrationTests.git	PS_CI	PS		AS, DAS, DAC, Agg, WSI, NGWI, FDI , HDS, <u>CRED</u> , <u>Doc</u> , Vault, Bulk Import, PBI, PES		ProviderServiceDataModel

### Standards - Certification

	QA						E2E	1									
BankStream		Component	Release	Deployment	Automation	Certification		Component	Release	Deployment	Automation	Certification					
	1	QBO	31.0.X	INPROGRESS	INPROGRESS	INPROGRESS	1	QBO	31.0.X	INPROGRESS	INPROGRESS	NOT READY					
	2	PS	1.11.1.0	1-7-2016	COMPLETE	COMPLETE	2	PS	1.11.1.0	1-7-2016	COMPLETE	COMPLETE					
	3	DAS	1.7.0.0.x	01-13-2016	COMPLETE	COMPLETE	3	DAS	1.6.0.5	11-19-2015	5 COMPLETE COMPL						
	4	WSI	1.2.0.27	01-12-2016	COMPLETE	COMPLETE	4	WSI	1.2.0.27	01-12-2016	INPROGRESS	INPROGRESS					
	5	FDI - CAF	0.0.5X	2-09-2016	COMPLETE	COMPLETE	5	FDI - CAF	0.0.4	2-09-2016	COMPLETE	COMPLETE					
	6	AGG	4.7.20.3	1-15-2016	INPROGRESS	INPROGRESS	6	AGG/BIM	4.7.21.113	1-15-2016	INPROGRESS	COMPLETE					
	7	Doc	1.2.12.0	02-10-2016	COMPLETE	COMPLETE	7	Doc	1.2.12.0	02-10-2016	COMPLETE	COMPLETE					
	8	BIM	4.7.21.113	1-14-2016	INPROGRESS	COMPLETE											



## Traceability - Visibility to Identify Potential Issue

- Workflow Strategy (End-to-End)
- Single Service
- Single Test



#### **For Reference**

### Traceability – Workflow – Tax



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## Traceability – Single Service - AS





**For Reference** 

# Traceability – Single Test– AS

Se Last 24 hours V	ect Environment e2e qa perf	Field tid	Filter	s (3 v	Value TEST-e2e-AS-4ff9-a9f3-354658716	Bucket	😮 🔻 Submit	
Avg time <b>1</b> Sec		Avg Size	5	Transactions	1	Success rate	100	Failure rate
execTime in Sec - top 10		Size in Kb - top 10		BU App - Success M	letrics	Status AS		Failure AS
tid 0	execTime 0	tid 0	respContLength 0	providerName 🗧 Intu	uit.platform.fdpasservice.astestclient 0	providerName 0	200 0	
				Q ± 1 0				No results found.
Access Service in ms Provide 527 12:00 AM 8:00 AM 4:00 PM Mon Jul 11 2016 		- dt 00 AM 8:00 AM 4:00 PM in Jul 11 15 _time	DAS Service in ms	: :00 AM 4:00 PM _time	Alternat data service in ms No results four – dt	nd.	Document service in ms	Oauth Services in ms
Provider by host Provider Error		Provider ErrorCode	der ErrorCode BU A		n	EntityType Information		EntityCount Information
host 0	count(tid) 🌣	providerId  accSvcErrorCode  calle	edSvcErrorMessage 🌣	AppId 0	BU 0	entityTypes 0	taxYear ≎ count ≎	entityCounts $\Diamond$ taxYear $\Diamond$ count $\Diamond$
e2eacqap400.ie.intuit.net 1		1 dominion- 0 Intuit.p			vice.astestclient Intuit.platform.fdpasser	W2	2015 1	W2=1 2015 1



#### **For Reference**

## Traceability – Single Test– DAS

docservicedatamodel							
Select Environment		Field Filter	,	Value	Bucket		
Last 24 hours v e2e		tid contains	5 🕲 🔻	TEST-e2e-AS-4ff9-a9f3-3546587166	32 5m 🛛 🗸 🗸	Submit	
⊖ perf							
Avg time	Avg Size		Transactions		Success rate		Failure rate
<b>O</b> Sec		<b>8</b> Kbs	-	1	100		0
execTime in Sec		Size in Kb		Status AS		Failure AS	
0.4		10		respStatus 0	Intuit.platform.fdpasservice.astestclient 0	statusDetail 🗘	Intuit.platform.fdpasservice.astestclient 0
0.3 0.2 0.1 TEST-e2e-AS-4ff9-a9f3-354658716632 tid	exeme	f 7.5 tid 7.5 2.5 TEST-e2e-AS-4ff9-a9f3-35465 tid	reqgth	201	1	-	1
createAlternateData	putAlternat	eData	getDocument		getAlternateData		ticketValidationTimeInMillis
е е 0.115 12:00 АМ 6:00 АМ 12:00 РМ 6:00 РМ Мол Jul 11 2016 time	100 90 80 70 60 50 40 30 20 10		E 0.039 12:00 AM 6:00 AM Mon Jul 11 2016		No results found.		100       90       80       70       60       50       40       30       20       10



