A close look at software Infrastructure business (Design, Development & Processes)

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Agenda

- 4thpass Overview
- Product History
- MAS Overview (Mobile Application System)
- Development Challenges
- Product Lifecycle Overview
- Engineering Process
- What improvements are needed?
- So what does it take to be successful in software field?
- Discussion . .

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4thpass Overview

- Headquarters: Seattle, WA
- Founded in 1997 (self-funded)
- Current headcount: 68
- Technology focus on Wireless Provisioning Infrastructure
- Series 'A' funding in May 2001
  (OVP, Invest Corp, Motorola & Nextel)
- Acquired by Motorola in September 2003
- Active member of various standard bodies world-wide
  (JSR 118, JSR 124, JSR 185, OMA, GSMA)
- Leading next generation technologies development to support 3G and other end-to-end data services initiatives

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Product History

- Initial focus on 'Obfuscation' technology and Java deployment on clients. Targeted niche market with 'SourceGuard' product upon launch of company in 1997.
- Captured 70% of market within 18 months of launch of SourceGuard. Product focused on User Interface and ease of use. Three flavor of product: Enterprise, Professional and Basic.
- Launched KBrowser (micro-browser) in 1999. Launched on Palm platform and preview on Java using the earliest standards, evolving finally into support for MIDP 1.0. Customers: LG Telecom, RIM
- Became apparent that the bigger problems lie in getting applications to handset – Mainly in field of security, billing and authentication. Started design & development of Mobile Application System in fall 1999
- Commercial release of MAS in fall 2000
- First MAS customer - LG Telecom, Korea
- Next MAS Customer – Telefonica Global (Spain)
- Current Customer base: LG Telecom, Telefonica, Nextel, mmO2, China Mobile (CMCC), T-Mobile (USA)
- Potentially 200 million+ customer on MAS system

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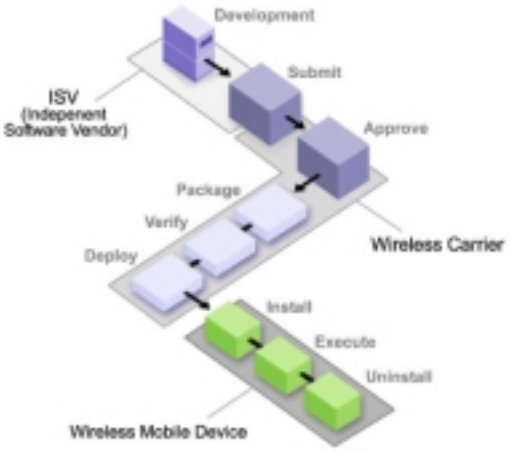
MAS Overview

End-to-End Carrier Grade Provisioning System for Mobile Applications - Secure, Scalable, fault-tolerant, Modular, Componentized Framework based Application Provisioning System supporting Java and other contents (ring tones, wall papers, smart phone applications).



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MAS Functional Areas

- Content Management
- Catalogue Generation
- Device Management
- Subscriber Management
- Personalization Management
- Billing Management
- Proactive Security support
- Web based Server Management
- High Scalability and fault-tolerance support based on horizontal & vertical deployment configuration Support

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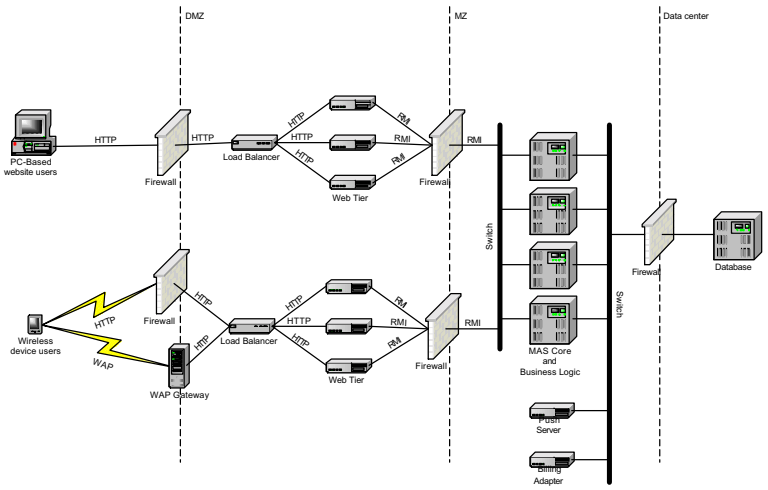
MAS Architecture Overview



