MSF History & Achievements
1998-2013
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Introduction

- This slide deck takes a trip down memory lane and highlights the achievements of the MSF over its 15 year lifetime.

- The MSF has been through a number of distinct phases which are reflected in these slides.
The MSF was formed in October 1998 as an open industry forum “committed to reaching and promoting consensus on implementation of multiservice switching systems”.

- It was a successor to the previous closed BT-MCI Forum which had come to grief in 1997,
- BT & MCI/Worldcom were prime drivers for the MSF formation,
First Technical Meeting

• Was held in December 1998 in Orlando, FLA.

• 80 delegates from 29 companies,


• Alcatel sent 9 delegates and Siemens 13!
The Pre-GMI Phase
1999-2000
Pre-GMI Years

- The Forum was initially focussed on ATM before moving into IP (reflecting industry trends/issues).

- Focus of the MSF was on the R1 Architecture and related Implementation Agreements (IAs),
  - R1 IAs include Megaco/H248 for ATM access and trunking GWs & IP trunking GW, BICC (IP & ATM), SIP & SIP-T.

- The Forum was initially as pseudo-standards body – although it could be argued that it was ahead of the game,
MSF Structure

- Board of Directors, overseeing 2 Committees -
  - Marketing Committee,
  - Technical Committee, of 3 Working Groups:-
    - Architecture
    - Switch Control
    - Media Control
  - The MSF was also the Multi-Service Switching Forum at this time.
R1 Architecture

Notes:
- Italicized reference points are not considered open reference points for release 1.
- Bearer transport reference points are not shown.
Meeting Sites

- **1999**
  - San Francisco, CA, USA
  - Dallas, Texas, USA
  - Stockholm, Sweden,
  - Montreal, Canada,
  - San Diego, CA, USA

- **2000**
  - New Orleans, Louisiana, USA
  - Paris, France
  - Vancouver, Canada
  - Charlotte, NC, USA
The GMI Phase
(Global MSF Interoperability)
2001-2008
The GMI Years

• Covers the period mid 2001 to 2008,

• Having done the R1 architecture and a few related IAs, MSF was struggling for a role.
  • It was decided to re-focus the forum as an interop forum – although the MSF still remained a pseudo-standards body in that it published architectures and IAs (some of which were not endorsements).

• Over this period the MSF ran 4 multi-site, multi-protocol events namely GMI2002 / 2004 / 2006 & 2008. The scope of these events reflected the focus of the industry at the time.
GMI 2002 (1/2)

• Took place in October 2002 – the result of about 18 months planning.

• Was focussed on testing the R1 architecture and related IAs,

• Focus of GMI2002 was on controllers (MGCs) & GWs and interaction between MGCs as well as interfaces to the PSTN/SS7.
GMI 2002 (2/2)

- 18 companies took part in a 3 week event across 3 labs: -
  - BT labs in Adastral Park in the UK,
  - UNH facility in US,
  - NTT lab in Tokyo, Japan,

- The sites were connected by a combination of ATM links and Internet2 links using MPLS.

- The multi-site, multi-protocol end-end testing was an industry first,

- The MSF was unique in this respect of having IOTs across inter-connected sites across continents. All GMI events involved US, Asian & European sites.
GMI 2002 Scenarios

• Scenario 1 – TDM to IP
  • MGC to AGW/TGW interaction,
  • Single & Multiple MGCs,
  • Protocols included MGCP, H.248, SIP, SIP-T, BICC & SS7.

• Scenario 2 – TDM to IP to TDM
  • MGC to TGW interaction,
  • Single & Multiple MGCs,
  • Protocols included MGCP, H.248, SIP, SIP-T, BICC & SS7.
R1 Achievements (1/2)

- MSF publishes: -
  - its R1 architecture,
  - 6 related IAs (SIP, SIP-T, BICC & Megaco/H.248)
  - a technical report on “QOS for Next Generation IP Networks”.
  - a product specification for the functional requirements of a Trunking GW.
R1 Achievements (2/2)

• A number of companies announce that they have adopted the MSF R1 architecture and implementation guidelines.