# Adoption - Improving Engineering Productivity

- Workflow
- Internal Services
- External Services
- Single Service



## Adoption – Workflow - Tax

↓ doL	Success #	%	
George State     Sector AccessService_ClaimBased	5	100%	
Geria EDP » AS » CD » E2E-Test-Regression	1048	97%	
FDP » AS » CD » E2E-Test-Sanity	33	100%	
FDP » DAC » CD » QA-Bank-Regression	570	91%	
FDP » DAC » CD » QA-Tax-Regression	1031	100%	
FDP » DAS » CD » E2E-DAS-TAX-Regression	999	100%	
Geria FDP » DAS » CD » E2E-DAS-WSI-Regression	136	92%	
	570	91%	
FDP » DAS » CD » QA-Regression-Tax	999	100%	
Geric FDP » Doc » CD » E2E-Test-Regression-Git	1146	98%	
German Stresser Series Ser	415	<100%	
Geria De Service S	367	92%	
FDP » NGWI » CD » QA-Test-Smoke	366	100%	
EDP » NGWI » CD » QA-Test-Smoke-1095	18	12%	
FDP » NGWI » CD » QA-Test-Smoke-Paychex	1	>0%	
EDP » PS » CD » E2E-Test-Regression	17	100%	
FDP » PS » CD » QA-Test-Regression	14	100%	
Total	7735	94%	



### Adoption – Workflow - Banking

Job ↓	Success #	%
Geria DAC » CD » E2E-Test-Sanity	1021	99%
FDP » DAC » CD » QA-Test-Sanity	0	0%
Geria DAS → CD → E2E-Test-Sanity	1202	<100%
FDP » DAS » CD » E2E-Test-Smoke	1014	57%
Geria DAS » CD » QA-Test-Sanity	1722	99%
FDP » DAS » CD » QA-Test-Smoke	0	0%
FDP » FDI » CD » E2E-Test-Regression	1	20%
FDP » FDI » CD » E2E-Test-Sanity	14	67%
FDP » FDI » CD » E2E-Test-Smoke	2	40%
FDP » FDI » CD » QA-Test-Regression	3	60%
Geria De Service S	18	86%
FDP » FDI » CD » QA-Test-Smoke	2	40%
FDP » HDS » CD » E2E-Test-Regression	13	62%
FDP » HDS » CD » E2E-Test-Sanity	13	62%
FDP » HDS » CD » QA-Test-Regression	13	62%
FDP » HDS » CD » QA-Test-Sanity	13	62%
FDP » HDS » CD » QA-Test-Smoke	0	0%
Geria Provide Automatica Structure Structu	260	92%
FDP » WSI » CD » E2E-Test-Sanity	0	0%
Geria Provide America Structure State Structure Stru	267	94%
Total	5578	86%



#### **For Reference**

#### <u> Adoption – Tax – Internal Services</u>



#### Distribution of fild - DS and FDP

fild 0	execTime 0	DSFAIL 0	DPFAIL 0	FDPFAIL 0	DSSUCCESS 0	DPSUCCESS 0	FDPSUCCESS 0	hosted 0	Retry 0	DP 0	DP_Percentage_Failure 0	DP_Percentage_Success 0	DS 0	DS_Percentage_Failure 0	DS_Percentage_Success 0	FDP 0	FDP_Percentage_Failure 0	FDP_Percentage_Success	Total 0
	10.13	0	0	0	0	0	1	IntuitCC	0	0			0			1	0.00%	100.00%	1
	9.22	0	0	0	0	0	1	IntuitCC	0	0			0			1	0.00%	100.00%	1
	3.74	2	0	2	0	0	0		0	0			2	100.00%	0.00%	2	100.00%	0.00%	4
	8.65	0	0	0	0	0	1		0	0			0			1	0.00%	100.00%	1
	0.71	9	0	9	0	0	46	Self	0	0			9	100.00%	0.00%	55	16.36%	83.64%	64
																	« prev 1	2 3 4 5 6	7 next »

#### Distribution of App - DS and FDP

app 🗘	execTime 0	DSFAIL 0	DPFAIL 0	FDPFAIL 0	DSSUCCESS 0	DPSUCCESS 0	FDPSUCCESS 0	hosted 0	Retry 0	DP 0	DP_Percentage_Failure 0	DP_Percentage_Success 0	DS 0	DS_Percentage_Failure 0	DS_Percentage_Success 0	FDP 0	FDP_Percentage_Failure 0	FDP_Pe
Intuit.cg	1.59	1	0	1	0	0	5	Self	0	0			1	100.00%	0.00%	6	16.67%	83.33%
Intuit.ta	0.80	2	. 0	2	0	0	2	Self	0	0			2	100.00%	0.00%	4	50.00%	50.00%
Intuit.ta	1.56	30	3	31	0	0	92	IntuitCC Self	0	3	100.00%	0.00%	30	100.00%	0.00%	123	25.20%	74.80%

