PROCESS, METHODS & TOOLS – AN AGILE APPROACH TO INTEGRATION

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TITLE: Principal Consultant / Software Process Manager

ORGANIZATION: KPIT Technologies & Jaguar Land Rover
AGENDA

1. Introduction

2. Automotive Industry – future trends

3. Improvement Journey @ JLR

4. Solution – Management Approach

5. Solution – Execution Approach

6. Summary & Next steps
INTRODUCTION

• David Farr has a BEng (Hons) in Electronic Engineering and has over 30 years’ experience with embedded software, being involved in such diverse projects as medical LASERs and high-speed industrial control systems, as well as over 20 years in the automotive industry itself.

• David is Software Process Manager at Jaguar Land Rover (JLR), with responsibility for software process design and quality within JLR, as well as ensuring that suppliers conform to industry best practice.

• Sripathy Ramachandran is an MBA (Systems), PMP certified and a Provisional Assessor for Automotive SPICE (by intacs). Sripathy has an overall experience of over 20 years in IT industry. Sripathy has performed multiple roles during his tenure that spans across the entire software lifecycle. Sripathy has good experience in various process models and standards such as CMMI, Automotive SPICE, ISO 26262 and DO-178B standards.

• Sripathy is a Practice Lead & Principal Consultant (Automotive SPICE and Functional Safety) at KPIT Technologies
ORGANIZATION OVERVIEW

About JLR

Jaguar Land Rover is the UK’s largest automotive manufacturing business, built around two iconic British car brands: Land Rover, the world’s leading manufacturer of premium all-terrain vehicles and Jaguar, one of the world’s premier luxury sports saloon and sports car marques.

About KPIT

KPIT is a global technology company specializing in providing IT Consulting and Product Engineering solutions and services to Automotive, Manufacturing, Energy & Utilities and Life Sciences companies. KPIT is a partner of choice to Automotive Industry to deliver best in class solutions and products across automotive subsystems and make mobility Smarter, Greener, Safer and Affordable.
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BUSINESS CHALLENGES

1. ADAS & Connected car functions are complex, requiring flexible development processes aligned to industry best practices.

2. ALM/PLM tools support engineering process automation and require alignment to industry best practices (e.g. traceability management, integration across discrete engineering tools).

3. Agile development is popular in the automotive industry in order to achieve time-to-market.

4. Product development needs to be supported with agile process and tool development.
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Since July 2015: CE & HC have adopted best practices derived from ASPICE & CMMI for in-house software development. Other departments have adopted a similar approach for better engineering & management practices. There have been parallel improvement initiatives concerning supplier software quality. There have been multiple Systems Engineering initiatives across the departments. There are localized initiatives to configure and deploy popular industry tools to standardize workflow.
Five core elements:

- Processes
  - Aligned with recognized Standards
- Governance
- Tools and methods
- Knowledge Management
- Competence
CHALLENGES (PROCESSES & TOOLS)

1. Process team and Tools/Methods team are governed by different Management Structures

2. Different goals and objectives, leading to conflicting priorities for definition and deployment

3. Disconnected process and tool delivery timelines

4. Redundant effort in defining processes in isolation by Process & Tools/Methods teams

5. Repeated customer contact for gathering the same information needed for process & tools development
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INITIAL STATE

Departments

Chassis
Electronics

Hybrid
Control

ADAS

Powertrain

Supplier SW QA

Systems Engineering

Supplier SW QA

Systems Engineering

Supplier SW QA

Systems Engineering

SUPPLIER

Knowledge
Management

ASPI/CMMI
CHALLENGES & LIMITATIONS

1. Lack of clarity on RASIC between Process and Tools/Methods teams
2. Disconnected Process and Tools/Methods delivery timelines
3. Lack of clarity on deliverable exchange between Process and Tools/Methods teams
4. Lack of involvement of members from Process and Tools/Methods teams for change decisions
5. Lack of tool knowledge within the Process team and lack of process knowledge within Tools/Methods team
## MANAGEMENT APPROACH – CHANGES INTRODUCED

1. Identify Deliverables and team dependencies
2. Established RASIC for clarity of involvement
3. Alignment of timing plan and dependencies
4. CCB for process improvement includes Tools/Methods

### Process & PMT RASIC

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Process</th>
<th>Tools</th>
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</thead>
<tbody>
<tr>
<td>Process Usecases</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Tools Usecases</td>
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<td>Y</td>
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<tr>
<td>Process Workflow</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Process State Flow</td>
<td>Y</td>
<td>Y</td>
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<td>Process Forms/Fields</td>
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<tr>
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<td>Tools Forms/Fields</td>
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<tr>
<td>UAT Tool Testing</td>
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<tr>
<td>Deployment of Tools</td>
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<td>Y</td>
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</table>