• MSF exhibits at SUPERCOMM 2002 event,

• The Open VOB Forum transfers its VoIP & VoATM work into the MSF.
TC Structure (end R1)

- Four Working Groups:
  - Architecture
  - Protocol & Control (formerly Media Control)
  - Interoperability
  - Management Advisory
- Switch Control was disbanded.
- The MSF was now the Multi-Service Forum.
Meeting Sites

- **2001**
  - Redondo Beach, CA, USA
  - Munich, Germany
  - Boston, Mass., USA
  - Osaka, Japan

- **2002**
  - Frisco, Texas, USA
  - Rome, Italy
  - Denver, Colorado, USA
  - Jeju, South Korea
GMI 2004 (1/2)

• Took place in October 2004 – with planning starting after the end of GMI2002.

• Was focussed on testing the R2 architecture and related IAs which were developed for the event,

• Focus of GMI2004 was on SIP Servers (plus interaction between SIP Servers/CAs/MGCs plus GWs as well as interfaces to the PSTN/SS7.)
GMI 2004 (2/2)

- 28 companies took part in a 2 week event across 4 labs:-
  - BT labs in Adastral Park in the UK,
  - Qwest Communications labs in US,
  - NTT lab in Tokyo, Japan,
  - KT lab in Daejon, South Korea.

- The sites were connected by a combination of ATM links and Internet2 links using MPLS.
GMI 2004 Scenarios

- Scenario 0 – MPLS Connectivity.
- Scenario 1 – VoIP in a single IP domain
- Scenario 2 – As Scenario 1 plus Value Added Services (SIP AS, Parley/Parley-X GW),
- Scenario 3 – As Scenario Single domain plus Value Added Services plu2 plus PSTN connectivity (MGCP or H.248 TGWs),
- Scenario 4 – Multiple IP domains inc. PSTN connectivity (SBCs between domains),
- Scenario 5 – As Scenario 4 plus Value Added Services,
- Scenario 6 – IPv6,
- Scenario 7 – Management.
R2 Achievements (1/2)

- MSF Publishes :-
  - Its R2 architecture,
  - GMI2004 Test Scenarios,
  - 20 related IAs (SIP, SIP-T, COPS, Megaco/H.248, SDP Usage),
  - Technical Report on “MSF R2 Services Architecture”.
  - Technical Report on “Services Solutions in Next Generation Networks”.
  - Technical Report on “Management of Next Generation Multi-Service Networks”.

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R2 Achievements (2/2)

• A number of companies announce that they have adopted the MSF R2 architecture and implementation guidelines.

• MSF exhibits at SUPERCOMM 2003 & SUPERCOMM 2004 events,

• MSF exhibits at International SIP 2004 event.
Meeting Sites

- 2003
  - Orlando, FLA, USA
  - Cheshire, England
  - Ottawa, Canada
  - Vancouver, Canada

- 2004
  - Singapore
  - Toronto, Canada
  - Copenhagen, Denmark
  - Atlanta, GA, USA
GMI 2006 (1/2)

- Took place in October 2006 – with planning starting after the end of GMI2004.

- Was focussed on testing the R3 (and 3GPP R4) architecture and related IAs which were developed for the event,

- Focus of GMI2006 was on IMS, including backwards compatibility to R1/R2 (FMC).
GMI 2006 (2/2)

• 31 companies took part in a 2 week event across 5 labs :-
  • BT labs in Adastral Park in the UK,
  • UNH labs in US,
  • Verizon labs in US,
  • NTT lab in Tokyo, Japan,
  • KT lab in Daejon, South Korea.

