

# Quality Insights & Predictions by Arian Homainik



Transparent och intressentdriven modell  
för Testautomation & Kvalitetssäkring



**VALUELOGIC** DEDICATED TO DEVELOPMENT



# Agenda

1. Kvalité från intressenters perspektiv
2. Vad är **Quality Insights & Predictions**
3. Hur ser arkitekturen ut
4. **QIP** Power BI Dashboard
5. Vad kan AI bidra med
6. Naysayers vs Yaysayers
7. Final Take aways





Dålig kvalitet vid utveckling av mjuk- eller hårdvaror

**Definitionen av Kvalité enligt ISO:** ”Graden till vilken en uppsättning inneboende egenskaper uppfyller specificerade krav, med målet att möta eller överträffa intressenters förväntningar.”



# Case Fordonstillverkning

## Bakgrund

- Stort antal - gemensamma komponenter.
- Tekniska beroenden mellan team.

## Vanliga Problem

- Sekventiella utvecklingsprocesser
- Teamberoende leveranser

## Konsekvenser

- Förseningar och inställda ordrar

## Effekten av Quality Insights & Predictions

”Insikter & Prediktioner i realtid”

- ***Realtidsstatus*** på system, applikationer och leveranser
- ***Automatiserad kvalitetssäkring för datadrivna beslut.***
- ***Informationsdelning*** mellan intressenter.
- ***Kvalité utifrån acceptanskriterier***

## Vad är nytt med Quality Insights & Predictions

- **QIP** är en intressentdriven modell för Testautomation och Kvalitetssäkring av mjuk- och hårdvaror.
- *Automatiserade tester berikas med verksamhetsmetadata som sparas för insikter och prediktioner.*
- **QIP modellen** kombinerar Testautomation med BI & AI.



## Problem QIP angriper

- **Koppling krav, testfall och intressenter**
- **Bara närmast sörjande vet** vad testfallen avser och hög teknisk kunskap krävs för att förstå resultaten.
- **Nytta når inte alla intressenter** vilket ökar risken för brister och dåliga beslut.
- **Svårt att hitta resultat** i olika CI/CD-pipelines.
- **Personberoende testramverk** kan dö ut vid personalbyte.
- **Repetitiva brister accepteras** på grund av en svag feedback-loop och uteblivna "lessons learned".

## Förbättringar QIP tillför

- **Kvalitetssäkring integreras**
- **Faktabaserad dashboard** för analys och uppföljning i realtid där alla kan samlas.
- **Rapporter och nyckeltal** baseras fakta från funktionella tester
- **Här möts alla informationsbehov: drill-through** på testfallnivå och *helikopterperspektiv* på team- eller applikationsnivå.
- **Stabilare testmiljöer** arbetas fram.
- **Självdokumenterande testfall**

# QIP Arkitektur

FÖR INBYGGD KVALITÈ OCH INTRESSENTDRIVEN KVALITETSÄKRING

QIP Dashboard

QIP Datastore

QIP Core Framework

QIP DevOps

QIP Enablement

QIP Multi Framework Support

QIP AI Model<sup>\*New</sup>

QIP Management Interface<sup>\*New</sup>

Vilka testfall indikerar Kvalité för intressenter?

# Case från Kollektivtrafik

## Tvårorganisatorisk funktion

*Fungerar störningsinformation E2E?*

- Flöde: ICC → DataLake → Störningsinfo → Webb

## Teamnivå

*Kan applikationen processa störningsinformation?*

- Betydelse: Kritisk för hela kedjan trots att det utförs på teamnivå.

## Metadataberikade testfall

Inkluderar information om testets syfte, verifieringar, påverkade intressenter, beroenden, komponenter, kritikalitet, testnivå och testdata.

Applikation-, TestSuit- & Testfall

# QIP Metadata

## Verksamhetsmetadata / taggar

- **Testbeskrivning**
- **Intressenter & påverkan**
- **System under test**
- **Testdata**
- **Ansvarigt team**
  
- **Release:** Train, Sprint eller annan period
- **Applikationsversion & kompatibilitet**
- **Information Testmiljö**

## Testexekveringsmetadata

System / Applikation / Teamnivå

Testnivå

- TestSuit
  - TestCase

## Dynamisk information

- Execution date, time duration.
- Status (Passed, Failed, Skipped)
- Error message
- Testparameters etc.