### Process Delivery Team

- **CCB**
- **CE**
- **ADAS**
- **HC**
- **BMS**
- **IHS**
- **GWM**
- **FT**
- **XYZ**

### CCDS Framework

- **SE Process**
- **SW Process**
- **SMF Process**

### Deployment Strategy

- **CCB**
- **Process & Tools Team**

### Supporting Process

- **Defining**
- **Supporting**
- **Maintaining**

### Vehicle Engineering team (Methods & Tools)

- **CCD Goals & Objectives**
- **As defined by SPI**

**KPI**

**JAGUAR**

**LAND-ROVER**
**MANAGEMENT APPROACH – CURRENT CHALLENGES**

1. **Business Users**
   - Requirement Engineering
   - System Architecture
   - Software Architecture
   - Controls & Software Engineering
   - V&V

2. **Process Group**
   - **S No**
   - **Goal (Process Group)**
     1. Define & Deploy System Engineering Process (CTB)
     2. Define & Deploy Supplier Management Process (CTB)
     3. Setup common process for SW Engineering across dept. (RTB)
     4. Maintain ASPICE certification (RTB)

3. **Tools & Methods Group**
   - **S No**
   - **Goal (Methods & Tools Group)**
     1. Configure & deploy tools for problem and change management (CTB)
     2. Setup configuration management system & migrate data (CTB)
     3. Obtain buy-in from new department, configure & deploy tools for problem & change management (CTB)

1. Multiple customer contacts for gathering similar information
2. Processes and Tools/Methods governed by different Management Structure
3. Different goals and objectives, leading to conflicting priorities for definition and deployment
1. Identify single owner for both Process and Tools/Methods.
2. Arrive at integrated goals and objectives
3. Define an integrated definition & deployment plan for Process & Tools/Methods
4. Conduct integrated weekly meetings for progress reviews
5. Adopt agile approach to deploy process & tool solution to accelerate use of best practices
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INITIAL STATE: INTERACTION MODEL CHALLENGES

Sequential execution of definition & deployment
Informal exchange of deliverables

1. Process Gap Analysis
2. Process Definition
3. Review with users covering Biz use cases
4. Pilot performed for processes not using tools

Definition Activities

- Design workflows based on industry best practices
- Form Design & Tools Configuration
- Establish Workflows thru Pilot
- Multiple pilots along with UAT

Deployment Activities

- Pilot
- Tools Training
- Deployment
- Data migration performed prior to deployment

3. Lack of synergy between business & tools use cases
4. Lack of integrated approach pilot, training & deployment

Unable to deliver results thereby delaying customer commitments
### Release Plan

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### Burndown chart

![Product Burndown Chart](https://example.com/burndown_chart.png)
DEPLOYING AGILE @ TOOLS/METHODS TEAM

1. Tools Roadmap
2. Release Plan + Detailed Plan
3. Product Backlog
4. Sprint Backlog
5. Dashboard + Burndown chart
UNIFIED APPROACH TO DEPLOYMENT

1. Early identification of use cases for definition
2. Unified approach to deployment activities
3. Unintegrated approach to definition by Process & Tools/Methods teams

Process Analysis → Process Definition → Review

voice of customer → Form Design & Tools Configuration → Tools Integration

Review includes Tools/Methods team

Establish Workflows thru Pilot → Training → Deployment

Data migration performed prior to deployment
ADOPTING AGILE APPROACH

Integrated Goals & Objectives

Process Team

Tools Team

Activity Split-up

Pilot

Training

Deployment

Blueprint ready for use
UPCOMING PRIORITIES

Integrated Goals & Objectives

New processes

• Setup common process and tool solutions for
  • Configuration Management
  • Test Management

Tailor existing solution for new department

• Departmental process tailoring and tool configuration
  • Requirements Management
  • Change Management
  • Defect Management

Biz use cases

Tool use cases

Workflow definition

Tool config

Pilot

Training

Deployment

Alignment to existing solution
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SUMMARY & NEXT STEPS

• An integrated approach to process and tools is the right way forward, due to the tight collaboration needed between both

• Planning and tracking is the key

• Being Agile ensures alignment to changing priorities due to business needs

• Adopting Agile principles for process and tools definition and deployment to maximize on the business outcome based on priority

• Being Agile does not compromise on the documentation needed for future maintenance

• The retrospective at the end of each sprint cycle helps identify improvements, continuously
Thank you for your Attention!

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