J2EE Based Architecture

- 5 Tier Architecture
- Enterprise Java Beans (EJB)
- Plug-ins based Framework
- JSP/XSLT (WML, XHTML,HTML,etc),
- Support for JNDI, LDAP, SMS, MMS
- SG Java Bytecode Technology

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Development Challenges

- Maintaining quality of product and at same time releasing product with short cycles
- Maintaining Scalability and fault-tolerance to meet stringent SLAs (Service Level Agreements) that operators want.
- Being nimble and at same time maintaining design and architecture integrity
- Operational challenges: Limited resources, market convergence, organizational challenges with increase in team size
- Commoditization of product: More competitors joining fray – without same feature set but saying ‘yes’ to RFIs anyway!

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Product Release Cycle Overview

- Problems needs
- Technical Feasibility
- Proof of Concept Prototyping

- Marketing Feasibility
- Requirements
- Time to Market
- Priorities
- MRD
- Functional Spec
- UI Illustrations

- Engineering Feasibility
- Engineering Planning
- Preliminary Design
- Critical Design
- Implementation
- Unit Test
- Integration
- Alpha Test
- Beta Release

- Beta Deployment & Test
- Product Release
- Acceptance Test
- Commercial Deployment
- Post-deployment Support

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Engineering Excellence

- Key Areas being focused upon
  - Fine grained control
  - End-to-end Traceability
  - Focus on Quality
- Architecture & Design Integrity
  - Architecture is alive and changes to address new requirements.
  - Architectural integrity is Key. Without it, becomes hard to maintain consistency.
- Design Methodology being followed
  Feature Driven Development (modified)

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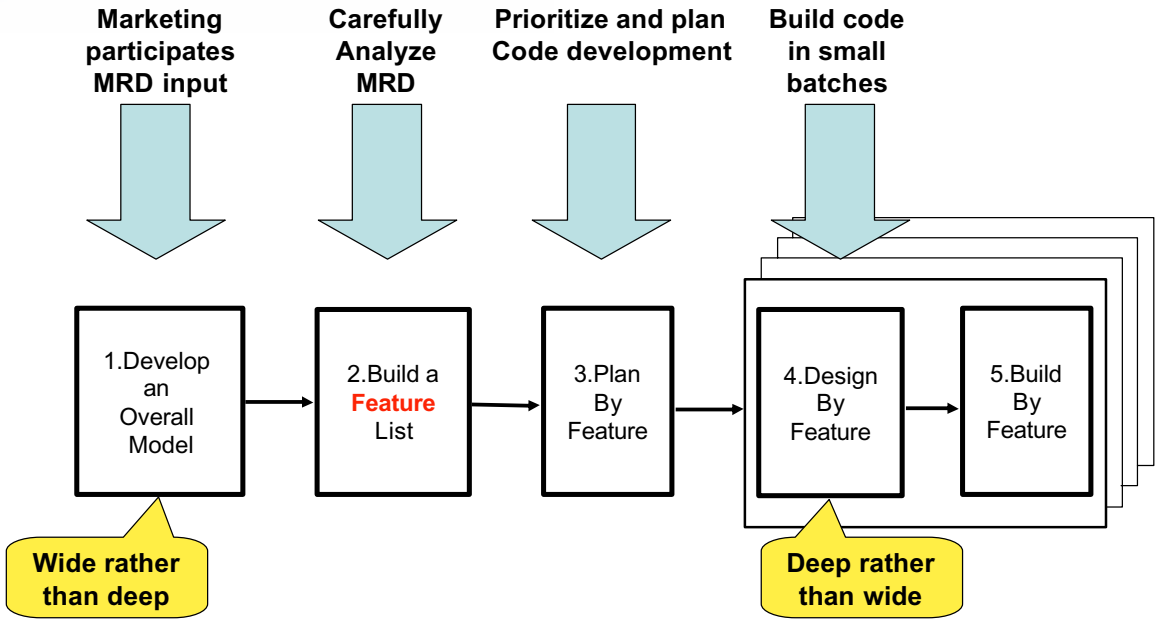
FDD – an agile methodology