• The sites were connected using MPLS over links provided by BT Global Services as well as research & academic networks (Geant2, Abilene, Janet, Gemnet & Kreonet).
GMI 2006 Scenarios

- Scenario 0 – MPLS Connectivity
- Scenario 1 – Single IMS Domain (inc. legacy lines)
- Scenario 1a – Mc interface testing
- Scenario 2 – As Scenario 1 plus Value Added Services (SIP AS, Parley/Parley-X GW),
- Scenario 3 – Interconnect between 2 IMS domains (inc. PSTN),
- Scenario 4 – IMS Roaming,
- Scenario 5 – As Scenario 4 plus Value Added Services,
R3 Achievements (1/3)

• MSF publishes :-
  • its R3 architecture,
  • GMI2006 Test Scenarios,
  • 27 related IAs (SIP, SIP-I, DIAMETER, SNMP, Megaco/H.248, SDP Usage & IMS Roaming Guidelines.
  • GMI2006 White Paper, which is launched at Net Events in Hong Kong in December 2006.
  • a product specification for a Session Border Gateway.
R3 Achievements (2/3)

- MSF publishes :-
  - a White Paper on “Bandwidth Management in Next Generation Packet Networks”.
  - a White Paper on “Testability in the NGN”.
  - a White Paper on “NGN Control Plane Overload and its Management”.
  - a White Paper on “N/W Engineering to support the Bandwidth Manager Architecture”.
  - a White Paper on “IMS Reconciliation”.

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R3 Achievements (3/3)

- MSF exhibits at SUPERCOMM 2005,
- MSF exhibits at VON 2005 and VON 2006 events,
- MSF speakers take part in a session at VON Europe 2006 ("The Role of IMS & FMC").
- MSF exhibits at GLOBALCOMM 2006 event.
Meeting Sites

- **2005**
  - San Francisco, CA, USA
  - Madrid, Spain
  - Ottawa, Canada
  - Nagoya, Japan

- **2006**
  - Clearwater Beach, FLA, USA
  - Berlin, Germany
  - Vancouver, Canada
  - San Diego, CA, USA
GMI 2008 (1/2)

• Took place in October 2008 – with planning starting after the end of GMI2006.

• Was focussed on testing the R4 (and 3GPP R7) architecture and related IAs which were developed for the event,

• Focus of GMI2008 was once more on IMS – with a focus on applications & services – plus IPTV.
GMI 2008 (2/2)

• 27 companies took part in a 2 week event across 5 labs :-
  • BT labs in Adastral Park in the UK,
  • UNH labs in US,
  • Verizon labs in US,
  • NCS lab in US,
  • CMCC lab in Beijing, China.

• The sites were connected using VPN technology, namely IPSEC tunnels, over the public internet.
GMI 2008 Scenarios

- Scenario 1 – End-End Session Control (inc. multiple access types, single/multiple IMS cores),
- Scenario 2 – End-End Session Control plus QOS (PCRF, TISPAN RACS),
- Scenario 3 – IPTV
  - 3a – IMS based IPTV,
  - 3b – ATIS IIF based IPTV,
- Scenario 4 – Location Based Services
- Scenario 5 – SOA GW (Services Oriented Architecture),
- Scenario 6 – Management (of IPTV STBs).
R4 Achievements (1/2)

- MSF publishes:
  - its R4 architecture,
  - a generic access tile framework and a number of specific access tiles (baseband, broadband, WIMAX),
  - GMI2008 Test Scenarios,
  - 25 related IAs (SIP, SIP-I, DIAMETER, Megaco/H.248, XML, RTCP protocols),
R4 Achievements (2/2)

- MSF partners with ATIS IIF to test IPTV specifications.
- MSF takes part in a panel session at NetEvents 2007 in France.
- MSF hosts a pavilion at Spring VON 2007.
- MSF exhibits at NXTCOMM 2008 event.
- MSF attends the ETSI TC-INT IOT in 2008 as an observer and ETSI reciprocates at the GMI2008 event.
Meeting Sites

• 2007
  • Hong Kong, China
  • Montreal, Canada
  • Amsterdam, Holland
  • Seattle, Washington, USA

• 2008
  • San Francisco, CA, USA
  • Shanghai, China
  • Dublin, Ireland
  • Nassau, Bahamas
The post GMI Phase 2009-2013
Re-Focussing
2009
What next ..?

- Coming out of GMI2008, there was a brainstorming session in the Q4/2008 meeting to discuss MSF future direction:-
  - feeling that the MSF needed to re-focus from running biennial events to more regular & more focussed IOT events.
  - consensus that architectural arguments had been settled as well as “standard” protocols.

