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SRE Implementation Strategy to Drive DSPs' IT Operational Excellence

Achieve agile and stable IT operations with 75% reduction in P2+ incidents

Credits | Bala Vasanth Murugan Rohit Karthikeyan

Barriers for implementing agile methodologies prevents Digital Service Providers (DSPs) from achieving stability in their IT operations

Though DSPs follow agile software development processes, they often face challenges in its implementation, leading to unstable IT operations.

Traditional IT operations, which struggle on scalability and reliability can negatively impact critical business outcomes like release cycle times, time-to-market of new features, and customer satisfaction

Major challenges faced by DSPs to achieve agile & stable IT operations

A heterogenous environment causes operational silos, due to the use of different systems from multiple vendors

Rapidly evolving IT landscape brings a huge shift in how Dev team engage with IT Ops.

Lack of pre-defined best practices inhibit collaborative approach among different teams

Lack of modern software tools in IT Ops hampers the time-to-market for the deployment of new features or products

Importance of agile methodologies in DSPs' IT operations

Engagement	Typical benefits	Following a full agile transformation
Time-to-market	2X–4X acceleration in delivery	Shortens the time of new feature launch
Features	3X–4X increase in customer satisfaction	Leads to close collaboration between business and IT
Delivery efficiency	15%-25% reduction in development cost	Leads to faster implementation cycles

Source: Boston Consulting Group

> **Site Reliability Engineering (SRE) principles provide agile methodologies to transform DSPs' IT operations**

Product-based companies such as Google, Amazon, and Netflix have leveraged SRE principles to achieve faster releases of features and updates. Same best practices can be applied by DSPs' IT Ops to achieve stability and agility.

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SRE principles – an agile methodology to drive DSPs' IT operational excellence

SRE principles provide an agile and prescriptive approach for implementing DevOps, thereby, offering the required speed & stability for a DSPs' IT operations

SRE principles originated at Google. It includes the following approaches:

Work to minimize toil
Identify and eliminate the toil

Manage by service level objectives (SLOs)
Select an appropriate target for the service and manage it by that SLO

Operations is a software problem
Use software engineering approaches to solve a problem

Automate the job away
Determine what to automate and how to automate it

Move fast by reducing the cost of failure
Accelerate problem discovery

Share ownership with developers
Foster collaboration between business, development, and operation teams

SRE principles can be implemented in any of the DSPs' IT operations. This insight focuses on the four facets of a DSPs' IT operations – ITSM change management, incident management, production deployment, and culture

Significance of SRE principles in DSPs' IT operations

Elements of IT Ops	DSPs' requirements	Positive impact from SRE implementation
Change management process	With the increasing demand for enhanced digital customer experience, DSPs are **compelled to release frequent application changes and feature updates** on their online intake channels (web portal, e-commerce and other digital platforms)	**Increased reliability & scalability of operations**
	There is a **need to eliminate toil and reduce cumbersome processes** in DSPs' digital channels (e.g., B2B, B2C web portals)	**Improved operational efficiency and quality of the content delivered**
Incident management process	Mostly DSPs employ in-house tools, open-source applications or loosely connected toolchains. There is a **need for standardized tools** and approaches	**Avoid siloed tool sprawl**
Production deployment process	There is an increasing **need to eliminate manual intervention** in the production deployment cycle of DSPs' digital channels (e.g., B2B, B2C web portals)	**Accelerated time-to-market of features/updates**
Culture	IT Ops team have to juggle between addressing the incoming requests, maintaining stability and performance of the systems. Hence, there is a **need for a collaborative approach and an always-improving culture of learning** to accomplish all the tasks.	**Improved collaboration among team members and achieve quicker resolution**

Recommendation
- It is imperative to **adopt SRE principles which are most relevant to the DSPs' domain.**
- Successfully implementing this approach requires the right set of enablers that are presented in the upcoming slides

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SRE implementation **enablers** to provide stability and ultra-scalability to DSPs' IT operations