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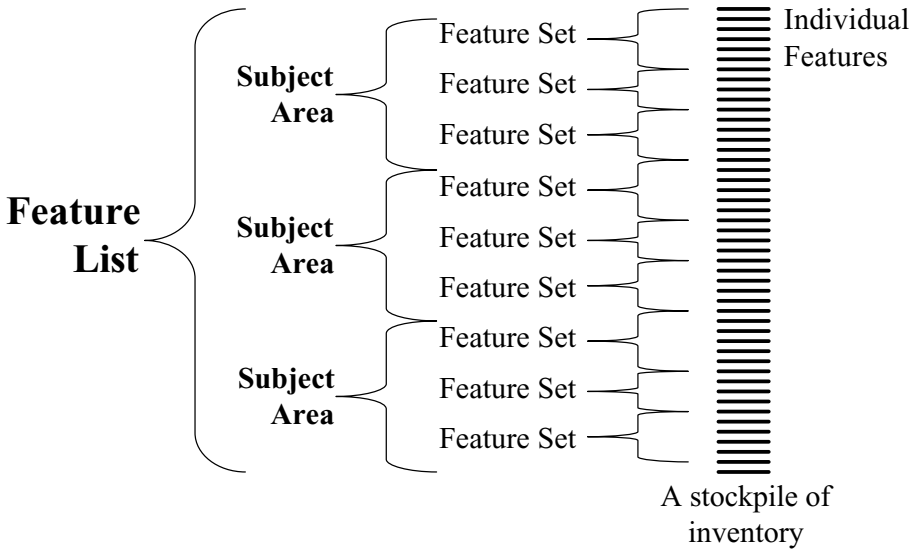
FDD – How it works



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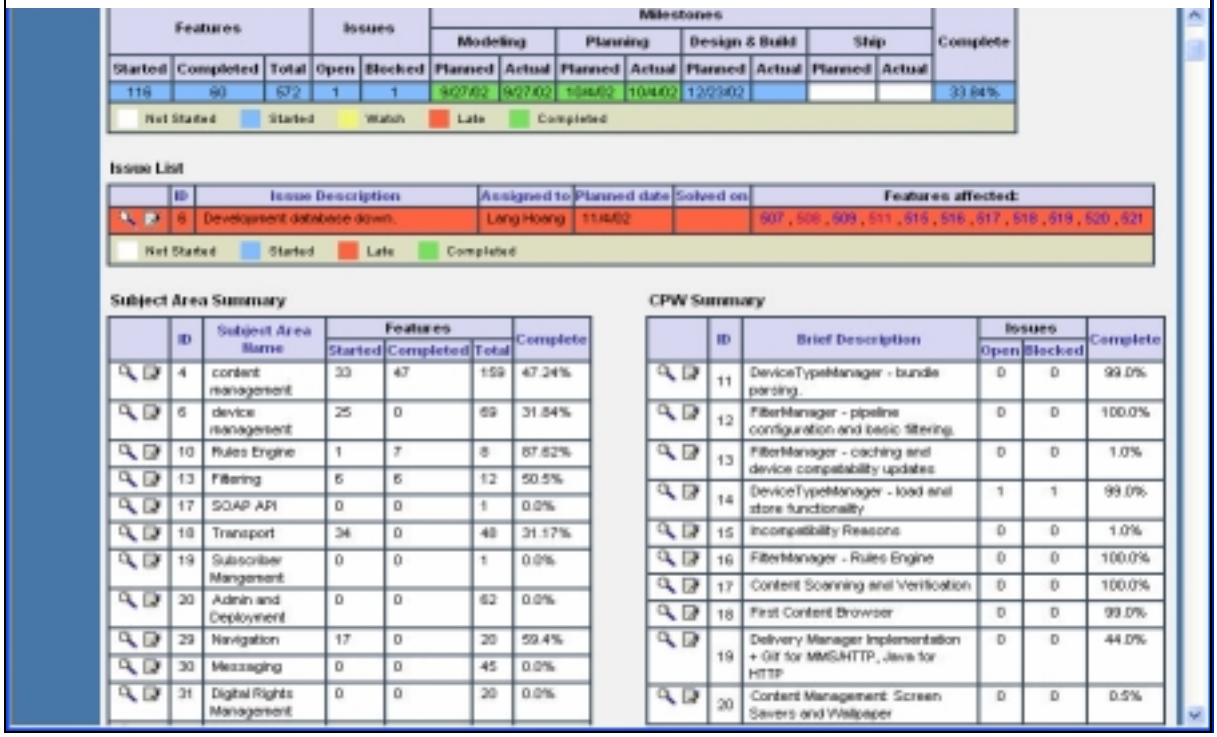
Project Overview