Whitebox, Blackbox, End-2-End, Integration, Komponent, API, Frontend, Databas

”Allt som är viktigt för intressenter”

# QIP Power BI Dashboard



Select Train Cycle      Select PI Cycle      Clear All      Last Refreshed Date: 10/30/2023 4:21 PM

Please Select Test Suite Level  
Last Execution: 10/30/2023 03:14 AM

Testcase	Description	App	Version	Platform	Testcase	Team	Status	Run	Pass	Fail	Skipped	Executed
CDAPS Functionality	Verification of CDAPS functions, integration etc.	CDAPS	1.0.0	Android	CDAPS	CDAPS	Functional	LP 2 - 5th Speed App Information	10/30/2023	10/30/2023	0	10
Connectivity: CDX, AWS & External	Verification of connectivity between onboard, offboard & external components	CDX	1.0.0	Android	CDX	CDX	Functional	LP 2 - 5th Speed App Information	10/30/2023	10/30/2023	0	10
Health Check/Platform Release	Verification of CDX platform & driver probe parts	CDX	1.0.0	Android	CDX	CDX	Functional	LP 2 - 5th Speed App Information	10/30/2023	10/30/2023	0	10
CDX App Functionality	Check the on software updates & backup etc.	CDX	1.0.0	Android	CDX	CDX	Functional	LP 3 - Over the air update	10/30/2023	10/30/2023	0	10
Routing App Functionality	Verification of GPS, OBD and other Routing functions	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Positioning	10/30/2023	10/30/2023	0	10
Quality of service for MP and file operator	Verification of MP and Operator's last the right CDX	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Positioning	10/30/2023	10/30/2023	0	10
Vehicle Status Functionality	Verification of vehicle status functionality	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Vehicle Status	10/30/2023	10/30/2023	0	10
Health, Inc Homebank & Pipeline	Verification of Test Framework & Automation pipeline	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Vehicle Status	10/30/2023	10/30/2023	0	10
CDX Application Integration & Compatibility Test	Verification of CDX Release Candidate	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Vehicle Status	10/30/2023	10/30/2023	0	10

Test Case Level - 20 Passed & 4 Skipped & 0 Failed & 0 ExecError

Testcase	Description	App	Version	Platform	Testcase	Team	Status	Run	Pass	Fail	Skipped	Executed
WV_CDX_01_operations_on_up_and_moving	Verify that Homing Module and all the operations are up and running with expected CDX	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Vehicle Status	10/30/2023	10/30/2023	0	10
WV_CDX_02_on_line_status_on_the_air	Verify the holding capability of the CDX over the air	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Vehicle Status	10/30/2023	10/30/2023	0	10
WV_CDX_03_on_line_status_on_the_air	Verify that position can be sent on gps	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Vehicle Status	10/30/2023	10/30/2023	0	10
WV_CDX_04_on_line_status_on_the_air	Verify that CDX can turn on and off	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Vehicle Status	10/30/2023	10/30/2023	0	10
WV_CDX_05_on_line_status_on_the_air	Verify that CDX can turn on and off	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Vehicle Status	10/30/2023	10/30/2023	0	10
WV_CDX_06_on_line_status_on_the_air	Verify that integration between Home Cloud, Home AWS and CDX app works	CDX	1.0.0	Android	CDX	CDX	Functional	LP 1 - Vehicle Status	10/30/2023	10/30/2023	0	10
WV_CDX_07_on_line_status_on_the_air	Verify that communication with 1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1N, 1O, 1P, 1Q, 1R, 1S, 1T, 1U, 1V, 1W, 1X, 1Y, 1Z, 1AA, 1AB, 1AC, 1AD, 1AE, 1AF, 1AG, 1AH, 1AI, 1AJ, 1AK, 1AL, 1AM, 1AN, 1AO, 1AP, 1AQ, 1AR, 1AS, 1AT, 1AU, 1AV, 1AW, 1AX, 1AY, 1AZ, 1BA, 1BB, 1BC, 1BD, 1BE, 1BF, 1BG, 1BH, 1BI, 1BJ, 1BK, 1BL, 1BM, 1BN, 1BO, 1BP, 1BQ, 1BR, 1BS, 1BT, 1BU, 1BV, 1BW, 1BX, 1BY, 1BZ, 1CA, 1CB, 1CC, 1CD, 1CE, 1CF, 1CG, 1CH, 1CI, 1CJ, 1CK, 1CL, 1CM, 1CN, 1CO, 1CP, 1CQ, 1CR, 1CS, 1CT, 1CU, 1CV, 1CW, 1CX, 1CY, 1CZ, 1DA, 1DB, 1DC, 1DD, 1DE, 1DF, 1DG, 1DH, 1DI, 1DJ, 1DK, 1DL, 1DM, 1DN, 1DO, 1DP, 1DQ, 1DR, 1DS, 1DT, 1DU, 1DV, 1DW, 1DX, 1DY, 1DZ, 1EA, 1EB, 1EC, 1ED, 1EE, 1EF, 1EG, 1EH, 1EI, 1EJ, 1EK, 1EL, 1EM, 1EN, 1EO, 1EP, 1EQ, 1ER, 1ES, 1ET, 1EU, 1EV, 1EW, 1EX, 1EY, 1EZ, 1FA, 1FB, 1FC, 1FD, 1FE, 1FF, 1FG, 1FH, 1FI, 1FJ, 1FK, 1FL, 1FM, 1FN, 1FO, 1FP, 1FQ, 1FR, 1FS, 1FT, 1FU, 1FV, 1FW, 1FX, 1FY, 1FZ, 1GA, 1GB, 1GC, 1GD, 1GE, 1GF, 1GG, 1GH, 1GI, 1GJ, 1GK, 1GL, 1GM, 1GN, 1GO, 1GP, 1GQ, 1GR, 1GS, 1GT, 1GU, 1GV, 1GW, 1GX, 1GY, 1GZ, 1HA, 1HB, 1HC, 1HD, 1HE, 1HF, 1HG, 1HH, 1HI, 1HJ, 1HK, 1HL, 1HM, 1HN, 1HO, 1HP, 1HQ, 1HR, 1HS, 1HT, 1HU, 1HV, 1HW, 1HX, 1HY, 1HZ, 1IA, 1IB, 1IC, 1ID, 1IE, 1IF, 1IG, 1IH, 1II, 1IJ, 1IK, 1IL, 1IM, 1IN, 1IO, 1IP, 1IQ, 1IR, 1IS, 1IT, 1IU, 1IV, 1IW, 1IX, 1IY, 1IZ, 1JA, 1JB, 1JC, 1JD, 1JE, 1JF, 1JG, 1JH, 1JI, 1JJ, 1JK, 1JL, 1JM, 1JN, 1JO, 1JP, 1JQ, 1JR, 1JS, 1JT, 1JU, 1JV, 1JW, 1JX, 1JY, 1JZ, 1KA, 1KB, 1KC, 1KD, 1KE, 1KF, 1KG, 1KH, 1KI, 1KJ, 1KK, 1KL, 1KM, 1KN, 1KO, 1KP, 1KQ, 1KR, 1KS, 1KT, 1KU, 1KV, 1KW, 1KX, 1KY, 1KZ, 1LA, 1LB, 1LC, 1LD, 1LE, 1LF, 1LG, 1LH, 1LI, 1LJ, 1LK, 1LL, 1LM, 1LN, 1LO, 1LP, 1LQ, 1LR, 1LS, 1LT, 1LU, 1LV, 1LW, 1LX, 1LY, 1LZ, 1MA, 1MB, 1MC, 1MD, 1ME, 1MF, 1MG, 1MH, 1MI, 1MJ, 1MK, 1ML, 1MM, 1MN, 1MO, 1MP, 1MQ, 1MR, 1MS, 1MT, 1MU, 1MV, 1MW, 1MX, 1MY, 1MZ, 1NA, 1NB, 1NC, 1ND, 1NE, 1NF, 1NG, 1NH, 1NI, 1NJ, 1NK, 1NL, 1NM, 1NO, 1NP, 1NQ, 1NR, 1NS, 1NT, 1NU, 1NV, 1NW, 1NX, 1NY, 1NZ, 1OA, 1OB, 1OC, 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# QIPs Dashboard besvarar frågor