1 **SRE principles in change management process**

Eliminating toil in change management process, enables DSPs to accelerate time-to-market of the updates to be deployed on the digital platform

2 **SRE principles in incident management process**

Modernizing the incident management process using alerts and on-call management solution reduces the time-taken for incident response

3 **SRE principles in production deployment process**

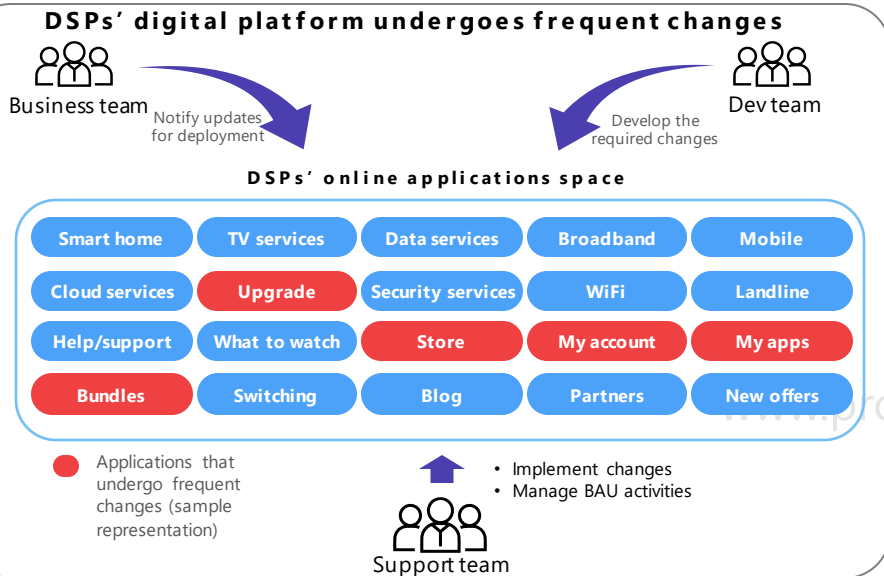Improving production deployment cycle, in DSPs' digital platform using automation

4 **SRE principles in cultural shift**

Increasing DSPs' IT operational efficiency through blameless postmortem culture in the incident management process

By embracing these enablers, DSPs can successfully achieve stability in IT operations, attaining a **75%** reduction in P2+ incidents

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Eliminating toil during the change management process, enables DSPs **to accelerate time-to-market of updates** to be deployed on the digital platform

DSPs' digital platform undergoes frequent changes

Business team — Notify updates for deployment →

Dev team — Develop the required changes ←

DSPs' online applications space

Smart home	TV services	Data services	Broadband	Mobile
Cloud services	Upgrade	Security services	WiFi	Landline
Help/support	What to watch	Store	My account	My apps
Bundles	Switching	Blog	Partners	New offers

● Applications that undergo frequent changes (sample representation)

↑ Support team
• Implement changes
• Manage BAU activities

Sample (representation) of toils for different applications

Application	Toil description	Time taken	Frequency	Toil type	Plan of attack
Store	Publish content in production manually at 7AM, 10AM, 12PM, & 3PM – tiring and & time consuming	> 8 hours	Daily	Repetitive	Implement AEM scripts
All applications	Resources need to monitor group chat/calls during the entire deployment cycle	> 8 hours	Daily	Repetitive	Implement application monitoring tool
My account	Registration related issues due to the failure of 3 services - gives an inflow of 20 + incidents/ month	0.5 hours	Daily	Non-tactical/ Reactive	Operations support systems (OSS) to provide a permanent fix for 3 webservices

Toil is a task which tends to be **manual, repetitive, automatable, tactical, lacks any enduring value, and that scales linearly as a service grows**. Examples of toil include applying database schema changes, reviewing non-critical monitoring alerts, copying and pasting commands, etc.

