International Data Distribution

SAR Controllers Training 2012
14 – 16 February 2012

Sam Baker
Science Systems and Applications, Inc.
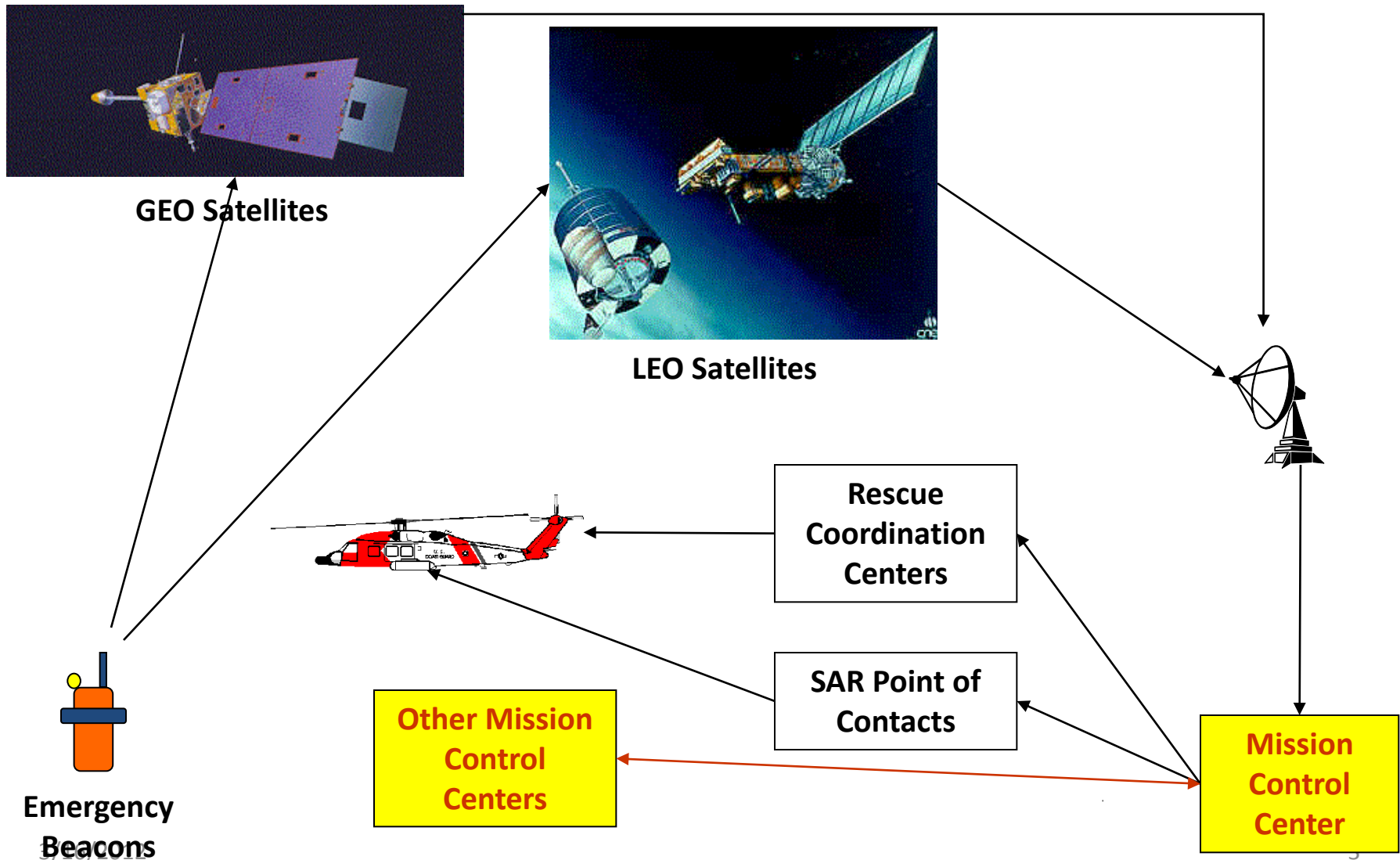Chief USMCC

MCC to MCC Data Distribution

- Cospas-Sarsat was designed to:
  - Save lives through
    - Early detection of distress
    - Minimizing search time
    - Quick recovery
  - Consider
    - Number of extended searches - past vs. present
    - Cost of an extended search

