Is Agile Infrastructure an Oxymoron?

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Elevate.To

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Solution Train Engineer, SPC
MetLife
In 1962, President John F. Kennedy set a goal and a deadline:

“We choose to go to the moon in this decade … because that challenge is one that we are willing to accept, one we are unwilling to postpone”

One small catch?
Technologies that would be needed had not yet been invented!

A need for Agile Infrastructure emerges …
Agile Infrastructure – A Story from 1962
Solution: Incremental Design on the way to the Moon

1. Computer **microchips** descend from Apollo’s integrated circuits
2. **Cordless drills** were designed to drill for moon samples
3. **Freeze-dried food** reduce weight and increase shelf life
4. **Home insulation** uses reflective material that protects spacecraft from radiation
5. The first **computer joystick** was first used on the Apollo Lunar Rover

6. **Satellite TV** uses technology to fix errors in spacecraft signals
7. Helmet visor coating makes our **eye glasses** ten times more scratch resistant
8. Adjustable **smoke detectors** with sensitivity levels to prevent false alarms
9. **Water filters** use a NASA technique to kill bacteria in water taken into space
Tailoring Agile and Waterfall Methodologies for Success
Solution: Incremental Deployment on the way to the Moon

NASA’s Incremental Programs:
• 1 man – Mercury (1960)
• 2 man – Gemini (1964)
• 3 man – Apollo (1967)
What is IT Infrastructure?

IT infrastructure refers to the composite hardware, software, network resources and services required for the existence, operation and management of an enterprise IT environment. ...

IT infrastructure consists of all components that somehow play a role in overall IT and IT-enabled operations.

It can be used for internal business operations or developing customer IT or business solutions.
What is Agile Infrastructure?

- DevOps
- Predictive Monitoring
- Resilient Operations
- Proactive Monitoring
- Address resistance to change
- Process Driven

Deliver Customer Value Quickly

Cloud
- PaaS
- IaaS
- NaaS

Automation

Containerization
How our Agile Infrastructure Story Began at MetLife -- IT Currency

<table>
<thead>
<tr>
<th>WE HAVE ....</th>
<th>WE ARE SEEING ....</th>
<th>OPPORTUNITIES ....</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10+</strong> INITIATIVES</td>
<td>More collision than cohesion across initiatives…</td>
<td>Clarity on prioritization</td>
</tr>
<tr>
<td><strong>$MMs</strong> COMMIT</td>
<td>Erosion of desired results and benefits…</td>
<td>Late discovery of dependencies</td>
</tr>
<tr>
<td>&gt;1,300 APPS</td>
<td>An emergent opportunity to set a single currency strategy…</td>
<td>Testing anchored at the end</td>
</tr>
<tr>
<td>&gt;6,000 SERVERS</td>
<td></td>
<td>Significant oversight required for regular tracking and reporting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Substantial overhead required to maintain currency without automation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of end-to-end decommissioning process</td>
</tr>
</tbody>
</table>
Our Value Hypothesis:

Minimize Downtime: “Like work” grouping leads to significantly less outages for partners

Promote Efficiency: Reduce overhead required to manage multiple monolithic initiatives

Recognize Benefits Faster: Decrease system waste and improve key processes

Experience Full Transparency: Cadence & Synchronization ensures stakeholders have insight into prioritization, value delivery progress and roadmap

Continuous Delivery of Value: Accelerate path to a continuous delivery pipeline
Our Vision
MetLife Vision for IT Currency

**Description**
Applications, infrastructure, and services are maintained globally at a current MetLife certified and financially optimized version.

Objectives:
- All components have a defined currency methodology
- MetLife standards & policies are maintained (e.g., blueprints, security, etc…)
- Out-of-date products and related costs are eliminated
- Committed service levels are maintained
- The process occurs on a regular cadence

**Customer(s)**
Business Units and External Customers

[Diagram showing the process flow involving Application Analyze, Intake, Interview, Review, Set end state direction, Approve, Migrate, Define Future Plan, Issue Operating License, GARB, Operate and Maintain via release strategy, and 2 Year Cycle]
Our Value Streams
IT Currency Value Streams

Application Families
- Application Currency and Modernization – Solution 1
- Application Currency and Modernization – Solution 2
- Application Currency and Modernization – Solution 3
- Application Currency and Modernization – Solution 4
- Application Currency and Modernization – Solution 5

Infrastructure
- Desktop Currency
- Platform Currency
- Data Center Currency

Platform Currency initial focus due to ‘Burning Platform’
Data Center launched after Platform ART gained momentum
IT Currency Upgrade Mode Categories

- **Upgrade-In-Place** (upgrades made to the current infrastructure)
- **Re-platform** (upgrades made by moving to a new target infrastructure)
- **Quarantine** (work indefinitely put on hold where unable to meet standards)
- **Defeer** (work temporarily put on hold due to complexity, scheduling, funding)
- **Retire & Decommission** (retire the application and/or decom the infra) – make last bullet
- **Application Currency** (application code changes)
- **Version cleanup** (application & infrastructure components)
Evolution of Platform Currency ART

• Launched 4 initial enablers teams to test and learn (CMT, Pilot App, Blueprints, Test Automation)
• Expanded to 10 teams to accelerate outcomes
• Launched 2\textsuperscript{nd} ART – Data Center
• Test Automation is evolving into Systems Team (E2E testing of full solution stack)

So, start small, and start quickly. Pay attention to feedback. Above all, think about what you are doing. Good luck!