Steps to eliminate toil

Step - 1 — **Toil identification:** Capture all the activities occurring in the application, and filter them to identify the toil

Step - 2 — **Toil analysis:** Perform toil analysis to identify solutions

Step - 3 — **Toil elimination:** Devise a plan of attack and develop solution scripting to eliminate the toil

Recommendations

During toil identification process:
• Conduct a **workshop with the support team for 1-2 hours everyday** for toil identification.
• **Perform time and frequency modelling** for each activity (determine the time spent on the activity and the frequency of its occurrence- either daily, weekly or monthly)
• Based on the feedback, **categorize the activities into toil**
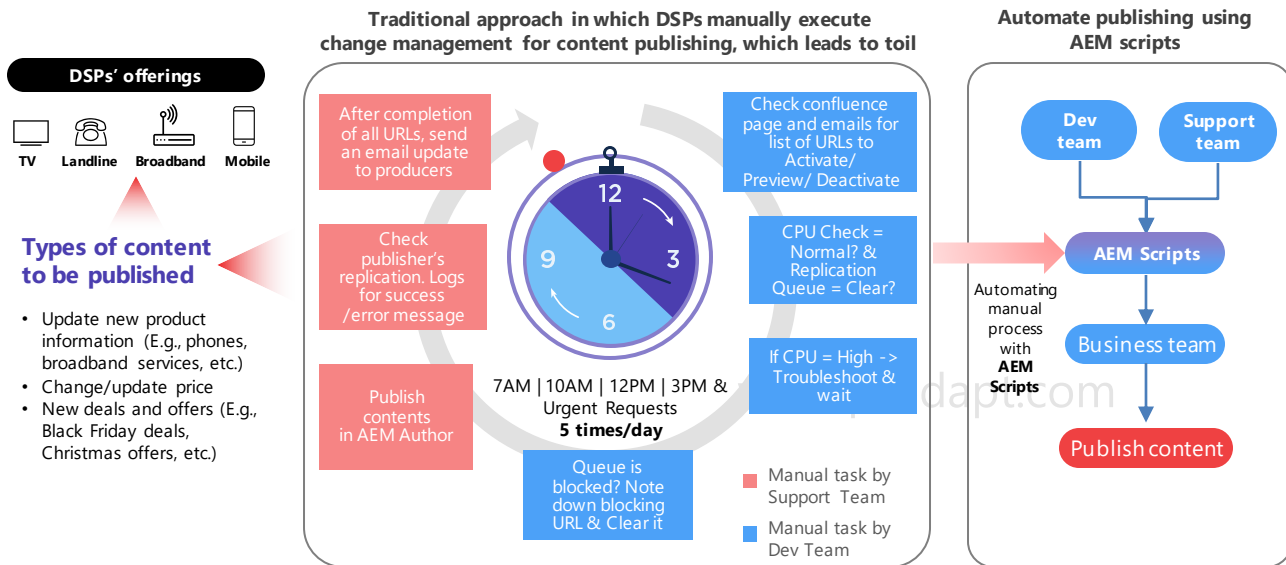
During toil analysis process:
• Prioritize the toils based on i) Amount of time; ii) Frequency; iii) Type of toil.
• Rank the toil type based on its severity. This **is critical to devise an action plan** and manage BAU activities. Manual – Rank 2 | Repetitive – Rank 1 | Automatable – Rank 2 | Nontactical/Reactive– Rank 3 | Lacks enduring value – Rank 4
• **Identify plan of attack (solution)** - collaborate with the dev team to identify a **high-level solution using T-shirt size estimation** technique.

During toil elimination process:
• Perform impact documentation and get it signed-off from dev team, business, IT and projects team.
• Implement the **solution scripting in chunks and avoid big bang scripting**.

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Use case: Toil elimination in DSPs' content publishing activity using AEM scripts, **saves time spent** on it per month by 15-20%

DSPs' offerings

TV | Landline | Broadband | Mobile

Types of content to be published

- Update new product information (E.g., phones, broadband services, etc.)
- Change/update price
- New deals and offers (E.g., Black Friday deals, Christmas offers, etc.)