MCC to MCC Data Distribution

GEO Satellites

LEO Satellites

Rescue Coordination Centers

SAR Point of Contacts

Other Mission Control Centers

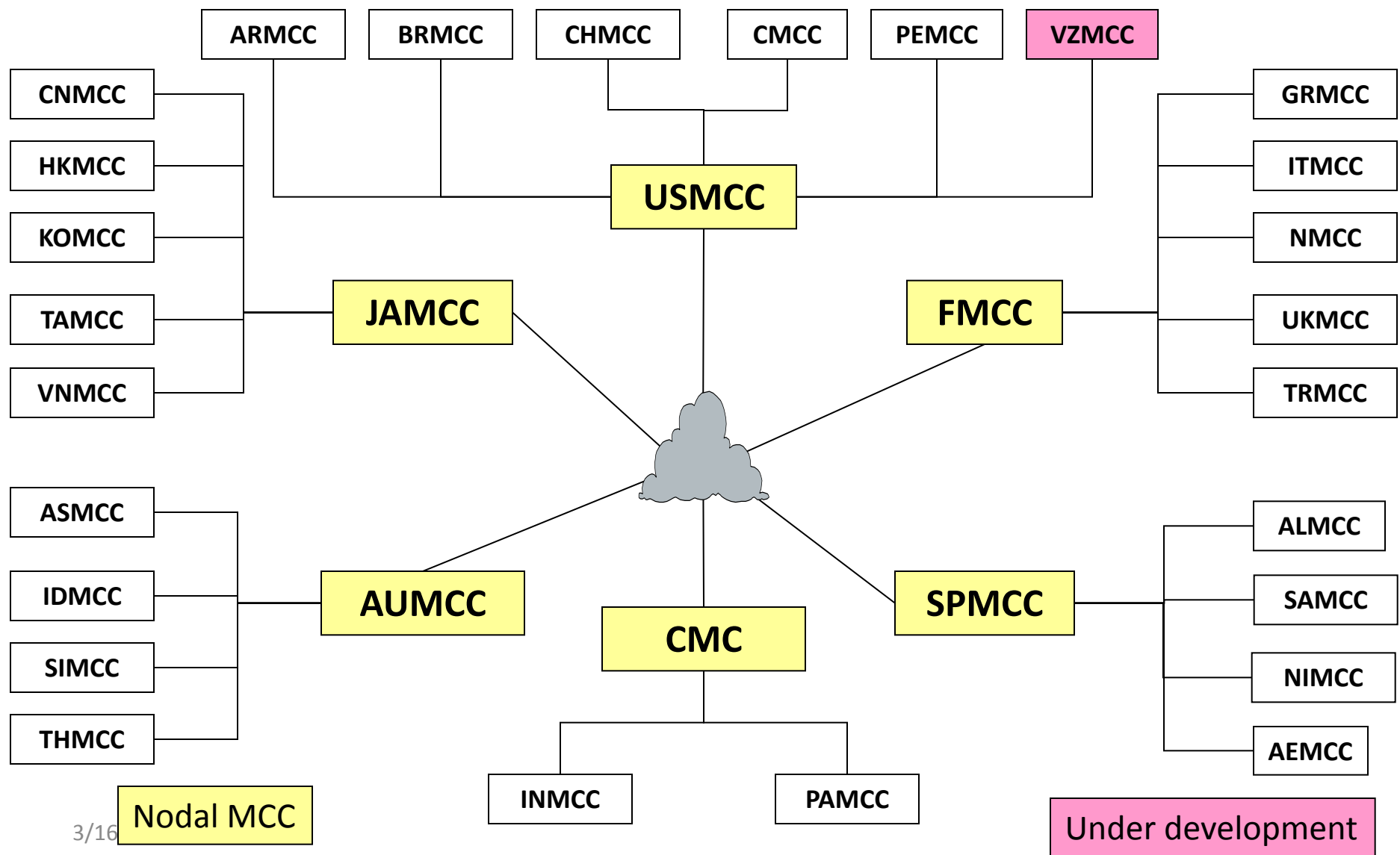Mission Control Center

Emergency Beacons

MCC to MCC Data Distribution

- Data Distributions Procedures are spelled out in Cospas-Sarsat Data Distribution Plan (DDP), A.001

- Generally alerts are distributed based on location of alert

- Unlocated alerts are based on the country code of the beacon

- Notification of Country of Registry (*NOCR*) messages are based:
  - on location of the beacon and
  - the country code of the beacon