#### Distribution of Tax Form - DS and FDP

formtype 0	execTime 0	DSFAIL 0	DPFAIL 0	FDPFAIL 0	DSSUCCESS 0	DPSUCCESS 0	FDPSUCCESS 0	hosted 0	Retry 0	DP 0	DP_Percentage_Failure 0	DP_Percentage_Success 0	DS 0	DS_Percentage_Failure 0	DS_Percentage_Success 0	FDP 0	FDP_Percentage_Failure 0	FDP_Percentage_Success 0	Total 0
	1.28	19	3	20	0	0	84	Self	0	3	100.00%	0.00%	19	100.00%	0.00%	104	19.23%	80.77%	126
	2.48	14	0	14	0	0	15	IntuitCC	0	0			14	100.00%	0.00%	29	48.28%	51.72%	43



#### **For Reference**

### Adoption – Tax – FDP Services

getDataServiceD	ataM	lodel											Edit 🗸	More Info 🗸	Ŧ 9
		Field	F	lter		Value			Bucket			_			
Last 15 minutes	~	tid		contains	♥ 1	*			1h	<b>⊙</b> <sub>▼</sub>	Submit				
SuccessR 11m a	agoPS	11m	Das	11m	Dac	<sup>m</sup> Doc	11m	HDS	1	PES		CS	11m	NGWI	11m a
AS		99 53	100.00	0/	76 67 🐭		100.00 🔍		66 67 🐭	84 4	g "	100	nn .	100 (	າດ ູ
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### Adoption – Tax – External Service

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### Adoption – Tax – Single Service - AS

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# Agility - Increasing Productivity with Splunk

- Right indexing across environment holistic view
- Pivot creation standard
- Dashboard creation standard
- Extracted Fields standard
- Transaction ID standard
- Version control maintaining and managing of Splunk assets
- Promotion Simplify monitoring and alerting in production
- Traversing Across microservices
- tstats utilization in place of pivot performance boost
- Summaries Acceleration technology with summary indexing

# Agility – Increasing Productivity with Splunk

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# **Best Practices / Lessons Learned/ What's Next**

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#### **Best Practices**

Microservices are different than monolith – handle with care

Logging standard – must be in microservices

End-to-end testing – strategy define

Data modelling – per service

Continuous delivery - adoption

Splunk SDLC - alerting / supportability / accountability



#### Lessons Learned

Performance issues
Number of queries per user
Dashboard debugging with data model
Data model migration
Modification in data model (enhance/ updation)
Process accountability
Data model – supportability special char " "
Json parsing with data model is challenging
Calculation field support is missing in data model
Disk space



### What's Next

Atlassian Jira integration				
PagerDuty				
Splunk REST API				
Atlassian HipChat				
CloudBees Jenkins				
Splunk annotation in testing				
Interaction and linking in multiple dashboards				
Holistic data model and dashboard - any service				



# Q & A

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## Splunk – Data Model

DataModel\_DAC

DataModel\_DAC

< Back to Data Models

This Data Model cannot be edited because it is accelerated. Disable acceleration in order to edit the Data Model.					
Objects	e2e e2e				
EVENTS	CONSTRAINTS				
DAC	index=* sourcetype=*dacperf*				
— perf	index=e2e				
- e2e					
— qa	INHERITED				
— dac	_time				
dac_tax	actionvalue				
	agent_dac_time_ms				
	agent service				



## Splunk – Data Model - Fields

XTRACTED

acti		String		
age	≥_ms	Number	VALGOLATED	
age		String		
age		Number	Example Mel	Mumber
api		String	ExceptionVal	Number
api,		String		
auti		Number		Musehan
byte	4	Number	ErrorValue	Number
byte		Number		
cap		String		N
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doc	3_count	String	tid	String
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### Splunk – Data Model – Eval /Regex/lookup

CALCULATED			
ExceptionVal	Number	Eval Expression	Edit
ErrorValue	Number	Eval Expression	Edit
TPS	Number	Eval Expression	Edit
Application	String	Lookup	Edit
AssetId	String		
BU	String		
id tid	String	Regular Expression	n Edit
GenricException	String	Regular Expression	n Edit
ExceptionInfo	String		
CausedException	String	Regular Expression	n Edit
CausedExceptionMessage	String		



# Life cycle for Log change in Splunk

- New change in Logs
- Modify Data Model
- Auto Extract
- Custom Extract
- Modification in Main Search
- Modification in Panel
- Download Data Model
- Download Dashboard
- Data Model Move to Prod
- Modification in Prod Dashboard