Traditional approach in which DSPs manually execute change management for content publishing, which leads to toil

After completion of all URLs, send an email update to producers

Check publisher's replication. Logs for success /error message

Publish contents in AEM Author

Check confluence page and emails for list of URLs to Activate/ Preview/ Deactivate

CPU Check = Normal? & Replication Queue = Clear?

If CPU = High -> Troubleshoot & wait

7AM | 10AM | 12PM | 3PM & Urgent Requests **5 times/day**

Queue is blocked? Note down blocking URL & Clear it

Manual task by Support Team

Manual task by Dev Team

Automate publishing using AEM scripts

Dev team | Support team

AEM Scripts

Business team

Publish content

Automating manual process with **AEM Scripts**

Recommendations

- Dev and support team should collaborate to **write Adobe Experience Manager (AEM) scripts**, which automates the manual process for publishing activity.
- Implement AEM Workflows to automate the activities that are performed on (one or more) webpages and/or assets.
- While introducing a new type of content on the website, **reuse an existing template which can be further fine-tuned using CSS**.
- **Use the paragraph system** (parsys/iparsys) on the new webpages, which will enable the business team to drag and drop or add other components or scripts at page level.
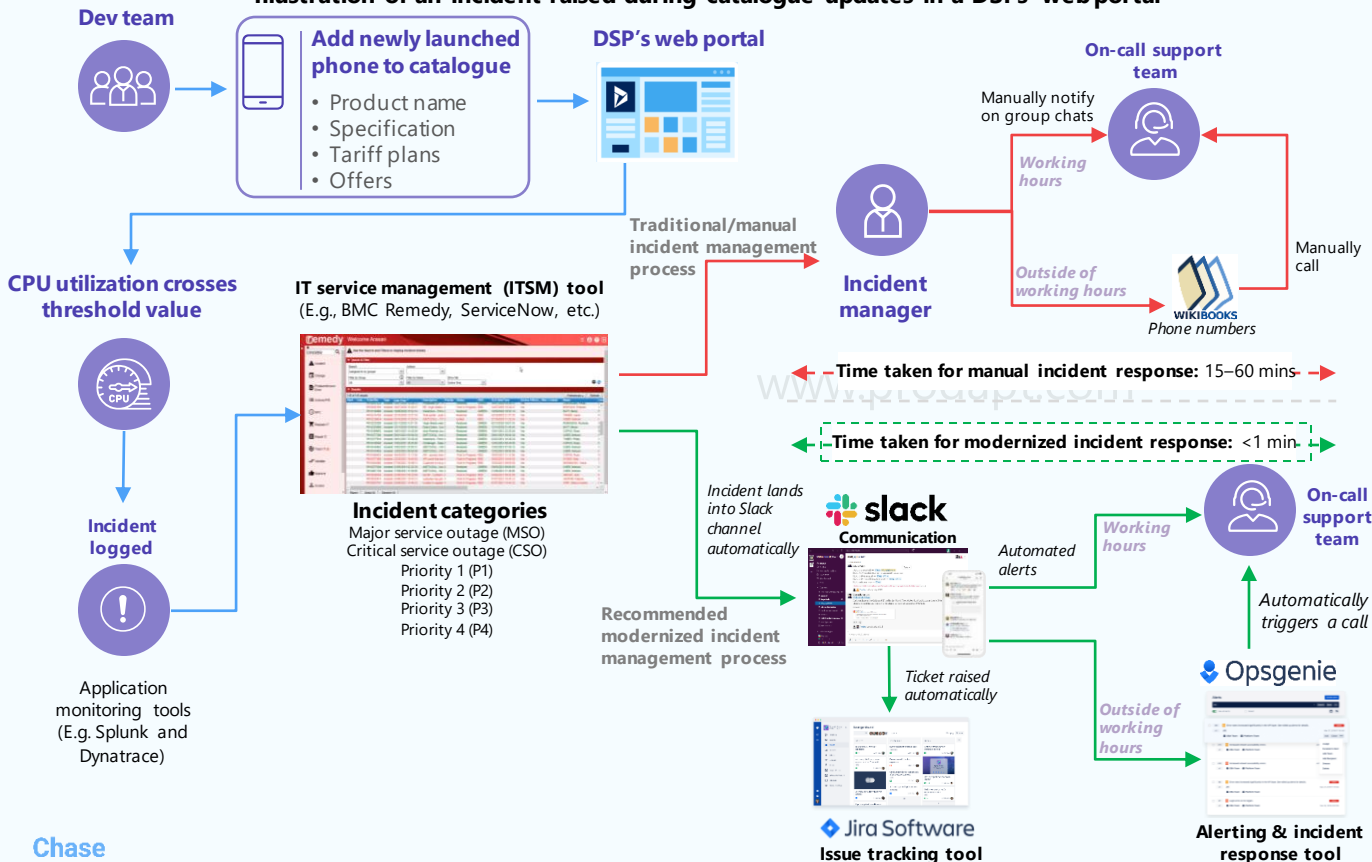
Benefits