- Beacon event is only sent once

- SSAS alerts are distributed base on country code

- No messages are distributed after ambiguity resolution (composite)

MCC to MCC Data Distribution
Data Distribution Network

ARMCC BRMCC CHMCC CMCC PEMCC VZMCC

CNMCC
HKMCC
KOMCC
TAMCC
VNMCC

JAMCC

USMCC

GRMCC
ITMCC
NMCC
UKMCC
TRMCC

FMCC

ASMCC
IDMCC
SIMCC
THMCC

AUMCC

CMC

SPMCC

ALMCC
SAMCC
NIMCC
AEMCC

INMCC PAMCC

Nodal MCC

Under development

MCC to MCC Data Distribution
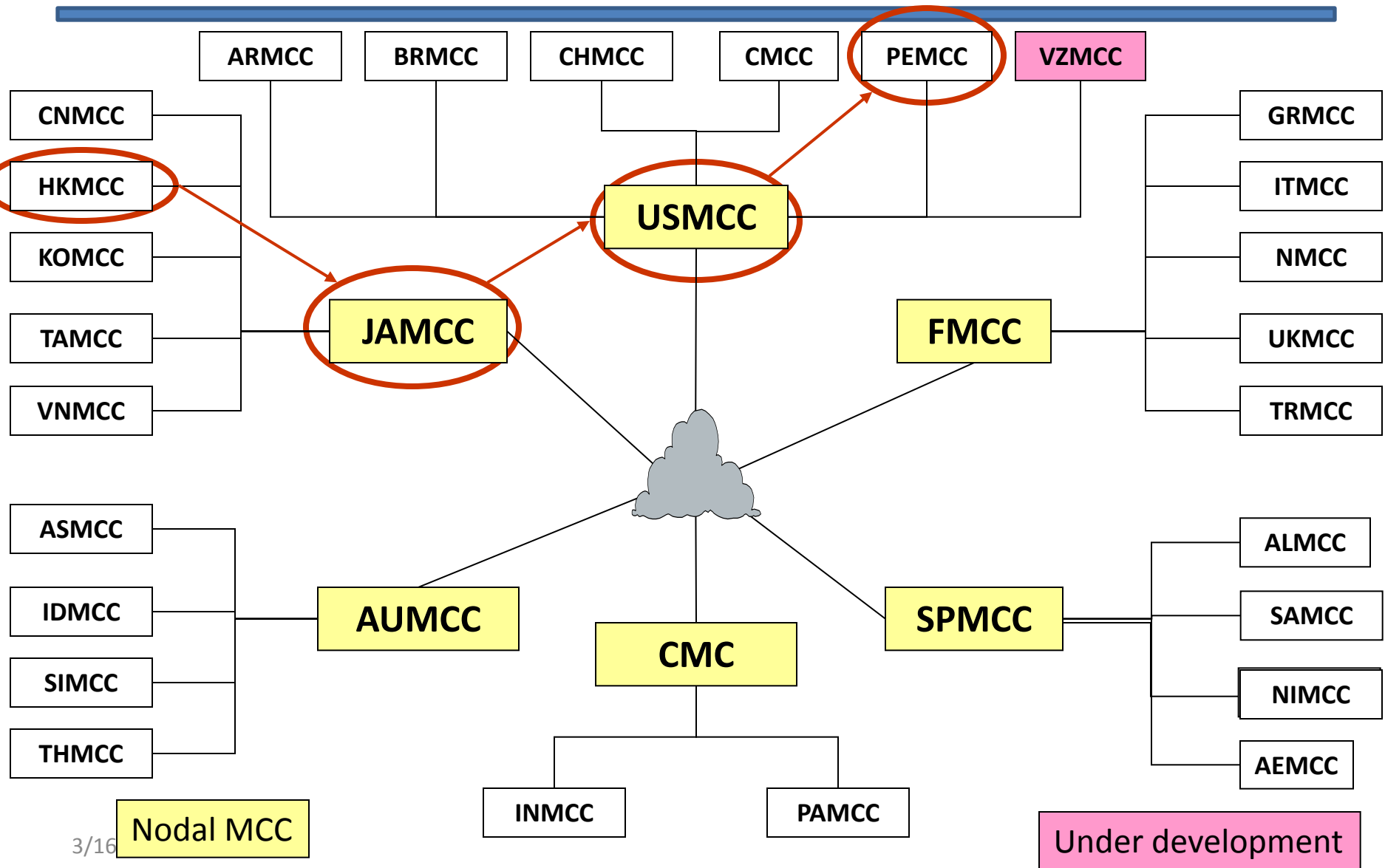
Unlocated Alert Example

Unlocated Alert detected by HKMCC with Peru country code

- HKMCC sends to JAMCC (if HKMCC has not previously sent the "beacon event" to JAMCC).