Features			Issues		Milestones								Complete
					Modeling		Planning		Design & Build		Ship		
Started	Completed	Total	Open	Blocked	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	
116	60	572	1	1	9/27/02	9/27/02	10/4/02	10/4/02	12/23/02				33.84%

Not Started | Started | Watch | Late | Completed

Issue List

	ID	Issue Description	Assigned to	Planned date	Solved on	Features affected:
	6	Development database down.	Lang Hoang	11/4/02		507, 508, 509, 511, 515, 516, 517, 518, 519, 520, 521

Not Started | Started | Late | Completed

Subject Area Summary

	ID	Subject Area Name	Features			Complete
			Started	Completed	Total	
	4	content management	33	47	159	47.24%
	6	device management	25	0	69	31.84%
	10	Rules Engine	1	7	8	87.82%
	13	Filtering	6	6	12	50.5%
	17	SOAP API	0	0	1	0.0%
	18	Transport	34	0	48	31.17%
	19	Subscriber Mangement	0	0	1	0.0%
	20	Admin and Deployment	0	0	62	0.0%
	29	Navigation	17	0	20	59.4%
	30	Messaging	0	0	45	0.0%
	31	Digital Rights Management	0	0	20	0.0%

CPW Summary

	ID	Brief Description	Issues		Complete
			Open	Blocked	
	11	DeviceTypeManager - bundle parsing.	0	0	99.0%
	12	FilterManager - pipeline configuration and basic filtering.	0	0	100.0%
	13	FilterManager - caching and device compatability updates	0	0	1.0%
	14	DeviceTypeManager - load and store functionality	1	1	99.0%
	15	Incompatibility Reasons	0	0	1.0%
	16	FilterManager - Rules Engine	0	0	100.0%
	17	Content Scanning and Verification	0	0	100.0%
	18	First Content Browser	0	0	99.0%
	19	Delivery Manager Implementation + Gif for MMS/HTTP, Java for HTTP	0	0	44.0%
	20	Content Management: Screen Savers and Wallpaper	0	0	0.5%