- The business team can automatically preview and publish the content using AEM scripts and **does not have to rely on the dev & support team** anymore.
- Thus, the business team **saves 15-20% of hours** taken per month in publishing activity

Challenges in change management in the traditional content publishing process

- Dev team and support team must get involved manually to execute the change and publish the final content.
- Large number of urgent change requests come from the business team. This increases the number of manual activities for the dev and support team.
- Need for high number of support engineers.
- 8-10 hours spent by support team every day for executing the content publishing activity.

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Modernizing the incident management process using alerts and on-call management solution reduces the time taken for incident response

Illustration of an incident raised during catalogue updates in a DSPs' web portal

Dev team

Add newly launched phone to catalogue
- Product name
- Specification
- Tariff plans
- Offers

DSP's web portal

On-call support team

Manually notify on group chats

Working hours

Traditional/manual incident management process

Incident manager

Outside of working hours

Manually call

WIKIBOOKS
Phone numbers

CPU utilization crosses threshold value

IT service management (ITSM) tool
(E.g., BMC Remedy, ServiceNow, etc.)

Time taken for manual incident response: 15–60 mins

Time taken for modernized incident response: <1 min

Incident logged

Incident categories
Major service outage (MSO)
Critical service outage (CSO)
Priority 1 (P1)
Priority 2 (P2)
Priority 3 (P3)
Priority 4 (P4)

Incident lands into Slack channel automatically

slack
Communication

Automated alerts

Working hours

On-call support team

Automatically triggers a call

Recommended modernized incident management process

Ticket raised automatically

Opsgenie

Application monitoring tools
(E.g. Splunk and Dynatrace)

Jira Software
Issue tracking tool

Outside of working hours

Alerting & incident response tool

- The traditional incident management process requires manual intervention by the incident manager to notify the support engineers. Typically, the time taken for incident resolution in such a scenario is 15-60 mins.
- **Modernize the incident management process using modern communication platform and automated alerts,** thereby reducing the time-taken for incident resolution to less than 1 minute.
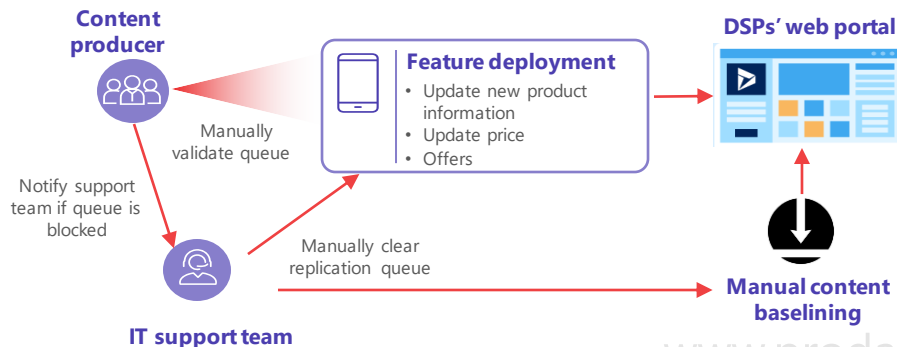
Recommendations