- JAMCC sends to USMCC (if JAMCC has not previously sent the "beacon event" to USMCC).

- USMCC sends to PEMCC (if USMCC has not previously sent the "beacon event" to PEMCC).

- PEMCC sends to RCC or SPOC (if BRMCC has not previously sent the "beacon event" to RCC or SPOC), based on national procedures.

MCC to MCC Data Distribution

Unlocated Alert detected by HKMCC with Peru country code

ARMCC · BRMCC · CHMCC · CMCC · PEMCC · VZMCC

CNMCC · HKMCC · KOMCC · TAMCC · VNMCC

JAMCC · USMCC

GRMCC · ITMCC · NMCC · UKMCC · TRMCC

FMCC

ASMCC · IDMCC · SIMCC · THMCC

AUMCC

CMC

SPMCC

ALMCC · SAMCC · NIMCC · AEMCC

INMCC · PAMCC

Nodal MCC

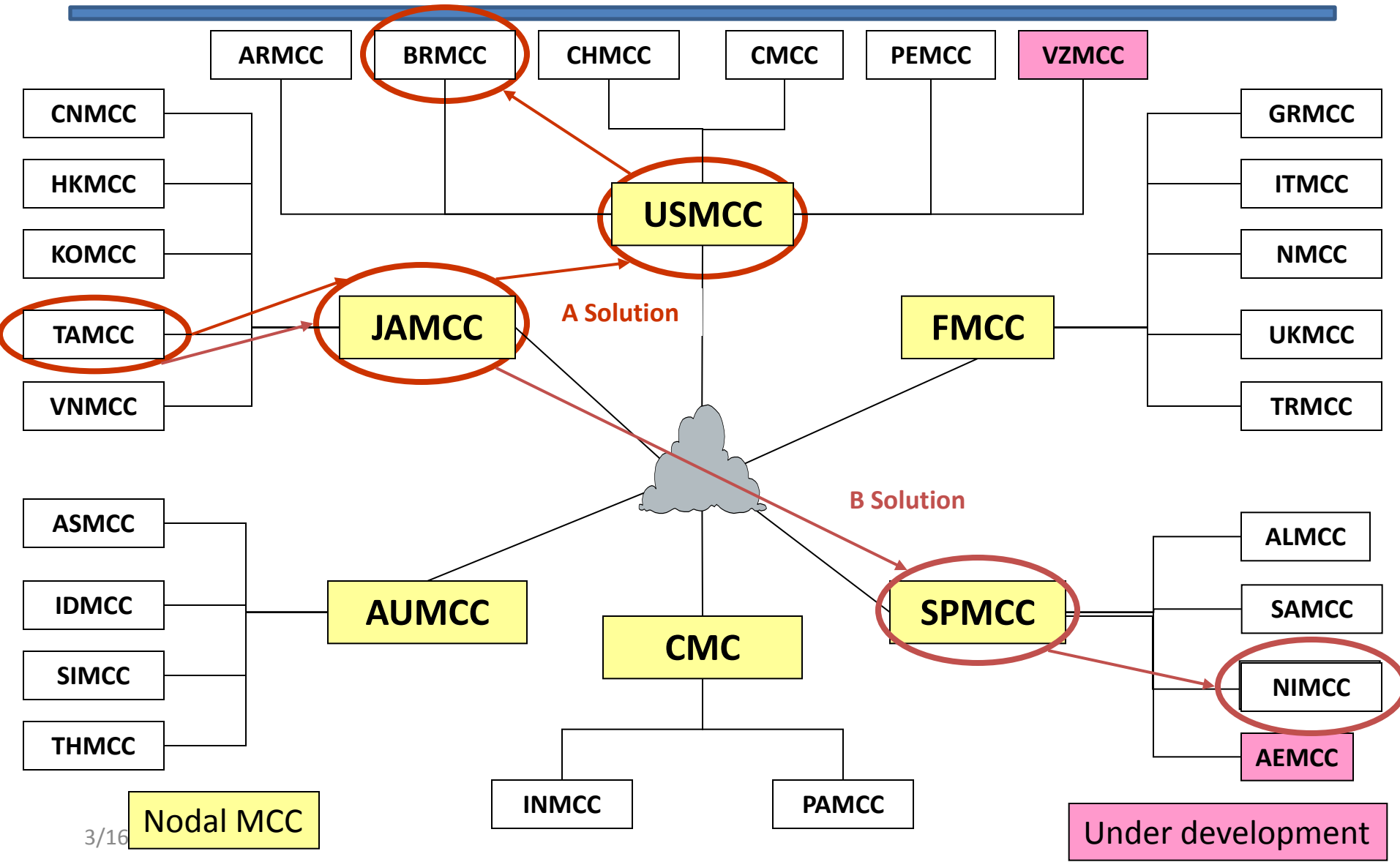Under development

3/16

MCC to MCC Data Distribution

<u>First Doppler Located alert Example</u>

Alert detected by TAMCC with location in BRMCC & NIMCC's service areas

- TAMCC sends to JAMCC (if TAMCC has not previously sent the "beacon event" to JAMCC).

- JAMCC sends to USMCC & SPMCC (if JAMCC has not previously sent the "beacon event" to USMCC or SPMCC).

- USMCC sends to BRMCC (if USMCC has not previously sent the "beacon event" to BRMCC).

- SPMCC sends to NIMCC (if SPMCC has not previously sent the "beacon event" to NIMCC).

- BRMCC & NIMCC send to respective RCC or SPOC (if BRMCC or NIMCC have not previously sent "beacon event" to RCC or SPOC), based on national procedures.

- Procedure above is followed for the E locations.

MCC to MCC Data Distribution
Alert detected by HKMCC with location in BRMCC & NIMCC's service areas