Feature List

List of features

	ID	Feature Name	Type	Subject Area	Feature Set	Cmplx.	Complete	Complete date
	407	normalize boolean expression	PD	Rules Engine	Initialization	5	100.0%	10/16/02
	408	generate RuleSystem from normalized expression	PD	Rules Engine	Initialization	2	100.0%	10/16/02
	409	get relevant content profiles from device	PD	Rules Engine	Matching	1	100.0%	10/16/02
	410	get RuleSystem from content profile	PD	Rules Engine	Matching	1	100.0%	10/16/02
	411	get possible Delivery Methods for content profile	PD	Rules Engine	Matching	1	100.0%	10/16/02
	412	get RuleSystem from Delivery Method	PD	Rules Engine	Matching	1	100.0%	10/16/02
	413	match Content attributes against RuleSystem	PD	Rules Engine	Matching	2	100.0%	10/16/02
	414	determine incompatibility reasons	PD	Rules Engine	Matching	3	1.0%	
	420	filter CatalogEntry with FilteringComponent	PD	Filtering	Filtering	3	100.0%	10/16/02
	421	filter Category using AccessFilter	PD	Filtering	Filtering	2	100.0%	10/16/02
	422	filter PhysicalContent using DeviceCompatabilityFilter	PD	Filtering	Filtering	3	100.0%	10/16/02
	423	filter ApplicationPhysicalContent using APISecurityFilter	PD	Filtering	Filtering	2	100.0%	10/16/02
	424	build FilterPipeline using FilterConfiguration	PD	Filtering	Filtering	3	100.0%	10/16/02
	429	update FilterCache for added FirmwareFamily	PD	Filtering	Filter Management	3	1.0%	
	430	update FilterCache for removed FirmwareFamily	PD	Filtering	Filter Management	2	1.0%	
	431	update FilterCache for added CatalogEntry	PD	Filtering	Filter Management	4	1.0%	
	432	update FilterCache for updated CatalogEntry	PD	Filtering	Filter Management	3	1.0%	
	433	update FilterCache for removed CatalogEntry	PD	Filtering	Filter Management	3	1.0%	
	434	update FilterCache for updated FirmwareFamily	PD	Filtering	Filter Management	3	1.0%	
	438	process FilterConfiguration from FilterConfigFile	PD	Filtering	Filter Management	3	100.0%	10/16/02
	455	Validate OIF Content type for the Content	PD	content management	validating content	2	100.0%	10/16/02
	456	SOAP API additions	PD	SOAP API	SOAP	3	0.0%	
	457	Log Purchase Agreement as Billing Event	PD	content management	logging content events	2	0.0%	
	458	Log Download Attempt	PD	content	logging content events	2	0.0%	

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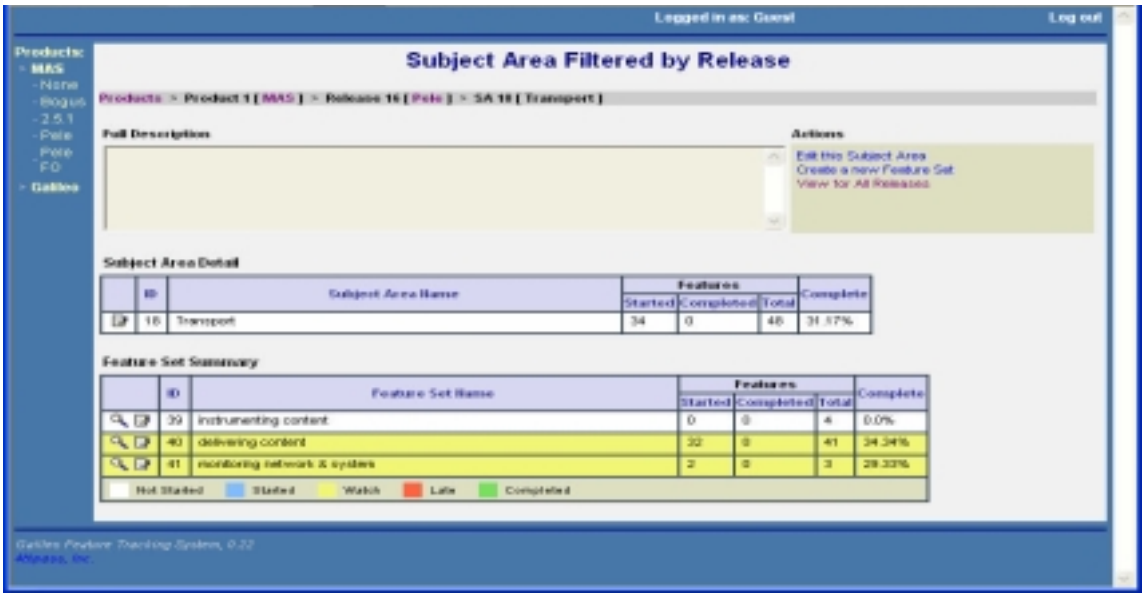
Subject Area