- **Integrate Slack Communication platform** with the ITSM tool, to enable automated notification of incidents to the support engineers, during the working hours.
- **Integrate Opsgenie tool** with the Slack platform to enable automated call-alerts to the support engineering, during the non-working hours.
- **Use work management tools such as Jira Software**, which would enable incident managers and support engineers to keep a track of the issues and the tickets raised.
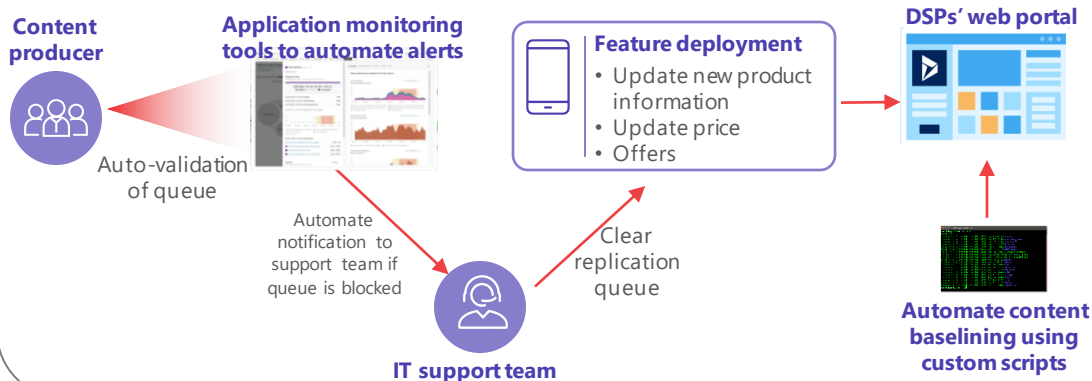
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Improving production deployment cycle by 25% in DSPs' digital platform using automation

Traditional production deployment cycle in DSPs' web portals

Content producer

Manually validate queue

Notify support team if queue is blocked

IT support team

Feature deployment
- Update new product information
- Update price
- Offers

Manually clear replication queue

DSPs' web portal

Manual content baselining

Automated production deployment cycle in DSPs' web portals

Content producer

Auto-validation of queue

Application monitoring tools to automate alerts

Automate notification to support team if queue is blocked

IT support team

Clear replication queue

Feature deployment
- Update new product information
- Update price
- Offers

DSPs' web portal

Automate content baselining using custom scripts

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Challenges

- There is lack of alert mechanism to notify the issue occurring during content publication.
- Content producer must manually validate the queue and notify the support team that the queue has been blocked.
- Manual intervention increases the efforts of the support engineers by 5-6 hours every day.
- Support team must manually baseline the content, wherein a software package is shifted from one environment to another environment.

Recommendations

Implement application monitoring tools to automate alerts.
Use software tools such as **New Relic or Dynatrace** to search, monitor, and analyze the data and automatically, generate alerts, and visualizations.