ARMCC · BRMCC · CHMCC · CMCC · PEMCC · VZMCC

CNMCC · HKMCC · KOMCC · TAMCC · VNMCC

GRMCC · ITMCC · NMCC · UKMCC · TRMCC

USMCC

A Solution

JAMCC

FMCC

B Solution

ASMCC · IDMCC · SIMCC · THMCC

AUMCC

CMC

SPMCC

ALMCC · SAMCC · NIMCC · AEMCC

INMCC · PAMCC

3/16

Nodal MCC

Under development

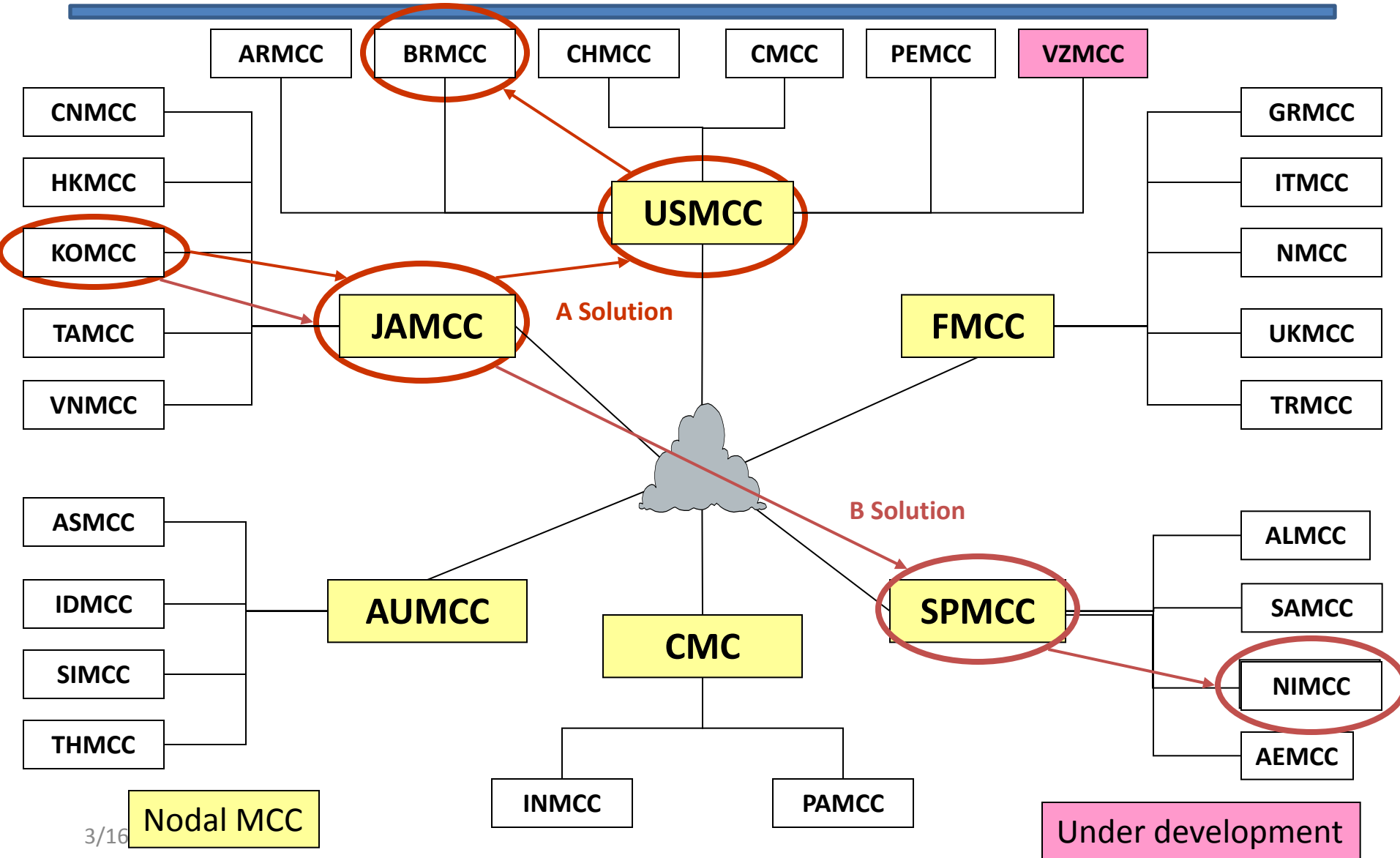# MCC to MCC Data Distribution

Ambiguity Resolving Example
Alert detected by KOMCC with location in BRMCC and PEMCC's service areas
Ambiguity is resolved to BRMCC

- KOMCC sends to JAMCC (if KOMCC has not previously sent the "beacon event" to JAMCC).

- JAMCC sends to USMCC & SPMCC (if JAMCC has not previously sent the "beacon event" to USMCC and SPMCC).

- USMCC sends to BRMCC (if USMCC has not previously sent the "beacon event" to BRMCC).

- SPMCC sends to NIMCC (if SPMCC has not previously sent the "beacon event" to NIMCC).

- BRMCC & NIMCC send to respective RCC or SPOC (if BRMCC or NIMCC have not previously sent the "beacon event" to RCC or SPOC), based on national procedures.

- Procedure above is followed for the E locations.

- Notes:
  - No messages are sent to PEMCC
  - No other messages are sent to

MCC to MCC Data Distribution

Alert detected by KOMCC with location in BRMCC and PEMCC's service areas - Ambiguity is resolved to BRMCC