- MSF was re-focussed to concentrate on running more IOT events.

- MSF sought to build stronger links with other industry fora.
Impacts of re-focusing

• MSF no longer did architectural work and endorsed “standards” published elsewhere
  • No MSF R5 documentation,
  • Fewer IAs published.

• Technical Committee structure was modified (in two steps).
Technical Committee Structure (post GMI2008)

• Five Working Groups :-

  • Services (new)
  • Architecture
  • Protocol & Control
  • Interoperability
  • Management Advisory
Technical Committee Structure (final)

- One permanent Working Group and other ad-hoc ones:
  - Services & Architecture
  - Ad-Hoc Working Group(s)

- The Ad-Hoc Working Groups are created on the basis of formal Work Items which were introduced into the Technical Committee.

- The Ad-Hoc Working Groups are temporary and exist until completion of a Work Item.

- The permanent Working Group is a (default) home to anything that isn’t linked to an ad-hoc Working Group.
2009 Achievements

• MSF signs a MOU with ETSI. As part of this MOU, the IPTV Test Plans from GMI2008 are shared to be used in an ETSI IOT event in 2009.

• MSF & i3Forum collaborate on NNI QOS and there is reciprocal attendance at each other’s meetings.

• The Forum is re-focussed.
Meeting Sites

• 2009
  • San Jose, CA, USA
  • Budapest, Hungary
  • Ottawa, Canada
  • Hong Kong, China
2010 IOT Events

- First year of the re-focused MSF,
- The MSF ran two IOTs:
  - LTE/EPC IOT Event in March 2010,
LTE/EPC Event

• A 2 week event held in March 2010.

• Hosted by Vodafone in Duesseldorf and CMCC in Beijing.

• Sites interconnected via IPSEC tunnels over the public internet.

• Involved 10 companies.

• Scope was interoperability between eNB and EPC and within the EPC for a number of use cases.
LTE/EPC Scenarios

- Five test scenarios:
  - S1 – Basic interoperability,
  - S2 – Roaming,
  - S3 – Legacy access to the EPC,
  - S4 – Handover
  - S5 – Robustness Testing (“fuzzing”)
P-IOT 2010 Event

- A 2 week event held in November 2010.
- Hosted by NCS.
- Involved 8 companies.
- Scope was the performance management reporting capabilities of SBCs, their accuracy and ability to support KPI validation.
P-IOT 2010 Scenarios

- Two test scenarios :-
  - S1 – Single Domain Performance Management Reporting,
  - S2 – Multi Domain Performance Management Reporting.
2010 Achievements (1/2)

- The MSF publishes:-
  - LTE/EPC Testing Scenarios,
  - EPS Access Tile,
  - Non-3GPP EPS Access Tile,
  - LTE/EPC White Paper,
  - P-IOT Testing Scenarios,
  - P-IOT White Paper,
  - White Paper on “Blended/Converged IPTV Services”.
  - White Paper on “Personalized Converged Services”.
  - White Paper on “Service Continuity”
  - White Paper on “Location Services in LTE Networks”.
  - White Paper on “Priority Emergency Telecommunications Services”.
  - White paper on “QOS over the Network-Network Interface.”
2010 Achievements (2/2)

- The MSF sends LSs to partner fora relating to the completed IOT events.
Meeting Sites

• 2010
  • Vienna, Austria
  • Vancouver, Canada
  • Vancouver, Canada
  • Seoul, South Korea
VoLTE
2011
VoLTE Event

- A 3 week event held in September 2011.
- Hosted by Vodafone in Duesseldorf and CMCC in Beijing.
- Jointly organised with the GSMA.
- Sites interconnected via IPSEC tunnels over the public internet.
- Involved 27 companies.
- Built on LTE/EPC event, focussing on VoLTE and MMTEL services.
VoLTE Scenarios

• Three test scenarios :-
  • Basic interoperability (attach, IMS Registration, IMS sessions, MMEL services, Ut configuration).
  • Roaming & Interconnect,
  • Robustness Testing (“fuzzing”)
2011 Achievements (1/3)

- The MSF publishes:
  - VoLTE Testing Scenarios
  - EPS Access Tile,
  - IA for Sec-GW,
  - VoLTE White Paper,
  - VoLTE Robustness Report,

- MSF signs a co-operation agreement with GSMA to work together on the VoLTE IOT and attends the MWC to formally launch the VoLTE IOT event.
2011 Achievements (2/3)

• MSF attends the IMS World Forum and participates in an Interop Workshop with other fora/organizations.