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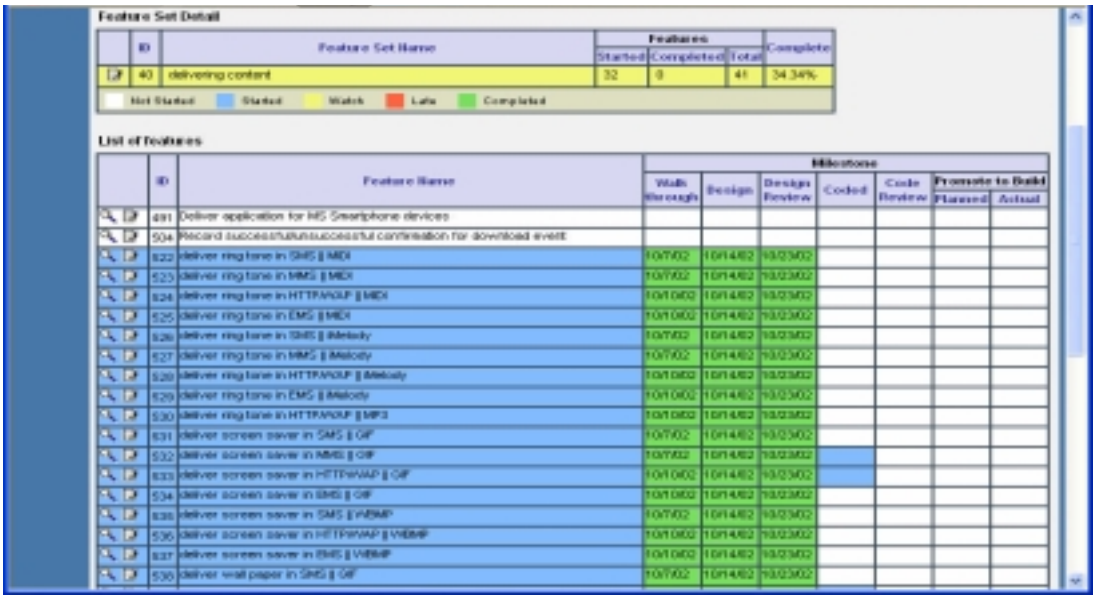
Feature Set



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Chief Programmer Worksheet

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What Improvements are needed?

- Communication: Working towards improving communication between team members is very high on my agenda.
- Learn from past: Mistakes are not bad – as long as one learns from mistake. More so in an environment with pressure to succeed.
- Make it more enjoyable and challenging: If one enjoys work and feels challenged, it improves team morale and team works more efficiently.
- Improve on processes as we learn, to make them more efficient and practical.
- Training: Keep team updated on new paradigms and help individual to improve, thus improving team functionality.
- This year focus on three things: Improved Responsiveness, Improved Quality & Improved Bench Strength.

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So, What does it take to be successful in software field?

- Technology is 'mean' to a business 'end': Understand business reasons behind technology that you are asked to build.
- Don't be afraid of processes – they are there to make life easier, and not harder. Always keep in mind though: you run the processes and not other way around.
- Don't be afraid of asking questions – if something does not make sense, challenge it.
- Understand bigger picture – not just what you are working on, but where it fits in the bigger picture. It will make you build better and practically usable software.
- Enjoy what you do – don't do it for sake of doing it. If you enjoy what you do, its bound to show up in your work.
- Work hard – there is no substitute for it. There are no shortcuts. Work hard and doors will automatically open for you.
- "Always aim for stars. Even if you miss, you may end up falling on moon".

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Questions?

- So – what can I answer for you?

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