3/16

Nodal MCC

Under development

MCC to MCC Data Distribution

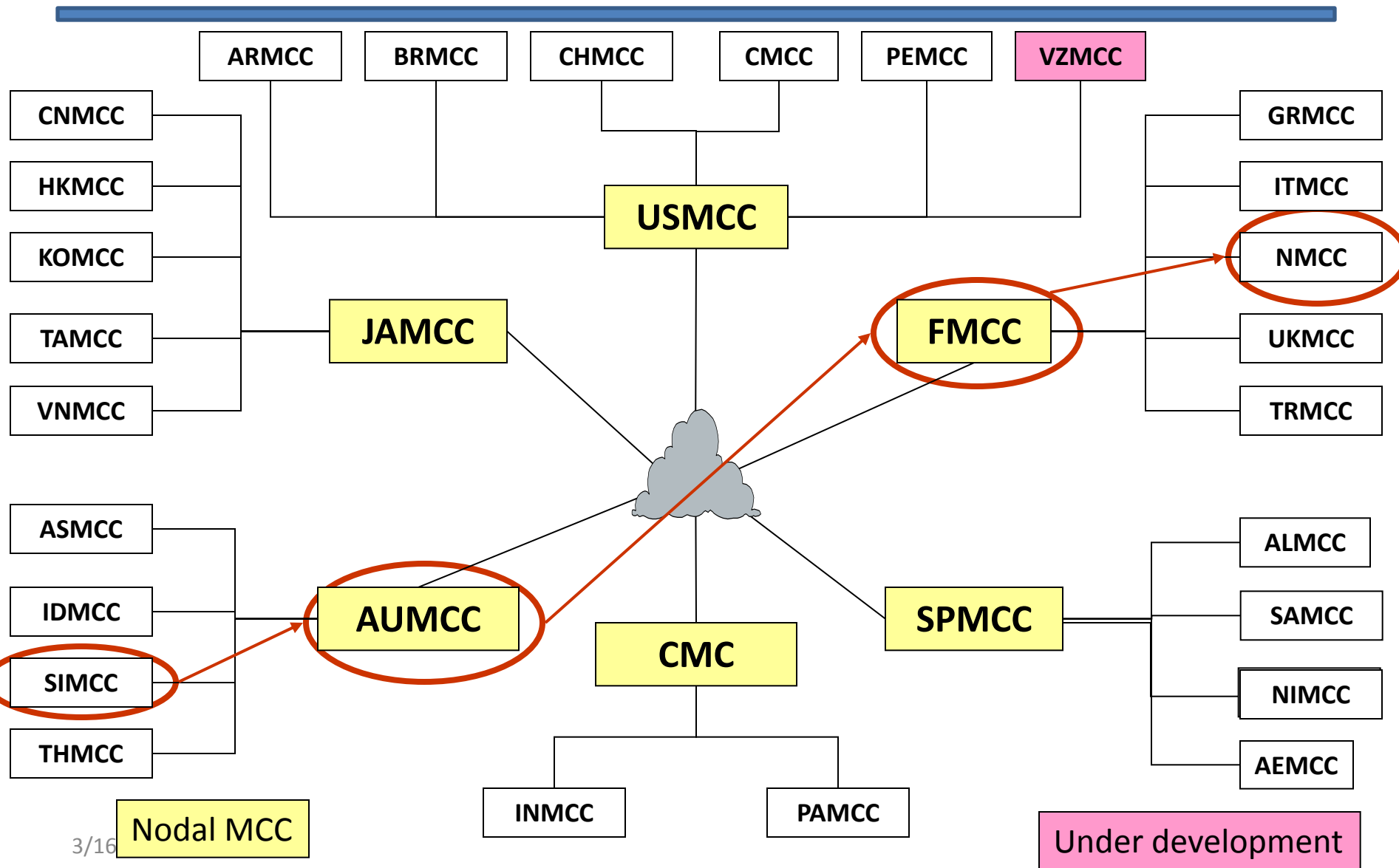<u>Notification of Country of Registry (NOCR) Example</u>

Beacon with Sweden country code is detected by SIMCC with location in SIMCC's service area

- Location is required.

- SIMCC sends NOCR to AUMCC (if SIMCC has not previously sent the NOCR to AUMCC).

- AUMCC sends NOCR to FMCC (if AUMCC has not previously sent the NOCR to FMCC).

- FMCC sends NOCR to NMCC (if FMCC has not previously sent the NOCR to NMCC).

- NMCC sends NOCR to Sweden SPOC (if NMCC has not previously sent the NOCR to the Sweden SPOC) based on national procedures.