• MSF is an Endorsing Association for the IPv6 World Congress event.

• ETSI attend the VoLTE IOT event as Observers. This visit leads on collaboration for further work which eventually leads to the RCS VoLTE IOT event in 2012.

• A LS presenting the results of the VoLTE IOT is sent to partner fora.
2011 Achievements (3/3)

- MSF attends the LTE North America Event and takes part in a panel session as well as distributing the VoLTE IOT WP.

- MSF attends the i3Forum QOS workshop and presents comments on the i3Forum QOS WP.

- MSF is an event partner for the layer123 conference and presents the VoLTE IOT results. In addition, the MSF and ETSI have a joint booth which advertises future collaboration.
Meeting Sites

• 2011
  • Miami, FLA, USA
  • Lisbon, Portugal
  • Denver, Colorado, USA
  • Beijing, China
RCS VoLTE Event

• A 3 week event held in September/October 2012.
• Hosted by Sintesio in Kranj, Slovenia and CMCC in Beijing.
• Jointly organised with the ETSI & GSMA.
• Sites interconnected via IPSEC tunnels over the public internet.
• Involved 14 companies.
• Built on VoLTE event, focusing on VoLTE & MMTEL services plus RCS services.
RCS VoLTE Scenarios

• Two test scenarios :-
  • RCS VoLTE in a home/single Network,
  • RCS VoLTE for Roaming & Interconnect.
2012 Achievements (1/2)

• MSF attends the Mobile World Asia Event in February 2012 and presents the results of the VoLTE IOT Event.

• MSF is an Endorsing Association for the IPv6 World Congress event.

• MSF publishes :-
  • RCS VoLTE Testing Scenarios,
  • RCS VoLTE White Paper.

• MSF forms a joint WG with ATIS PTSC in early 2012 to work toward a NNI IOT testing ATIS standards. This culminates in the NNI IOT event in 2013.
2012 Achievements (2/2)

• The RCS VoLTE IOT results and WP are presented at a number of fora:-
  • Fuseco Forum in Berlin,
  • Rich Communication Services Conference in Berlin,
  • the IMS Asia Conference in Singapore,
  • the layer123 conference in London (at which the MSF is also an event partner).

• A LS presenting the RCS VoLTE IOT results and WP is sent to partner fora from TC-INT.
Meeting Sites

- 2012
  - Washington DC, USA
  - Munich, Germany
  - Los Angeles, CA, USA
  - Singapore
NNI Event

• A 1 week event held January 19-23 2013.
• Hosted by OEC (NCS).
• Jointly organised with the ATIS PTSC.
• Involved 2 participating companies.
NNI Scenarios & Output

• Three (*) test scenarios :-
  • Both SBG ATIS compliant,
  • One SBG AIS compliant, one RFC 4412 compliant,
  • One SBG ATIS compliant, one non-compliant.

• Related output :-
  • Testing Scenarios,
  • Event White Paper.
Some Final Numbers….

- MSF survived for 15 years,
- MSF held 59 Technical Meetings (a pity there was no Diamond Jubilee!),
- MSF visited 19 countries,
- MSF visited 44 cities/venues :-
  - Most visited was Vancouver with 4 followed by Ottawa & San Francisco with 3 apiece,
  - Included 17 capital cities.
Some More Numbers.....

• MSF held 9 IOT events,

• MSF published 25 White Papers,

• MSF published 100 Architecture / IA / Specification documents.

• MSF generated 3061 contributions.

• MSF held 506 ballots (290 straw, 211 final, 5 other).
Phew.....Thanks to you all.

Questions?