- Don Reinersten, The Principles of Product Development Flow
Continuous Delivery Pipeline
IT Infrastructure Currency as a Continuous Delivery Pipeline

Single-touch delivery and integration by combining work across IT Stack
Continuous Improvement
Currency Management Tool

**CMT Database**

Single consolidated view of technologies with both architectural status, vendor life cycles, and currency disposition. At application, server and product levels including dependences.

**Upgrade Roadmaps**

- Database Upgrade
- Server Upgrade
- Application Upgrade
- Integration Upgrade

**Vendor Lifecycles** (Extended Support, End of Life)

**Technology Stack** (Invest, Maintain, Disinvest, Retire)

**Discovery Tools** What is actually in the environment

**CMDB** What should be in the environment

**CURRENCY DISPOSITION**

- **RED** – Technology out of support or on paid extended support
- **YELLOW** – Technology will be out of support or on paid extended support within 18 months
- **GREEN** – Technology is current

**Guiding Principles**

- Applications owners drive, plan and execute their own updates
- Alignment and measured against technology roadmaps, product lifecycles, MTS lifecycles (invest/maintain), MTS procurement status (buy, hold, sell), and blueprints

**Product** | **End of Support** | **Technology Stack Status** | **Currency Disposition**
--- | --- | --- | ---
Product A | YYYY/MM/DD | HOLD – Disinvest | RED
Product B | YYYY/MM/DD | BUY – Maintain | YELLOW
Product C | YYYY/MM/DD | BUY – Invest | GREEN
Mitigating friction between ITIL and Agile

1. Infrastructure is organically sequential in nature, so we needed to recognize that early to be effective

2. Leverage Enablers extensively for long lead time dependencies

3. Carefully sequence iterations with ITIL SLAs well understood

4. Keep BAU impediments in mind always
Lean Budgeting

- Project approval cycles reduces ability to pivot quickly
  - Funding change requests inhibits flow
    - False precision of progress
    - Limited leading indicators

Future State (Agile)

Annual Plan

<table>
<thead>
<tr>
<th>Discover, Analysis, Design Funding Request</th>
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<tbody>
<tr>
<td>• Set “Not To Exceed” Limits</td>
</tr>
<tr>
<td>• Validate Epic Hypothesis (Proof of Concept)</td>
</tr>
<tr>
<td>• Deliverables Commitment of 1st Increment</td>
</tr>
<tr>
<td>• Committed Epic Roadmap (Schedule &amp; Funding)</td>
</tr>
<tr>
<td>• Committed KPIs (Quantitative Value)</td>
</tr>
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</table>

| Fund Increment 1 DEMO |
| Fund Increment 2 DEMO |
| Fund Increment 3 DEMO |
| Fund Increment N |

- Set Incremental Funding & Approval
- Demo Approval
- Approved Increment Deliverables (Quantity & Quality)
- KPIs & Value Assessment/Approval to Start Next Increment

Project approval cycles reduces ability to pivot quickly.
Funding change requests inhibits flow.
False precision of progress.
Limited leading indicators.
IT Currency Road Ahead
IT Currency Roadmap (WIP)

Enablers (Architectural Runway)

Get Current (Currency Upgrades)

Stay Current (Continuous Currency)

Benefits

Eliminate Extended Support Costs
Reduce Upgrade Costs
Reduce Data Center & Software Costs
Enable Application Modernization
Enhanced Stability and Security

Process

Tools

Initiative 1
Initiative 2
Initiative 3
Initiative 4
Initiative 5
Initiative 6

Define Process
Pilot
Tooling
Rollout

Steady State Continuous Currency

Enhanced Stability and Security
ART Metrics & Reporting
The Power of Transparency – Realtime Execution Metrics

**Earned Value %**
- **Committed Target:** 162
- **Committed Achieved:** 111
  - **Stretch Target:** 70
  - **Stretch Achieved:** 13

**Story Points by Status**
- **Open:** 24
- **Blocked:** 4
- **In Progress:** 48

**Issues by Status**
- **Resolved:** 4
- **Open:** 3
- **In Progress:** 2

**Story Point Completion By Iteration**

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<th>Iteration</th>
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<tr>
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**Open Features**

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**Story Point Variance**

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<tr>
<th>Team</th>
<th>P</th>
<th>A</th>
<th>Y(bar)/</th>
<th>Y(bar)/</th>
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<tr>
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<td>1419</td>
<td>968</td>
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Realized Benefits & Key Lessons Learned
Realized Business Benefits

Minimize Downtime - 50% less downtime
Promote Efficiency - 60% greater efficiency
Recognize Benefits Faster - 30% faster cycle time
Experience Full Transparency - 100% increase in transparency
Continuous Delivery - Accelerate path to a continuous delivery pipeline

“IT Currency significantly improved quarterly throughput with SAFe!”
-- Jim Purgason, IT Currency Business Owner
Review of Key Lessons Learned!

- Be strategic in structuring your value streams with strong leadership buy-in
- Create dedicated cross-functional build/run teams with all required skills up front
- Pay early attention to processes that inhibit flow (e.g., ITIL, test automation)
- Care and feeding of your Architectural Runway is essential to flow (think tooling and Enablers!)
- Test automation is essential. Start early!
- Involve your business stakeholders early and often to create better alignment (prioritization, grouping like work, transparency)
- Agile Architecture (IaaS, Containerization, Virtualization) and DevOps practices help accelerate a move to continuous delivery

**Above All Get started … solve problems along the way**
The IT Currency Dream Team

Left to right:
Greg Zeph – RTE
Jim Purgason – Business Owner
Michael Brennan – Solution Architect
Heather Gardner – STE
Frani McGinty – Solution Manager
Questions?
Thank you.