MCC to MCC Data Distribution

Alert detected by SIMCC with location in SIMCC's service area

MCC to MCC Data Distribution
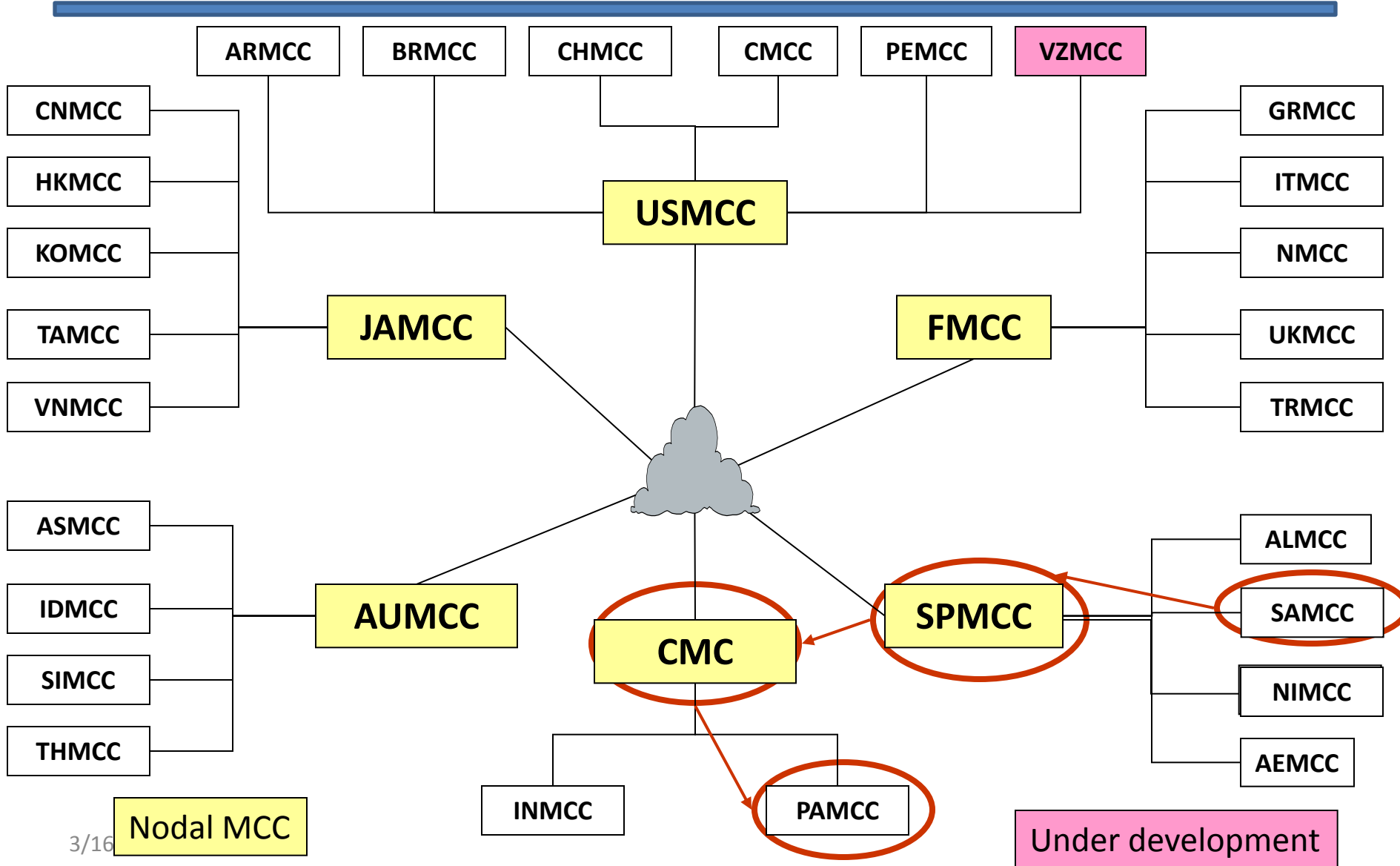
SSAS Example

SAMCC detects a Ship Security beacon with a Pakistan country code, with or without location

- SAMCC sends an Alert to SPMCC (if SAMCC has not previously sent the Alert to SPMCC).

- SPMCC sends to the Alert to CMC (if SPMCC has not previously sent the Alert to CMC).

- CMC sends Alert to PAMCC (if CMC has not previously sent the Alert to PAMCC).

- PAMCC sends Alert to "Competent Authority" (if PAMCC has not previously sent the Alert to "Competent Authority") based on national procedures.

- Distribution of SSAS Alerts is independent of the beacon's location.

MCC to MCC Data Distribution

SAMCC detects a Ship Security beacon with a Pakistan country code, with or without location

| ARMCC | BRMCC | CHMCC | CMCC | PEMCC | VZMCC |

CNMCC
HKMCC
KOMCC
TAMCC
VNMCC

GRMCC
ITMCC
NMCC
UKMCC
TRMCC

USMCC

JAMCC

FMCC

ASMCC
IDMCC
SIMCC
THMCC

AUMCC

CMC

SPMCC

ALMCC
SAMCC
NIMCC
AEMCC

INMCC

PAMCC

Nodal MCC

Under development

3/16

Glossary

- <u>Ambiguity Resolution</u> – Real solution determination

- <u>Beacon Event</u> – Unique Beacon/Satellite/TCA

- <u>Encoded location</u> – Location encoded in beacon ID (30 Hex) – usually from internal GPS for EPIRBs and PLBs, but may be from aircraft navigation system for ELTs

- <u>Service Area</u> – SRRs of MCC and the SPOCs it supports

- <u>NOCR</u> – Notification of Country of Registry

- Position conflict / distance separation

- <u>SSAS</u> – Ship Security Alerting System

- TCA – Time of closest approach

Questions?