Automate content baselining using custom scripts
- Build a custom automation script (or tool) such as **Linux shell scripting** to automate the repetitive tasks such as file manipulation, program execution and printing text.
- The **following key tasks should be automated** using customer scripts:
  - Validation/comparison of existing and new content in terms of file name and size
  - Counting the number of files
  - Recognizing the file format
  - Back-up of file from one location to another
  - Publishing the baseline version

Benefits

- The application monitoring tools automatically raise tickets when the production queue is blocked, even before the user reports it. This **improves the deployment cycle by 25%.**
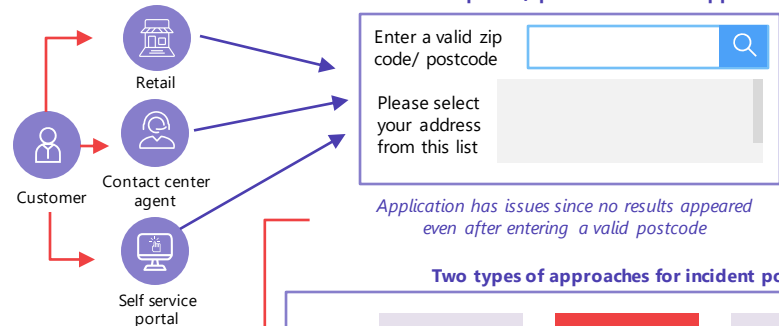- Custom automation tool **saves 25-30% hours of FTE efforts** every week.

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Increasing DSPs' IT operational efficiency through **blameless postmortem culture** in the incident management process
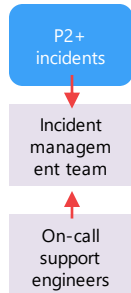
Example to illustrate the escalation of P2+ incident due to an issue in DSP's broadband zip code/ postcode checker application
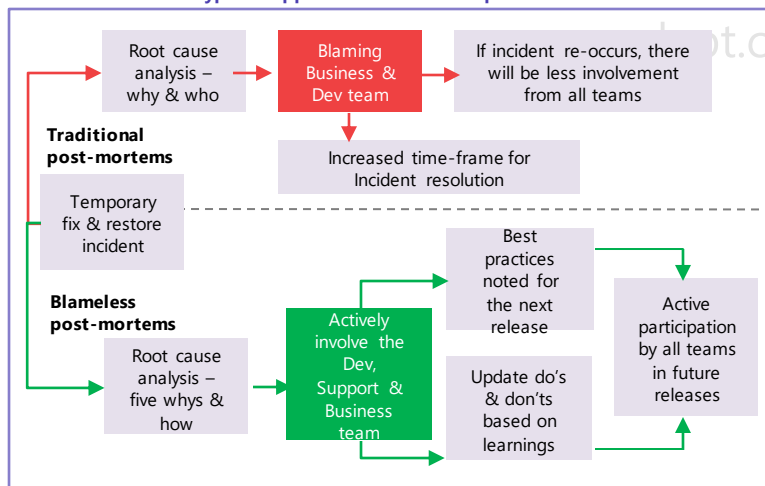
DSP's customer-facing channels

Retail

Customer

Contact center agent

Self service portal

Broadband zip code/ postcode checker application

Enter a valid zip code/ postcode

🔍

Please select your address from this list

Application has issues since no results appeared even after entering a valid postcode

Issue escalated to internal IT team

P2+ incidents

Incident management team

On-call support engineers

Two types of approaches for incident post-mortems

Root cause analysis – why & who

Blaming Business & Dev team

If incident re-occurs, there will be less involvement from all teams

Traditional post-mortems

Increased time-frame for Incident resolution

Temporary fix & restore incident

Blameless post-mortems

Root cause analysis – five whys & how

Actively involve the Dev, Support & Business team

Best practices noted for the next release

Update do's & don'ts based on learnings

Active participation by all teams in future releases

Blameless post-mortems **investigate incidents without making accusations** or blaming a particular person or team.