## Relevant för alla intressenter

- Vilka kritiska tester finns för Applikationen?
- Vilka funktionella krav täcks av testfallet?
- Vilka verifieringarna görs i testet?
- Vilka intressenter påverkas?

## Dynamisk och historisk datapunkter

- Aktuellt & Historiskt resultat: Filtrerat på applikation, testnivå, kriticitet, Release, Period m.m.
- Framtida prediktioner: när förväntas alla tester passera?
- Grafer för periodjämförelser

## Extra nyfikna eller närmast sörjande

- Varför smäller Testet?
- Vad säger felmeddelandet?
- Hur lång tid tar det att köra?
- Tar det längre tid än förut?
- Vilken miljö och CI/CD pipeline kördes testet i?



# AI-Model för QIP

## Prediktiva insikter

- Prognostisera tid och kvalitet för release
- Upptäcka avvikelser i realtid
- Automatisk klassificering av fel
- Hitta beroenden och rotorsaker
- Riskklassificering
- Djupgående testmiljöanalys
- Djupgående rapportering med helhetssyn

## Agentisk AI

- Prediktera problem och varna i förväg
- Automatiskt föreslå nya testfall
- NLP-baserade svar på kvalitetsfrågor





# Vanliga motargument

## Naysayers

- Visualisering är inte viktigt
- Det kommer kosta jättemycket
- Vi saknar stabila testmiljöer
- Det är för stort
- Vi vill inte dela information med andra intressenter
- Vad andra team gör påverkar inte oss
- Vi bryr oss inte om vad andra tycker om vår kvalitet
- Vi har inte Power BI här
- Kan man inte använda Jira

## Mitt svar

Snabb överblick och bättre beslut

En investering som sparar kostnader

QIP hjälper till stabilisera miljöer

QIP är skalbart – börja smått och väx gradvis

Transparens skapar bättre samarbete – *givande & tagande*

Alla team bidrar till helhetskvaliten

Feedback från andra är värdefull för kvalitetsförbättringar

QIP kan byggas med andra visualiseringsverktyg

Nej de stödjer inte det här

# Quality Insights & Predictions – key takeaways

## Nyttor

- Högre kvalité och minskad risk för brister
- Ökad transparens och kundnöjdhet
- Förutsägbarhet och högre precision
- Bättre produktivitet med lägre kostnader

# Quality Insights & Predictions

Transparent och intressentdriven modell för kvalitetssäkring

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πάντα ῥεῖ (panta rhei)  
Det enda som är konstant är förändring



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