Benefits of blameless post-mortem culture:
• Create an open, always-improving culture of learning
• Decreases the chances of ignoring incidents for fear of blame
• Enhance support and communication
• Accelerate time-to-market of required changes

Recommendations

• During the root cause analysis (RCA), **do not focus on who** caused the incident. Shift the focus on why, what and how.
• Perform **five why analysis**, which is an effective tool to uncover the root of the issue.
• The RCA checklist should involve the following:
  • **Time travel analysis:** investigate what happened 48 hours before incident and 24 hours after the incident. Example: patch updates, new user access, changes in system, etc. Analyze the rational behind the action taken post the incident.
  • **Business impact analysis:** evaluate how many tickets were raised by the user, how many number of users were directly and indirectly impacted.
  • **System impact analysis:** investigate how many upstream and downstream systems were impacted, number of job failures & its impact.
• **Be proactive:** having an open communication about the issue creates a **'mistake-friendly' approach** to resolve incidents.
• Involve the development, support and business team in every step of the RCA and restoration of the incident.
• Use **incident management tools** such as **Jira scrum board** to record, manage and track every incident. It would facilitate a smoother post-incident review.

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Benefits achieved by a leading DSP in Europe after implementing the SRE principles

Implementing the **4 key enablers** as discussed in this insight, resulted in the following benefits.

75%
reduction in P2+ incidents making the system more stable & reliable

25-30%
reduction of hours per month in incident handling time due to toil reduction in package deployment

15-20%
reduction of hours per month in publishing time using amended AEM process

Faster time-to-market
of application releases, feature changes and updates on DSPs' online intake channels (web portal, e-commerce and other digital platforms)

Increased
reliability and stability of IT operations

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Get in touch

USA

Prodapt North America, Inc.
Oregon: 10260 SW Greenburg Road, Portland
Phone: +1 503 636 3737

Dallas: 1333, Corporate Dr., Suite 101, Irving
Phone: +1 972 201 9009

New York: 1 Bridge Street, Irvington
Phone: +1 646 403 8161

CANADA

Prodapt Canada, Inc.
Vancouver: 777, Hornby Street,
Suite 600, BC V6Z 1S4
Phone: +1 503 210 0107

PANAMA

Prodapt Panama, Inc.
Panama Pacifico: Suite No 206, Building 3815
Phone: +1 503 636 3737

CHILE

Prodapt Chile SPA
Las Condes: Avenida Amperico Vespucio Sur
100, 11th Floor, Santiago de Chile

UK

Prodapt (UK) Limited
Reading: Suite 277, 200 Brook Drive,
Green Park, RG2 6UB
Phone: +44 (0) 11 8900 1068

IRELAND

Prodapt Ireland Limited
Dublin: Suite 3, One earlsfort centre,
lower hatch street
Phone: +44 (0) 11 8900 1068

EUROPE

**Prodapt Solutions Europe &
Prodapt Consulting B.V.**
Rijswijk: De Bruyn Kopsstraat 14
Phone: +31 (0) 70 4140722

Prodapt Germany GmbH
Münich: Brienner Straße 12, 80333
Phone: +31 (0) 70 4140722

Prodapt Digital Solution LLC
Zagreb: Grand Centar,
Hektorovićeva ulica 2, 10 000

Prodapt Switzerland GmbH
Zurich: Muhlebachstrasse 54,
8008 Zürich

Prodapt Austria GmbH
Vienna: Karlsplatz 3/19 1010
Phone: +31 (0) 70 4140722

Prodapt Slovakia j.s.a
Bratislava: Plynárenská 7/A, 821 09

SOUTH AFRICA

Prodapt SA (Pty) Ltd.
Johannesburg: No. 3, 3rd Avenue, Rivonia
Phone: +27 (0) 11 259 4000

INDIA

Prodapt Solutions Pvt. Ltd.
Chennai: Prince Infocity II, OMR
Phone: +91 44 4903 3000

"Chennai One" SEZ, Thoraipakkam
Phone: +91 44 4230 2300

IIT Madras Research Park II,
3rd floor, Kanagam Road, Taramani
Phone: +91 44 4903 3020

Bangalore: "CareerNet Campus"
2nd floor, No. 53, Devarabisana Halli,
Phone: +91 80 4655 7008

Hyderabad: Workafella Cyber Crown 4th Floor,
Sec II Village, HUDA Techno, Madhapur

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